R E P O R T R E S U M E S

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MICROFICHE COLLECTION OF DOCUMENTS REPORTED IN ABSTRACTS OF RESEARCH AND RELATED MATERIALS IN VOCATIONAL AND TECHNICAL EDUCATION, FALL 1967.

OHIO STATE UNIV., COLUMBUS, CENTER FOR VOC. EDUC.

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DOCUMENTS ANNOUNCED IN THE FALL 1967 ISSUE (VT 003 696) OF "ABSTRACTS OF RESEARCH AND RELATED MATERIALS IN VOCATIONAL AND TECHNICAL EDUCATION" (ARM), WITH MINOR EXCEPTIONS, ARE INCLUDED IN THIS MICROFICHE SET. THE MICROFICHE SET IS ARRANGED IN THE FOLLOWING SEQUENCE -- (1) A VOCATIONAL TECHNICAL (VT) NUMBER INDEX TO DOCUMENTS IN THE MICROFICHE COLLECTION, (2) A VT LIST OF DOCUMENTS WHICH WERE LISTED IN ARM BUT ARE NOT IN THE MICROFICHE COLLECTION, (3) THE AUTHOR INDEX, THE VOCATIONAL AND SUPPORTING SERVICES INDEX, AND THE SUBJECT INDEX FROM ARM, AND (4) THE FULL TEXT OF DOCUMENTS LISTED IN THE VT NUMBER INDEX. THE TEXTS ARE FILMED CONTINUOUSLY IN VT NUMBER SEQUENCE. (BS)

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Microfiche Collection of Documents

Reported in Abstracts of Research and Related Materials in Vocational and Technical Education

(ARM)

Compiled and Indexed by The ERIC Clearinghouse
on Vocational and Technical Education

Fall 1967

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INTRODUCTION

This collection of microfiche includes the documents announced in the Fall, 1967 issue of Abstracts of Research and Related Materials in Vocational and Technical Education (ARM) with minor exceptions. The microfiche set is arranged in the following sequence:

1. Vocational Technical (VT) Number Index to Microfiche Collection of Documents Reported in ARM, Fall 1967

2. VT Number List of Documents not in Microfiche Collection.
   Copies of these documents may be obtained from the source indicated in the citation on page 3.

3. Selected indexes from ARM, Fall 1967

   a. Author Index

   b. Vocational and Supporting Services Index

   c. Subject Index

   The page numbers shown in these indexes refer to the location of the abstracts in ARM, Fall 1967.

4. The full text of documents listed in the VT Number Index on pages 1-2.
   The documents are arranged in numerical order according to VT numbers. The texts of materials in this microfiche set have been filmed continuously in VT number sequence thereby facilitating the purchase of the texts of all documents on microfiche with one order and lowering the cost of the entire set as contrasted to the purchase of microfiche of individual titles.

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OFFICE OF EDUCATION

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CENTRAL STATES SEMINAR IN AGRICULTURAL EDUCATION

Theme: Implementing the Vocational Education Act of 1963

Sheraton-Chicago Hotel

Chicago, Illinois

March 14-17, 1966

VT 00000

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SECTION I

CENTRAL STATES SEMINAR

for

TEACHER EDUCATORS AND STATE SUPERVISORS OF AGRICULTURAL EDUCATION

Sheraton-Chicago Hotel
March 14-17, 1966

Theme: Implementing the Vocational Education Act of 1963

Conference Staff

Regional co-chairmen	Warren Weiler, Ohio C. V. Roderick, Missouri
Program co-chairmen	Paul Hemp, Illinois C. C. Eustace, Kansas
General secretary	James Hensel, Ohio

Program Planning Committees

High School

*Dale Aebischer
Ray Agan
C. C. Eustace
Harold Binkley
Kenneth James
W. C. Montgomery
Paul Sweany
Gilbert Guiler

Post-secondary

*Harold Byram
George Cochran
Floyd Cox
George Ekstrom
Ralph Guthrie
D. R. Purkey
J. R. Warmbrod
Ralph Woodin

Disadvantaged Youth

*Leslie Crabbe
Paul Day
Gerald Fuller
Richard H. Wilson

Adult and Young Farmer

*Winston Dalbey
Carl Humphrey
Milo Peterson
Phil Teske
Harold Urton

*Chairman

Group	Chairmen	Secretary
No. 1	Raymond Garner	Duane Blake
No. 2	Dale Aebischer	Norman Ehresman
No. 3	Harold Shoaf	Richard Karelse
No. 4	Kenneth James	-
No. 5	Ray Agan	B. E. Gingery

12:00 Lunch

Tuesday Afternoon

1:30 Occupational experience programs..... Kenneth James, Illinois State University

2:00 Small group discussions

Group	Chairmen	Secretary
No. 1	Raymond Garner	Duane Blake
No. 2	Dale Aebischer	Norman Ehresman
No. 3	Harold Shoaf	H. W. Gadda
No. 4	Kenneth James	John Matthews
No. 5	Ray Agan	B. E. Gingery

3:15 Coffee break
3:30 Summary by listening panel--E. L. De Alton, G. R. Cochran, R. H. Wilson, and W. T. Bjoraker
4:30 Adjourn
7:00 Business meeting

Wednesday Morning, March 16

Presiding Officer: Harold Shoaf, Kansas Secretary: E. J. Mabon, Iowa

Topic: Programming Vocational Education for Disadvantaged Youth
Chairman: Richard Wilson, Ohio

8:00 Who are the disadvantaged youth?..... Gerald Fuller, University of Illinois
8:30 Report of Project REDY..... Lloyd Phipps, University of Illinois
9:00 Some possible solutions, panel discussion..... Paul Day, Teacher, Fairbault, Minnesota, Moderator
Wilbur Weir, Teacher, Lodi, Ohio
Kenneth Parker, Teacher, Cleveland, Ohio
Shaw Terwilliger, Teacher, Virginia, Illinois
9:45 "Open Mike," Audience may question the panel--Willie Davis, Vo-Hort Instructor, Cleveland, Ohio
10:15 Recess

10:45 "Looking Ahead to the Programming of Special Efforts in Vocational Agriculture for Disadvantaged Youth".....Clifford Minton, Program Specialist for Persons with Special Needs, Chicago Regional Office, Department of Health, Education and Welfare

11:15 Question-and-answer period
11:45 Lunch

Wednesday Afternoon, March 16

Topic: Adult Education Programs
Chairman: C. W. Dalbey, Iowa Secretary: Milo Peterson, Minnesota

1:15 Organizing and conducting local programs of adult education
The "Current Topics" Approach.... George Sefrit, Teacher, Algona, Iowa
The "Unit" Approach..... Chris Beck, Teacher, Staples, Minnesota

2:00 Symposium: A Critical Look at our Vocational Agriculture Program for Adults..... Richard Hummel, Ohio
Doyle Beyl, Wisconsin
James Bailey, Missouri
Glen Nicklas, Nebraska
James McGuire, Indiana

3:00 Coffee break
3:30 Discussion groups

Group	Chairmen	Subject
A	Phil Teske	Program for Young Farmers and Adults Preparing to Enter Farming
B	James Bailey	Programs for Adults Preparing to Enter Off-Farm Occupations
C	Harold Urton	Programs for Adults Engaged in Farming
D	J. R. Warmbrod	Programs for Adults Engaged in Off-Farm Agricultural Occupations

4:15 Summary and conclusions..... Milo Peterson, University of Minnesota

Thursday Morning, March 17

Presiding Officer: Secretary: J. A. McKinney, Missouri

Topic: Post-Secondary and Technical Education in Agriculture
Chairman: Harold Byram, Michigan
Host: E. L. De Alton, North Dakota

8:15 Brief status reports from Iowa, Michigan, Minnesota, and Nebraska

8:45 Post-secondary education in agriculture in Ohio..... R. O. Brinkman, Director and H. B. Drake, Coordinator, Agricultural Technologies, Springfield and Clark County Technical Education Program, Springfield, Ohio
Warren Weiler, State Supervisor of Agricultural Education, Ohio

9:30 Discussion..... Ralph Bender, Ohio State University, in charge

10:00 Coffee break

10:30 Development of the Kenosha, Wisconsin, Post-High School Program in Ornamental Horticulture..... Eugene Lehrmann, Director, Kenosha Technical Institute
Doyl Beyl, Wisconsin State Board for Vocational Education, Leader

11:15 Discussion

11:45 Lunch

Thursday Afternoon

1:30 Panel report: Post-secondary education in agriculture in Illinois..... J. R. Warmbrod, University of Illinois, Chairman
Ralph Guthrie, Chief of Agricultural Education, Illinois
Elmer Rowley, Dean, Joliet Township Junior College, Joliet, Illinois
Joseph Dallon, Jr., Instructor Woodrow Wilson Branch, Chicago City Junior College, Chicago, Illinois
Leo P. Deutsch, Dealer Development Manager, International Harvester Company, Peoria, Illinois
James Nickell, Instructor, Danville Junior College, Danville, Illinois
Edward Kaiser, Instructor, Canton Community College, Canton, Illinois

Thursday Morning, March 17

Presiding Officer: Secretary: J. A. McKinney, Missouri

Topic: Post-Secondary and Technical Education in Agriculture
Chairman: Harold Byram, Michigan
Host: E. L. De Alton, North Dakota

8:15 Brief status reports from Iowa, Michigan, Minnesota, and Nebraska

8:45 Post-secondary education in agriculture in Ohio..... R. O. Brinkman, Director and H. B. Drake, Coordinator, Agricultural Technologies, Springfield and Clark County Technical Education Program, Springfield, Ohio
Warren Weiler, State Supervisor of Agricultural Education, Ohio

9:30 Discussion..... Ralph Bender, Ohio State University, in charge

10:00 Coffee break

10:30 Development of the Kenosha, Wisconsin, Post-High School Program in Ornamental Horticulture..... Eugene Lehrmann, Director, Kenosha Technical Institute
Doyl Beyl, Wisconsin State Board for Vocational Education, Leader

11:15 Discussion

11:45 Lunch

Thursday Afternoon

1:30 Panel report: Post-secondary education in agriculture in Illinois..... J. R. Warmbrod, University of Illinois, Chairman
Ralph Guthrie, Chief of Agricultural Education, Illinois
Elmer Rowley, Dean, Joliet Township Junior College, Joliet, Illinois
Joseph Dallon, Jr., Instructor Woodrow Wilson Branch, Chicago City Junior College, Chicago, Illinois
Leo P. Deutsch, Dealer Development Manager, International Harvester Company, Peoria, Illinois
James Nickell, Instructor, Danville Junior College, Danville, Illinois
Edward Kaiser, Instructor, Canton Community College, Canton, Illinois

2:15 Questions and answers
2:45 Coffee
3:15 Implications of information presented for State Programs of Teacher Education, Supervision, and Research..... George Ekstrom, University of Missouri, in charge

Group	Leader	Recorder
A	Joe Malinski, Minnesota	Harold Crawford, Iowa
B	Clarence Bundy, Iowa	James Bailey, Missouri
C	Hilding Gadda, South Dakota	J. A. McKinney, Missouri
D	B. E. Gingery, Nebraska	Floyd Doering, Wisconsin

4:30 Adjourn

Thursday Evening, March 17

Presiding Officer: Warren Weiler, Ohio Secretary: John Coster, Nebraska

Reports of special-interest group meetings

Agricultural mechanics.....Carlton Johnson, Ohio
FFA executive secretaries.....G. Donovan Coil, Illinois
Instructional aids specialists.....Harold Crawford, Iowa
State supervisors.....Ralph Guthrie, Illinois
Teacher-educators.....A. H. Krebs, Illinois

Business meeting.....Warren Weiler, Ohio
C. V. Roderick, Missouri

Adjourn

Seminar Participants

Illinois

J. F. Nickell
M. B. McMillion
G. R. Fuller
Paul Hemp
N. D. Ehresman
L. J. Phipps
A. H. Krebs
A. L. Utech
H. M. Strubinger
K. E. James
R. A. Guthrie
R. F. Espenschied
W. H. Witt
Don Coil
J. D. Sweeney
H. W. Homann
John Matthews
B. K. Bristol
O. C. Floyd
J. R. Warmbrod
Shaw Terwilliger

Indiana

L. R. Hilterbrand
Phil Teske
Howard Addison
Jim McGuire
Coleman Harris

Iowa

G. W. Sefrit
Duane Blake
G. F. Barton
H. R. Crawford
Rick Thomas
C. E. Bundy
C. W. Dalbey
E. J. Mabon

Kansas

H. R. Bradley
Ray Agan
Harold Shoaf

Michigan

Jim Hannemann
N. S. Gill
Bounnong Thipphawongi
Richard Karelse
Clifford Haslick
C. F. Albrecht
Albert Ackley
Raymond Garner
Harold Byram
H. E. Nesman

Minnesota

Joe Malinski
W. F. Bear
G. R. Cochran
M. J. Peterson
Paul Day

Missouri

J. A. McKinney
C. R. Weston
James Bailey
C. V. Roderick

Nebraska

J. K. Coster
G. W. Nickla
A. A. Kahler
Les Thompson
B. E. Gingery
R. W. Equall
Jim Horner

North Dakota

E. L. De Alton

Ohio

Wm. Weir
Willie Davis
Kenneth Parker

Ohio (cont'd)

W. G. Weiler
R. E. Bender
R. L. Hummel
J. E. Dougan
W. H. Wolf
Jim Stitzlein
C. E. Johnson
Gilbert Guiler
Floyd McCormick
J. A. Rolloff
P. F. Pulse
James Hensel
R. H. Wilson

South Dakota

H. W. Gadda
H. E. Urton

U. S. Office

H. C. Edwards
C. E. Minton

Wisconsin

Eugene Lehrmann
A. B. Cordes
F. J. Doering
D. C. Aebischer
Ray Wall
M. Thompson
Doyle Beyl
M. W. Cooper
W. T. Bjoraker
Gerald Matteson

Guests

James L. Willman
Field Representative
American Zinc Institute
Lafayette, Indiana

Wilson W. Carnes
Editor
The National Future Farmer
Alexandria, Virginia

P. E. Schmidt
National Safety Council
Chicago, Illinois

A. C. Razaitis
Interstate Printing
Danville, Illinois

Leland E. Bradley
Field Mgr.
American Zinc Institute
Lafayette, Indiana

Walter Jacoby
AIC Youth Program Director
Washington, D.C.

SECTION II

PROCEEDINGS OF THE SEMINAR

Monday Morning, March 14

"New Opportunities in Agricultural Education": Homer E. Edwards, Field Representative, Agr. Educ. Division of Vocational and Technical Education

It is a distinct honor and a personal privilege to speak to this group today as you begin a full week of much needed cooperative effort and deliberation aimed toward the improvement of vocational education in agriculture within the central and major agricultural area of these United States.

It would be presumptious for me to offer you any new formula for success in providing vocational education for agricultural occupations when, in fact, I have observed very few of your many successful local and state programs. Please allow me, then, to raise some issues with you for your continued deliberation this week as you work with each other in plotting a course in this broad area of vocational education.

The wording of PL 88-210 provides the expansion of opportunity. Our challenge is to determine specific needs for vocational education in agriculture, then to package and sell our combined best thinking.

The term "vocational agriculture" no longer describes a specific course or program. It is now a generic name or umbrella under which we must design many separate programs of vocational education aimed to provide systematic educational experiences that prepare the individuals enrolled for a specific entry job in an occupation where agricultural skills and knowledges are necessary for competency, or programs whose purpose is to upgrade individuals now working in an agricultural occupation.

The basic purpose of the Vocational Act of 1963 makes our area of opportunity "people" centered. Our concern is, and should be, with people. If as a nation, we are to achieve more closely our goal of full employment and opportunity for everyone, we must point our efforts at people--all of the people. Employers think first of needs, then jobs, then people. Vocational educators are charged with the responsibility of thinking first of people, then jobs, then programs that fit people into personally satisfying and challenging jobs. To quote the act--so that persons of all ages in all

communities in the state--will have ready access to vocational training or retraining--which is of high quality--which is realistic in light of actual or anticipated opportunities for gainful employment--and which is suited to their--needs,--interests,--and ability to profit from such training. It is this content that I must operate in attempting to analyze our new opportunities in agricultural education.

One other point that I urge you to keep in mind as we look for our opportunities is this: Everyone does not need vocational education in agriculture but our goal should be to make vocational education in agriculture available to those people who want, need, and can use it.

Let's analyze our opportunities for service, some new, some old, but perhaps unfilled. We must consider (1) high school preparatory programs, (2) post-high school preparatory programs, (3) technician programs, (4) adult or continuing education programs for those now employed in agricultural occupations, and (5) manpower programs for those presently unemployed or underemployed.

High School Preparatory Programs. The preponderence of evidence seems to indicate that there is a need for vocational education in the high school. We know that many youth drop out before completing high school and many more will complete their formal education with high school graduation and seek immediate employment or enter partnership in a farm business.

It is my opinion that we need to continue to provide high school programs starting at least by the 10th grade and preferably in the 9th grade and/or age 14. These programs may be exploratory in nature, but definitely vocational. They should lead to specialized courses at the upper high school or post-high level although there is also need for some special courses for you with special needs.

Post-High School Preparatory Programs. States have developed different patterns in post-high school vocational education. I have separated post-high school programs from technician programs as I believe there is a difference. Our main challenge in post-high school programs is probably the combining of students who have started a vocational program while in high school with students who did not have that opportunity. In talking about post-high school programs, let's not assume high school graduation as a prerequisite.

Technician Programs. In my mind, the word "technician" implies those programs of vocational specialization that require for completion a minimum of one year intensive instruction beyond high school graduation, and of course, less than a baccalaureate degree. In these programs, there is additional emphasis on the "why" as well as the "how."

Adult Education. This division of vocational education in agriculture may still be one of our great areas of opportunity. What percentage of our employed people in farming and other agricultural occupations are now enrolled in systematic vocational education aimed toward improvement of occupational efficiency? The courses offered must be of the highest quality and probably specialized teachers are needed. Our job is to package and sell a quality product, not only to those who may enroll, but to those who help in the financing and administering of such programs.

Manpower Development and Training. We have done very little in the promotion and packaging of MDTA programs in agricultural occupations. No one else can assess the need and promote courses better than we. The law specifies that underemployed people are eligible for this training as well as unemployed. We must convince Employment Security and Department of Labor people of the need for training and perhaps specifically show them the possibilities. I think we owe our public this service.

Across the lines, I have drawn in this analysis, let's draw five more--horizontally or vertically as you choose.

Production Farming. Particularly at the high school and the adult levels, production farming is now and probably always will be our foremost program. We cannot neglect it as we look for new opportunities to be of service to people.

We still are not providing enough competent graduates to fill the vacancies on commercial farms. The average age of farm operators continues to increase. Farming is an industry that produces new wealth. It is the largest individually owned business in the world.

Farming is a dynamic, changing industry requiring increasingly competent workers. It is a growing industry whose image is improving as we face the population explosion. To maintain our present diet, we must double our food output within 35 years on no more than 8% more land. The time to train these production specialists is now.

Our adult programs must become more specific and systematic to serve the needs of present farm operators. We must consider a two or three year farm business analysis approach in addition to ongoing programs featuring production practices.

Production Agriculture--Other Than Farming. The increasingly affluent society in this country opens wide vistas of educational opportunity in the rapidly expanding agricultural production business of what were luxuries a few short years ago--flowers, flowering plants, shade trees, grass, turf, specialty crops, and livestock.

In many states, all vocational education programs of this type are new for vocational agriculture. We must design high quality vocational programs at all levels, high school through adult.

Processing Agricultural Products. This is new ground to plow. We have not even determined where the line fences are going to be. The only guideline we have at present is the wording of our vocational legislation, "Any occupation involving knowledge and skills in agricultural subjects, thus requires competencies in one or more of the primary areas of plant science, soil science, animal science, farm management, agricultural mechanization and agricultural leadership."

Let's use good judgment and logic as we explore our educational opportunities here, tempering our judgment with the challenge that vocational education is people centered and we are vocational educators. Trade and industrial educators can cooperate with us or help us build the line fence if one is needed.

Distributing Agricultural Products. This, too, is new ground and an area in which we must cooperate with others in getting the job done. We must work in close cooperation with our Distributive Education Specialists as we search for opportunities to be of service to people of all ages. Remember that the goal is to provide competent people for jobs rather than to bicker over procedural details.

Servicing Production Agriculture. This is fertile ground and an area we can plow deep. I would further divide this field into two categories:

(1) Services for people in production agriculture such as farm machinery repair and maintenance, artificial breeding technician, spraying or fertilizing services, etc., farm record analysis plus many others.

(2) Agricultural services for other people such as landscaping, park and recreational areas management, care of pets, care of riding horses, etc.

The last three areas I have mentioned are, of course, all new areas of opportunity. All are based on a prosperous production agriculture where the continued trend toward specialization demands new kinds of programs.

I am completely confident that we professional educators can and will find these new and exciting opportunities, but, new opportunities bring new and increased responsibilities to state staff members. Our program must and will be evaluated. We must compete for funds with all other occupational fields and must prove our judgment.

Program evaluation will be based on (1) the competency of our graduates and (2) the ability of the graduates to obtain placement in their chosen occupational competency. We may not like this, but it will be a factor in our future. As we face this challenge, may I suggest that all of us read and re-read the new objectives bulletin prepared by a hard-working committee of our peers and adopted by our group as well as the Division of Vocational and Technical Education. Our teachers, too, need to become completely familiar with this document.

As members of the state supervisory and teacher education staffs, you are charged with the duty of determining direction for your state program of vocational education in agriculture. Your presence at this meeting indicates your interest. May I take a few minutes to mention some new or added responsibilities I think are important:

1. WE MUST INFLUENCE THE KIND AND NUMBER OF SPECIFIC PROGRAMS STARTED WITHIN THE STATE:

   a. To prevent duplication of effort.
   b. To assure the variety needed in the state.
   c. To place the programs in the areas of the state where needed.
   d. To select the best equipped institution.

The rapid increase of area vocational schools and community colleges makes this responsibility immediate and most difficult.

2. WE MUST FOSTER A CONTINUING DIALOGUE WITH EMPLOYER GROUPS TO DETERMINE THE PRECISE YET CHANGING COMPETENCIES EMPLOYERS EXPECT OF BEGINNING EMPLOYEES AT THE SEVERAL AREAS OF EMPLOYMENT.

   a. These groups are willing and anxious to work with us.
   b. There should be a state consulting committee for each major occupational area in the state.
   c. Utilize the work of National committees when available.
   d. Keep in communication with neighboring states.
   e. Divide staff responsibility to achieve a close working relationship on a continuing basis.
   f. In many cases, these people are not familiar with our program or its many opportunities for service. We cannot assume they will be enthusiastic toward us. We must prove our ability.
   g. These are new groups for most of us. Use Trade Associations and University specialists in making contacts.
   h. Insist on job analysis within the different levels of beginning employment.

3. WE MUST MAKE SURE THAT PROGRAMS ARE OF SUFFICIENT BREADTH AND DEPTH TO ASSURE EMPLOYABILITY.

   a. This includes high standards for supervised occupational experience.
   b. Preparatory vocational programs require supervised occupational experience commensurate with the students occupational objective.
   c. Written agreements are essential to protect the student, the school, and the employer.
   d. The graduate when placed, proves the worth of the program. He must be competent at the level trained.

4. WE MUST RECOGNIZE AND PLAN FOR INCREASED MOBILITY OF PEOPLE.

   a. Many students will start a program in one school and complete in another, or transfer from a comprehensive high school to an area vocational school. Repetition should be kept to a minimum.
   b. Is there a common body of knowledge that should be achieved in grades 9 and 10 from which preparatory students go into the various specialized programs?
   c. Can we prepare and agree on a job analysis that fits in logical sequence for various levels of competence?
   d. Consideration should be given to teaching on the basis of occupational objective rather than community needs--A horizontal rather than a vertical approach.

5. WE MUST BUILD PLATEAUS INTO PREPARATORY PROGRAMS WHERE STUDENTS OF LESSER ABILITY OR DESIRE CAN BEGIN EMPLOYMENT ON A TEMPORARY OR PERMANENT BASIS.

   a. As we explore our role in occupational education, we should see and identify hierarchies of jobs in agricultural occupations. This insight might be stated as providing for "open-ended" occupational preparation. It might start with occupational preparation at the high school level, from which students may move into vocational programs at the post-high school or junior college level, and in some cases, into a four-year college. Each of the occupational curriculums must lead to an identifiable occupation.
   b. We must find job opportunities and vocational programs for the person with less ability and assist in removing the stigma of service occupations in or out of agricultural occupations. There is dignity in work--in competence at every level--and in taking a place or contributing to the goals of our society.
   c. Most preparatory programs begin with a common body of skills and knowledge that can start at a fairly early age. Let's not buy the idea of postponing vocational education until after high school.

6. WE MUST DETERMINE THE NUMBER AND KINDS OF TEACHERS WE NEED, THEN ACTIVIELY RECRUIT AND PREPARE THEM TO DO A HIGH QUALITY JOB OF VOCATIONAL EDUCATION.

   a. Consider new programs, retirements, promotions, and number leaving teaching in determination of number.
   b. There are some decisions to be made as to source of teachers for vocational education--college graduates in agricultural education, college graduates in agriculture, successful agricultural experience, when and where will education course work be done, amount of occupational experience needed.
   c. Teaching must become a more desired occupation.

7. WE MUST PROVIDE A SYSTEMATIC PROGRAM OF IN-SERVICE TRAINING FOR BOTH OUR PRESENT TEACHERS AND THOSE WHO FILL NEW POSITIONS.

   a. Retreading is not enough. Three hours of landscape horticulture will not change a dairy major to a horticultural specialist.
   b. We must take steps to eliminate the fear of present teachers that they must teach all agricultural occupations or lose out; and to prevent below-average teachers from changing present program to a poorer program in emerging agricultural occupations.
   c. Keeping up with scientific progress in all specialists is becoming more important daily. A systematic in-service training schedule must be devised and some degree of teacher selection for enrollment maintained.
   d. In some states, teacher education departments need to be enlarged to provide personnel whose main concern is in-service training.
   e. In-service teacher education programs must recognize the need for 12 month teacher employment. Concentrated courses or drive-in courses are needed.

8. WE MUST SHOW THE WAY IN SHARING.

   a. Teaching materials

      1. National contracts
      2. Share state prepared materials with each other. Keep others informed as to plans to prevent needless duplication.
      3. High quality is essential.
      4. Only by sharing responsibility can we produce the needed materials for emerging needs.
      5. Successful teachers should be used in the preparation of teaching materials--be practical. If used, give them time to do a competent job.
      6. Teaching aids are as important as source units, modules and course outlines.

   b. Sharing with other vocational services

      1. There is a job to be done. Let's build on the competencies of other vocational educators and take the lead in co-operation.
      2. We have competencies that can be made available to other services.
      3. Consider job analysis, course building, teaching, in-service training, teaching materials.

   c. Facilities and equipment between local departments and between program areas.

9. WE MUST BE MORE CONCERNED WITH PROGRAM GOALS (COMPETENCE AND EMPLOYABILITY) THAN WITH PROCEDURES.

   a. Innovation should be cultivated. We need new ideas.
   b. High program goals require better facilities for learning, equipment, supplies, teaching materials.

10. WE MUST INCREASE AND IMPROVE STATE PROFESSIONAL STAFF.

   a. Variety of programs demand more supervision and leadership from the state level.
   b. Someone must keep up to date on specialized programs. Delegation of responsibility is essential.
   c. We are working with more groups and individuals, consulting committees, local school boards, colleges, area schools, etc. Contacts must be made, informational materials are needed.
   d. New occupations are emerging.
   e. Consider need for advanced study, research, sabbatical leave, instructional aids, etc.
   f. Let's maintain a continuity of leadership by locating and employing younger people into state positions.

You probably have noted that few specific new programs have been mentioned and that most of my discussion on issues has been in generalities. Many important areas of agricultural education such as follow-up records, the need for experimental and pilot programs, youth organizations, research, contests, and awards, the image of agriculture, and administrative policy have been omitted but are not of less importance.

For those omitted and for those mentioned, our next step is to agree on principles of operation as we have already agreed on the objectives. This conference will help solidify our thinking so that positive action can and will take place in each state in the region. Mr. Hunsicker pledges his assistance and that of the Washington Office. I can speak for the Region V office and for my unknown partner in the Region VI office in stating we are at your service where we can be of help to you. In fact, we need your help in determining where we can be of greatest assistance. Your candid opinion as to our role is solicited.

It is my honest opinion that we face an ever increasing opportunity and responsibility in vocational education for agricultural occupations. We have the desire, the capacity, and the will to move forward and we will.

Memorial Service to Claude C. Minteer

Claude C. Minteer, Associate Professor, Emeritus, Department of Agricultural Education, University of Nebraska, died Monday, January 17, 1966 at the age of 77.

On January 28, 1919, following discharge from the army, C. C. Minteer began his teaching service in vocational agriculture at Bratton-Union Consolidated School in southeast Nebraska.

In June, 1919, he was given the opportunity by Dr. H. E. Bradford to become a member of the newly established Department of Agriculture and Home Economics Education of the University of Nebraska. His work officially started at the University September 1, 1919.

"C. C.," as he was known by his many friends, was born in Conrad, Iowa and moved to Neligh, Nebraska at the age of 21. He graduated from Iowa State College with a B. of Sc. degree in 1916. His master's degree was received at Nebraska in 1922. He also attended Cornell University.

In the 35 years with the University of Nebraska, all but two and one-half years were directly connected with the vo-ag teacher-training work. The "time-out" was as Assistant Director of War Training during World War II.

Four hundred and eighty-seven men completed qualifications as vo-ag instructors under Professor Minteer's guidance. He has watched with pride as these men advanced to important positions in Nebraska and all points east, west, north, and south.

Professor Minteer retired from the University of Nebraska in 1954. For the next four years he worked with the state highway testing laboratory. Mr. Minteer was a 30-year member of the American Legion, a member of the Masonic Lodge 19 AF&AM, Scottish Rite, Shrine, Gamma Sigma Delta, Phi Delta Kappa, Lambda Chi Alpha, and School Masters Club of Nebraska. Survivors include his wife, Susan, of 1120 N. 37th Street, Lincoln, Nebraska; son, Bruce, a teacher in the Scottsbluff public schools; and two sisters.

Central States Seminar Program

Tuesday Morning, March 15

Business Meeting: Chairman, C. V. Roderick, Missouri
Secretary, Arnold Cordes, Wisconsin

1. Question: Shall we continue this 13-state Regional Conference as conducted in the past?

   Motion by Harold Byram, seconded by Ray Agan, to continue the Regional Conference. Motion carried by voice vote.

2. Question: What is the preferred time for this Regional Conference?

   Motion by Harold Urton, seconded by Ray Agan, to hold conference on dates comparable to this year. Doyle Beyl moved, Floyd Doering seconded, to amend the motion that the first Conference session begin Monday at 1:00 p.m. The Amendment was lost by a 20 to 16 vote. The original motion was then passed by a voice vote.

3. Question: What is the preferred length of the Regional Conference?

   Motion by Curtis Weston, seconded by De Alton, that determination of conference length be decided by the program committee. Motion carried by voice vote.

4. Neal Gingery, Nebraska, announced the dates of the Nebraska Research Conference--August 2 to 4, 1966.

5. The Chairman announced the Nominating Committee members as follows: Harry Nesman, Harold Urton, Ray Agan, and Clarence Bundy, Chairmen.

6. A poll was taken as a guide to Homer Edwards to determine workshop preferences in the Technical Program areas:

a.	Organization of a National Young Farmer organization	- 9 votes
b.	Off-farm agricultural equipment	- 17 votes
c.	FFA executive secretaries	- 10 votes
d.	Instructional materials	- 22 votes
e.	Farm business analysis	- 11 votes
f.	Off-farm agricultural mechanics	- 14 votes
g.	Agri-business	- 9 votes
h.	Disadvantaged youth	- 9 votes

7. A show of hands indicated the group present to be in favor of shifting the scheduled Friday morning program to Thursday evening and Conference adjournment to follow that session.

8. The Business Meeting was adjourned at 8:35 a.m.

"Objectives, Goals, or Fundamentals of High School Instructional Program": Ray Agan, Kansas State University

For a period of time, which seemed like several years, we asked ourselves at this conference the question: Is vocational agriculture at the crossroads, which way should we go? Today we find ourselves rocketed down a multi-lane road with much traffic away beyond that well-worn crossroad upon which we circled for so long. The propellant for our rocketing is the Morris-Perkins Law, the Vocational Education Act of 1963, which we now find ourselves attempting to control, attempting to implement to the best advantage. The question of "When" is past--we now search for a more complete answer to the question of "How."

Modern objectives for vocational and technical education in agriculture have been well outlined for us in an office of education bulletin under this title. Basically they follow our conference outline today or we follow them even though the rough outline for our conference was prepared before the bulletin was distributed. The three major objectives seem to me to be (1) to develop competencies in production agriculture, (2) to develop the teaching of agricultural occupational opportunities, and (3) to provide occupational experience programs. The other three (a) placement, (b) human relations, and (c) leadership, seem to me to blend into the first three, and perhaps fit well into the future farmer part of our program of instruction. The question of "how" has grown until we worry about how to adequately teach just one phase of the program in the time we have. With the technical knowledge of production agriculture doubling before the next decade, how can we even adequately teach this phase of our field? Education must step up its process if it is to keep step with society. An example of the accelerated speed with which we are competing is shown in the fact that it took 112 years for the science of photography to move from discovery to use commercially. It took 56 years for the same process with the telephone, 35 years with the radio, 15 years for radar, 12 years for television, 6 years for the atom bomb, and 5 years for transistors. This acceleration of social change is followed with the phenomena of enlargement of social organization and mass processing of people.

We become acquainted with the word "cybernation" which refers to both the manipulation and fabrication of material objects by automation and to the manipulation of symbols by computers. Using the word "cybernation" saves continually repeating "automation and computers," and it eliminates the sense of rigid mechanization that tends to be semantically associated with the word automation. The word cybernetics came from the Greek word meaning steersman or helmsman. In the chemical industry, this process of cybernation has cut production jobs by 3 per cent since 1956 while output has increased by 27 per cent. In the steel industry, it has made 17,000 less jobs and increased production by 20 per cent. Bell telephone now handles 50 per cent more calls with 10 per cent less people. The Bureau of Census had 50 statisticians on a job in 1960 that required 4,100 employees 10 years before. In agriculture, the meat industry has 28,000 fewer workers and has increased output by 3 per cent.

The farmer, likewise, now produces food for himself and 31 others. This figure in 1949 was himself and 15 others. So, cybernation has come to farming, agriculture.

We are not only faced with this type of change as we attempt to educate, but we also are challenged to teach a population on the move where every year one American in five changes his address and one person in four now lives in a state other than the one in which he was born. As vocational educators, we have the problem of preparing experts in the phenomenon of accelerated social change and the phenomena of large organizations and mass processing of people. All this indicates that improved methods must be found--methods become more and more important in their relationship to the subject matter. Increased attention to methodology is a must when we fully realize that added to the rapidly growing production-agriculture body of knowledge we also have a very real and pressing obligation, if we are to fulfill our function adequately as outlined in objectives 2 and 3--that of teaching occupational opportunities and providing occupational experience programs. These three tasks seem to crowd to the foreground of the task of teaching vocational agriculture. The question of "how" gets louder and louder.

The number one fact to consider in approaching the solution to this program seems to be that we are working in a situation where the future in subject matter and the future in agricultural opportunities are a rapidly growing unknown quantity. The number two fact to consider is that the educated person is the one who solves life's problems well and continually strives to keep abreast of newly found information--intellectual curiousity we might call it. Last night I was with Neal Gingery when he ran into an ex-student of his from Nebraska, here in Chicago to market cattle. The man was certainly abreast of the new developments in the field of cattle production. However, I don't suppose he has been in a formal education program for several years. B.E. tells me he advised him not to go to college in those days when he graduated from high school, but he did give him that spark of intellectual curiosity which kept him successful in modern farming. Thirdly, it is more and more important that the educated person has the ability to understand and get along well with all the peoples of the world. How can we do this? What methods of teaching become most important?

The critical elements of teaching method apparently include the processes of recalled use, cause and effect, and repetition by doing. Interest must be native or induced by the method. We then have a vertical cross sectioning of objectives. Horizontally, we have the objectives of production agriculture, occupational opportunities, and occupation experience. Vertically, we have the objectives of thinking, understanding, and applying. The subject matter to supply the meat which attaches to the skeleton of teaching method starts with those desirable and worthwhile things the students are tending to do--for us--what they do vocationally and agriculturally, but it is very important that we start where they are.

By drawing teaching methods and subject matter from these perceptive experiences of students, basic concepts may be established which, when applied through the thinking and understanding processes, make it possible that decisions may be made, goals established, strategies planned, work organized, and application made. Basic concepts, thus taught, grow like snowballs rolled in wet snow as they are applied. It matters not if the area of technical subject matter we call X is not in the curriculum, if we have done these other things well with the subject we use. Of course, subject matter must be carefully selected, but it cannot all be taught. This is not entirely new. Cotton raising has not customarily been taught in the vocational agriculture programs of Kansas. Yet, I dare say that a well-trained graduate of Kansas vocational agriculture would have the ability to successfully farm in a cotton area because he would use the same concepts of crop production in Kansas--blending them with new techniques and knowledges which he has learned to acquire, analyze, and apply. The three "a's" of knowledge--acquiring, analyzing, and applying combined with basic concepts resulting from education experience become the key to success of the educated youth in a world of knowledge new and strange to him.

Another example comes in the area of occupations. Assuming the average worker in agricultural occupations changes jobs seven times in his career, an important part of the educational process becomes the teaching of the ability to acquire information at the proper time about now unknown occupations, analyze both the occupation and self for compatability and decide whether the self has the ability to apply his traits toward success in the occupation under consideration. This is a different objective than covering a pamphlet or textbook about occupations. Many firms have learned to protect themselves against catastrophic change by diversifying. What about protecting the individual by diversifying him? A 'four-job man" might work one week of the month in an automobile plant, another week in a steel mill, another week in a packing house, and a fourth week in an electronics warehouse. This worker would develop a diversity of skills and probably develop greater capacity for self-renewal. He would be protected against total, quick, and arbitrary obsolescence, and could change jobs and job skills in increments rather than as a total package. I think this also has the objectives of vocational agricultural educational programs.

The objective of giving the student a body of concepts about self and practice in applying such concepts through the understandings and thinking processes involved in new occupational situations becomes the more important objective, but it leads to a much improved process over the trial and error process at the 7-job changing periods of an occupational career. I would not suggest in this preparation that we fail to give emphasis to the area of human relations and leadership. As cybernation develops in our world of occupations, we have increased need for educational objectives which point toward human relationships. To review the developments which point strongly to this need, we need to recall that first we had the man at work, and then the man and the machine at work, and finally we frequently have only the machine at work. The man is often removed from the locale of the work. When he is removed

there is the likelihood that some important social outputs have been removed. When these are removed they become an important objective for our educational process--these more closely are allied with the objectives for citizenship, leadership, etc. We might call it Mr. Future Farmer's influence on the life in the streets of a big city.

A simple example lies in replacing the man at the corner newsstand with a metal box that holds newspapers and allows us to take a newspaper when we insert a coin. The changeover is made by an economic calculation, but what social outputs are lost? The newspaper vendor was eyes on the street. He saw everything that occurred on and around his corner: It was to his interest to see that it remained a nice corner, a safe corner. Those who were out to do harm had to anticipate those eyes and had to anticipate that the vendor was a steady source of information for the police. He was, in short, an important part of the social control of the city neighborhood. The newspaper vendor was also an expert in small talk. The regular customer not only got a newspaper, but also a verbal account of the latest baseball scores, the latest corruption, the latest happenings of Elizabeth Taylor. The vendor had an interest in talking as part of friendly service to old customers, and the customer had a regular excuse for talking to the vendor. In the city city, a person needs an excuse to talk to others on the street, and be talked to--to be small-talk agents of society and help knit together people who tend to pull apart into enclaves and sub-cultures.

By the time we retire the newspaper vendor from the corner and replace him by a metal box, we have usually also closed up the curbside grocery, moving it inside the supermarket, and we have usually also taken off his beat the policeman and put into a radio car, so he can cover more territory. At the same time, we also build apartment houses so that they face away from the street and are buttoned up to the street, so that the old lady on the third floor who used to see everything has had her eyes removed from the street, and then, of course, we have quite literally lost control of what goes on in the street. The walls do not see and the coin-operated machines do not see, and people who do interact are people who do not care. Society fragments into small subcultures whose members care about one another but do not feel responsible for outsiders. This contributes to the situation where in the most advanced cities of the most advanced societies in the year 1966, neither adult nor child can engage in the simple act of going out for a walk in the evenings in safety. We need to wonder about a civilization that is one-fifth jungle, where the interactions of men with men in daily affairs have been so altered that, by any criteria of civility, we are headed in the wrong direction. This situation implies much for objectives for our educational system.

Also important in our consideration of objectives for education is the fact that for every student with the I.Q. of 120 there is a student with an I.Q. of 80. We must also keep in mind that there are actually five types of intelligence: (1) memorization, (2) cognition (understanding), (3) convergent thinking, (4) divergent thinking (creativity, ways of seeing items), and (5) evaluation (good, bad, beautiful).

Our schools in the past have emphasized the number one and two types of intelligence. This does not meet the needs of all our pupils. Churchill was good in the number four type of intelligence, but was quite poor in number five.

With so much to teach, if our teaching objectives can be to organize the world of agricultural objects and events into a smaller number of categories called concepts and perhaps the concepts further organized into hierarchies of rank order as those used in the biological sciences, and if the student "learns by doing" in applying himself, using his peculiar set of qualifications and characteristics, following the basic steps of scientific thinking and seeing the cause and effect relationships related to developing understandings and if in all this process he learns to live with his fellow man, we yield a better educated individual more aptly prepared to meet tomorrow's world of yet undiscovered subject matter and the yet unidentified agricultural occupations.

"Teaching Basic Production Agriculture": Harold Shoaf, Assistant State Supervisor, Kansas

1. According to the Institutuion of Life Insurance analysis of the Federal Reserve Board Study, the fact was revealed that young men are moving into farming at about the same proportion as any other business.

2. In a study by Professor Howard Bradley of Kansas State University, 25.9 per cent of 1959 agriculture graduates are now employed in farming with 12.6 per cent in farm related occupations, for a total of 38.5 per cent in occupations related to farming.

3. There are 3.7 million farmers in the United States. Considering 40 years as an average life of farmers, this would mean a need of 92,500 to replace those retiring from the field. In Kansas there are approximately 100,000 farmers. Assuming 40 years is the average life of a farmer, this would mean that Kansas needs 2,500 trained farmers to replace those passing away. In 1965 there were 1,335 seniors graduating from vocational agriculture in Kansas. If all graduates went into farming, there still would not be enough trained individuals to supply the need for skilled farmers.

4. Businessmen who specialize in particular fields should be brought into the vocational agriculture departments to give up-to-date instructions. Too long has one teacher endeavored to know all the answers to all problems in all fields.

5. A change of curriculum which will allow individuals to select specific areas, such as chemistry, horitculture, farm machinery, farm power, sales and services, on a semester schedule is being used on a pilot basis in Kansas. This has been popular and will increase.

6. Unification in Kansas will mean less departments, more multiple teacher departments serving more students than in the past. The below-average department will not survive in the future regardless of the courses.

7. From the beginning of man until the year 1830, the world reached a population of one billion people. In the next 100 years, the world population rose to two billion people. From 1939 until the present day we saw this increase to 3.2 billion people. By 1980 the forecast is 4.5 billion people in the world. As teachers of vocational agriculture, these statistics pose a vital responsibility in teaching the production of food and fibre. These sky-rocketing demands must come mainly from United States, Canada, and Western Europe. This could create quite a change in the farming picture in the next four years. At the same time, our stockpile of food is disappearing at an alarming rate. The excess food we have called a surplus is now becoming a strategic reserve. Neville Hunsicker, United States Office of Education, Washington, D.C., estimates that 70 per cent of agriculture teaching in the future will be in the area of production agriculture.

8. The teaching of production agriculture will be of utmost importance in those states who are basically responsible for the production of food and fibre.

"Agricultural Occupational Opportunities": Gilbert Guiler, Ohio

Webster says, "Opportunity" is at an appropriate or favorable time. Why should we teach about occupations in agriculture or career selection? From the new Bulletin No. 4 - Objective No. 3 on page 5 reads as follows:

1. "To Develop and Understanding of, and appreciation for career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations."

We as supervisors and teacher educators have a responsibility in seeing that this objective is carried out by teachers in the schools.

2. Today agriculture is broad and complex involving hundreds of professional and technical occupations which require extensive knowledge and highly developed skills: Current trends indicate that agriculture will become even more complex and more specialized. "Occupational Information is indispensable - One cannot choose what one does not know" - But information alone is not enough - Knowledge and acceptance of one's own aptitudes, abilities, limitations, interest, values, fears, and likes are all essential.

3. Occupations in agriculture are changing constantly and with great speed. Students must be aware of these changes. Some occupations each year actually become obsolete. For example, we have this recent dramatic change right before us--success in farming, as an example. Only a short time ago production jobs constituted the

majority, but today 60 per cent of the jobs in agriculture are service. This figure may even go higher. We must train for a "cluster of jobs" and not concentrate on one specific task or employment opportunity that may exist today, but obsolete tomorrow. "For . . . today is the tomorrow we talked about yesterday."

4. Fewer people will be engaged in production agriculture. Statistics indicate that the average size farm in the nation has increased from 174 acres to 302 acres in the last 20 years. Yet, as I observe classroom teaching, it appears that all vocational agriculture students were going into farming. This we know is not the case.

As supervisors and teacher educators, we can alter this teaching approach in our student teaching courses, our curriculum plans, and the in-service training programs, etc.

5. There is and will be even greater competition for the labor force.

We would all agree that the need for opportunities is not our problem but how to teach or provide for our students the learning of these opportunities in agriculture is our problem. That is, we have ample opportunities in agriculture for our students but the problem is that these opportunities become smothered and lost in the competition with jobs in industry and attractions of more money to our youth. Some high school students are now leaving school and earning $3.50 per hour in industry.

6. The teacher of vocational agriculture is the most capable person to do this job of teaching agricultural occupations. Thus, the teacher in the triangle The Educator (teacher) becomes shouldered with a

Parent Student

major responsibility of teaching - occupational opportunities. Parents - many parents make specific plans for their children, but for the most part they want him to get the best education that is more compatable with his ability, interest, and aspirations.

Throughout the nation we are discussing the problems of the disadvantaged youth or commonly known as the "culturally deprived." Today, however, we need to give attention to our students who are occupationally disadvantaged, or "Occupationally Deprived."

What occupational information do our students need to know?

1. Number and types of annual employment opportunities in agriculture. Geographical locations--number of placement opportunities which can be secured from state reports of "available market data."

2. The nature of the work--how, where, health and accident hazard.

3. The abilities required of occupations in agriculture. Education, personal qualifications.

4. Salaries, conditions of employment--vacations, sick leave, and dues.

5. Opportunities for advancement in the agricultural occupations, and related occupations to which the job might lead.

6. Promise of satisfaction--security, fringe benefits. Just to mention a few. How to teach - "Occupational Opportunities in Agriculture."

As we teach the various units of the agricultural then time should be allowed for developing understanding, among our students, of the agricultural occupations in that respective cluster or group of problem areas.

Some specific techniques that have proven successful:

1. Study the relationship of occupational opportunities in each "cluster" as the problems are discussed.

2. Have each student to establish some specific goals and standards by which he desires to work by in his chosen vocation.

3. Assign students additional reference for study and reporting to class about a likely occupation appropriate to their interest, capabilities, and aspirations, fears, etc.--a personal inventory of themselves.

4. Maintain "check list of facts" on occupation desired of each student.

   a. Education requirement
   b. Physical requirement
   c. Unions requirement

5. Dramatize the "progress" that each student has made toward understanding the occupations as we may study credit--marketing, role playing, etc., in class. Discuss progress of student in his "occupational pursuit" with parents. The image of vocational education in agriculture must be improved in the minds of the parents. Recruitment is not our problem today--it is communications and acquaintance.

6. Broaden the student's horizons and conceptions about the occupations by personal participation, personal interview, personal research, personal involvement in the "world of work" in relation to his cluster of occupations. One good example is by means of class demonstration of case situation. In 77 different classroom situations which I have been in since September 1st, I have not heard one word about agricultural occupations or careers.

7. Through "work experience of occupational experience programs."

8. Field trips to witness the occupations. In what ways are the community and its resources being used in the improvement of instruction? The agriculture mechanics people, the nursery, the hardware, the elevator, the banker. The M.P.A.T.I. program has been well received by educators. Vocational agriculture needs some good films on agricultural occupations beyond what we now have.

9. Cross fertilization of educators (teachers and staff) in agriculture, industry, science, math--general educator--sociologist and psychologist and school counselors. The school counselors usually have the test results and biographical data on each boy and girl. "No man is an island unto himself."

10. Involve other vocational services--Trade and Industry, Distributive Education, Guidance, Business Education, and others. Cooperative agreements via team teaching are necessary in respect to the training programs in these fields.

11. Labor and Employment Security Office or other governmental agencies have data reports on many job descriptions.

12. Use of satellite committees in the community.

13. Teach on the basis of principles--both economic and biological in order to develop this understanding and appreciation of career opportunities as outlined in objective No. 3.

14. We must keep in mind our pattern of instruction in vocational education--"the class work and directed or supervised practice in agriculture which was studied in class." This pattern must not be forgotten! Let's not forget there are jobs still available on the farms.

Summary

Success in terms of the pre-employment information and instruction will depend upon: demonstration of basic knowledge or skills needed to earn a living; knowledge of world of work--occupations, entry and progression requirements, salaries, benefits; working conditions, attitude, method of student self-appraisal, and knowledge of how to obtain a job as well as how to keep it after employed. This could well be a course in itself.

We really don't know yet how wise ninth grade students might be about their vocational preference if they had accurate and adequate information about agriculture occupations. We do know many high school seniors and college seniors are as naive and bewildered as ninth grade boys, so apparently something more than age or maturity is needed to achieve wisdom.

In this brief presentation, I have not intended to cover every important aspect of our job in agricultural occupations. The magnitude of this task will take considerable effort on our part as supervisors

and teacher educators. I trust many more innovations will come to light as we focus in on this task and exchange ideas this afternoon.

There are many good references and much work has been done by staff personnel and states represented here today. However, I'm sure they agree we have much to do as we resolve the problem of our "occupationally deprived" students in vocational agriculture.

Small Group Discussions

Group I: Chairman, Raymond Gardner, Michigan
Secretary, Duane Blake, Iowa

1. Discussed the influence of area vocational schools upon the high school vocational agriculture program--service areas and vocational horticulture areas can be developed on the high school level.

2. Heard and discussed a report of the area vocational school in Ohio.

3. Discussed the rank and file vocational agriculture department in regard to tracking with multi-men departments, etc. It appeared that most of the programs in the various states are still nebulous and in the pilot stage. The trend seemed to be more emphasis on production agriculture, with specialties during the third and fourth year.

4. Discussed needs of the student teacher in preparation for teaching related off-farm occupations. Some felt that we should encourage technical agriculture graduates to become qualified to teach vocational agriculture by an additional year of graduate work in agricultural education.

5. We need to strengthen vocational agriculture teachers through added in-service training.

6. Even though many vocational agriculture teachers are in small communities, they should be encouraged to do some teaching of off-farm related occupations and provide some supervised occupational experience.

7. Seemed to be quite a bit of encouragement to maintain the agriculture mechanics phase of all related off-farm occupational training. Example: horticulture training to include the mechanics of the physical plant, etc.

Group II: Chairman, Dale Aebischer, Wisconsin
Secretary, Norman Ehresman, Illinois

1. Chairman asked for reactions to Dr. Agan's presentation. Comments:

   a. Objectives of vocational agriculture should reflect the needs of students.

   b. Cautioned against becoming subject matter oriented rather than student oriented.

   c. Student orientation is perhaps implied.

2. Discussion on criteria for approving vocational agriculture departments--considered to be difficult to disapprove a department for aids.

3. Reaction to Harold Shoaf's talk.

   a. The poor quality agriculture department will fail regardless of course offering.

   b. Teacher supply influenced quality of teachers employed.

4. Reaction to H. Guiler's talk.

   a. Integration in occupational instruction in vocational agriculture was desirable.

5. Discussion on Kenneth James' talk.

   a. Wages paid in an experience program should be only incidental to the learning experience.

   b. In some cases production agriculture experience programs may be the best programs.

   c. A discussion of land laboratories and their use resulted in no definite group opinion or agreement.

Group III: Chairman, Harold Shoaf, Kansas
Secretary, Richard Karelse, Michigan

1. The objectives of vocational agriculture were discussed briefly and are generally accepted as given in Bulletin No. 4.

2. The following problems were presented by the group for discussion:

   a. Should "downtown" businessmen or specialists be brought into the classroom?

   b. Based on facts, how many actual opportunities are there to enter farming?

c. Should the vocational agriculture teacher teach production agriculture as well as related agriculture?

d. Should the teacher who teaches the class also do the supervision of the "out of class" work?

3. Answers:

a. In the first two years of basic agriculture, the teacher may involve businessmen to "show a point." In the advanced years or post-high school, businessmen and specialists should be brought in to teach whenever they can do a better job than the regular agriculture teacher could do.

b. There doesn't seem to be any agreement on how to obtain facts or what facts to use in determining opportunities in farming.

c. The general opinion was that the agriculture teacher should teach related agriculture and also supervise the work experience. It was felt that if possible we should have teachers with special training in specific areas to teach specific related areas of agriculture.

4. What is a realistic teacher load in developing programs of agriculture occupations alongside basic production agriculture?

Appears to depend on the type of community and needs of individual students, but four or five 1-hour periods per day plus an adult program seems to be typical.

5. What will a typical future agriculture department be like?

Two years of basic production agriculture. Some off-farm agriculture occupations program including work experience. Perhaps basic agriculture in junior-senior years and the technical and work experience part of the program in grades 13 and 14, as area schools become better established.

6. What about high school farm business analysis?

Generally, this will become a part of the post-high school program. However, this is a good basis for teaching production agriculture during the senior year.

<u>Group IV</u>: Chairman, Kenneth James, Illinois
Secretary, John Matthews, Illinois

1. The group was concerned particularly with the need for lending emphasis to the third major objective for vocational and technical education, recently published by the Joint Committee of the U. S. Office of Education and the American Vocational Association: "To develop an understanding and appreciation of career opportunities in agriculture and of the preparation needed to enter and progress in agricultural occupations."

2. Schools are having problems doing very much in offering courses in the off-farm occupations. Almost all schools being single-teacher departments, problems of getting this training done due to teacher time and load arise.

3. There is a great need to get schools to permit enrollment to be such that instructors have time to give adequate attention to each student. The total number of students per instructor tends almost always to be too large.

4. Courses should include materials to cause some of the students to be inclined to decide to go to school for additional years--technical or regular college or university. This can well be a part of agriculture occupation training.

5. Parents need to be informed of opportunities in agriculture as well as guidance personnel, teachers, and potential employers.

6. Problems in all vocational education:

   a. All services

   b. Overlapping

   c. Cooperation--in schools (different services)

   d. Selection of students

   e. Use of advisory committees (not council)

   f. Selecting of training stations

   g. Correlation of classroom instruction and on-job instruction

   h. Qualifying instructors

Group V: Chairman, Ray Agan, Kansas
Secretary, R. E. Gingery, Nebraska

The question presented for discussion was: In curriculum planning for a vocational agriculture program in secondary schools should there be a specific approach or generalized approach?

Comments were as follows:

1. Post-high school program offerings may affect the high school vocational agriculture programs.

2. Enrollment in post-high school vocational and technical programs in Minnesota totaled, this year, approximately 4,000 males and 2,000 females. It was not the exact number in vocational or technical post-high school programs but a study to determine this number was being considered.

3. Of 1,100 students enrolled in post-high school vocational and technical programs in Ohio, around 5 per cent are in the agricultural area.

4. Divergent views prevailed as to the degree vocational agriculture should be exploratory.

5. One state reported that in communities where no vocational agriculture department had been established, few people entered into professional fields of agriculture.

6. The McCracken County plan in Kentucky was briefly discussed with its implication for curriculum planning.

7. The "principles" approach and its value in vocational agriculture teaching was reviewed.

8. It was thought that possibly vocational agriculture teachers were utilizing the "principles" approach without realizing it.

9. Useful citizenship should be a point in curriculum development.

10. The question was posed "What implications do non-farm students have for vocational agriculture programs?"

Questions discussed concerning occupational experience programs were as follows:

1. How can school administrators be sold on occupational experience programs in agriculture?

2. How much time does it take for supervising the off-farm experience program, as compared to the production program?

3. One state reported that it held the opinion that it was inadvisable to place students on the job without having related instruction.

4. The importance of students applying for a job was mentioned, with the qualification that all job locations or stations first be approved by the instructor.

5. Considerations before placing students on job locations should be made.

"Agricultural Occupation Experience Program": Kenneth E. James, Agricultural Education, Illinois State University, Normal, Illinois

It is with a great deal of pleasure that I have been given this opportunity to discuss this most important topic of the high school vocational agriculture program.

In this short period of two years, since the passage of the Vocational Education Act of 1963, there has been rapid change and progress beyond the expectation of most of us. Actually, it has been since September 19, 1964, when approrpriations were authorized. Most states have moved in compliance with the objectives of the Vocational Education Act to maintain effort, broaden and expand their program. Many states have conducted pilot programs. In Illinois, Mr. Guthrie, Chief of Agricultural Education announced that 100 schools had initiated an agricultural occupation program. Many other schools are making plans to start next year. Several schools have already added a second teacher and one school is adding a third teacher.

My assignment is to discuss the topic, "Occupational Experience Programs." I have considered several approaches to this topic. I am aware that this group of educators are well informed. I assume that you have been keeping involved by reading, sharing in workshops, seminars, conferences, and observing pilot programs. However, there is much for us to share and learn from our experiences. I am amazed at the amount of material that has been published and the number of research projects completed or under way. The Center for Research and Leadership Development in Vocational and Technical Education at The Ohio State University has provided much material. It was one year ago during this same meeting here in Chicago that we met in groups to discuss many of the modules and procedures that were being developed by the Center in Ohio. The Agricultural Education Magazine has devoted several issues to the theme of the agricultural occupation program. A number of you people have made fine contributions.

I would like to take a few minutes and discuss ways used to implement the occupational program in Illinois. As soon as the State plan was accepted on September 21, 1964, a number of committees in the Joint Staff were appointed to prepare bulletins with guidelines concerning such areas as facilities, supervised agricultural occupational program, teaching ornamental horticulture, and agricultural business and industry. Then the biggest step to preparing teachers were three non-credit, one-week in-service workshops conducted in different areas of the state by the State Office of Agricultural Education. The personnel was made up of the Joint Staff in Agricultural Education, which in our state includes all of the supervisors and the teacher educators in the three institutions. There were other state personnel who made contributions from the legal division, guidance and other areas. This gave temporary approval to those teachers taking the course to proceed. Other meetings in addition have been held with school administrators and teachers.

We have gained some valuable experience in working with and observing these programs. This leads me to some basic things which should be kept in mind when we move to provide occupational experience away from the home farm or school.

1. We must think of the vocational agriculture program as a "Total Program in Vocational Agriculture." This includes the basic agriculture courses as they are now being called. The concept of total program development in agricultural education has been proven successful in our farming programs in the past. I believe that most persons agree that the background in farming through a farming program for two years is basic for a supervised occupational experience in agricultural supply business and areas of sales and services. Many schools are requiring the completion of basic agriculture courses prior to enrollment in the occupations course. In Illinois, the state plan suggests that the freshman and sophomore years include production agriculture with a supervised farming program required. This, of course, includes the FFA and agricultural mechanics.

It should always be kept in mind that a student who has a background in agriculture is better able to understand the problems of farmers and thus have a better insight into the work of agricultural occupations.

2. The experience must be a success. This is from the standpoint of the student, the teacher, the employer, the parents, and the school. In the past, we have had only the parent, school, student, and the teacher. It is not to be expected that every high school student will make a life work of the occupation in which he receives school-directed training experience. Neither has this been true in the past in establishing students in farming. But the student can be expected to learn some of the general requirements of holding a job, working with others, taking orders, being on time, reporting regularly for work, doing the unpleasant as well as the pleasant jobs. He will get help in choosing an occupation and perhaps find out why he should not pursue further the occupation in which he has received his high school training. He can learn what is required for advancement from the occupation in which his initial training has been received and may be induced to take further training in an area school or a college. The student can build a reputation as a worker that will be useful to him regardless of his future occupation. His interest in school may be increased as he sees the practical usefulness of high school studies and his inclination to drop out of school may be reduced.

Some have wondered if the occupational experience might cause students to become so interested in their work that the slower student might drop in his quality of school work. Teachers involved in the occupational program have indicated that in most cases the students academic interest and grades increases.

One of the coordinators in our student teaching centers said that in his first year of working with the agricultural occupation program, that his employers were so pleased that they allowed the students to work full-time during the holiday vacations.

3. The employer must understand what we are attempting to do in the training programs. This requires a lot of time and effort on the part of a thorough and diplomatic teacher. This can be accomplished by discussing objectives of the program and developing training plans with the help of the employer. These plans consist of listing the activities in which the student should be engaged while working at the training station. Opposite this there should be a listing of the subject matter that should be dealt with in related instruction at school. A sample training plan is suggested in the material prepared at the Center in Ohio.[1] Dr. Hemp and Dr. Krebs suggest a system of listing employment experiences to be obtained by the student in using a different form and listing activities to be done each month in their Study Guide.[2] A written training agreement should be drawn up as soon as the student is placed in the training station.

4. Scheduling of the occupations class and other class is important. We must make the students available to the employers at their convenience and when "business is moving." Kentucky suggests scheduling the occupations class from 11 to 12 o'clock or 12 to 1 o'clock and all the other classes in the A.M. or P.M. This makes the students available for work experience for at least 3-hour blocks of time, either in the morning or the afternoon.

5. Close coordination of the experience program is a must. This means working with the employer on what experiences to give the student from the start, and observing the student work, but not interfering with his work. The amount of time a teacher coordinator should devote depends upon many factors. Release time during the regular school hours for coordination is necessary. The coordinator should make a weekly schedule. Periodic visits to training stations are very necessary. Good visitation records should be maintained. They are valuable in correlating classroom instruction with on-the-job training and evaluating the student. It is appropriate that the employer be made aware of the visit.

6. Adjust the course of study to meet the needs of the students. This should be based on the work that is coming up in the business and in keeping ahead of what the boys will be doing. This is nothing more than our traditional seasonal teaching in the past. Certain business skills should be developed to a satisfactory degree before students go on the job for work experience. This can be done in the classroom with sales-ticket boxes, scales, adding machines, and cash registers.

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[1] Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus, Ohio.

[2] Paul E. Hemp and A. H. Krebs, A Study Guide for Placement Employment Programs in Agricultural Business and Industry, Interstate, Danville, Illinois.

Neatness, dress, courtesy, promptness, and such things need to be developed before boys apply for work experience. Schools that do not require basic agriculture courses as prerequisite to occupational experience courses should not attempt to place boys for occupational experience until after six weeks of class work.

7. Evaluation of student progress must involve the employer. This is the joint responsibility of the teacher coordinator and the employer. A rating form should be used that is easily understood. There is a definite advantage to take the chart to the employer and discuss the strong and weak points together.

8. Instructor and student records are essential for any sound educational program. Certain records are essential for the teacher coordinator, such as visitation, individual training plans, agreements, and evaluation forms.

It is essential for students to keep a record of hours worked and wages earned. The publication entitled Records of Supervised Occupational Experience and Training in Vocational Agriculture published by the French-Bray Printing Company is designed so that it is applicable to students enrolled in cooperative occupational experience programs.

9. Follow-up of students upon graduation. This again is a part of the "Total Program" concept and is necessary for all students of vocational agriculture. Here we can reappraise the educational and training aspects of the program of agricultural occupations.

In summary, the basic things that should be kept clearly in mind as we move to provide occupational experience are:

a. Must think of the vocational agriculture program as a "Total Program in Vocational Agriculture."

b. The experience must be a success. This is from the standpoint of the student, the teacher, the employer, the parent, and the school.

c. The employer must understand what we are attempting to do in the training programs.

d. Scheduling of the occupations class and other class is important.

e. Close coordination of the experience program is a must.

f. Adjust the course of study to meet the needs of the student.

g. Evaluation of student progress must involve the employer.

h. Instructor and student records are essential for any sound educational program.

i. Follow-up of students upon graduation.

We are constantly looking for new ideas and practical approaches that may help us strengthen and improve the effectiveness of our total program. We must continue to make adjustments and strive for well-planned instructional programs in the agricultural occupational program along with adequate on-the-job instruction. Many challenges and many opportunities are placed before us. I am confident that the teachers of agriculture will meet this challenge.

Central States Seminar Program

Tuesday Evening, March 15

Business Meeting: Chairman, Warren Weiler, Ohio

1. A letter was shared, received from Lowell Burkett, Executive Secretary, AVA, in which he encouraged 100 per cent membership in AVA and the use of the life membership plan of $150.00, paid in six payments.

2. Recognition was given to members retired or retiring soon:

Harry Nesman, Michigan	presented by	Harold Byram
J. E. Hill, Illinois	" "	Ralph Guthrie
C. H. Bonsack, Wisconsin	" "	Dale Aebischer
Hampton Hall, Iowa	" "	C. E. Bundy
John McClelland, Iowa	" "	C. E. Bundy
Lawrence Hall, Kansas	" "	Ray Agan

The members by voice vote directed the conference secretary to send a letter of appreciation to these people thus recognized and to extend the best wishes from the members of the Central Regional Conference. The secretary was directed also to request the U.S.O.E. to send their Certificate of Appreciation for Service Rendered to the persons listed above.

3. C. E. Bundy, as chairman of the nominating committee, presented a slate of officers and moved to accept report of this committee. Seconded was supplied by Howard Bradley. W. T. Bjoraker moved that nominations be closed and that the secretary cast a unanimous ballot. Motion seconded and carried.

   a. Alternate Member National FFA Foundation Board of Trustees - Hilding Gadda, South Dakota

   b. Member National FFA Board of Directors - Dale Aebischer, Wisconsin--Alternate, George Cochran, Minnesota

   c. Regional Chairman (Central), C. V. Roderick, Missouri

   d. 1967 Program Chairman, Ralph Guthrie, Illinois

e. Secretary Regional Conference, C. W. Dalbey, Iowa

f. AVA Membership Committee, Central Region Representative, Cliff Haslick, Michigan

g. Chairman, Regional FFA Public Speaking Contest, Harold Shoaf, Kansas

h. Special Editor for Agricultural Education Magazine for Central Region, Phillip Teske, Indiana

4. Moved by Mr. Roderick and seconded by Mr. Bundy that the name for this conference be renamed, retroactive to this year, the "Central States Seminar." Motion carried.

5. Moved by Mr. Roderick and seconded by Mr. Bundy that the teacher educators and state supervisors of the Central States strongly endorse the resolution passed by the House of Delegates of the American Vocational Association at Miami Beach, Florida, in December, 1965, in regard to the organization and status of the U. S. Office of Education. This endorsement has particular reference to the urgent need for the following administrative structure:

   a. A Department of Education with cabinet status at the Federal level.

   b. A Federal Bureau for Vocational Education within the Department of Education with sections for each vocational service.

   c. Each regional office staffed with at least one vocational agriculture specialist.

6. Moved by Mr. Urton, seconded by Mr. Roderick, that we inform U.S.O.E. of our plans to conduct future seminars as we did this year, and send a report of the 1966 seminar to the U.S.O.E. It was noted that Kentucky was invited to this seminar but could not attend.

7. The program Chairman and/or committee was authorized by the members to select the meeting place next year and to select seminar dates, other than those already suggested, if conflicts arose with other important conferences.

8. Moved by C. F. Barton, seconded by C. E. Bundy, to suggest to planners of the Central Region Research Conference to select a new name. After some discussion the motion was voted and lost.

9. Suggestions were made in regard to the kinds of assistance desired of the U. S. Office of Education. They were as follows:

   a. Assist in conducting the Central Region Research Conference.

b. Help establish guidelines for program development and evaluation.

c. Effect a coordinated program of vocational agriculture in the nine regions.

d. Help coordinate work between the vocational services.

e. Give leadership to workshops to develop programs and procedures.

f. Expand the services of the FFA and continue the administration as presently organized.

g. Identify innovating programs for possible use in other states.

10. Mr. Roderick raised the question of desired policy in future seminars with respect to accepting offers by friends from industry to sponsor a dinner. Motion by H. E. Urton, seconded by H. R. Bradley, to continue this year's arrangement. Discussion followed; question was voted and lost.

11. Moved by D. C. Aebischer, seconded by C. W. Dalbey, that the vocational agriculture teachers, supervisors, and teacher educators, representing the states in Regions V and VI, assembled in Chicago, Illinois, this 17th day of March, 1966, vigorously oppose passage of Section 106 of H.R. 6118 or the adoption by the House of Representatives of Sec. 206 of S. 561 so that State Boards for Vocational Education may continue as the sole authority for administering Federal funds for vocational education; and that the members contact their respective congressmen to express their opinions. Motion carried.

Wednesday Morning, March 16

"Who Are the Disadvantaged?": Gerald R. Fuller
University of Illinois

I found it very difficult to prepare this presentation in terms of disadvantaged youth at the exclusion of disadvantaged adults. Therefore, I have taken the liberty to broaden the topic to include both youth and adults. This seems especially appropriate when you recognize that vocational education in agriculture has always included programs for adults as well as youth. I will attempt to define for you the meaning of the word "disadvantaged" as I believe it should be interpreted in programming vocational education in agriculture. Then I will identify some of the disadvantaged groups of people in our society that I believe vocational education in agriculture should serve.

Society is developing a keen awareness of the need to provide for the special educational needs of groups that have been neglected in the recent history of education. As you know, the emphasis for education of

the gifted has and still is receiving the support of society. Recent state and federal legislation plus the impetus of large sums of government money has focused the attention of society on the problems of the so-called disadvantaged. It is now respectable to provide programs of education to meet special needs of the less gifted and I believe that society will give a rather low evaluation to those programs that do not meet this challenge. Society now expects the special needs of its members to be met at all levels, not just the upper levels.

Educators face the problem of identifying who are the disadvantaged youth and adults. This is a difficult problem because the commonly accepted criteria for determining whether a person is "advantaged" or "disadvantaged" does not always seem to correlate closely with the special learning needs of individuals or groups of individuals. The disadvantaged groups that we hear so much about on television, or read about in the papers are commonly identified through (1) social class para-meters and (2) demographic considerations. These factors do influence the special learning needs of groups in our society but they do not serve as the ultimate criteria. For example, educators working with the gifted children do not look at cultural background and family bank accounts to determine whether the individuals have special needs that can be met through programs developed for the gifted. Vocational educators must also look beyond social and demographic considerations in identifying those individuals or groups of individuals who have special educational needs.

I would like to point out that it is going to be very difficult for vocational educators not to be caught in the trap of using only socio-economic criteria in identifying the disadvantaged. Investigators, observers, and educators have long used society's middle class to establish norms. Deviation from these norms is used to indicate whether a person is disadvantaged. I would like to interject that it does seem to be acceptable to deviate from the middle class norms as long as the deviation is toward the upper class value system. Specifically, deviation from the established norms of middle class, white, urban, U. S. nationals is the commonly used basis for determining who are the disadvantaged. Today's schools use testing programs extensively. The majority of these measurement programs have built into them a middle class socio-economic bias that discriminates against the culturally different. The use of the generally accepted tests and measurements implicitly supports the use of socio-economic criteria for identifying the disadvantaged. Whether you like it or not, society and our colleagues in other fields of education would classify most of us as being disadvantaged if this criteria is applied. Let me quote from the Review of Educational Research: "The rural child, regardless of his ethnic origins, presents particular problems for test users who try to appraise his abilities. His completely different way of life from that of urban children makes for extreme differences . . . at the most basic level of work in measurement. His slower tempo of life, lack of contact with the macrocosm of his culture, and inconsistent educational experiences have also been offered as explanations for his relatively low scores on intelligence tests."

Federal and state governments are playing a part in establishing socio-economic factors as the criteria for identifying the disadvantaged. Certain groups in our society have been told that they are disadvantaged. This communication has taken place in the form of the overall war on poverty, social reforms, and the like. The criteria used to identify these disadvantaged has been legislated. Mass communications has had a "Madison Avenue" effect on the acceptance of these criteria by society. For example, some educators discuss the problems of "disadvantaged youth" but they are actually talking about only low income, urban, Negro youth. I would speculate that if legislation had focused primarily upon the low income, white, rural youth that these individuals might have a different frame of reference. It can be seen that a strong pressure exists to use socio-economic criteria as the means for identifying the disadvantaged.

Who are the disadvantaged that should be considered? They are those members of society who can best be described as disadvantaged learners. The criteria for identification of these disadvantaged learners is based upon the "how" of the learning process. There are many groups of disadvantaged learners and these groups cut across all socio-economic levels of society. They may be slow learners. They may be fast learners. These disadvantaged learners can be described as males or females who do not learn effectively in the middle class pedogogical climate found in most of our present day schools. They may be disadvantaged due to mental deficiencies, physical impairments, cultural differences, economic status, or other factors.

I would like to identify four of the groups of disadvantaged learners that presently exist in our society. I am going to classify these groups in general terms that reflect the reason for their special learning needs. The groups are (1) the culturally disadvantaged learners, (2) the academically disadvantaged learners, (3) the mentally disadvantaged learners, and (4) the physically disadvantaged learners. I will discuss in some detail the characteristics of the culturally disadvantaged learners that reflect the special learning needs of this group. I will then use my remaining time to touch briefly upon each of the remaining groups.

The culturally disadvantaged learners might be classified as misfits in the middle class program of pedogogy. I am considering in describing the characteristics of this group that the individuals, both youth and adults, are academically capable and not impaired in any way. The characteristics of members of this group may vary in some degree depending upon their cultural background.

Home environment is considered to be related to the development of the learning process. Not all the characteristics of the home environment of the culturally different can be classified as negative. The home may be austere, noisy, crowded, and sometimes disorganized. The positive points of the home environment are often overlooked. These families tend to lack the strain accompanying competition as it is known in middle class families; there is more individualism within the family, lessened sibling rivalry, and more security offered as a family unit. These families tend to have an attitude of cooperation and mutual aid between extended family members such as grandparents, sons, or daughters who have left home.

The way in which culturally disadvantaged learners come to learn and know is an important characteristic. The culturally disadvantaged tend to form concepts better when the subject matter is content centered rather than in abstract form. Learning is more effective when knowledge is introduced to them rather than having them draw a conclusion from something known or assumed.

Culturally disadvantaged learners tend to recognize and note differences best through physical involvement in the learning situation. They tend to be less dependent upon written and verbal clues than middle class members of society. This lack of dependence upon verbal and written stimuli is partly due to the meager use of verbal expression found in the home. Generally, the family members do not obtain many verbal experiences in conversation with more verbally mature individuals.

Motivations and aspirations of the culturally disadvantaged learners influence their learning processes. Members of this group do not respond well to only symbolic rewards such as grades. They are stimulated by immediate reward and are generally uninterested in postponed rewards. The goals of this group tend to be self-centered. They have short-term immediate goals that are of benefit to them or their families. They are not motivated by the aesthetics of knowledge for knowledge sake. They obtain no motivation from self-competition and an examining of their own self.

I believe that you can see the role of a vocationally oriented education program for the culturally disadvantaged learners. In fact, have we not been serving a portion of this group since the beginning of vocational education in agriculture? Now there is a need to extend agricultural education to include all who can benefit from this program in terms of improvement of the individual.

I will touch briefly upon some of the characteristics of the remaining three groups of disadvantaged learners. The special need group who are academically disadvantaged consists of those youth or adults lacking the innate ability to comprehend traditional subject matter as it is presented in the academic atmosphere. Caution must be exhibited here. Many times I believe educators confuse the academically disadvantaged with the culturally disadvantaged and try to treat them in the same way. As an example, in Illinois there are programs of special education offered for the academically disadvantaged. Often the smaller schools cannot afford such a program and will place these students in classes with culturally disadvantaged students. In terms of the learning processes, there are some similarities but there are also some differences. Academically disadvantaged individuals generally have a concrete, pragmatic, personal, and physical style of learning similar to the culturally disadvantaged but at at a less mature level.

There is some indication that the pressures of our urban middle class society are developing academically disadvantaged individuals who have the innate ability to learn subject matter when presented in an academic atmosphere. Many high school students are under such great

pressures to learn that they often learn only by memory and have a nearly complete lack of understanding of the application of their knowledge; their goal is to get into college. As a result, there are recorded instances where youth are becoming mentally ill under such stress. I will not dwell on this point but will offer the thought that in programming vocational education in agriculture attention needs to be given this emerging academically disadvantaged group.

The disadvantaged learner who is impaired by mental health may be institutionalized or actively participating in society. The significant characteristic of members of this group is their need for therapeutic treatment. The therapeutic value of working with living plants and animals has long been recognized. The Danville (Illinois) Veterans Administration Hospital has a large greenhouse and nursery facility for the treatment of mentally disturbed veterans. The objective of educational programs in this phase of agriculture is not primarily occupationally oriented. The therapeutic value of working with the living plants is emphasized. The doctors at Danville do not care if a single plant survives as long as the patients progress in their treatment. It is hoped that some of the patients will develop saleable skills in agriculture, but this is a secondary concern. Examples of how agriculture is employed in therapy can also be found in many of our penal systems.

Learners who are disadvantaged due to a physical impairment is the last group I will discuss. This group has a variety of problems in learning. The therapeutic value of the learning situation cannot be overlooked. In many cases the development of marketable skills is one of the prime concerns of educational programs for members of this group. Often this may be the best therapy a physically disabled individual can receive.

Summary

I have pointed out that the term "disadvantaged" may mean different things to different people. Society has identified the disadvantaged as deviants from middle class, urban, white, U. S. nationals. Deviation is presently measured primarily on the basis of social status, cultural background, and/or the economic level of an individual.

I have made the point that in programming vocational education in agriculture the disadvantaged groups should be identified on the basis of special needs related to the learning process. Four groups of disadvantaged learners were identified: (1) those whose learning is impaired by their culture, (2) those whose learning is impaired by their academic abilities, (3) those whose learning is impaired by mental illness, and (4) those whose learning is impaired by physical defects.

I believe that in working with disadvantaged groups the emphasis must be on the individual and not on occupations. Vocational education is a highly important vehicle through which these people can be reached and aided. I am willing to bet that programs developed in vocational education in agriculture which are "people centered" will have a higher degree of success in preparing disadvantaged individuals for employment and advancement in a career than will strictly occupation oriented programs.

In the infancy of vocational education in agriculture, agricultural subject matter was the means. The end was to educate rural people to take their rightful place in the "mainstream of society." Agricultural subject matter was a vehicle to obtain attention, create interest, motivate and change people.

Soon teacher educators, supervisors, and teachers rightfully demanded improvements in the pre-service and in-service training of teachers. This trend continued until most educators in the other fields of education stated that the best-qualified teachers in the public schools were the teachers of agriculture. The ego of agricultural educators was touched by this recognition and additional attempts were made by teachers, supervisors, and teacher educators to make the "best bettet." Standards of excellence were established for all areas and phases of vocational education in agriculture. Objective measures were developed to evaluate progress.

These objective evaluation devices focused attention on easily evaluated items of the program such as size of farming programs, percentage of boys entering farming, attendance at adult-farmer courses. All of these efforts improved the quality of vocational education in agriculture.

The focus of vocational education in agriculture, however, gradually shifted away from rural people and rural life to agricultural subject matter. Agriculture became the end instead of the means to the end. The welfare of people, the only legitimate concern of educators was given less attention, and more attention was focused on the improvement of agriculture. The pressure to improve agriculture became a very important objective.

In some schools, administrators were encouraged to eliminate any boy or girl from vocational education in agriculture who could not have a superior farming program.

In some schools the Smith-Hughes Act was interpreted literally, as some interpret the Bible. In these schools enrollment in agriculture was pruned until only boys who could go directly into farming were permitted to study agriculture. We were successful in improving greatly the quality of vocational education in agriculture. This was good, but our success caused us to give less attention to people in rural areas with special needs.

I have been discussing vocational education in agriculture, but situations were paralleled in other areas of vocational education such as trade and industrial education and home economics education. All vocational educators more or less forgot or were forced to ignore persons with special needs. We were not alone and all of vocational education may have succeeded in shifting from a focus on people to a focus on subject matter if our society and culture had not been subjected to the extreme pressures of automation.

Production agriculture first felt the full impact of automation. Manpower was released in great amounts from farming, and the clientele for vocational education declined at a rapid rate. In recent years the full

impact of automation has also been felt in business and industry, and the maintenance of the status quo in other areas of vocational education also became untenable.

Finally, the people made their wishes known through the Vocational Education Act of 1963. Society did what educators were unable to do. In my opinion, society said, do not permit your standards, your objectives, and your traditional means to get in the way of educating people. They said, and are saying, broaden your objectives, adjust to automation and serve people, especially the disadvantaged that you have temporarily forgotten because they might ruin your "record."

Project REDY focus

Project REDY is our small attempt to take seriously the mandate of society to focus vocational education on people instead of on subject-matter content. It is our attempt to focus attention on the six million persons living in rural areas who are disadvantaged, so that their needs will not be overlooked in the "rush" to assist the disadvantaged 29 million who live in metropolitan areas. We believe that people are of equal worth regardless of whether they live in rural or urban areas.

Procedure

The first part of Project REDY is an attempt to find out as much as possible about disadvantaged rural families and depressed rural areas. We have been directing our attention in vocational education so long on the "advantaged" sector of rural areas that we known very little about the disadvantaged.

Our hypothesis is that we must take seriously society's mandate to serve the disadvantaged. If we do not, society will eliminate support for vocational education and develop new means, probably outside the school, to meet their needs. We believe that the opening wedge for re-orienting vocational education is to provide a family education program for rural families. This program will emphasize economic and educational planning. It will be family-centered adult education.

Its purpose is to create readiness for change. Our hypothesis is that if readiness for change is developed, ways and means can be found to provide the courses and programs needed to satisfy the needs of dis-advantaged people and the demands of society.

Findings

We are finding that we have been ignoring the rural disadvantaged for so long that we and society are often unaware of their existence; that rural area prosperity screens from view the disadvantaged. We are finding that pockets of disadvantaged rural families are present in even the most prosperous communities.

Teachers of agriculture often are unaware of the presence of rural families with special needs because they have been focusing their attention only on the prosperous farmers and their families. Most

teachers of agriculture are willing and anxious, however, to work with rural families with special needs as soon as they are convinced that teacher educators, supervisors, and their peers will not crucify them for their efforts.

Contrary to the belief of many, it is possible to work with the rural disadvantaged. Early in the project we have evidence that the rural disadvantaged will respond if the educator uses a "person-oriented" approach instead of an "object or material-oriented" approach.

Summary

I will not burden you with more findings because I would soon be presenting details which may or may not be of interest to you.

We are convinced that vocational education progress can be made with the rural disadvantaged using vocational education in agriculture as the primary vehicle. We must learn, however, to use different "yardsticks" to measure progress when working with persons with special needs. We will need to develop new evaluative devices and these devices must be more sensitive to smaller changes. Behavior changes among the disadvantaged will often be small and slow, at least at first.

We must insist that society not use the same evaluative criteria to evaluate our success or failure with persons with special needs that is used in our programs for average or typical enrollees. If we insist that society use new and different evaluative criteria and standards, and if we assist in the development of these criteria and standards, vocational education in agriculture, in our opinion, has nothing to fear, except our lethargy in getting underway.

Some Possible Solutions

Panel Discussion

Panel Moderator: Paul Day,
Teacher,
Fairbault, Minnesota

"Disadvantaged Youth Programs in Cleveland": Kenneth A. Parker,
Instructor of Vo-Hort,
Cleveland B.O.E., West
Tech High School,
Cleveland, Ohio

The program has been developed over a period of the last four or five years. It was an outgrowth of the home gradening and tract gardening program of Cleveland which has been in existence about forty years.

The course of Vo-Hort has been based on needs of the area and the student.

The first unit of disadvantaged youth was started in 1963 at Thomas A. Edison. Course is primarily along the lines of landscape maintenance and other service occupations with horticultural implications.

Recently we have developed a program at the Cleveland Boys School. The C.B.S. is an institution where boys have had problems with the court and are assigned by the court. This program has been set up along the lines of our tract garden program in the city. The boys get work in the field growing plants--working for perfection.

At West Technical High School and several other schools with Vo-Hort, we have developed our program for disadvantaged youth integrating it with our regular program. Primarily our students are physically disadvantaged; we develop individual programs, within our course of instruction, and find that students get valuable experience and confidence which they would not get in some other basic shop courses.

Our basic aims are to make the students employable as well as socially accepted, and help them understand what they can do and then help them perfect that ability.

Willie C. Davis, Instructor of Vo-Hort,
Thomas A. Edison Occupational School,
Cleveland, Ohio

I have tried to take a realistic approach to understanding and teaching Edison students. There are six characteristics that I am concerned with in this program. Namely, group, intellectual, educational, emotional, social, and environmental. It must not be assumed that the characteristics mentioned are to be found in all pupils.

Students attending Edison have I.Q.'s ranging from 75 to 90.

Regarding what is to be taught and how it is to be taught:

A. Subject Matter

1. Subject matter must be functional and materials must be geared to the interests, needs, and abilities of pupils.

2. Content must be simplified and as concrete as possible.

3. Units of instructions must be relatively short.

4. The teacher must build on what pupils know and understand.

B. Methods of Teaching

1. Use a variety of approaches involving all physical sense.

2. Make practical applications.

3. Make things concrete.

4. Supervise study; give individual attention.

5. Drill frequently; report and review frequently.

6. Make the goals readily attainable and as immediate as possible.

7. Be liberal with praise.

C. Results to be Expected

1. Measure improvements on the accomplishment of the individual pupil with respect to his capabilities.

2. Look for improvement in work habits, self-direction, self-control, social conformity, attitudes, intellectual interest and effort, rather than in retention of subject matter.

Our major concern at Edison is to train the students to be employable. We have 44 boys enrolled in this disadvantaged program. We specialize in landscape maintenance and related areas.

We try to place all of our students in jobs if possible.

These boys at Edison are not problem boys, but boys with problems.

Many of the June graduates are now in the Armed Services. Others are gainfully employed in agricultural occupations.

Our motto is "We Learn by Doing." That money earned is always better than welfare payments.

"Work Study Program": W. R. Weir, Teacher, Vo-Ag,
Cloverleaf High School,
Lodi, Ohio

1. Basically a two-year program.

2. Open to any agriculturally interested student that is recommended by Junior High Guidance Counselor, principal and parents.

3. First year students spend three periods per day with vo-ag teacher in:

   a. tailor-made study period in areas of their farming program or related study;

   b. teaching work habits and shop skills; and

   c. attempting to make the students employable.

The students are also enrolled in classes at their level of learning in English, history, health, physical education, and industrial arts.

4. The second year students--if they prove to be ready--are placed on job training or work study programs for 1/2 day. They also spend two periods under the vo-ag teacher's supervision in shop work and related study.

The student must also spend one period in another school subject.

If students stay enrolled in the program for three years, they are issued a certificate of attendance along with other members of their graduating class.

Cloverleaf High School is a Comprehensive High School operating under a 6-3-3 plan with 3,000 students.

The school district is composed of five townships in a rural-urban area.

"Four Boys, 14-17 Years,
from Special Education Class": Shaw Terwilliger,
Virginia, Illinois

These boys, and one girl, were with a lady teacher all day. The boys came to Ag from the middle of November 1 to 3 periods per day until May 15th.

Shop skills were used to teach some arithmetic, drawing, and planning--quite original designs were developed.

Two boys did fine work, one poor, and one not that good. All were eager to try to learn.

There were no discipline problems in Ag. The Special Education teacher punished them by not letting them come to Ag.

Attitude toward school in general was improved.

Other students accepted these boys and helped them.

The boys were quite happy in the Ag work.

They were interested in animal projects although they did not study them.

They did make progress.

These students require much supervision.

They must clearly understand the rules and must be corrected often.

They respond well to praise.

They cannot take joking and deeply resent anyone making fun of them.

They are hungry for success, attention, and acceptance by other students.

We have much to offer these people; they should be grouped together for most work but occasionally profit by being mixed with regular classes.

They love their teachers.

A teacher must be very patient, willing to repeat directions many times, tactful in pointing out mistakes, free with praise, and have iron nerves and a love for people to do the work.

Agriculture is a wonderful tool subject to help these people.

"Looking Ahead to Programming Special Reports in Vocational Agriculture for Disadvantaged Youths": Clifford E. Minton, Field Representative, Persons With Special Needs, Division of Vocational and Technical Education, U. S. Office of Education, Department of Health, Education, and Welfare

The opportunity to review factors relating to the topic "Looking Ahead to Programming Special Efforts in Vocational Education for Disadvantaged Youths" is appreciated. The planning of the conference program indicates your interest in coming to grips with a timely subject which has basic implications for vocational education. This is significant because it indicates you do not believe in the inevitability of progress and that planning for progress is necessary.

Programming realistic diversified offerings for disadvantaged youths presents one of the most important and complex challenges faced by public vocational education during the past half-century. Un-met needs, public interest, and our educational mission suggests, if not dictates, expansion and changes in the traditional patterns of approach and offerings in vocational education.

The theory that the vocational educator can no longer afford to be a narrow specialist has been emphasized. We must increasingly be involved in the mainstream of societal problems that bear upon the mission of public education.

The tremendous number of school drop-outs, estimated to be 1,200,000 in 1965, causes a great waste of our youths, and inflicts a heavy social and economic cost upon the nation.

Education for productive work is obviously not the only solution to the socio-economic problems facing the nation, but occupational education is a basic ingredient, because it is in the schools that the tragic cycle of poverty, unemployment, low economic growth, and inadequate education can be broken.

The insight and leadership among vocational education specialists will be decisive on determining the degree to which educators generally will acknowledge the absolute necessity for skilled manpower and that excellence in vocational training is as educationally significant as abstract academic achievement.

It is important that emphasis be placed on excellence in one's occupation as well as on the kind of occupation. The image that one has of himself because of his occupation is significant. It is my guess that many students have been deterred from vocational education because of an unrealistic image. Public relation firms imply that many images are created and that many of the created images are not generic. The job of intellectually honest image creation is important to educators in vocational education.

Major Points for Consideration in Developing Programs for Disadvantaged Youths

1. The potential in ability and intelligence.

2. Interdisciplinary approach.

3. Diversification of course offerings to meet the demand of employment opportunities.

4. The involvement of parents in career planning.

5. The utilization of community resources.

6. Personnel requirements.

7. Research as a tool in program planning and development.

8. Reaching the student.

Provisions of the Vocational Education Act of 1963 which are pertinent to programming for the disadvantaged are:

1. Maintaining, extending, and improving present programs.

2. The development of new programs.

3. Provide part-time employment for needy vocational students.

4. Service for all persons of all ages in all communities of the state.

5. It provides for vocational training and re-training that is geared to the labor market (including new occupational fields).

The Act embodies the philosophy that all our citizens must have access to education and training that is of high quality and realistic in terms of opportunities for gainful employment. This service should be available to all, from the least able and the disadvantaged to those of a high level of technical ability.

The Forthcoming Evaluation of Educational Efforts in the States

In relation to the resources available, it appears reasonable to assume that the evaluation will emphasize matters of this type:

1. The adequacy of State Plans and the actual degree of implementation of State Plans in accordance with their documented projections.

2. The effective use made by the local school agency of the flexibility provided for in the Act for more inclusive program development and implementation.

3. The degree of interdisciplinary relationships, and the lines of communication, and the bonds of cooperation with other public and voluntary agencies which can contribute to preparing citizens to meet the problems of life.

4. While compliance with administrative regulations is important, I believe the evaluation will place heavy emphasis on indices of effective leadership focused on the objective of providing vocational training and retraining geared to labor market needs, for persons of all ages and groups, and particularly those with special needs.

   a. The degree of the dent made in the number of dependent unproductive consumers, the increase of productive consumers--I believe the evaluation will be weighed in terms of progress and results rather than procedural details.

In the light of needs and the public interest, it is reasonable to assume that through Congress the evaluation will have significant implications regarding the future relative status of vocational education in the public schools and the leadership in vocational education.

If there should be those who would like to maintain the status quo in vocational education, it is evident that they will find that the STATUS will not QUO.

Upon request from the state, the U. S. Office of Education can give consultant and other services to help solve many problems that I have cited or implied. I urge you to envision our office together with the institutions which you represent as parts of a powerful team that is engaged in the conservation of human resources.

Organizing and Conducting Local Programs of Adult Education

Wednesday Afternoon, March 16

"Current Topics" Approach: George Sefrit, Iowa

Taught for 20 years in Algoma, in northern Iowa, a community that is very interested in adult education. This past year 700 adults enrolled in 23 different courses. The average enrollment this year was 160. He starts first with a well-organized advisory council--his has 12 members, 6 elected each year. He feels the advisory council is the key to success--he has never personally invited a farmer to his evening school. Next is a well-planned program of work--the kind should be determined by the advisory council and not by the instructor. At Algoma the council choses the "current topics" approach. Meets needs, increases enrollment, and builds support for vocational education. This approach gives farmers a better way to help keep up-to-date--mechanization, chemicals, etc. You either keep up or you are out. Next requirement for success is that of promotion--they will come only if it is attractive to them. Fourth, is the method of instruction. The specialists or the commercial representatives will not make the class. No commercial representatives allowed at Algoma. Final point: the problem of follow-up. We only stimulate thinking in the class, the real teaching is done on the farm.

The secret of the evening program is that it is the people's program.

"The Unit (Farm Management)" Approach: Chris Beck, Minnesota

Future economic growth of an area depends upon the extent of the education of people. Production is the basis of existence--the strength of the nation lies close to the soil. Farm management, high school area: learn concepts and attempt to motivate parents at home. Complete and accurate records are essential. The adult program must be well planned.

Records are the basis of instruction. Program should be set up for two or more years. Farm Management I, etc. Wives do attend because they often keep records and, of course, are important in decision making. Beck likes to bring a calculator out on a farm visit--can do feed checks, etc. They can compare their own with averages. Start a new group each year--after two years they go into a seminar group which is much like the Algoma, Iowa approach described by George Sefrit.

Area vocation schools have area coordination in Ag. Ed.--they are reimbursed one hundred per cent for salary and travel--biggest responsibility is in the analysis. Mr. Beck then described the process of analysis. In teaching he uses the discussion approach. Panels are successful; also, small group tours.

Symposium

"A Critical Look at Our Vocational Agriculture Program for Adults"

R. L. Hummel, Ohio:

371 teachers in 306 schools. Reached 8,500 farmers--2,900 were young farmers.

81% of departments conducted classes; 4.4 visits per student. Average attendance of 31 per class.

One problem is that they are working with the adult farmers who are really soon due to retire. In Y.F. groups there are 800 dues-paying members. A large number have over two years of college and farm an average of 400 acres and have over $50,000 invested.

Problems:

1. Cooperation between educational agencies--now reimbursement per hour ($2.50 at State level) with hope that local board will match this. Need two hours on farm instruction per hour of classroom instruction.
2. Too many teachers depend upon commercial people.
3. Administrators, in general, do not support adult education.
4. Turnover of teachers (nearing 20%).
   Many do poor job--extra duty; no follow-up.

Doyle Beyl, Wisconsin:

One of really important programs. Increasing per cent of contact with farmers. Big loss in number of dairy farmers and in dairy cattle numbers.

1. More individual instruction for Y.F.; perhaps less needed for farm mechanics.
2. Program easy to defend. Have income on figures--showing increase in net income figures.
3. Is it to our advantage to train three farmers for $10,000 gross, or one with a gross of $30,000?
4. Electrical analysis of records is most effective.
5. Farm finance is an area of neglect--especially under regular instructors.
6. What can we contribute to the fellow who is going off the farm?

James Bailey, Missouri:

A few basic changes have taken place in Missouri:

1. Number of mechanics courses have increased.

2. Two hundred thirty-five departments of vo-ag; 120 did either. Y.F. or A.F. class gave 200 series.

   a. 4,100 plus students

   b. 80 were production courses

   c. 120 mechanics in nature, 88 of them welding

3. Classes scheduled at convenience of students when facilities are available.

4. Three to five sessions per topic area (minimum).

5. Reimburse 75% of cost of special instructors where needed.

Glen Nicklas, Nebraska:

All adult work is done by the teachers of agriculture--he gets $15 per meeting--minimum of 10 meetings, enrollment of 10 and must attend at least three meetings. Last year a bonus was given to a school if they have a complete program, but this was dispensed with in 1965-66.

They offer production classes and farm management. This year a class has been added--non-farm agriculture class. The teacher does not have to make follow-up visits.

Thirty-three Y.F. classes; 102 A.F. classes; 7 non-farm agriculture classes; 5 farm management classes, making a total of 147 classes.

Farming is a profession for professionals. Feel they need:

1. More support from administrators, and

2. More multi-teacher departments.

James McGuire, Indiana:

Have our adult education programs in agriculture kept up with the times?

1. Farm management approach and electrical record analysis is new.

2. We now have lost ground--using commercial specialists.

3. Have we run with the ball or have we merely let out the air?

Problems (similar to others mentioned):

1. Out-of-school load not considered a part of teacher load by administrators.

2. Lack of continuity in program.

3. Series of unrelated instruction.

4. Insufficient follow-up instruction.

5. Instructors feel outdated.

6. Instructors are confused over their roll--educators or technicians.

Discussion Groups

Group A: Chairman, Phil Teske, Indiana

Subject: Programs for Young Farmers and Adults Preparing to Enter Farming.

Following questions raised:

1. What types of programs of "systematic instruction?" Current topics or unit, or both.

2. Developing teacher and administrator concept of programs? High school + Y.A. + A.F. or H.S. Y.A. A.F.

3. Organization and promotion of programs?
   Advisory council
   Y.F.

4. Competency and load of instructors.
   Regular instructor and/or special instructor.
   Single vs. multiple-teacher instruction.

5. Reimbursement policies to organize, promote to/or expand?
   Base salary + vs. total salary for total program.
   $ per program vs. $ per class session.

Question was raised as to establishment of national Y.F. organization. We are not ready now.

Developing teacher and administrator concept of program and reimbursement policies. Iowa considers one adult class as one-quarter of their load, with no added reimbursement. Ten lessons for an adult; 15 lessons for young farmer class.

Question was raised--How does a teacher get release time for teaching a Y.F. or A.F. class over another class? Reviewed Indiana's program of reimbursement.

Group B: Chairman, James Bailey, Missouri

Subject: Programs for Adults Preparing to Enter Off-Farm Occupations.

Our responsibilities:

1. To any age person who can benefit from preparatory training.

2. Can be full-time in training program or part-time in the training program.

Training will be done in:

1. Area vocational school.

2. Comprehensive Junior College.

3. Will probably be difficult for the local vocational agriculture department to do this, except as the school secures a person or persons specifically for this training.

Some examples:

1. Agriculture salesmanship.

2. Agriculture mechanics.

3. Artificial inseminaters.

4. Landscape specialists.

5. Dairy technology.

6. Rural finance.

7. Soil technicians.

8. Aerial spraying.

9. Conservation technicians.

We had some trouble with the terms:

Preparatory training and supplementary training.

Group C: Chairman, Harold Urton, South Dakota

Subject: Programs for Adults Engaged in Farming

Instructor handles the class but often 80-90 per cent of the answers are given by the men in the class.

Regularly scheduled time set for farmers to make contacts with instructor helps conserve time and energy in both answering questions and planning further contacts.

Each instructor will need to determine whether there be both a young farmer and adult farmer program.

Follow-up with letters announcing programs and dates of meeting. Send out entire program.

Effective advisory councils are mandatory.

Group D: Chairman, J. R. Warmbrod, Illinois

Subject: Programs for Adults Engaged in Off-Farm Agricultural Occupations: There seemed to be unanimity of opinion that Vo-Ag has not only capability but responsibility to provide instruction for this group--both living and/or working on or off the farm.

Is anything being done?

Glen Nicklas, of Nebraska, was asked to discuss in more detail the plans and activities in that state.

It was pointed out that the 1965 State Plan provides for instruction of this nature--major difference being that no follow-up instruction is required. Welding was the only specific course.

(It was suggested that associations might strongly support it; e.g., Farm Equipment Association, Nursery Association, etc.)

Race horse management and landscape nursery programs are conducted in Michigan; turf management courses in Ohio

Status Reports

Thursday Morning, March 17

Subject: Post-Secondary and Technical Education in Agriculture, Chairman, Harold Byram, Michigan.

Iowa - C. W. Dalbey

1. Program started with 10, now have 34. Will have 6 teachers this year with 60 enrolled.

2. One program at Mason City and one at Cedar Rapids.

3. A course is to start at Esterville on fertilizers.

Michigan - Clifford Haslick

The post-high school program described in this report is limited to the two-year technical training program offered at Michigan State University. The purpose of this program is to prepare students for the business of farming and for employment in off-farm agricultural occupations. The program offered and the length of each is as follows:

	Program Length	
	On Campus	On the Job
Young Farmer	32 weeks	32 weeks
Commercial Floriculture	4 quarters	4 quarters
Elevator and Farm Supply	4 "	2 "
Farm Equipment Service and Sales	4 "	2 "
Nursery and Landscape Management	4 "	4 "
Soil Technology	4 "	2 "

An important characteristic of the technical training program is the combination of classroom instruction with on-the-job experience. Students begin the program by attending classes on the campus for a minimum of two quarters and then return to the home farm or are placed in agricultural businesses for practical experience. A coordinator is responsible for each of the programs mentioned above. His responsibilites include:

1. Locating places of employment.

2. Working with the employer to determine competencies which the student must acquire.

3. Development of work agreements.

4. Supervision of on-the-job trainees.

5. Advising and counseling students.

6. Teaching classes.

7. Working with industry and trade associations.

8. Placement following graduation.

Following the work experience, with the exception of those in commercial floriculture, students return to the campus for additional classroom instruction for two quarters.

Consideration is being given to further expansion of the program and present plans call for offering a new program in Turf Management beginning in September, 1966. Other new programs anticipated include:

Food Science - Fall 1967
Pest Control Operators
Farmstead Mechanization

Approximately 400 students are currently enrolled.

Minnesota - G. R. Cochran

We are just making a start in post-high school and agriculture technician programs. We now have two 1-year post-high school programs. These programs are designed primarily for students who plan to return to the farm, although a number have been employed in agricultural occupations and have performed satisfactorily. We have one 2-year plant and animal technician program in operation. To date, interest in the program is good and we feel it will point the way for other schools in development of technician programs in other areas of instruction.

We do have a problem of just where the post-high school vocational education program will be located.

Some of the problems we have are lack of reliable information on occupational needs and opportunities and lack of manpower.

We have had two meetings of state-wide advisory committees in development of course offerings and procedures. There is a local advisory committee for each program conducted by the area schools.

Some of the areas where we anticipate new programs will be developed are: conservation aide, farm structures and materials handling, and cooperative management training.

Subject: Post-Secondary Education in Agriculture in Ohio. Warren Weiler made introductory statements about start of program.

Springfield Technical School - H. B. Drake, Coordinator of Agricultural Technologies

A. Existing programs at Springfield

Data Processing
Mechanical Engineering
Electrical Engineering
Agri-Business
Agricultural Equipment

B. Building plans

Now housed in a wing of City High School.
$2,000,000 building being constructed with Board of Regents money.

C. Procedures of operation

Securing and selecting students
Securing and selecting instructors (qualifications)
60% full-time
40% part-time
Curriculum
Placement training
Placement of graduates
Follow-up of graduates

Discussion led by Ralph Bender, Ohio

1. Program for first six months was financed 100%; after that it was by 75% Federal aid.

2. Satisfactory background and interest as determined by interview qualifies student for enrollment.

3. Follow-up of students is done by visitation with worker and employer.

4. The total cost is about $800.00, $300 of which comes from tuition; balance is State funds.

5. Students are enrolled on a rather high selective basis.

6. Walter Jacoby injected the thought that he felt there was still a need for training the mediocre student.

Subject: Development of the Kenosha, Wisconsin, Post-High School Program in Ornamental Horticulture

Report by Doyle Beyl:

Our vocational schools have been in existence 54 years; however, they have been primarily supported by the city in which they are located. Agriculture was slow in being accepted; now they are becoming area located and supported.

First meeting with advisory council, 7 men in the florist business

First step determine need of program:

a. Play this by ear

b. May have an organized group, such as Upper Michigan florists association

c. Formation of an advisory council--this is most important. Get industry advice and support

Second step - what does industry want?

a. Curriculum

b. Facilities

Third step - what will the state and federal support be?

Fourth step - should this be continued? Yes, in case of florists. No committees were appointed from industry to report on the following:

a. Flower shop operation

b. Design

c. Crop management

d. Horticulture

e. Floriculture

f. Greenhouse construction and operation

g. Garden plant

h. Internship - 5 week time log

Second meeting:

Reviewed curriculum and made suggested changes.

Selected elective courses for both production and retail emphasis.

Determined needed facilities and estimated costs of program.

Met with representatives of schools interested in course.

They questioned advisory committee.

We presented the school proposal outline and procedure for designating how school would be selected. The following points were raised on outline:

1. Occupational survey

   a. Number florists, greenhouses, etc. in school area

   b. Number employed in industry

   c. Estimated future employment needs

2. Population support

   a. Location and size of population being served

   b. To what extent do they take advantage of present post-high school education opportunities?

   c. Factors for student potential

      (1) Occupational survey
      (2) Student enrollment
      (3) Testimonials
      (4) Other supporting factors

3. Financial support offered by local school

4. Do present post-high school programs provide a suitable foundation for addition of this course?

5. When would school plan to initiate course?

6. How will school be selected?

   a. Date for submission of materials - 2 months

   b. Recommendation by advisory committee

   c. Designation of program by state board

Two months later, Dec. 28th -

Advisory board met to review proposals:

1. They questioned items of expenditure. For example, they believed the cash register was too costly until they found it used for controlled accounting and extension training during the evening.

2. They gave help in selecting a house and drawing up plans that would provide needed facilities at low cost.

They deliberated for considerable time before designating Kenosha as the school.

The State Board then upheld this decision on a January 24th meeting and publicity was given the program. The purpose will be to aid the school as consultants and to publicize the program.

Report by Eugene Lehrmann:

Operation of Horticulture Training Program -

1. Enthusiasm was first generated through community contacts.

2. A survey of needs in horticulture areas was made of businesses in Kenosha.

3. Proposal was made to State Board for vocational education and was approved.

4. Growth and development will depend upon the image of the program and the needs of the community.

Panel Report

Thursday Afternoon, March 17

Subject: Post-Secondary Education in Agriculture in Illinois

Ralph Guthrie:

1. Six programs with 240 students enrolled.

2. Introduced panel members who told what had been done.

Elmer Rowley:

1. Works with advisory committee representing 25 industries.

2. Courses include agricultural communications, sales, and service, etc.

3. Forty-seven took training, 36 still on jobs.

4. Evaluation has been promoted.

Joseph Dallon, Jr.:

1. Courses include landscaping, turf management, sales management and promotion, greenhouse and nursery management.

2. Supporting courses taught include: English, biology, chemistry, speech, and physical education.

3. Teachers meet with the advisory council.

Leo P. Deutsch:

1. There are 850 dealers in the state. Each one needs one to three additional trained workers.

2. An advisory council studies length of course needed, course content, and general teacher problems.

James Nickell, Ornamental Horticulture:

1. Recruiting students by:

   a. Mailing printed brochures

   b. Publishing articles in farm magazines

c. Publicizing in newspapers

d. Providing eleven TV programs (this was most effective one)

e. Applications were received from 119 prospects. These were screened to 40, which was all that could be taken.

Edward Kaiser, Farm Machinery:

1. Started with 40; still have 38 with four teachers.

2. Complete overhaul skills are taught and developed.

3. Twenty-two new farm implements have been assembled.

Questions from the floor brought out the following:

1. Temporary vocational certificates are approved by the Director of Vocational Agriculture.

2. Teachers are trained by members of the university staff.

3. Administrators at various schools are responsible to the State Department of Education.

4. Most students come from outside of the district.

5. Only Junior Colleges can offer vocational technical training.

Group Meetings

Implications of Information Presented for State Programs of Teacher Education, Supervision, and Research; George Ekstrom, in charge.

Group A: Joe Malinski, Leader
Harold Crawford, Recorder

The basic discussion centered around the following question:

How can we provide in vocational-technical education in vocational agriculture that which will provide adequate and timely instruction in both preparatory and supplementary trends, meet the changing needs of job requirements, and encourage effective citizenship?

Comments are as follows:

1. Teacher Education

a. Not too much indication of anything being done in teacher education to specially train men for this type of teaching.

b. Implications are that the primary emphasis should be on choosing the potential teachers for post-secondary education in agriculture with technical skill and develop the teaching skill through special education.

c. Could get good men (past teachers) and give them more training in the technical skill.

2. Implications for Supervision

a. If funds are being provided by state and federal funds, then it must be supervised by state staff.

b. When an institution accepts a vocational-technical program, then they accept the philosophy with it; then the first responsibility of supervision is by the sponsoring institution; second, it is the responsibility of the state staff, especially if things are not progressing correctly.

c. It is the responsibility of state staffs to help institutions see and develop the overall programs.

3. Implications for Research

a. To identify what additional knowledge is needed.

b. To evaluate existing programs (not too soon to start now).

c. To reach an agreement on the qualifications of potential instructors.

d. To identify what types of programs to offer.

e. To identify the various methods that vocational programs are being developed and to evaluate these methods.

We should never forget that high school vocational agriculture programs should not suffer at the expense of development of post-secondary education.

Group B: Clarence Bundy, Leader
James Bailey, Recorder

At present, states represented say the state universities do not offer training for teachers as needed in post-high school technical school teacher.

It is important the prior on-the-job experience of the teacher has been successful experience.

An acceptable procedure may be to pair a trained teacher with experienced technicians. An example of training of instructors is the sending of the teacher of the farm equipment or tractor repairman course to the schools conducted by the equipment companies for their own personnel.

One problem probably will be, in training teachers, that the number of teachers needed in a state may be quite small in certain specialized areas.

Illinois seems to be the only state represented which attempts to offer teacher training to teachers of post-high school courses.

Use of advisory committees is a must.

We may violate the real intent of the total program if we sent out the more able persons and plan training programs only for them. Is it important to plan programs also for the less-able persons?

On-the-job training should be a part of technical training.

Group not willing to say how much of the training time should be at the training institution and how much should be on the job. North Central seems to want not more than 25% of time to be on the job. The estimates of the group was that 25% to 50% might be acceptable.

Group C: Hilding Gadda, Leader
J. A. McKinney, Recorder

1. Special provisions may be needed for certification of teachers to meet the demand. Recognized that qualified teachers will require motivation for training. Needs for vocational instruction in Junior Colleges should be emphasized.

2. Occupational trends may be best determined by contacts with business firms and referring to what appears to be students' interests and needs.

3. Pre-service and in-service training should be promoted.

4. Competency of trainees can be enhanced by intern exchange of teachers. Occupational experience should be provided.

5. All those desiring training should be provided for as quickly as possible. Arrangement for choices is important.

Group D: B. E. Gingery, Leader
Floyd Doering, Recorder

The Wisconsin post-high school program in horticulture at Kenosha Technical Institute was discussed. Some were concerned about the simulated experience program. Since this is a problem of dealing with people, would this type of program weaken the overall program?

Post-high school program in production agriculture was discussed. Few of these programs exist in the Junior Colleges. Question was raised on how student would get his farm experience under this program. Nebraska stated that one-fourth of the time will actually be spent on the farm--either the home farm or another. Concern was expressed that student may not get to make management decisions and this is vital, including comprehensive records and record analysis.

Is it necessary to have farm boys enrolled in these post-high school agricultural classes? Most felt the student must be familiar with farm terminology and know how to talk to farmers and, therefore, should have the farm background. Exceptions were noted.

Reports of Special Interest Group

Thursday Evening, March 17

Agricultural Mechanics: Carlton Johnson, Ohio

"New Developments in Agricultural Mechanics"

Power and Machinery

Forest Bear discussed a special study of the plow adjustment and mower adjustment in which teachers check the quipment and make recommendations for changes to correct adjustment and summarize reports.

Technical skill workbooks for student use for studying combine, corn planters, balers, and sprayers have been developed and are revised as suggested by the teachers who use them.

Short intensive courses (three, 3-hour sessions, one each week) on plow adjustment, hay conditioners, and balers are taught to teachers at outlying centers.

Soil and Water

Roland Espenschied reviewed Illinois vo-ag service teaching materials and discussed the use of spraying kits which are loaned to teachers for a $5 fee, after they are instructed to use them properly.

Electric Power and Processing and Farmstead Mechanization

Curtis Weston discussed Clinton Jacobs' study of automation in feed lots in Kansas. Regarding the question of why farmers mechanize, 83% said they did so to expand production; 50% said "to do a better job of feeding"; 46% said "to save labor"; 30% reported more accurate feeding and increased production.

They also reported that in planning their system, 63% visited other farms, 47% used the extension service, 30% consulted with factory representatives, and 20% used their own ideas.

Farm Buildings and Structures

Harry Henderson reported that information about farm buildings is centered around five areas: Economics, including financing, functional requirements, materials available, structural requirements, use of newer power tools such as pneumatic tools, angle indicators instead of squares.

Trends are toward metal plate wood trusses; confinement housing for all livestock with slotted floors for beef and swine enterprises, and free stall housing for dairy; designs stress expandability and flexibility.

Agricultural Construction and Maintenance

Espenschied discussed a new film strip on lawnmower safety and the importance of helping teachers with skills needed by them in new areas of teaching, such as how to read a micrometer and the types of micrometers for use in small engine teaching units.

Semester Block Units

Curtis Weston reported that problems teachers have when using the semester block approach are:

1. Lack of competency to teach in depth.

2. Lack of guidance as to how to fit semester block units into their teaching.

3. How far to go with course content.

4. Lack of course materials.

5. Lack of help at university level to upgrade teachers.

Avery Gray, from supervisors group, recommended:

Preparing for clusters of occupations; using agricultural mechanics consultant committees to select courses, where to teach them, propose guidelines for selecting instructors, facilities and tools and equipment for teaching; teach at 11 and 12th grade levels.

Technical Education Projections

Carlton Johnson reported an intensive series of programs on technical education have been sponsored by the Committee on Instruction in Mechanized Agriculture (formerly Committee on Vocational Agriculture Teacher Education) of the American Society of Agricultural Engineering. The content has centered about defining the terms technician, technologist, etc; the scope of job opportunities, types of courses, content of curriculum, techniques of teaching, etc.

Report III Recommendations for Pre-Service and In-Service Education for Teachers of Vocational Agriculture is being revised.

A special project on guidelines for agricultural equipment technology programs is being written at Cobbs Hill, New York under a USOE project.

Manpower Program

Carl Albrecht described the MDTA tractor and machinery mechanics program at Bay City, Michigan. He also reported a graduate credit 3 weeks workshop on farm power will be taught this summer at Michigan State.

Problems in Teaching Technician Courses

Robert Devin, Coordinator of Agricultural Technology at Wabash Valley College, Mt. Carmel, Illinois, said the problems in technical courses are primarily:

1. Finding qualified agricultural mechanics teachers.

2. Selection of students.

3. Obtaining adequate space, tools and equipment, and obtaining suitable work stations for "on the job" placement of students.

Miscellaneous

Forrest Bear reported good success with three-day workshops for teachers on hydraulic principle using university staff and manufacturer's representative.

Bear also reported the use of new plan sheets which include, in addition to the drawing, steps for construction, skills to be learned, and evaluation of completed projects. He mentioned the potential for using the 8 mm movie projectors for self-teaching of many skill activities as a supplement to demonstrations.

Curtis Weston discussed similar plan sheets he has developed and booklets for larger, more complex projects.

Research

Jim Hensel reported that a recent survey by the Vocational Center for Vocational and Technical Education indicated that 37 of 48 states considered agriculture mechanics as the area of agriculture education which will have the greatest need for teachers in the future.

Overseas Opportunities

Marvin Thompson discussed the conditions in Nigeria such as climate, crops, the people, language and culture, educational system, and possible future developments.

FFA Executive Secretaries: G. D. Coil, Illinois

The meeting was called to order by Donovan Coil, Executive Secretary from Illinois, who turned it over to the Acting Chairman, Gerald Barton, Executive Secretary from Iowa.

1. Mr. Edwards discussed the following problem areas with the group:

Honorary American Farmer Degrees for State Staff Personnel

It was suggested that a set of general guidelines be developed rather than a strict score card. Anyone with suggestions for guidelines should submit them to Mr. Coil or Mr. Barton.

Judges for Regional Contest Activities

The selections will be made in early August. The National FFA Foundation will pay the expenses to bring three state staff members to Chicago to judge the activities.

Central Regional Public Speaking Contest

The contest will be held Tuesday morning, October 11th, just prior to the National FFA Convention in Kansas City. A Kansas representative, Harold Shoaf, will serve as chairman of the contest if it is agreeable with the state supervisor. The states to provide judges are Iowa, Kansas, and Kentucky. This order is followed each year alphabetically by states in the region.

FFA Work Committee to Discuss FFA Problems and Make Recommendations to the National Board

This committee will meet in May prior to the July Board Meeting. Mr. Gerald Barton is one of our regional representatives.

National FFA Theme for 1966-67

"We Will Need Farmers in Your Future" has been tentatively selected. Other topics were discussed and the final selection will be made in the near future. The importance of an immediate decision on the theme was stressed. Theme selected is "Agriculture--Strength of America."

Girls in FFA

The general feeling was that the National Constitution should be changed to admit girls and that the decision should come from the National Board of Directors and Board of Student Officers.

Mr. Carnes discussed the following topics with the group:

National FFA Dues and the Subscription to the National FFA Magazine

Mr. Carnes explained the suggested procedures for collecting dues and reporting membership to the state and national levels. It was generally agreed that the form should be kept as simple as possible and

that in most states it would be desirable for the forms to be distributed by the state, rather than mailing them directly to the chapters from the National office.

3. Questions on FFA Awards were discussed by the group. The areas discussed:

   a. What new experimental and demonstration programs in agricultural occupations, other than farming, have been initiated this year? Each state representative present explained their new program. The group indicated their desire to have the $30,000 from the National FFA Foundation continued for the experimental programs again next year.

   b. What has been your experience with the new proficiency awards: ornamental horticulture and home improvement? Too early to say.

   c. What awards, if any, should be considered for achievement in post-high school programs? No conclusions.

4. Jim Stitzlein - National FFA Vice President

   Jim talked with the group about his desire to learn of state problems that need to be taken up with the board of student officers.

5. Philip Schmidt - National Safety Council, Chicago

   Mr. Schmidt explained the safety kit program and the National Safety Congress. The executive secretaries indicated that they would like to have the kits and other materials as early as possible in order that they can be supplied to the local chapters.

6. Most valuable part of the session each year is the exchange of materials and the discussion and explanation that followed.

   The FFA Executive Secretary wishes to express appreciation to the program planning committee for setting up a discussion group meeting for us. Many valuable ideas were exchanged.

Instructional Aids Specialists: Harold Crawford, Iowa

1. Review of Activities in the Various States

   a. Illinois

      (1) 1965-66 Report of the Professional Information Committee, AVA, distributed to state supervisory and teacher training staffs. Additional copies available to the states in request.

      (2) Catalog of materials from Illinois Center distributed including lists of subject matter units, lists of revised subject matter units, lists of programmed instruction units, lists of scrambled lesson programs, samples of overhead projection materials.

b. Indiana

(1) The audio-tutorial system used by Prof. S. N. Postlewait in the teaching of biology at Purdue was discussed for possible applications to agricultural education situations.

(2) Teaching units for young adult and adult farmer groups have been developed (listed in 1965-66 AVA catalog in Prof. Information).

(3) A source listing of commercial teaching aids for use in vo-ag has been developed (listed in 1965-66 AVA catalog of Prof. Information).

c. Nebraska

(1) Teaching units on farm management are being developed.

(2) Teaching units on principles of livestock production are in process of development.

d. Ohio

(1) Special committees of vo-ag teachers are working on various teaching units, with units on seeds and combined, now completed. Seven workshops for teachers are held using 4c funds, to develop these units.

e. Wisconsin

(1) "A Summary Report of Vo-Ag in Wisconsin" developed for information of guidance counselors was distributed.

(2) An outline of a forestry unit was distributed.

f. Iowa

(1) A list of agricultural engineering references has been compiled.

(2) Summaries of the off-farm agricultural occupation competency studies were distributed.

g. Minnesota

(1) A brief report on the development of an Upper Midwest Regional Curriculum Development Laboratory was presented.

2. Future Actions

a. Listings are needed of both literature being produced and literature recently produced to keep everyone up to date.

b. It was suggested that the committee's next meeting be held during the August Regional Research Conference, and that prior to that time the chairman check with committee members to determine progress in production of instructional materials.

c. Duane Blake re-elected Chairman for 1966-67.

State Supervisors: Ralph Guthrie, Illinois

Prior to the meeting, all head state supervisors in the Central Region were contacted for suggestions for possible items for discussion at this meeting. The suggestions received were duplicated prior to the meeting and distributed to those in attendance. After receiving these suggestions, others were added by members in attendance. A priority list was made and the following items were discussed:

1. Official business of Region V and VI and Central Region.

2. The future of FFA

   a. Girls in FFA

   b. Post-high school organizations

3. The teacher supply situation.

4. Guidelines in off-farm occupations.

5. What effect will recently enacted Veterans legislation have upon verteran's training in agriculture.

6. What has been the impact of the elementary-secondary education act on vocational agriculture?

Supervisors discussed each topic vigorously by raising questions and noting problems, but had few answers or solutions. The chairman gleaned the following conclusions from the discussion, but they may not represent the consensus of opinion of the group:

1. FFA

   a. Girls in FFA

      (1) Divided opinions

   b. Post-high school organization

      (1) Those enrolled in post-high school programs should form their own organization

2. Teacher Supply

   a. Very short at present

b. May improve in two years

(1) More enrolled in Freshman and Sophomore years in Ag-Ed

3. Off-Farm Agricultural Occupations

a. A wide variety of standards exist in different states

(1) May need to coordinate guidelines for OFAO

4. Veterans legislation

a. Little information available on this topic

5. Title I Elementary-Secondary Education Act

a. Competition with regular programs

b. Should supplement ag-ed

c. Some areas are using programs to assist departments

The state supervisors adjourned at 4:30 p.m. with 15 topics still remaining on the agenda that were not discussed.

Teacher-Educators: A. H. Krebs, Illinois

Moved by Peterson, seconded by Phipps, that Dr. Harold Byram represent the Region as its Vice President, and that Dr. Richard H. Wilson represent the Region as its alternate.

Dr. A. H. Krebs was asked to notify Dr. C. Hill regarding the officers selected at this session to represent the North Central Region.

Dr. Ray Agan was selected as the representative of the Agricultural Teacher Educators for the Region for the Advisory Board of the National Center--The Ohio State University.

Dr. Peterson moved and Bradley seconded a motion that the AATEA support the continuance of a Central Regional Conference (with 13 states included) for next year, 1967. Motion passed.

Dr. Byram asked whether the group should support both a conference such as this one and a Regional Research Conference. Dr. Bundy moved and Phipps seconded that a three-day conference for each, the General and the Research, be supported. Motion passed.

Dr. Phipps moved, Dr. Bundy seconded, that Regional Research Conference be planned for August 2, 3, 4, in Nebraska, in 1966. Motion passed.

Moved by Dr. Wilson, seconded by Dr. Roderick, that Dr. Byram recommend to the Executive Committees of the A.A.T.E.A. to study and then suggest a "best" method of organization region-wise. Motion passed.

Discussion of Current Topics

Jim Hensel reported that Gene Love, Agriculture Education Research Committee, was preparing the Report of Studies and that Mr. Hunsicker was able to secure the funds to finance the project.

Dr. Bender reported on the work of the AVA--Agriculture Education Committee headed by Dr. Ralph J. Woodin, entitled "The Recruitment of Teachers of Vocational Agriculture."

a. Suggestions for recruiting are to be sent to the leaders in each of the 13 states.

b. Certificates for teachers of teachers are being prepared.

c. Posters and brochures are also being prepared.

d. Recruitment exhibit is being planned for the National FFA Convention.

Dr. Krebs called for reports from representatives of the various states on the topics listed in the agenda. This agenda was prepared by Dr. Krebs from suggestions received through inquiry of state teacher educators.

Of special significance was the report that there will be a combined shortage of nearly 120 teachers of agriculture in the Central Region in 1966. No relief is in sight for 1967.

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OFFICE OF EDUCATION

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THE PRESENT OCCUPATIONAL STATUS OF OKLAHOMA HIGH SCHOOL VOCATIONAL AGRICULTURE GRADUATES OVER THE PAST FIVE YEAR PERIOD FROM 1959 TO 1963

BY EVERETT D. EDINGTON AND RONALD E. HILL

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Appendix 30

THE PRESENT OCCUPATIONAL STATUS OF OKLAHOMA HIGH SCHOOL VOCATIONAL AGRICULTURE GRADUATES OVER THE PAST FIVE YEAR PERIOD FROM 1959 TO 1963

By Everett D. Edington and Ronald E. Hill

INTRODUCTION

There are several reasons for having conducted such a study as this. Mostly they are involved with the sweeping sociological changes taking place in our country today. It is certainly no secret that America is experiencing a vast reorientation from a rural to an urbanized culture. Most notable is the disappearance of the on-the-farm farmer and the rapidly growing phase of agriculture known as "agribusiness".

This study helps to determine the extent to which graduates from Oklahoma High School Vocational Agriculture Departments are taking up farming as an occupation or are entering the rapidly expanding field of "agribusiness", and to what extent are these graduates using their vocational agricultural training.

This study involves one-third of all Oklahoma high schools having a program in Vocational Agriculture and includes every graduate in vocational agriculture of those high schools over the past five years--classes 1959, 1960, 1961, 1962, and 1963.

PROCEDURE

One-third of all Oklahoma high schools with Vocational Agriculture

departments were chosen on a random basis to be used in the study. From the total of 383 schools, 127 were selected. A questionnaire was constructed to obtain the following information: (1) what each graduate is now doing occupationally, (2) to what extent the student participated in F. F. A. work (the F. F. A. degree he attained), and (3) the location of each individual's home, on the farm or in town. The names of each school's graduates over the past five years were obtained from the State Office of Vocational Agriculture and typed on the questionnaire which was then sent to the teachers of Vocational Agriculture. Ninety-two per cent of the questionnaires were returned. This included 4631 high school graduates of Vocational Agriculture.

The students were studied on the basis of four different classifications: Vocational Agriculture District, Year of Graduation, F. F. A. Degree Attained, and Type of Student. This latter classification involved the location of the student's home and whether or not he or his family was farming any land. This category was further broken down into four subdivisions: Country Farmer, Town Farmer, Country Nonfarmer, and Town Nonfarmer.

A "Country Farmer" includes those graduates who had lived on a farm and farmed the land while a "Town Farmer" includes those who lived in town but were actively engaged in farming. A "Country Nonfarmer" graduate was one who had lived in a rural area but did not farm and the "Town Nonfarmer" includes those who lived in town and did not farm.

The five Vocational Agriculture Districts are designated: Northeast, Northwest, Southwest, Southeast, and Central. The five years include those graduating classes of 1959, 1960, 1961, 1962, and 1963,

and the three F. F. A. degrees are: Chapter Farmer, Junior Master Farmer, and American Farmer.

COMPARISONS BY YEAR OF GRADUATION

During this five year period a total of 14,078 students was graduated from Oklahoma's Vocational Agriculture Departments of which 4631 or 33.91 per cent are involved in this study. The data in Table I indicates there has been a steady increase in the number of graduates during this five year period.

TABLE I

NUMBER OF HIGH SCHOOL VOCATIONAL AGRICULTURE GRADUATES BY YEAR

YEAR	NUMBER[1]	GRADUATES IN THIS STUDY BY YEAR	PER CENT OF TOTAL BEING STUDIED
1959	2620	893	34.08
1960	2621	875	33.39
1961	2914	961	32.98
1962	2949	952	32.38
1963	2974	950	31.94
TOTALS	14078	4631	32.95

[1]Figures provided by the Oklahoma State Board for Vocational Education, Stillwater, Oklahoma.

The data in Table II show that the lowest per cent in farming is 16.24 per cent in 1959 and the highest, 20.32 per cent, in 1963. This would tend to indicate that the further out of school a graduate becomes, at least during the first five years, the less he is involved in farming. A possible reason for this is that a larger number of the graduates are entering the Armed Forces from three to five years after graduation (Table IV).

TABLE II

NUMBER OF GRADUATES IN FARMING BY YEAR OF GRADUATION

YEAR	TOTALS	NO	YES	PER CENT YES
1959	893	748	145	16.24
1960	875	711	164	18.74
1961	961	795	166	17.27
1962	952	779	173	18.17
1963	950	757	193	20.32
TOTALS	4631	3790	841	18.16

The data in Table III reveal that approximately the same number of graduates are enrolled in other areas of higher education as are in agriculture. The drop rate seems to be higher among those in the agricultural colleges ~~than the o~~ther colleges because of the decreasing smaller percentage enrolled in each year.

The data in Table IV indicate that as the graduates become older more of them leave the state. This is an indication that we need more attractive types of employment here to hold our young people in the state. The larger number in the Armed Forces in the 1959-1960-1961 years is probably due to the fact that young men are out of school a few years before being drafted.

TABLE III

NUMBER OF GRADUATES CONTINUING IN HIGHER EDUCATION BY YEAR OF GRADUATION

YEAR	TOTAL	AG. COLLEGE		OTHER COLLEGE		OTHER SPECIAL EDUCATION		TOTAL PER CENT IN EDUCATIONAL INSTITUTIONS
		YES	PER CENT YES	YES	PER CENT YES	YES	PER CENT YES	
1959	893	74	8.29	96	10.75	19	2.13	21.17
1960	875	80	9.14	101	11.54	30	3.43	24.11
1961	961	105	10.93	124	12.90	42	4.37	28.20
1962	952	146	15.34	156	16.39	63	6.62	38.35
1963	950	164	17.26	142	14.95	55	5.79	38.00
TOTALS	4631	569	12.29	619	13.37	209	4.51	30.17

TABLE IV

NUMBER OF GRADUATES IN MILITARY SERVICE AND STATE RESIDENCE BY YEAR OF GRADUATION

YEAR	IN ARMED FORCES		LOCATION OF RESIDENCE				
	NUMBER	PER CENT	UNKNOWN	OUT OF STATE	PER CENT OUT	IN STATE	PER CENT IN
1959	171	19.15	99	298	33.37	496	55.54
1960	175	20.00	77	267	30.51	531	60.68
1961	170	17.69	97	261	27.16	603	62.75
1962	133	13.97	97	213	22.37	642	67.44
1963	112	11.79	109	187	19.68	654	68.84
TOTALS	761	16.43	479	1226	26.47	2926	63.18

The data in Table V reveal that the longer a student is out of school the more likely he is to be employed in a non-agricultural occupation. There is also a definite decrease in the number of unemployed graduates as they get older. This may due to the fact that employers prefer to hire persons with a little more maturity.

TABLE V

NUMBER OF GRADUATES IN NON-AGRICULTURAL OCCUPATIONS, UNEMPLOYED AND DECEASED BY YEAR

YEAR	NONAG. OCCUPATION		UNEMPLOYED		DECEASED	
	NO.	PER CENT	NO.	PER CENT	NO.	PER CENT
1959	373	41.77	16	1.79	8	.90
1960	284	32.46	15	1.71	4	.46
1961	333	34.65	40	4.16	6	.62
1962	273	28.68	29	3.05	1	.11
1963	260	27.37	47	4.95	3	.32
TOTALS	1523	32.89	147	3.17	22	.48

TABLE VI

NUMBER OF GRADUATES IN OFF-FARM AGRICULTURAL OCCUPATIONS BY YEARS

YEAR	TOTAI	NUMBER	PER CENT
1959	893	119	13.33
1960	874	110	12.59
1961	961	84	8.74
1962	952	113	11.87
1963	950	79	8.33
TOTALS	4631	505	10.90

The number of graduates in off-farm agricultural occupations also shows a slight increase (Table VI) as the graduates grow older. This is probably due to the same factors as the increase in employment in the non-agricultural industries. The smaller percentage in off-farm agricultural occupations indicates that the type of program in the past in vocational agriculture has not been preparing graduates adequately for such occupations.

COMPARISON BY DISTRICT OF STATE

The data in Table VII reveal that the areas of Oklahoma with the largest and most profitable farms are also those that have the largest percentage of graduates returning to the farm. The eastern part of the state has smaller farmers and a larger number of the farm boys fail to find the units economically large enough for them to return. This may have tended to increase the unemployment in this area of the state.

TABLE VII

NUMBER OF GRADUATES IN FARMING BY DISTRICTS

DISTRICT	TOTALS	NUMBER	PER CENT
Northeast	1285	168	13.07
Northwest	679	174	25.63
Southwest	1188	260	21.89
Southeast	956	128	13.39
Central	523	111	21.22
TOTALS	4631	841	18.16

TABLE VIII

NUMBER OF GRADUATES CONTINUING IN HIGHER EDUCATION BY DISTRICTS

DISTRICTS	TOTAL	IN AG. COLLEGES		IN OTHER COLLEGES		IN SPECIAL EDUCATION		TOTAL PER CENT IN EDUCATIONAL INSTITUTIONS
		NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	
Northeast	1285	147	11.44	137	10.66	52	4.05	26.15
Northwest	679	110	16.20	140	20.62	49	7.22	44.04
Southwest	1188	166	13.97	203	17.09	50	4.21	35.27
Southeast	956	87	9.10	95	9.94	39	4.08	24.12
Central	523	59	11.28	44	8.41	19	3.63	23.32
TOTALS	4631	569	12.29	619	13.37	209	4.51	30.17

Table VIII indicates that slightly over thirty per cent of all the graduates are presently in some type of post high school education. The western and central parts of the state had a higher portion of those enrolled in Colleges of Agriculture while the western areas had a larger number in other types of colleges. The western areas also had a substantially larger number enrolled in higher education.

Table IX indicates that a larger number of graduates from the eastern portion of the state are in the Armed Forces than in the western area. This is also true with the number whose residence is out of Oklahoma. This is probably due to the smaller number of employment opportunities in eastern Oklahoma.

There was some difference as indicated by the data in Table X in those in non-agricultural occupations throughout the state, with the eastern portion of the state somewhat higher. The northeast was slightly higher in unemployment with the northwest next.

A study of occupations by districts quickly shows as indicated by the data in Table XI three districts, Southeast, Central, and Southwest, have slightly more employment in off-farm agricultural occupations than the Northwest and Northeast. The southeast district has the highest rate which is possibly due in part to the state's large concentration of commercially and recreationally valuable forests in that area. Exactly 25 per cent of all those employed agriculturally in that district are engaged in lumbering, forestry, or wildlife management.

TABLE IX

NUMBER OF GRADUATES IN MILITARY SERVICE AND STATE RESIDENCE BY DISTRICTS

DISTRICTS	TOTAL	IN ARMED FORCES		LOCATION OF RESIDENCE				
		NUMBER	PER CENT	UNKNOWN	OUT OF STATE	PER CENT OUT	IN STATE	PER CENT IN
Northeast	1285	240	18.68	162	384	29.88	739	57.51
Northwest	679	79	11.63	89	120	17.67	470	69.22
Southwest	1188	184	15.49	69	288	24.24	831	69.95
Southeast	956	174	18.20	92	329	34.41	535	55.96
Central	523	84	16.06	67	105	20.08	351	67.11
TOTALS	4631	761	16.43	479	1226	26.65	2926	63.18

TABLE X

NUMBER OF GRADUATES IN NONAGRICULTURAL OCCUPATIONS, UNEMPLOYED AND DECEASED BY DISTRICTS

DISTRICTS	TOTAL	NONAG. OCCUPATIONS		UNEMPLOYED		DECEASED	
		NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT
Northeast	1285	454	35.33	69	5.37	4	.31
Northwest	679	193	28.42	21	3.09	5	.74
Southwest	1188	351	29.55	17	1.43	4	.34
Southeast	956	327	34.21	25	2.62	4	.42
Central	523	198	37.86	15	2.87	5	.96
TOTALS	4631	1523	32.89	147	3.17	22	.48

TABLE XI

NUMBER OF GRADUATES IN OFF-FARM AGRICULTURAL OCCUPATIONS BY DISTRICTS

DISTRICT	TOTAL	YES	PER CENT YES
Northeast	1285	112	8.72
Northwest	679	65	9.57
Southwest	1188	135	11.36
Southeast	956	128	13.39
Central	523	65	12.43
TOTALS	4631	505	10.90

COMPARISON BY DEGREE OF ATTAINMENT IN THE F. F. A.

TABLE XII

OCCUPATIONAL STATUS ON BASIS OF F. F. A. DEGREE

STATUS OF STUDENT	F. F. A. DEGREE		
	CHAPTER FARMER	JUNIOR MASTER FARMER	AMERICAN FARMER
Farming	641	192	8
Ag. Occupation	474	30	1
Ag. College	356	207	6
Other College	535	82	2
Other Special Education	188	20	1
Armed Forces	742	18	1
Nonag. Occupation	1462	60	1
Unemployed	140	7	-
State Residence	2550	368	8
Deceased	22	-	-

From Table XII it can be seen that the consideration of the relationship between the present occupational status and the F. F. A. degree received requires an approach somewhat different from the other three points of investigation. To begin with, the percentages presented here must be understood in light of the fact that there is only a total of 455 who achieved the "Junior Master Farmer" degree and only ten who became "American Farmers." The most obvious indications of this category of the study are to be found with regard to the ten men who attained the "American Farmer" degree. In virtually every case, those attaining the Chapter Farmer degree were at the low end of the scale of those in various areas of agriculture.

TABLE XIII

NUMBER OF GRADUATES IN FARMING BY F. F. A. DEGREE

DEGREE	TOTALS	YES	PER CENT YES
Chapter	4166	641	15.39
Junior Master	455	192	42.20
American	10	8	80.00
TOTALS	4631	841	18.16

It is significant that eight of the ten "American Farmers" are engaged in farming as shown in Table XIII. Apparently they continue to farm while they are attending college. This is brought out by the fact that a large per cent of them are in higher education (Table XV). There is a direct relationship between the degree received and number engaged in farming.

TABLE XIV

RESIDENCE OF GRADUATES COMPARED

DEGREE	RESIDENCE				
	UNKNOWN	OUT OF STATE	PER CENT OUT	IN STATE	PER CENT IN
Chapter	444	1172	28.13	2550	61.21
Junior Master	35	52	11.43	368	80.88
American	-	2	20.00	8	80.00
TOTALS	479	1226	26.47	2926	63.18

Table XIV indicates that the vast majority of those receiving the two higher degrees are still state residents. These persons are more likely to be established in the business of farming and thus stay in Oklahoma where this business is located.

From Table XV it can be seen that the "American Farmers" had the highest per cent attending each of the three categories of higher educational institutions with those with the "Junior Master" degree next. The percentage of "Chapter Farmer" obtaining further education after high school is much smaller.

TABLE XV

NUMBER OF GRADUATES CONTINUING IN HIGHER EDUCATION BY F. F. A. DEGREEE

DEGREE	TOTAL	AG. COLLEGE		OTHER COLLEGE		SPECIAL EDUCATION		TOTAL PER CENT IN EDUCATIONAL INSTITUTIONS
		NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	
Chapter	4166	356	8.55	535	12.48	188	4.51	25.54
Junior Master	455	207	45.59	82	18.02	20	4.40	67.91
American	10	6	60.00	2	20.00	1	10.00	90.00
TOTALS	4631	569	12.29	619	13.37	209	4.53	30.19

TABLE XVI

NUMBER OF GRADUATES IN MILITARY SERVICE AND NONAGRICULTURAL OCCUPATIONS BY F. F. A. DEGREE

DEGREE	ARMED FORCES		NONAG. OCCUPATIONS	
	NUMBER	PER CENT	NUMBER	PER CENT
Chapter	742	17.81	1462	35.09
Junior Master	18	3.96	60	13.19
American	1	10.00	1	10.00
TOTALS	761	16.42	1523	32.89

The data in Table XVI show that only one "American Farmer" is in a nonagricultural occupation as well as only one in the Armed Forces. Here again those with the lower degree are more likely to be in the military service or in a non-agricultural occupation.

TABLE XVII

NUMBER OF GRADUATES UNEMPLOYED AND DECEASED BY F. F. A. DEGREE

DEGREE	UNEMPLOYED		DECEASED	
	NUMBER	PERCENT	NUMBER	PERCENT
Chapter	140	3.36	22	.53
Junior Master	7	1.54	-	-
American	-	-	-	-
TOTALS	147	3.17	22	.01

The data in Table XVII indicate that none of the "American Farmers" are unemployed or deceased and that only 1.54 per cent of the "Junior Master Farmers" are unemployed and none deceased. This may be due

to the fact that more of these graduates are in the business of farming or in higher education. The amount of unemployment for all vocational agriculture graduates is below that of the state average.

TABLE XVIII

NUMBER OF GRADUATES IN OFF-FARM AGRICULTURAL OCCUPATIONS BY F. F. A. DEGREE

DEGREE	TOTALS	NO	YES	PER CENT YES
Chapter	4166	3692	474	11.38
Junior Master	455	425	30	6.59
American	10	9	1	10.00
TOTALS	4631	4126	505	10.90

A comparison on the basis of F. F. A. degree achieved shows 11.38 per cent of the 4166 "Chapter Farmers" in off-farm agricultural occupations as shown in Table XVIII. On the other hand is the "Junior Master Farmer" group with only 6.59 per cent in off-farm agiricultural occupations. This is explainable by the fact that there are fewer Chapter Farmers in college or on the farm and thus more available for such employment.

From the study of these students on the basis of the type of residence they had, it would appear that the extent to which they were associated with farming greatly determines their future relationship with it occupationally.

COMPARISON OF GRADUATES BY TYPE OF STUDENT

From the data in Table XIX can be seen that the boys who have

come from a background of on-the-farm farming have the greatest percentage of those entering farming as an occupation. At the other extreme was the town non-farming category which had only 1.29 per cent involved in farming.

TABLE XIX

NUMBER OF GRADUATES IN FARMING BY TYPE OF STUDENT

TYPE OF STUDENT	TOTALS	YES	PER CENT YES
Country Farmer	2717	748	27.53
Town Farmer	341	49	14.37
Country Nonfarmer	420	16	3.81
Town Nonfarmer	1004	13	1.29
Unreported	149	15	10.07
TOTALS	4631	841	18.16

TABLE XX

RESIDENCE OF GRADUATES BY TYPE OF STUDENTS

TYPE OF STUDENT	RESIDENCE				
	UNKNOWN	OUT OF STATE	PER CENT OUT	IN STATE	PER CENT IN
Country Farmer	234	612	22.52	1871	68.86
Town Farmer	38	92	26.98	211	61.88
Country Nonfarmer	42	131	31.19	247	58.81
Town Nonfarmer	101	339	33.76	564	56.18
Unreported	64	52	34.90	33	22.15
TOTALS	479	1226	26.40	2926	63.18

From Table XX it can be see that the on-the-farm farming group had the highest percentage of those located within the state while the town non-farming group was at the opposite end of the scale. The non-farm youth are much more mobil and move out of Oklahoma at a greater rate than the farm youth.

TABLE XXI

NUMBER OF GRADUATES IN MILITARY SERVICE AN NONAGRICULTURAL OCCUPATIONS BY TYPE OF STUDENT

TYPE OF STUDENT	TOTAL	ARMED FORCES		NON AG. OCCUPATIONS	
		NUMBER	PER CENT	NUMBER	PER CENT
Country Farmer	2717	373	13.73	815	30.00
Town Farmer	341	60	17.60	103	30.21
Country Nonfarmer	420	79	18.81	165	39.39
Town Nonfarmer	1004	212	21.12	407	40.54
Unreported	149	37	24.83	33	22.15
TOTALS	4631	761	16.43	1523	32.89

Table XXI indicates that less of the farm youth are in the Armed Forces which is the same type of situation as was found with residence. The non-farm youth also had more employed in non-agricultural occupations. Table XXII also shows that the same group had the highest number unemployed. This is significant in determining the type of training program necessary to rehabilitate this group.

TABLE XXII

NUMBER OF GRADUATES UNEMPLOYED AND DECEASED BY TYPE OF STUDENT

TYPE OF STUDENT	TOTAL	UNEMPLOYED		DECEASED	
		NUMBER	PER CENT	NUMBER	PER CENT
Country Farmer	2717	58	2.13	11	.40
Town Farmer	341	2	.59	3	.88
Country Nonfarmer	420	33	7.86	3	.71
Town Nonfarmer	1004	49	4.88	3	.30
Unreported	149	5	3.36	2	1.34
TOTALS	4631	147	3.71	22	.48

As can be seen from Table XXIII the farm students rate highest in those attending institutions of higher education. The group with the poorest overall showing was the country non-farm group. It had the lowest total percentage of those seeking education beyond high school as well as the highest level of those unemployed.

TABLE XXIII

NUMBER OF GRADUATES IN HIGHER EDUCATION BY TYPE OF STUDENT

TYPE OF STUDENT	TOTAL	AG. COLLEGE		OTHER COLLEGE		OTHER SPECIAL EDUCATION		TOTAL PER CENT IN EDUCATIONAL INSTITUTIONS
		NUMBER	PER CENT	NUMBER	PER CENT	NUMBER	PER CENT	
Country Farmer	2717	413	15.20	358	13.18	113	4.16	32.54
Town Farmer	341	56	16.42	59	17.30	35	10.26	43.89
Country Nonfarmer	420	28	16.67	43	10.24	20	4.76	31.67
Town Nonfarmer	1004	50	4.98	139	13.84	38	3.78	22.60
Unreported	149	22	14.77	20	13.42	3	2.01	30.20
TOTALS	4631	569	12.29	619	13.37	209	4.51	30.17

TABLE XXIV

GRADUATES IN OFF-FARM AGRICULTURAL OCCUPATIONS BY TYPE OF STUDENT

TYPE OF STUDENT	TOTAL	NUMBER	PER CENT
Country Farmer	2717	321	11.82
Town Farmer	341	29	8.80
Country Nonfarmer	420	44	10.24
Town Nonfarmer	1004	105	10.46
Unreported	149	6	-
TOTALS	4631	505	10.90

As revealed by the data in Table XXIV there is very little difference in the percentage of those employed in off-farm agricultural occupations among the different type of students. However the "town farmer" group is slightly lower.

PLACEMENT IN OFF-FARM AGRICULTURAL OCCUPATIONS

Of the 4631 students involved, 505 or 10.9 per cent were listed as being engaged in some off-farm agricultural occupation on either a part time or full scale basis. Included with the questionnaire was a list (see Appendix) of sixty-three suggested occupations for identifying the student's type of employment in "agribusiness." Table XXV shows the distribution of the 505 graduates among the many areas of off-farm agricultural occupations.

TABLE XXV

THE DISTRIBUTION AND NUMBER OF GRADUATES IN THE MAJOR AREAS OF OFF-FARM AGRICULTURAL OCCUPATIONS

AREA	NUMBER	AREA	NUMBER
Animal Science	95	Farm Mechanics	154
Plant Science	148	Ag. Services	24
Soil Science	18	Ag. Laborers	66

Eight of the occupational choices were checked twenty or more times. These are the following: feed and hammar mill employeee, farm machinery mechanic, welder, general repairman, blacksmith, farm implement agency employee, farm hardware/equipment store employee, farm "co-op" employee, lumberman/sawmill employee, and farm laborer.

All but five of those listed as agricultural laborers went only as far as the "Chapter Farmer" degree in F. F. A. work with the majority of them being located in the Southwest district--possibly due to the migrant type labor employed in that area. This majority also had an on-the-farm background.

SUMMARY TABLE OF RESULTS

The data in Table XXVI are the complete results of this study of 4631 graduates with regard to their present occupational status, location of residence (in state or out of state) and those deceased. This table summarizes the findings for the total group of students reported in this study.

TABLE XXVI

OCCUPATIONAL STATUS OF GRADUATES OF HIGH SCHOOL VOCATIONAL AGRICULTURE IN OKLAHOMA FROM 1959 - 1963

STATUS OF STUDENTS	NUMBER		PER CENT YES[3]
	NO	YES	
Farming	3790	841	18.16
Ag. Occupation	4126	505	10.90
Ag. College	4062	569	12.29
Other College	4012	619	13.37
Other Special Education	4422	209	4.51
Armed Forces	3870	761	16.43
Nonag. Occupation	3108	1523	32.89
Unemployed	4484	147	3.17
State Residence[4]	1226	2926	63.18
Deceased	4608	22	.48

SUMMARY AND CONCLUSIONS

This study involves one-third or 127 of the 383 high schools in Oklahoma with vocational agriculture departments. Every graduate over the past five years, classes 1959, 1960, 1961, 1962, and 1963, is included.

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[3]This does not add to 100 per cent because many students are in more than one category.

[4]Those "Out of State" are represented in the "No" column and those "In State" in the "Yes" column. Also all those listed as being in the Armed Forces whose residential location was not indicated, were placed in the "Out of State" group.

A questionnaire was mailed to each vocational agriculture instructor of those schools to determine the following information: what each graduate is now doing occupationally, when each individual was graduated, to what extent the student participated in F. F. A. work (the F. F. A. degree he attained), and the location of the graduate's home--on the farm proper or in town. Ninety-two per cent of the questionnaire were returned providing a study of a total of 4631 graduates.

It was found that 18.16 per cent of the graduates are farming with 10.90 per cent in off-farm agricultural occupations and 12.29 enrolled in agricultural colleges.

There is a point of possible concern with regard to those remaining or leaving the state following graduation. Inasmuch as a boy, listed as serving in the Armed Forces and whose residential location was not marked, was placed in the "out of state" group, the 36.82 per cent given as living out of state might be reduced somewhat in significance. Nevertheless, it is rather apparent that a minimum of 25 per cent are leaving the state for employment elsewhere during the first few years following high school graduation.

The Northwest district appears to be the district with the largest percentage of graduates farming and in continuing their education. This is very likely due to the larger farms and greater incomes for farmers in Western Oklahoma when compared to the Eastern half of the State.

The per cent of those in farming in 1963, 20.32 per cent, drops to 16.24 per cent for those graduating in 1959 which indicates that some of the graduates stay at home on the farm for a few years before entering the Armed Forces or seeking employment elsewhere. This is further illustrated by the fact that as the graduates became older a larger

number of them were found in off-farm agricultural occupations.

The higher the F. F. A. degree achieved, the greater chance there is of the graduate entering farming as well as a post high school educational institution. Also it seems to be as well that the higher the F. F. A. degree achieved, the more likely a graduate is to remain a state resident and be employed.

The type of residence background a graduate had is apparently quite determinative of his future agricultural relationship. Those with a background of "country farm" had by far the highest percentage not only of those entering farming but those in off-farm agricultural occupations as well. Opposite to this was the group with the "town nonfarming" background. The "country nonfarm" category was the weakest group agriculturally.

This study indicates that with 29 per cent of the graduates of vocational agriculture either farming or employed in off-farm agricultural occupations and 12 per cent enrolled in colleges of agriculture, with the total being 41 per cent, that our present type of program is serving the needs of this group. It also indicates that we are not meeting the needs of a larger group of the students. Our present day programs in vocational education for the rural youth need to be strengthened in order that they may be better trained. More studies need to be undertaken in the areas of off-farm agricultural occupations to determine the needs for persons employed in these occupations.

Different types of programs of vocational agriculture are needed in the various areas of the state to meet the specific needs of the individuals concerned. Many of these are due to economical and geographical differences in the areas.

There is also an indication of a special need for the rural student without the farm background. Our present day programs have failed to train him in occupations which are available.

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APPENDIX

LIST OF OFF-FARM AGRICULTURAL OCCUPATIONS

A. Farm Service Occupations
1. Artificial Inseminator
2. Auctioneer
3. Butcherer
4. Crop duster, sprayer
5. Feed and hammer mill employee
6. Field supervisor (A. S. C.)
7. County agent

B. Farm Machinery Sales & Service Occupations
8. Farm machinery mechanic
9. Welder, general repairman, blacksmith
10. Farm implement agency employee

C. Farm Supplies & Equipment Occupations
11. Farm Hardware/equipment store employee
12. Farm "co-op" employee

D. Livestock Industry Occupations
13. Apiary inspector
14. Dairy plant employee
15. Egg grader, inspector
16. Levestock auction employee
17. Disease control worker
18. Milk sanitarian/inspector
19. Poultry and egg broker
20. Packing plant employee
21. Poultry processing plant employee
22. Stockyard employee
23. Veterinarian

E. Crops, Forestry & Soil Occupations
24. Field crop, fruit, vegetable inspector
25. Fruit and vegetable produce broker
26. Grain elevator employee
27. Irrigation management employee
28. Lumberman/sawmill employee
29. Soil conservationist/specialist
30. City/state/national forest employee
31. Fertilizer expert/salesman

F. Ornamental Horticulture, Wildlife & Recreation Occupations
32. Florist
33. Game management employee
34. Garden center employee
35. Golf center employee
36. Greenhouse employee
37. Grounds maintenance employee
38. Landscape gardener
39. Nursery employee
40. Tree pruner, surgeon

G. Professional Agricultural Occupations
41. Agricultural chemist
42. Agricultural economist
43. Agricultural teacher/educator
44. Agricultural engineer
45. Agricultural journalist and communications
46. Agronomist
47. Animal scientist
48. Bacteriologist
49. Botanist
50. Entomologist
51. Plant pathologist
52. Rural sociologist
53. Zoologist
54. Insecticide/ pesticide expert/salesman
55. Agricultural insurance agent
56. Agricultural banker
57. Farm, ranch worker/laborer

H. Occupations Suggested By The Questionees:
58. Rural Electric Co-op
59. Cotton gin employee
60. Veterinarian helper
61. Agricultural truck operator
62. Miscellaneous
63. Custom Combine fleet operator

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MEASURING CREATIVE ABILITIES

in

JUNIOR HIGH SCHOOL INDUSTRIAL ARTS

by

Jerome Moss, Jr.
Department of Industrial Education
University of Minnesota

7 1965

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Moss, Jerome Jr.

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Minnesota Tests of Creative Thinking

The principal purpose of this study was to estimate the concurrent validity of the pencil and paper "Minnesota Tests of Creative Thinking, Abbreviated Form VII" for identifying the creative abilities of eighth-grade students in industrial arts classes. Concomitant purposes were to investigate the relationships of creative abilities and (1) intelligence, and (2) school achievement. A definition of relative creative abilities in the industrial arts and guidelines for their measurement were developed and submitted to a small purposes sample of educational psychologists and industrial arts teachers to determine their acceptability. A procedure was selected for applying this to secure criterion measures of native abilities. Three pairs of industrial arts teachers were trained to rate a sample of 95 eighth-grade students. The "Minnesota Tests of Creative Thinking, Abbreviated Form VII" were administered. Verbal and non-verbal IQ tests, five standardized achievement tests, and eight sets of teachers' grades were analyzed, along with peer ratings. The abilities presented and measured by the Minnesota tests are inadequate to account for the creative output, but the test measures components not measured in the typical intelligence test. The fairly high relationship between substantive creativity and IQ appears to indicate that some of the convergent thinking abilities do influence the production of unusual and useful ideas. (EL)

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[illegible]

This study [illegible] supported by two grants (1959-61 and 1961-63) from the Graduate School, University of Minnesota. The funds enabled the investigator to employ, in a small amount, the assistantships of his three colleagues at the University, David Bjerstedt, Michael Poole, and Diana Redding.

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Chapter I

INTRODUCTION

Statement of the Problem

There are a multitude of definitions for "creativity", yet each implies the eventual production of something new, original, or clever in response to a perceived problem. Thus, the desirability of nurturing creativity in all youth becomes increasingly evident with the growth, in number and complexity, of our social, economic, and technical problems.

Most industrial arts educators recognize that the development of creativity would be an important responsibility of the school should it prove possible. They believe that the tools, materials, and problem-solving opportunities inherent in a laboratory environment might provide an excellent setting in which to enhance creativity. But the research necessary to determine the feasibility of improving creative abilities is dependent upon clarification of the conceptual confusion surrounding the term and the development of satisfactory instruments to measure the desired outcomes. Until these prerequisites are satisfied, "teaching for creativity" will remain a catchphrase for an indeterminate educational objective.

Assuming agreement can be reached on a definition of creativity, suitable criterion measures are difficult to obtain, especially among school age youth. For example, post-facto teacher's ratings typically yield crude measures, they are subject to considerable bias and contamination unless preceded by very careful training, and they require extended observation periods before reliable measures can be acquired. Consequently, the difficulties involved preclude their widespread use. Performance tests are also impractical to utilize in most situations. They consume large portions of time to sample limited amounts of behavior, and they are difficult to score objectively. Therefore, as in the case of intelligence (IQ), researchers in creativity have devoted their major efforts to

the development of pencil and paper tests. These have the potential for securing reliable measures with relative ease of administration and scoring, and they may be standardized on large populations. Unfortunately, their present usefulness is severely hampered by a lack of convincing evidence about their concurrent validity. As Thorndike puts it:

> The extension of our appraisal instruments to aspects of divergent and productive thinking is an exciting, promising field for investigation....In the meantime, we will be well advised to use with a great deal of tentativeness the term "creativity" as applied to any or all of the tests, or "creative" as applied to children selected on the basis of them. (37)

The principle purpose of this study was to estimate the concurrent validity of the pencil and paper Minnesota Tests of Creative Thinking, Abbreviated Form VIII, for identifying the creative abilities of eighth grade students in industrial arts classes. Concomitant purposes were to investigate the relationships between creative abilities and (a) intelligence, and (b) school achievement of eighth grade industrial arts students.

Background of the Problem

Most current paper and pencil tests of creativity derive their theoretical base, either directly or with some variation, from the factor analytic studies of Guilford and his associates (13, 14, 16). Guilford hypothesized that creative behavior is dependent upon five principal primary abilities. "Creativity represents patterns of primary abilities, patterns which can vary with different spheres of creative activity. Each primary ability is a variable along which individuals differ in a continuous manner" (13). The primary abilities are purported to be: (a) sensitivity to problems, (b) fluency of ideas (associational and ideational), (c) flexibility of ideas (adaptive and spontaneous), (d) originality (uncommon ideas, clever responses, remote associations), and (e) redefinition. Further, in his analysis of the structure of the human intellect, Guilford (15) claimed that many of these primary abilities are involved in the intellectual operation of "divergent" thinking. He therefore stated that, in our search for creative talent,

"we must look well beyond the boundaries of IQ", which typically requires stable, predictable responses based largely upon the operation of "convergent" thinking. Consequently, makers of creativity tests are want to indicate the construct validity of their instruments by comparing creativity scores with intelligence test scores; a positive but low correlation is expected in the general population. Also, since learning itself is a reorganization of behavior that should involve the production of novelty as well as remembrance of content, test makers are hopeful that creativity scores will be positively related to indices of school achievement.

In the main, the theoretically anticipated results have been obtained. Employing a variety of pencil and paper tests to measure Guilford's primary abilities, and a sample whose mean IQ was 132, Getzels and Jackson (12) found a small positive correlation between IQ and creativity test scores. Several other investigators (7,9, 21,24) have correlated ratings of observed creative behavior and intelligence test scores using groups with above average intelligence; they report insignificant coefficients. On the other hand, Shaycroft (29) found a coefficient as high as .67 between IQ and creativity test scores when the sample included a wide range of intelligence. The evidence appears to indicate that at high levels of intelligence there is great diversity of creativity, but as intelligence decreases so does the scatter for creativity.

Comparisons between "high creativity" and "high intelligence" groups (based on test scores) with school achievement as the criterion (32,34) tend to show no significant differences between the means of school achievement scores. However, since intelligence and creativity in both groups were well above average, it is impossible to generalize the findings to normal school populations. One can only conclude that in a group with superior intelligence and creativity neither measure is likely to predict achievement very accurately.

The concurrent validity of a variety of pencil and paper creativity tests has been investigated. While two studies (36) found a battery capable of distinguishing between the most and the least creative engineers and research workers, determined by supervisor ratings, the remainder of the research reviewed (9,20 24,36) failed to find significant corre-

lations between creativity test scores and criterion measures derived from observed behavior. Thus, while the pencil and paper tests used in the studies reported above did not yield results inconsistent with the Guilford theory of primary creative abilities, they failed to show a useful degree of concurrent validity. This conclusion provides the general setting in which similar types of evidence for the Minnesota Tests of Creative Thinking may be examined.

The several pencil and paper Minnesota Tests of Creative Thinking (MTCT), developed by E. P. Torrance, purport to measure many of Guilford's primary abilities with complex tasks, using non-specialized content simplified for use at all educational levels. The techniques for administration and scoring are probably more practical and reliable than other available creativity tests.

Various batteries of the MTCT have been used by different researchers to investigate the relationship between creativity measures and IQ. Torrance and his associates (40), using elementary, secondary, and graduate students with above average intelligence and creativity, reported correlation coefficients from eight studies that were little higher than chance. When populations of fifth grade and junior high school students with average intelligence were employed (1,24), the coefficients between MTCT scores and IQ were only slightly greater, ranging from .07 - .43 in the two studies.

Six of eight partial replications of the Getzels and Jackson study found that there were no differences in school achievement between "high creativity" (top 20% in summated MTCT scores, but below the top 20% in IQ) and "high intelligence" (top 20% in IQ, but below the top 20% in summated creativity scores) groups (40). Yammoto (48), in a follow-up of one of the eight studies, showed that when the effects of intelligence (in an above average IQ sample) were fixed, "high creative" high school students achieved significantly more than "low creative" students, thereby demonstrating a positive relationship between creativity scores and school achievement. Ahrens (1) reported correlation coefficients of .10 - .38 between measures from a MTCT battery and several standardized achievement tests in a "typical" fifth grade population; the relationship

between IQ and achievement ($r = .44 - .76$) appeared to decrease as the creativity scores of students increased.

Only scattered evidence is available which bears directly upon the concurrent validity of the various batteries of the Minnesota Tests of Creative Thinking. Wallace (45) studied sixty-one salesmen with the top one-third and lowest one-third sales record from several departments of a large retail store. He found significant differences in MTCT scores between (a) women in departments which called for the most and the least customer service, and (b) women with top one-third and bottom one-third sales record in the total group. Women with the poorest sales record in the department calling for the least customer service had the lowest MTCT scores. Summers (30) showed that there was a significant difference in mean total MTCT scores between ten college students nominated by the faculty as "most creative" in industrial design and twelve students named "least creative". A MTCT battery was administered to 459 secondary school students (40). Raw test scores measuring fluency, flexibility, and inventiveness were correlated with the number of times students were nominated by their peers as (a) producing the most ideas, (b) being first to find a new way of meeting problems, and (c) inventing and developing the most new ideas, gadgets, and such. The highest coefficients were only around .24. Torrance (40)also reported a validity study in which observers recorded the number of ideas pupils initiated in a given amount of time for demonstrating scientific principles with a box of science toys. A positive "linear trend" was noted between five ~~intervals~~ class intervals of creativity based on MTCT total scores and the mean number of ideas initiated by pupils within each interval.

Finally, it should be noted that at least five studies (2,11,23,30,44) have shown it is possible to increase scores on pencil and paper creativity tests, including the MTCT, by deliberate educational treatments.

In summary, the Minnesota Tests of Creative Thinking (MTCT) appear to have at least as much promise for usefulness in the industrial arts as any other available creativity

tests. In addition to their applicability to a wide age range of students and their greater administrative and scoring advantages, the construct validity of the MTCT is equivalent to other instruments. That is, MTCT scores show little relationship to IQ and appear to be as well related to school achievement as other paper and pencil creativity tests. School achievement, of course, is the result of a combination of many student traits, and the contribution of each trait is undoubtedly influenced by the nature of the criterion used to assess achievement.

The evidence bearing on the concurrent validity of the MTCT is also as encouraging, and as questionable at present, as that of other tests. The MTCT batteries are, under certain situations, capable of discriminating between groups with large differences in demonstrated creative abilities. Are they capable, however, of making fine discriminations among students in an industrial arts environment?

Perhaps one of the reasons why the MTCT batteries have not shown greater concurrent validity is the unfortunate use of the total score as a critical measure of creativity. Guilford hypothesized that creative behavior involves patterns of primary abilities, these patterns varying with the nature of the creative activity. Summing abilities is not consistent with the theory. Consequently, a multiple regression approach to the prediction of criterion measures may prove more fruitful.

Personal observation indicates that individuals are usually more creative in certain types of situations than in others. Guilford's model of the intellect takes this phenomenon into account by implying that mental products are the result of an interaction between thought processes, or operations, such as convergent and divergent thinking, and thought materials, such as figural, behavioral, and symbolic content. The measurement of primary abilities with instruments which utilize non-specialized content may not be capable of satisfactorily predicting creative behavior in situations requiring the use of specialized content. The presence of primary abilities conducive to creativity may not be a sufficient condition for creative achievement.

Ausubel (6) expressed the same concern when he argued that creative behavior in

a real-life situation requires more than the general (primary) "content-free" creative abilities measured by most pencil and paper creativity tests. The former entails a substantive capacity in a particular field of human endeavor, as well as a capacity for critical self-appraisal, that is not considered by "general" tests. Ausubel concludes that, although a certain minimal degree of the general creative abilities is probably necessary for the actualization of creative potential, above the minimum amount general creative abilities are not co-extensive with substantive creativity.

Thus, while this study estimated the concurrent validity of the Minnesota Tests of Creative Thinking, Abbreviated Form VII, in particular, in general, it investigated the capacity of relatively content-free tests of so-called primary creative abilities to measure the actual creative output of students in a particular substantive area.

Objectives of the Study

The primary purpose of the study was to estimate the concurrent validity of the Minnesota Tests of Creative Thinking, Abbreviated Form VII, for identifying the creative abilities of eighth grade industrial arts students. Concomitant purposes were to investigate the relationships between creative abilities and (a) intelligence, and (b) school achievement.

Since an investigation of relationships in such a broad, and as yet nebulous, problem area implies a degree of exploratory activities and the probable application of a host of statistical tests, a list of specific hypotheses has not been presented. Rather, the purposes have been analyzed into their logical elements and are listed below as important questions to be answered by the study. The questions posed are intended to provide a framework which (a) reflects prior related research and theory, (b) supplies intermediate, sequential goals for the study, (c) suggests appropriate study procedures, and (d) furnishes an organization for presenting conclusions.

1. What definition of "creativity" is (a) compatible with theory and research, (b) capable of operational interpretation in industrial arts classes, and (c) acceptable to

selected industrial arts educators?

2. What measurement procedure will yield reliable criterion scores of the relative creative abilities of eighth grade industrial arts students?

3. Do the criterion measures derived by the above procedure have satisfactory construct validity as shown by a comparison with such intermediate indices of creativity as post-facto teacher and peer ratings?

4. What is the extent of the relationship between the criterion measures and each of the measures yielded by the Minnesota Tests of Creative Thinking, Abbreviated Form VII?

5. To what extent can combinations of measures yielded by the MTCT, Abbr. Form VII, predict criterion measures? What are these combinations?

6. What are the degrees of linear relationship between IQ and (a) criterion measures, (b) measures yielded by the MTCT, Abbr. Form VII, and (c) post-facto teacher ratings of creativity?

7. What are the degrees of linear relationship between school achievement, as measured by standardized tests and by teachers' grades, and (a) IQ, and (b) creative abilities, as measured by criterion scores, MTCT, Abbr. Form VII scores, and post-facto teacher ratings?

Chronology of Procedures

The nature and sequence of the major activities undertaken during the conduct of the study have been dictated by the objectives of the research. In order to facilitate possible replication of the study, and to place subsequent chapters of the report in proper perspective, Table 1 presents an overview of the principal activities of the study and the approximate time consumed by each.

Activities numbered 1 - 4 in Table 1 are reported in Chapter II. Chapter III covers activities numbered 5 - 8. Chapter IV, "Findings", reports the results of activities 9 and 10. Activity 11, interpretation of findings, is reported primarily in Chapter V.

Table 1.

SCHEDULE OF MAJOR ACTIVITIES IN THE CONDUCT OF THE STUDY

Time Schedule	ACTIVITY
Sept. 1, 1963	1. Reviewing the literature and conducting exploratory interviews to develop a definition of and guidelines for identifying the creative abilities of industrial arts students.
Nov. 1, 1963	
Jan. 1, 1964	2. Surveying a purposive sample of industrial arts teacher educators and other experts to determine the acceptability of the definition and guidelines.
Mar. 1, 1964	
May 1, 1964	3. Selecting a procedure for securing criterion measures of creativity consistent with the definition; developing techniques and forms for collecting criterion measures; trying out the data collection procedure. 4. Choosing an appropriate MTGF test battery.
July 1, 1964	5. Selecting teachers to collect criterion measures; making administrative arrangements for data collection; revising techniques and forms for collecting criterion measures.
Sept. 1, 1964	6. Training selected teachers in the techniques of collecting criterion measures.
Nov. 1, 1964	7. Supervising teachers as they obtain criterion measures; retraining teachers; collecting socio-economic, aptitude, and achievement data on students; administering MTCT; securing post-facto teacher and peer ratings of creativity.
Jan. 1, 1965	
	8. Conducting a post-observation session for teachers who collected criterion measures.
Mar. 1, 1965	9. Scoring MTCT and other rating scales; computing reliabilities and distributions of measures; preparing data for key punching.
May 1, 1965	
	10. Key punching, machine computation, and hand computation.
July 1, 1965	11. Interpreting findings and writing the report.
Aug. 1, 1965	

Chapter II

TWO OPERATIONAL DEFINITIONS OF CREATIVITY

Measuring Creativity in the Industrial Arts

The first requirement of the study was to define creativity in a manner that was (a) compatible with theory and research, (b) capable of operational interpretation in industrial arts classes, and (c) acceptable to knowledgable and interested industrial arts educators. Such a definition must adequately describe the type of behavior industrial arts educators are willing to call creative and to foster; it must provide guidelines for obtaining criterion measures of that behavior such that the measures can be used to validate the results of other more practical techniques which purport to measure the same behavior.

In order to develop such a definition and measurement guidelines it was necessary to recognize at least five of the theoretical and practical issues involved and to take a position on each. The alternatives selected determined the bases upon which the formalized definition rests.

The first issue involved the selection of an approach to be taken to the definition of creativity. As Rhodes (27) formulates it, one can perceive creativity from at least four vantage points: the person of the creator, the press where creation takes place, the process of creation, or the product created. The acceptance of one of these approaches largely determines both the definition of and criteria for creativity. In this study the product approach has been accepted. It was accepted, first, because the school as a social institution must justify its concern with creativity in term of outcome. Second, while it is the role of educators to learn to manipulate the causative variables of person, process, and press, it is for the ultimate effect of enhancing substantive creativity. It is, therefore, the product which requires initial definition and measurement; the further study of causative and intervening variables must await this prerequisite or lose touch with reality. Finally, the empirical nature of the

investigation necessitated selecting the criterion which could be observed and measured most directly and objectively. "When such products are judged to be 'creative', the behavior which produced them can be called creative. The individuals who produced them can also be considered creative" (40,p.4041)The 1959 Committee report on Criteria of Creativity (33), Ausubel (6), and Strang (32) are among those who agree that the products of creative behavior should be the first object of study.

The second issue was whether creativity should be considered a possession of only the most exceptional individuals, or whether it is the property of all. In the former instance, creative achievement is limited to discovery that is unique in terms of human experience. In the latter case, creativity can be considered to exist on a continium extending from a negligible to a high degree of achievement. It has been assumed in this study that all persons possess some amount of creativity, just as they possess some degree of most mental abilities. Besides, there would have been little point in conducting a <u>concurrent</u> validity study in the industrial arts at the eighth grade level if the criterion measure required only culturally or interculturally unique products.

Although unusualness or originality is fully accepted as a characteristic of creativity, the third issue was to determine the standards for unusualness. The previous paragraph indicated that a creative manifestation need not be limited to the culturally unique. At the other extreme, should unusualness include those products which are unique only to the individual? To take the latter position would make creativity indistinguishable from problem-solving, and even learning, since the definitions of problem-solving and learning require non-habitual responses from the individual. In addition, measurement would present an almost insurmountable task. Consequently, the study has defined unusualness in terms of peer group behavior. This permitted considering unusualness a variable quality (thus conforming to the decision to treat creativity as a continuous variable) and provided some possibility for measuring it in the school situation.

The fourth issue was whether or not the concept of creativity should include a qualitative component. A great many authors have concluded that to be creative the

product must be accepted as tenable, useful or satisfying to some group in time (3, 5, 10, 17, 18, 28, 31). Even Torrance's tests "have required that (original responses) be to some extent adaptive to reality" (p.42), and his detailed description of the creative process includes a step for "critically analyzing these solutions for advantages and disadvantages" (p.40). The problem seems more practical than theoretical since it revolves around the difficulty of making adequate qualitative judgments. Yet, in the industry which industrial arts is attempting to depict, these judgments are being made constantly, just as they are being made by the U. S. Patent Office. In this study it has been presumed that the school is not justified in encouraging difference just for the sake of difference, but that the development of substantive creativity connotes constructive behavior--the development of unusual ideas inherent in product-solutions which satisfy problems initiated by or posed to individuals. Because the definition formulated is applicable to a specific subject matter field, and because of the "practical" nature of that field, measurement of the qualitative aspects of products was considered feasible. As Guilford notes, for those who deal in practical affairs, "creative work that is to be realistic or accepted must be done under some degree of evaluative restraint" (p.13).

The fifth and final issue was whether to consider creativity a general ability or whether to think of it as varying within the individual dependent upon the nature of the content being dealt with. This question has already been considered in Chapter I; it is one of the broad problems being investigated indirectly by the study. Thus, the definition developed for use must provide for several criterion measures, each indicative of performance with a different type of content, so that their interrelationships may be determined.

In light of the above requirements, issues, and decisions the following "Theoretical Model for Identifying the Relative Creative Abilities of Industrial Arts Students" was developed.[1]

---

[1]The "Theoretical Model...", and a further interpretation of it, also appears in an article by Moss, J. and Bjorkquist, D. C., "What is Creativity in Industrial Arts", The Journal of Industrial Arts Education, 24:24-27 +, Jan.-Feb. 1965.

WHEN A STUDENT organizes his past experience in such a manner as to reach an unusual and useful solution to a perceived problem, he has formulated a creative idea. When the idea is expressed in an observable, overt form, he has developed a creative product. A student's creative ability is evidenced by a) the relative degree of unusualness and usefulness of each of his products, and b) the total number of his creative products.

The following material elaborates upon this general definition and provides guidelines for identifying and rating the creative abilities of industrial arts students.

I. Identifying and Rating a Creative Product

A. Product. An idea or combination of ideas expressed or manifested in any overt, observable form as a solution to a non-factual type problem is a product. Products may take many forms in the industrial arts, such as verbal (oral and written) communications, physical acts, two-dimensional representations, and three-dimensional objects.

B. Unusualness. To be creative a product must possess some degree of unusualness. The quality of unusualness may, theoretically, be measured in terms of probability of occurrence; the less the probability of its occurrence, the more unusual the product. The specific probability of occurrence of a particular student's product must be based on the actual or anticipated varieties of products of a peer group having similar experiential background. Thus, to rate the degree of unusualness of a student's product, it is theoretically necessary to a) be familiar with the frequency of occurrence of varieties of peer products, b) to select some probability level to represent the norm for "common" products, and c) to possess means for translating probability deviations from the norm into ratings of unusualness.

C. Usefulness. While some degree of unusualness is a necessary requirement for creative products, it is not a sufficient condition. To be creative, an industrial arts student's product must also satisfy the minimal principal requirements of the problem situation; to some degree it must "work" or be potentially "workable." Completely ineffective, irrelevant solutions to teacher-imposed or student-initiated problems are not creative.

Like the quality of unusualness, usefulness is also relative. It is theoretically possible to establish a scale of product usefulness ranging from complete inadequacy to fulfill any of the requirements of the problem situation to products which far exceed the safety, economic, aesthetic, functional and other requisites of an acceptable solution. For example, one point on such a scale might represent the value of the commonly advocated classroom/laboratory practice or the "typical" teacher solution. Care must be taken in evaluating each product to distinguish between the usefulness of the idea inherent in the product and the quality of the manipulative or verbal skill evidenced in expressing the idea as a product; it is the former characteristic that must be rated and not the latter. Identification of the problem, awareness of the actual or potential value of the product-solution, and familiarity with the usefulness of the standard solution are therefore prerequisite to rating the usefulness of a specific student product.

D. Combining Unusualness and Usefulness. When a product possesses some degree of both unusualness and usefulness it is creative. But because these two criterion qualities are considered variables, the degree of creativity among products will also vary. The extent of each product's departure from the typical and its value as a problem solution will, in combination, determine the degree of creativity of each product. Giving the two qualities equal weight, as the unusualness and/or usefulness of a product increases so does its rated creativity; similarly, as the product approaches the conventional and/or uselessness its rated creativity decreases. The following table illustrates one possible model for combining the two essential qualities to arrive at a final creativity rating for each product.

Table A.

Combined Product Creativity Ratings for Given Ratings of Unusualness and Usefulness

(Unusualness Rating)	If the same problem was solved by a group of one hundred typical seventh grade students, would you find---	The solution does not satisfy the principal requirements of the problem	The solution satisfies the principal requirements of the problem	The solution is as good as the commonly advocated or "typical" teacher solution	The solution is better than the commonly advocated or "typical" teacher solution
		0	1	2	3
More than 10 similar products	0	0	0	0	0
Between 6-10 similar products	1	0	1	2	3
Between 1-5 similar products	2	0	2	4	6
Less than 1 similar product	3	0	3	6	9

II. Classifying Creative Products

While the same thought processes might be universally employed to formulate creative ideas, it is entirely conceivable that the particular type of thought materials being manipulated will differentially influence the efficiency of the processes for various individuals. This could result in students displaying relatively high creative ability with one type of content and relatively low creative ability with another. To provide for this possible phenomenon, creative products should be classified according to a system which reflects fundamental and potentially significant differences among the thought materials used in their production.

For the creative products of industrial arts students, the categories of behavioral, symbolic, and figural content* are proposed. Behavioral content is contained in products dealing primarily with individual and group rela-

*J. P. Guilford, "Three Faces of Intellect," American Psychologist, 14:469-479, 1959.

tionships, such as pupil-teacher and pupil-pupil interactions in persuasive or instructional situations. Symbolic content is displayed in products which represent the aesthetic and other abstract qualities of real, tangible objects or processes, i.e. systems of measurement, dimensioning, coding, and representation, and the artistic aspects of design. Products with figural content contain ideas for the manipulation of real, concrete, inanimate objects and processes; the mechanics of performing an operation, the combination or use of materials for functional purposes, and the sequence or kind of operation used in completing a project are illustrations of this type of content.

It should be emphasized that the system classifies the content of the idea manifest in the unusual aspect of the product, and not the particular form of the product itself. For example, oral suggestions are products; these may contain unusual ideas for securing better cooperation among students (behavioral), improving the aesthetic qualities of a design (symbolic), or for arranging machinery for a mass production project (figural). Similarly, a sketch might utilize conventional symbols in an unusual manner (symbolic), or depict a new device for mitering wood (figural).

In addition to the proposed categories of creativity based on type of content (behavioral, symbolic, figural), the possibility exists that the more specific materials (wood, metal, etc.) dealt with in various industrial arts classes might also influence the extent of each student's creative abilities. Until there is an opportunity to test such an hypothesis, care must be taken in assuming that ratings of creative abilities in one industrial arts course are equivalent to what they might be in other industrial arts courses.

Consequently, during initial attempts to rate creativity, industrial arts courses differing in content should be treated discretely, and within each course behavioral, symbolic, and figural creative abilities should be rated separately.

III. Assessing the Relative Creative Abilities of Students

Within a given industrial arts course, each product of every student should be evaluated in terms of its unusualness. If a product is judged to be unusual to some degree (above a zero rating), its usefulness must then be estimated, and the two ratings entered on the student's record in the proper content category (behavioral, symbolic, or figural).

Under similar environmental conditions, the higher the ratings for each creative product and the greater the number of creative products within each content category, the more creative the student is with content of that nature. To assess the relative creative abilities of students, it is possible to compare their creative production, over a given length of time, in each of the content categories. A relative measure of total "creativity" may be obtained by comparing students' cumulative creative productivity in all content categories.

~~When a student organizes ... creative productivity in all content categories.~~

In utilizing the definition to secure criterion measures of relative creative abilities, eight different sets of scores may be obtained: (a) behavioral unusualness, (b) behavioral creativity, (c) symbolic unusualness, (d) symbolic creativity, (e) figural unusualness, (f) figural creativity, (g) total unusualness, and (h) total creativity. The unusualness scores are based on the probability of occurrence of a product; the creativity scores combine unusualness with a measure of usefulness of the product. Total scores are the sums of the appropriate content category scores.

The "Theoretical Model..." was submitted to two measurement specialists and six educational psychologists to determine its theoretical and practical consistency. Both measurement specialists[2] felt that the definition provided a feasible basis for securing criterion measures. Four of the six educational psychologists responded to the request for critical evaluation:

1. Professor J. W. Getzels believed the model to be "...sensible and useful", and, in fact, generalizable to other areas as well. He was pleased that provision had been made to investigate differences in creative abilities as they relate to differences in content.

2. Professor P. W. Jackson thought that both unusualness and usefulness were clearly important criteria to apply in the assessment of creative products, but that, lacking more detailed information about the measurement techniques to be used, he was unable to evaluate the application of those criteria in judging specific products.

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[2]Professors Cyril Hoyt and Jack Merwin, University of Minnesota.

3. Professor J. P. Guilford concurred in the choice of unusualness as a criterion. He would not have included usefulness if the aim of the study was to solve a basic science problem. Since the study is concerned with a technological problem, and because the combination of unusualness and usefulness does have a basis in tradition, Guilford conceded that there is a "logical defense" for including usefulness as an evaluative variable.

4. Professor E. P. Torrance agreed that the "Theoretical Model..." was most appropriate for the purposes of the investigation.

Thus, it would appear, on the basis of the opinions of a small but knowledgeable panel of "experts", that the "Theoretical Model..." may be considered compatible with existing theory and practice.

In order to determine whether the proposed theoretical approach to obtaining criterion measures of relative creativity in the industrial arts was acceptable to members of the profession, copies of the "Theoretical Model..." were sent to a purposive sample of fifty-seven industrial arts teacher educators; these persons were selected on the basis of their prior interest in and information about creativity. Each recipient was asked to examine the "Theoretical Model..." carefully and critically and to submit his reactions by letter. No opinionnaire form was included in the mailing because unstructured evaluations were deemed to be of greatest value; respondents were, however, requested to begin their replies with one of three basic statements: "First, you might accept the definition and guidelines as they now appear. Second, you might agree with them in the main, but wish to provide suggestions for certain additions and/or revisions designed to improve the material. Finally, you might disagree with the major premises, and require that certain revisions and/or additions be made before the definition and guidelines can be accepted."

A total of forty-three of the fifty-seven industrial arts teacher educators responded to the request for a critical appraisal[3]. (See Page 18) The unstructured replies

varied from three-quarters of a page to several pages in length; each revealed that considerable time and careful thought had been given to the evaluation. To reduce the possibility of misinterpreting respondent comments, each reply was analyzed separately by two judges and the analyses were compared to detect discrepancies.

Sixty-seven percent of the replies accepted the "Theoretical Model..." as it appears. Thirty-three percent agreed with the definitions and guidelines in the main, but provided suggestions for additions and/or revisions designed to improve the material. No one disagreed with the major premises or required that certain revisions or additions be made before the "Theoretical Model..." could be accepted.

Many of the comments received were essentially requests for clarification rather than change. Some comments were relevant to the measurement technique that would be utilized, and its reliability. There were the usual semantic problems. After careful consideration it was decided not to alter the "Theoretical Model..."; the predominance of complete agreement and the opportunity to clarify the definition and guidelines through its application in this study provided the justification for the decision.

Having determined the reasonable acceptability of the proposed definition of creative abilities and guidelines for their measurement, the next steps in the study required selecting a specific procedure for securing criterion measures of relative creative abilities consistent with the definition, developing techniques and forms to facilitate data collection, and trying out the data collection procedure.

Two alternative procedures for securing criterion measures were apparent. The first

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[3] Responses were received from the following persons and are gratefully acknowledged: D. H. Andersen; W. C. Andersen; R. P. Boling; C. R. Bartel; R. Bohn; K. W. Brown; E. Cianciens; K. R. Clay; R. N. Evans; J. L. Feirer; R. D. Gallington; I. Hostetler; R. C. Hutchcroft; F. D. Kagy; M. R. Kamos; W. A. Kavanough; F. C. Krubeck; A. K. Lahti; A. A. Lanse; J. R. Lindbeck; D. Maley; W. R. Miller; W. H. Middleton; J. Mitchell; H. F. Nelson; D. W. Olson; C. B. Porter; W. Robinson; J. D. Rowlett; W. J. Schill; M. Schmitt; J. M. Sherick; G. H. Silvius; W. S. Summers; A. R. Sucse; M. N. Sulentic; E. Svendsen; R. S. Swanson; R. A. Tinkham; E. M. Weber; W. R. Williams; L. S. Wright; L. W. Yoho.

involved the development and administration of specially constructed performance tests appropriate for the industrial arts. The second involved securing teacher ratings of student behavior (products) as it appeared in the typical industrial arts classroom/laboratory over a period of time. The former procedure is less time-consuming, is likely to result in more objective rating, and will assuredly yield scores for all students in all three content categories. The latter procedure, however, will provide a larger sample of student behavior; measure actual creative output in a substantive area, and will make it possible for students to display, and thus have incorporated in their ratings, self-initiated creative behavior; it should, therefore, be a better predictor of future behavior in similar real-life situations.

In light of the potential advantages of the "teacher rating in typical situations" approach, it was chosen for use in the study[4]. It was selected despite some of its potential disadvantages because it was felt that, under controlled conditions, many of them would not materialize.

Table 2 presents a brief summary of some of the potential difficulties of the teacher rating procedure which could prevent securing valid, reliable criterion measures, together with some of the precautions which should be taken to overcome partially those difficulties.

In addition to the measurement problems noted in Table 2, at least one important assumption is being made in the application of the "teacher rating in typical situations" approach; the definition assumes that creative products are developed by creative persons who possess creative abilities, and the measurement procedure then presumes that persons with creative ideas will manifest those ideas in the school situation, and will

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[4]The specially constructed performance test approach is now being applied by L. G. Dasek, using the same sample of students at the same time as this study, in a Ph.D. dissertation tentatively titled, "A Study of the Concurrent Validity of the 'Minnesota Tests of Creative Thinking, Abbr. Form 7', for Eighth Grade Industrial Arts Students".

Table 2

PRECAUTIONS TO BE TAKEN

SOME POTENTIAL DIFFICULTIES AND/~~[illegible]~~ IN UTILIZING TEACHER RATINGS OF OBSERVED STUDENT PRODUCTS TO MEASURE RELATIVE CREATIVE ABILITIES

Potential Difficulty	Precaution to be Taken ~~[illegible]~~
A. Environment	
1. Providing equal opportunity to all students for creative behavior	1. Properly selecting, training, and supervising the teacher-raters
2. Providing sufficient opportunity to obtain a reliable sample of student creative behavior	2. Allowing sufficient observation time, and providing many problem-solving opportunities
3. Providing a variety of opportunities to secure measures in all the different content categories of creativity	3. Comparing relative creative abilities of students who had the same course content, in the same sequence, from the same teacher-raters
B. Norm Group	
The peer group used for determining relative creative abilities should have the same amount of prior, direct experience with the course content	Using students with a minimal amount of prior industrial arts experience, and eliminating those with exceptional amounts of in-school and out-of-school directly related experiences from the comparison peer group
C. Ratings	
1. Observing all students equally, without bias, and recognizing creative products as they occur	1. Properly training and supervising teacher-raters, and rating products immediately after they are observed
2. Securing reliable ratings of recognized creative products	2. Properly training, and supervising teacher-raters, and checking on the agreement in product ratings among teacher-raters and the stability of individual teacher-rater ratings

not deliberately restrain them.

A trial of the data collection procedure was conducted during April-May, 1964. Five instructors in the Department of Industrial Education, University of Minnesota, volunteered to act as teacher-raters in their respective laboratory classes for a five week period in order to check the feasibility of the data collection procedure and to determine the most effective teacher-rater training and data recording techniques. In the training session, the definition and guidelines were explained by the investigator, several sample products served to illustrate the rating scales and procedures, and products suggested by the teacher-raters on the basis of their past experience were used to provide practice in rating product unusualness and usefulness and in classifying the content of the unusual idea inherent in each product. These five teacher-raters met with the investigator at the end of each of the five weeks to discuss problems evident in the procedure, to rate the products observed by each other during the week, and to suggest changes in recording techniques. As a result of the five week trial period it was decided that the overall procedure was practical, provided the students could be observed for at least one semester in courses which were "problem-centered" as opposed to "fact-centered", that acceptable agreement among teacher ratings of products could be obtained, and that, when properly alerted and motivated, teachers were capable of efficient observation of their students' classroom/laboratory behavior. Valuable ideas were gleaned for the training session, creative products to be used as training examples were gathered, and revisions were suggested in the data recording forms and techniques.

Minnesota Tests of Creative Thinking, Abbreviated Form VII

> "I have tried to describe creative thinking as taking place in the process of sensing difficulties, problems, gaps in information, missing elements; making guesses or formulating hypotheses about these deficiencies; testing these guesses and possibly revising and retesting them; and finally in communicating the results."——Torrance (42)

Since 1958 Torrance and his associates have been developing pencil and paper tests,

each consisting of one rather complex task, which can be assembled into various batteries for the purpose of measuring creative abilities. "One strategy that we have used constantly is to generate ideas for test tasks and for scoring them from descriptions of the creative process, the behavior of creative men and women in achieving their breakthroughs, and the like" (p.42, 43).

Typically, each test is scored in several ways, each measure being indicative of some creative ability which Torrance feels is involved in the creative process and in producing creative ideas of any kind. In the development of the tests an attempt has been made to utilize complex tasks (a) whose appropriateness is as universal as possible, (b) which require both verbal and non-verbal response symbols, and (c) which can be administered to individuals or to groups using either real objects for manipulation, films or slides, tape recordings, or ordinary printed forms.

The first tests constructed by Torrance were adaptations of Guilford's materials and required responses with verbal (oral or written) symbols. The tests included "Unusual Uses of Tin Cans", "Impossibilities" (as many as you can think of), "Consequences" (if you could become invisible at will, etc.), "Situations" (a charge of dishonesty in a club, etc.), "Common Problems" (taking a bath, etc.), and "Product Improvement" (a bicycle, etc.). Each test was scored for fluency, flexibility, and originality of responses.

Because the first series of tests did not prove very appropriate for children below the fifth grade, the second development was to experiment with tasks involving the improvement of toys more familiar to young children, e.g. toy stuffed dog, and tasks requiring alternative solutions to some Mother Goose problem situations. These tests were scored for fluency and flexibility, and later inventive level, constructiveness, and originality.

None of the previous tasks gave adequate opportunity for the subject to express his curiosity, reveal his sensitivity to defects or gaps in knowledge, or demonstrate

his ability to formulate hypotheses about causation. Consequently, Torrance developed the "Ask-and-Guess Test". This task presented a picture, such as Tom, the Piper's Son, stealing a pig and being chased by a farmer, and then called upon the subject to (a) list questions about the picture, (b) make guesses concerning the causes, and (c) indicate the consequences of the action depicted.

The fourth major development in the test series was the introduction of tasks which required non-verbal symbols for responses. These tests, such as "Circles" and "Figure Completion", probed a new aspect of creative thinking, and also served to reduce administration time. Scores from non-verbal tests were derived for fluency, flexibility, originality, and elaboration.

After review and consideration of the proposed criterion definition of relative creative abilities in the industrial arts, it was decided that Abbreviated Form VII of the MTCT would most appropriately serve the purposes of this investigation. Dr. Torrance concurred in the decision.

The Minnesota Tests of Creative Thinking, Abbreviated Form VII, was originally assembled from available test tasks for use in evaluating the effects of experimental programs on creative growth in which testing time was limited. Form VII consists of four tests, (two verbal and two non-verbal) each requiring ten minutes completion time; the battery can be administered conveniently in a fifty-minute class period. The battery is intended to be used with groups at the fourth grade level or above. No additional materials, besides the test battery booklet and a pencil, are needed, and the instructions contained in the test battery booklet should be supplemented only by a brief oral introduction. The name, description, rationale and scores yielded by each of the four tests in the battery are noted in Table 3.[5]

[5]At present, permission to use any of the Minnesota Tests of Creative Thinking must be secured from Dr. E. P. Torrance, College of Education, University of Minnesota.

Table 3.

MINNESOTA TESTS OF CREATIVE THINKING, ABBREVIATED FORM VII

Test Name	Description	Rationale	Some Scores Yielded
1. Figure Completion (Non-verbal)	Ten incomplete figures are presented to which lines should be added in order to sketch interesting objects or pictures.	Sets up tension for completion; individual must delay gratification to produce original and elaborate figures.	Fluency, flexibility, originality, elaboration, total
2. Circles (Non-verbal)	Thirty-six circles are presented; objects or pictures are to be drawn using one or more circles as the main part of the drawing.	Designed as a non-verbal test of four types of divergent thinking, but due to limited time each individual must choose the relative emphasis to be placed on fluency, flexibility, originality or elaboration of responses.	Fluency, flexibility, originality, elaboration, total
3. Product Improvement (Verbal)	Ideas are to be listed for changing a stuffed toy dog so that it will be more fun for children to play with.	Forces the subject to utilize ideas that he would not have arrived at in a more conscious attempting "suspension in the service of the ego".	Fluency, flexibility, originality, elaboration, total and irrelevant total
4. Unusual Uses of Tin Cans (Verbal)	Interesting, unusual ideas for using empty tin cans are to be listed.	Tests ability of individual to free his mind of well established ends.	Fluency, flexibility, originality, elaboration, total

While Guilford preferred each of his tests to be factorially pure, and Torrance has insisted upon the development of complex tasks, the type of scores yielded by Abbreviated Form VIII reveals the basic similarity between the two approaches in terms of the abilities each attempts to identify. Every test in Abbreviated Form VIII is scored for fluency, flexibility, originality, and elaboration; each of these has a counterpart among the abilities identified by Guilford. Fluency is interpreted as an index of ability to produce a large number of ideas; it is scored by counting the total number of different relevant responses to a given task. Flexibility is the ability to produce a variety of ideas or approaches; it is scored by counting the number of different categories into which the total number of responses to a task may be classified. Originality is the ability to produce novel, statistically infrequent ideas which are adaptive to reality; it is scored by crediting each response with a variable score dependent upon the relative frequency with which the response has been made by a comparable norm group. Elaboration is the ability of integration and exposition of details; it is scored by giving credit to the number of pertinent ideas which have been added to a primary response. Inventive level, a score derived only from the "Product Improvement" test, has no single counterpart among the Guilford factors; it is an attempt to adapt practical criteria for patentable products to a particular task, and therefore represents a combination of intellectual energy, originality, adequacy of planning, sensitivity to problems, and evaluative and usefulness factors.

After each test is scored for its four factors, and "Product Improvement" is scored in addition for inventive level, eight different measures are ordinarily computed for the test battery as a whole: (a) fluency is the sum of the fluency scores of each of the four tests; (b) flexibility is the sum of the flexibility scores of each of the four tests; (c) originality is the sum of the originality scores of each of the four tests;

(d) elaboration is the sum of the elaboration scores of each of the four tests;[6] (e) inventive level is the inventive level score on the "Product Improvement" test; (f) non-verbal is the sum of the scores derived from the "Figure Completion" and "Circles" tests; (g) verbal is the sum of the scores from the "Unusual Uses of Tin Cans" and "Product Improvement" tests (excluding the inventive level score); (h) grand total is the sum of the non-verbal and verbal scores.[7] Table 4 illustrates the scoring categories used in the study and presents the approximate time required to derive each score. Note that about twenty minutes are needed to score Abbreviated Form VII completely.

Table 4.

SCORING CATEGORIES AND APPROXIMATE TIME REQUIRED
TO DERIVE EACH SCORE ON MICH. ABBR. FORM VII

(Time in minutes)

Ability	Figure Completion	Circles	Total Non-verbal	Product Improvement	Unusual Uses of Tin Cans	Total Verbal	Battery Totals
Fluency	.50	.75		.75	.50		*
Flexibility	.75	1.00		1.00	.75		*
Originality	1.00	1.50		1.50	1.00		*
Elaboration	.75	1.25		1.25	.75		*
Total			*			*	*
Inventive level	----	----	----	2.00	----	----	

*Eight measures computed from each complete battery.

Previous experience with the battery has shown that inter-scorer agreement on all

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[6]Separate verbal and non-verbal fluency, flexibility, originality, and elaboration scores may be computed if desired. Since the criterion measures in this study reflect a combination of verbal and non-verbal products, and because the separate test scores are likely to be less reliable, no such distinction was made.

[7]It is often desirable to add standard rather than raw scores in order to give equal weight to all factors. To check this, the fluency, flexibility, originality, and elaboration scores of twenty-four students in the study were converted to standard scores, summed, and the resultant totals correlated with the sums of the raw scores; a coefficient of .98 was obtained. Since the variances of the four raw score distributions were significantly different (.05), there appeared to be little reason not to use raw score totals throughout the study.

factors in all tests may be expected to be around .90 or higher (42). The test-retest reliability of the total battery score has averaged approximately .80, while the stability of part scores is in the vicinity of .65-.70 (42,43). Both types of reliability seem to be sufficiently high to warrant using the battery in experimental situations.

Chapter III

DATA COLLECTION

Selecting Teacher-Raters and the Sample

The procedure chosen to secure criterion measures of relative creative abilities, namely, using teachers to observe, rate, and classify student products as they were manifested in typical industrial arts environments, required the careful selection of teacher-raters. Therefore, the first step in the data collection process was to nominate teachers who were considered suitable to participate in the study, and then to attempt to secure their cooperation. The sample of students was subsequently defined in terms of the classes taught by the cooperating teacher-raters.

A panel of four staff members of the Department of Industrial Education, University of Minnesota, was formed in order to secure nominations for teacher-raters from among the available junior high school industrial arts personnel in the Minneapolis-St. Paul metropolitan area.[8] Each panelist was asked, individually, to name (a) four school systems in the area which provided large, complete, and "good" junior high school industrial arts programs, (b) the teachers within each of these systems who were sympathetic to the development of creative abilities, provided the most opportunities in their classes for the expression of creativity, and had more than two years of junior high school industrial arts teaching experience, and (c) teachers outside of the four school systems who met the criteria in (b), above.

Independent School District No. 623 (Roseville), Minnesota, was named by all four panelists. Within this system, four teachers were nominated by all four panelists and two others were designated by three panelists. No other school systems suggested had as much panel agreement on individual teachers. Even when the total target area was

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[8] The panelists had from three to fourteen years of experience as teacher educators and as supervisors of student teachers in the Minneapolis-St. Paul area; thus, each was familiar with most, if not all, of the potential candidates. Also, all the panelists were familiar with and subscribed to the definition of creativity used in the study.

considered, no other six teachers accumulated more nominations.

Permission to conduct the study, provided individual teachers agreed to cooperate, was granted readily by Independent School District No. 643. As a confirmation of the panelists' judgment, all six instructors nominated immediately expressed their willingness to assist in the conduct of the study.

After discussion with the six teacher-raters (four of them were in one school, and two in another), it was unanimously agreed to use eighthgrade rather than seventh grade students as subjects; most of the time in the seventh grade classes was ordinarily devoted to presenting facts and developing specific manipulative skills, while in the eighth grade much more time was typically spent in various types of problem-centered activities. Industrial arts was required of all boys in both the seventh and eighth grades, but not in the ninth grade.

Six, eighth grade industrial arts class sections participated in the study throughout two consecutive quarters (a total of eighteen weeks). These sections were taught by the teacher-raters selected, and constitute the original sample for the study. Students were assigned to class sections by a computer; there was no attempt to make sections homogeneous with respect to any relevant variable.

With the cooperation of the Principals in both schools, the original sample was grouped into three pairs of sections and scheduled so that each pair was taught by one of three teacher-raters the first quarter (nine weeks) and by one of the other three teacher-raters the second quarter (nine weeks). Thus, it was possible to consider the original sample to be composed of three groups; all the students in one group, or pair of sections, received the same course content, in the same sequence, from the same two teacher-raters over the eighteen week observation period. Because of the differences among the groups in content experienced and/or teacher-raters used, it was not possible to pool the criterion measures of the three groups at any time during the study. Table 5 shows the teacher-raters used and the courses taught for each of the three groups of students during the first and second quarters.

Table 5.

TEACHER-RATERS AND COURSE CONTENT USED WITH EACH OF THE THREE GROUPS IN THE ORIGINAL SAMPLE

Group (Two Sections Each)	First Quarter (Nine Weeks)	Second Quarter (Nine Weeks)
I	Teacher A Drawing-Graphic Arts	Teacher B Metals
II	Teacher C Woods	Teacher D Electricity
III	Teacher E Woods	Teacher F Electricity

At the beginning of the study, the six teacher-raters had taught an average of 7.7 years; their junior high school teaching experience ranged from 3-8 years, with a mean of 5.3 years. Five of the six teacher-raters had previously taught the same course content they taught during the study to 32-64 class sections of eighth-graders. The sixth teacher-rater (A) had taught the same content 17 times previously to seventh and ninth graders; this was the first semester, however, that eighth graders had been scheduled in that course.

In their judgment of student products, teacher-raters could not be expected to distinguish between creativity and atypical prior experience with the content as the cause for producing unusual and useful products. It was therefore necessary to make the students within each group as homogeneous as possible with respect to their direct prior experience with the content of the two courses they were to take. This was done in two ways. First, since most of the students had already taken seventh grade courses in drawing and woods, those who hadn't, and who were going to be rated while engaged in one of those two subjects, were eliminated from the original sample.[9] Second, each student

[9]This proved to be an appropriate step since a subsequent analysis of the criterion measures showed that those with no prior seventh grade experience produced substantially fewer creative products than those with prior experience in the subject.

in the original sample completed a "Student Information" [illegible] which revealed the extent of his out-of-school experience with the behavioral [illegible] objects he was to take during the study. [illegible] 15% of the students indicated that they spent an average of four or more hours [illegible] in pertinent activities. This was considered exceptional. The other [illegible] on the "Student Information" form was used to check the consistency and reasonableness of the students' [illegible] claims and resulted in reducing the 15% to 8% of the students. The teacher-interns [illegible] the 8% were then consulted to determine whether they had noticed evidence of such [illegible] experience; where they hadn't, each student was interviewed to confirm his [illegible] responses. Confirmation by the teacher-intern or by the student led to elimination of [illegible] student from the original sample.

In addition to the attempt to reduce contamination of the [illegible] measure of relative executive abilities by eliminating students with exceptional direct prior experience with the course content, it was necessary to eliminate from the original sample students with atypical absentee records. Obviously, excessive [illegible] seriously reduced the relative opportunity of the individual to manifest [illegible] executive abilities. The distribution of days absent during the semester data collection period showed a reasonably steady decline in numbers of students absent, from zero to seven days, with only one or two students absent from eight to a maximum of thirty-one days; the mean was 3.26 days and the standard deviation 4.29 days. Consequently, it was decided that plus or minus one standard deviation would represent the range of tolerable absences. This meant that any student absent eight or more days was dropped from the original sample.[10]

Table 6 summarizes the foregoing steps by presenting the numbers in the original sample, the reductions due to exceptional in-school experience, out-of-school experience, and excessive absences, and the net sample.

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[10] After criterion measures were collected, it was found that 30% of those eliminated due to excessive absences had produced no executive products, while only 24% of the remaining students had produced no executive products.

Table 5.

ORIGINAL SAMPLE AND EXPERIMENTERS

Group	Original Sample	Exceptional In-School Experience	Exceptional Out-of-School Experience	Alternative Absence	Net Sample
I	39	5	0	2	32
II	43	16	2	6	24
III	45	6	0	1	39
Total	133	27	2	9	95

At the conclusion of the data collection period, the teacher-raters reported on the nature of the courses they had offered to the sample. As might be expected, in addition to differences in subject matter, the methodology and approaches utilized by teacher-raters were quite diverse. On the average, however, about 40% of the class time of the three groups was devoted to learning informational (related) content provided by lecture, discussion, and written materials. The remaining 60% of class time was spent by students watching demonstrations, planning projects, and carrying out projects. Four of the teacher-raters had students work individually on projects, while one used small group projects and another employed mass production projects. In all groups, the students did most of the project planning, with some assistance from the teacher-raters.

Training Teacher-Raters and Collecting Criterion Measures

A seven-hour training session was held for all six teacher-raters two days before the start of the quarter in which the first three of the teacher-raters were scheduled to observe and rate the creative products of members of the sample. Appendix A contains the notes used by the investigator during this session, as well as copies of most of the forms used by the teacher-raters during the training session and during the semester

observation-recording problem.[7]

The training session was organized into thirteen units: (a) introducing the personnel involved in the study, (b) overviewing the objectives of the study, (c) stating the purposes of the training session, (d) providing definitions of and scoring standards for "product", "unusualness", and "usefulness", and then having the group note and discuss ten sample products, (e) providing definitions of the bases of their categorization, and then having the group classify and discuss ten sample products, (f) distributing samples of creative products from the teacher-subject based upon their peer categorization, and rating and classifying each product, (g) administering a test consisting of twenty additional creative products to be rated and classified, (h) reviewing the test results to identify and clarify misunderstandings about definitions and scoring standards, (i) presenting the forms and recording procedures to be employed by the teacher-raters, (j) overviewing rating, classifying, and recording procedures, (k) discussing ideas for providing creative problem-solving opportunities in the classroom/laboratory, (l) assigning teacher-raters of future activities in the study, and (m) distributing copies of the training session notes and sample executed forms for their future reference.

The twenty-product test administered during the training session contained products from the subject areas of words (10), models (4), graphic arts (2), drawing (1), and crafts (3); figural ideas (12), symbolic ideas (5), and behavioral ideas (3) were included among the twenty products, which thus represented the full range (0-3) of possible unusualness and usefulness ratings. The test results were analyzed to determine the reliability of the teachers' ratings, and thus provided some measure of the success of the training session. Ninety-three percent agreement was found among the teacher-raters on

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[7] Because of space limitations, Appendix A does not contain copies of the sample products of particular use in the training session, nor does it contain the standard records of the teacher-raters used on a test during the training session. The sensitive product test answer form was not considered sufficiently important to include.

their classification of content.[12] A conservative estimate of the reliability of each teacher-rater's unusualness ratings was found to be .71, while a comparable estimate of reliability for usefulness ratings was .69.[13] These reliabilities indicated that teacher-raters possessed a sufficient degree of common understanding of the definitions and scoring standards to warrant proceeding with the data collection.

Because three of the teacher-raters did not begin to observe and rate the products of the students in the sample until nine weeks after the training session, re-training was provided for them in a one-hour session held just before the beginning of the second quarter. A condensed version of the initial training procedure was utilized for this purpose.

Briefly, the task of each teacher-rater was to observe closely the behavior of all students in the sample. When a student performed in an unusual manner (according to minimum standards for unusualness), the idea inherent in the product (behavior) was to be rated for unusualness, then usefulness, and then classified according to the appropriate content category. These ratings were to be recorded immediately on a "Pocket Memo" pad, and, before the end of the day, recorded permanently on that student's tabulation sheet in a "Product Rating" folder. In addition, teacher-raters completed an "Anecdotal Record" describing in detail every fifth product rated in each of the three content categories for the pair of sections they were teaching.[14]

In order to help insure that teacher-raters performed their duties properly, maintained acceptable rating standards, and retained a maximum of motivation for the task, each teacher-rater was visited at least once a week by the investigator or his assistant

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[12] $\% \text{ agreement} = \frac{\text{Total number of ratings} - \text{Number of deviant ratings}}{\text{Total number of ratings}}$

[13] $\frac{\text{MS items} - \text{MS residual}}{\text{MS items} + (K-1)\text{MS residual}}$ in Winer, B. J., Statistical Principles in Experimental Design, New York, N.Y., McGraw-Hill, 1962, pp. 124-32.

[14] Review Appendix A for a detailed explanation of the rating and recording procedures.

throughout the data collection period. During these visits, special attention was given to checking and/or discussing the following: (a) questions posed by the teacher-rater, (b) the manner in which the forms were being completed, (c) ideas for increasing the opportunities for student creative behavior, (d) systems for awarding specific ratings to a random sample of previously observed products, (e) the necessity for observing all students and for providing all with equal opportunity to behave creatively.

The week following the conclusion of the semester observation period, the six teacher-raters met to note and classify each of the student products that had been described in all of the "Anecdotal Records" completed by all of the teacher-raters during the semester. The forty products thus assembled included figural ideas (33), symbolic ideas (3), behavioral ideas (4). The distribution of unusualness ratings was one's (18), two's (16), and three's (14); usefulness ratings consisted of zeros (2), one's (5), twos (24), and threes (9). An estimate of the reliability of each teacher's ratings of the actual student products described in the "Anecdotal Records" was obtained by comparing his ratings on unusualness, usefulness, and content classification, and creativity[15] with the average ratings of the other five teacher-raters on the forty products. Table 7 presents the resultant coefficients.

Table 7.

ESTIMATED RELIABILITY* OF EACH TEACHER'S RATINGS OF STUDENT PRODUCTS DESCRIBED IN THE ANECDOTAL RECORDS

(N = 40)

Teacher-Rater	Unusualness	Usefulness	Content Classification	Creativity
A	.62	.68	1.00	.68
B	.78	.73	1.00	.65
C	.73	.70	1.00	.73
D	.76	.75	1.00	.71
E	.72	.74	1.00	.75
F	.76	.58	1.00	.59

$$\frac{\text{MS items} - \text{MS residual}}{\text{MS items} + (K-1)\text{MS residual}}$$

[15] The creativity score of each product was determined by multiplying the unusualness by the usefulness rating.

Since a portion of the forty student products described in the "Anecdotal Records" represented products that had previously been rated by each teacher during the observation period it was possible to estimate the stability of each teacher's ratings by comparing the ratings given by him during the observation period with those given by him in the post-observation rating session. The small number of products rated by each teacher should be considered in evaluating the obtained coefficients, shown in Table 8.

Table 8.

ESTIMATED STABILITY* OF TEACHERS' RATINGS OF STUDENT PRODUCTS

Teacher-Rater	Interval Between Ratings (Weeks)	N	Unusualness	Usefulness	Content Classification
A	10-19	10	.71	.68	1.00
B	1-10	7	1.00	1.00	1.00
C	10-19	8	.68	.84	1.00
D	1-10	6	.71	.79	1.00
E	10-19	4	1.00	.58	1.00
F	1-10	5	1.00	1.00	1.00

*Pearson product-moment correlations for unusualness and usefulness ratings.

Because the forty student products described in the "Anecdotal Records" represent a restricted random sample of one-fifth of the total student products and one-fifth of the products each teacher actually rated during the course of the semester observation period, the coefficients shown in Tables 7 and 8 provide a reasonable basis for estimating the reliability of teachers' ratings of students' products during the study. The coefficients appear to be sufficiently high to justify the acceptance of the teachers' ratings and to warrant their use as criterion measures in the study.

From the individual product ratings, eight criterion measures were obtained for each student: (a) figural unusualness was the sum of the unusualness ratings given to his figural products, (b) symbolic unusualness was the sum of the unusualness ratings given to his symbolic products, (c) behavioral unusualness was the sum of the unusualness ratings given to his behavioral products, (d) figural creativity was the sum of the

unusualness times usefulness ratings of each of his figural products, (e) symbolic creativity was the sum of the unusualness times usefulness ratings of each of his symbolic products, (f) behavioral creativity was the sum of the unusualness times usefulness ratings of each of his behavioral products, (g) total unusualness was the sum of his figural, symbolic, and behavioral unusualness, and (h) total creativity was the sum of his figural, symbolic, and behavioral creativity.

As stated in the proposed definition of creative ability, unusualness is not considered a sufficient condition of creativity. Unusualness measures, therefore, do not represent true criterion measures. However, since it was possible that the results of the MMCT, Abbr. Form VII might be more highly related to unusualness alone than to a combination of unusualness and usefulness, the unusualness measures in the three content categories were secured as separate measures.

Administering Minnesota Tests of Creative Thinking, Abbreviated Form VII and Other Creativity Rating Scales

Approximately halfway through the sample data collection period, the MMCT, Abbr. Form VII was administered to the six class sections comprising the original sample. The battery was given to each class section during a regular fifty-minute class period; all four sections in one school were tested in one day, while the two sections in the second school were tested on the following day.

The investigator and two assistants administered the battery to each class section. A brief (one minute) oral introduction was given to orient and motivate the students, pencils and test booklets were distributed, the directions for the battery and for each of the four tests in the battery were read aloud at the appropriate time by the investigator while the students read the directions in the test booklet silently; each test was carefully timed by stopwatch (ten minutes each). The two assistants acted as monitors to see that the students followed directions explicitly.

Both assistants studied the scoring manual (23), practiced scoring the tests of

persons who had been dropped from the original sample, and consulted with personnel in the Bureau of Educational Research, University of Minnesota, who had considerable prior experience with scoring the battery, as preparation for the scoring task. All the test batteries were then scored by one assistant. A random selection of twenty-five test batteries was taken from the sample and scored independently by the second assistant in order to estimate scorer reliability. Table 9 shows the resultant coefficients, and indicates the expected high reliability of the scoring procedure.

Table 9.

SCORER RELIABILITY* ON MUCL. ABIL. BATT VII

(N = 25)

Score	Reliability
Fluency	.95
Flexibility	.85
Originality	.94
Elaboration	.97
Inventive Level	.99
Non-verbal Total	.92
Verbal Total	.93
Grand Total	.96

*Pearson product-moment correlations.

Post-facto supervisor ratings and peer ratings of creativity have been used in other studies as criterion measures; their inadequacies in this role are well known. This study, however, utilized both these types of ratings to estimate the construct validity of the criterion measures; they provide some clue as to the realism, reasonableness, and acceptability of the criterion measures.

Post-facto teacher ratings were gathered from individual teacher-raters, without prior notice, at the close of their respective quarter observation periods. Under the direct supervision of the investigator, each teacher-rater was asked to name the most creative student (the one with the most unusual and clever ideas), the least creative student, the student halfway between them, etc., until nine students, representing a

nine point scale from high to low creativity, had been identified from the combined class rolls of the two sections he had observed. Every remaining student in both sections was then rated as having an amount of creativity most like one of the nine students originally identified. The result was to secure ratings of one to nine for each student that could be treated as interval measures. The ratings of the two teachers who had observed the same two sections of students were averaged to obtain the measures used in the study. Appendix B contains the complete directions and rating form used to secure the post-facto teacher ratings. Table 10 presents estimates of the reliability of the average ratings of each pair of teacher-raters.

Table 10.

ESTIMATED RELIABILITY* OF AVERAGE POST-FACTO TEACHER RATINGS

Teachers	Reliability
A, B	.72
C, D	.70
E, F	.36

$$* \frac{MS\ items - MS\ residual}{MS\ items}$$

It is interesting to note that the reliabilities of the <u>average</u> of two teachers' post-facto ratings is generally no greater than the reliabilities of a single teacher's ratings of student products, despite the fact that post-facto ratings were undoubtedly greatly influenced by prior teacher training in defining creative abilities and by unusually careful observation of students during a full quarter's work. The post-facto reliabilities tend to bear out the pessimism with which these ratings are generally viewed, and, in this study, raise serious questions about the cause of the unsatisfactory agreement between Teachers E and F.

The investigator and one assistant collected peer ratings of relative creative abilities at the end of the semester observation period by administering a rating instrument

to each of the six class sections in the original sample. It took approximately twenty-five minutes of a regular class period for each student to rate every other student in the class section. The instrument utilized was very similar to that used to obtain post-facto teacher ratings, except that a five instead of a nine point scale was employed. Unlike post-facto teacher ratings, which pertained to the relative creative abilities of individuals within a pair of sections (group), peer ratings were indices of relative creative abilities within each class section. Complete peer rating directions and the rating form are presented in Appendix C. All the ratings given to each student by his classmates were averaged to obtain the rating used in the study. Table 11 shows the satisfactory reliabilities of the mean peer ratings for class sections.

Table 11.

RELIABILITY* OF MEAN PEER RATINGS PER CLASS SECTION

Group I		Group II		Group III	
Section 1	Section 2	Section 1	Section 2	Section 1	Section 2
.93	.96	.86	.92	.89	.94

*$\frac{\text{MS items} - \text{MS residual}}{\text{MS items}}$

Obtaining Socio-Economic, Aptitude, and Achievement Measures

Measures indicative of the socio-economic status, aptitude, and achievement of the sample were gathered for descriptive purposes and/or for investigating their relationships with measures of relative creative abilities.

Information about the occupational distribution of the parents of the sample was collected for descriptive purposes by means of the "Student Information" form previously noted in the first section of this Chapter. The form was distributed

by the teacher-aides during the first part of the first quarter. Teacher-aides explained the questions to the students, and collected the completed forms the following day. A summary of the data is presented in Table 12.

Table 12.

COMPARISON OF PERCENTS OF PARENTAL EMPLOYMENT BETWEEN GROUPS IN THE SAMPLE AND CIVILIAN EMPLOYMENT IN MINNESOTA AND THE U.S. BY MAJOR OCCUPATIONAL CATEGORY

Major Occupational Category	Percent Employment of Parents of Sample[1]				Other Groups	
	Group I (A =36)	Group II (n = 32)	Group III (n = 54)	Total (N = 122)	Minnesota Civilian Employment[2]	U. S. Civilian Employment[3]
Professional, technical and kindred	36.1	34.4	20.3	28.7	11.5	11.4
Managers, officials and proprietors (ex. farm)	11.1	6.3	1.8	5.7	8.3	8.3
Farmers and farm workers	0.0	0.0	0.0	0.0	10.7	3.9
Clerical and kindred	5.6	9.4	11.1	9.0	14.2	14.9
Sales	13.9	12.5	14.8	13.9	7.5	7.4
Craftsmen, foremen and kindred	25.0	18.8	29.6	25.4	12.9	14.3
Operatives and kindred	2.8	6.2	11.1	7.4	15.3	19.9
Service (inc. private household)	5.6	12.5	9.2	9.0	11.6	11.6
Farm laborers and foremen	0.0	0.0	0.0	0.0	3.4	2.4
Laborers (ex. farm)	0.0	0.0	1.8	0.8	4.6	5.5

[1]Sixty-five housewives, one student, and two deceased parents have been omitted from this summary.

[2]United States Census of the Population, 1960-Minnesota, Washington, D.C., U.S. Dept. of Commerce, pp. 25-465-470.

[3]Statistical Abstract of the U.S., 1964, Washington, D.C., U.S. Dept. of Commerce, pp.229-31.

Comparisons (chi-square) between the distributions of pairs of the three groups comprising the parents of the sample showed significant (.05) differences between all pairs of distributions; the occupational distribution of the parents of the total sample was also significantly different (.05) from the civilian employment distribution in Minnesota and in the U. S.

Student verbal and non-verbal aptitude measures were available as raw scores in each student's "Cumulative Record" folder. These scores resulted from an administration of the Lorge-Thorndike Intelligence Test, Level A, Form A during the early part of the seventh grade; scores were thus about one year old. Raw scores were converted to IQ scores by the investigator, using student's chronological age obtained from "Cumulative Record" folders and the conversion tables in the Lorge-Thorndike Handbook Manual.[16] This particular intelligence test attempts to measure the ability to work with ideas and the relationships among ideas. Reasoning, as expressed by both verbal and non-verbal symbols, is one of the primary areas tested.

Two types of data were gathered to obtain evidence of student achievement. First, five standardized achievement tests were administered to the sample about halfway through the semester observation period as a part of the regular testing program of both schools. Current raw scores were thus obtained for each of the following tests: (a) Iowa Diagnostic Reading, Form A, Power Section (total score), (b) SRA Social Studies, Form 2A, (c) STEP Writing, Form 2A, (d) Sradley General Mathematics, Form AM, and (e) Read General Science, Form AM. Second, grades awarded by teachers during the seventh grade were recorded in students' "Cumulative Record" folders. These grades, plus the two grades earned by students in industrial arts during the observation period of the study, yielded eight measures of teacher's grades: (a) combined average of seventh and eighth grade industrial arts (5 quarters), (b) average seventh grade English (4 quarters), (c) average seventh

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[16] Lorge, I. and Thorndike, R. L., Handbook Manual: The Lorge-Thorndike Intelligence Tests, Level A, Grades 7, 8, and 9, Boston, Mass., Houghton Mifflin Company, 1957.

grade social studies (4 quarters), (d) average seventh grade mathematics (4 quarters), (e) average seventh grade industrial arts (3 quarters), (f) average seventh grade science (2 quarters), (g) seventh grade art (1 quarter), and (h) overall seventh grade average (giving equal weight to each quarterly grade in every subject previously noted).

Chapter IV

FINDINGS

Criterion Measures

The objectives of the study were to determine the reliability and the construct validity of the criterion scores yielded by the measurement procedure. It has already been shown that all the teachers utilized were able to rate and identify Identified student products with reasonable reliability. Further, as a direct application of the "Theoretical Model for Identifying the Relative Creative Abilities of Industrial Arts Students", the measurement procedure may be considered consistent with the proposed definition of creativity. But before the two objectives can be satisfied, the results of all the product ratings obtained during the study must be examined to determine (a) whether the measurement procedure resulted in identifying a sufficient number of creative products to warrant the assumption of reliable measures of individual student creativity in each content category, (b) whether the arithmetic technique of multiplying, rather than adding, unusualness and usefulness ratings to obtain creativity scores had some empirical justification, (c) the degree to which the total creativity scores were related to post-facto teacher and peer ratings of creativity, and (d) the shape of the frequency distribution of criterion measures.

Table 13 summarizes the unusualness and usefulness ratings awarded to all the

Table 13.

FREQUENCY DISTRIBUTION OF UNUSUALNESS AND USEFULNESS RATINGS OF OBSERVED STUDENT PRODUCTS

Group	Unusualness Ratings			Usefulness Ratings			
	1	2	3	0	1	2	3
I	30	32	12	5	22	40	8
II	19	14	12	2	7	23	8
III	23	12	4	6	12	21	0
Total	72	59	28	13	41	89	16

products observed by the six teacher-raters during the semester. It shows, as might have been anticipated, that the more unusual products were observed less frequently, that relatively few unusual products were considered completely useless or irrelevant problem-solutions, and that most of the unusual solutions observed were judged to be as useful as typical solutions.

Table 14 presents a summary of product ratings recorded during the semester in terms of numbers of products rated in each group of students by content categories and per student.

Table 14.

NUMBER OF PRODUCTS RATED IN EACH GROUP OF STUDENTS
BY CONTENT CATEGORIES AND PER STUDENT

Category	Group I (N = 32)	Group II (N = 24)	Group III (N = 39)
Number of Figural Products Rated	67	43	35
Number of Symbolic Products Rated	8	0	2
Number of Behavioral Products Rated	0	2	2
Total Number of Products Rated	75	45	39
Average Products Rated Per Student	2.3	1.9	1.0
Percent Students With No Products Rated	9	21	36

The findings in Table 14 led to two important decisions. First, because an insufficient number of symbolic and behavioral products were identified to warrant using symbolic unusualness, symbolic creativity, behavioral unusualness, and behavioral creativity as criterion measures in the study, subsequent analyses utilized only the criterion measures of figural unusualness, figural creativity, total unusualness and total creativity (the latter two measures include the symbolic and behavioral product ratings). Second, serious doubt was raised as to whether an adequate number of total ratings had been secured in Group III to yield reliable criterion measures for each student. This doubt

was reinforced by the very poor agreement previously found between Teachers E and F in their post-facto ratings of creativity. Both findings might have been caused by the teachers' lack of knowledge about students' creative abilities due to inefficient observation and/or insufficient opportunities for students to display creative behavior. On the other hand, both findings might also have been caused by a relatively low level of creative abilities in the group. In order to determine whether the students in Group III were atypical, certain selected measures that might affect or be related to creative abilities were summarized and the means and standard deviations of the three groups were compared. Table 15 presents this data.

Table 15.

A COMPARISON OF THE THREE GROUPS OF STUDENTS ON SELECTED MEASURES THAT MIGHT BE RELATED TO CREATIVE ABILITIES

Measure	Group I (N = 22)	Group II (N = 24)	Group III (N = 39)
Number of Absences	s = 2.2	1.8	2.1
Verbal IQ (Lorge-Thorndike)	M = 112.6 s = 12.4	106.8 16.4	107.1 14.3
Non-verbal IQ (Lorge-Thorndike)	M = 116.2 s = 13.3	110.3 15.3	110.2 16.3
Snader General Mathematics	M = 27.4* s = 6.9	22.4 8.3	18.6 6.5
Read General Science	M = 40.0 s = 10.7	38.4 12.1	37.5 10.0
MTCT Non-verbal	M = 83.5 s = 23.2	72.3 25.3	66.7 26.7
MTCT Verbal	M = 63.3 s = 25.7	45.2* 24.8	65.3 33.1

*Significantly different from the other two groups at the .05 level.

Since Table 15 shows there was no reason to believe that Group III was atypical, and, therefore, that the relatively few observed creative products were probably not caused by the nature of the group, it was assumed that the obtained criterion measures for each student were not reliable. Consequently, it was decided to drop Group III from the sample, and exclude it from subsequent analyses.

It is ~~[illegible]~~ desirable that creativity scores be computed by multiplying, rather than by adding, unusualness and usefulness ratings; this serves to increase the range of potential creativity scores, and assigns a zero creativity score to products which are completely irrelevant or useless as problem-solutions. In order to estimate whether the choice between multiplication and addition materially affected the empirical results of the study, and, at the same time to gain some clues regarding the construct validity of the total creativity criterion measures, total creativity scores were computed by addition and by multiplication and the resultant scores ranked and correlated with post-facto teacher and peer rankings of creativity. The results are given in Table 16.

Table 16.

ESTIMATED CONSTRUCT VALIDITY[++] OF TOTAL CREATIVITY CRITERION SCORES AND THE EFFECT OF DERIVING TOTAL CREATIVITY SCORES BY MULTIPLICATION VERSUS ADDITION

Variables Correlated	Method	Group I (N = 32)		Group II (N = 24)	
Total Creativity Criterion Measures and Post-facto Teacher Ratings	X	.52*		.73*	
	+	.55*		.61*	
		Sec. 1	Sec. 2	Sec. 1	Sec. 2
Total Creativity Criterion Measures and Peer Ratings	X	.70*	.35	.66*	.72*
	+	.70*	.41	.63*	.76*

* Significantly different from zero at the .05 level.
++ Rank order correlations corrected for ties.

Except for Section 2 of Group I, where the sample size was small, the data in Table 16 reveal statistically significant and generally satisfactory degrees of relationship between the criterion of total creativity and post-facto teacher and peer ratings of creativity. Further, the difference in the manner of computing the creativity criterion measures had almost no influence on the extent of the obtained rank order correlation coefficients. In light of its theoretical desirability, creativity criterion measures were, therefore, computed by multiplying unusualness by usefulness ratings for all subsequent analyses.

Table 17 summarizes the means and standard deviations of the four criterion measures

in Groups I and II. No significant differences in means or standard deviations were found between groups on any measure.

Table 17.

MEANS AND STANDARD DEVIATIONS OF CRITERION MEASURES

Criterion Measure	Group I (N = 32)	Group II (N = 24)
Figural Unusualness	M = 4.1 s = 3.4	3.3 3.4
Figural Creativity	M = 6.6 s = 6.3	6.5 7.5
Total Unusualness	M = 4.3 s = 3.7	3.5 3.7
Total Creativity	M = 7.3 s = 7.0	6.9 8.0

In order to obtain a clearer picture of the frequency distribution of the four criterion measures, graphs were drawn for Groups I and II on each measure. The results were definite and consistent. The distributions of figural unusualness, figural creativity, total unusualness and total creativity were all positively skewed. Because the criterion scores were to be used in Pearson product-moment correlations, the scores of the four measures were normalized within each group with a mean of 50 and a standard deviation of 10.

The interdependence of the four criterion measures was assessed by computing their intercorrelations. Table 18 presents the Pearson product-moment coefficients obtained when the normalized scores of the four measures were correlated.

The correlations in Table 18 indicate almost complete interdependence among the four criterion measures; they are, in all likelihood, indices of the same student ability or group of abilities. The lack of distinction between figural and total measures may be at least partially explained by the very few symbolic and behavioral ratings incorporated in the total measures. The lack of distinction between the unusualness and creativity measures is not as readily interpreted. Statistically, the multiplication of unusualness

by usefulness ratings for each product resulted in approximately doubling the variance of the distribution of students' total unusualness scores, but did not appreciably alter students' relative positions within the distribution. This could have been caused by the

Table 16.

CORRELATION COEFFICIENTS* AMONG THE FOUR CRITERION MEASURES

Measure	Group	Measure 1	2	3	4
1. Figural Unusualness	I	1.00	.94	.98	.93
	II	1.00	.95	.95	.96
2. Figural Creativity	I		1.00	.93	.96
	II		1.00	.92	.98
3. Total Unusualness	I			1.00	.96
	II			1.00	.97
4. Total Creativity	I				1.00
	II				1.00

*Pearson product-moment correlations.

high proportion of two ratingsof usefulness and/or a tendency for the ability to produce unusual products to be closely related to the ability to produce useful products. In light of this evidence and speculation, the investigator hypothesized that the single ability or group of abilities measured by the product rating procedure was figural creativity in the industrial arts. It was decided to include all four criterion measures in subsequent analyses to confirm the similarity among them by comparing their relationships with other creativity, aptitude, and achievement measures.

Relationships Among Criterion, Test, and Other Measures of Creative Abilities

The post-facto teacher ratings of relative student creative ability in both Group I and Group II appeared to be normally distributed with means near 4.6 and standard deviations approximating 1.6. The ratings by peers in each of the four class sections were also normally distributed; their means were all close to 3.0 and their standard deviations were about .9. Pearson product-moment correlations between the post-facto teacher and peer ratings in each of the four class sections resulted in coefficients of .86, .77, .87, and .73.

It seems apparent that teachers and peers were in reasonable agreement on the relative creative abilities of students in the sample.

The construct validity of the criterion measures was further investigated by correlating the four criterion measures, in normalized score form, with both post-facto teacher and peer ratings. Table 19 contains the results.

Table 19.

CORRELATION COEFFICIENTS++ BETWEEN CRITERION MEASURES AND POST-FACTO TEACHER AND PEER RATINGS OF CREATIVITY

Other Measures of Creativity	Group and Section	Criterion Measures			
		Figural Unusualness	Figural Creativity	Total Unusualness	Total Creativity
Post-facto Teacher Ratings	I	.54*	.52*	.57*	.55*
	II	.83*	.72*	.83*	.80*
Peer Ratings	I,1	.66*	.64*	.69*	.69*
	I,2	.12	.29	.25	.32
	II,1	.73*	.65*	.75*	.70*
	II,2	.83*	.79*	.81*	.76*

*Significantly different from zero at the .05 level.
++Pearson product-moment correlations.

Except for Section 2 of Group I, all the coefficients in Table 19 are statistically significant and fairly high, lending credence to the construct validity of the criterion measures, and demonstrating the similarity in results between the rank order correlations of raw scores (Table 16) and product-moment correlations of normalized scores. Also, since all four criterion measures have very similar relationships to post-facto teacher and peer ratings, Table 19 tends to confirm the prior finding that all are measuring the same ability or group of abilities. Finally, the coefficients obtained with Group I appear to be consistently lower than those found for Group II; these differences were statistically significant at the .05 level only in the cases of the correlations between figural unusualness and post-facto teacher ratings.

It is recognized that some part of the agreement between criterion measures and post-facto teacher ratings might be considered evidence of the reliability of teacher judgments rather than the validity of criterion measures. However, this cannot be said to be true for the pupil ratings which correlate well with both post-facto teacher ratings and criterion measures.

Table 20 presents the means and standard deviations of the eight measures obtained from the Minnesota Tests of Creative Thinking, Alternate Form VIII. Note that Group I

Table 20.

MEANS AND STANDARD DEVIATIONS OF MTCT, ALT. FORM VIII MEASURES

MTCT Measures	Group I (N = 30)	Group II (N = 24)
Non-verbal	M = 81.3 σ = 18.2	75.2 33.3
Verbal	M = 49.3* σ = 23.7	45.2 24.8
Grand Total	M = 131.6* σ = 46.9	120.4 45.2
Fluency	M = 44.7* σ = 16.6	35.8 14.9
Flexibility	M = 25.3 σ = 6.8	22.9 8.4
Originality	M = 33.1* σ = 14.5	29.5 12.4
Elaboration	M = 40.7 σ = 18.0	35.2 17.5
Inventive Level	M = 22.3* σ = 6.0	15.0 10.6

*Equal variances but significant differences between means at the .05 level.

had consistently higher scores than Group II; these differences were statistically significant at the .05 level in five of the eight measures. The frequency distributions of the combined scores of Groups I and II on each of the eight test measures gave no indi-

cation that the hypothetical population distributions would not be normal.

Table 21 contains Pearson product-moment correlation coefficients between the MGCT, Abbr. Form VII measures and criterion measures and post-facto teacher ratings of relative creativity. The results can be summarized as follows: (a) only two of sixteen coefficients between MGCT measures and post-facto teacher ratings were significant; MGCT measures

Table 21.

CORRELATION COEFFICIENTS[44] BETWEEN MGCT, ABBR. FORM VII MEASURES AND CRITERION MEASURES AND POST-FACTO TEACHER RATINGS

MGCT Measures	Group	Criterion Measures: Figural Originality	Figural Quantity	Total Originality	Total Quantity	Post-facto Teacher Ratings
Non-verbal	I	.42*	.20	.39*	.25	.37*
	II	.22	.23	.23	.27	.11
Verbal	I	.11	-.12	.10	-.10	.14
	II	.53*	.62*	.65*	.63*	.39
Grand Total	I	.31	.11	.29	.10	.30
	II	.46*	.62*	.62*	.57*	.29
Fluency	I	.14	-.03	.12	-.07	.12
	II	.32	.36	.33	.39	.11
Flexibility	I	.13	-.03	.11	-.05	.09
	II	.35	.33	.40	.43*	.21
Originality	I	.21	.04	.15	.02	.09
	II	.40	.49*	.44*	.45*	.23
Elaboration	I	.45*	.39	.44*	.31	.55*
	II	.47*	.49*	.49*	.45*	.33
Inventive Level	I	.14	.01	.14	.04	.26
	II	.64*	.64*	.66*	.65*	.39

* Significantly different from zero at the .05 level.

44 Pearson product-moment correlations.

were not as highly correlated with post-facto teacher ratings as were the criterion measures (see Table 19); (b) the coefficients between MGCT and criterion measures for Group I were almost all insignificant, but for Group II, verbal, grand total, originality, elaboration and inventive level coefficients were significant; only verbal and inventive level coefficients in Group II, however, even approached a magnitude that indicated a practically useful degree of concurrent validity; (c) with few exceptions, Group II coefficients

[illegible] Group II were [illegible] Group I, [illegible] (2) the [illegible] for [illegible] groups, that they [illegible] [illegible] and both were usually [illegible] [illegible] also [illegible] Group II, [illegible] Group I, the [illegible] and [illegible] considerable.

Multiple Linear [illegible] Group II [illegible] to determine the extent of the relation that [illegible] the best combination [illegible] measures and [illegible] criterion [illegible]. In order to [illegible] the degree of dependency among MAGT [illegible], Literary, Mechanical, [illegible], [illegible], and [illegible] level were used as independent variables in the [illegible], and numerical and verbal measures were used as independent variables in a [illegible] of [illegible]. Table 22 shows the resultant [illegible] multiple linear [illegible].

TABLE 22

[illegible] (R) [illegible] MADE AT THE [illegible] OF [illegible] VARIABLES

Dependent Variable	Group	Independent Variables: Literary, [illegible], Mechanical, [illegible]	Independent Variables: Numerical and Verbal
[illegible]	I	[illegible]	[illegible]
[illegible]	II	[illegible]	[illegible]
[illegible]	I	[illegible]	[illegible]
[illegible]	II	[illegible]	[illegible]

[illegible] significant at the .05 level.

[illegible] Table 22 [illegible] the [illegible] and the [illegible] criterion [illegible] [illegible] combinations [illegible] Groups I and II. The

table also verifies the fact that a combination of MMM measures more efficiently predicts the criteria for the groups in the sample than any single MMM measure. It should be remembered, however, that estimates of the probable multiple coefficients for the hypothetical universes from which the two groups were drawn would be reduced by .03 to .22[18], with the largest reductions in the smallest coefficients using the five independent variables.

A test of the standard partial regression coefficients[19] showed that the four equations developed for a given group of students, using the same independent variables but different dependent variables, were not significantly different from each other. The equations for Group I, however, were significantly different at the .05 level from the equations developed for Group II. These results give further evidence of the similarity among criterion measures, and the differences between groups. Since one equation adequately represented the prediction of all four criterion measures for each group and set of independent variables, Table 23 presents the normal and ordinary multiple linear regression equations for each group and set of independent variables using figural creativity as the dependent variable.

For Group I, the elaboration measure made the largest contribution to the prediction of figural creativity in the five variable equation, and the non-verbal measure made the greater contribution in the two variable equation. On the other hand, inventive level was the largest contributor to the five variable equation for Group II, and the verbal measure contributed more than the non-verbal measure in the two variable equation.

Relationships Between IQ and Various Measures of Creative Ability

Table 24 summarizes the means and standard deviations of Groups I and II on the Verbal and Non-verbal IQ scores of the Lorge-Thorndike Intelligence Test. Although Group I has the higher means, there were no significant differences (.05 level) in the means or

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18 $cR^2 = 1 - (1 - R^2)\frac{(N-1)}{(N-M)}$ in Guilford, J. P., Fundamentals of Statistics in Psychology and Education, 2nd ed., New York, N.Y., McGraw-Hill, 1950.

19 The approximation $z = \frac{B_1 - B_2}{\sqrt{S_1^2 + S_2^2}}$ was used.

Table 23.

CENTROIDS AND MODAL PATTERNS FOR FOUR OBSERVER PAIRS AND
COMPONENTS OF MOR, AFR, EOM PERFORMANCE[1]

	Canonical Variates	Modal Variates
Group I	$Y^1 = 42.4 - .32 X_1 - .23 X_2 + .20 X_3 + .24 X_4 - .07 X_5$ $Y^2 = 44.2 + .16 X_3 - .34 X_4$	$Y^1 = -.21 X_1 - .16 X_2 + .14 X_3 + .46 X_4 - .07 X_5$ $Y^2 = .77 X_3 - .36 X_4$
Group II	$Y^1 = 42.0 - .11 X_1 + .37 X_2 + .01 X_3 + .02 X_4 - .05 X_5$ $Y^2 = 42.6 - .03 X_3 + .21 X_4$	$Y^1 = -.02 X_1 + .23 X_2 + .07 X_3 + .03 X_4 + .21 X_5$ $Y^2 = -.03 X_3 + .47 X_4$

[1] X_1 = Memory; X_2 = Flexibility; X_3 = Originality; X_4 = Fluency; X_5 = Ideational Fluency
X_6 = Manipulation; X_7 = Validity; X^1 = Figural Creativity

standard deviations between the two groups on either measure. Since the national norms of the test indicate 100 as the mean and 15 as the standard deviation, Group II is somewhat above the national average, and Group I is almost a standard deviation above the average.

Table 24.

MEANS AND STANDARD DEVIATIONS OF VERBAL AND NON-VERBAL IQ

IQ	Group I (N = 32)	Group II (N = 24)
Verbal	M = 112.6 σ = 12.4	105.8 16.4
Non-verbal	M = 116.2 σ = 13.3	110.3 15.3

The Pearson product-moment correlation coefficients between the two measures of IQ and criterion measures, post-facto teacher ratings, and MTCT, Abb. Form VII measures are given in Table 25.

Table 25.

CORRELATION COEFFICIENTS†† BETWEEN VERBAL AND NON-VERBAL IQ AND VARIOUS MEASURES OF COGNITIVE ABILITIES

Creative Abilities	Verbal IQ		Non-verbal IQ	
	Group I	Group II	Group I	Group II
Figural Unusualness	.40*	.53*	.30	.59*
Figural Creativity	.38*	.49*	.36*	.61*
Total Unusualness	.37*	.52*	.25	.52*
Total Creativity	.34	.50*	.32	.55*
Post-facto Teacher Ratings	.55*	.62*	.36*	.65*
MTCT Non-verbal	.16	.28	.14	.31
MTCT Verbal	.07	.23	-.19	.35
MTCT Grand Total	.13	.16	-.02	.39
MTCT Fluency	-.02	.00	-.18	.25
MTCT Flexibility	.02	.25	-.13	.30
MTCT Originality	-.09	.17	-.11	.35
MTCT Elaboration	.40*	.16	.25	.39
MTCT Inventive Level	.15	.17	.10	.24

*Significantly different from zero at the .05 level. ††Pearson product-moment correlation

The findings in Table 25 may be briefly summarized in three parts. First, post-dicto teacher ratings and criterion measures had a greater relationship with IQ measures than did IPAT Anxiety Form XII measures; the two former types of measures had, in general, statistically significant coefficients, while the latter did not. Second, all three types of creativity measures had larger coefficients with IQ measures in Group II than they did in Group I. Third, the coefficients of the criterion measures within each group, for each type of IQ measure, were quite similar.

Relationships Between School Achievement and Various Measures of Creative Ability

The means and standard deviations of the two types of school achievement measures used in the study, standardized tests and teachers' grades, are shown in Table 26. Where available, the percentiles of the group means, using the local school district and national norms, are also shown for the standardized achievement measures. While the means of Group I are significantly greater (.05 level) than those of Group II in only two cases, the means in Group I are consistently higher than those in Group II. The local percentiles of the means reflect the differences in the relative standing of the two groups and the national percentiles indicate the above average position of the combined groups.

Although the study is not directly concerned with the relationships between measures of IQ and school achievement, Table 27 presents these coefficients for later comparison with the coefficients resulting from correlations between creativity and school achievement measures.

With just a single exception, all the coefficients in Table 27 are significant and fairly high. Measures of IQ appear to correlate equally well with standardized test measures and teachers' grades. Excepting mathematics, and possibly industrial arts achievement, Verbal IQ is somewhat more closely related to school achievement than is Non-verbal IQ. Finally, with few exceptions, the correlation coefficients derived from

Table 26.

MEANS††, STANDARD DEVIATIONS, AND SOME PERCENTILES
OF THE MEANS OF SCHOOL ACHIEVEMENT MEASURES

School Achievement	Group I			Group II		
	$\bar{X}$ and s	Local Percentile	Nat'l Percentile	$\bar{X}$ and s	Local Percentile	Nat'l Percentile
Triggs Diagnostic Reading	$\bar{X}$ = 53.5* s = 13.9	62	66	$\bar{X}$ = 46.6 s = 17.7	39	48
STEP Social Studies	$\bar{X}$ = 50.0 s = 7.5*	54	76	$\bar{X}$ = 46.5 s = 11.7	40	67
STEP Writing	$\bar{X}$ = 32.7 s = 7.9	47	67	$\bar{X}$ = 29.7 s = 9.9	36	57
Snader General Mathematics	$\bar{X}$ = 37.4* s = 6.9	60	—	$\bar{X}$ = 22.4 s = 5.3	58	—
Read General Science	$\bar{X}$ = 41.0 s = 10.7	72	—	$\bar{X}$ = 38.4 s = 13.1	64	—
Avg. Ind. Arts Grade (7th and 8th)	$\bar{X}$ = 2.3 s = .7	—	—	$\bar{X}$ = 2.2 s = .7	—	—
Avg. English Grade	$\bar{X}$ = 2.3 s = .6	—	—	$\bar{X}$ = 2.0 s = .8	—	—
Avg. Social Studies Grade	$\bar{X}$ = 2.3 s = .7	—	—	$\bar{X}$ = 2.0 s = 1.0	—	—
Avg. Mathematics Grade	$\bar{X}$ = 2.4 s = .8	—	—	$\bar{X}$ = 2.0 s = .9	—	—
Avg. Ind. Arts Grade (7th)	$\bar{X}$ = 2.4 s = .7	—	—	$\bar{X}$ = 2.1 s = .7	—	—
Avg. Science Grade	$\bar{X}$ = 2.2 s = .8	—	—	$\bar{X}$ = 2.0 s = .8	—	—
Avg. Art Grade	$\bar{X}$ = 2.3 s = .8	—	—	$\bar{X}$ = 2.1 s = .5	—	—
Avg. Grade (7th)	$\bar{X}$ = 2.3 s = .6	—	—	$\bar{X}$ = 2.0 s = .7	—	—

* Significant differences in group means or variances at the .05 level; where variances were significantly different, group means were tested using the Welch approximation.

†† Means of standardized tests are based on raw scores; means of teachers' grades are based on the scale of A = 4, B = 3, C = 2, D = 1, F = 0.

Table 27.

CORRELATION COEFFICIENTS†† BETWEEN VERBAL AND NON-VERBAL IQ AND VARIOUS MEASURES OF SCHOOL ACHIEVEMENT

School Achievement	Verbal IQ		Nonverbal IQ	
	Group I	Group II	Group I	Group II
Triggs Diagnostic Reading	.63*	.80*	.46*	.51*
STEP Social Studies	.75*	.86*	.65*	.62*
STEP Writing	.70*	.81*	.49*	.53*
Snader General Mathematics	.56*	.67*	.68*	.67*
Read General Science	.76*	.83*	.61*	.47*
Avg. Ind. Arts Grade (7th and 8th)	.63*	.79*	.45*	.77*
Avg. English Grade	.49*	.79*	.35*	.53*
Avg. Social Studies Grade	.50*	.80*	.52*	.62*
Avg. Mathematics Grade	.74*	.75*	.71*	.77*
Avg. Ind. Arts Grade (7th)	.59*	.69*	.47*	.60*
Avg. Science Grade	.56*	.64*	.37*	.54*
Avg. Art Grade	.42*	.47*	.43*	.39
Avg. Grade (7th)	.69*	.84*	.62*	.72*

* Significantly different from zero at the .05 level.
†† Pearson product-moment correlations.

Group II are larger than those resulting from Group I.

The correlation coefficients between standardized achievement tests and various measures of creative abilities are shown in Table 28. The coefficients involving post-facto teacher ratings of creative abilities were very slightly higher than those involving criterion measures, but both sets of coefficients were all either significant (.05) or close to significant. On the other hand, with the exception of mathematics achievement in Group II, MCT, Abbr. Form VII measures were not significantly related to achievement on standardized tests. In accord with the relationships investigated in previous sections, the coefficients in Table 28 indicate the similarity among criterion measures and the somewhat higher coefficients obtained for Group II as compared to Group I.

When the coefficients in Table 25 are compared with those in Table 28 it is evident

that criterion and MGOT, Alternate Form III measures of creative abilities are approximately equally related to IQ and to standardized test achievement. IQ, however, especially Verbal IQ, tends to have a greater degree of relationship with standardized achievement than do

Table 28.

CORRELATION COEFFICIENTS# BETWEEN STANDARDIZED ACHIEVEMENT TESTS AND VARIOUS MEASURES OF CREATIVE ABILITIES

Creative Abilities	Triggs Diagnostic Reading		SRA Social Studies		SRA Writing		Sander General Mathematics		Reed General Science	
	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II
Figural Unusualness	.33	.50*	.46*	.40	.46*	.50*	.30	.64*	.29	.47*
Figural Creativity	.32	.55*	.46*	.40	.45*	.49*	.30	.67*	.31	.46*
Total Unusualness	.35*	.49*	.46*	.49*	.47*	.48*	.34	.62*	.29	.50*
Total Creativity	.34	.52*	.47*	.43*	.52*	.46*	.33	.64*	.32	.49*
Post-facto Teacher Ratings	.5.*	.52*	.45*	.47*	.51*	.57*	.42*	.59*	.56*	.51*
MTCT Non-verbal	.04	.00	.16	.21	-.07	.27	.12	.24	.02	-.07
MTCT Verbal	-.19	.13	-.05	.21	.04	.27	-.11	.60*	-.01	.23
MTCT Grand Total	-.09	.07	.07	.25	-.02	.25	.01	.46*	.00	.08
MTCT Fluency	-.21	-.05	-.08	.11	.02	.14	.00	.33	-.07	.00
MTCT Flexibility	-.19	.15	-.12	.34	-.10	.26	-.09	.44*	-.05	.23
MTCT Originality	-.31	.07	-.07	.25	-.10	.23	-.23	.40	-.17	.16
MTCT Elaboration	.29	.11	.33	.28	.04	.24	.24	.43*	.23	-.03
MTCT Inventive Level	-.04	.16	.11	.21	.12	.29	.04	.56*	.01	.21

* Significantly different from zero at the .05 level.
\# Pearson product-moment correlations.

the measures of creativity, this closer relationship became most obvious when the measures of creativity considered are MGOT, Alternate Form III scores.

Table 29 contains the correlation coefficients between school achievement, as measured by teachers' grades, and various measures of creative abilities. The findings shown in Table 29 are, in general, very similar to those in Table 28. The coefficients between

Table 29.

CORRELATION COEFFICIENTS†† BETWEEN TEACHERS' GRADES AND VARIOUS MEASURES OF CREATIVE ABILITIES

Creative Abilities	Avg. I. A. (7 & 8)		Avg. English		Avg. Soc. St.		Avg. Math		Avg. IA. (7)		Avg. Science		Avg. Art		Avg. 7th Grade	
	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II	Group I	Group II
Figural Unusualness	.51*	.62*	.36*	.51*	.35*	.47*	.36*	.56*	.52*	.45*	.30	.65*	.16	.53*	.47*	.59*
Figural Creativity	.47*	.63*	.31	.39	.27	.37	.36*	.46*	.46*	.47*	.32	.58*	.23	.52*	.42*	.50*
Total Unusualness	.53*	.60*	.36*	.50*	.36*	.50*	.38*	.53*	.54*	.45*	.36*	.64*	.18	.56*	.50*	.59*
Total Creativity	.52*	.61*	.33	.41*	.29	.44*	.36*	.47*	.49*	.46*	.39*	.60*	.23	.56*	.44*	.54*
Post-facto Teacher Rating	.76*	.70*	.58*	.54*	.54*	.71*	.63*	.65*	.76*	.53*	.40*	.65*	.53*	.42*	.75*	.72*
MCCT Non-verbal	.24	.02	.29	.03	.34	.01	.19	.09	.33	.00	-.08	.26	.04	.38	.28	.10
MCCT Verbal	.00	.29	.10	.33	.06	.19	.09	.38	.07	.16	-.31	.33	-.32*	.56*	.08	.32
MCCT Grand Total	.15	.17	.23	.23	.24	.11	.17	.27	.18	.09	-.22	.34	-.17	.54*	.21	.24
MCCT Fluency	-.02	.03	.07	.15	.11	-.05	.09	.13	.01	-.07	-.36*	.16	-.34	.42*	.06	.08
MCCT Flexibility	.08	.28	.11	.24	.12	.18	.08	.49	-.04	.24	-.13	.31	-.15	.51*	.06	.29
MCCT Originality	-.07	.15	.03	.21	-.03	.14	-.05	.24	.02	.03	-.36*	.28	-.39*	.41*	-.05	.22
MCCT Elaboration	.44*	.18	.46*	.19	.49*	.15	.35*	.27	.47*	.14	.09	.40	.24	.32*	.51*	.26
MCCT Inventive Level	.17	.24	.13	.30	.05	.14	.09	.31	.21	.12	-.19	.32	-.16	.55*	.11	.23

* Significantly different from zero at the .05 level.
†† Pearson product-moment correlations.

post-facto teacher ratings of creative abilities and teachers' grades were a little higher than the coefficients between criterion measures and teachers' grades. However, both sets of coefficients were all significant (.05 level) or close to significant. MGCT, Alpha, Form III measures were generally not significantly correlated with teachers' grades, with the exception of elaboration for Group I and vocabulary and grade for Group II. Among criterion measures, unusualness appeared to be slightly better correlated with teachers' grades than were creativity measures, and the differences between the coefficients for Group I and Group II favored Group II more than Group I.

A comparison of the magnitude of the coefficients in Tables 28 and 29 reveals that post-facto teacher ratings of creativity may be a little more closely related to teachers' grades than to standardized tests of achievement, but that criterion and MGCT, Alpha, Form III measures tend to correlate equally with both types of school achievement measures. As shown by Tables 25 and 29, criterion and MGCT, Alpha, Form III measures are related about equally to IQ and to teachers' grades, while Tables 27 and 29 reveal that IQ is a better indicator of teachers' grades than either of the two creativity measures.

Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

In general, this study investigated the relationship between the "primary creative abilities" and actual creative performance in a substantive area. In particular, the principal purpose was to estimate the concurrent validity of the pencil and paper Minnesota Tests of Creative Thinking, Abbreviated Form VII, for identifying the creative abilities of eighth grade students in industrial arts classes. Concomitant objectives were to investigate the relationships between creative abilities and (a) intelligence, and (b) school achievement of eighth grade industrial arts students.

To accomplish these purposes, a definition of relative creative abilities in the industrial arts and guidelines for their measurement was developed and submitted to a small, purposive sample of educational psychologists and industrial arts teacher educators to determine its acceptability. A procedure was then selected for applying the definition and guidelines to secure criterion measures of creative abilities. The procedure, consistent with the definition, required industrial arts teachers to (a) observe the typical classroom/laboratory behavior of their students, (b) identify the problem-solutions of students that qualified as "unusual", (c) rate the extent of the unusualness of the idea inherent in the problem-solution, (d) rate the "usefulness" of the idea as a problem-solution, and (e) classify the content of the unusual idea as figural, behavioral or symbolic. The eight criterion measures derived for each student from this procedure included: (a) figural unusualness (the sum of the unusualness ratings of the student's figural products which were identified as being at least minimally unusual), (b) behavioral unusualness, (c) symbolic unusualness, (d) total unusualness (the sum of the figural, behavioral and symbolic unusualness measures), (e) figural creativity (the sum of the unusualness times the usefulness ratings of each of the student's figural products), (f) behavioral creativity, (g) symbolic creativity, and (h) total creativity (the sum of the figural,

behavioral and by little creativity measures for the students).

Three pairs of industrial arts teachers were carefully selected and then tested in the measurement procedure. Following the testing, the teachers observed three pairs of eighth grade class sections throughout one semester in order to obtain criterion measures. The original sample consisted of three hundred students. However, eliminations by the investigator due to exceptional in-school experiences or out-of-school experience with the content of the industrial arts class, or excessive absences, reduced the original sample to a sample of ninety-five students.

The Minnesota Rate of Manipulation Battery, Alternate Test IIX was administered to the sample in the middle of the semester observation period. Eight measures were derived from this battery: (a) Firmness, (b) Speed, (c) Originality, (d) Dissection, (e) Inventive Level, (f) total verbal, (g) total non-verbal, and (h) grand total.

In addition, post-facto teacher ratings of student creativity and peer ratings of creativity were secured as supplementary measures to assure the construct validity of the criterion measures.

The measures of IQ (verbal and non-verbal), the results of the standardized achievement tests administered to the eighth grade, and eight sets of teachers' grades were collected from the students' cumulative records.

The analysis consisted of: (a) testing for differences between the means of each pair of class sections on all variables, (b) computing zero order correlations among all variables, and (c) developing multiple linear regression equations between the criterion measures (as the dependent variables) and IQ, Age, Plan XII measures (as the independent variables).

Conclusions

The following conclusions are organized to provide direct response to the seven specific questions posed in Chapter I, "Objectives of the Study". The conclusions are based upon, and are limited to, the particular sample utilized and the conditions prevailing dur-

ing the study, or to similar hypothetical populations and circumstances.

1. What definition of "creativity" is (a) compatible with theory and research, (b) capable of operational interpretation in industrial arts classes, and (c) acceptable to selected industrial arts educators? Based upon the responses from a limited, but carefully selected sample of educational psychologists and industrial arts teacher educators, the definition and guidelines contained in a "Theoretical Model for Identifying the Relative Creative Abilities of Industrial Arts Students" appears to meet the stipulated criteria.

2. What measurement procedure will yield reliable criterion scores of the relative creative abilities of eighth grade industrial arts students? The "teacher ratings of observed student behavior in a typical industrial arts environment" approach proved only partially successful. The reliability of teacher ratings of observed student products seems satisfactory, but, in the judgment of the investigator, the students in only two of the original three groups (pairs of class sections) received a sufficient number of ratings to warrant the assumption of adequate reliability of their criterion measures for individual students. In the two groups that were retained, the group with the higher correlation coefficients with MTCT, Abbr. Form VII measures had the lower number of average ratings per students; if these coefficients are spurious they are therefore probably higher than the "true" coefficients.

3. Do the criterion measures derived by the above procedure have satisfactory construct validity as shown by a comparison with such intermediate indices of creativity as post-facto teacher and peer ratings? The criterion measures do have a reasonably high degree of agreement with both post-facto teacher and peer ratings; this lends credence to their use as criterion measures of creative performance. On the other hand, the measures secured appear to represent only one of the three possible types of creativity hypothesized in the definition--figural creativity. It is likely that, in the industrial arts classes employed in the study, the nature of the problem-situations provided limited opportunity for students to express behavioral and symbolic creative abilities.

4. What is the extent of the relationship between criterion measures and each of the measures yielded by the Minnesota Tests of Creative Thinking, Abbreviated Form VII? The

coefficients obtained were not sufficiently high to consider measures from the MMPI, Alpha, Form VII, (a relatively content-free test battery of primary creative abilities), as satisfactory indices of actual figural creativity output in the laboratory. For example, improvement of test scores by experimental treatment cannot be assumed to be equated with improved figural creativity performance. Some of the MMPI Alpha, Form VII measures, however, did have a significant relationship to figural creativity, and this relationship was greater than with measures of IQ. In the group of lower aptitude and achievement level, (which was nevertheless a little above the national average), five of the eight MMPI, Alpha, Form VII measures tended to correlate significantly with the criterion in the higher aptitude and achievement group none of the eight measures correlated significantly. While some of the differences in coefficients might have been due to errors of measurement, observational bias, and/or variation in the specific types of abilities called for by dissimilar course content or problem-situations, it is possible that a cause was the unequal general ability level of the two groups. Apparently, the closer the group was to the national general ability average, the greater the relationship between test scores and figural creativity performance.

5. To what extent can combinations of measures yielded by the MMPI, Alpha, Form VII predict criterion measures? What are these combinations? The multiple correlation coefficients were numerically higher than the zero order coefficients, but they were still not significant for the higher aptitude and achievement level group, and, when the probable shrinkage was estimated, the multiple coefficients for the lower aptitude and achievement group were only slightly greater than the significant zero order correlations. Further, the relative contribution of each of the test measures to the prediction of figural creativity performance varied significantly between the two groups of students; for the higher ability group, domination made the largest contribution, but in the lower ability group inventive level contributed the most.

6. What are the degrees of linear relationship between IQ and (a) criterion measures, (b) measures yielded by the MMPI, Alpha, Form VII, and (c) post-facto teacher ratings of

creativity? Creative performance of a figural nature, as indicated by criterion measures, and post-facto teacher ratings of creativity are significantly related to both verbal and non-verbal IQ, but MMPI, Alpha, Form III measures are not. IQ appears to be a factor in creative output. In the group of students with the higher IQ this relationship tended to be less than in the other groups; thus it seems that a high IQ is no guarantee of substantive creativity, but a low IQ certainly reduces the probability of its occurrence.

7. What are the degrees of linear relationship between school achievement, as measured by standardized tests and by teachers' grades, and (a) IQ, and (b) creative abilities, as measured by criterion scores, MMPI, Alpha, Form III scores, and post-facto teacher ratings? The highest correlation coefficients with both types of school achievement measures were produced by IQ; verbal IQ was more closely related to most kinds of school achievement than was non-verbal IQ. In general, figural creativity performance and post-facto teacher ratings of creativity were significantly related (although less than IQ) to both types of school achievement, while MMPI, Alpha, Form III measures were not significantly related to either type of school achievement. As might be expected, the magnitude of the coefficients between school achievement and creative output, test scores, and post-facto teacher ratings decreased as the average achievement in the two groups of students increased.

Implications

The conclusions of this study tend to confirm the results of prior investigations which related the scores on pencil and paper creativity tests to measures of IQ and school achievement. They also serve to place in a somewhat more realistic perspective the relationship between actual creative performance in the industrial arts and measures of "primary creative abilities", IQ, and school achievement. But perhaps the most fruitful outcomes are the clues they provide for further study. Some of these clues and relevant hypotheses are summarized briefly in the following paragraphs.

The abilities presumably measured by the MMPI Alpha, Form III are inadequate to account for creative output. Yet, the battery is measuring intellectual components which

are not represented in the typical intelligence test--components that have some promise of being related to creative performance. The fairly high relationship between substantive creativity and IQ appears to indicate that some of the "convergent" thinking abilities do influence the production of unusual and useful ideas. Familiarity with the subject matter of the problem area also seems to affect creative output. Further, it is impossible to ignore the relevance of motivational and emotional factors to any kind of performance. Thus, the most efficient prediction-explanation of creative output will probably need to incorporate all of those factors. Using currently available, relatively crude instruments for measuring the hypothesized independent variables is likely to reveal only the greatest components of creative performance, and then only when "normal" populations are utilized. Yet, it is the logical first step. However, since a greater amount of creative activity may be expected from a more limited group with a high level of intellectual abilities, the task of refining the explanation and prediction of creative performance will require more discriminating and discrete measures of the independent variables, as well as careful classification of the dependent variable according to the nature of the conditions in which creative output is measured.

Until we learn the factors that have the greatest influence upon specific kinds of creative output, various techniques of "teaching for creativity" must be considered very speculative; the advocated techniques may or may not be improving a quality which is significantly related to the criterion.

Attempts to measure and classify kinds of creative output should be continued. For example, the potential differences among figural, symbolic, and behavioral creative abilities should be investigated, using "normal" populations in carefully described and differentiated environments.

The further use of the criterion measurement process described in this study should provide for observation periods longer than one semester and teacher-raters trained in the use of techniques which encourage the expression of student creative abilities. These

provisions would tend to insure the reliability of measures, permit rectification of the shape of the distribution of criterion measures, and assist in controlling the conditions under which creative performance is observed. Any such studies should, concurrently, investigate the relationship between the ability to produce unusual products and the ability to make these products useful problem-solutions.

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APPENDIX A

NOTES AND FORMS USED DURING TEACHER-RATER TRAINING SESSION AND DATA COLLECTION PERIOD

NOTES

for

TEACHER-RATER TRAINING SESSION

Materials Needed

1. Ten examples of creative products written up on the Anecdotal Record form (6 sets)

2. Pocket "memo pads" (18 pads, 50 sheets to pad)

3. "Student folders" (12), each containing:
   a. Identification data on cover
   b. 30 "Product Recording" blank forms
   c. Rating scales pasted on inside front cover

4. Creative product test answer form (6)

5. Test containing twenty examples of student products to be rated (on Anecdotal forms) (1 copy)

6. Anecdotal Record form folders (6)

7. Ideas for providing opportunities for creative problem-solving behavior (6)

8. Duplicated notes on training session (6)

Materials & Notes

I. Introduction

II. Correlates of Objectives of the Study:

A. Obtain criterion measures of creative abilities of students by teacher observation of student "products" in typical class/laboratory situation.

B. Obtain measures of "creativity" based on Torrance's test battery and peer ratings. (Do not tell teachers about their own post-facto ratings.)

C. Obtain data on students' aptitudes, academic ability, etc. from cumulative records and teacher's grade book.

D. Determine the relationships among these measures.
   1. The concurrent validity of Torrance's battery.
   2. The relationships among creativity, aptitudes, academic achievement, etc.

III. Purposes of Training Session

A. Prepare teachers to observe student "products" so that criterion measures of creative abilities can be obtained.
   1. Identifying and rating creative products.
   2. Classifying creative products.

B. Explain the recording procedures desired.

C. (Note that refresher will be given to the three teacher-raters who aren't scheduled to observe the sample until the beginning of the second quarter.)

IV. Definitions: Part One

A. "Product"--To measure the creative abilities of students, teachers will rate the "products" of students. If a product is "creative" then it is assumed that the student is "creative". What is a "product" in industrial arts?

1. Product is a solution to a problem which has more than one possible correct answer (non-factual, requires understanding).
2. Problem (non-factual) can be teacher-imposed or student-initiated.
3. Products as problem solutions can take many forms.
   a. Verbal (oral or written).
   b. Physical acts.
   c. Two dimensional representations.
   d. Three dimensional objects.
4. Products can be observed in the classroom and the laboratory.
5. CAUTION:
   a. Need to observe all students closely.
   b. Need to observe all products of each student closely.
   c. Product is not synonymous with project. Products will be produced at all stages of a project.
   d. Need to provide equal opportunities for creativity (type and amount of problems).

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B. "Unusualness"--Unusualness is the first thing to look for in every student product. Unusualness is a matter of frequency of occurrence; the more frequently a particular product occurs the less unusual it is.

1. Unusualness is measured in terms of the teacher's expectations of other students in the same age-grade level.
2. The teacher must decide, for every product observed, whether there is something about it that makes it an unusual solution to the problem (imposed by the teacher or initiated by the student) for that age-grade level of student.
3. The teacher asks himself: If this same problem was solved by 100 typical students of that grade level, how many similar products would the teacher expect to find? The teacher uses his past experience to evaluate 100 students (past and present) and the products he would likely get if they all attempted to solve the same problem. (Illustrate the distribution of products they might expect to find.)
   a. If the teacher would expect to find more than 20 (11 and up) similar products, among the 100, the product is common. Rate it zero on unusualness and forget it.
   b. If the teacher would expect to find 6-10 similar products, the product is fairly unusual. Rate it one.
   c. If the teacher would expect to find 1-5 similar products, it is very unusual. Rate it two.
   d. If the teacher would expect to find less than one in 100 products, the product is rare. Rate it three.
4. CAUTIONS:
   a. Ordinarily, more 0 ratings would be expected than 1's, more 1's than 2's, and more 2's than 3's.
   b. If more than one solution to a problem is presented by a student at one time, rate them all. (The student must recognize each one as a solution and not depend upon the teacher to tell him which one is a solution.)
   c. Unusualness is not a matter of quality of manipulative skill or expression, but the idea expressed by the product.
   d. If one student is creative but other students copy him, the originator is creative, but the other students are not.
5. EXAMPLES:
   a. Read out loud two prepared anecdotal records of students' products. Rate unusualness and explain the rating. (Be sure to point out the unusual idea of each product.)
   b. Read out loud eight additional anecdotal records of students' products. For each example, have each teacher rate unusualness, then reveal investigator's rating, then determine why the teacher's ratings did not agree among themselves or with the investigator's. (Diagnostic.)

10 prepared anecdotal examples.

C. "Usefulness"--If a product is rated zero on unusualness, forget it, but if the teacher rates it 1, 2, or 3 then he

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must rate the "usefulness".

1. Usefulness is judged in terms of the problem situation. How well does the unusual idea expressed in the product meet the requirements of the problem?
2. To judge usefulness it is necessary to know the problem being solved and the requirements of a good solution.
3. What makes a product useful? Is the unusual idea within the limitations imposed by the problem? Within specifications? Will it solve the problem? What are its actual or potential safety, economy, aesthetic values?
4. The teacher must ask himself: How well will the unusual idea expressed in the product satisfy the requirements of the problem?
   a. If the solution does not satisfy the principal requirements of the problem then rate it zero.
   b. If the solution does satisfy the principal requirements of the problem rate it one.
   c. If the solution is as good as what you usually teach (standard shop practice) or 2) what a typical teacher would have done when faced with the same problem, rate it two.
   d. If the solution is better than what you usually teach or what a typical teacher would have done when faced with the same problem, rate it three.
   e. When the unusual aspect is the aesthetic qualities of the design:
      1. If not functional, rate it zero.
      2. If functional, rate it 1, 2, 3 on pleasing qualities of design. (Try to eliminate quality of expression.)
5. CAUTIONS:
   a. To rate usefulness the teacher may have to question the student regarding the problem attacked and/or how the solution is expected to solve the problem.
   b. Usefulness has nothing to do with the workmanship or quality of expression of the product; the value of the unusual idea inherent in the product is being rated.
   c. Keep unusualness and usefulness separated in your mind. A product may be unusual but useless; it may be useful but not unusual (it is the common solution). On the other hand, when a product is more useful than the standard practice then it must be unusual.
   d. It is anticipated that there will be relatively few 3 ratings given on usefulness.
6. EXAMPLES:
   a. Read out loud two prepared anecdotal records of students' products. Rate usefulness and explain the rating (relating usefulness to the unusual idea).
   b. Read out loud eight additional anecdotal records of students' products. For each example, have each teacher rate usefulness, then record investigators rating, then determine why the teachers' ratings did not agree among themselves or with the investigator. (Diagnostic.)

Use same anecdotes as in "unusual" examples.

V. Definition [illegible]

Some students might be sensitive with certain kinds of content but not with other types of content, i.e. creative artistic may not be creative when they deal with problems involving content of a mechanical nature. It is therefore necessary to classify students' creative products as fully to the content of the natural idea expressed in the product.

A. Determine a product's [illegible] judged unusual (rated 1, 2 or 3), the remainder be [illegible]. Regardless of the novel idea, the product is also [illegible] according to content categories.

B. There are three [illegible] such categories. Every unusual product must be classified into one of the three categories.

C. The teacher [illegible] itself from the [illegible] idea in the product deal with:

1. Individual [illegible] group relationships, such as pupil-teacher and pupil-pupil interactions in permanent or instructional situations, i.e. novel ideas of how to teach something or how to convince somebody to do something? If so, we call it [illegible] content.
2. Attributes [illegible] abstract qualities of real, tangible objects or [illegible], i.e. systems of measurement, characterizing, co[illegible], intangible aspects of design? If so, we call it [illegible] content.
3. Manipulation [illegible] real, concrete, inanimate objects and processes, i.e. [illegible] of performing an operation, combining matter, [illegible] for functional purposes, suggesting of operations [illegible]? If so, we call it [illegible] content.

D. CRITERIA:

The product is [illegible] by the content of the natural idea and not the "form" [illegible] product by, i.e. and organizations may contain unusual ideas [illegible] only the aesthetic qualities of a design (symbolic [illegible] a face, example; the employment in a room production product [illegible] figure). A sketch might utilize conventional symbols [illegible] unusual manner (symbolic) or depict a new design for wheel [illegible] head (figural).

E. Procedure:

1. Read out [illegible] prepared anecdotal records of students' products. [illegible] to look and explain the classification (related [illegible] to the unusual idea).
2. Read out [illegible] of different anecdotal records of students' products [illegible]. For each example, have each teacher classify the [illegible], then permit investigator's judgment. Show determine if any teacher's classification did not agree with [illegible] judgment rater. (Diagnostic.)

Use same procedure as for "Natural" and "Manipulation" groups.

VI. G[illegible] of natural products from teachers, based upon table [illegible] equations, and [illegible] and literally each product.

VII. [illegible]

A. [illegible] of trendy [illegible] words, representing a range of [illegible] and work [illegible] and age, content categories and sub-

Hand out test answer sheets. Use 20 pro-

	Materials & Notes
just rather is to be used out loud. Teachers enter their ratings and classification on separate answer sheets. (Some items on the test may have usefulness.)	
VIII. [illegible]	
IX. Recording Procedures:	
A. Product Memo pad	
1. Observe all [illegible] products of every student as they occur in class.	
2. Identify and [illegible] to all the unusual products (product-solutions [illegible] given problem that would be expected to occur 10 or [illegible] times in 100 product-solutions to the same problem. Forget all the other (common) products.	
3. Rate the us[illegible] items (0-3) of all unusual products.	
4. Classify th[illegible] product (its unusual idea) as behavioral, symbolic or [illegible]ual (b, s, f).	
5. Immediately [illegible] the two ratings and the classification on the Pro[illegible] memo pad.	
a. Student [illegible] no.	Hand cut Product Memo pads.
b. Product [illegible]ng and classification.	
c. Date.	
d. Brief d[illegible]ption of product (for later recall purposes)	
6. CAUTION:	
a. All unu[illegible] products are rated, classified and recorded [illegible]en if the usefulness is rated as zero.	
B. Product Recordi[illegible]	
1. Alphabetize [illegible] names of students in each section. Copy each studen[illegible] name, alphabetically, on the left portion of the [illegible]uct Recording form. (Use one folder of forms for [illegible]h class section.) Enter each student's name on the [illegible] line of the Product Recording form. (Second quar[illegible] teachers will not do this until they get the stu[illegible] in class.)	Hand cut "Student Folders", one for each section of students.
2. Complete id[illegible] [illegible]ntifying data on folder cover (now).	
3. Immediately [illegible] the class period is over, transfer the information [illegible] the Product Memo pad to the individual student's P[illegible]t Recording form.	
a. Use a se[illegible] line for each product.	
b. Enter da[illegible] product was observed.	
c. Select th[illegible] proper content category column.	
d. Enter th[illegible] usefulness and usefulness rating in the proper [illegible] column.	
e. Do not [illegible] blank columns.	
C. Anecdotal Record[illegible]	
1. Every time [illegible] not rated and recorded by the teacher in each of the [illegible] content categories for the combined class sessi[illegible] will be written up on the Anecdotal Record form.	
2. The Anecdot[illegible] record form should be completed on the same day in whic[illegible] product was originally observed and rated.	

Lecture

3. At each daily entry is made in the Product Recording Form, a frequency tally should be kept, by content categories, on the inside front cover of page of the Product Recording form folders. This tally should include both class sections. In this manner, the teacher will know which products are to be used in the Anecdotal Records, and can complete the records the same day the product was observed.

4. In completing each Anecdotal Record Form:
   a. Fill in the content classification, unusualness rating, and usefulness rating on the top line of the form at the top of the form.
   b. Enter your name, student's name, course, section, date of observation and current date.
   c. Briefly describe the problem or question imposed by the teacher or initiated by the student, and its requirements and limitations.
   d. Describe the solution (how the product solved the problem). Indicate the "form" of the product (oval, sketch, etc.) and attach a sketch or a sample if needed.
   e. Indicate the idea in the product which made it unusual. This is the basis for rating unusualness and classifying content and rating usefulness.
   f. Indicate the solution commonly taught by you for this problem - the typical teacher solution to the problem. This is a basis for rating usefulness.
   g. Add, in Item V, any information which would provide a better basis for rating and classifying the product.

Hand out folders Anecdotal Record forms, one per

X. Review of Recording Procedures

A. Observe all products of all students.
B. Identify unusual products.
C. Rate unusualness, usefulness and classify every unusual product.
D. Enter ratings and classification of content on "Product Memo" pad during the class (immediately).
E. At the end of the class period, transfer data to the student's "Product Record" form.
F. At the end of the day, decide whether any product rated that day should be written up on the "Anecdotal Record" form.

XI. Cautions

A. Need to observe all products of all students.
B. Salience of notable creative behaviors.
C. Need to provide equal opportunities for problem-solving experiences.
D. Halo effect on ratings. (Do not judge the student on what you expect from him.)
E. Possible techniques for providing creative problem-solving opportunities.

Hand out list of "Ideas" and review them.

	Materials & Notes
XII. Future Activities	
A. Begin rating student products September 14, 1964.	
B. Visitations of investigators to review records, answer questions, etc.	
C. Collection of Student Information forms.	
D. Investigators to collect data from cumulative records.	
E. Administration of Torrance battery (near end of first quarter or beginning of second quarter).	
F. Retrain three teachers for the second quarter.	
G. Collect quarter grades and absentee record at close of each quarter.	
H. Administration of peer creativity rating scale.	
I. Collection of outlines of course content, projects, operational procedures, etc.	
J. Meeting of teachers after the semester is completed.	
XIII. Distribution of Additional Materials	
A. Distribute these notes, Sections III-XII.	Notes on session.
B. Distribute ten examples of completed Anecdotal Record forms for future reference.	Copies of 10 example Anecdotes.

(A-2)

RATING SYSTEM

I. Uncommonness

0 - Solution occurs more than 30 times in 100

1 - Solution occurs between 6 to 30 times in 100

2 - Solution occurs between 1 to 5 times in 100

3 - Solution occurs less than 1 time in 100

II. Usefulness

0 - Does not partially satisfy minimal requirements of problem

1 - Satisfies partially minimal requirements of problem

2 - As good as common or standard solution

3 - Better than common or standard solution

III. Content

Behavioral (B) - Particularly those content deals with human relationships.

Figural (F) - Particularly those content deals with the manipulation of real, concrete, inanimate objects and processes.

Symbolic (S) - Particularly those content deals with representations of the intangible and other abstract qualities of real, tangible objects or processes.

(A-3)

POCKET MEMO PAD

STUDENT'S NAME _____

PRODUCT RATING _____

Unusualness	Usefulness	Content
(1, 2, 3)	(1, 2, 3)	(F, S, D)

DATE _____

_____

PRODUCT DESCRIPTION

PRODUCT RECORDING FORM

Student's Name: _____
(Last) (First) (Middle)

ENTER PRODUCT RATINGS DURING OR IMMEDIATELY AFTER THE CLASS PERIOD IN WHICH OBSERVED

DATE	[illegible]				[illegible]				[illegible]			
	Unusual	Useful			Unusual	Useful			Unusual	Useful		
TOTALS												

ANECDOTAL RECORD FORM

Content	Unusualness	Usefulness

Teacher_____ Student_____

Course_____ Section_____ Date of Observation_____ Delay's Date_____

I. Describe the problem, including stipulated requirements and/or restrictions.

II. Describe the solution to the problem (product). Attach the product, a copy, or a sketch if possible.

III. What idea in the solution to this problem (product) made it unusual?

IV. What is the typical teacher solution to this problem?

V. Observer comments: Elaborate upon (a) the situation in which the product was observed, (b) success of the product in meeting the problem requirements, (c) prior technical experiences given in the course related to the problem.

IDEAS FOR PROVIDING CREATIVE OPPORTUNITIES

1. Develop an atmosphere for encouraging creative thinking.

   a. Respect unusual questions, ideas and solutions.

   b. Reward, reinforce creative problem-solutions.

2. Provide problems with as few restrictions as course objectives, facilities, and student abilities permit.

   a. Make assignments which encourage a wide latitude of possible responses.

   b. Provide opportunities for work on self-initiated projects and problems.

3. Permit discovery by students.

   a. Teach only essential facts and fundamental manipulative skills in a direct, authoritative manner.

   b. Provide opportunities for experimentation.

   c. Give credit for self-initiated, independent learning.

4. Ask questions requiring analysis and problem-solving, not just recall of facts.

5. Do not evaluate formally too often.

   a. Remove the pressure for immediate productivity.

   b. Allow time and freedom for creative activities.

6. Provide opportunities for all students to be creative.

   a. Give the same problem to all students and observe the products of all students.

   b. Encourage unresponsive students to express themselves; for example, direct questions to them first (and then to the rest of the class).

7. Use role playing or sociodrama and discussion when possible.

APPENDIX B

DIRECTIONS AND FORM FOR SECURING POST-WARTO TEACHER RATINGS OF CREATIVITY

RATING THE TOTAL CREATIVE ABILITY OF STUDENTS

Teacher's Name _____ Date _____
(Last) (First)

Course Title _____ No. of Students in Class _____

The chart on the reverse side of this sheet is designed to obtain your rating of the total creative ability of each student in your combined experimental sections relative to the creative abilities of his classmates. Please read the following DIRECTIONS completely and carefully, and then carry out the instructions exactly as given.

DIRECTIONS

1. Step One

   a. Select the most creative student--the one with the most unusual and clever ideas--from your two sections and print his name on the chart in the box directly above the word "HIGH".

   b. Select the least creative student from your two sections and print his name on the chart in the box directly above the word "LOW".

   c. Select a student from your two sections whose creative ability lies halfway between the most creative student and the least creative student and print his name on the chart in the box directly above the word "MEDIUM".

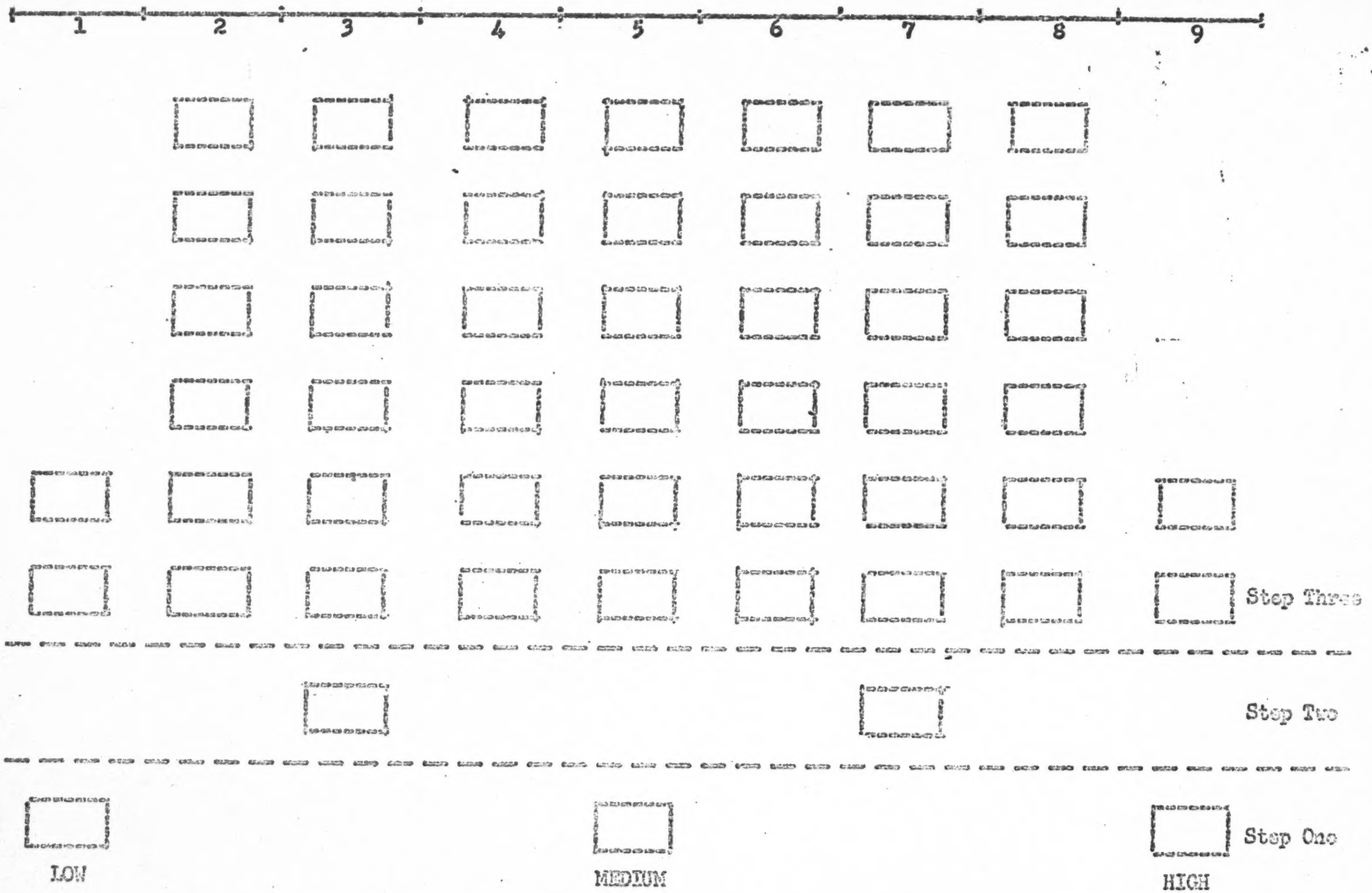
2. Step Two

   a. Select a student from your two sections whose creative ability lies halfway between the most creative student and the student selected as "Medium" and print his name in the box midway between the "HIGH" and "MEDIUM" boxes.

   b. Select a student from your two sections whose creative ability lies halfway between the medium creative student and the least creative student and print his name in the box midway between the "MEDIUM" and "LOW" boxes.

3. Step Three

Print the name of each of the remaining students in your two experimental sections in the box which properly classifies his creative ability relative to the other students in your class. Note that the chart provides for nine different levels of creativity. It is possible to place students in levels which lie halfway between each of the five levels you have already identified in Steps One and Two, above. Be certain to rate every student in your two experimental sections on this one chart.


1
2
3
4
5
6
7
8
9
Step Three
Step Two
Step One
LOW
MEDIUM
HIGH

(G-2)

DIRECTIONS FOR GRADING

PEER RATINGS OF CREATIVE ABILITIES

(Place a drawing of the rating form on the chalkboard.)

Good morning, boys. You can relax, we're not going to give you any kind of a test.

You've been together in industrial arts class since last September. We think you've gotten to know each other pretty well since then, and so we are going to ask each of you to help us by giving us some information about your classmates.

First, we'll pass out two (2) sheets to you. You can look these over, but please don't write on them until you're told what to do. (Show sheets.) One of these sheets contains the names of all the boys in this class; the second sheet contains columns of blank boxes, like the one we have on the board.

(Pass out class roll and blank rating form to each student.)

Does everyone now have two sheets--one with the class roll and the other with the blank boxes?

Does everyone have either a pencil or a pen?

(Pass out pencils where needed.)

Now, since we don't want you to tell us about yourself, please find your name on the class roll and green it out by drawing a line through it.

(Monitors check.)

Next, print your name on the sheet with the blank boxes; use the line in the upper right hand corner. Print your last name first.

(Show these on chalkboard. Monitors check.)

Now boys, as I said before we want to get some information from each of you about the rest of the members of this class. The information you give us will be confidential. Your teachers and your classmates will not see the papers you hand in. So please, answer our questions as frankly and honestly as you can.

I want you to imagine that you are working in the industrial arts shop on a project assignment and you run into a problem. It could be a problem involving the design of a project, or how to go about making the project, or it could be a problem of getting some other members of the class to cooperate with you. In order to solve this problem, you feel you need some unusual and clever ideas. The teacher is out of the room so you can't go to him. But you can go to your classmates for help.

Which one boy in this class would you go to for help? Don't pick the boy just because you like him best, or because he's always willing to help, or just because he gets good grades. Pick the boy only because you think he will have the most clever and unusual ideas for you. Any questions?

When you have decided on the boy you would go to for help, take the sheet with the blank boxes on it and print his last name and first initial in the box in the lower left-hand corner.

(Print a name in the proper box on the chalkboard. Monitors check.)

When you have done this, draw a line through the boy's name on the class roll.

Now, I want you to decide which boy in the class you feel would be the least help to you. That is, what boy do you think has the least unusual and least clever ideas. Look over the class roll to be sure you consider everyone. Remember, your choice has nothing to do with whether you like the boy or not, or whether he's a friend of yours. Pick the boy that is least likely to be of help when you need a good idea.

When you have chosen the boy, print his last name and first initial in the blank box on the lower right-hand corner of the sheet.

(Print a name in the proper box on the chalkboard. Monitors check.)

When you have done this, draw a line through the boy's name on the class roll.

The third step is for you to decide on the boy whom you feel is medium in this class with respect to the help he could give to you. That is, he falls halfway between the boy with the most and best ideas and the boy with the fewest and least clever ideas.

When you have selected the boy, print his last name and first initial in the middle blank box on the lowest line of boxes--directly above the words, "Medium number of unusual and clever ideas".

(Print a name in the proper box on the chalkboard. Monitors check.)

After entering his name in the proper box, cross his name off the class roll.

So far, you have selected three boys--the one who can give you the most help, the least help, and the one halfway between the other two. Now, pick a fourth boy from the class roll whose amount and quality of unusual and clever ideas is halfway between the boy with the most and best ideas and the boy with the medium number and quality of ideas.

When you have chosen the boy, print his name and first initial in the blank box which is between the boxes containing the names of the boys with the most and the medium number of unusual and clever ideas.

(Print a name in the proper box on the chalkboard. Monitors check.)

After entering the name in the proper box, cross off the boy's name on the class roll.

Next, pick a fifth boy from the class roll whose number and quality of unusual ideas lies halfway between the boy with the least and nearest ideas and the boy with the medium number and quality of ideas.

Print his name and first initial in the second from the right box in the bottom row.

(Print a name in the proper box on the chalkboard. Monitors check.)

Cross this boy's name off the class roll after entering his name in the box.

At this point, all of the five boxes in the bottom row should have names in them, and six names (including your own) should be crossed out on the class roll. Please check your papers to see if you are correct. Raise your hand if something is wrong. (Monitors check.)

Each of the boxes that you have filled in is part of a different column of boxes. There are five different columns of boxes. Each column of boxes represents a separate group of boys who differ in the amount and quality of their unusual and clever ideas. The column on the extreme left is for the boys with the greatest number of unusual and clever ideas; you have already filled in the bottom box in that column with the one boy in the class who has the most unusual and clever ideas. Going from left to right the columns represent decreasing amounts of good ideas. For example, the extreme right-hand column is for the boys with the least unusual and clever ideas.

Now, what I want you to do is to take the first name on the class roll that you haven't already crossed out, and decide which one of the boys in the bottom row of boxes is most like him. Write his name in the box directly above the name of the boy in the bottom row of boxes who is most like him in the amount and quality of his unusual and useful ideas. The name must be written in one of the five columns. Any questions?

Go ahead and do this now.

When you are done with the first boy, I want you to continue placing each boy on the class roll in one of the five columns. Print the last name and first initial inside the blank boxes. You don't have to fill in all the boxes in any one column, but when you are done, you will have written the name of each boy in the class (except yourself) in a box in one of the five columns. Remember, all the boys you place in one column should have about the same amount and quality of unusual and useful ideas that will be different from the boys named in any other column.

Don't be influenced in your decisions by friendship, willingness to cooperate or class marks; place students in columns only on the basis of what you feel their amount and quality of unusual and useful ideas to be. Any questions?

(Monitors check on progress.)

Before we collect papers, please count the names you have placed in boxes. This total should equal _____ (class total minus one).

Your Name: _____
(Last) (First) (Middle)

(C-2)

Most unusual and clever ideas.	Medium number of unusual and clever ideas	Least unusual and clever ideas

(96)

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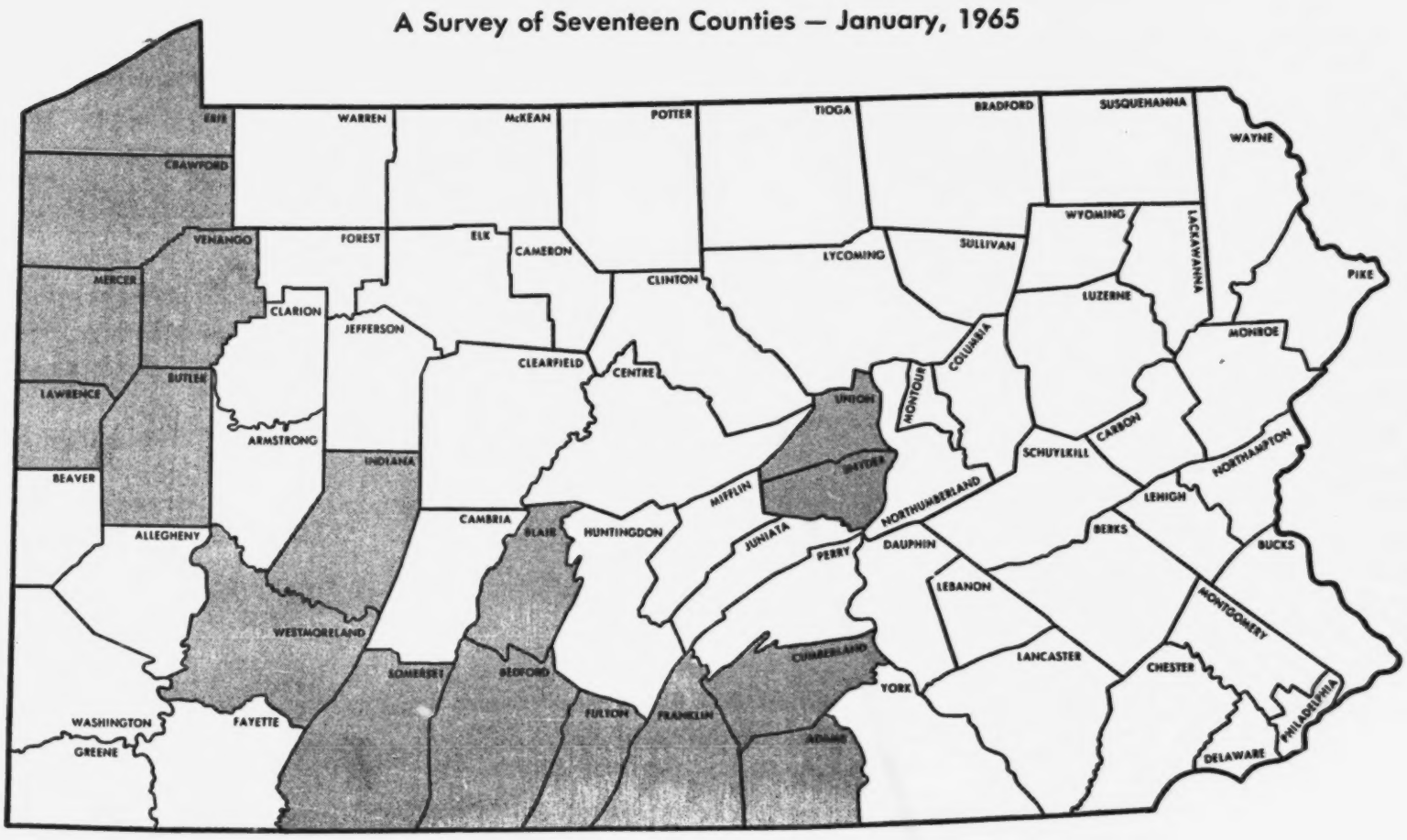
Technical Education Needs of Persons Engaged in Agricultural Occupations

A Preliminary Report of the Pennsylvania Study of Agricultural Occupations

A Survey of Seventeen Counties — January, 1965



Department of Agricultural Education, The Pennsylvania State University, University Park, Pennsylvania

VT 00004

TECHNICAL EDUCATION NEEDS OF PERSONS ENGAGED IN AGRICULTURAL OCCUPATIONS

Summary of Work Completed to January 1, 1965

This study has attempted to identify the jobs in which persons are now employed and the future employment opportunities for these and emerging jobs in the next five years in off-farm agricultural occupations in Pennsylvania in which the workers need some knowledge of agriculture to successfully perform their jobs.

As of January 1, 1965, surveys have been completed for 17 counties. The surveys were made by high school vocational agriculture teachers and area supervisors of agricultural education in these counties. Preceding the county surveys, advisory committees consisting of such individuals as the county superintendent of schools, the county agricultural agent, an employee of the Bureau of Employment Security, school guidance counselors, leading agricultural businessmen, farmers, and others met and helped identify businesses which should be surveyed.

The Department of Public Instruction, Harrisburg, has cooperated with the Department of Agricultural Education at The Pennsylvania State University, in conducting this project for which some financial support was obtained from state N.D.E.A. Title VIII funds.

OBSERVATIONS OF SPECIAL INTEREST IN THE AGRICULTURAL OCCUPATIONS STUDY

1. In the 17 counties, 2,142 businesses employing 26,380 persons of which approximately 50 per cent or (13,668) need agricultural competencies.
2. Of the estimated 13,668 persons employed who need agricultural competencies, approximately 10 per cent are at the professional level, 10 per cent are at the managerial level, 12 per cent are in sales work, and 58 per cent are at the skilled or semi-skilled level.
3. Approximately 30 per cent of the estimated 13,668 employees are in the Farm Machinery and the Farm Supply and Equipment families.
4. Approximately 25 per cent of the estimated 13,668 employees are in the Ornamental Horticulture family.

5. Approximately 25 per cent of the estimated 13,668 employees are part-time workers. Of the part-time employees (3,316), one-half are in the Ornamental Horticulture family.

6. For the 17 counties, there was an estimated 5,263 additional employees needed to be hired during the next five years who need agricultural competencies. Of these, 3,064 are full-time employees and 2,199 are part-time employees. The Ornamental Horticulture family accounted for 72 per cent of the part-time employees needed.

7. There are 86 departments of vocational agriculture in the 17 counties. To fill the needs indicated in Item 6 above, an average of 8.1 full-time employees and 5.1 part-time employees or a total of 13.2 would be needed to be graduated per department per year.

8. Thirty-nine job titles account for 85 per cent of the increase in number of workers expected in the next five years.

9. Entry opportunities for full-time employment in off-farm agricultural occupations in the next five years exceed farm entry opportunities 2½ to 1.

WORK PLANNED FOR 1965-1966

Surveys are now in progress in nine counties. Plans are underway to survey the counties surrounding Pittsburgh and Philadelphia and other large metropolitan areas during the year. Complete surveys will not be needed in every county of the Commonwealth in order to complete the objectives of the project. The target date for completing the project is June 30, 1966.

#65-103

INTRODUCTION

This study, "Technical Education Needs of Persons Engaged in Agricultural Occupations," is a joint effort of the Department of Agricultural Education, The Pennsylvania State University, and the Division of Agricultural Education, Pennsylvania State Department of Public Instruction.

The study was initiated by the Department of Agricultural Education, The Pennsylvania State University, as Agricultural Experiment Station Project No. 1483. Project leaders are N. K. Hoover, D. R. McClay, and G. Z. Stevens. An NDEA grant was obtained through the Bureau of Technical and Continuing Education, Pennsylvania Department of Public Instruction, to help finance the project. Teachers of agriculture and area supervisors of agricultural education conducted the interviews to gather data.

PURPOSE OF THE STUDY

The purpose of the study is to provide information for occupational guidance in agriculture and for planning new programs in agricultural education. Specific objectives of the study are:

1. To identify agricultural occupations and job titles in Pennsylvania and to estimate present numbers of employees and annual entry opportunities.

2. To list competencies needed for entry and advancement and to determine job characteristics such as salary, minimum age, labor law and union restrictions, required education and experience, licensing and certification.

3. To group occupations and job titles for which there are common technical education needs.

New programs in agricultural education are needed because changes in the agricultural industry during the past decade have resulted in new opportunities for employment in a wide range of agricultural occupations. The occupational areas, the number of persons employed in them, and the agricultural competencies needed should be determined in order to provide guidance in establishment of technical education programs.

New programs in agricultural education are now possible because:

1. The Pennsylvania State Legislature, in 1963, passed Act 463 which provides for further expansion of vocational-technical education through area technical schools and technical institutes.

2. The Pennsylvania State Legislature, in 1963, passed Act 484 which is known as the "Community College Act of 1963."

3. The United States Congress passed the "Vocational Education Act of 1963," Act 88-210. This Act in Section 10 states: "Any amounts allotted under such titles, Act, or Acts for agriculture may be used for vocational

education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupation involves work of the farm or of the farm home, and such education may be provided without directed or supervised practice on a farm."

PROCEDURE

Agricultural occupations may be defined as those in which workers need competencies in one or more of the primary areas of plant science, animal science, agricultural business management and marketing, and agricultural mechanization. Information about these occupations was secured by use of a survey form through personal interviews with qualified persons in businesses and services that have employees who need agricultural competencies.

Seventeen selected Pennsylvania counties comprised the 1964 phase of the study. They are:

Adams	Snyder
Franklin	Union
Cumberland	Butler
Blair	Lawrence
Bedford	Mercer
Fulton	Venango
Indiana	Crawford
Somerset	Erie
Westmoreland	

A list of all businesses in these counties was obtained from the Pennsylvania Department of Labor, Bureau of Employment Security. A committee made up of representatives from teachers of agriculture of the county, agricultural extension, County School Office, Chamber of Commerce, County Commissioners, agricultural business, non-agricultural business, school administrators, guidance counselors, and local Bureau of Employment Security was appointed by the area supervisor. This committee selected those businesses that were thought to have employees who need agricultural competencies and added other businesses and services not included in the B.E.S. list. One part of the data was obtained by having teachers of agriculture and area supervisors interview a random sample of the businesses which were categorized into eight occupational families. The per cent of businesses interviewed varied due to number of teachers in a given county and the number of businesses within a category.

The occupational families and the per cent sample follows:

Occupational Family	Per Cent of Businesses Interviewed	
	13 Counties	4 Counties
Farm Machinery Sales and Service	50	25
Farm Supplies and Equipment	25	25
Livestock and Poultry Industries	25	25
Crops, Forestry, and Soil Cons.	50	25
Ornamental Horticulture	25	25
Wildlife and Recreation	100	100
Farm Service	50	25
Agricultural Service	50	25

A second part of the data was obtained by interviewing persons at the state level who provided information for particular businesses or services for the state as a whole. Data for these businesses and services, estimated for the 17 counties, are presented as a separate part of the report. The estimate was determined by the proportion that the rural population of the 17 counties is to the total rural population of the state. Businesses and services included in this part of the report are:

- State Government
  - Department of Agriculture
  - Game Commission
  - Fish Commission
  - Department of Justice
  - Department of Labor and Industry
  - Department of Forestry and Waters
  - Department of Public Instruction
  - Department of Military Affairs
  - Department of Highways
  - Department of Property and Supplies
  - Department of Public Welfare
  - Department of Health
  - State Police Commission
  - Historical and Museum Commission
- Agricultural Stabilization and Conservation Service
- Soil Conservation Service
- United States Department of Agriculture
- Private Practicing Veterinarians
- Teachers of Vocational Agriculture and Supervisory Staff
- College of Agriculture, The Pennsylvania State University
- Farm Credit Administration
- Pennsylvania Farmers Association
- Dairy Laboratory Directors
- Pennsylvania Milk Control Commission
- Dairy Herd Improvement Association
- Farm Machinery Personnel (working independently of retail sales and services)
- Chemical Company Personnel (working independently of retail businesses)

PRESENTATION OF DATA

Data obtained from interviews by teachers are presented in Tables 1 to 5. An analysis of these data will be made during 1965. There are several explanations and observations, however, that should be made now.

Table 1 is a summary of all businesses and is presented to show the comparisons among the several classifications of businesses. Current information for "Farming" was obtained from the 1959 U. S. Census of Agriculture. Persons to enter farming during the next five years was determined by assuming a one and one-half per cent replacement per year. This rather conservative estimate of replacements on farms is the result of research done in Iowa which considered both the age of present farm workers and the decline in number of farms.

There are 86 departments of vocational agriculture in the 17 counties. From Table 1 the number of persons in the several categories per department per year can be determined. This information is presented in tabular form as follows:

Classification of Worker	To Be Hired Next 5 Years		To Be Hired For One Year		Number Needed Per H. S. Ag. Dept. Per Year	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Farm Worker	1307	1552	261	311	3.0	3.6
Agri. Businesses and Services (Excluding Farming)	3476	2218	695	444	8.1	5.1
Totals	4783	3770	956	755	11.1	8.7

Tables 3, 4, and 5 show a relatively small number of persons at the Professional Level of Employment. As these data are studied, one must consider the fact that most of the professional and some managerial, supervisory and technical job titles are not included in this part of the report but are included under "Data Obtained by Interviews at State Level."

TABLE 1

SUMMARY OF BUSINESSES AND NUMBER OF EMPLOYEES
INCLUDING FARMS AND FARM WORKERS
SUMMARY OF 17 COUNTIES, 1964

Classification of Businesses	Number of Businesses and Services	Persons Employed			Employees to be Hired During Next 5 Years		
		Total	Full-time	Part-time	Total	Full-time	Part-time
Farming[1]	31467	38117	17429	20688	2859	1307	1552
Businesses and Services (Excluding Farming) with Employees Needing Agricultural Competencies							
Data Obtained by Personal Interviews[2]	2142	12537	9221	3316	5263	3064	2199
Data Obtained by Interviews at State Level[3]		1231	1094	137	431	412	19
Total		13768	10315	3453	5694	3476	2218
All Businesses[4] (Excluding Farming)	28044	361895					

1 "Persons Employed," U. S. Census of Agriculture, 1959. "Employees to be Hired During Next 5 Years" (persons to enter farming) based on 1½ per cent replacement per year.
2 Pennsylvania Agricultural Occupations Study, Department of Agricultural Education, PSU, 1964.
3 Pennsylvania Agricultural Occupations Study. Data are in the proportion that the rural population of the 17 counties is to the total rural population of the state.
4 County Business Patterns, U. S. Department of Commerce, Bureau of Census, First Quarter, 1962.

TABLE 2

NUMBER OF AGRICULTURAL BUSINESSES AND SERVICES, TOTAL PERSONS EMPLOYED, YEARS IN BUSINESS AND PER CENT GROSS INCOME AGRICULTURALLY ORIENTED, BY OCCUPATIONAL FAMILY SUMMARY OF 17 COUNTIES, 1964

Occupational Family	No. Businesses and Services	All Persons Employed	No. Businesses and Services by Years in Operation			Ave. Per Cent Gross Income Agriculturally Oriented
			1-5 Years	6-10 Years	Over 10 Years	
Farm Machinery Sales and Ser.	196	1826	26	42	128	73
Farm Supplies and Equipment	532	4208	72	60	400	76
Livestock and Poultry Industries	468	5864	72	52	344	84
Crops, Forestry, and Soil Cons.	200	5256	32	40	128	50
Ornamental Horticulture	604	5795	108	56	440	43
Wildlife and Recreation	10	79	6	0	4	26
Farm Service	88	1822	18	28	42	52
Agricultural Service	44	1530	8	4	32	34
Totals	2142	26380	342	282	1518	

TABLE 3

ESTIMATED NUMBER OF FULL-TIME AND PART-TIME EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, EXPECTED FIVE YEARS FROM NOW, AND NUMBER OF EMPLOYEES TO BE HIRED DURING NEXT FIVE YEARS, IN AGRICULTURAL BUSINESSES AND SERVICES, BY OCCUPATIONAL FAMILY SUMMARY OF 17 COUNTIES, 1964

	Employees Needing Agricultural Competencies								
	Current			Expected 5 Years from Now			Employees to be Hired During Next 5 Years		
Occupational Family	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Farm Machinery Sales and Ser.	1056	982	74	1252	1180	72	444	408	36
Farm Supplies and Equipment	3372	2960	412	3920	3404	516	1264	1020	244
Livestock and Poultry Industries	2820	2196	624	2972	2428	544	872	712	160
Crops, Forestry, and Soil Cons.	1170	878	292	1248	914	334	290	212	78
Ornamental Horticulture	3344	1728	1616	3784	1988	1796	2180	588	1592
Wildlife and Recreation	71	49	22	85	54	31	27	14	13
Farm Service	624	356	268	692	408	284	178	102	76
Agricultural Service	80	72	8	82	74	8	8	8	0
Totals	12537	9221	3316	14035	10450	3585	5263	3064	2199

TABLE 4

ESTIMATED NUMBER OF PERSONS EMPLOYED WHO NEED AGRICULTURAL COMPETENCIES
IN EIGHT OCCUPATIONAL FAMILIES, BY LEVEL OF EMPLOYMENT
SUMMARY OF 17 COUNTIES, 1964

	Occupational Levels of Employment								
Occupational Family	Professional	Managerial	Supervisory	Technical	Sales	Clerical	Skilled	Semi-Skilled	Total
Farm Machinery Sales and Ser.	12	156	156	0	130	38	510	54	1056
Farm Supplies and Equipment	4	536	188	68	536	168	484	1388	3372
Livestock and Poultry Industries	4	260	148	140	472	56	528	1212	2820
Crops, Forestry, and Soil Cons.	20	130	50	28	132	4	228	578	1170
Ornamental Horticulture	8	380	152	20	116	40	852	1776	3344
Wildlife and Recreation	0	15	2	0	0	1	31	22	71
Farm Service	0	14	16	30	246	10	208	100	624
Agricultural Service	78	0	0	2	0	0	0	0	80
Totals	126	1491	712	288	1632	317	2841	5130	12537

TABLE 5-1

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Product Engineer	4	0	6	0	2	0
Agricultural Engineer	8	0	16	0	8	0
Sub-Totals	12	0	22	0	10	0
Managerial Occupations						
Farm Implement General Manager	144	2	136	2	14	0
Agricultural Machinery Repair Manager	10	0	8	0	0	0
Sub-Totals	154	2	144	2	14	0
Supervisory Occupations						
Farm Machinery Office Manager	8	4	8	0	0	4
Farm Machinery Service Center Manager	38	0	38	0	6	0
Farm Machinery Parts Manager	82	6	102	6	50	2
Farm Machinery Sales Manager	8	0	8	0	2	0
Farm Machinery Credit Manager	2	0	2	0	2	0
Agricultural Machinery Repair Foreman	8	0	8	0	0	0
Sub-Totals	146	10	166	6	60	6
Technical Occupations						
Sub-Totals	0	0	0	0	0	0
Sales Occupations						
Farm Machinery Parts Clerk or Helper	36	4	40	4	8	0
Farm Machinery Salesman	80	10	112	14	54	6
Sub-Totals	116	14	152	18	62	6

TABLE 5-1 (Continued)

Level of Employment / Occupational Titles	Current Full-time	Current Part-time	Expected 5 Years from Now Full-time	Expected 5 Years from Now Part-time	Employees to be Hired During Next 5 Years Full-time	Employees to be Hired During Next 5 Years Part-time
Clerical Occupations						
Farm Machinery Business Bookkeeper	36	2	40	2	10	0
Sub-Totals	36	2	40	2	10	0
Skilled Occupations						
Farm Machinery Mechanic	362	22	472	22	180	12
Agricultural Equipment Serviceman	52	4	52	0	10	0
Farm Machinery Set-up Man	28	4	28	6	6	2
Agricultural Machinery Repairman	36	2	56	4	28	2
Sub-Totals	478	32	608	32	224	16
Semi-Skilled Occupations						
Farm Machinery Mechanic's Helper	16	10	18	8	16	4
Farm Machinery Truck Driver	24	4	30	4	12	4
Sub-Totals	40	14	48	12	28	8
Totals	982	74	1180	72	408	36

TABLE 5-2

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM SUPPLIES AND EQUIPMENT OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Agronomist	4	0	4	0	0	0
Sub-Totals	4	0	4	0	0	0
Managerial Occupations						
Feed and Farm Supplies Store Manager	264	0	256	0	20	0
Feed and Farm Supplies Assistant Store Manager	140	0	144	0	12	0
Feed Manufacturing General Manager	20	0	20	0	4	0
Farm and Garden Supplies General Manager	28	0	28	0	0	0
Hardware General Manager	12	0	8	0	0	0
Rural Petroleum General Manager	16	0	16	0	0	0
Manager of Lime and Fertilizer Bulk Spreading Service	32	0	28	0	8	0
Fertilizer Manufacturing General Manager	8	0	20	0	12	0
Chemical Manufacturing General Manager	16	0	20	0	4	0
Sub-Totals	536	0	540	0	60	0
Supervisory Occupations						
Feed Mill Manager	48	0	48	0	4	0
Feed Store Floor Manager	24	0	28	0	44	0
Feed and Farm Supply Service Manager	16	0	16	0	0	0
Feed and Farm Supply Sales Manager	44	0	44	0	16	0
Feed and Farm Supply Office Manager	16	0	16	0	0	0
Feed Manufacturing Plant Superintendent	20	0	20	0	4	0
Production Supervision for Lime and Fert. Mfg.	20	0	24	0	4	0
Sub-Totals	188	0	196	0	72	0

TABLE 5-2 (Continued)

Level of Employment / Occupational Titles	Current Full-time	Current Part-time	Expected 5 Years from Now Full-time	Expected 5 Years from Now Part-time	Employees to be Hired During Next 5 Years Full-time	Employees to be Hired During Next 5 Years Part-time
Technical Occupations						
Feed Fieldman	12	4	16	8	4	4
Rural Petroleum Service Technician	52	0	72	0	20	0
Sub-Totals	64	4	88	8	24	4
Sales Occupations						
Feed and Farm Supplies Salesman	256	100	332	140	116	52
Farm and Garden Supplies Salesman	104	0	132	0	32	0
Rural Petroleum Salesman	20	0	24	0	4	0
Salesman of Lime and Fertilizer for Bulk Spreading	52	4	76	8	24	8
Sub-Totals	432	104	564	148	176	60
Clerical Occupations						
Feed and Farm Supplies Bookkeeper	88	12	92	8	44	4
Farm and Garden Supplies Bookkeeper	12	4	16	4	4	0
Farm and Garden Supplies Clerk	16	4	12	4	8	0
Rural Petroleum Bookkeeper	20	0	20	0	0	0
Fertilizer Manufacturing Bookkeeper	12	0	16	0	4	0
Sub-Totals	148	20	156	16	60	4
Skilled Occupations						
Millwright	4	0	4	0	0	0
Feed Mill Operator	156	4	172	4	56	4
Portable Mill Operator	60	0	68	0	32	0
Grain Elevator Operator	4	0	4	0	0	0
Farm Supplies Service Mechanic	68	4	72	4	24	4
Farm Supplies Dispatcher and Shipper	8	0	8	0	0	0
Feed Manufacturing Special Equipment Operator	8	24	8	36	8	12
Farm and Garden Service Man	60	12	64	24	20	12
Leather and Harness Worker	8	0	8	0	0	0
Fertilizer Mixer for Bulk Spreading	52	8	52	8	0	0
Maintenance Man	4	0	4	0	0	0
Sub-Totals	432	52	464	76	140	32

TABLE 5-2 (Continued)

Level of Employment / Occupational Titles	Current Full-time	Current Part-time	Expected 5 Years from Now Full-time	Expected 5 Years from Now Part-time	Employees to be Hired During Next 5 Years Full-time	Employees to be Hired During Next 5 Years Part-time
Semi-Skilled Occupations						
Feed and Farm Supplies Warehouseman	204	28	260	44	96	20
Feed Mill Worker	216	56	244	64	64	36
Feed and Farm Supplies Truck Driver	424	28	504	28	208	8
Feed and Farm Supplies Truck Driver's Helper	8	12	8	16	0	4
Bulk Lime and Fertilizer Spreader	84	40	100	44	52	20
Truck Driver (Feed Manufacturing and Fertilizer)	16	4	20	4	4	0
Farm and Garden Supply Worker	20	12	32	16	16	16
Rural Petroleum Truck Driver	76	0	88	0	20	0
Fertilizer Manufacturing Plant Worker	108	52	136	52	28	40
Sub-Totals	1156	232	1392	268	488	144
Totals	2960	412	3404	516	1020	244

TABLE 5-3

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE LIVESTOCK AND POULTRY INDUSTRIES OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Veterinarian (animal hospital)	4	0	0	0	0	0
Sub-Totals	4	0	0	0	0	0
Managerial Occupations						
Hatchery Manager	24	0	24	0	0	0
Wholesale Egg Plant Manager	16	0	16	0	8	0
Poultry Processing Plant Manager	20	0	20	0	0	0
Dairy Plant Manager	104	12	112	16	8	4
Bulk Milk Transport Manager	8	0	4	0	0	0
Livestock Auction Manager	8	12	8	12	0	0
Meat Processing Plant Manager	44	4	36	4	4	4
Meat Locker Manager	4	0	4	0	0	0
Riding Stable Manager	0	4	0	12	0	8
Sub-Totals	228	32	224	44	20	16
Supervisory Occupations						
Hatchery Foreman	16	0	20	0	4	0
Hatchery Flock Supervisor	8	0	12	0	4	0
Poultry Processing Plant Supervisor	4	0	4	0	0	0
Dairy Plant Office Manager	8	0	8	0	0	0
Milk Inspector	4	0	4	0	0	0
Dairy Plant Superintendent	32	0	36	0	8	0
Dairy Plant Milk Processing Superintendent	16	8	16	8	0	8
Dairy Plant Sales Manager	12	0	24	0	12	0
Locker Plant Supervisor	12	0	16	0	4	0
Slaughter House Supervisor	16	0	16	0	0	0
Retail Store Meat Department Manager	12	0	12	0	0	0
Sub-Totals	140	8	168	8	32	8

TABLE 5-3 (Continued)

Level of Employment / Occupational Titles	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Technical Occupations						
Poultry Inspector	4	0	4	0	0	0
Dairy Plant Laboratory Technician	16	4	20	4	12	0
Dairy Plant Fieldman	20	0	20	0	8	0
Livestock Auctioneer	4	16	4	16	0	0
Packing House Buyer	20	0	20	0	4	0
Meat Processing Buyer	20	0	8	0	4	0
Sausage Maker	36	0	90	0	4	0
Sub-Totals	120	20	116	20	32	0
Sales Occupations						
Hatchery Salesman	12	0	16	0	8	0
Poultry Processing Plant Salesman	4	0	4	0	0	0
Driver Salesman (Dairy Plant)	388	0	440	0	92	0
Dairy Plant Salesman	4	0	4	0	0	0
Dairy Store Clerk	0	12	0	12	0	0
Meat Salesman	40	12	36	0	12	0
Sub-Totals	448	24	500	12	112	0
Clerical Occupations						
Wholesale Egg Plant Bookkeeper	4	4	4	0	0	0
Livestock Auction Clerk	4	36	4	40	0	4
Veterinarian's Secretary	8	0	8	0	0	0
Sub-Totals	16	40	16	40	0	4

TABLE 5-3 (Continued)

Level of Employment / Occupational Titles	Current Full-time	Current Part-time	Expected 5 Years from Now Full-time	Expected 5 Years from Now Part-time	Employees to be Hired During Next 5 Years Full-time	Employees to be Hired During Next 5 Years Part-time
Skilled Occupations						
Hatchery Maintenance Man	12	0	12	0	0	0
Poultry Buyer	4	0	4	0	0	0
Poultry Processing Plant Maintenance Man	4	0	4	0	0	0
Ice Cream Maker	8	0	12	0	4	0
Cheesemaker	4	0	4	0	4	0
Dairy Plant Special Equipment Operator	52	4	52	4	0	8
Dairy Plant Maintenance Man	4	0	8	0	4	0
Bulk Tank Truck Driver	132	40	172	28	96	8
Livestock Dealer	44	8	44	8	4	4
Meat Processor	12	0	12	0	0	0
Butcher	68	4	92	4	40	0
Meat Cutter	120	8	136	8	24	8
Sub-Totals	464	64	552	52	176	28
Semi-Skilled Occupations						
Hatchery Worker	108	32	120	32	20	8
Egg Grader	24	0	68	0	44	0
Egg Packer	144	0	140	0	56	0
Egg Plant Truck Driver	8	0	20	0	16	0
Egg Candler	4	0	8	0	4	0
Poultry Processing Plant Worker	36	48	20	48	12	0
General Dairy Plant Worker	176	32	176	32	28	0
Can Pick-up Truck Driver	12	0	12	0	0	0
Livestock Auction Worker	44	236	64	152	24	52
Livestock Truck Driver	56	8	64	8	36	4
Slaughterer	64	48	56	60	20	12
Meat Processing Worker	44	12	44	16	16	8
Meat Processing Plant Delivery Man	16	0	16	0	0	0
Veterinarian's Assistant	4	0	4	0	4	0
Stableman	12	20	16	20	20	20
Animal Feeders	24	0	24	0	40	0
Sub-Totals	776	436	852	368	340	104
Totals	2396	624	2428	544	712	160

TABLE 5-4

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE CROPS, FORESTRY, AND SOIL CONSERVATION OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Forester	14	4	10	4	0	0
Biologist	2	0	4	0	2	0
Sub-Totals	16	4	14	4	2	0
Managerial Occupations						
Fruit and Vegetable Processing Plant General Manager	24	0	24	0	0	0
Fruit and Vegetable Business General Manager	24	4	32	4	10	0
Grocery Store Manager	2	0	2	0	0	0
Grading and Excavation Work Manager	12	0	10	0	0	0
Sawmill-Lumber Business General Manager	56	2	58	2	4	0
Lumber Company Store Manager	4	0	4	0	0	0
Lumber Company Mill Manager	2	0	2	0	0	0
Sub-Totals	124	6	132	6	14	0
Supervisory Occupations						
Fruit and Vegetable Processing Plant Procurement Mgr.	6	0	6	0	0	0
Lumber Purchasing Agent	2	0	4	0	2	0
Fruit and Vegetable Packing Shed Superintendent	10	6	14	6	6	0
Fruit and Vegetable Sales Manager	12	0	12	0	2	0
Grocery Produce Manager	2	0	4	0	4	0
Timber Foreman	4	0	4	0	0	0
Lumber Company Yard Manager	2	0	2	0	2	0
Pulpwood Plant Superintendent	6	0	6	0	0	0
Sub-Totals	44	6	52	6	16	0

TABLE 5-4 (Continued)

Level of Employment / Occupational Titles	Current Full-time	Current Part-time	Expected 5 Years from Now Full-time	Expected 5 Years from Now Part-time	Employees to be Hired During Next 5 Years Full-time	Employees to be Hired During Next 5 Years Part-time
Technical Occupations						
Fruit and Vegetable Processing Plant Fieldman	28	0	28	2	2	0
Sub-Totals	28	0	28	2	2	0
Sales Occupations						
Fruit and Vegetable Processing Plant Salesman	22	4	22	4	0	0
Fruit and Vegetable Salesman	84	22	54	26	16	14
Sub-Totals	106	26	76	30	16	14
Clerical Occupations						
Fruit and Vegetable Business Bookkeeper	4	0	4	0	0	0
Sub-Totals	4	0	4	0	0	0
Skilled Occupations						
Fruit and Vegetable Processing Plant Maintenance Man	64	0	80	0	16	0
Fruit and Vegetable Produce Buyer	2	0	2	0	0	0
Grading and Excavation Equipment Operator	42	30	42	30	20	6
Grader and Bulldozer Operator	14	0	14	0	10	0
Shovel Operators	4	0	6	0	2	0
Sawyer	30	0	32	0	2	0
Lumber Grader and Scaler	12	0	12	0	2	0
Sawmill-Lumber Equipment Operator	24	6	24	8	2	2
Sub-Totals	192	36	212	38	54	8

TABLE 5-4 (Continued)

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Semi-Skilled Occupations						
Fruit and Vegetable Federal Inspector Helper	4	0	4	0	0	0
Fruit and Vegetable Processing Plant Worker	48	14	50	18	6	4
Fruit and Vegetable Produce Packer	30	16	30	16	0	0
Fruit and Vegetable Packing House Worker	6	70	16	86	4	28
Fruit and Vegetable Produce Truck Driver	44	0	44	0	44	0
Farm Contractor Worker	16	8	16	8	0	0
Sawmill-Lumber Truck Driver	24	6	26	0	2	0
Tail Sawyer	8	0	8	0	0	0
Log Cutter	38	20	40	20	2	0
Edger	6	0	6	0	0	0
Saw Filer	4	4	4	4	0	0
General Sawmill Worker	128	6	140	6	46	4
Tree Farm Worker	8	70	12	90	4	20
Sub-Totals	364	214	396	248	108	56
Totals	878	292	914	334	212	78

TABLE 5-5

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE ORNAMENTAL HORTICULTURE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Landscape Architect	8	0	12	0	4	0
Sub-Totals	8	0	12	0	4	0
Managerial Occupations						
Greenhouse Manager	76	24	96	4	16	0
Nursery Manager	76	32	72	32	4	12
Floral Shop Manager	44	0	44	0	0	0
Landscape Consultant	12	0	12	0	0	0
Golf Course Superintendent	80	0	76	0	20	0
Tree Service Manager	12	0	16	0	8	0
Garden Center Manager	12	0	12	0	4	0
Christmas Tree Farm Manager	4	0	4	0	0	0
Park Superintendent	8	0	12	0	4	0
Sub-Totals	324	56	344	36	56	12
Supervisory Occupations						
Greenhouse Production Supervisor	20	0	20	0	0	0
Nursery Production Supervisor	24	12	24	12	4	12
Wholesale Florist Sales Manager	4	0	4	0	0	0
Nursery Crew Leader	24	0	28	0	0	0
Landscape Foreman	0	4	0	4	0	0
Assistant Golf Course Superintendent	24	0	28	0	12	0
Grounds Maintenance Supervisor	36	4	36	4	4	4
Sub-Totals	132	20	140	20	20	16

TABLE 5-5 (Continued)

Level of Employment / Occupational Titles	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Technical Occupations						
Greenhouse and Nursery Plant Pathologist	4	4	4	4	0	0
Tree Surgeon	4	0	8	0	4	0
Public Health Officer	8	0	12	0	0	0
Sub-Totals	16	4	24	4	4	0
Sales Occupations						
Greenhouse Salesman	32	0	32	0	0	0
Nursery Salesman	12	0	12	0	0	0
Wholesale Florist Salesman	16	24	16	20	0	4
Garden Center Salesman	24	8	24	8	16	8
Sub-Totals	84	32	84	28	16	12
Clerical Occupations						
Greenhouse and Nursery Bookkeeper	20	4	20	4	0	0
Floral Shop Bookkeeper and Clerk	4	4	4	4	0	0
Groundskeeper Business Secretary	4	4	4	4	0	0
Sub-Totals	28	12	28	12	0	0
Skilled Occupations						
Ornamental Plant Propagator	8	0	12	0	8	0
Florist	16	0	20	0	8	0
Greenhouse Grower	40	28	84	64	60	40
Floral Designer	32	20	40	28	8	8
Landscape Gardener	72	36	84	64	16	32
Greensman	104	88	104	108	20	148
Groundskeeper	152	88	180	88	40	32
Cemetery Caretaker	76	28	88	36	24	16
Ground and Building Maintenance Man	60	4	80	8	28	0
Sub-Totals	560	292	692	396	212	276

TABLE 5-5 (Continued)

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Semi-Skilled Occupations						
Greenhouse Worker	124	108	120	124	32	236
Nursery Worker	216	576	224	640	92	792
Greenhouse Growers Assistant	4	8	0	8	0	0
Greenhouse and Nursery Truck Driver	4	4	4	4	0	0
Landscape Gardener's Helper	80	108	104	96	48	68
Greens Worker	16	188	12	232	0	72
Tree Pruner	40	4	92	4	72	0
Tree Service Groundsman	0	4	0	4	0	0
Peat Handler	8	4	12	12	4	8
Christmas Tree Farm Worker	8	104	0	92	0	60
Groundskeeper's Aid	56	92	68	84	20	40
Recreational Park Worker	20	0	28	0	8	0
Sub-Totals	576	1200	664	1300	276	1276
Totals	1728	1616	1988	1796	588	1592

TABLE 5-6

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE WILDLIFE AND RECREATION OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE SUMMARY OF 17 COUNTIES, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Managerial Occupations						
Game Preserve Manager	2	1	2	1	0	0
Aviary Manager	2	3	2	4	0	1
Fish Hatchery Superintendent	3	2	3	2	0	0
Zoo Director	2	0	1	0	0	0
Sub-Totals	9	6	8	7	0	1
Supervisory Occupations						
Fish Hatchery Foreman	1	0	1	0	0	0
Zoo Business Manager	1	0	0	0	0	0
Sub-Totals	2	0	1	0	0	0
Clerical Occupations						
Fish Hatchery Bookkeeper-Clerk	1	0	1	0	0	0
Sub-Totals	1	0	1	0	0	0
Skilled Occupations						
Fish Culturist	7	0	7	0	0	0
Zookeeper	6	10	5	15	4	5
Ski Resort Maintenance Man	8	0	12	0	4	0
Sub-Totals	21	10	24	15	8	5

TABLE 5-6 (Continued)

Level of Employment / Occupational Titles	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Semi-Skilled Occupations						
Aviary Farm Worker	2	2	1	4	0	6
Fish Hatchery Worker	7	3	9	4	2	1
Zoological Animal Feeders	2	1	2	1	1	0
Snow-Making Crew Man	5	0	8	0	3	0
Sub-Totals	16	6	20	9	6	7
Totals	49	22	54	31	14	13

TABLE 5-7

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Managerial Occupations						
Real Estate Broker	8	0	8	0	0	0
Manager of Construction Business	2	0	2	0	0	0
Auction Sales Manager	2	0	2	0	2	0
Power Company Manager	2	0	2	0	0	0
Sub-Totals	14	0	14	0	2	0
Supervisory Occupations						
Rural Electrification Advisor	12	0	12	0	4	0
Supervisor of Forestry	4	0	4	0	0	0
Sub-Totals	16	0	16	0	4	0
Technical Occupations						
Artificial Inseminator	20	6	28	6	14	0
Timber Products Technician	4	0	4	0	4	0
Sub-Totals	24	6	32	6	18	0
Sales Occupations						
Farm Auctioneer	6	0	6	0	0	0
Farm Building and Equipment Salesman	34	6	34	6	0	4
Real Estate Salesman	8	0	8	0	0	0
Electric Company Rural Salesman	56	0	60	0	4	0
Insurance Salesman	42	94	52	94	10	0
Sub-Totals	146	100	160	100	14	4

TABLE 5-7 (Continued)

Level of Employment / Occupational Titles	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Clerical Occupations						
Auction Clerk	2	0	2	0	0	0
Insurance Company Secretary	8	0	12	0	4	0
Sub-Totals	10	0	14	0	4	0
Skilled Occupations						
Farm Building Construction Carpenter	38	36	46	36	26	20
Farm Building Construction Mason	4	52	8	56	4	16
Farm Building Construction Plumber	10	10	10	10	0	0
Farm Building Construction Electrician	4	0	4	0	4	4
Farm Building Erectors	40	4	42	4	6	4
Crop Sprayer Pilot	6	2	10	6	4	4
Custom Farm Machine Operator	0	2	0	2	0	0
Sub-Totals	102	106	120	114	44	48
Semi-Skilled Occupations						
Farm Building Construction Carpenter's Helper	6	0	6	0	0	0
Farm Building Construction Mason's Helper	0	32	0	36	0	12
Farm Building Construction General Worker	16	14	18	14	6	4
Crop Sprayer Assistant	4	10	8	14	4	8
Lineman	18	0	20	0	6	0
Sub-Totals	44	56	52	64	16	24
Totals	356	268	408	284	102	76

TABLE 5-8

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE AGRICULTURAL SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE SUMMARY OF 17 COUNTIES, 1964

Level of Employment	Current		Expected 5 Years from Now		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Public Accountant	4	0	4	0	0	0
Breed Association Fieldman	12	0	12	0	4	0
Agricultural Consultant for Banks	2	8	0	8	0	0
Rural Bank Loan Manager	24	0	24	0	4	0
Bank Cashier	8	0	8	0	0	0
Bank Appraiser	16	0	20	0	0	0
Newspaper Editor	4	0	4	0	0	0
Sub-Totals	70	8	72	8	8	0
Technical Occupations						
Newspaper Photographer	2	0	2	0	0	0
Sub-Totals	2	0	2	0	0	0
Totals	72	8	74	8	8	0

SUPPLEMENTAL REPORTS

A. Individual County Information

In addition to the summary tables for the 17 counties, some information for individual counties has been compiled. This information will be distributed only to the counties or the supervisory areas to which it applies. The following items will comprise the supplemental report for individual counties.

1. Table 1 for each of the 17 counties. The table for Franklin County is attached as an example of a supplemental county report.

2. Table 3 for each of the 17 counties. The table for Blair County is attached as an example of a supplemental county report.

3. Table 4 for each of the 17 counties. The table for Indiana County is attached as an example of a supplemental county report.

4. A list of businesses and services that have employees who need agricultural competencies. This list was compiled after the interviews were conducted. It should be considered an aid for study and guidance. Students and teachers should constantly revise the list as a part of the occupational guidance unit and as a student-learning activity.

B. Businesses and Services Interviewed at the State Level

On page three of this report there is a partial list of businesses and services that are being interviewed at the state level. Information obtained to date is presented in Table 1 in the proportion that the rural population of the 17 counties (as it applies collectively or to an individual county) is to the total rural population of the state.

This phase of the study will be continued. When it is completed, probably May or early June, there will be a detailed report published.

TABLE 1-2

SUMMARY OF BUSINESSES AND NUMBER OF EMPLOYEES
INCLUDING FARMS AND FARM WORKERS
SUMMARY OF FRANKLIN COUNTY, 1964

Classification of Businesses	Number of Businesses and Services	Persons Employed			Employees to be Hired During Next 5 Years		
		Total	Full-time	Part-time	Total	Full-time	Part-time
Farming[1]	2370	3301	1815	1486	246	135	111
Businesses and Services (Excluding Farming) with Employees Needing Agricultural Competencies							
Data Obtained by Personal Interviews[2]	141	813	659	154	258	168	90
Data Obtained by Interviews at State Level[3]		79	70	9	28	27	1
Total		892	729	163	286	195	91
All Businesses[4] (Excluding Farming)	1512	18578					

1 "Persons Employed," U. S. Census of Agriculture, 1959. "Employees to be Hired During Next 5 Years" (persons to enter farming) based on 1½ per cent replacement per year.
2 Pennsylvania Agricultural Occupations Study, Department of Agricultural Education, PSU, 1964.
3 Pennsylvania Agricultural Occupations Study. Data are in the proportion that the rural population of the 17 counties is to the total rural population of the state.
4 County Business Patterns, U. S. Department of Commerce, Bureau of Census, First Quarter, 1962.

TABLE 3-4

ESTIMATED NUMBER OF FULL-TIME AND PART-TIME EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, EXPECTED FIVE YEARS FROM NOW, AND NUMBER OF EMPLOYEES TO BE HIRED DURING NEXT FIVE YEARS, IN AGRICULTURAL BUSINESSES AND SERVICES, BY OCCUPATIONAL FAMILY BLAIR COUNTY, 1964

	Employees Needing Agricultural Competencies								
	Current			Expected 5 Years from Now			Employees to be Hired During Next 5 Years		
Occupational Family	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Farm Machinery Sales and Ser.	48	40	8	58	48	10	28	18	10
Farm Supplies and Equipment	300	200	100	436	276	160	180	96	84
Livestock and Poultry Industries	372	308	64	380	340	40	144	144	0
Crops, Forestry, and Soil Cons.	218	126	92	240	126	114	32	10	22
Ornamental Horticulture	176	124	52	216	148	68	220	40	180
Wildlife and Recreation	13	13	0	20	20	0	7	7	0
Farm Service	28	16	12	34	18	16	8	4	4
Agricultural Service	10	10	0	10	10	0	0	0	0
Totals	1165	837	328	1394	986	408	619	319	300

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TABLE 4-7

ESTIMATED NUMBER OF PERSONS EMPLOYED WHO NEED AGRICULTURAL COMPETENCIES
IN EIGHT OCCUPATIONAL FAMILIES, BY LEVEL OF EMPLOYMENT
INDIANA COUNTY, 1964

	Occupational Levels of Employment								
Occupational Family	Professional	Managerial	Supervisory	Technical	Sales	Clerical	Skilled	Semi-Skilled	Total
Farm Machinery Sales and Ser.	0	2	6	0	12	2	40	2	64
Farm Supplies and Equipment	0	32	24	0	44	8	32	64	204
Livestock and Poultry Industries	0	24	0	0	16	0	44	80	164
Crops, Forestry, and Soil Cons.	0	0	0	0	0	0	4	10	14
Ornamental Horticulture	0	52	20	8	4	16	36	496	632
Wildlife and Recreation	0	1	0	0	0	0	0	2	3
Farm Service	0	4	2	0	0	2	14	8	30
Agricultural Service	2	0	0	0	0	0	0	0	2
Totals	2	115	52	8	76	28	170	662	1113

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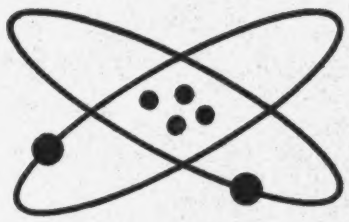
the effects of programmed instruction on ATTITUDE and ACHIEVEMENT



BARBARA ROSENQUIST & MARK MILLER

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THE EFFECTS OF PROGRAMMED INSTRUCTION ON ATTITUDE AND ACHIEVEMENT

Barbara Rosenquist & Mark Miller

The report prepared for
The State Board of Vocational Education

by
The Department of Vocational-Technical Education
College of Education
University of Illinois, Champaign
March 1965

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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FOREWORD

The genesis of this report was a publication by the U.S. Office of Education which revealed that Illinois was one of the few states that had done no research on the use of the programmed instruction in industrial education. This prompted the preparation of a proposal which was forwarded to the State Department of Vocational Education and subsequently supported by that department and by the University of Illinois, Department of Vocational Technical Education.

The major portion of the conduct of the experiment, the data collection, data analysis, and the writing up of this report has been the responsibility of Barbara Rosenquist and Mark Miller who are credited as the authors of this report.

It is the hope of the persons involved that this experiment will generate interest in classroom experimentation and that this experiment will be the first of a series involving the State Department of Education and the Vocational Technical Education Department of the University and the faculty thereof. The students, faculty, and Illinois public education will undoubtedly profit to some extent from this experiment and the report and additional experimentation which it is hoped will follow.

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INTRODUCTION

Industry is not the only group to feel the quickening pressures of automation. The requirements necessary to gain entry into the occupational setting have been rising. Incorporated into the knowledge necessary to fulfill a job function is an increasing reliance upon the interdisciplinary knowledge upon which the industry is predicated. However, even with the postponed entry into the labor field, there is insufficient time for the worker to master both the abstract scientific concepts which contribute to the development of new processes, and the techniques and practical application of those concepts in the production setting (Schill, 1964, p. 3).

The pressure of this development must be borne in part by the people who have elected themselves responsible for preparing the worker for his future job function--the educators. It is up to them to realize a way of equipping the student with the knowledges he must have, and to do so in the time allotted him.

This implies that more effective teaching methods must be inaugurated; that the instructor must be sensitive enough to the times to realize this. To date, industrial education programs have been alien toward accepting these viewpoints. Bateson and Stern (1963) have examined the matter of educational objectives with an attempt to identify and clarify those objectives which are proper and dominant for industrial education. They have outlined their beliefs for the basic causes of proliferation in previous industrial education objectives with suggestions toward ultimate improvement. This is but one example which demonstrates the need for action. To realize an effective solution to the problem,

> (industrial education) teachers, supervisors and teacher educators must critically analyze their past performance with the aim of providing better instruction and inaugurating pilot programs that can test new ideas. (HEW, 1962, p. 64)

Related Research

Instruction is the process by which a teacher presents subject matter to a learner so that he responds to it in a way that enables the teacher to determine the next item of information to be presented.

The planning of instruction will continue to be the province of the teacher; however, recent research has attempted to show how the implementation of this instruction can be accomplished automatically, through the use of teaching machines.

To this end, researchers have been concerned with determining what specific functions are to be optimized and, subsequently, the best way of accomplishing this. They have employed means to manipulate the stimulus to which each criterion response is attached. Furthermore, they have varied methods for eliciting the desired performance, predicated on different reinforcement techniques.

One result that is apparent from a survey of the research is the effectiveness of machines for teaching a variety of different subjects or materials; a second is its effectiveness for a variety of different learners (Stolurow, 1961, p. 103). However, the question, "How well do students learn from programs as compared to how well they learn from conventional methods of instruction?" cannot be answered so confidently. On one hand is the situation which can be explicitly controlled, on the other is the situation that is unique to the type of teacher and course.

One of the more comprehensive investigations of programmed instruction has been conducted by Geer (1962) under the sponsorship of Bell Laboratories. This study compared the performances of three groups: conventional instruction, and programmed instruction with and without laboratory experiences, also programmed, covering the subject matter of basic electricity. Pre-tests with Form 2B of the Otis Employment Test (Electrical) and a test constructed by the investigator, with content drawn from concepts in the verbal program, showed all groups to be drawn from the same population.

The group receiving programmed theory and laboratory exercises gained significantly more electrical knowledge than either of the other group conditions as indicated by a post-test constructed by an external group, the Communications Social Science Research Department of Bell Laboratories.

Thirty six similar reports, comparing programs with conventional classroom instruction, were tabulated in an annotated bibliography prepared by the U.S. Department of Health, Education, and Welfare. Of these thirty-six comparisons, eighteen showed no significant difference when the groups were measured on the same criterion test. But seventeen showed a significant superiority for the students who worked with the program, and only one showed a final superiority for the classroom students.

By and large, the experiments to date have been conducted over short periods of time with a small number of students. These have been basically exploratory in nature. There are some results, however, that indicate the desirability of comparing student achievement in the traditional teaching pattern over the same length of time. It is suggested that the

research reported herein will further the investigation in that previous research indicates that the materials to be presented and the mode of presentation are equivalent to, if not better than, other existing programs and modes. Moreover, the research in this area has characteristically dealt with factual assimilation to the exclusion of the emotional aspects of this new approach. Some studies which did consider attitudes and feelings of the learner (Collins, 1962) limited themselves to very unstructured interviews with no attempts at quantification.

This study also represents an effort to detect, assess, and quantify changes in attitude toward programmed instruction as it is presented by the teaching machine over an extended period.

The Problem

Industrial education concerns itself with the theoretical information and the manual skills needed to perform satisfactorily in the occupations as well as the relationship of these skills and knowledges to the culture. The project method that is so widely used in industrial education is expensive in time and energy, and in addition, it can well become the vehicle for occupying student time while negating the necessity of keeping abreast of the applied theory and industrial skills which should be part and parcel of the educational setting. If today's industrial arts teachers are meek, mild, and mediocre, it may well be because they have insufficient preparation in the theory applicable to their subject matter area.

The Department of Vocational and Technical Education, College of Education, University of Illinois, Urbana,

currently offers a course in general electricity which is concerned with an introduction to basic theory and industrial practice. This is not an atypical course. If the teacher training institutions are going to produce teachers capable of imparting the fundamental abstract theories of electronics to high school students, and at the same time, acquaint them with the basic skills necessary to perform in industry, there must be an increase in the efficiency of the presentation of materials.

Automated programmed instruction provides a possible source of individual student tutoring. The availability of programs written by experts in the field may serve to expand upon the teacher's knowledge of that field. Subject matter presentation by programmed devices could also serve to fill the gap when qualified teachers are not available. The generalist in industrial arts may be able to improve his teaching by relying, in part, on programmed materials which cover theory he is not prepared to teach.

The study reported herein, because it is a long-term intensive study of a small group, can properly assess student growth and the change of attitude toward programmed materials as the result of exposure to them.

Objectives

The objectives of this study were to:

1. evaluate the efficacy of using an existing automated instructional device, which has been programmed to permit individual study of the abstract theories of electricity and current applications in industry, in teacher training;

2. evaluate the effect of practice in application upon student achievement in related theory;
3. evaluate initial learner attitude toward programmed instruction and subsequent attitude shift as a result of continued exposure to this instructional technique; and
4. acquaint prospective industrial education teachers with newer educational media.

METHODOLOGY

Subjects

The students enrolled in VoTec 285, General Electricity, and Aviation 181, Introduction to Electronic Theory and Practice, comprised the population of the study. The enrollment of these classes was fifteen students. While prior studies have used considerably larger N's in investigating the effects of programmed instruction on student achievement, it must be recognized that these prior studies were also conducted over a relatively short time and the exposure to programmed instruction per student was measured in minutes or hours rather than months.

The students in VoTec 285 were assigned to one of two groups: five full-time in the lecture-laboratory setting and four full-time in the programmed instruction setting. The assignment was on the basis of pre-test achievement scores in electrical theory. The students were paired on pre-test scores and then randomized into two groups. Using Kruskal-Wallis one-way analysis of variance,* it was ascertained that there was no significant difference between the groups at the 5% level, 7 df.

The students enrolled in Aviation 181 comprised the control group; they had no knowledge of the existence of the experiment.

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*The Kruskal-Wallis (H) one-way analysis of variance does not require normal distribution, but it does require that the data being analyzed be continuous.

The reason for using this statistic is to determine if the differences that exist among the test scores in this study could have occurred by chance. The Kruskal-Wallis (H) statistic compares the placement of the sub-groups within.

All three groups were assumed to be random samples from a common population, again, H not significant at the 5% level.

The Equipment

The Autotutor Mark II is a partially adaptive machine built by Western Design; it is illustrated in Figure 1.

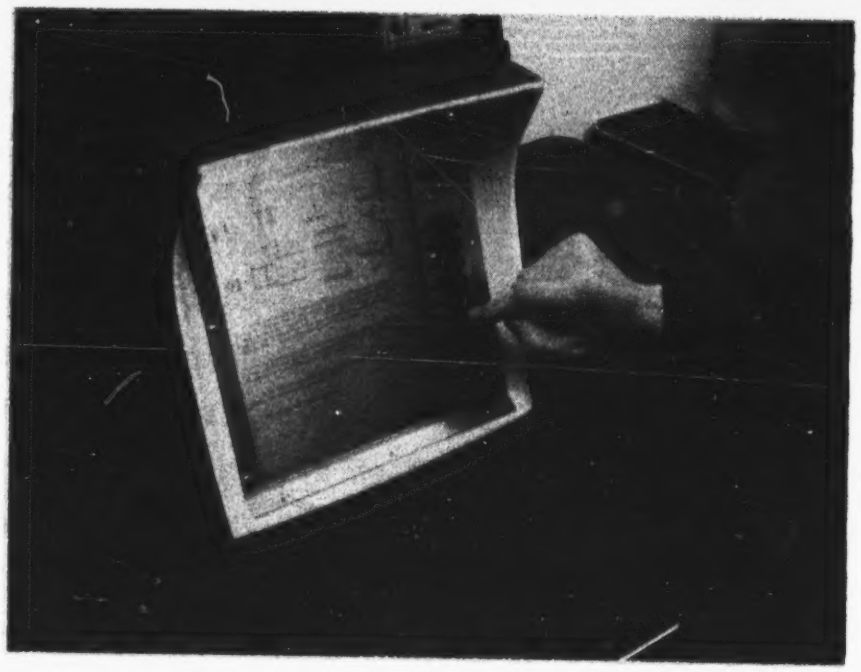

Fig. 1 The Autotutor Mark II

Basically the Autotutor is an automatic, random-access, 35 mm recording projector displaying one frame at a time. The student finds the first unit of subject-matter information on image 1 of the film, along with a multiple-choice question based on that unit of information. He then selects an answer to the multiple-choice question, enters into a keyboard the frame number (address) accompanying the answer he selects (a frame number is always located beside each alternative answer) and presses the button of his choice. The device then automatically locates and projects the image found at the address selected by the student. If the correct answer to the multiple-choice question was chosen, the image selector will not only contain knowledge of results, e.g., "you are right," but also will contain the next unit of information, and the next question. If an incorrect alternative is chosen, the corresponding image will tell the learner of his error, provide information designed to correct the particular error, and direct him to return to the image at which he made his mistake and try again (Stolurow, 1961, p. 31).

Appendix A contains three frames which typify those found in the Autotutor program on Electronic Theory. These show the statement of a problem, an incorrect solution response, and a correct solution response, respectively.

A recorder was connected to the machine to print the number of frames visited by the student. These data were utilized for computation of error rate.

Development and Conduct of Instruction

The author of the proposal that resulted in support for this study was engaged for a year and a half in the editing

of the material on electricity and electronics for Educational Science, Incorporated, Division of U.S. Industries. In his opinion the material is sufficiently detailed and adequately programmed for use in this study.

The programmed instruction device was housed at a separate location from the rest of the facilities for students in electricity. A log was kept of student time which also served as a check on error rate and number of frames covered during each session. To minimize student involvement with the device, and to maximize efficient utilization of the programmed material, the machine was always in operating order with the proper film installed and on the right frame for the student who was next to view the instructional material. Students viewed the programmed material by appointment, permitting the participation of four students with only one programmed device.

The lecture-lab instruction included all of the information that was included in the programmed device, although it was not necessarily presented in the same order. The lecture followed Electronics for Scientists by H. F. Malmstadt and C. G. Enke (W.A. Benjamin Co., 1962). The text was elaborated upon as needed to clarify concepts for the student. The laboratory sections consisted of breadboarding, circuit analysis, and measurement exercises designed to reinforce the lectures and readings.

The students enrolled in this course attended class for one semester. During the first week, the pre-test was administered, the data was analyzed to determine the class grouping, and orientation to the programmed device took place. Additional sessions were used for criterion tests

and the final examination (post-test). Considering these intervening variables and the fact that an instructional hour is fifty minutes, the total time available to the students in the formal instruction setting was about sixty-five hours for each group.

Instruments

The data collected during this study was comprised of the information found in Table 1. The test measures employed are described below for further clarification of the content and the method employed.

1. Pre- and post-achievement tests--The achievement test was first administered to students in January, 1963. The split half reliability of this form was .873 (each concept tested was represented by two versions of the same item). From this, an item analysis was completed which identified the 151 items to be retained for use in the experiment.

2. Semester quizzes--Two objective tests were given during the course of the semester. They consisted of twenty-five multiple choice questions designed to measure specific aspects of electrical theory that had been covered up to that time.

3. Laboratory practical test--This test was prepared to assess student capability on the use of basic test and measuring equipment. It involved the use of the volt-ohmmeter and oscilloscope in a variety of applications. Grading was done through a subjective assessment by the instructor with each item being scored "zero" for poor, "one" for fair, and "two" for good.

4. Extension test--This test was of the same form as previous written examinations; however, it covered circuit analysis and electronic theory of a more advanced nature. The purpose of this test was assessment of upper limits of understanding in this area.

5. Attitude evaluation--At the beginning of the study it was determined by means of a brief questionnaire that, although many of the students were somewhat familiar with programmed instruction, none had any prior direct contact with this type of teaching. (See Appendix B for a sample questionnaire.)*

After considerable investigation of the types of tools being employed for attitude assessment, the decision was made to construct a device containing 25 statements about programmed instruction and ask the students to react to each statement on a graphic rating scale. (See Appendix C). The responses range in five steps from "Strongly Agree" to "Strongly Disagree" with the number three or center choice indicating "No Opinion." This type of rating scale is a variation of the Semantic Differential which has been developed and used very effectively by Osgood to measure "the meaning, in a given sense, to any individual of literally any concept within his ken" (Osgood, Suci, and Tannenbaum, 1957, p. 91).

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*Examples of the questions from each of these tests appear in Appendix D.

TABLE 1
Mean Values of Variables Investigated

	Lect-Lab N=5	Prog. Instr. N=4	Inst. of Avia. N=6
Age	23.60	20.25	20.11
Total Sem. Hrs. Completed	55.40	64.00	9.33
Total Hours Related Study	12.20	9.25	10.00
Math	8.20	7.00	7.17
Physics	2.60	2.00	1.33
Electricity-Electronics	1.40	.25	1.50
Attitude			
Pre	-2.60	+9.00	-11.50
Post	+1.40	-3.00	-13.17
Criterion Tests			
Pre-test (%)	41	54	50
1st Quiz (%)	86	66	
2nd Quiz (%)	86	68	
Post-test (%)	88	83	82*
Practical Test (%)	82	52	
Extension Test (%)	51	48	
Total Time (Hours)		64.19	
Total Frames Viewed		3382	
Raw Error		1175	
Error Rate		54.50%	
Raw Growth	34.	29.25	31.80*
Possible Gain	69.60	64.25	64.2*

* N = 5 for these values

RESULTS AND DISCUSSION

Measures of achievement were predicated upon a pre-test, two criterion tests administered at intervals during the semester, a practical performance test, and an extension test which went beyond the material covered in the course. The total frames, total time, and error rate on the Autotutor were computed for the students using the programmed material.

The control group at the Institute of Aviation was only administered the pre- and post-test; therefore, the N for assessing the relationships between the various test consisted of the nine students enrolled in the lecture-lab and programmed instruction groups.

Table 2 presents the 15 inter-correlations among the various tests. It was expected that they would be highly inter-correlated because they measure essentially selected aspects of the same body of knowledge. However, not evident from the table is the fact that type of instruction had no effect on these relationships.

Kruskal-Wallis one-way analysis of variance was performed to determine if the achievement of the students, on the criterion test, was comparable among modes of instruction. There was no significant difference, using H at the .05 level. Therefore, it was decided that a measure of gain, rather than raw score achievement, might be a more meaningful measure to use. This would consider the fact that the students were not starting at the same initial point in their mastery of the subject matter (as witnessed by the pre-test scores). Achievement might be better described by looking at how much the students elevated their knowledge from differential starting points.

TABLE 2
The Relationship Between The Testing Procedures Employed

1.	Pre	X					
2.	1st Quiz**	.31	X				
3.	2nd Quiz**	.55	.77*	X			
4.	Post	.43	.81*	.71*	X		
5.	Practical**	.49	.79*	.93*	.59	X	
6.	Extension**	.63	.59	.73*	.61	.76*	X
		1	2	3	4	5	6

*An asterisk denotes significance at the .05 level, df varying on N.

**These tests are based on an N of 9, being that they were not administered to the control group.

Measurement of Gain

Measurement of gain was done in two ways. One was to assess the raw score gain from the pre- to the post-test. Another method was to assess the amount an individual gained compared to the amount he possibly could have gained. This was accomplished by taking the raw gain (post-test score minus pre-test score) divided by possible gain (possible score minus pre-test score) to give a percentage score.

These two methods were then correlated, r equaling .52, which is significant for an N of 14 at the five percent level. The opinion of the researchers was that the percent of possible gain was a more descriptive measure. Since it was highly correlated with raw gain, it was the computation which was used for the remainder of the analysis.

Kruskal-Wallis one-way analysis of variance was used to assess the gain in the above measure because of the small N in each group and the unwillingness of the researchers to

assume a normal distribution. The calculation resulted in an H of .2, which indicated no significant difference among the three groups in achievement as measured by growth. This is portrayed graphically in Figure 2.

The importance of this finding rests on the amount of time invested by the groups in studying. The programmed instruction group did as well as the lecture lab group, with no outside reading or homework. Consequently, they spent considerably less total time on study than did the

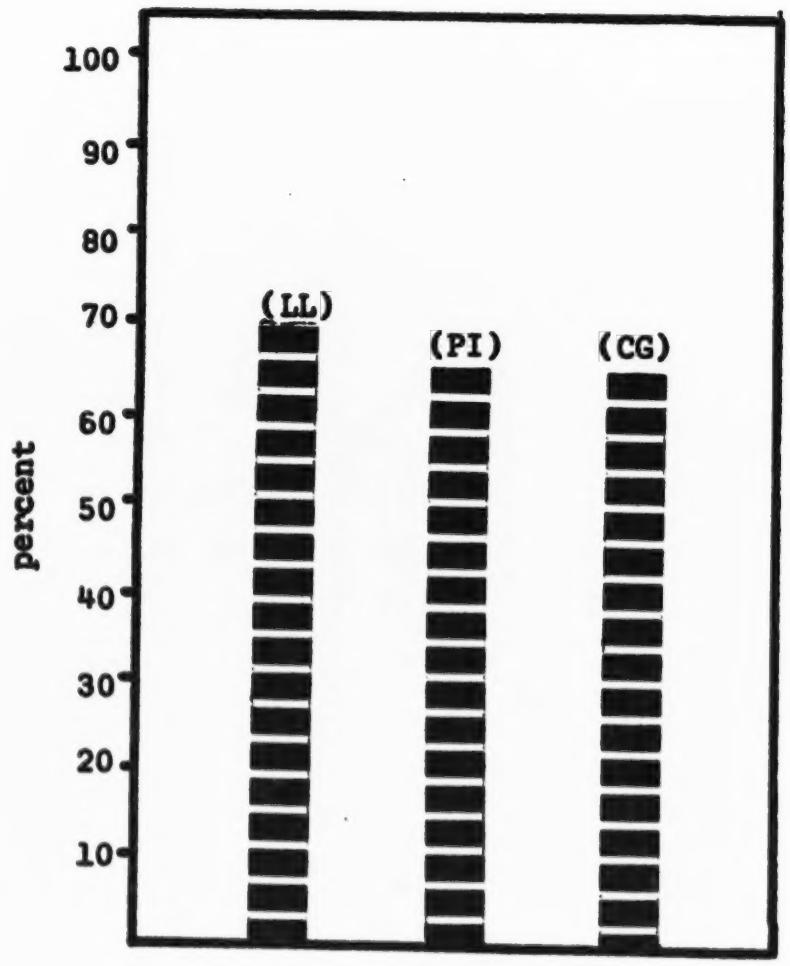

Fig. 2 Possible Gain by Group

other two groups. Of course, this could overlook the possibility that the total time studying theory would be about equal when it is realized that the lecture-lab and control group spent approximately 2/3 of their time in lab.

Scores on the Extension and Practical Test

The purpose of these tests was to determine if the "no significant difference" comparison between the lecture-lab and programmed instruction group* would break down when:

1. The groups were asked to extrapolate beyond the knowledge gained in this course on an objective test, mainly covering theory with some circuit analysis.
2. The groups were asked to demonstrate their ability to use simple test and measurement devices; one group having been actively involved with this type of material, and the other having only read about it.

The extension test was analyzed via Kruskal-Wallis one-way analysis of variance resulting in an H equal to .5. Again we find that the assessed method of instruction did not contribute to any significant difference.

Using the same analysis of variance technique to assess the scores on the practical resulted in an H of 2.9. This is significant at the .05 but not at the .01 level.

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*These tests were not administered to the control group at the Aviation Institute because the time involved impinged too greatly on their allotted schedule. Therefore, the N in this case is 9.

Undoubtedly, the small N in this case is contributing in part to this result. There is still something not to be overlooked; this is the fact that the students in programmed instruction, having no intimate relationship with the devices -- only the theoretical presentation, were still able to demonstrate an acceptable performance on the practical test. Table 2 also shows significant relationships between the practical, the two quizzes, and the extension test. This further indicates that the relationship between theory and practice in the lab is not being fully exploited with the size of this group and the length of time involved.

The Influence of Variables Other Than Tests on Achievement

An attempt was also made to analyze the effects of:

1. previous formal educational experiences related to electricity;
2. total semester hours of university study; and
3. age on the assessment of gain in this course.

To this end, the students' exposure to mathematics, physics, and electricity-electronics in the formal education setting was totaled and the inter-correlations computed. Since the total time of study in these areas correlated significantly high with the individual courses it is the value which was used in the analysis. The effect of this variable

did not indicate a significant relationship with any of the others. It was concluded, therefore, that the measures of achievement in the experiment were sufficiently independent of past studies in these three areas so as to be ignored.

Age, as another gross assessment of experience, was also found to have no significant correlation with any of the other variables. However, total semester hours was related; the effect coming largely from the fewer number of hours completed by the group at the Institute. This was highly correlated with the amount of physics studied. The apparent reason for this is that the study of physics on the University of Illinois campus is generally postponed by education students until later in their academic careers. Essentially then, this can also be ignored in looking at achievement in the experiments.

Performance on the Teaching Machine

This research indicates that there is no tenable basis for rejecting the conclusion that one method of instruction is more satisfactory than another for a particular group of students. However, there are still some interesting insights to be gained from taking a closer look at what was taking place with the students using programmed instruction. Figure 3 shows that this method started with a group of students whose differential starting points were similar (range of pre-test scores) and diversified them with regard to their final achievement (range of post-test). On the other hand, the lecture-lab method started with a group having a large range of scores on the pre-test and brought them up to similar levels, as witnessed by the small range on the post-test.

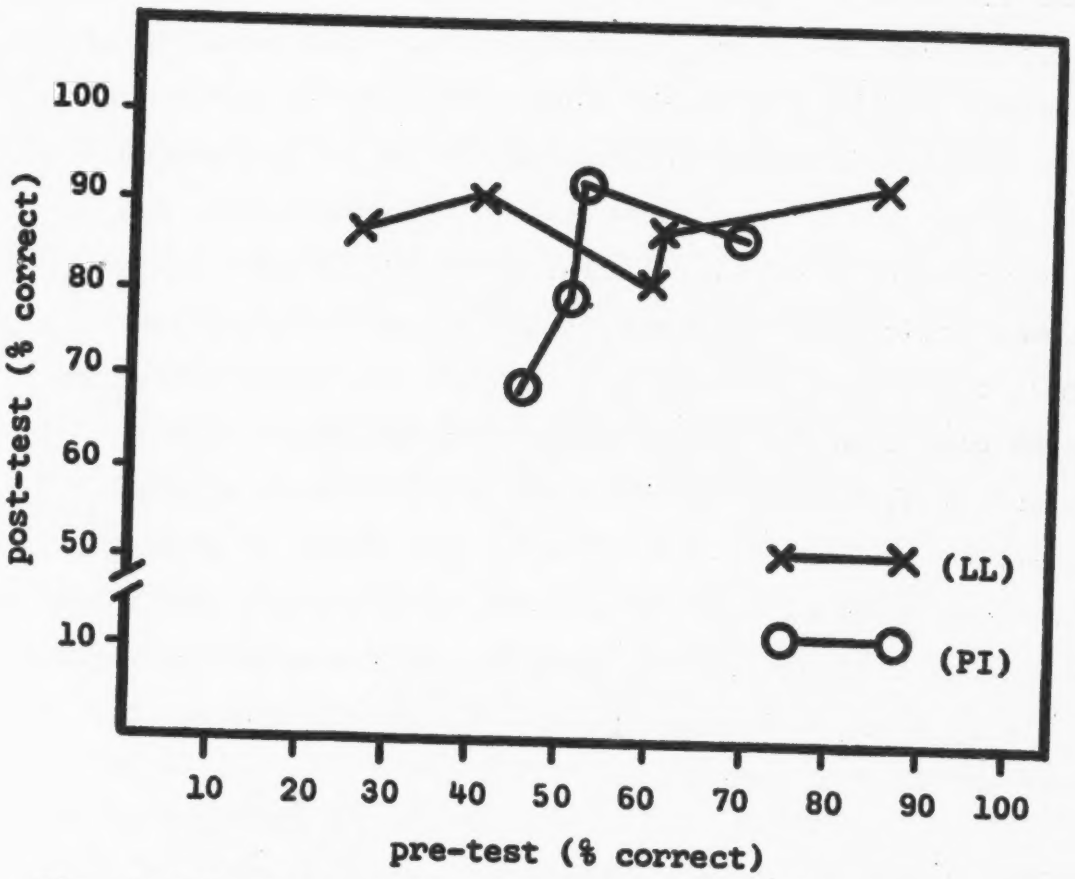

Fig. 3 The Percentile Range of Scores by Individuals for Pre- and Post-test

This finding would appear to be at odds with the popular conception of programmed instruction. Research has indicated that the use of programmed learning would serve to decrease the effect of students' heterogeneity on teaching practices. Student differences would show up at the beginning of a course of instruction and would be reduced by the end of the course, each student proceeding at his own pace.

For the purpose of investigating this finding three additional variables were computed. These were: total time spent on the programmed material, total frames, and error rate.

Total time was simply the amount of time spent by each student viewing the material.

Total frames was the number of frames viewed by the student as he progressed through the various topics covered on the programmed reels. This was considered pertinent, inasmuch as there was a minimum number possible in order to complete the reels most efficiently.

From this information, error rate was computed; this being the complement of the number of frames viewed, divided by the minimum number possible to view in order to complete the program reels. The calculations were based on the four larger reels of programmed material which were viewed by the students during the middle part of the semester. It was computed this way, rather than for all of the reels, in order to overcome the differential difficulties in orienting the students to the programmed instruction device and to overcome the differential anxiety manifest in the later stage shortly before the final examination.

By inspection of the data, it is apparent that the total number of frames is highly related to error rate. This value is irrespective of total time. In other words, time is the crucial factor. Given the same amount of time, the student with the higher rate of error will progress through the material more slowly; hence, his performance on the criterion measure will be affected inasmuch as he covers less content. Therefore, when the time element is constant, it would appear logical to expect the divergence shown in Figure 3 if the student proceeds at his own rate.

In the lecture-lab setting the student is held to a time schedule. He is, therefore, exposed to the same amount of material as everyone else and has the option of studying on his own to brush up on those points about which he is in doubt. His contemporary on the teaching machine cannot proceed to the

next point until he has mastered the present information. The suggestion here is that, even though performance on the criterion test does not show any significant difference, the optimum procedure for using a programmed device would be to have the length of the program time in accord with the anticipated progress of the less proficient student.

Attitude Evaluation

At the beginning and end of the study the reaction of each of the three groups toward programmed instruction was elicited. The attitude survey instrument was broken down into three areas as follows: (1) presentation of material as related to note taking, understanding, and retention; (2) student-teacher interaction and values derived therefrom; and (3) general assessment involving gross comparisons of programmed instruction with conventional teaching.

Each response was weighted according to whether the statement being responded to was positively or negatively oriented. That is, if space "2" or "4" were checked it was scored ±1, and if space "1" or "5" were checked a score of ±2 was attached.

The results of this study showed the following changes in attitude (see Figure 4). As might be anticipated, the lecture-laboratory group underwent relatively little attitude change since it was not in direct contact with programmed instruction. This group began with a negative attitude score (-13) and moved 20 points in a positive direction (+7). The control group at the Institute of Aviation was the most stable with a range of only 10 points. This group began with a high negative score (-69) and moved even more negatively during the course of study (-79). It is suspected, however,

that the attitude displayed by this group might have reflected a measure of irritation with the study itself rather than a particular reaction against programmed instruction. The programmed instruction group went from a very high positive score (+36) to a negative score (-12) with a total change of 48 points.

Since only the programmed instruction group was exposed to the teaching machine, it is not surprising that it is the only one showing any appreciable shift in attitude during the experiment. The initial positive reaction may well be attributed to the presence of the Hawthorne Effect. That is, at the outset members of this group were reacting to the novelty of the situation rather than to the reality of learning by this method. As the study progressed, the machine lost some of its newness and, consequently, the attitude of the group

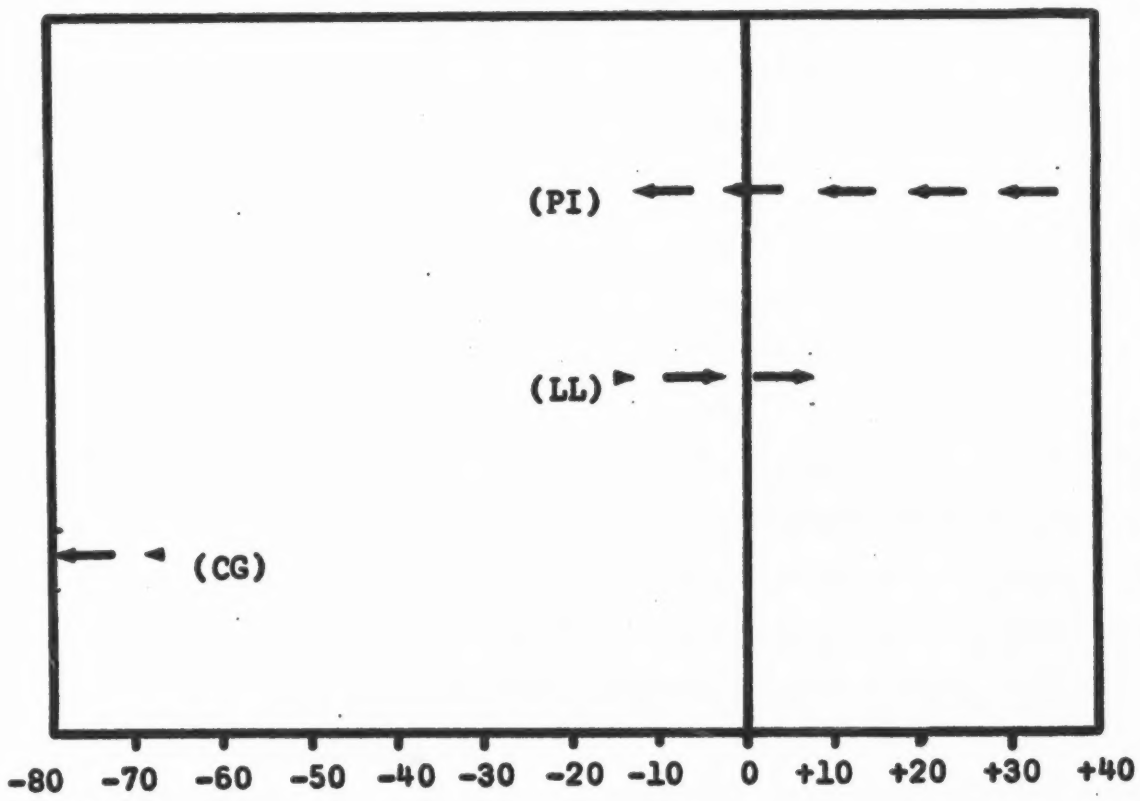

Fig. 4 Attitude Shift (Direction & Range)

began to grow more negative. This definite negative shift was reflected in a more critical reaction to practically all areas covered by the attitude instrument with 76% of the statements receiving a more negative reaction. Only 12% moved positively with the remaining 12% showing no change.

The most significant positive change in attitude occurred with respect to the level of concentration thought to be required by the teaching machine. Pre-test responses indicated that students strongly agreed that a very high level of concentration is necessary. They later concluded, apparently as a result of increased familiarity with procedure, that this is not a distinguishing characteristic of programmed instruction.

Specific statements reflecting a marked negative shift in attitude dealt with blanket endorsement of programmed instruction, effectiveness in teaching slow learners, and quality of explanation. In these areas students were most critical of programmed instruction.

This definite shift in attitude would certainly seem to be an indictment of the concept of total mechanization of teaching. Many of our leading educational philosophers, following Dewey and Kilpatrick, have emphasized the need for satisfaction in the course of learning if it is to be effective and permanent.

The teaching machine appears to have failed to help the student build desirable attitudes toward programmed instruction. This is not to say that this device is without merit, inasmuch as learning has occurred despite this shortcoming. It is apparent, however, that the fundamental, socially-oriented nature of the human organism will have to undergo

some changes before we arrive at the oft-talked about school of the future wherein all stimuli are "canned" and all responses are in the form of pressure exerted upon a plastic button.

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APPENDIX A

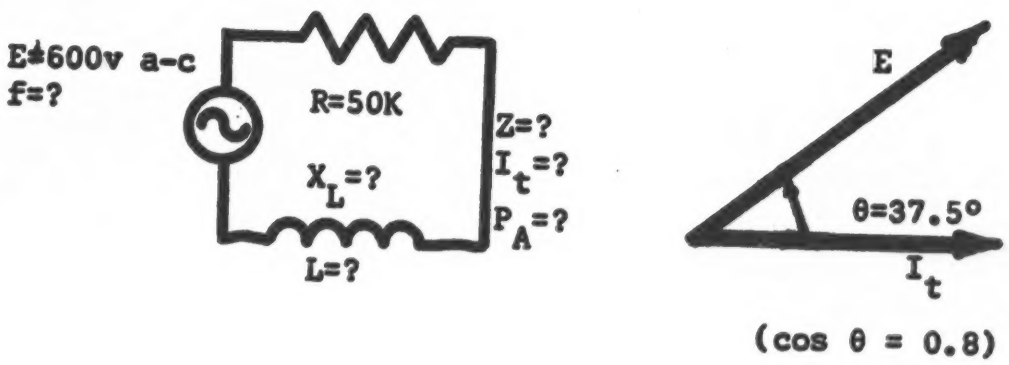
Appendix A contains three frames which typify those found in the Autotutor program on Electronic Theory. These show the statement of a problem, an incorrect solution response, and a correct solution response, respectively.

Good, you probably had no difficulty spotting the incorrect assertion that increasing E decreases the power factor of a series RL circuit.

Here is you last question:

Question 4:

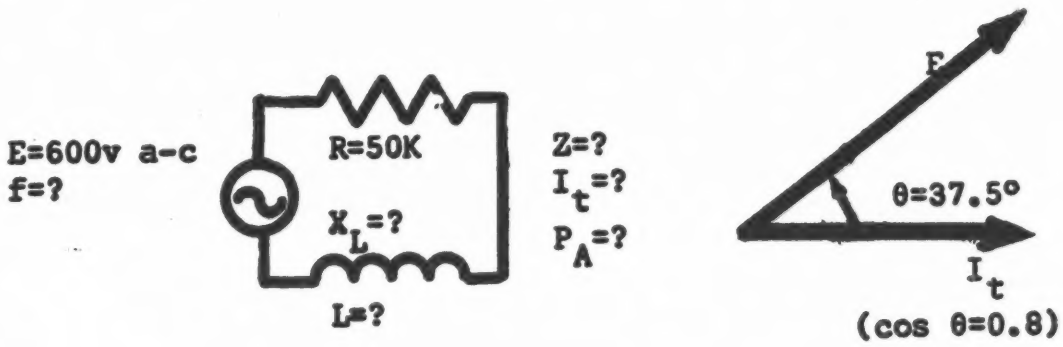
Look closely at the circuit and phase diagram below. What additional information must be supplied before you can calculate the power drawn by the resistor?



Z must be supplied.	F
I_t must be supplied.	E
L must be supplied.	D
L <u>and</u> f must be supplied.	B
Nothing additional need by supplied.	A

Sorry, your answer is incorrect.

Everything needed to find P_T is given. Look at the problem again:



Here is the solution:

$$P.F. = \cos\theta = 0.8; \quad \text{and } P.F. = \frac{R}{Z}.$$

Therefore, $\frac{R}{Z} = 0.8.$ Since $R = 50K$,

$$Z = \frac{50K}{0.8} = 62.5K.$$

Now, $P_A = \frac{E^2}{Z}$. E is 600v a-c, so,

$$P_A = \frac{(600v)^2}{62.5K}$$

$$= 5.75 \text{ watts.}$$

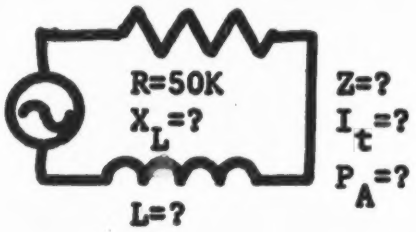
Finally, $P.F. = \frac{P_T}{P_A}$, so $P_T = P_A \times P.F.$

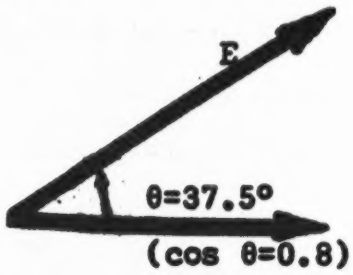
$$P_T = 5.75 \text{ watts} \times 0.8 = 4.6 \text{ watts}$$

This solution is only one of several possible using only the data given. With the proper grasp of the ideas in this section, you should have been able to decide this for yourself. A review is in order; please press Button I as many times as necessary to return to the beginning of this section.

Very good. While you weren't asked to find a numerical solution, you may be interested in seeing one.

E=600v a-c
f=?





$$P.F. = \cos\theta, \qquad \text{and } P.F. = \frac{R}{Z}.$$

Therefore, $\frac{R}{Z} = 0.8.$ Since $R = 50K$,

$$Z = \frac{50K}{0.8} = 62.5K.$$

Now, $I_t = \frac{E}{Z}$, so

$$I_t = \frac{600v}{62.5K} = 0.0096 \text{ amp}$$

Squaring to get I_t^2: $I_t^2 = (0.0096 \text{ amp})^2 = 0.92 \times 10^{-4} \ \frac{\text{v-amp}}{\text{ohm}}$

Using $P_T = I_t^2 R$,

$$P_T = (0.92 \times 10^{-4} \ \frac{\text{v-amp}}{\text{ohm}}) \times (5 \times 10^4 \text{ ohms})$$

$$= 4.6 \text{ watts}$$

The next Section combines resistors, capacitors and inductors into a single series a-c circuit. It will give you no trouble.

To continue, press Button A.

APPENDIX B

Appendix B shows a sample of the General Information Questionnaire completed by all students participating in the study. Each question has been answered to show a composite of the responses (Yes or No) made by each of the three groups and the percentage of those answering in the manner indicated.

Name_____ Date_____

(last) (first)

GENERAL INFORMATION SHEET
on
PROGRAMMED INSTRUCTION

I. Have you had any direct contact with programmed instruction or "teaching machines" before this semester? If "yes", please explain.

Prog. Instr.	Lect-Lab	Control Group
No (100%)	No (100%)	No (100%)

II. Have you read any books or articles dealing with programmed instruction?

Yes (100%)	Yes (20%)	Yes (17%)

III. Have you heard or participated in discussions of programmed instruction prior to this semester?

No (50%)	No (60%)	No (83%)

IV. Had you formed any opinion of programmed instruction as a teaching technique before this semester? If "yes", please state your opinion.

Yes (25%) Negative	Yes (00%)	Yes (17%) Negative

APPENDIX C

Appendix C provides a sample of the Attitude Survey Instrument used in this study. Shown in the "response" section of the instrument is a tabulation of all student responses coded to distinguish between initial and final reactions. The top section of each block indicates responses of the programmed instruction group; the center section shows those of the lecture-laboratory group; and the lower section contains those of the control group. Plus or minus notations beside each number indicate whether that statement is positively or negatively oriented.

Name_____ Date_____

(last) (first)

ATTITUDE SURVEY
on
PROGRAMMED INSTRUCTION

(please check you reaction to each statement in the appropriate space)

+ = pre-test
* = post-test

	Strongly Agree 1	2	3	4	Strongly Disagree 5
+1. Programmed instruction is superior to conventional lecture-laboratory instruction in all respects.		++ *	++	**	*
		*	++	+++**	**
				++++	++***
+2. Programmed instruction is desirable because it allows students to advance at any desired rate.	++ **	++ *	*		
	+ *	++++ ***		*	
	+ *	++ **	++ *	+ **	
+3. Programmed instruction is desirable because it permits accurate note taking.	++ *	++ *	*	*	
	+ *	++***	+ *	+	
	++	++***	**		++ *
+4. Programmed instruction adequately takes the place of lab activities in the study of Electronics.		*	+ *	+++ *	*
			*	+++ *	++***
			*	+++ *	+++ ****
+5. Programmed instruction is desirable because it presents information in a highly organized form.	++++*	**	*		
	*	+++ ****	++		
	++ *	++ ***	+ **	+	

NOTE: The top line following each statement contains responses of the programmed instruction group; the next line contains the responses of the lecture-lab group; the last line contains the responses of the Aviation Institute.

APPENDIX C

Appendix C provides a sample of the Attitude Survey Instrument used in this study. Shown in the "response" section of the instrument is a tabulation of all student responses coded to distinguish between initial and final reactions. The top section of each block indicates responses of the programmed instruction group; the center section shows those of the lecture-laboratory group; and the lower section contains those of the control group. Plus or minus notations beside each number indicate whether that statement is positively or negatively oriented.

	Strongly Agree 1	2	3	4	Strongly Disagree 5
+6. The fact that the student is unable to ask questions in programmed instruction is of no serious consequence.				+++ ***	+ *
				+++ ***	++**
				++ ****	++++ **
-7. Programmed instruction should be supplemented with lectures for purposes of clarification.	+ **	++ *	*		+
	+++*	++ ***	*		
	+++++ **	+ ***	*		
+8. A student should experience no difficulty in maintaining a high level of concentration for at least one hour of programmed instruction.	++ *	**	+	+	*
	+++*	+ ***	+ *		
		++ *	++ *	**	++ **
-9. Programmed instruction is of little value and should be eliminated.			+ *	*	+++**
		+	+ *	++***	+ *
		+ *	+ **	+++ **	+ *
+10. Programmed instruction presents material in a more interesting form than is usually encountered in a lecture.		++ **	+ *	+ *	
		*	++***	+++*	
			+++*	+++**	***
-11. Programmed instruction would be more desirable if sessions were supervised by an instructor.	*	+ *	+ *	+	+ *
	*	++ **	+++**		
	++ **	+++ ***	+ *		
-12. Programmed instruction would work well for a non-lab course such as mathematics but not for a course in which equip. familiarization & lab procedure is important.	+ **	+	+ *	+ *	
	++ *	++ ****	+		
	++**	++ **	*	+	+ *

	Strongly Agree 1	2	3	4	Strongly Disagree 5
+13. Programmed instruction is a superior means of teaching the slow learner.	++	+ **	+ *		*
	+	+***	++**	+	
		+ *	+++ ***	++ *	*
-14. The most serious shortcoming of programmed instruction is the lack of opportunity to develop manipulative skills.	++++ **	**			
	++**	++ *		+ **	
	++++ ***	++ *	**		
+15. The learner is more at ease and relaxed with programmed instruction than with a lecturer.	+++ *	**		*	+
		++ **	+++ ***		
	+	++	+****	+ *	+ *
-16. It would be difficult for a student to remain attentive to programmed instruction for a period of two hours.	+ *	+ **		+ *	+
	+	+ **	++**	+ *	
	+++++ *****	+ *			
-17. A serious fault of programmed instruction is the absence of a spririt of competition that prevails in the classroom.		+***	+	+ *	+
		+++ **	+***	+	
	+ *	++ *	++**	**	+
-18. In programmed instruction the student is hampered by the lack of a learning experience such as that provided by public participation in a question-answer sess.	*	++ *	**	+	+
	+	++ *	++**	**	
	++++ *	+***	+ **		
+19. Explanations provided by the machine in prog. instr. are at least as good as, or better than, the explanation which could be expected from an instructor.	++	++***			*
		++**	+++ ***		
	+ *	+ *	+ *	++**	+ *

	Strongly Agree 1	2	3	4	Strongly Disagree 5
-20. Programmed instruction requires a much higher level of attention and concentration than that usually required in a lecture.	++++ **		*	*	
+21. Programmed instruction reduces anxiety because there is no great sense of failure or scorn from others in the class when a question is answered incorrectly.	*	*	+ **	+	
+22. Programmed instruction is superior because here understanding is assured rather than assumed for any point or concept under consideration.	++ *	*	+ *	*	+
+23. More material can be learned and understood in an hour of programmed instruction than in an hour of lecture or laboratory experience.	+ *	++++ ***	*	**	
+24. Material learned by the programmed instruction method is more readily retained and recalled when needed from day-to-day and week-to-week than the mat. learned in lec.	+ *	++ *	++ *	++ *	+ *
+25. Small details are more likely to be ignored by an instructor but covered by the programmed instr.	+	+ *	+ **	+ *	
		**	++++ ***	+	
	+ *	+ *	++ ***	+ *	+
	+	++ **	+	**	
		++++ ***	+++ **		
	+	+***	+	++**	+ *

APPENDIX D

Appendix D shows a sequential outline of the topics covered by the Programmed Instruction Group.

TOPIC 0 — Reel I

Direct Current

TOPIC I — Reel I

Alternating Current

- Magnetism
- Electro Magnetism
- Electro Magnetic Induction

Reel II

- Alternating Current & Generators
- Inductors
- Capacitors
- Transformers

TOPIC II — Reel I

Reactive Circuits

Vectors, Elementary Trig.

Square Roots

Series RC Circuits

Series RL Circuits

Series RCL Circuits

Series Resonance

Reel II

Parallel RC Circuits

Parallel RL Circuits

Parallel RCL Circuits

Parallel Resonance

TOPIC III

Reel I

Rectifiers, Amplifiers, and Basic Circuits

Classification of Vacuum Tubes

Introduction to Vacuum Tubes - Diodes

Semiconductor Diodes

Power Supplies

Regulation of Power Supplies

Reel II

Triodes, Part I

Triodes, Part II

Tetrodes

Introduction to Transistors

GAS Tubes

Soldering

TOPIC IV

Reel I

Test Instruments, special purpose Tubes, and Transistor Circuits

The Cathode Ray Tube

Operation of the Test Oscilloscope

Basic Measuring Instruments

Special Purpose Tubes

Transistors

Transistor Characteristic Curves

APPENDIX E

Appendix E shows sample questions from each of the criterion tests. The questions selected are representative of the theoretical concepts which the students are expected to have mastered at designated times during the semester.

FIRST QUIZ

1. Capacitance is that electric property which opposes any change in the

   a. applied voltage.
   b. current flow.
   c. inductance of the circuit.
   d. circuit resistance.

2. Inductive effects are <u>not</u> noted when a field is

   a. expanding.
   b. contracting.
   c. collapsing.
   d. stationary.

3. A current of 5 amp. is flowing through a 50-ohm resistance. The power dissipation is

   a. 1,250 watts.
   b. 250 watts.
   c. 125 watts.
   d. 25 watts.

4. One 20-uf capacitor and one 50-uf capacitor are connected in series. The total capacitance will be

   a. 9.2 uf
   b. 14.2 uf
   c. 30 uf
   d. 70 uf

SECOND QUIZ

1. A transformer is connected across a 100-volt AC source, and the 100-turn primary winding is drawing 1.00 amp. At 100 percent efficiency, what is the voltage across the secondary winding, which has 5,000 turns of wire?

   a. 5,000 volts
   b. 500 volts
   c. 5,000,000 volts
   d. 50 volts

2. When resistance alone is the governing factor in the flow of a current, the circuit is said to be

   a. a resonant circuit.
   b. an inductive circuit.
   c. a capacitive circuit.
   d. a combined inductive and resistive circuit.

3. When an alternating current is applied to the rectifier tube in a half-wave rectifier circuit, a direct current appears in the output side of the half-wave rectifier circuit only when the

   a. anode is negatively charged by the negative part of the AC cycle.
   b. anode is positively charged by the positive side of the AC cycle.
   c. cathode is indirectly heated.
   d. cathode is directly heated.

4. The range of the voltmeter may be extended by a

   a. multiplier resistor.
   b. load resistor.
   c. shunt resistor.
   d. parallel resistor.

PRE- AND POST-TEST

1. When the core of an electromagnet is removed, it retains some of its magnetic properties. This is due to the

   a. internal resistance.
   b. residual magnetism.
   c. magnetic reluctance.
   d. dielectric field.

2. Four voltmeters rated, respectively, at 100, 1,000, 2,000 and 100,000 ohms per volt are available. For highest sensitivity, it is best to use the voltmeter rated at

   a. 100,000 ohms per volt.
   b. 2,000 ohms per volt.
   c. 1,000 ohms per volt.
   d. 100 ohms per volt.

3. A lamp connected in series with a capacitor and an AC voltage source will light up. This is due to the fact that

   a. the dielectric is shorted out automatically when alternating current is applied.
   b. the peak AC voltage, being higher than a DC voltage, can temporarily break down the dielectric.
   c. the lamp is also acting as a capacitor when connected in series with an actual capacitor.
   d. the capacitor is automatically being charged and discharged, resulting in a flow of current through the lamp.

4. Permeability is the opposite of

   a. magnetic reluctance.
   b. magnetic attraction.
   c. ohmic resistance.
   d. magnetomotive force.

EXTENSION TEST

1. Which of the following is NOT considered a triode parameter?

   a. ac plate resistance.
   b. mutual conductance.
   c. filament voltage.
   d. amplification factor.

2. For proper operation a junction transistor must be biased:

   a. emitter reverse and collector forward.
   b. emitter forward and base reverse.
   c. emitter forward and collector reverse.
   d. emitter reverse and base forward.

3. The use of a by pass capacitor in the screen grid circuit of a tetrode tube will maintain:

   a. a constant plate potential.
   b. a constant screen grid current.
   c. the screen grid at a constant potential.
   d. the control grid at a constant potential.

4. The beam forming plates of a beam power tube:

   a. completely enclose the cathode and control grid.
   b. focuses the beam of light onto the photo electric plate.
   c. "channels" the flow of electrons from the cathode to the plate.
   d. none of the above.

Name _____

CHECK LIST FOR PRACTICAL TEST ITEMS

	RATING		
	Poor	Fair	Good
Voltage			
1. Accurate meter zero set			
2. Proper setting of Function Switch			
3. Proper setting of Range Switch			
4. Accurate reading of DC voltage			
5. Accurate reading of AC voltage			
Current			
6. Accurate meter zero set			
7. Proper connection into circuit			
8. Proper setting of Function Switch			
9. Proper setting of Range Switch			
10. Accuracy of current reading			
Resistance			
11. Proper adjustment of Zero Set & Ohms Adj.			
12. Accurate reading of Resistor #1			
13. Accurate reading of Resistor #2			
Waveform Identification			
14. Proper adjustment of Scope controls			
15. Proper insertion of signal			
16. Correctness of identification			
Frequency Determination			
17. Proper use of Scope controls			
18. Accuracy of frequency determination			
Measuring P-P Voltage			
19. Proper procedure in Scope calibration			
20. Accuracy of P-P measurement			
Care & Safety			
21. Equipment handled in a careful manner			
22. Unknown voltages regarded with respect			
TOTALS			

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THE ROLE OF DISTRIBUTIVE EDUCATION

Developing Future Leaders For Marketing and Distribution

DR. CECIL M. SHAW
State Superintendent of Public Instruction

Wyoming State Department of Education
1966

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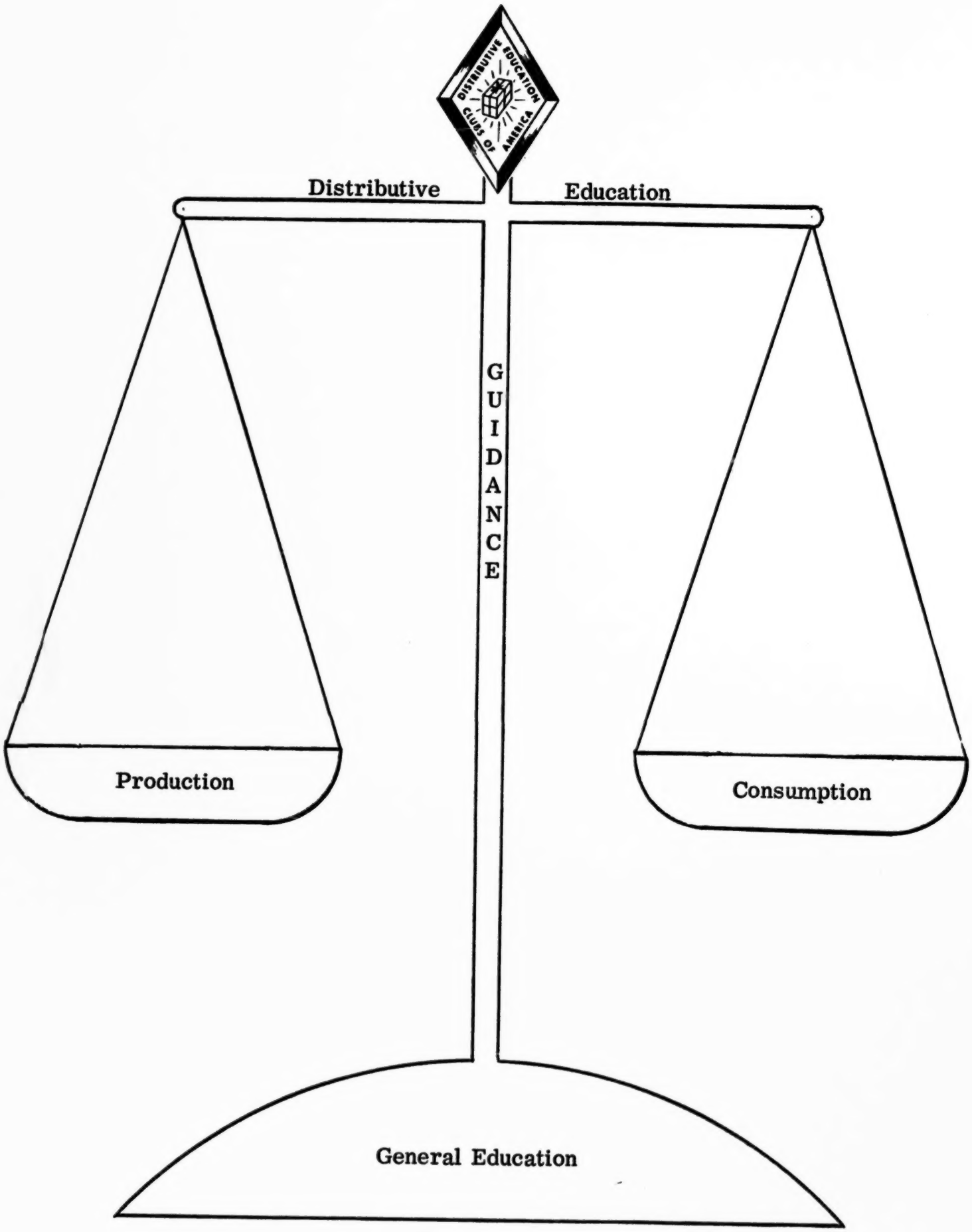

Distribution is the balance - the connecting link - between production and consumption. It also enables the consumer to receive and enjoy the benefits of our scientific and technical achievements.

Distributive Education

During the years distributive education has been in existence, it has grown to over 1,500 high schools and over a quarter of a million students. It has become a significant part of the total educational program.

Today, we find many who have a meager knowledge of the term "Distributive Education" or what its objectives are.

Distributive Education is vocational education designed for persons employed or for adults or students who are preparing to enter a distributive occupation. Distributive occupations are those followed by proprietors, managers, or employees engaged primarily in marketing or merchandising of goods or services. These occupations are commonly found in various business establishments such as retailing, wholesaling, manufacturing, storing, transportation, financing, and risk bearing.

One of the important objectives of the distributive education program is to train the distributive worker to perform services intelligently and efficiently. He must have the vocational skills and knowledge that are necessary for successful functioning in the different distributive occupations. Appropriate courses and training must be given to enable him to attain these skills and knowledge.

Worth Thinking About...

The term Distributive Education identifies a program of education. Its purpose is to provide instruction in marketing, merchandising and management.

In Distributive Education, the high school, post-secondary school, and the adult programs are integrated and coordinated into what is considered as a continual educational offering beginning with the high school program and advancing through the post-secondary school and adult programs.

Types of Distributive Education Programs

HIGH SCHOOL

Preparatory instruction may be provided either in preparatory classes utilizing participation activities or in cooperative classes utilizing on-the-job training through part-time employment. The high school program has a wide degree of flexibility so that it can be adapted to meet the needs of the students, the community, and the local school system.

POST-SECONDARY

These programs operate in our community colleges, junior colleges and vocational-technical schools. These programs include marketing, merchandising, or management training and are offered on a mid-management or junior executive level.

ADULT

Part-time extension programs where out-of-school youth and adults return to school during part of the working day to receive instruction related to their occupations.

Evening extension programs where out-of-school youth and adults return to school outside of working hours to receive instruction which leads to employment or advancement in distributive occupations.

"Where education is best, business is best, and likewise where business is best, education is best."

Objectives of Distributive Education

To promote high standards of operation in the distribution of goods and services through the improvement of marketing, merchandising, and management practices throughout the field of distribution.

To develop to the fullest extent a person's abilities, initiative, and creativeness.

To help meet the needs of our ever-changing civilization and economic life.

To develop salable skills in distributive occupations which would enable our citizens to lead rich and rewarding lives by becoming productive members of our communities.

To promote the American system of free enterprise.

To develop leaders in marketing, merchandising and management.

As these objectives point out, Distributive Education is a "total concept" program in education. There is a need to develop training on the high school level, the post-secondary level, and the adult level.

Need for Distributive Education

Distribution produces 56 per cent of our national income and provides 52 per cent of all jobs.

Economic literacy is needed by our citizens to understand fully our American system of free enterprise.

The rate of labor turnover in distributive occupations and the failure of small businesses can be traced directly to incompetency of personnel due to lack of adequate training.

One out of every three gainfully employed persons in Wyoming works in a distributive occupation.

Need to develop more economical and efficient methods of distribution.

Salable skills in distributive occupations enables our citizens to lead rich and rewarding lives by becoming productive members of our communities.

Career Objective in Distributive Education

The purpose of all vocational education is to prepare students for gainful employment.

The term "career objective" identifies the controlling purpose of the distributive education program - to fit persons for useful and successful employment in a distributive occupation.

Instructional practices in Distributive Education are particularly related to occupational goals, both in preparation for the immediate job and for advancement to greater future responsibilities.

"Career objective" suggests the continuing process of development within the framework of the person's chosen field.

Advancement will probably continue long after high school graduation; this means the individual will need to continue his education, to up-date his skills, to learn new methods of accomplishing objectives.

Nature of Career Development

A lifetime career in marketing, merchandising, or management is likely to be marked with changing employment status such as promotion, new-found opportunities, and the desire to leave and re-enter distribution.

Advancement depends upon the ability to solve problems and make decisions, acquire broad experiences, cultivate personal abilities, and adjust to the changing world of work.

It is estimated that distribution produces 56 per cent of our national income and provides 52 per cent of all jobs. According to recent figures released by the Wyoming Employment Security Commission, 20.1 thousand persons of a total 99.8 thousand non-agriculturally employed are employed in the wholesale and retail trade - or one out of every five employed persons. In addition, 16.9 thousand persons are employed in finance, insurance, real estate, service, and miscellaneous service occupations. Most of these occupations are distributive in nature.

Even with this tremendous contribution to our total work force, relatively few of this vast number have had previous training for their positions.

The rate of labor turnover in distributive occupations and the failure of small businesses can be traced directly to incompetency of personnel due to lack of adequate training. There is no doubt that adequate and appropriate training for proprietors, managers, executives, and employees would result in more economical and efficient methods of distribution, a reduction in labor turnover, and a consequent reduction in the costs of operation.

Job satisfaction and appreciation, increased usefulness and earning ability, advancement, stabilization, and permanency of employment are important outcomes of our distributive education programs.

What is DECA?

DECA is the accepted term when referring to the Distributive Education Clubs of America. This youth activity program is designed for students enrolled in high school and post-secondary distributive education programs. It is organized on local, state and national levels to provide incentives and recognition for DE students. It encourages group participation, leadership development, career study, and is recognized as an integral part of the total instructional program.

Develops leaders in marketing, merchandising, and management

Engenders a love for our American system of free enterprise

Cultivates desirable work characteristics and social graces needed by our citizens

Assist students in understanding and appreciating the responsibilities of citizenship

Distributive Education

can assist the young student immeasurably in making the difficult transition from school to full-time employment

provide our citizens with an opportunity to develop knowledge and skills that enable them to seek employment in a career that will allow for productivity and self-satisfaction

helps meet the needs of our ever changing civilization and economic life

By 1970	Eighty-seven million will be working full-time *
58 Million	Now at work will still be employed They need training to keep pace with new methods, new materials, new opportunities
26 Million	Young workers will start work, 1960-1970 Their aptitudes, skills and education must match the needs of a changing economy
3 Million	Women will switch from House-Work to Jobs, 1960-1970 These wives, mothers and widows will also need marketable skills in the decade ahead

EDUCATION MAKES PEOPLE MORE PRODUCTIVE AND VERSATILE

PRODUCTIVE, VERSATILE PEOPLE WILL BUILD A STRONGER AND BETTER AMERICA

METHODOLOGY AND PROJECTIONS

The component-ratio 1/ method was employed. That is the base population and work force was "aged" and "renewed" using certain assumptions concerning the mortality, fertility, net out migration, and information reflected in the Work Permits and Certificates.

The projection is a judgment projection based on a high and a low projection. The judgment model implies an average annual growth rate derived from the methodology. The specific components of population change are (1) moderate mortality declines (2) net immigration or out migration (3) fertility (4) reflections embodied in the Work Permits or Certificate of Age information. This, in summary, the judgment projection assumes moderate increases in life expectancy, continuation of present immigration patterns, continued high fertility, and trends in Work Permits and Certificates of Age.

* Reprinted from "Education For A Changing World of Work" Summary report of the Panel of Consultants on Vocational Education requested by the President of the United States.

1/ The ratio of state vital rates is computed to the comparable national rates for a past service of time and projected to the future by asymptotic growth curves.

ESTIMATED WYOMING TEENAGE NON-FARM EMPLOYMENT AND PROJECTION

(14-19 Years of Age)

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
TOTAL EMPLOYMENT	5,980	3,620	9,600	7,595	4,405	12,000
Total Manufacturing	722	144	866	740	163	903
Durable Goods	477	54	531	480	55	535
Lumber & Lumber Products	100		100	100		100
Laborers, Loaders & Stackers	40		40	40		40
Mill and Chain Workers	15		15	15		15
Warehouse and Dockmen	20		20	20		20
Others	25		25	25		25
Other Durable Goods	377	54	431	380	55	433
Laborers	30		30	32		32
Maintenance Workers	15		15	15	3	18
Mailers, Paper Wrappers and Kindred Workers	10	3	13	10		10
Mechanics, Machinists, Apprentices and Helpers	5		5	5		5
Metal Workers, Apprentices and Helpers	10		10	10		10
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	9	12	21	10	12	22
Paper Carriers and Deliverymen 1/	206	30	236	206	30	236
Pressmen, Printers, Apprentices and Helpers	15		15	15		15
Reporters	5	5	10	5	6	11
Stone, Brick and Clay Product Workers	14		14	14		14
Taxidermists, Apprentices and Helpers	6		6	6		6
Vehicle and Equipment Operators and Helpers	35		35	35		35
Others	17	4	21	17	4	21
Non-Durable Goods	245	90	335	260	103	363
Food and Kindred Products	201	82	283	210	85	295
Bakers, Apprentices and Helpers	20	5	25	25	7	32
Canners, Packagers and Helpers	25	12	37	30	15	45
Delivery and Warehousemen	10		10	13		13
Food Process and Preparation Workers	50	17	67	61	24	85
Laborers, Loaders and Stackers	31		31	40		40
Maintenance Workers	24	2	26	38	2	40
Sales Clerks	5	20	25	9	25	34
Shipping, Receiving Clerks and Kindred Workers	7	14	21	8	14	22
Stockers	5		5	9		9
Others	24	12	36	27	16	43
Refining of Petroleum and Related Industries	30	8	38	30	7	37
Laborers	15		15	15		15
Maintenance Workers	5		5	5		5
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	5	8	13	5	7	12
Others	5		5	5		5
Other Non-Durable Goods	14	11	25	20	11	31
Others	15	11	25	20	11	31

1/ Includes only those covered by State or Federal Child Labor Laws.

ESTIMATED WYOMING TEENAGE NON-FARM EMPLOYMENT AND PROJECTION - Continued

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
Other Retail Trade	248	206	454	375	285	660
Cashiers, Checkers and Wrappers	17	40	57	31	65	96
Deliverymen and Helpers	25		25	33		33
Florists and Helpers	10	9	19	13	12	25
Jewelers and Helpers	2		2	2		2
Maintenance Workers	45	2	47	74	2	76
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	3	20	23	5	35	40
Repair, Servicemen and Helpers	6		6	12		12
Sales Personnel	80	115	195	115	143	258
Shipping, Receiving and Kindred Clerks	5	2	7	11	2	13
Stockers and Kindred Workers	10	2	12	22	3	25
Warehousemen and Supplymen	7		7	9		9
Window Dressing, Display and Advertising	8	2	10	9	3	12
Others	30	14	44	39	20	59
Finance, Insurance and Real Estate	39	16	55	50	16	65
Maintenance Workers	25		25	32		32
Messengers	5		5	5		5
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	5	10	15	6	10	16
Tellers and Cashiers		5	5		5	5
Others	4	1	5	7	1	8
Service and Miscellaneous	667	1,057	1,724	885	1,405	2,290
Hotels, Motels, Tourist Courts, Resorts and Dude Ranches	279	257	536	401	430	831
Bell Boys and Kindred Workers	65		65	75		75
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	15	25	40	25	65	90
Elevator Operators	3	3	6	2	2	4
Guides, Instructors, Counselors and Kindred Workers	5	2	7	23	18	41
Laborers and Kindred Workers	45	5	50	68	19	87
Laundry and Kindred Workers	17	63	80	29	85	114
Lifeguards, Recreation and Kindred Workers	5	2	7	10	12	22
Maids, Housekeepers and Kindred Workers	25	135	160	40	180	220
Maintenance Workers	65	7	72	81	16	97
Performers, Entertainers and Musicians	22	9	31	29	11	40
Others	12	6	18	19	22	41
Personal Service	91	515	606	108	653	761
Beauticians, Cosmotologists Apprentices and Helpers		10	10		20	20
Deliverymen and Helpers	12		12	14		14
Laundry and Kindred Workers	30	90	120	39	126	165
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	2	20	22	2	47	49
Maids and Other Domestic Workers	30	375	405	36	430	466
Others	17	20	37	17	30	47

WYOMING TEENAGE LABOR FORCE AND EMPLOYMENT

(14-19 Years of Age)

	1960 1/	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Labor Force	14,000	14,500	15,100	15,800	16,600	17,500	18,000	18,400	18,800	19,100	19,300
Employed	11,700	12,100	12,550	13,150	13,800	14,500	14,800	15,100	15,400	15,700	15,900
Non Agriculture	7,900	8,200	8,550	9,050	9,600	10,100	10,500	10,900	11,300	11,700	12,000
Agriculture	3,800	3,900	4,000	4,100	4,200	4,400	4,300	4,200	4,100	4,000	3,900

U. S. TEENAGE LABOR FORCE

	1960	1965	1970	% Increase
Labor Force	6,200,000 1/	7,658,100	8,393,600	35%
Wyoming	14,000		19,300	38%

1/ Ajusted Figure

These chart figures furnished through the courtesy of the Wyoming Department of Labor and Statistics - Mr. Lee Galeotos - Statistician

ESTIMATED WYOMING TEENAGE NON-FARM
EMPLOYMENT AND PROJECTION - Continued

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
Other Services and Miscellaneous	297	285	582	376	322	698
Amusement Ride Operators, Attendants and Kindred Workers	30	5	35	39	8	47
Concession Stand Workers	10	100	110	12	109	121
Deliverymen and Kindred Workers	14		14	14		14
Guides, Instructors, Counselors and Kindred Workers	26	9	35	36	14	50
Dental and Medical Aides		15	15		19	19
Laborers and Kindred Workers	45		45	56		56
Lifeguard, Recreation and Kindred Workers	16	8	24	21	11	32
Maintenance Workers	37	2	39	44	2	46
Motion Picture Projector Operators	5		5	5		5
Nursery and Lawnworkers 3/	15		15	23		23
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	15	63	78	15	67	82
Parking Lot and Miscellaneous Attendants	5		5	8		8
Sales Personnel	24	45	69	30	50	80
Servicemen and Repairmen	21		21	29		29
Ushers, Ticket Sales and Kindred Workers	25	35	60	33	39	72
Others	9	3	12	11	3	14
Government	400	161	561	500	200	700
Federal	41	9	50	45	11	56
Laborers	5		5	7		7
Maintenance Workers	16		16	18		18
Miscellaneous Clerks	15	8	23	15	9	24
Others	5	1	6	5	2	7
State and Local	359	152	511	455	189	644
State	166	31	197	200	44	244
Highway and Kindred Workers	55		55	63		63
Laborers and Kindred Workers	30		30	42		42
Laboratory, Research Aides, Assistants and Kindred Workers	15		15	16		16
Maids, Housekeepers and Kindred Workers		5	5		7	7
Maintenance Workers	44		44	54		54
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	7	20	27	8	29	37
Others	15	6	21	17	9	25
Local	193	121	314	255	145	400
Dietary, Laboratory and Kindred Workers	2	25	27	3	29	32
Highway and Road Workers	25		25	37		37
Laborers and Kindred Workers	38		38	46		46
Librarians, Helpers and Kindred Workers		15	15		17	17
Maintenance Workers	51	3	54	62	3	65
Lifeguards, Recreation and Kindred Workers	15	15	30	22	20	42
Maids, Housekeepers and Kindred Workers		3	3		4	4
Mechanics, Repairmen, Apprentices and Helpers	25		25	39		39
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	5	22	27	7	28	35
Orderlies, Hospital Attendants and Kindred Workers	5		5	9		9
Nurses Aides, Helpers, Hospital Attendants and Kindred Workers		25	25		30	30
Others	27	13	40	30	14	44

3/ Includes those covered by State and Federal Child Labor Laws.

ESTIMATED WYOMING TEENAGE NON-FARM EMPLOYMENT AND PROJECTION - Continued

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
Transportation, Communication, Electric Gas and Sanitary Service	256	65	321	270	64	334
Interstate Railroads	67	5	72	55	4	59
Brakemen	5		5	3		3
Call Clerks	2		2	2		2
Carmen	2		2	2		2
Carpenters and Helpers	2		2	2		2
Laborers and Kindred Workers	5		5	3		3
Maintenance Workers	10		10	8		8
Office Clerks, Secretaries, Stenographers, Bookkeepers, and Kindred Workers	15	5	20	14	4	18
Painters and Helpers	4		4	2		2
Porters, Baggage and Freight Workers	3		3	2		2
Signalmen and Helpers	5		5	4		4
Switchmen and Helpers	6		6	4		4
Telegraphers and Dispatchers	8		8	9		9
Transportation, Excluding Railroads	75	15	90	95	15	110
Deliverymen	5		5	5		5
Loaders, Freightmen, Stockers, and Kindred Workers	20		20	25		25
Maintenance Workers	15		15	21		21
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	7	15	22	10	15	25
Repairmen, Mechanics and Helpers	3		3	5		5
Warehousemen	10		10	12		12
Vehicle and Equipment Operators	10		10	10		10
Others	5		5	7		7
Communications, Electric, Gas and Sanitary Service	114	45	159	120	45	165
Announcers, Reporters and Kindred Workers	10	1	11	10	2	12
Laborers	36		36	38		38
Maintenance Workers	17		17	19		19
Messengers and Kindred Workers	15	2	17	15	1	16
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	4	15	19	4	15	19
Partsmen, Materialmen and Supplymen	5		5	5		5
Technicians, Servicemen and Repairmen	13		13	15		15
Telephone Operators		25	25		25	25
Others	14	2	16	14	2	16

ESTIMATED WYOMING TEENAGE NON-FARM EMPLOYMENT AND PROJECTION - Continued

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
TOTAL TRADE	2,516	2,138	4,654	3,480	2,505	5,985
Wholesale Trade	142	18	160	155	20	175
Laborers, Loaders and Stockers	45	9	54	50	9	59
Maintenance Workers	27		27	34		34
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	10	5	15	11	6	17
Sales Personnel	13	2	15	13	3	16
Truck Drivers, Deliverymen and Helpers	25		25	20		20
Warehousemen, Supplymen and Materialmen	17		17	19		19
Others	5	2	7	8	2	10
Retail Trade	2,374	2,120	4,494	3,325	2,485	5,810
Retail General Merchandise Appliances and Accessories	220	306	526	300	335	635
Cashiers, Checkers and Wrappers	20	50	70	30	55	85
Deliverymen and Helpers	15		15	22		22
Maintenance Workers	50	15	65	65	15	80
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	10	46	56	12	48	60
Repairmen, Mechanics and Helpers	23		23	33		33
Sales Personnel	54	170	224	62	180	242
Shipping and Receiving Clerks	10	7	17	15	10	25
Stockers	20	3	23	33	5	38
Window Dressing, Display and Advertising	8	3	11	11	4	15
Others	10	15	25	17	18	35
Automotive and Filling Stations	667	32	699	900	35	935
Attendants and Kindred Workers	410	10	420	550	8	558
Body Repairmen and Helpers	25		25	32		32
Deliverymen and Helpers	14		14	20		20
Laborers, Auto Polishers, Washers and Kindred Workers	75		75	98		98
Maintenance Workers	40	5	45	54	6	60
Mechanics, Apprentices and Helpers	40		40	57		57
Machinists, Apprentices and Helpers	5		5	8		8
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	4	15	19	5	18	23
Partsmen and Helpers	15		15	22		22
Sales Personnel	14		14	15		15
Others	25	2	27	39	3	42
Retail Food and Restaurants 2/	1,239	1,576	2,815	1,750	1,830	3,580
Bus Boy, Girls and Kindred Workers	184	50	234	235	65	300
Cooks and Miscellaneous Kitchen Helpers	150	200	350	225	230	455
Checkers and Cashiers	30	50	80	47	60	107
Courtesy Boys	320		320	430		430
Deliverymen and Helpers	26		26	30		30
Dishwashers	115	80	195	147	104	251
Host and Hostesses	3	15	18	5	25	30
Maintenance Workers	50	5	55	80	8	88
Meat Cutters, Wrappers and Helpers	15	15	30	31	20	51
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	6	35	41	8	45	53
Produce and Miscellaneous Clerks	45	25	70	77	30	107
Sales Personnel	25	125	150	67	160	227
Stockers	95	6	101	131	8	139
Waiters, Waitresses, Car Hops and Kindred Workers	160	950	1,110	213	1,040	1,253
Others	15	20	35	24	35	59

2/ Also includes those working for schools and other food services

ESTIMATED WYOMING TEENAGE NON-FARM
EMPLOYMENT AND PROJECTION - Continued

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
TOTAL NON-MANUFACTURING	5,258	3,476	8,734	6,855	4,242	11,097
Mining	356	25	381	430	30	460
Metal Mining	51	5	56	55	5	60
Field Workers	10		10	13		13
Laborers	15		15	16		16
Laboratory Technicians and Helpers	5		5	5		5
Maintenance	15		15	15		15
Office Clerks, Secretaries, Stehographers, Bookkeepers and Kindred Workers	2	5	7	2	5	7
Others	4		4	4		4
Crude Petroleum and Natural Gas	255	17	272	300	19	319
Drillers, Field Workers and Helpers	50		50	45		45
Equipment and Vehicle Operators	5		5	5		5
Laborers, Roustabouts and Roughnecks	145		145	160		160
Maintenance Workers	25		25	35		35
Mechanics	5		5	8		8
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers		12	12		19	19
Seismograph and Geological Workers	15		15	27		27
Others	10	5	15	20		20
Other Mining	50	4	54	75	6	81
Field Workers	15		15	20		20
Laborers and Kindred Workers	20		20	28		28
Maintenance Workers	5		5	9		9
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers		3	3		5	5
Warehousemen and Kindred Workers	5		5	8		8
Others	5	1	6	10	1	11
Construction	1,024	14	1,038	1,240	22	1,262
Carpenters, Millwrights, Apprentices and Helpers	136		136	140		140
Electricians, Apprentices and Helpers	8		8	11		11
Flagmen and Kindred Workers	157		157	180		180
Laborers and Kindred Workers	340		340	400		400
Machinists, Apprentices and Helpers	10		10	20		20
Maintenance Workers	40		40	75		75
Masons, Cement and Kindred Workers	110		110	125		125
Material, Partsmen and Kindred Workers	8		8	10		10
Mechanics, Repairmen, Apprentices and Helpers	12		12	17		17
Office Clerks, Secretaries, Stenographers, Bookkeepers and Kindred Workers	2	12	14	5	20	25
Painters, Apprentices and Helpers	35		35	65		65
Timekeepers and Miscellaneous Clerks	15		15	22		22
Warehousemen and Kindred Workers	5		5	5		5
Vehicle and Equipment Operators	38		38	47		47
Others	108	2	110	118	2	120

ESTIMATES OF WYOMING TEENAGE NON-FARM EMPLOYMENT
By County

	1964			1970		
	MALE	FEMALE	BOTH	MALE	FEMALE	BOTH
ALBANY	406	180	586	546	234	780
BIG HORN	183	115	298	239	157	396
CAMPBELL	128	64	192	160	80	240
CARBON	321	188	509	396	240	636
CONVERSE	166	122	288	189	135	324
CROOK	57	29	86	70	38	108
FREMONT	330	208	538	414	306	720
GOSHEN	154	124	278	160	140	300
HOT SPRINGS	108	102	210	138	126	264
JOHNSON	99	74	173	128	88	216
LARAMIE	1,068	535	1,603	1,420	608	2,028
LINCOLN	114	30	144	114	30	144
NATRONA	1,028	451	1,479	1,364	544	1,908
NIOBRARA	78	66	144	80	64	144
PARK	317	297	614	425	403	828
PLATTE	98	94	192	98	94	192
SHERIDAN	234	208	442	255	225	480
SUBLETTE	54	23	77	85	35	120
SWEETWATER	317	182	499	426	222	648
TETON	284	234	518	395	301	696
UINTA	138	112	250	153	123	276
WASHAKIE	153	87	240	180	108	288
WESTON	145	95	240	160	104	264
TOTALS	5,980	3,620	9,600	7,595	4,405	12,000

Checked - DHS
no Rels.

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Illinois Agricultural Education Curriculum Research Project

Interim Report

Pilot Programs in Agricultural Education

June, 1965

by
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Urbana

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ILLINOIS AGRICULTURAL EDUCATION CURRICULUM RESEARCH PROJECT

INTERIM REPORT NO. 1
JUNE, 1965

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Agricultural Education Division
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The objective of the Illinois Agricultural Education Curriculum Research Project in the beginning and at the present time was to develop and try out innovations in agricultural education that would (1) improve agricultural education for farmers and prospective farmers and (2) provide agricultural education programs for occupations other than farming in which knowledge and skill in agricultural subjects are necessary for successful employment. The pilot programs were not developed as demonstration centers and are not considered demonstration centers. Their purpose is to provide a realistic setting for discovering both successful and unsuccessful curriculum practices. A future possible development in the Illinois Agricultural Education Curriculum Research Project might be the establishment of centers to demonstrate successful curriculum practices developed in the pilot centers.

DESCRIPTION OF PILOT PROGRAMS

Cissna Park High School, Cissna Park, Illinois

Setting. Cissna Park High School, a part of the Community Unit Number 6 school district, is located in the village of Cissna Park, Illinois. The village of Cissna Park, with a population of approximately 800, is situated in the center of a rich farming area in the southern part of Iroquois County. The village is approximately twenty miles from cities of

5,000 to 10,000 population and forty miles from a city of over 40,000 population.

Agriculture is the major industry in the Cissna Park school district. The village of Cissna Park is primarily a retail sales and service center for farmers and rural families in the surrounding area. Nearly all the businesses in Cissna Park are oriented toward agriculture in one way or another.

Enrollment in the Cissna Park High School totals slightly more than 200 pupils. Nearly 70 percent of the pupils come from farm homes or rural residences. The remaining pupils are acquainted with agriculture through the environment of a rural community.

The curriculum of the Cissna Park High School presently includes the traditional college-preparatory offerings plus physical education, driver education, business education, home economics education, and agricultural education (vocational agriculture). Vocational courses in diversified occupations and in distributive education were once offered but have been discontinued.

The Cissna Park High School has a professional staff of nearly fifteen. The Cissna Park High School staff involved in this project are:

Mr. Charles Watson, Superintendent of Schools and High School Principal
Mr. Roland Meyer, Teacher of Agriculture
Mr. Donald Whitten, Teacher of Agriculture

Vocational Agriculture Program Prior to 1964-65. Prior to 1964-65, the vocational agriculture program at Cissna Park High School was conducted by two teachers of agriculture and offered at the high school level the traditional production agriculture courses designed to educate future farmers. Four high school courses were offered each year with an average enrollment of 50 pupils:

Agriculture I (9th grade)--included instruction in livestock production and farm carpentry.
Agriculture II (10th grade)--included instruction in crop production and welding.
Agriculture III (11th grade)--included instruction in conservation, farm machinery and farm electrification.
Agriculture IV (12th grade)--included instruction in farm management and farm power.

Courses were also offered for young and adult farmers. There was no agricultural advisory council in existence in the Cissna Park school district.

Vocational Agriculture Program for 1964-65

The pilot program in agricultural education initiated July 1, 1964, consisted at the high school level of a four-year core of instruction in

agriculture with separate, specialized courses at the junior-senior level for pupils desiring to prepare for farming or for occupations in industry requiring knowledges and skills in agriculture. The purpose of this core vocational agriculture program, with specialized courses for farming and nonfarm agricultural occupations, was to provide boys and girls of high school age with an opportunity to receive education that would supplement their rich rural backgrounds and prepare them for gainful employment or post-secondary education leading to employment in occupations which require knowledges and skills in agriculture, including farming. The core of instruction offered was as follows:

Basic Agriculture (9th grade)--included instruction in livestock production for consumer demands, conservation of natural resources, and mechanics in agriculture.

Agricultural Science (10th grade)--included instruction in crop production for consumer demands, agriculture mechanics, forestry products and their use, and leadership skills in agriculture.

Agricultural Mechanics I (11th grade)--included instruction in drawing, agricultural blueprints, planning projects, using hand tools and using power equipment.

Agricultural Mechanics II (12th grade)--included instruction in agricultural plumbing, farm power, farm electrification, surveying, and farm machinery.

The specialized courses were as follows:

Farm Operations (11th grade)--included instruction in farm business analysis and planning, farm law, agricultural mechanics.

Agricultural Occupations (12th grade)--included instruction in the functions of agricultural firms, agricultural skills required in nonfarm agriculturally oriented jobs, and selected skills in the operation of agricultural firms.

Agricultural Mechanics III (12th grade)--Provided as an extension of Agricultural Mechanics II making it, in effect, a double period course for most of the pupils enrolled.

Junior and senior pupils were allowed to enroll in one or two courses depending upon their interest and whether their schedule would permit. Enrollment of high school pupils for the 1964-65 school year was as follows:

Course	Number of Pupils
Basic Agriculture	10
Agricultural Science	16
Agricultural Mechanics I	11
Agricultural Mechanics II	10
Farm Operations	13
Agricultural Business	7
Agricultural Mechanics III	2
Total	69

Each class met 55 minutes per day, five days per week for a total contact time of 275 minutes. Each teacher had two, 55-minute periods per day for pupil-teacher conferences, visitations or class preparation.

Supervised Agricultural Experience Programs. In 1964-65, the ninth- and tenth-grade courses (Basic Agriculture and Agricultural Science) required each pupil to conduct a supervised agricultural experience program with plants and animals. The advanced courses (Agricultural Mechanics I, II, and III, Farm Operations and Agricultural Occupations) required each pupil to conduct a supervised agricultural experience program in an agricultural firm, in farming, or in both. Agricultural experience programs in nonfarm agriculturally oriented businesses were operated in accordance with the "noncooperative" time requirement rather than the time requirement for cooperative work programs, which necessitates released school time. All pupils enrolled in the Agricultural Occupations course gained experiences relating to the operation of an agricultural firm, either as part of a placement-employment situation or through experiences which supplemented their farming programs.

Adult Education. In 1964-65 one adult course was offered during the spring with both teachers sharing in the instruction. The title of the course was soils and fertilizers. An average attendance of approximately twenty-three farmers and agricultural businessmen was maintained.

Community Survey. A survey of the community was conducted in 1964-65 to obtain information regarding the (1) location of agricultural businesses in the community, (2) number of people employed and their job titles, (3) location of possible training centers and (4) the functions of the businesses. It was found that a need existed for preparing pupils for employment in agricultural servicing and retailing occupations. Furthermore, it was ascertained that agriculture was a concern of most businesses in Cissna Park.

Agricultural Advisory Council. An agricultural advisory council was organized during 1964-65. The council consists of nine farmers and three agricultural businessmen. An additional three agricultural businessmen were appointed to serve as a part of a subcommittee that will study the problems relating to preparing pupils for employment in agricultural occupations in off-farm industries.

East Richland High School, Olney, Illinois

Setting. East Richland High School is located in Olney (Richland County), Illinois. Olney has a population of slightly less than 9,000. The East Richland Community Unit District includes about two-thirds of the geographical area of the county. Enrollment at East Richland High School is approximately 1,000 pupils. In addition to the traditional college-preparatory program offered in the school, courses in business education (including cooperative distributive education), industrial arts, home economics, and vocational agriculture are provided.

The curriculum of the district's community college includes primarily college-transfer courses. Enrollment in their community college is approximately 500 full-time student equivalents, most of whom are part-time students.

Little industry exists in the Olney area. The average family income in the county is slightly less than $3,000. The farms are usually small and are general farms, however, some farmers specialize in dairying and in supplying milk for the local milk-processing plant.

Staff. Staff members of the East Richland Community Unit district who have been involved in the project are:

Mr. Leslie Purdy, Superintendent
Mr. Lee Shafer, Assistant Superintendent
Mr. Gail Lathrop, Principal
Mr. Bob Whittington, Teacher of Agriculture
Mr. William Washburn, Teacher of Agriculture

The Vocational Agriculture Program Prior to 1964-65. Prior to 1964-65, the vocational agriculture program at East Richland High School consisted of a conventional offering of productive agriculture and farm management courses for high school boys and young and adult farmers. Four years of vocational agriculture was offered for high school boys with enrollment each year ranging from 100 to 110 pupils. From 45 to 50 young and adult farmers were served each year through organized courses. Two teachers of agriculture were employed in the school.

The Vocational Agriculture Program for 1964-65. A dual-track program in agricultural education was initiated at the high school level. The pupils were grouped on the basis of background (supervised farming program potential) and, secondly, on the basis of occupational interest (farming and nonfarm occupations involving knowledges and skills in agricultural subjects). A survey of the businesses of the community in the fall of 1963 indicated employment needs and opportunities in nonfarm agricultural occupations.

Ninth-grade (Agriculture I) and tenth-grade (Agriculture II) courses in production agriculture were offered. Two sections of each course were offered-- one section for pupils with good potential for desirable farming programs and one section for pupils with limited potential for farming programs. The content of Agriculture I included: livestock selection and breeds; introductory crops, soils, and fertilizers; basic agricultural mechanics involving carpentry, welding, and metal work. Agriculture II included primarily livestock production units involving feeding, breeding, and diseases. Problem areas concerning harvesting, storing, and marketing crops were also taught in Agriculture II. Project work in agriculture mechanics was also included in the course.

Pupils enrolled in eleventh- and twelfth-grade agriculture courses were grouped according to occupational interest. Pupils primarily interested in farming and pupils planning collegiate study in agriculture were enrolled in Agriculture III and Agriculture IV. The content of

Agriculture III was primarily farm management and farm operations. Agriculture IV was primarily mechanics with additional units on insurance and taxes. A new course, Agricultural Occupations, was offered for juniors and seniors interested in nonfarm occupations involving knowledges and skills in agricultural subjects.

Enrollment of high school pupils for the 1964-65 school year was as follows:

Courses	Number of Pupils
Agriculture I	32
Agriculture II	36
Agriculture III	13
Agriculture IV	18
Agriculture Occupations	12
Total	111

Supervised Agricultural Experience Programs. In 1964-65 pupils enrolled in the basic production agriculture courses (Agriculture I and II) conducted supervised agricultural experience programs with growing plants and animals. Pupils enrolled in Agriculture III and IV continued their farming programs. Pupils enrolled in the Agricultural Occupations course were required to participate in supervised agricultural experience programs in agriculturally oriented businesses. The "noncooperative" type of supervised agricultural experience program was followed. Several pupils enrolled in the Agricultural Occupations course continued their farming programs. All pupils enrolled in the Agricultural Occupations course had been enrolled previously in the regular courses of vocational agriculture offered in the school.

Adult Education. In 1964-65 two courses in welding and one course in soils and fertilizers were offered.

Advisory Council. A citizens' agriculture advisory council was organized during 1964-65. The council has a membership of twelve--seven farmers and five agricultural businessmen and professional agriculturists.

St. Elmo High School, St. Elmo, Illinois

Setting. St. Elmo is a town of 1,500 persons in south central Illinois, located about halfway between Vandalia and Effingham, Illinois. Approximately 250 pupils are enrolled in the St. Elmo High School, grades 9-12. Courses in business education, industrial arts, home economics, and agriculture are offered at the St. Elmo High School in addition to the general education and college-preparatory courses offered in most Illinois high schools.

Staff. High school staff members who were involved in the pilot program at St. Elmo are as follows:

Mr. Eugene Brubaker, Superintendent
Mr. John Griffin, Principal
Mr. Jack Fowler, Guidance Counselor
Mr. Richard Lowe, Teacher of Agriculture

The Vocational Agriculture Program Prior to 1964-65. Prior to 1964-65, the vocational agriculture program at St. Elmo High School consisted of four courses for high school pupils and one or more courses for adult farmers. The instructional program was oriented toward preparation for farming. Agricultural mechanics had not beem emphasized prior to 1964-65 because shop facilities were definitely limited.

In 1962-63 the enrollment in the four high school courses in vocational agriculture was 33. In 1963-64, the high school enrollment increased to 45 students.

The Vocational Agriculture Program for 1964-65. New facilities for agricultural education consisting of an agricultural mechanics laboratory, classroom, and office were constructed at St. Elmo in 1963-64. For 1964-65, the program in agricultural education at the high school level was reorganized to include a course in agricultural business as well as courses oriented toward production agriculture. Considerable emphasis was placed on agricultural mechanics in all high school vocational agriculture courses in an effort to compensate for the lack of instruction in the area during previous years. The specific courses scheduled and the enrollments in each were as follows:

Course	Number of Pupils
Agriculture I--Production Agriculture	10
Agriculture II--Production Agriculture	12
Agriculture III--Production Agriculture	14
Agriculture IV--Cooperative Agricultural Business	7
Total	43

The content of the production agriculture courses (Agriculture I, II, and III) consisted largely of problem areas involved in the production and marketing of farm crops and livestock plus units of instruction in agricultural mechanics, supervised farming programs, FFA, and guidance.

The content planned for the Cooperative Agriculture Business course included the following enterprises and units:

Enterprise I	The present vocational agriculture situation.
Unit A	Opportunities for careers in agricultural business.
Unit B	Opportunities this year.

Enterprise II	Agricultural experience programs.
Unit A	Placement in agricultural businesses for career study.
Unit B	Agricultural business experience records.
Unit C	Evaluation of and revision of the agricultural experience program.
Unit D	Supervised farming programs.
Unit E	Evaluating and expanding supervised productive projects.
Unit F	Evaluating and expanding improvement projects.
Enterprise III	Agricultural businesses.
Unit A	Development of salesmanship in agriculture.
Unit B	Development of skills needed in agriculture.
Unit C	Development of sound employee-employer relationships in an agriculturally oriented business.
Unit D	Ways of doing business in agriculture.
Unit E	Emergency procedures and safety precautions in agriculturally oriented businesses
Unit F	Work laws affecting agricultural occupations.
Enterprise IV	Agricultural mechanics (Pupils had not had agricultural mechanics before).
Unit A	Welding with an electric arc welder.
Unit B	Welding and cutting with an oxyacetylene welder.
Enterprise V	Individual study of problems associated with agriculturally oriented businesses
Enterprise VI	Evaluation of accomplishments.
Unit A	Decisions regarding establishment in a gainful occupation.
Unit B	Comparison of net worth at the beginning and the end of year.
Unit C	Evaluation of work experiences.
Unit D	Evaluation of agricultural knowledges and skills developed and improved.

Pupils enrolling in the Cooperative Agricultural Business course were required to have as prerequisites two years of vocational agriculture, a broad farming program in progress or plans for employment in an agricultural business. A pupil with less than two years of agriculture who had the approval of the guidance counselor and high school principal was also eligible for enrollment.

A community survey of the local agricultural businesses was conducted by the vocational agriculture instructor, with the help of the guidance counselor. This task was completed during the summer months of 1964, using forms furnished by the Agricultural Education Division, University of Illinois.

serving farming are very important and will continue to be important in the economy of the Woodstock community.

Enrollment in the high school is approximately 1,200. Approximately one hundred of these pupils live on farms, but many additional pupils in the school come from homes where the family heads are employed in occupations requiring knowledges and skills in agricultural subjects.

The curriculum in the Woodstock High School has been oriented toward academic subjects, but recent emphasis has been on broadening the curriculum to include increasing opportunities in practical arts and vocational subjects. Programs in agriculture, home economics, industrial arts, business, and diversified occupations are provided.

The Woodstock High School has a professional staff of fifty-two. The staff actively involved in the project were:

Mr. T. C. Shoberg, Superintendent
Mr. A. C. Drummond, Assistant Superintendent
Mr. W. C. Goodwin, Principal
Mr. W. E. Maxwell, Head Vocational Guidance Counselor
Mr. George Forgey, Teacher of Agriculture
Mr. William Pictor, Teacher of Agriculture

Vocational Agriculture Program Prior to 1964-65. Prior to 1964-65, the vocational agriculture program was conducted by one teacher of agriculture and all the courses were oriented toward production agriculture and designed for present and prospective farmers. The courses emphasized agricultural mechanics, livestock, and crops. In recent years, emphasis on vegetable production has been increased. Until 1961, three high school courses in vocational agriculture were offered each year. After 1961, four courses in vocational agriculture were offered. They were Vocational Agriculture I, Vocational Agriculture II, Vocational Agriculture III, and Vocational Agriculture IV. The enrollment fluctuated in recent years from 40 to 45 high school pupils.

In addition to the high school vocational agriculture courses, a course for adult farmers has been offered each year for several years.

Vocational Agriculture Program for 1964-65. In 1964-65, five vocational agriculture courses were offered at the high school level instead of four. These five courses and their enrollments follow:

Courses	Number of Pupils
Vocational Agriculture I	16
Vocational Agriculture II	18
Vocational Agriculture III	7
Vocational Agriculture IV	8
Agriculture Business	18
Total	67

A second vocational agriculture teacher was employed in the summer of 1964. Vocational Agriculture I through IV were designed in 1964-65 to provide (1) knowledge and skill with plants and animals and (2) knowledge and skill in agricultural mechanics. The supervised agricultural experience programs of the pupils enrolled in these four courses involved plant and animal projects and agricultural mechanics projects.

The Agriculture Business course was designed for pupils preparing for employment in occupations, other than farming, requiring knowledge and skill in agriculture subjects. Both boys and girls were enrolled in the course. Their supervised agriculture experience programs involved placement for work experience in an agriculturally oriented business. The "noncooperative" time-requirement plan was used for the placement experiences of the pupils. Thus, the pupils obtained their work experiences, requiring knowledge and skill in agriculture, after school, on Saturdays and in the summer. Most of the pupils in the Agriculture Business course continued their farming programs as parts of their total supervised agriculture experience programs.

Woodstock High School plans to offer the following courses in agriculture in 1965-66 if sufficient enrollment is obtained:

Course Title	Grade Level
Basic Agriculture	9th
Advanced Agriculture	10th
Agricultural Power and Machinery	11th and 12th
Agriculture Construction and Conservation	11th and 12th
Applied Animal and Plant Science	11th
Farm Operations	11th and 12th
Agriculture Business	12th

Adult Education. Woodstock High School has offered adult courses for farmers for many years. In 1964-65 courses in corn production and dairy production were offered.

Community Survey. In the summer of 1964 and in the early months of the first semester of 1964-65, a survey of the community was conducted to obtain information regarding the (1) location of the agricultural businesses in the community, (2) number of people employed in these businesses and their job titles, (3) location of possible training centers and (4) functions of the businesses. Several agriculturally oriented businesses were identified that employed persons who must have knowledge and skill in agricultural subjects. The survey was essential in locating and developing training centers for the pupils in the Agriculture Business course.

Agricultural Advisory Council. Woodstock has had a nine-member agricultural advisory council for many years. In 1964-65 this advisory council was enlarged to twelve. The three persons added were businessmen in agriculturally oriented businesses. These three members also serve as a subcommittee to advise regarding the operation of the Agriculture Business course.

WHAT HAS BEEN LEARNED

1. A community survey of nonfarm agriculturally oriented businesses needs to be completed before a course involving placement-employment is started.

2. Businessmen in the community must be involved in planning and developing a course involving placement-employment.

3. An agricultural advisory council including members from nonfarm agriculturally oriented businesses needs to be in operation before a change in courses is initiated.

4. A step-by-step procedure is needed in developing agricultural experience programs involving placement.

5. Classroom instruction concerning agricultural businesses and industries must be accompanied by related activities in agricultural experience programs, if it is to be most effective.

6. Classroom instruction in nonfarm oriented courses in agriculture must emphasize the knowledges and skills in agriculture which the pupils placed in agricultural business need to perform and to understand their work.

7. Teachers and others need to develop lesson planning guides and reference material guides related to agricultural businesses and industries.

8. Pupils who enroll in agricultural occupations courses or agricultural business courses need a background of basic instruction in agriculture.

9. A good community-wide public relations program is needed with as much "face-to-face" contact as possible.

10. Teacher enthusiasm and advance planning are essential ingredients in the success of new programs.

11. Teachers must assume responsibility for developing pupil agricultural experience programs in agricultural firms by:

    a. knowing the opportunities
    b. knowing the pupils
    c. contacting potential employers and placing pupils
    d. helping develop training program outlines
    e. helping develop training agreements
    f. coordinating and evaluating experience programs

12. Agricultural mechanics courses should emphasize the applied aspects of mechanics, including both theory and practice, and should be adapted to the needs of both present and prospective farmers and present and prospective workers in agriculturally oriented businesses.

13. Time, a difficult thing to find in a teacher's busy day, is essential in the operation of vocational agriculture programs designed to serve both production agriculture workers and workers in nonfarm agriculture businesses.

14. Traditional teacher activities need to be evaluated and nonessential activities eliminated.

15. Resource persons can be used effectively in teaching about agricultural occupations.

16. Well-planned field trips can be used effectively in teaching about agricultural occupations.

17. Pupils in an agricultural business course should obtain experiences in agricultural firms through the study of the firms, observation of work performed, and placement for experience.

18. A substantial core of instruction regarding technical agriculture needs to be included in courses designed to prepare pupils for employment in agriculturally oriented businesses and services.

19. A unit of instruction regarding agricultural occupations needs to be included in agricultural business courses.

20. On-the-job instruction and supervision need to be emphasized. It is a highly important ingredient of a successful agricultural business course.

21. The summer work of teachers is extremely important when placement-employment programs are conducted.

22. A core of experiences in both agriculture and the operation of agricultural firms needs to be included in an agricultural business course.

23. Guidance counselors need much instruction relating to the broadened objectives of vocational agriculture.

24. Systematic efforts must be initiated to change the production agriculture image of vocational agriculture. These efforts need to be focused on the faculty, all elementary and high school pupils, parents, businessmen, and the total community.

25. Businessmen and others providing placement-training stations need systematic instruction regarding their responsibilities in the program.

26. Detailed placement-training programs need to be developed for each pupil placed. These programs should be developed cooperatively by the employer, pupil, parents and teacher of agriculture.

Periodic evaluations should be conducted to determine whether or not the placement-training program is being followed. Revisions in a placement-training program are often necessary after such evaluations.

27. Placement-training programs need to be "education through work oriented" and not just "work oriented."

28. Titles of agriculture courses often need to be changed to capture the attention of prospective pupils and the public, and to alter the production-centered image of vocational agriculture.

29. Teachers of agriculture providing placement-training programs must learn the legal regulations involved.

30. Teachers of agriculture placing pupils for training must accept responsibility for placing pupils in jobs. They cannot delegate this responsibility to the pupils.

31. Teachers of agriculture have the competence in technical agriculture, or can acquire it with little difficulty, for offering instruction designed to prepare persons for nonfarm occupations requiring knowledge and skill in agricultural subjects.

32. Teachers of agriculture who attempt to prepare persons for gainful employment in agriculturally oriented businesses often need to learn more about the operation of these businesses, employer-employee relationships, and salesmanship. However, since they have had basic education at the university level in psychology, economics, accounting, and human relations, they can often develop competence in these areas by self-directed study of the agriculturally oriented businesses in their communities.

33. Records, both teacher and pupil, need to be emphasized in placement training programs.

34. Opportunities for jobs requiring knowledge and skill in agriculture exist and girls can be placed in training stations in jobs that are agriculturally oriented.

35. Good, enthusiastic teaching is all important in new programs designed to implement the broadening objectives of vocational agriculture resulting from the Vocational Education Act of 1963. The teaching must be systematic and carefully planned. The content must be solid. Pupils in a new course in agriculture such as agricultural business want to be taught in a systematic manner the technical agriculture they need in their placement-training programs, plus the other technical agriculture they will need for gainful employment in occupations requiring knowledge and skill in agriculture. If they do not receive instruction of this type, they soon start advising younger pupils to avoid enrollment in the course in following years.

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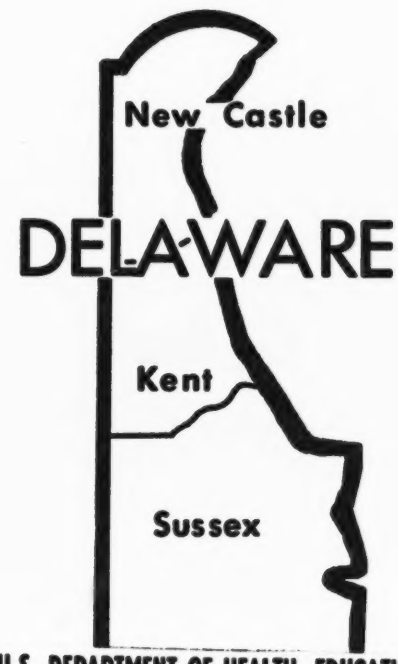
IDENTIFICATION OF OFF-FARM AGRICULTURAL OCCUPATIONS

Present and Projected Employment

A Preliminary Report of the Delaware Study of Agricultural Occupations other than Farming



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INTRODUCTION

The full title of this study, "Identification of Agricultural Occupations Other Than Farming and the Scientific and Technical Education Needed for Employment and Advancement in These Occupations in Delaware," is descriptive of the major objectives of the investigation. It is jointly sponsored by the Department of Agricultural Education, School of Agriculture, University of Delaware and the Agricultural Education Section, Division of Vocational-Technical Education and Extended Services, State Department of Public Instruction.

Project leader for the study is Ralph P. Barwick, Assistant Professor of Agricultural Education, School of Agriculture, University of Delaware, and project advisors are Dr. William E. McDaniel, Director of Resident Instruction, School of Agriculture, University of Delaware and Daniel E. Koble, Jr., State Supervisor of Agricultural Education, State Department of Public Instruction. A grant was obtained through the Division of Vocational-Technical Education and Extended Services, State Department of Public Instruction, to help finance the project.

This report is preliminary in nature and is primarily an enumeration of occupations by title and/or occupational family. A complete report will be published at a later date.

OBJECTIVES AND PURPOSE OF THE STUDY

The complete study has as its objectives the following:

1. To identify present and emerging agricultural occupations, other than farming, by job title, for which scientific, technical, and vocational agricultural education is needed in Delaware.

2. To determine the number of employees presently employed in these occupations and the numbers to be employed in the future.

3. To estimate the entry opportunities in present agricultural occupations due to turnover.

4. To determine the competencies needed for entry and satisfactory performance in these occupations.

5. To determine common competencies needed for employment and advancement in each of several groups of agricultural occupations.

6. To determine other characteristics of these occupations such as salary, minimum age of entry, union restrictions, labor laws, licensing, certification, experience, and formal education.

7. To determine the continuing educational needs of those employed in these occupations.

A complex of agricultural businesses and services has evolved to aid and facilitate the efforts of the producer on the farm. As a result, those concerned with agricultural education are aware that farming is only a portion of the broad agricultural industry. Farmers are customers for six million workers. These workers supply farmers each year with production supplies valued at 28 billion dollars. Also, ten million workers transport, process, manufacture, and sell farm products.

Broadened and extended programs in agricultural education need to be developed to meet the educational needs of certain workers in these off-farm agricultural occupations. This requires additional information over that which is currently available in order to make these adjustments and extensions in an intelligent manner.

The vocational agriculture program under federal reimbursement, came into being with the passage of the Smith-Hughes Act in 1917. One of the controlling purposes of the Act was that "such education be designed, to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home." When the fact became more and more recognized that agriculture was more than farming and an expanded program of vocational agriculture was needed, a movement was initiated to establish new legislation.

The "Vocational Education Act of 1963," P.L. 88-210, is now law. This Act provides that "any amounts allotted (or apportioned) under such titles, Act, or Acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupation involves work of the farm or of the farm home, and such education may be provided without directed or supervised practice on a farm.' The passage of this legislation makes the identification of off-farm agricultural occupations with specific job titles imperative.

There is also a need to identify the agricultural occupations

that require post-high school technical and scientific education in agriculture, the formal education or training needed and the levels at which the education and training should be offered.

PROCEDURE

In order to implement this study a list of the businesses in the state that were listed with the Delaware Employment Security Commission was secured. From this list, businesses were selected whose employees, we believed, would find a knowledge of agriculture useful or necessary in their occupation.

For this study agricultural occupations will be defined as those in which the worker needs competencies in one or more of the primary areas of plant and soil science, animal science, agricultural business management, marketing, and agricultural mechanization.

In order to make certain that all of the various types of businesses and services in the state would be included in the study, the firms were stratified into 55 occupational sub-families according to the type of business. Stratification was also made by geographic subdivision in case there would be any differences due to geographic location. The "disproportionate random sample" method was used in drawing the sample.

The data were obtained by having the teacher educator or one of three trained assistants interview a responsible person representing the business or service included in the random sample. The businesses or services included in the 55 occupational sub-families are grouped into eight occupational families. The per cent of businesses interviewed varied according to the number of businesses within a category.

The occupational families and the per cent sample follows:

Occupational Family	Number of Businesses and Services in Delaware	Number of Businesses and Services Interviewed	Per Cent of Businesses and Services Interviewed
Farm Machinery Sales and Service	29	6	20.7
Farm Supplies and Equipment	239	33	13.8
Livestock and Poultry Industries	205	35	17.0

Crops, Forestry and Soil Conservation	204	32	15.7
Ornamental Horticulture	176	26	14.8
Wildlife and Recreation	1	1	100.0
Agricultural and Farm Service	744	83	11.2
Food Marketing and Distribution	455	51	11.2
Totals and Average	2053	267	13.0

PRESENTATION OF DATA

The data obtained from the interviews by the teacher educator and assistants are presented in Tables 1 through 8. Eventhough this is a preliminary report, and further analysis of these data will be made at a later date, there are some observations that should be made at this time.

1. Approximately 20 per cent, or 32,776 (Table 2), of the total number of employees in the State of Delaware, which equals 165,008 excluding farming (Table 1), are employed in businesse and services other than farming in which it was believed the employees would find a knowledge of agriculture useful or necessary in their occupation.

2. Approximately 15 per cent, or 5,050 (Table 2), of the 32,776 that are employed in these businesses and services were found to need agricultural competencies.

3. During the next five years 2,154 additional and replacement employees having agricultural competencies will need to be hired in these businesses and services, Table 1.

4. Table 1 shows 7,352 persons employed in "Farming" and a need for 551 replacements during the next five years. Eventhough this report primarily concerns off-farm agricultural occupations, "Farming" is included in Table 1 for the purpose of making comparisons. The figure of 551 replacements was determined by assuming a one and one-half per cent replacement rate per year. This percentage is the result of research done in Iowa which considered both the age of present farm workers and the decline in number of farms.

5. Delaware has approximately 5 persons employed in off-farm occupations requiring agricultural competencies for every 7 persons engaged in farming.

6. The occupational families requiring the greater percentages of employees needing agricultural competencies are "Farm Machinery Sales and Service" and "Ornamental Horticulture," 64.5 and 45.4 respectively, Table 2. "Livestock and Poultry Industries" and "Agricultural and Farm Service" had the lowest percentages of employees needing agricultural competencies, both indicating 6.3. Also, the "Crops, Forestry and Soil Conservation" occupational family was low with 8.0.

7. Table 3, listing occupational sub-families, aids in understanding the three low percentages in the occupational families previously presented. The "Livestock and Poultry Industries" occupational family includes the "Poultry Processing" sub-family. This sub-family employs 2,810 persons, but the employers indicated that only 66, or 2.3 per cent, needed agricultural competencies.

   The "Canned Fruits and Vegetables" sub-family is included in the "Crops, Forestry, and Soil Conservation" family. The "Canned Fruits and Vegetables" sub-family employs 3,836 persons, but again employers indicated a small percentage needing agricultural competencies. In this case, 269, or 7.0 per cent. In both the "Poultry Processing" and "Canned Fruits and Vegetables" sub-families employers indicated that they did not believe the persons working on the processing lines needed agricultural competencies.

   The "Agricultural and Farm Service" occupational family includes several occupational sub-families in which it was suspected that the number of persons needing agricultural competencies would be low, but the study would not have been complete without their inclusion. For example, "General Building Contractors," 2.3 per cent; "Trucking," 1.6 per cent; "Utilities," 0.4 per cent; "Fuel Oil and Gasoline Dealers," 0.0 per cent; and "Real Estate Agencies," 0.8 per cent.

8. There are three occupational families in which more than 30 per cent of the businesses were established in the last 10 years, Table 4. These are "Farm Machinery Sales and Service," "Ornamental Horticulture," and "Food Marketing and Distribution." "Food Marketing and Distribution" is outstanding in this respect with 52 per cent of the businesses established in the last 10 years.

9. Table 5 shows there are three occupational families in which 50 per cent or more of the businesses indicated that 100 per cent of their gross income is agriculturally oriented. These are "Farm Machinery Sales and Service,"

"Livestock and Poultry Industries," and "Crops, Forestry, and Soil Conservation."

10. The occupational family having the greatest number of "Employees to be Hired During Next 5 Years" is "Food Marketing and Distribution" with 1,067 needed, Table 6. "Ornamental Horticulture" is next, needing 385.

11. Of the 5,050 persons employed needing agricultural competencies, 2,610, or 51.7 per cent, are employed at the professional, managerial, and supervisory levels of employment, Table 7. The supervisory level has the greatest number, 1,385.

12. Tables 8-1 through 8-8 list the occupational titles by level of employment and occupational family. These tables indicate the large number of occupational titles in the managerial and supervisory levels of employment. A large number of the occupational titles at the professional level of employment is found in Table 8-7.

13. Delaware has 16 departments of vocational agriculture. Table 1 indicates the number of persons needed in the next five years to enter farming and to enter other businesses and services needing employees with agricultural competencies, both full-time and part-time. From these data the number of persons needed per vocational agriculture department per year can be determined. This information is presented as follows:

Classification of Workers	To Be Hired Next 5 Years		To Be Hired For One Year		Number Needed Per H. S. Ag. Dept. Per Year	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Farm Worker	392	159	78	32	4.9	2.0
Agricultural Businesses and Services (Excluding Farming)	1496	658	298	132	18.6	8.2
Totals	1888	817	376	164	23.5	10.2

14. Each vocational agriculture department in the State of Delaware will need to graduate approximately 34 persons per year to fill the employment opportunities in each of several groups of agricultural occupations.

Table 1

SUMMARY OF BUSINESSES AND SERVICES, AND NUMBER OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, INCLUDING FARMS AND FARM WORKERS
Delaware, 1964

Classification of Businesses and Services	Number of Businesses and Services	Persons Employed			Employees to be Hired During Next 5 Years		
		Total	Full-time	Part-time	Total	Full-time	Part-time
Farming[1]	5203	7352	5226	2126	551	392	159
Businesses and Services Included in the Study and Estimated Number of Employees Needing Agricultural Competencies (Excluding Farming)[2]	2053	5050	4543	507	2154	1496	658
All Businesses[3] (Excluding Farming)	8538	165008					

[1]"Persons Employed," U. S. Census of Agriculture, 1959. "Employees to be Hired During Next 5 Years" (persons to enter farming) based on 1½ per cent replacement per year.

[2]Delaware Off-Farm Agricultural Occupations Study, Agricultural Education, School of Agriculture, University of Delaware, 1964.

[3]County Business Patterns, U. S. Department of Commerce, Bureau of Census, First Quarter, 1962.

Table 2

NUMBER OF AGRICULTURAL BUSINESSES AND SERVICES, TOTAL ESTIMATED PERSONS EMPLOYED, ESTIMATED NUMBER OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, AND PER CENT OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, BY OCCUPATIONAL FAMILY
Delaware, 1964

Occupational Family	Number of Businesses and Services	All Persons Employed	Number Employees Needing Agricultural Competencies	Per Cent Employees Needing Agricultural Competencies
Farm Machinery Sales and Service	29	262	169	64.5
Farm Supplies and Equipment	239	2998	604	20.1
Livestock and Poultry Industries	205	6102	383	6.3
Crops, Forestry and Soil Conservation	204	6005	478	8.0
Ornamental Horticulture	176	2663	1209	45.4
Wildlife and Recreation	1	40	8	20.0
Agricultural and Farm Service	744	8367	527	6.3
Food Marketing and Distribution	455	6339	1672	26.4
Totals and Average	2053	32776	5050	15.4

Table 3

NUMBER OF AGRICULTURAL BUSINESSES AND SERVICES, TOTAL ESTIMATED PERSONS EMPLOYED, ESTIMATED NUMBER OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, AND PER CENT OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, BY OCCUPATIONAL SUB-FAMILY
Delaware, 1964

Occupational Sub-Family	Number of Businesses and Services	All Persons Employed.	Number Employees Needing Agricultural Competencies	Per Cent Employees Needing Agricultural Competencies
1. Artificial Breeding	2	9	9	100.0
2. General Agricultural Services (Fertilizer spreading, etc.)	8	84	8	9.5
3. Veterinarians	41	109	88	80.8
4. Hatcheries	16	534	79	14.8
5. Animal Husbandry Services (Horse trainers, etc.)	30	98	36	36.7
6. Horticultural Services (Cemetery upkeep, tree work, etc.)	43	590	557	94.4
7. Nurseries	30	882	426	48.3
8. General Building Contractors (Wilmington not included)	310	3105	71	2.3
9. Meat Packing	10	93	33	35.5
10. Prepared Meats	3	43	4	9.3
11. Poultry Processing	11	2810	66	2.3
12. Natural Cheese	1	9	3	33.3
13. Ice Cream	3	245	9	3.7
14. Fluid Milk	20	196	20	10.2
15. Canned Fruits and Vegetables	17	3836	269	7.0
16. Pickled Fruits and Vegetables	3	73	3	4.1
17. Frozen Fruits and Vegetables	5	280	10	3.6
18. Fruit Packers and Brokers	16	53	23	43.4
19. Flour and Grain Mills	9	25	17	68.0
20. Animal Feeds	19	581	96	16.5
21. Lumber and Wood Products	48	822	41	5.0

Table 3 (continued)

22.	Newspapers	18	170	00	0.0
23.	Agricultural Drugs	4	50	28	56.0
24.	Fertilizers	6	121	35	28.9
25.	Agricultural Chemicals	7	299	101	33.8
26.	Leather Tanning	6	600	00	0.0
27.	Trucking (Wilmington not included)	172	2220	36	1.6
28.	Warehousing (Wilmington not included)	6	39	6	15.4
29.	Radio and Television	15	125	00	0.0
30.	Utilities	8	1306	5	0.4
31.	Wholesale Groceries	72	1112	122	11.0
32.	Wholesale Farm Products	14	509	83	16.3
33.	Poultry and Livestock Auctions	5	31	4	12.9
34.	Farm Machinery Manufacturers	12	376	85	22.6
35.	Lumber Dealers	83	744	68	9.1
36.	Hardware Stores	70	375	52	13.9
37.	Farm Machinery and Equipment Dealers	34	287	171	59.6
38.	Grocery Stores	303	4437	1365	30.8
39.	Meat Markets	34	140	66	47.1
40.	Fruit and Vegetable Markets	18	44	22	50.0
41.	Dairy Products Stores	3	73	1	1.3
42.	Egg, Poultry and Miscellaneous Stores	8	37	21	56.8
43.	Farm and Garden Supplies	53	334	204	61.1
44.	Fuel Oil and Gasoline Dealers	62	789	00	0.0
45.	Florists	34	124	73	58.9
46.	Banks	73	1390	42	3.0
47.	Agricultural Credit Institutions	1	8	4	50.0
48.	Insurance Agencies (Wilmington not included)	56	244	42	17.2
49.	Real Estate Lessors (Wilmington not included)	47	210	00	0.0
50.	Real Estate Agencies (Wilmington not included)	54	250	2	0.8
51.	Combination Real Estate and Insurance Agencies (Wilmington not included)	14	72	16	22.2
52.	Exterminating Services	28	117	67	57.3
53.	Golf and Country Clubs	14	279	30	10.8
54.	Estates	48	264	96	36.4
55.	County, State and Federal Agencies	26	1123	335	29.8
	Totals and Average	2053	32776	5050	15.4

Table 4

NUMBER OF YEARS SINCE ESTABLISHMENT OF AGRICULTURAL BUSINESSES
AND SERVICES IN THE STATE BY OCCUPATIONAL FAMILY
Delaware, 1964

Occupational Family	Per Cent of Businesses Indicating the Business was Established:										
	Within last 5 years	6-10 yrs. ago	11-15 yrs. ago	16-20 yrs. ago	21-25 yrs. ago	26-30 yrs. ago	31-35 yrs. ago	36-40 yrs. ago	41-45 yrs. ago	46-50 yrs. ago	Over 50 yrs. ago
Farm Machinery Sales and Service	17	17	0	17	17	0	16	16	0	0	0
Farm Supplies and Equipment	12	9	12	19	6	9	9	3	6	3	12
Livestock and Poultry Industries	6	9	9	17	17	17	6	17	2	0	0
Crops, Forestry and Soil Conservation	6	6	16	19	22	6	0	9	0	0	16
Ornamental Horticulture	14	19	8	4	0	19	0	8	4	12	12
Wildlife and Recreation	0	0	0	0	0	0	0	0	0	0	100
Agricultural and Farm Service	12	17	14	5	4	2	10	6	0	8	22
Food Marketing and Distribution	25	27	4	14	4	8	6	8	2	0	2

Table 5

PER CENT OF GROSS INCOME AGRICULTURALLY ORIENTED IN AGRICULTURAL BUSINESSES AND SERVICES, BY OCCUPATIONAL FAMILY
Delaware, 1964

Occupational Family	Per Cent of Businesses Indicating Their Per Cent of Agriculturally Oriented Gross Income is:										
	Less than 10%	10%-19%	20%-29%	30%-39%	40%-49%	50%-59%	60%-69%	70%-79%	80%-89%	90%-99%	100%
Farm Machinery Sales and Service	0	0	0	0	0	0	0	0	17	33	50
Farm Supplies and Equipment	21	3	3	3	6	6	3	0	3	9	43
Livestock and Poultry Industries	3	0	0	0	3	3	3	0	0	9	79
Crops, Forestry and Soil Conservation	16	3	0	0	0	6	0	3	0	0	72
Ornamental Horticulture	15	12	0	0	0	12	0	8	12	8	33
Wildlife and Recreation	0	0	0	0	0	0	100	0	0	0	0
Agricultural and Farm Service	51	6	5	4	4	1	2	1	1	5	20
Food Marketing and Distribution	2	0	0	2	0	4	0	14	22	12	44

Table 6

ESTIMATED NUMBER OF FULL-TIME AND PART-TIME EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, EXPECTED FIVE YEARS HENCE, AND NUMBER OF EMPLOYEES TO BE HIRED DURING NEXT FIVE YEARS, IN AGRICULTURAL BUSINESSES AND SERVICES, BY OCCUPATIONAL FAMILY
Delaware, 1964

Occupational Family	Employees Needing Agricultural Competencies						Employees to be Hired During Next 5 Years[1]		
	Current			Expected 5 Yrs. Hence					
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Farm Machinery Sales and Service	169	165	4	221	217	4	82	82	0
Farm Supplies and Equipment	604	596	8	667	644	23	99	81	18
Livestock and Poultry Industries	383	383	0	468	468	0	159	159	0
Crops, Forestry and Soil Conservation	478	468	10	615	599	16	216	208	8
Ornamental Horticulture	1209	1122	87	1372	1230	142	385	275	110
Wildlife and Recreation	8	8	0	9	9	0	2	2	0
Agricultural and Farm Service	527	497	30	618	573	45	144	98	46
Food Marketing and Distribution	1672	1304	368	1975	1471	504	1067	591	476
Totals	5050	4543	507	5945	5211	734	2154	1496	658

[1] "Employees to be Hired During Next 5 Years" includes additional employees and replacement employees.

Table 7

ESTIMATED NUMBER OF PERSONS EMPLOYED WHO NEED AGRICULTURAL COMPETENCIES
IN EIGHT OCCUPATIONAL FAMILIES, BY LEVEL OF EMPLOYMENT
Delaware, 1964

Occupational Family	Occupational Levels of Employment								
	Professional	Managerial	Supervisory	Technical	Sales	Clerical	Skilled	Semi-Skilled	Totals
Farm Machinery Sales and Service	0	29	18	0	53	1	52	16	169
Farm Supplies and Equipment	37	141	202	55	49	24	54	42	604
Livestock and Poultry Industries	62	137	95	19	0	1	33	36	383
Crops, Forestry, and Soil Conservation	11	81	270	41	0	15	35	25	478
Ornamental Horticulture	0	138	221	0	23	0	162	665	1209
Wildlife and Recreation	0	2	5	0	0	0	1	0	8
Agricultural and Farm Service	164	39	29	88	60	10	102	35	527
Food Marketing and Distribution	0	384	545	16	2	431	199	95	1672
Totals	274	951	1385	219	187	482	638	914	5050

Table 8-1

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Yrs. Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Farm Machinery Sales Engineer	0	0	4	0	4	0
Sub-Totals	0	0	4	0	4	0
Managerial Occupations						
Farm Machinery Business General Manager	21	0	21	0	4	0
Farm Implement Manufacturing Plant General Manager	1	0	1	0	1	0
Farm Machinery Business Assistant Manager	7	0	7	0	0	0
Sub-Totals	29	0	29	0	5	0
Supervisory Occupations						
Farm Machinery Sales Supervisor	4	0	4	0	0	0
Farm Machinery Service Supervisor	4	0	4	0	0	0
Farm Machinery Parts Supervisor	4	0	4	0	0	0
Farm Machinery Shop Foreman	6	0	6	0	6	0
Sub-Totals	18	0	18	0	6	0

Table 8-1 (continued)

Sales Occupations						
Farm Machinery Salesman	43	0	54	0	24	0
Farm Machinery Parts Salesman	8	0	8	0	0	0
Farm Implement Salesman	2	0	8	0	8	0
Sub-Totals	53	0	70	0	32	0
Clerical Occupations						
Farm Implement Manufacturing Plant Shipping Clerk	1	0	5	0	4	0
Sub-Totals	1	0	5	0	4	0
Skilled Occupations						
Farm Machinery Mechanic	52	0	67	0	19	0
Sub-Totals	52	0	67	0	19	0
Semi-Skilled Occupations						
Farm Machinery Mechanic's Helper	8	4	20	4	12	0
Farm Machinery Truck Driver	4	0	4	0	0	0
Sub-Totals	12	4	24	4	12	0
Totals	165	4	217	4	82	0

1

Table 8-1

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Yrs. Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Farm Machinery Sales Engineer	0	0	4	0	4	0
Sub-Totals	0	0	4	0	4	0
Managerial Occupations						
Farm Machinery Business General Manager	21	0	21	0	4	0
Farm Implement Manufacturing Plant General Manager	1	0	1	0	1	0
Farm Machinery Business Assistant Manager	7	0	7	0	0	0
Sub-Totals	29	0	29	0	5	0
Supervisory Occupations						
Farm Machinery Sales Supervisor	4	0	4	0	0	0
Farm Machinery Service Supervisor	4	0	4	0	0	0
Farm Machinery Parts Supervisor	4	0	4	0	0	0
Farm Machinery Shop Foreman	6	0	6	0	6	0
Sub-Totals	18	0	18	0	6	0

Table 8-2

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FARM SUPPLIES AND EQUIPMENT OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Yrs. Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Nutritionist (Feed Manufacturing)	5	0	5	0	5	0
Agricultural Chemicals Research Entomologist	3	0	3	0	0	0
Agricultural Chemicals Research Plant Pathologist	3	0	3	0	0	0
Agricultural Chemicals Research Plant Physiologist	3	0	3	0	0	0
Agricultural Chemicals Senior Plant Physiologist	5	0	5	0	0	0
Agricultural Chemicals Senior Nematologist	3	0	3	0	0	0
Veterinarian	6	0	8	0	2	0
Agricultural Chemist	3	0	3	0	0	0
Bacteriologist	6	0	6	0	2	0
Sub-Totals	37	0	39	0	9	0
Managerial Occupations						
Farm and Garden Supplies Store Manager	19	0	19	0	0	0
Pesticides Distribution General Manager	2	0	4	0	2	0
Feed Mill Manager	8	0	8	0	3	0
Fertilizer Manufacturing Plant Manager	6	0	9	0	3	0

Table 8-2 (continued)

Fertilizer Manufacturing Assistant Plant Manager	1	0	1	0	0	0
Farm and Garden Supplies General Manager	60	0	60	0	0	0
Farm and Garden Supplies Assistant Manager	5	0	5	0	0	0
Lime Spreader Service Manager	4	0	4	0	0	0
Hardware Store Manager	23	0	23	0	0	0
Hardware Store Assistant Manager	13	0	13	0	0	0
Sub-Totals	141	0	146	0	8	0
Supervisory Occupations						
Poultry Equipment Manufacturing Plant Office Manager	8	0	8	0	0	0
Poultry Equipment Manufacturing Plant Repair Manager	8	0	8	0	0	0
Poultry Equipment Manufacturing Manager	8	0	8	0	0	0
Poultry Equipment Manufacturing Plant Warehouse Manager	8	0	8	0	0	0
Poultry Equipment Manufacturing Plant Assembly Manager	8	0	8	0	0	0
Feed Mill Foreman	5	0	5	0	0	0
Feed Mill Maintenance Supervisor	5	0	5	0	0	0
Feed Mill Corn Department Supervisor	5	0	5	0	0	0
Feed Sales and Service Supervisor	6	0	6	0	0	0
Feed Mill Office Manager	5	0	5	0	0	0
Farm and Garden Supplies Sales Manager	5	0	5	0	0	0
Farm and Garden Supplies Service Manager	5	0	5	0	0	0
Feed Mill Superintendent	5	0	5	0	0	0
Feed Mill Maintenance Foreman	5	0	5	0	0	0

Table 8-2 (continued)

Feed Mill Manufacturing Foreman	6	0	6	0	0	0
Animal Health Products Sales Manager	2	0	2	0	0	0
Fertilizer Manufacturing Plant Supervisor	3	0	3	0	0	0
Feed Mill Quality Control Foreman	3	0	3	0	3	0
Feed Mill Grain Elevator Foreman	3	3	3	3	3	3
Fertilizer Manufacturing Plant Superintendent	1	0	1	0	0	0
Fertilizer Manufacturing Plant Office Manager	4	0	4	0	0	0
Agricultural Chemicals Section Supervisor	6	0	6	0	0	0
Agricultural Chemicals Laboratory Group Leader	3	0	3	0	0	0
Agricultural Chemicals Marketing Manager	3	0	3	0	0	0
Agricultural Chemicals Development Manager	3	0	3	0	0	0
Agricultural Chemicals Development Representative	5	0	8	0	3	0
Fertilizer Sales Manager	3	0	3	0	3	0
Pesticides Sales Manager	3	0	3	0	3	0
Herbicides Sales Manager	3	0	3	0	0	0
Pesticides Control Service Manager	3	0	3	0	0	0
Dairy Equipment Sales Manager	3	0	3	0	0	0
Farm and Garden Supplies Operation Manager	15	0	15	0	0	0
Farm and Garden Supplies Assistant Manager for Sales	5	0	5	0	0	0
Farm and Garden Supplies Floor Supervisor	15	0	15	0	0	0

Table 8-2 (continued)

Tire and Battery Supervisor	5	0	5	0	0	0
Farm and Garden Supplies Warehouse Supervisor	6	0	6	0	0	0
Farm and Garden Supplies Sales Supervisor	10	0	10	0	0	0
Sub-Totals	199	3	202	3	15	3
Technical Occupations						
Feed Mill Corn Buyer	5	0	5	0	0	0
Animal Health Products Laboratory Technician	4	0	4	0	0	0
Feed Ingredients Purchaser	9	0	9	0	3	0
Agricultural Chemicals Laboratory Technician	3	0	3	0	0	0
Agricultural Chemicals Greenhouse Technician	3	0	3	0	0	0
Agricultural Chemicals Senior Laboratory Assistant	5	0	8	0	3	0
Agricultural Chemicals Laboratory Assistant	8	0	16	0	8	0
Farm and Garden Supplies Fieldman	16	0	16	0	0	0
Fertilizer Manufacturing Plant Fieldman	2	0	2	0	0	0
Sub-Totals	55	0	66	0	14	0
Sales Occupations						
Animal Health Products Salesman	4	0	4	0	0	0
Pesticides Salesman	4	0	8	0	4	0
Agricultural Chemicals Salesman	10	0	10	0	5	0
Fertilizer Salesman	18	0	18	0	0	0
Hardware Salesman	13	0	13	0	0	0
Sub-Totals	49	0	53	0	9	0

Table 8-2 (continued)

Clerical Occupations						
Pesticides Clerk	2	0	2	0	0	0
Pesticides Bookkeeper	2	0	4	0	2	0
Feed Mill Production Accountant	3	0	3	0	3	0
Farm and Garden Supplies Clerk	6	5	6	10	0	5
Farm and Garden Supplies Bookkeeper	6	0	6	0	0	0
Sub-Totals	19	5	21	10	5	5
Skilled Occupations						
Farm and Garden Supplies Serviceman	6	0	6	0	0	0
Poultry Equipment Manufacturing Plant Sheet Metal Mechanic	32	0	48	0	16	0
Miller	11	0	11	0	0	0
Assistant Miller	5	0	5	0	0	0
Sub-Totals	54	0	70	0	16	0
Semi-Skilled Occupations						
Laboratory Animal Caretaker	6	0	6	0	0	0
Agricultural Chemicals Laboratory Helper	10	0	15	0	5	0
Farm and Garden Supplies Truck Driver	21	0	21	0	0	0
Farm and Garden Supplies Service Center Helper	5	0	5	10	0	10
Sub-Totals	42	0	47	10	5	10
Totals	596	8	644	23	81	18

Table 8-3

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE LIVESTOCK AND POULTRY INDUSTRIES OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE

Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Years Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Veterinarian	62	0	62	0	0	0
Sub-Totals	62	0	62	0	0	0
Managerial Occupations						
Horse Facilities Rental Manager	12	0	12	0	12	0
Slaughter House Manager	10	0	10	0	0	0
Assistant Slaughter House Manager	6	0	6	0	0	0
Prepared Meats Plant Manager	2	0	2	0	0	0
Cheese Plant Manager	1	0	1	0	0	0
Dairy Plant Manager	20	0	20	0	0	0
Hatchery Manager	16	0	17	0	2	0
Poultry and Livestock Auction Manager	2	0	2	0	0	0
Assistant Hatchery Manager	15	0	30	0	16	0
Poultry Processing Plant Manager	11	0	11	0	4	0
Poultry Manure Spreader Service Manager	4	0	4	0	0	0
Packing House Manager	1	0	1	0	0	0
Ice Cream Plant Manager	1	0	1	0	0	0
Poultry Trucking Firm Manager	36	0	36	0	0	0
Sub-Totals	137	0	153	0	34	0
Supervisory Occupations						
Cheese Plant Supervisor	2	0	2	0	0	0
Ice Cream Plant Production Manager	2	0	2	0	2	0
Ice Cream Plant Assistant Production Manager	2	0	2	0	2	0
Ice Cream Plant Quality Control Supervisor	2	0	2	0	0	0
Ice Cream Plant Pasteurizing Department Foreman	2	0	2	0	2	0

Table 8-3 (continued)

Poultry Breeding Flock Supervisor	1	0	5	0	6	0
Hatchery Foreman	28	0	56	0	28	0
Packing House Superintendent	1	0	1	0	0	0
Packing House Sales Manager	1	0	1	0	0	0
Meat Processing Plant Office Manager	1	0	1	0	0	0
Meat Processing Plant Superintendent	1	0	1	0	0	0
Poultry Processing Plant Sales Manager	8	0	12	0	4	0
Poultry Processing Plant Office Manager	4	0	4	0	0	0
Poultry Processing Plant Superintendent	4	0	4	0	0	0
Poultry Processing Plant Quality Control Manager	4	0	4	0	0	0
Poultry Processing Plant Foreman	32	0	52	0	28	0
Sub-Totals	95	0	151	0	72	0
Technical Occupations						
Live Poultry Inspector	2	0	3	0	1	0
Live Poultry Buyer	3	0	3	0	0	0
Broiler Flock Fieldman	14	0	14	0	0	0
Sub-Totals	19	0	20	0	1	0
Clerical Occupations						
Hatchery Bookkeeper	1	0	1	0	0	0
Sub-Totals	1	0	1	0	0	0
Skilled Occupations						
Horse Trainer	15	0	15	0	0	0
Butcher	16	0	16	0	3	0
Livestock Dealer	2	0	2	0	0	0
Sub-Totals	33	0	33	0	3	0
Semi-Skilled Occupations						
Veterinarian's Helper	26	0	26	0	0	0
Hatchery Worker	4	0	4	0	7	0
Horse Groom	6	0	18	0	42	0
Sub-Totals	36	0	48	0	49	0
Totals	383	0	468	0	159	0

Table 8-4

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE CROPS, FORESTRY AND SOIL CONSERVATION OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment	Current		Expected 5 Yrs. Hence		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
State Conservationist	1	0	1	0	0	0
Work Unit Conservationist	3	0	3	0	1	0
Soil Scientist	2	0	2	0	0	0
Conservation Planning Technician	2	0	2	0	1	0
Conservation Engineer	3	0	4	0	2	0
Sub-Totals	11	0	12	0	4	0
Managerial Occupations						
Lumber Business Manager	17	0	19	0	4	0
Fruit and Vegetable Processing Plant General Manager	4	0	4	0	0	0
Fruit and Vegetable Processing Plant Assistant General Manager	4	0	4	0	0	0
Fruit and Vegetable Freezing Plant Manager	5	0	5	0	0	0
Flour and Grain Mill Manager	9	0	9	0	2	0

Table 8-4 (continued)

Fruit and Vegetable Processing Plant Manager	13	0	13	0	0	0
Fruit and Vegetable Pickling Plant Manager	3	0	3	0	0	0
Wholesale Grain Business General Manager	12	0	12	0	0	0
Sawmill-Lumber Business Manager	10	0	10	0	0	0
Fruit and Vegetable Cold Storage Warehouse Manager	4	0	4	0	0	0
Sub-Totals	81	0	83	0	6	0
Supervisory Occupations						
Fruit and Vegetable Processing Plant Production Manager	16	0	22	0	6	0
Fruit and Vegetable Processing Plant Foreman	4	0	4	0	0	0
Fruit and Vegetable Freezing Plant Sales Manager	2	0	2	0	0	0
Wholesale Grain Mill Superintendent	12	0	12	0	0	0
Fruit and Vegetable Processing Plant Superintendent	12	0	24	0	12	0
Fruit and Vegetable Processing Plant Production Foreman	150	0	210	0	120	0
Fruit and Vegetable Processing Plant Quality Control Supervisor	12	0	24	0	12	0
Fruit and Vegetable Processing Plant Warehouse Supervisor	24	0	36	0	12	0
Timber Crew Foreman	31	0	41	0	10	0
Wholesale Grain Business Assistant to General Manager	7	0	7	0	0	0
Sub-Totals	270	0	382	0	172	0

Table 8-4 (continued)

Technical Occupations						
Engineering Technician	8	0	11	0	4	0
Fruit and Vegetable Freezing Plant Fieldman	1	0	2	0	1	0
Conservation Technician	2	0	2	0	1	0
Fruit and Vegetable Processing Plant Fieldman	30	0	42	0	13	0
Sub-Totals	41	0	57	0	19	0
Clerical Occupations						
Lumber Business Clerk	15	0	15	0	0	0
Sub-Totals	15	0	15	0	0	0
Skilled Occupations						
Miller	2	0	2	0	0	0
Conservation Aid	3	0	3	0	0	0
Farm Building Construction Carpenter	30	0	30	0	0	0
Sub-Totals	35	0	35	0	0	0
Semi-Skilled Occupations						
Lumber Truck Driver	6	0	6	0	4	0
Flour and Grain Mill Worker	6	0	6	0	0	0
Engineering Aid	3	10	3	16	3	8
Sub-Totals	15	10	15	16	7	8
Totals	468	10	599	16	208	8

Table 8-5

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE ORNAMENTAL HORTICULTURE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Years Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Landscape Architect	0	0	1	0	1	0
Sub-Totals	0	0	1	0	1	0
Managerial Occupations						
Tree Service Manager	26	0	26	0	0	0
Nursery Manager	30	0	30	0	0	0
Floral Shop Manager	33	0	33	0	0	0
Golf Course Superintendent	14	0	14	0	0	0
Estate General Superintendent	12	0	12	0	12	0
State Park Director	1	0	1	0	0	0
Assistant State Park Director	0	0	1	0	1	0
Garden Center Manager	3	0	3	0	0	0
Assistant Nursery Manager	18	0	18	0	9	0
Superintendent of Grounds	1	0	1	0	0	0
Sub-Totals	138	0	139	0	22	0
Supervisory Occupations						
Tree Service Foreman	82	0	82	0	82	0
Landscape Supervisor	11	0	11	0	0	0
Landscape Foreman	80	0	100	0	49	0
Nursery Production Manager	11	0	11	0	0	0
Assistant Golf Course Superintendent	14	0	14	0	0	0
Regional Park Superintendent	2	0	2	0	0	0
Area Park Superintendent	5	0	9	0	6	0
Assistant Area Park Superintendent	4	0	9	0	5	0

Table 8-5 (continued)

Park Labor Foreman	1	0	6	0	5	0
Highway Beautification Foreman	3	0	3	0	0	0
Assistant Highway Beautification Foreman	3	0	3	0	0	0
Highway Maintenance Supervisor	3	0	3	0	0	0
Nursery Superintendent	1	0	1	0	0	0
Grounds Maintenance Foreman	1	0	2	0	1	0
Assistant Superintendent of Grounds	0	0	1	0	1	0
Sub-Totals	221	0	257	0	149	0
Sales Occupations						
Tree Service Salesman	12	0	35	0	35	0
Landscape Salesman - Designer	11	0	33	0	22	0
Sub-Totals	23	0	68	0	57	0
Clerical Occupations						
Horticultural Secretary	0	0	11	0	11	0
Sub-Totals	0	0	11	0	11	0
Skilled Occupations						
Landscape Gardner	41	0	41	0	0	0
Ornamental Plant Propagator	11	0	11	0	0	0
Estate Groundskeeper	36	0	36	0	0	0
Estate Gardner	24	0	24	0	12	0
Floral Designer	10	40	10	50	0	20
Sub-Totals	122	40	122	50	12	20
Semi-Skilled Occupations						
Tree Service Groundman	70	47	70	47	0	0
Tree Service Climber	303	0	315	0	12	0
Nursery Tractor Driver	54	0	54	0	9	0
Nursery Worker	189	0	189	45	0	90
Golf Course Tractor Driver	2	0	4	0	2	0
Sub-Totals	618	47	632	92	23	90
Totals	1122	87	1230	142	275	110

Table 8-6

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE WILDLIFE AND RECREATION OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment	Current		Expected 5 Years Hence		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Managerial Occupations						
Assistant Game and Fish Director	1	0	1	0	0	0
Game and Fish Director	1	0	1	0	0	0
Sub-Totals	2	0	2	0	0	0
Supervisor Occupations						
Game and Fish Manager	3	0	3	0	1	0
Assistant Game and Fish Manager	2	0	3	0	1	0
Sub-Totals	5	0	6	0	2	0
Skilled Occupations						
Game and Fish Real Estate Specialist	1	0	1	0	0	0
Sub-Totals	0	0	1	0	0	0
Totals	8	0	9	0	2	0

Table 8-7

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE AGRICULTURAL AND FARM SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment	Current		Expected 5 Years Hence		Employees to be Hired During Next 5 Years	
Occupational Titles	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professional Occupations						
Veterinarian	2	0	6	0	4	0
Bank Agricultural Representative	0	0	10	0	10	0
Bank Loan Officer	10	0	20	0	10	0
Agricultural Chemist	9	0	9	0	1	0
Vocational Agriculture Teacher	22	0	31	0	13	0
ASCS Program Specialist	2	0	2	0	0	0
Bank Manager	2	0	2	0	0	0
Assistant Bank Manager	2	0	2	0	0	0
Assistant Bank Treasurer	7	0	7	0	0	0
Agricultural Economist	4	0	4	0	0	0
Bank Vice President	14	0	14	0	0	0
Bank President	7	0	7	0	0	0
Bacteriologist	1	0	1	0	0	0
Plant Pathologist	4	0	4	0	1	0
State Supervisor of Agricultural Education	1	0	1	0	0	0
Plant Scientist	1	0	3	0	2	0
Agricultural Engineer	4	0	4	0	1	0
Animal and Poultry Specialist	14	0	15	0	1	0
Teacher Educator in Agriculture	2	0	3	0	1	0
Food Marketing Specialist	6	0	6	0	0	0
Agronomist	5	0	5	0	1	0
Entomologist	11	0	11	0	1	0
Biologist	2	0	2	0	0	0
Horticulturist	7	0	7	0	0	0
Agricultural Journalist	2	0	2	0	0	0

Table 8-7 (continued)

State 4-H Club Leader	1	0	1	0	0	0
Agricultural Librarian	1	0	1	0	1	0
Agricultural College Administrator	4	0	4	0	0	0
Home Economics Extension Leader	1	0	1	0	0	0
Nutrition Specialist	1	0	1	0	0	0
Home Management Specialist	1	0	1	0	0	0
Clothing Specialist	1	0	1	0	0	0
County Agricultural Agent	3	0	3	0	0	0
Assistant Agent for Horticulture	1	0	1	0	0	0
4-H Club Agent	3	0	3	0	0	0
Home Economics Extension Agent	3	0	3	0	0	0
Home and Youth Agent	1	0	1	0	0	0
Crops Specialist	1	0	1	0	0	0
Associate County Agricultural Agent	1	0	1	0	0	0
Sub-Totals	164	0	201	0	47	0
Managerial Occupations						
Assistant Mosquito Control Superintendent	1	0	2	0	1	0
Mosquito Control Superintendent	1	0	1	0	0	0
Exterminating Service Manager	24	0	24	0	0	0
ASCS Executive Director	1	0	1	0	0	0
Artificial Insemination Service Manager	2	0	2	0	0	0
Construction Business Manager	3	0	3	0	0	0
ASCS County Office Manager	3	0	3	0	0	0
Farm Credit Manager	1	0	1	0	0	0
Director of Poultry and Animal Health	1	0	1	0	0	0
Director of Markets	1	0	1	0	0	0
Farm Placement Branch Manager	1	0	1	0	0	0
Sub-Totals	39	0	40	0	1	0

Table 8-7 (continued)

Supervisory Occupations						
Mosquito Control Supervisor	1	0	1	0	0	0
Sanitarian	1	11	2	25	1	16
Rural Electrification Supervisor	5	0	5	0	0	0
ASCS Operations Staff Assistant	1	0	1	0	0	0
ASCS Program Clerk Combination	3	0	3	0	0	0
Farm Credit Fieldman	3	0	4	0	1	0
Supervisor of Poultry Disease Control	1	0	1	0	0	0
Farm Placement Representative	2	1	2	1	1	0
Sub-Totals	17	12	19	26	3	16
Technical Occupations						
DHIA Supervisor	5	0	5	0	3	0
Artificial Inseminator	7	0	7	1	0	1
Laboratory Assistant	2	0	4	0	2	0
Seed Technologist	1	0	1	0	0	0
Feed, Fertilizer, and Lime Inspector	2	0	3	0	1	0
Poultry Inspector	4	0	8	0	4	0
Weights and Measures Inspector	6	0	8	0	2	0
Vegetable and Fruit Inspector	55	0	55	0	0	10
Soils Technician	1	0	1	0	1	0
Agricultural Engineering Technician	1	0	1	0	0	0
Field Crops Technician	1	0	1	0	0	0
Greenhouse Technician	1	0	1	0	0	0
Radio Aid	1	0	1	0	0	1
Poultry Laboratory Technician	1	0	1	0	0	0
Sub-Totals	88	0	97	1	13	12

Table 8-7 (continued)

Sales Occupations						
Real Estate and Insurance Agent	16	0	16	0	0	0
Insurance Agent	42	0	42	0	4	0
Real Estate Agent	2	0	3	0	1	0
Sub-Totals	60	0	61	0	5	0
Clerical Occupations						
ASCS Clerk	10	0	10	0	3	0
Sub-Totals	10	0	10	0	3	0
Skilled Occupations						
Property Appraiser	1	0	4	0	3	0
Rural Property Negotiator	7	0	12	0	5	0
Exterminating Service Serviceman	26	0	35	0	9	0
Farm Building Construction Carpenter	68	0	68	0	0	0
Sub-Totals	102	0	119	0	17	0
Semi-Skilled Occupations						
Exterminating Service Worker	17	0	26	0	9	0
ASCS Field Reporter	0	18	0	18	0	18
Sub-Totals	17	18	26	18	9	18
Totals	497	30	573	45	98	46

Table 8-8

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT, FIVE YEARS HENCE, AND TO BE HIRED DURING NEXT FIVE YEARS, IN THE FOOD MARKETING AND DISTRIBUTION OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE
Delaware, 1964

Level of Employment / Occupational Titles	Current		Expected 5 Years Hence		Employees to be Hired During Next 5 Years	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Managerial Occupations						
Wholesale Grocery Branch Manager	13	0	26	0	26	0
Wholesale Grocery Assistant Manager	13	0	13	0	0	0
Grocery Store Owner-Manager	183	0	183	0	14	0
Grocery Store General Manager	11	0	11	0	0	0
Grocery Store Assistant Manager	14	0	14	0	0	0
Grocery Store Manager	20	0	20	0	0	0
Meat Market Owner-Manager	34	0	34	0	0	0
Fruit and Vegetable Market Owner-Manager	18	0	18	0	0	0
Egg and Poultry Store Owner-Manager	7	0	7	0	0	0
Egg and Poultry Store Manager	7	0	7	0	0	0
Egg and Poultry Store Assistant Manager	7	0	7	0	0	0
Meat Market Manager	1	0	1	0	0	0
Fruit and Vegetable Broker	23	0	23	0	0	0
Wholesale Fruit and Vegetable Business General Manager	16	0	16	0	0	0

Table 8-8 (continued)

Dairy Store Owner-Manager	1	0	1	0	0	0
Wholesale Grocery General Manager	16	0	16	0	0	0
Sub-Totals	384	0	397	0	40	0
Supervisory Occupations						
Supermarket Manager	84	0	84	0	0	0
Assistant Supermarket Manager	84	0	84	0	33	0
Supermarket Meat Department Manager	84	0	84	0	63	0
Supermarket Produce Department Manager	73	0	73	0	32	0
Supermarket Dairy Department Head	51	0	51	0	0	0
Supermarket Produce Department Head	11	0	11	0	0	0
Supermarket Meat Department Head	11	0	11	0	0	0
Supermarket Fish and Poultry Department Head	11	0	11	0	0	0
Supermarket Frozen Food and Dairy Department Head	11	0	11	0	11	0
Supermarket Head Cashier	11	0	11	0	11	0
Supermarket Delicatessen Department Manager	22	0	22	0	11	0
Supermarket Dairy Department Manager	22	0	22	0	11	0
Supermarket Grocery Department Manager	11	0	11	0	11	0
Supermarket Front-End Manager	11	0	11	0	11	0
Wholesale Fruit and Vegetable Business Sales Manager	16	0	16	0	0	0
Wholesale Fruit and Vegetable Business Office Manager	16	0	16	0	0	0
Wholesale Grocery Sales Manager	16	0	16	0	0	0
Sub-Totals	545	0	545	0	194	0

Table 8-8 (continued)

Technical Occupations						
Wholesale Grocery Buyer	16	0	16	0	0	0
Sub-Totals	16	0	16	0	0	0
Sales Occupations						
Meat Market Clerk	1	1	1	1	0	0
Sub-Totals	1	1	1	1	0	0
Clerical Occupations						
Supermarket Clerk-Cashier	125	306	182	397	182	397
Sub-Totals	125	306	182	397	182	397
Skilled Occupations						
Meat Cutter	176	23	205	23	62	0
Sub-Totals	176	23	205	23	62	0
Semi-Skilled Occupations						
Supermarket Produce Clerk	23	11	23	11	11	11
Meat Wrapper	34	23	102	68	102	68
Fruit and Vegetable Market Helper	0	4	0	4	0	0
Sub-Totals	57	38	125	83	113	79
Totals	1304	368	1471	504	591	476

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OFFICE OF EDUCATION

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VT 0001

POST-HIGH SCHOOL VOCATIONAL-TECHNICAL EDUCATION IN WISCONSIN

ED013338

An Analysis of Enrollment Increases in Post High School Terminal Technical Programs During 1963–64 in Wisconsin Schools of Vocational, Technical, and Adult Education

STATE BOARD OF VOCATIONAL AND ADULT EDUCATION
Madison, Wisconsin
C. L. Greiber, Director

VT 000014

AUGUST, 1964

PREFACE

Nearly everyone is aware of the tremendous changes which have been taking place in public education in recent years. Not so many are aware that an area of great, and dramatic change in Wisconsin has been the explosive growth of the post high school, terminal technical programs in local vocational, technical and adult schools.

Enrollments in these technological programs for industry and business have virtually tripled since 1960. In many cases, students are being refused admittance because the schools are at capacity.

Some of the technicians trained by these programs work in the fields in which industry and business are having the most difficult time in obtaining qualified workers.

The study presented here points out the size and scope of these programs in Wisconsin in the 1963-64 school year. It identifies some of the problems which must be met, if young people of the state are to have the technical educational opportunities they need and want. We believe the material presented is worthy of careful study by anyone with responsibility or interest in the future planning of education in Wisconsin.

C. L. Greiber

The ability of Wisconsin's local schools of vocational-technical education to react quickly and effectively to the training needs of their communities has been widely recognized for more than half a century.

In recent years, there has been a dramatic demonstration of this ability in the schools' rapid development of one- and two-year, post high school, terminal technical programs. These programs have trained thousands of young Wisconsin men and women to the high degree of skills needed in the changing technologies of industry and business.

Burgeoning enrollments in terminal technical programs have severely taxed the abilities of the schools, and the communities which largely support them; yet the programs have been developed to high standards. In more than four dozen of these technical curriculums, the Associate Degree (the traditional technical institute and junior college degree for two years of work beyond the high school) may now be earned. Additionally, a large number of other one- and two-year programs are being offered in these schools.

Since the inception of these 13th and 14th grade level programs, the State Board of Vocational and Adult Education has regularly made special surveys of enrollments and other aspects of the programs. Publication of these studies has been on a two-year cycle, in 1960, 1962, and now 1964. Similar, unpublished, studies have been made in the odd years.

Summary of Post High School Enrollments in Wisconsin
Vocational-Technical Schools, February 15, 1964

First figure is 1964; second figure, in (), is comparable 1962 total

DEGREE PROGRAMS

	Full-time	Part-time	Total
Male	3,136 (1,899)	5,070 (3,639)	8,206 (5,538)
Female	731 (398)	1,899 (1,582)	2,630 (1,980)
Total	3,867 (2,297)	6,969 (5,221)	10,836 (7,518)

NON-DEGREE PROGRAMS

	Full-time Two-year	Full-time One-year	Total
Male	1,704 (1,201)	1,209 (986)	2,913 (2,187)
Female	268 (144)	1,487 (1,435)	1,755 (1,579)
Total	1,972 (1,345)	2,696 (2,421)	4,668 (3,766)

Totals -		
Degree Programs	10,836	(7,518)
Non-Degree Programs	4,668	(3,766)
	15,504	(11,284)
Totals - Male		
Degree Programs	8,206	(5,538)
Non-Degree Programs	2,913	(2,187)
	11,119	(7,725)
Totals - Female		
Degree Programs	2,630	(1,980)
Non-Degree Programs	1,755	(1,579)
	4,385	(3,559)

Data has been collected as of February 15 each year, shortly after the beginning of the second semester.

A near tripling of enrollments in these programs between 1960 and 1964 is their most striking aspect. Comparative enrollments in four basic classifications of students are as follows:

	1964	1963	1962	1960
Full-time students, 2 year degree programs	3,867	3,124	2,297	
Part-time students, 2 year degree programs	6,969	6,058	5,221	(enrollments not broken down into same categories)
Full-time students, 2 year non-degree	1,972	1,447	1,345	
Full-time students, 1 year programs	2,696	2,593	2,421	
	15,504	13,222	11,284	5,391

The Basis of the Programs

The enviable record of the local vocational-technical schools of the state in meeting community needs in the traditional vocational and adult education fields is too well known to require repetition here. The record of development of post high school programs in the schools is not so well known.

In 1959, the state's Coordinating Committee for Higher Education recommended that ".....pending further investigation and determination, any additional need for publicly supported education opportunities of the community college type be met in the field of technical education by the schools of vocational and adult education....." The Committee also charged the State Board of Vocational and Adult Education with responsibility for determining criteria

Post High School Enrollments in Wisconsin Vocational-Technical Schools, February 15, 1964

	Degree Programs		Non-Degree Programs		Totals	
	1964	(1962)	1964	(1962)	1964	(1962)
Appleton	144	(141)	112	(82)	256	(223)
Eau Claire	174	(154)	300	(218)	474	(372)
Green Bay	73	(52)	422	(383)	495	(435)
Kenosha	398	(72)	102	(159)	500	(231)
Madison	196	(119)	686	(395)	882	(514)
Milwaukee	9,057	(6,510)	1,009	(998)	10,066	(7,508)
Oshkosh	173	(39)	58	(120)	231	(159)
Wausau	621	(142)	109	(246)	730	(388)
Fond du Lac			118	(148)	118	(148)
Janesville			147	(173)	147	(173)
La Crosse			471	(378)	471	(378)
Manitowoc			70	(54)	70	(54)
Racine			153	(51)	153	(51)
Rice Lake			72		72	
Sheboygan			72	(97)	72	(97)
Superior			466	(255)	466	(255)
Waukesha			80		80	
Wisconsin Rapids			51		51	
Others		(289)*	170	(9)	170	(298)
Totals	10,836	(7,518)	4,668	(3,766)	15,504	(11,284)

Figures include both full-time and part-time students in two year degree programs, and full-time students in non-degree one and two year programs.

*Represents students in first year "feeder" programs, to receive second year in one of the eight degree-granting schools.

the programs should meet, and urged expeditious development of such post high school programs as the board and local schools felt were needed.

It is against this background that the growth of post high school programs has taken place; closely coordinated with local, area, and state-wide employment needs.

Area Vocational-Technical Schools

After careful study of the state's educational and employment needs in the fields the schools serve, the State Board in 1963 approved a plan for the orderly development of twenty area vocational-technical centers. Except for the south-western area of the state, these centers were so located as to provide convenient training opportunities for people in every part of the state, utilizing existing schools which were already providing post high school programs.

Eight of the schools have been authorized by the State Board to grant the two-year degree in one or more curriculums. These are Appleton, Eau Claire, Green Bay, Kenosha, Madison, Milwaukee, Oshkosh, and Wausau. In other schools, the 13th and 14th year programs are under way, but have not yet been evaluated for degree purposes. The post high school enrollments of these area center schools (with their corresponding 1962 figures) are shown on page 4. Included at the bottom of this page in the "Other" grouping, are enrollments in a very few one-year, full-time programs developed by local schools to fill local needs, but not scheduled to be developed into two-year area center programs.

Classifications Used in this Study

In the classifications used in this study, there were 15,504 enrollments as of February 15, 1964. In actuality, because the classifications used for this and earlier studies do not include any part-time students in non-degree programs, the actual enrollments in post high school level work are considerably understated. With 64 locally operated schools, each designing its programs to fit local needs, the Wisconsin vocational and adult system was an extremely complex one to account for, even before the development of the post high school type of program. The schools were (and are) filling a tremendous variety of educational needs, for students of all ages and at many educational levels. The system, in truth, handles educational needs of all types not met in the standard grade, high, and four-year college level programs. Post high school education added a further complicating factor to reporting this educational mix. During the developmental years of the post high school curriculums, it has been difficult in many cases to differentiate between the student who is a part-time enrollee in a post high school program and the part-time student taking a course to improve his job performance--the traditional "occupational extension program."

It is believed that with present program maturity, definitely prescribed curriculums, and improved reporting techniques, the 1965 survey may be able to include those part-time, non-degree students studying at the 13th and 14th year levels, without mixing them with the schools' occupational extension students.

"Terminal" and "Technical" Programs

The terminal technical programs of vocational schools differ in philosophy and content from other offerings in higher education. While there have been exceptions to the rule, generally these programs are "terminal" in that the student is expected to be prepared for employment at the end of his one or two-year course. This contrasts with the collegiate center programs, in which at the end of two years, the student is expected to be ready to undertake the junior and senior years of a four-year college program.

"Technical" in the sense used here may be applied to training either for industry or business. The program is designed to train a technician. The traditional vocational program trains craftsmen, usually in what are mainly manipulative skills. The technician is provided with basic manipulative skills, with emphasis on a broader base of knowledge. In the technical program, more time will be devoted to mathematics and science, psychology and human relations, and communications skills. The training is often described as being aimed at the middle management position in business, and at the sub- or semi-professional level in the industrial technologies.

Enrollments by Sex

As might be expected in technological training, men make up the bulk of the enrollments - 72% in 1964. Women, who account for a bit more than 28% of the enrollments, are found mainly in the fields of business and distribution, general education, and the health occupations. A breakdown of students into

Programs	1964 PART TIME	1964 FULL TIME	1964 TOTAL	1962 TOTAL	1960 TOTAL
I. BUSINESS EDUCATION Accounting, Office Machines, Data Processing, Secretarial	1,343	2,443	3,786	2,459	1,661
II. CONSTRUCTION AND CONSTRUCTION TECHNOLOGY Forestry and Lumber Technology, Residential Design, Structural Technology	207	301	508	459	360
III. DISTRIBUTIVE EDUCATION Marketing, Merchandising, etc.	227	401	628	231	73
IV. ELECTRICAL AND ELECTRICAL TECHNOLOGY Electricity, Electronics, Industrial Electronics, Radio-TV	429	737	1,166	939	378
V. ENGINEERING AIDE TECHNOLOGY Drafting, Highway Engineering, Machine Drafting, Mechanical Design, Power Plant, Hydraulics	737	656	1,393	1,136	602
VI. GENERAL EDUCATION Junior College	3,478	1,054	4,532	3,176	761
VII. GRAPHIC ARTS Commercial Art, Photography, Printing	186	333	519	380	183
VIII. PRACTICAL NURSING and other health occupations		562	562	598	480
IX. METALS TECHNOLOGY Foundry, Machine Shop, Metallurgy, Pattern Making, Welding	119	651	770	539	145
X. SERVICE AND SERVICE TECHNOLOGY Aviation Mechanics, Automotive Service, Baking, Barbering, Chef, Cosmetology, Diesel, Industrial Foods, Watch and Clock Repair, etc.	243	1,397	1,640	1,367	676
	6,969	8,535	15,504	11,284	5,319

fields of study will be found on page 8. A complete listing by curriculums would be several pages long. The listing here indicates only broad areas of training.

Part-time, Full-time Relationships

It is of interest that the relationship of part-time to full-time students is almost the same in 1964 as it was in 1962, despite the large increase in enrollments. In 1962, the ratio was 54% full-time to 46% part-time. In 1964, the ratio is 55%-45%. It is believed that this reflects one of the major differences between technical institute students and four-year students. The 45% of technical students who attend part-time are generally young employed people who take class work to upgrade themselves or to learn a new or additional skill. By contrast, the working college student is generally a student first, working only so he may continue his studies.

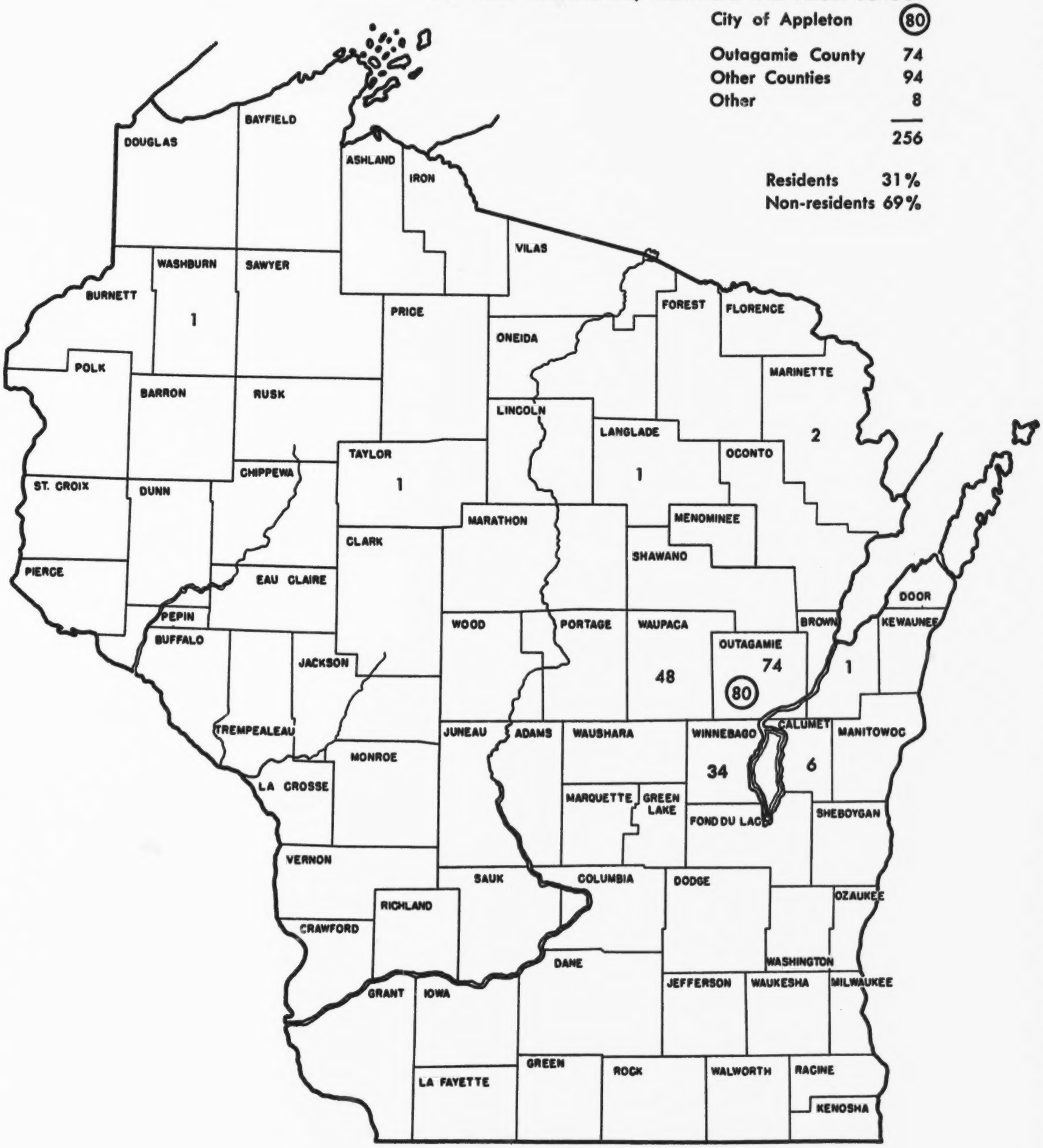
This high ratio of part-time students reflects the conscientious attention the vocational-technical schools of the state give to the essential educational philosophy they have always held--that the job-oriented training must be available to the part-time student. Other educational systems gladly accommodate the part-time student, but do not consciously plan for him to the extent the vocational-technical schools do.

After the tremendous five-year enrollment increase, the most striking aspect of post high school programs shown by this study is the resident, non-resident student ratio. The maps on pp. 10-16 show these relationships and point up one of the essential problems facing the schools, and the state.

POST HIGH SCHOOL ENROLLMENT
APPLETON VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Appleton	80
Outagamie County	74
Other Counties	94
Other	8
	256

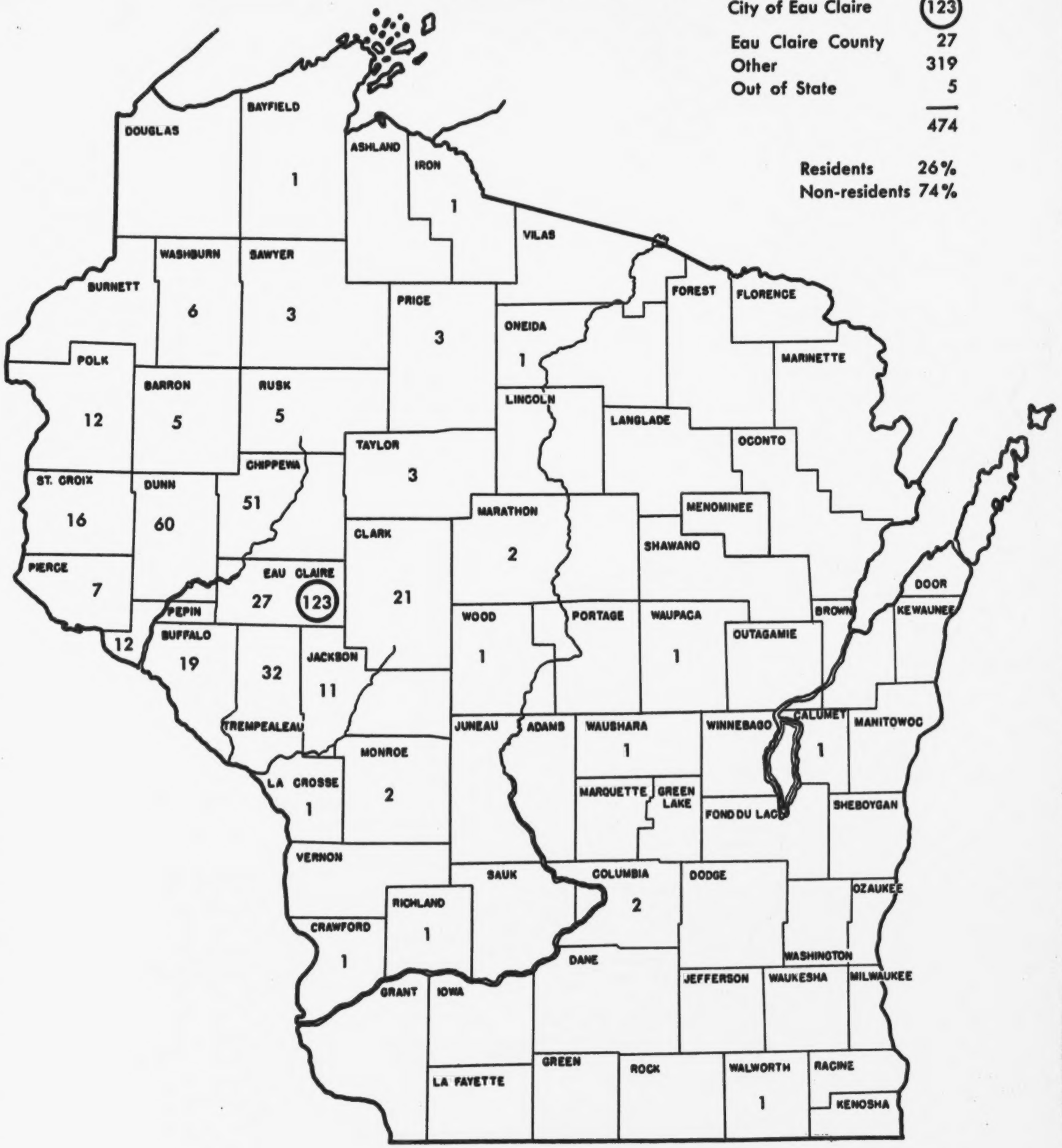
Residents	31%
Non-residents	69%



POST HIGH SCHOOL ENROLLMENTS
EAU CLAIRE VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Eau Claire	123
Eau Claire County	27
Other	319
Out of State	5
	474

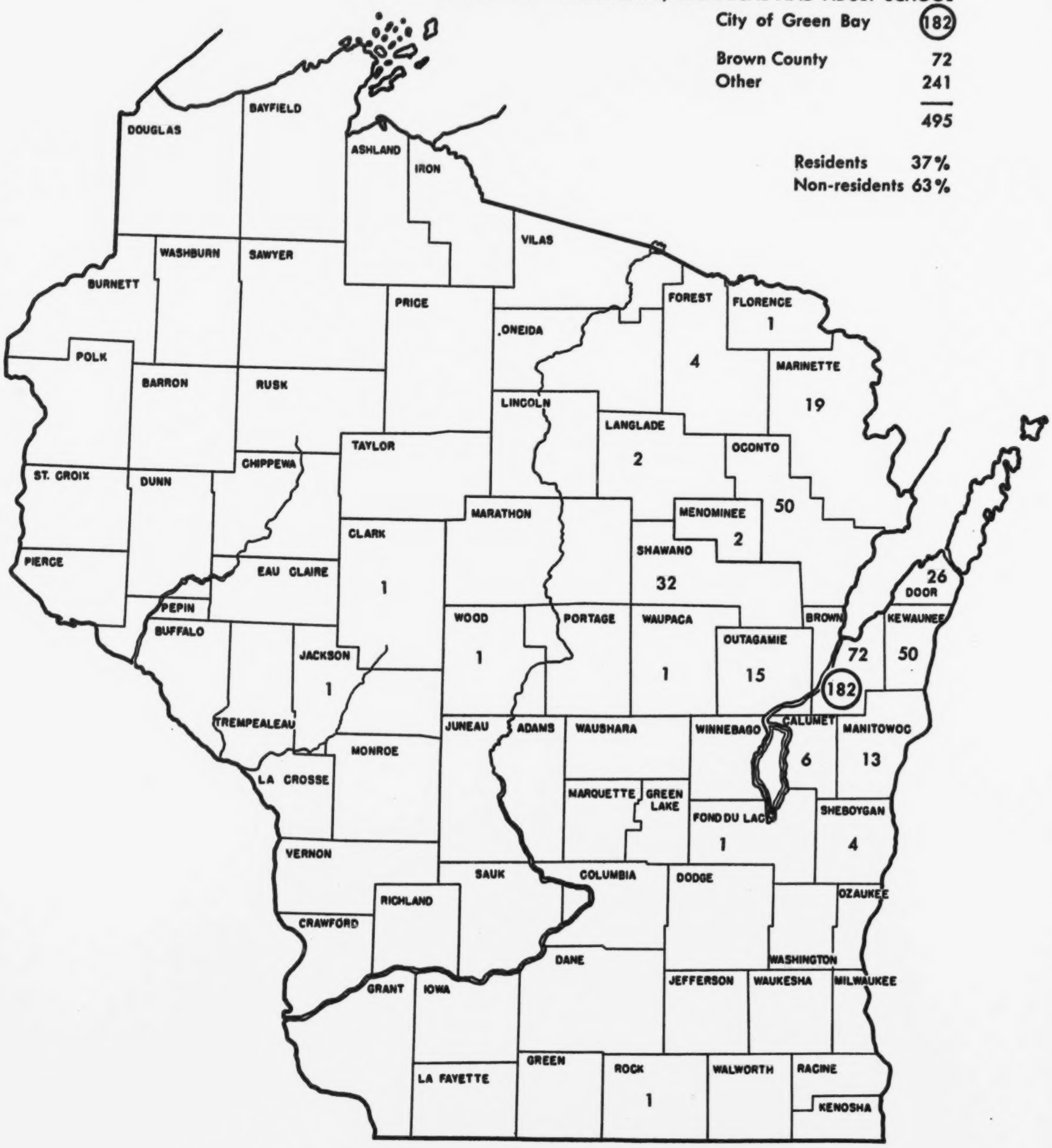
Residents	26%
Non-residents	74%



POST HIGH SCHOOL ENROLLMENT
GREEN BAY VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Green Bay	182
Brown County	72
Other	241
	495

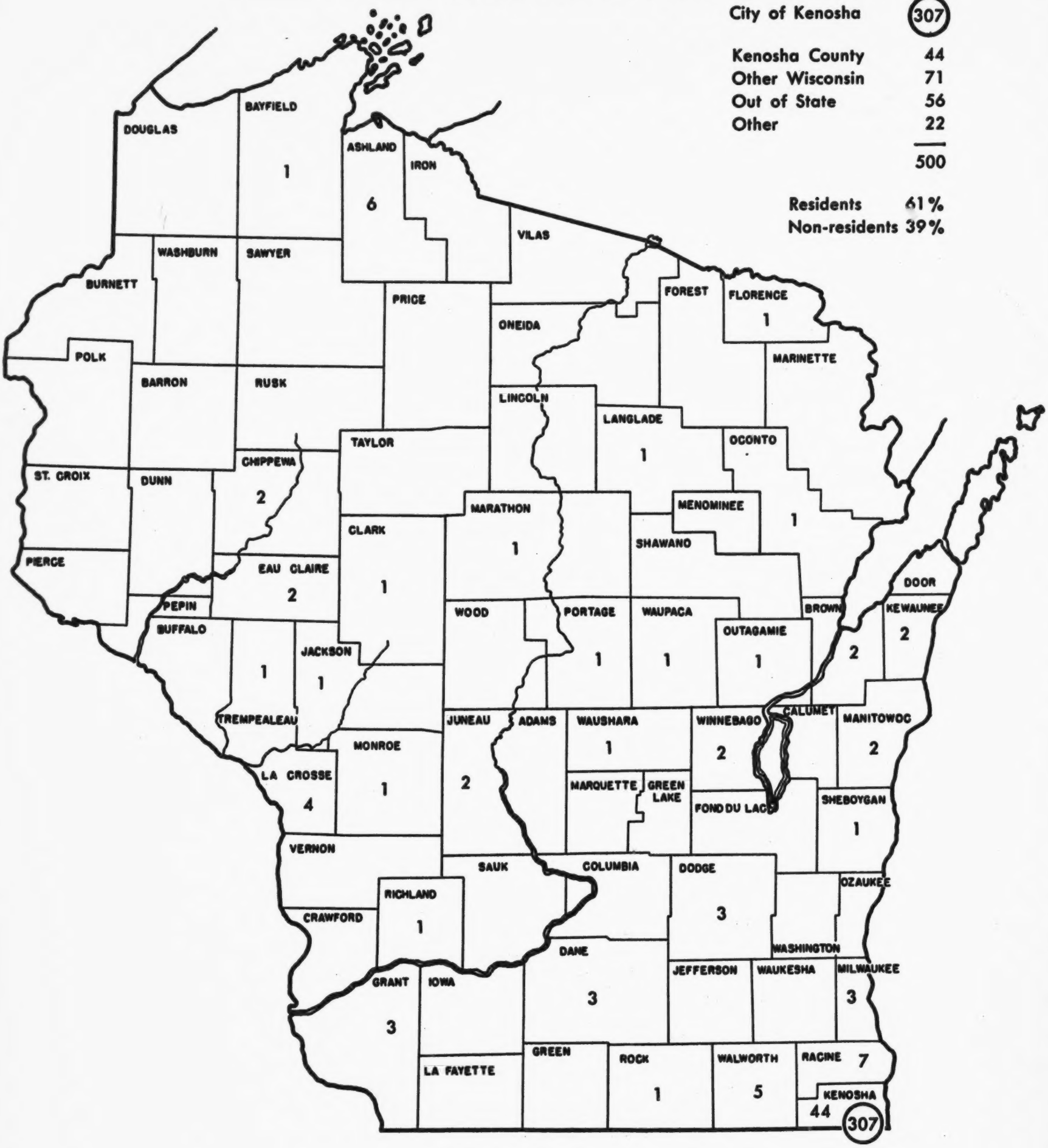
Residents	37%
Non-residents	63%



POST HIGH SCHOOL ENROLLMENT
KENOSHA VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Kenosha	307
Kenosha County	44
Other Wisconsin	71
Out of State	56
Other	22
	500

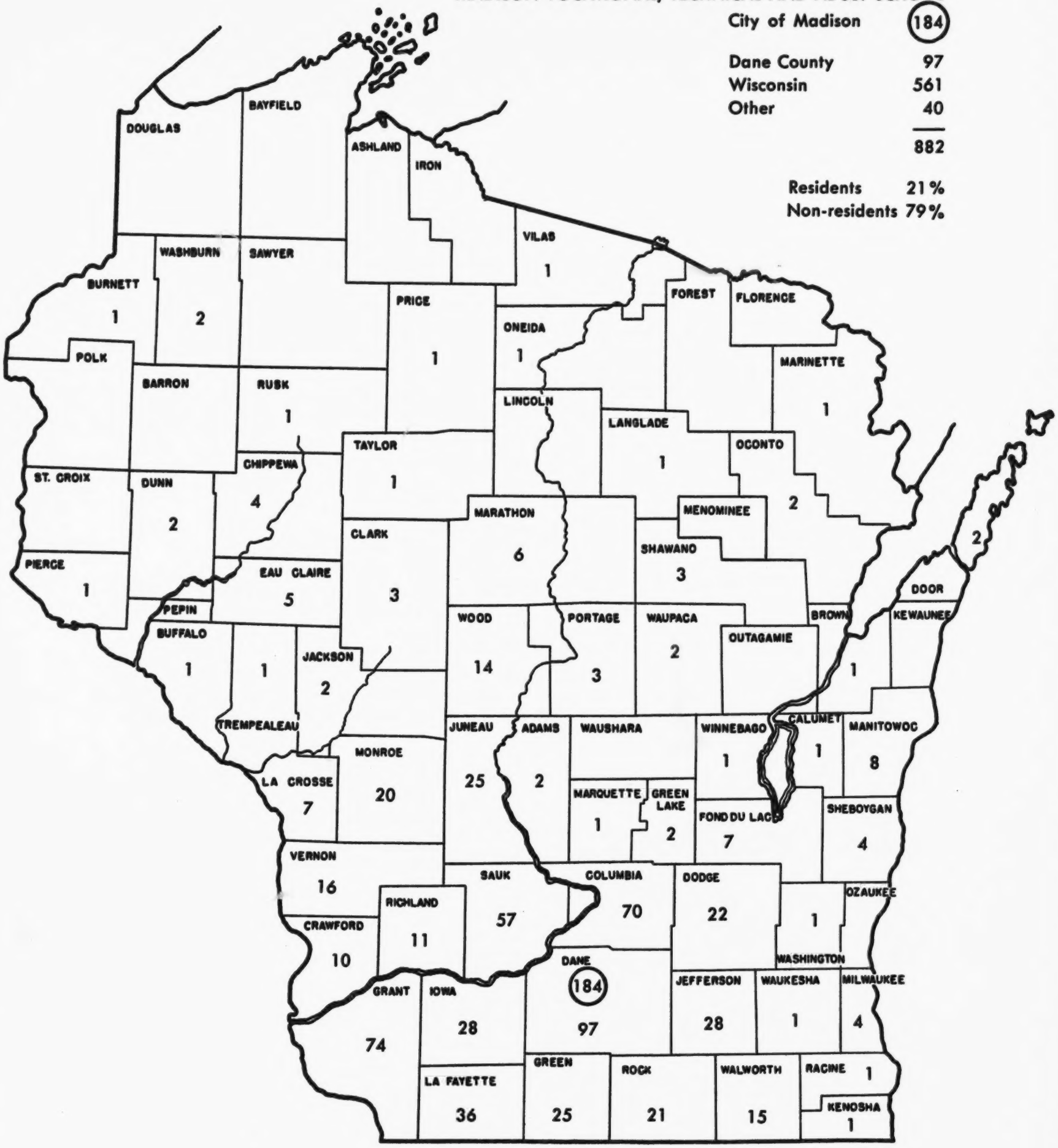
Residents	61%
Non-residents	39%



POST HIGH SCHOOL ENROLLMENTS
MADISON VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Madison	184
Dane County	97
Wisconsin	561
Other	40
	882

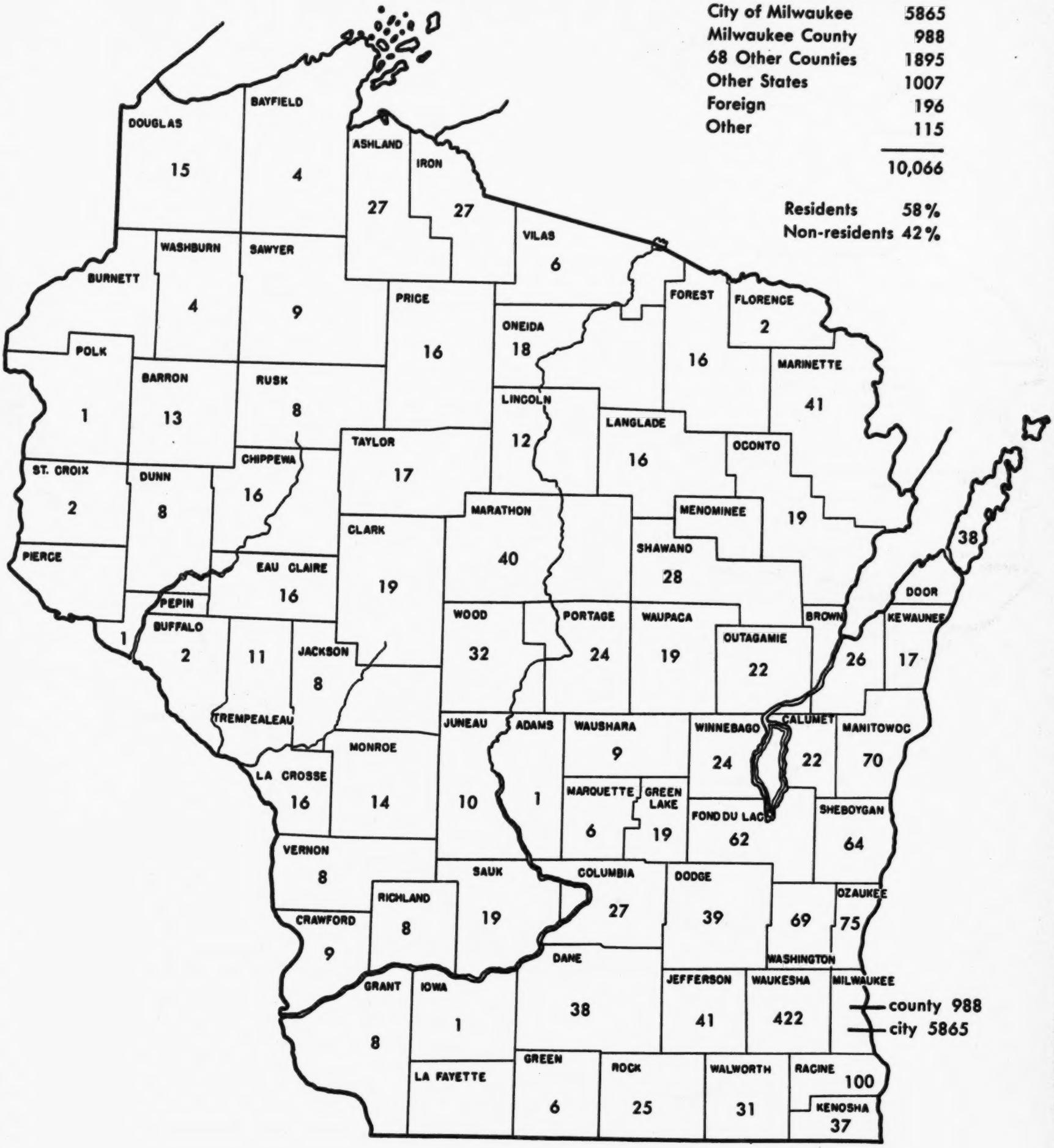
Residents	21%
Non-residents	79%



POST HIGH SCHOOL ENROLLMENTS
MILWAUKEE VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Milwaukee	5865
Milwaukee County	988
68 Other Counties	1895
Other States	1007
Foreign	196
Other	115
	10,066

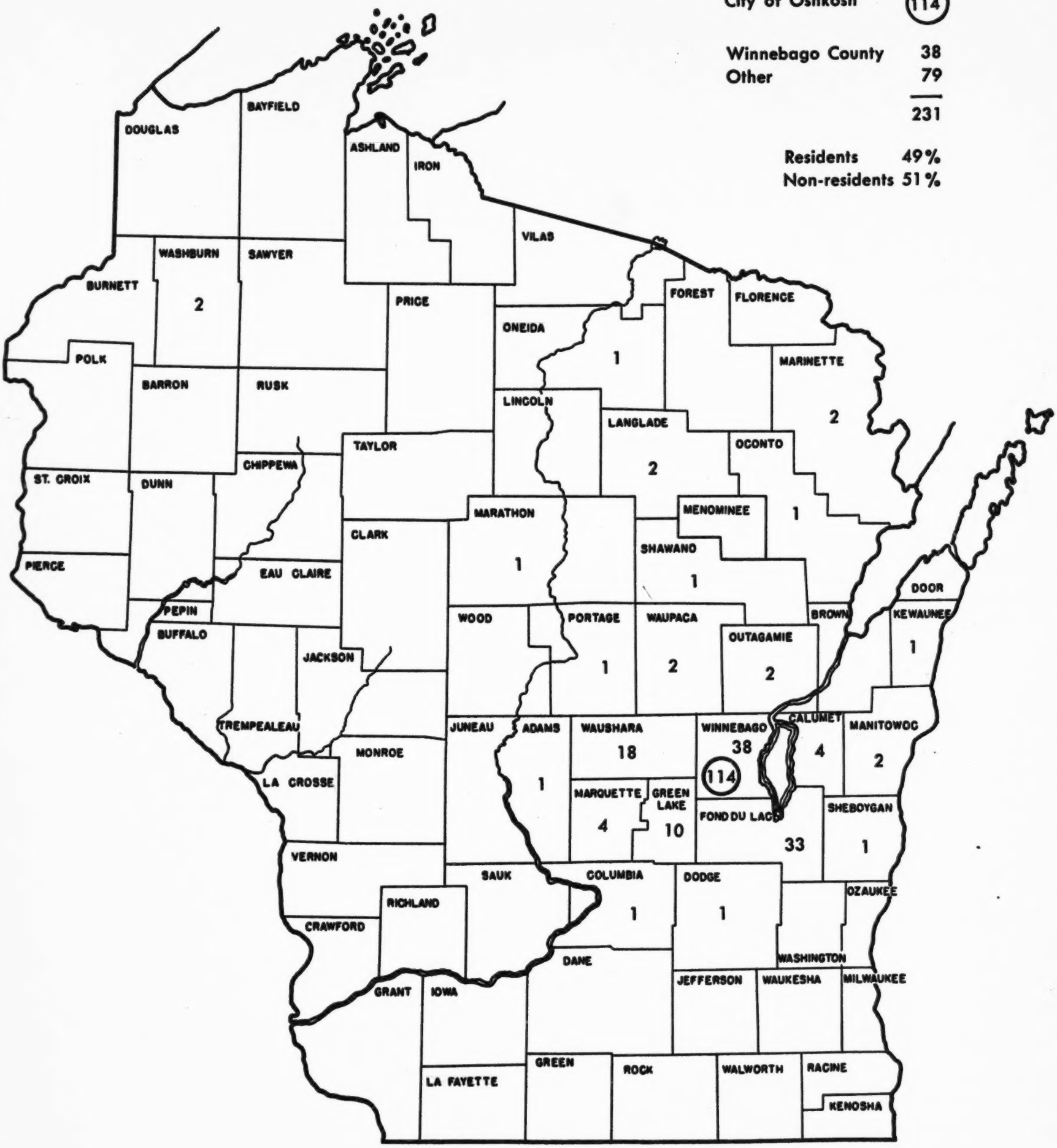
Residents	58%
Non-residents	42%



POST HIGH SCHOOL ENROLLMENTS
OSHKOSH VOCATIONAL, TECHNICAL AND ADULT SCHOOL

City of Oshkosh	114
Winnebago County	38
Other	79
	231

Residents	49%
Non-residents	51%



Resident, Non-resident Relationships

While it may seem a simple matter to the layman to establish where a person's legal residence may be, those who have worked in education, voter registration, taxation and other areas where residence is a major factor have discovered that it is not a simple matter. It is difficult, in some cases, to establish if a person is legally a Wisconsin resident or not. It is even more difficult to pin down residence within the state. For purposes of this survey, and with difficulties of past years in mind, schools were asked this year to indicate the high school from which the student graduated, and this has been used as establishing his basic residence. While it is true that the survey may thus indicate that a boy who graduated in Superior, and whose family then moved to Madison, is a non-resident in the Madison School; it is felt that these numbers will be more than balanced out by students who have graduated from a high school in a community without vocational-technical opportunities, who then moved in with relatives, or friends in cities with these opportunities, and are carried on the school records as residents.

For seven of the degree granting schools, the resident to non-resident ratio as determined by this survey is shown on the following table. These figures include full-time and part-time degree students; and the full-time students in one-year and two-year non-degree programs.

	Residents	Non-residents	Total
Appleton	80--31%	176--69%	256--100%
Eau Claire	123--26%	351--74%	474--100%
Green Bay	182--37%	313--63%	495--100%
Kenosha	307--61%	193--39%	500--100%
Madison	184--21%	698--79%	882--100%
Milwaukee	5,865--58%	4,201--42%	10,066--100%
Oshkosh	114--49%	117--51%	231--100%

The Resident, Non-resident Problem

The school is a local institution. Historically, approximately two-thirds of the financial support for the schools has been provided from local tax funds. However, the post high school programs provide an educational service which has impact far beyond the local city boundary lines. The programs are area-wide, in many cases state-wide in their impact. Students interested in these fields come from all areas of the state, and after training, are employed in all areas of the state. The essential question becomes: "How far should the municipality go in providing tax supported education for students (and industry) outside the community?"

At the outset, these programs were located in communities where there existed a need for the workers trained in the program. However, in many cases, the immediate community might not be able to supply enough students to make the program feasible--or, alternatively, needed some trained people, but not as many as an economically feasible program would turn out. At this stage, the availability of the non-resident student provided the numbers required for the programs to function.

The figures revealed by the survey indicate that post high school programs have been growing by approximately 2,000 enrollments per year over the past two years. To a person outside the vocational-technical system, these increases may appear to be simply healthy growth. The person within the system, knowing first-hand the enrollment pressures under which the schools are operating will reach a different conclusion about these gains. He would hypothesize that these increases simply represent the program growth that the schools have been able to accommodate in spite of near-capacity enrollments. To this person, the 2,000 increases indicate only the additional people the schools could "squeeze" into programs, rather than accommodation of all students who wished to enter.

To test this hypothesis, a spot check was made of a number of schools offering post high school programs. Results were illuminating.

For instance, the Madison School reported that as of early July, 1964, no further enrollments for September, 1964 could be taken in 23 of the 29 post high school curriculums the school offers. In the remaining 6 programs there were opportunities for only a very few students.

The Kenosha School reported that all three sections of the practical nurse course were over-capacity for 1964--that the first possible opening would be in September, 1965. All degree, and other post high school programs were virtually at capacity, with one exception. Additionally, the school's director pointed out that the school had reached the saturation point at its present site--no room nor opportunity was left for expansion at the present school plant.

In Wausau, the director reported to his board on April 15 that except for three programs, the school was at capacity for the fall term, and that approximately 300 students would have to be turned away from post high school programs unless instructional staff and plant were enlarged.

In Eau Claire, this situation is repeated. By July, trade and industrial education programs were over-full; and the business and distributive programs already had more than 90% of the enrollments which could be accepted. In September of 1964, worthy students will have to be turned away. Another school reports 78 qualified applicants for a program in which only 18 students can be accepted.

Thus, it seems clear that the enrollment increases in these programs would be substantially greater if the schools could accommodate the students who wish to attend. Without increases in the capacity of the schools, capable young people will not get the training they desire, and the acute shortage of trained technicians will continue to plague Wisconsin business and industry.

It seems clear also, that as long as programs are at capacity, and local government must supply most of the funds, the "waiting list" situation will inevitably work against the interest of the talented non-resident student.

The resident, non-resident problem of the schools involves many problems beyond the scope of this study, including tuition, equality of educational opportunity, state aid policies, and others. In the vocational-technical fields, these problems must be viewed against the background of the studies issued regularly by the Wisconsin State Employment Service titled "Wisconsin

Manpower Outlook." The indications in this continuing series of studies are that it is exactly at the technician levels for which these post high school programs provide the training, that the WSES forecasts some of the biggest shortages in the years immediately ahead.

The College Transfer Student

Schools have also been requested in this survey each year to supply information on transfers to their programs from various colleges. In the degree programs, it has always been clear that substantial numbers of students came to the vocational-technical schools as college transfers. Reports from school guidance and enrollment personnel indicate that in a great many cases, these transfers occur because the student finds it necessary to transfer to a school closer to home, for financial reasons, or because the student felt himself better suited to a different type of program. In these cases, academic success, or lack of it, is generally not a factor in the transfer.

Despite the numerical increases in students, the transfers remained high in percentage terms. For instance, in Eau Claire, the percentage of college transfers remained constant at 10% in both 1962 and 1964. In Madison, the percentage of college transfers increased from 8% in 1962 to 12% in 1964. In Kenosha the percentage went from 12% to 15% in this period. The Milwaukee day-time technical program had 842 transfers out of 3,047 students, or 28% in 1962. In 1964, the comparable figures were 1111 of 2905, or 38%. The pattern is similar through the reports of the larger schools, with a few variations,

which appear on the surface to be related to the college opportunities available in the area--in other words, where colleges exist, there are more transfers to vocational-technical schools, than where college opportunities are fewer.

For whatever reasons the transfers are made, it seems clear that to some extent, the post high school programs in vocational-technical schools relieve some pressures on the colleges, and provide a useful and desirable educational opportunity for many students who find the four-year college is not the opportunity they desire, seem to need, or can afford.

Conclusions

A number of conclusions may be drawn from this 1964 survey:

1. Need and desire for these programs is evidenced by their explosive growth. There appears to be some leveling off, due more to capacity use of facilities, than lack of students. Taken in the light of student demand, and projections of the state's needs for trained workers, it appears that enrollments will be limited only by the training opportunities available for the foreseeable future. Without a rapid increase in facilities, many young people will not be able to get the training they need and desire. Additionally, the questions of facilities must be looked at from the point of view of the state's own economy. In an increasingly competitive and complex technological society, can the state afford to be without the skilled technicians industry and business desperately require?
2. Increases in available curriculums and types of programs have been rapid. The basic structure established in Wisconsin's voca-

tional-technical system has made it practicable to handle program increases up to this time. How much further programs can be expanded within the present financial structure is open to question.

3. It is clear that the schools are providing educational offerings which have impact far beyond local boundaries. With continuing enrollment pressures, it seems clear that the whole problem of levels of state aids, tuition, and the resident, non-resident student relationships may have to be changed if the system is to continue to meet training needs of industry and business on which our economy depends.

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DEPARTMENT OF VOCATIONAL EDUCATION
AND PRACTICAL ARTS
THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

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SCHOOL OF EDUCATION

High School Principals' Perceptions of Assistance Needed in Order to Develop More Adequate Programs for Employment-Bound Youth

RALPH C. WENRICH
ALVIN OLLENBURGER

Sponsored by:

State Board of Control for Vocational Education
Lansing, Michigan

VT 00015

Administered through:

December 1963

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THE UNIVERSITY OF MICHIGAN

SCHOOL OF EDUCATION

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HIGH SCHOOL PRINCIPALS' PERCEPTIONS OF ASSISTANCE NEEDED IN ORDER TO DEVELOP MORE ADEQUATE PROGRAMS FOR EMPLOYMENT-BOUND YOUTH

Ralph C. Wenrich
Alvin Ollenburger

ORA Project 05678

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OFFICE OF RESEARCH ADMINISTRATION ANN ARBOR

December 1963

FOREWORD

In the spring of 1961 The University of Michigan did a study of the effect of withdrawal of reimbursement on high school vocational programs; the study was done as a part of the Michigan Vocational Education Evaluation Project. The majority of local school administrators, as revealed in the 1961 study, felt that if the special reimbursement provided for high school vocational programs were to be gradually eliminated (over a three-year period), their programs would be continued without special aid.

The study reported here is an attempt to determine, for the guidance of the State Board of Control for Vocational Education, how vocational education funds might best be spent in order to aid high school principals and their faculties in developing more adequate educational experiences appropriate to the needs of employment-bound youth.

Although the Project Director takes full responsibility for the study, he had the assistance of many of his colleagues. In designing the study Dr. Ned Flanders, Professor of Education and Research Consultant, was most helpful; in constructing the questionnaire, Dr. Morris Axelrod, Survey Research Center, gave valuable assistance; and in decisions regarding statistical procedures and data processing, Dr. M. Clemens Johnson, Associate Professor of Education and Research Associate, served the project well. Particular credit should be given to Alvin Ollenburger, Assistant in Research for the project, who gave unstintingly of his time and talents.

Ralph C. Wenrich
Project Director

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PART I. INTRODUCTION

A. Statement of the Problem

In the spring of 1961 a survey[1] was made of superintendents, high school principals, and directors of vocational education in Michigan to determine what the effect would be on reimbursed high school vocational programs if the reimbursement were gradually withdrawn (over a three-year period). Most administrators felt that their programs would continue to operate without reimbursement. In relation to homemaking, 89% said their programs would continue; 79% felt that their trade and industrial programs would continue; 75% thought their cooperative occupational training programs would continue; and 61% expressed the same opinion about agricultural education.

In the same survey approximately two-thirds of the local administrators expressed the thought that if, in the future, state and federal vocational funds were no longer used to support the present high school vocational offerings, these funds should be used to stimulate the further development of new vocational programs and services for high school youth. Less than one-third thought these funds should be used for the development of out-of-school youth and adult programs.

It can be assumed that the State Board of Control for Vocational Education will make some changes in the allocation of earmarked vocational education funds. Therefore, in revising policies, information regarding the kinds of assistance high school principals consider to be most essential in the development of more adequate programs for employment-bound youth would be helpful.

B. Objective of the Study

The objective of the study was to determine what kinds of assistance high school principals would consider most helpful in developing and/or operating special programs and services for employment-bound youth.

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[1]Ralph C. Wenrich. A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Operated by Local School Districts. Ann Arbor, Michigan: The University of Michigan Office of Research Administration, July 1962.

C. Scope of the Study

The study included all Michigan high school principals of schools with a student population of 700 or more in grades 10-12, of 1,000 or more in grades 9-12, and of 1,600 or more in grades 7-12. The study was limited to large high schools because it was felt that specialized education for employment, especially in industrial and service occupations, is feasible only in larger schools.

D. Procedure

A list was made of the many kinds of assistance high school principals said they would find helpful; this was done by interviewing principals, professors of secondary school administration and curriculum, Bureau of School Services personnel, and others. The activities in which principals said they would like assistance were categorized and <u>six areas of activity</u> were established (see Part II, Section A).

A questionnaire was constructed and pre-tested by giving it to a number of staff members and high school principals who were not included in the population to be surveyed. The questionnaire was then revised to eliminate ambiguities.

The <u>Michigan Education Directory</u> was used to determine the schools which were large enough to be included in the study. Early in May questionnaires were sent to the 125 principals of these schools with a cover letter [see Appendix, p. A3]. A duplicate questionnaire, with the same cover letter and an insert [p. A4] was mailed ten days after the first mailing to those who had not yet responded.

Responses were received from 123 principals, but three of these did not qualify on the basis of size of school enrollment. Table I shows the number of questionnaires sent out and the number and percent (98.4) returned. Tables II and III show the distribution of schools whose principals responded by grade span and by enrollment respectively. It should be noted that most of the schools operate three grades and that there is a fairly even distribution of schools by size.

PART II. RESULTS OF THE SURVEY

A. Six Areas of Activity for Improvement of Programs for Employment-bound Youth

For this study the entire process of improving a program for employment-bound youth was divided into six areas of activity:

Area One. Examining the goals of the school and evaluating the offerings available to employment-bound youth.

Area Two. Assessing the needs of in-school and out-of-school youth and the needs of employers.

Area Three. Developing new programs to meet the needs of youth and employers.

Area Four. Operating specialized programs designed to prepare in-school youth for employment.

Area Five. Operating specialized programs designed to prepare out-of-school youth for employment.

Area Six. Providing more adequate vocational guidance services for in-school and out-of-school youth.

The respondents were asked the following question for each of these areas: If state and federal funds earmarked for vocational education were reallocated, what part of these funds do you think should be spent to help you--(in a particular area). The choices for answering this question were NONE, LITTLE, SOME, MOST, and ALL.

For readability and to save space, these areas will be referred to by number throughout the rest of this report. The questionnaire and letter of transmittal are reproduced in the Appendix.

1. COMPARING THE RESPONSES FOR THE SIX AREAS OF ACTIVITY

Very few respondents felt that ALL of the reallocated funds should be spent to help them in any one area (see Table IV). The highest percentages are found for SOME with approximately 50 percent of those responding giving this answer in each of the six areas. Following SOME, the next highest percentages are for MOST in all six areas.

The principals were asked to rank three of the six areas in order of preference for assistance. Area Two was given a rank of 1 most often (by 33 principals). These rankings were than weighted and the six areas rank-ordered. After weighting, Area Two was ranked first and Area Four second (see Table V). It should be noted that Areas Two and Four, which were ranked first and second respectively, have the highest percentage of non-response (see Table IV).

2. COMPARING RESPONSES FOR AREAS ONE, TWO, AND THREE, WHEN SCHOOLS ARE CLASSIFIED ACCORDING TO SIZE, PERCENTAGE OF STUDENTS ENTERING COLLEGE, AND PERCENTAGE OF DROP-OUTS

Only minor differences can be found in the principals' opinions regarding Areas One, Two, and Three whether their schools are classified according to size, percentage of students entering college, or percentage of drop-outs (see Tables VI-XIV). One such difference is that principals of schools with enrollments of 1,000-1,299 and of 2,500 or more thought MOST of the reallocated funds should be spent to help them in Area Three (see Table XII).

3. ASSISTANCE DESIRED BY PRINCIPALS IN AREAS ONE, TWO, AND THREE

The principals who answered SOME, MOST, or ALL to the question about funds for help in Areas One, Two, and Three were asked several questions about what individuals they would prefer to help them in a particular area. The highest percentage of the principals answering these questions favored members of their own staff in all three areas. The principals' next choice was individuals from the community (see Table XV).

When asked what besides help from people they would want to aid them in these areas, a large percentage of principals answered favorably to all of the types of assistance listed in the questionnaire (see Tables XVI, XVII, and XVIII). Of the principals asked to respond to this question, the smallest percentage (69) wanted sample evaluation forms for aid in Area One.

4. COMPARING RESPONSES FOR AREAS FOUR, FIVE, AND SIX, WHEN SCHOOLS ARE CLASSIFIED ACCORDING TO SIZE, PERCENTAGE OF STUDENTS ENTERING COLLEGE, AND PERCENTAGE OF DROP-OUTS

The same situation exists for these three areas as for Areas One, Two, and Three: namely, only minor differences in principals' opinions show up no matter which way their schools are classified (see Tables

XIX-XXVII).

5. ASSISTANCE DESIRED BY PRINCIPALS IN AREAS FOUR, FIVE, AND SIX

The principals who answered SOME, MOST, or ALL to the question about funds for help in Areas Four, Five, and Six were asked a question about what kind of assistance they would want. Instructional materials were checked most often in Areas Four and Five, while guidance materials were checked most often in Area Six (see Table XXVIII). For Area Six, "Counselors aware of the problems of employment-bound youth" was checked almost as often as guidance materials, whereas the second choice for Areas Four and Five was equipment and consultation services. The type of help checked the least, for these three areas, was supervising and administrating the programs (see Table XXVIII).

B. What the Schools Have Done in the Past Two Years in Areas One, Two, and Three

1. WHAT THE SCHOOLS HAVE DONE IN AREA ONE

Three activities that could be carried on in this area were listed in the questionnaire. About two-thirds (79 of the 120) of the schools have made a follow-up study of graduates within the last two years. A little over one-third of the schools (43 and 46 schools respectively) have made a follow-up study of drop-outs and held a conference on the role of the school in educating the employment-bound youth (see Table XXIX).

The large number of principals who did not respond to these questions (29 did not answer the question on a follow-up study of drop-outs and 30 did not answer the question on a conference on the role of the school) leads to some interesting speculation.

When asked how often groups from outside the school are involved in the activities of this area, 17 principals checked NEVER and 69 checked SOMETIMES (see Table XXX).

2. WHAT THE SCHOOLS HAVE DONE IN AREA TWO

It should be kept in mind that Area Two was rank-ordered first in order of preference for assistance by the principals. Three kinds of surveys were listed for this area and principals were asked if they had

done any of them within the past two years. A majority of the 120 schools had done none of the three surveys listed (see Table XXXI). The fact that only 23 schools have attempted to identify the needs of out-of-school youths indicates where assistance could start in this area.

3. WHAT THE SCHOOLS HAVE DONE IN AREA THREE

Principals were asked to check whether or not they had any of five programs in operation at that time. A little over half, 66 of the 120, of the schools had in operation a program slanted towards empolyment-bound youth (see Table XXXII). Eighty-two of the schools had in operation a program for slow readers and slow learners to give them a saleable skill.

With regard to involving groups from outside the school in this area, 59 principals said they SOMETIMES ask them and 21 said they NEVER do (see Table XXXIII).

C. Miscellaneous Questions Bearing On A Program for Employment-bound Youth

Of the 120 principals, 109 accepted as a goal for their school the responsibility for giving employment-bound youth saleable skills, but only 87 felt that their schools reflect this goal in the courses they offer (see Table XXXIV). Only 19 schools felt they are doing all that can be expected of them for employment-bound in-school youth. Sixty-six principals felt they do not have enough time to give leadership to a program for employment-bound youth and 89 felt that a wise use of part of the earmarked funds would be to furnish an extra assistant to give this leadership (see Table XXXIV).

PART III. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. Summary

In the spring of 1961 a study was made which indicated that most administrators felt their vocational programs would continue to operate even if reimbursement were to be withdrawn; administrators also expressed the idea that if in the future federal and state vocational education funds were no longer used as reimbursement for the salaries of high school teachers in the same manner as in the past, these funds should be used to stimulate further development of vocational programs and services for high school youth.

Consequently, the present study was designed to determine the kinds of assistance high school principals would consider helpful in planning and operating programs and services for employment-bound youth. It was thought, furthermore, that the findings of this study would assist the State Board of Control for Vocational Education in making changes in policy regarding the use of vocational education funds.

By interviewing high school principals, professors of secondary school administration and curriculum, and others, a list was made of the kinds of assistance high school principals might find helpful; these were grouped into six categories or areas of activity. A questionnaire was constructed to determine the areas in which principals would like to have help and the kinds of assistance preferred.

The principals were asked to indicate on a scale of five choices, NONE, LITTLE, SOME, MOST, and ALL, what part of the state and federal earmarked funds should be spent for help in each of the six areas of activity. Approximately one-half of the principals felt that SOME state and federal funds earmarked for vocational education should be reallocated to help them improve their programs for employment-bound youth in <u>each</u> of the six areas. If the responses of SOME and MOST are combined we see that approximately three-fourths of the principals favored spending either SOME or MOST of the funds for each of the six areas.

When the areas of activity were placed in rank order by the principals, Area Two (assessing the needs of in-school and out-of-school youth and employers) and Area Four (operating specialized programs to prepare in-school youth for employment) were ranked first and second, respectively.

Few differences in opinions as to what part of the earmarked funds should be spent in each of the areas of activity were found among schools, whether schools were classified according to size, percentage of students entering

college, or precent of drop-outs, but principals with an enrollment of 1000-1299 students felt that MOST of the reallocated funds should be spent to help them in Area Three which was "developing new programs to meet the needs of youth and the needs of employers."

If help is given by making it possible for one or more individuals to work in Area One, Two, or Three, principals would prefer to have such services performed by members of their own staff and next in order of preference, by other individuals from the community.

Principals favored assistance in the form of instructional materials in Areas Four and Five and guidance materials in Area Six. Next in order of preference was (for Area Six) more and better counselors aware of the problem of employment-bound youth, and (for Areas Four and Five) consultation services and equipment.

Only 23 principals said that their schools have attempted to identify the needs of out-of-school youth and only 44 indicated any attempt to indentify the needs of in-school youth. Over half of the principals were of the opinion their school had a program slanted toward employment-bound youth.

Of the 120 principals, 109 accepted as a goal for their school the responsibility for giving employment-bound youth saleable skills, but only 87 felt their schools reflected this goal in the courses they offer. Only 19 principals felt their schools were doing all that could be expected of them for employment-bound in-school youth and only 22 principals felt this way about out-of-school youth.

Sixty-six principals felt they did not have enough time to give leadership to the development of programs for employment-bound youth and 89 principals felt an extra assistant would be helpful in providing leadership.

B. Conclusions

The fact that over 98% of the principals returned the questionnaire and that three-fourths of the responding principals favored spending either SOME or MOST of earmarked vocational funds to help them improve their programs for employment-bound youth, indicates how serious and important are the problems of employment-bound youth to the principals of Michigan high schools.

When the task of improving the program for employment-bound youth was divided into six areas of activity, principals did not single out any one particular area for assistance; they favored help for the entire task. When principals were presented with the possibility that perhaps assistance cannot be given in all areas of activity, principals ranked first, in order of preference for assistance, an assessment of the needs of in-school and out-of-school youth and employers.

If assistance is given to improve programs for employment-bound youth, these principals want help from members of their staff and individuals from the community to work on such improvement. Also they want assistance in obtaining more and better instructional and guidance materials.

A majority of the principals felt that they did not have time to give leadership to the programs for employment-bound youth and nearly three-fourths of them felt their programs could be improved if funds were made available to provide an extra assistant to give this leadership.

In the principals' opinion, the schools included in this study are not doing enough for either in-school or out-of-school youth who are looking toward employment rather than college, even though over half of the schools have a program designed specifically for employment-bound youth.

C. Recommendations

It is recommended that the State Board of Control for Vocational Education:

1. Continue to allocate a substantial protion of the funds made available annually to the development of programs and services for youth of high school age. Furthermore, funds should be made available to encourage and support activities in each of the six areas identified in the study:

Area One. Examining the goals of the school and evaluating offerings available to employment-bound youth.
Area Two. Assessing the needs of in-school and out-of-school youth and the needs of employers.
Area Three. Developing new programs to meet the needs of youth and employers.
Area Four. Operating specialized programs designed to prepare in-school youth for employment.
Area Five. Operating specialized programs designed to prepare out-of-school youth for employment.
Area Six. Providing more adequate vocational guidance services for in-school and out-of-school youth.

2. Make a special effort to assist high school principals and their faculties (1) to assess the needs of youth of high school age—both those in school and those out of school—and (2) to assess the needs of employers in the service areas of the school. This can be achieved in a number of ways:

a. By reimbursing school districts for the salaries of personnel assigned (full- or part-time) to the task of studying needs.

b. By having vocational education consultants in the State Department of Public Instruction give top priority to assisting school districts in the study of needs of youth and needs of employers.

c. By developing plans and procedures (including instruments) which any high school faculty can use in (1) making interest inventories, (2) conducting follow-up studies of drop-outs and graduates who have gone directly into employment, (3) surveying employment opportunities for youth, (4) determining

the requirements of jobs available to youth, (5) working effectively with lay advisory committees, (6) other techniques which will result in the more accurate assessment of community needs.

3. Adopt reimbursement policies which will make available more time of high school administrators and their faculties to engage in activities other than instructional, such as planning and developmental materials.

4. Allocate more funds to the development of instructional materials and guidance materials.

5. Publish annually a report on programs and practices which are outstanding; pilot and experimental programs should be included.

6. Provide consultant services on a team basis to high schools interested in evaluating their total program for employment-bound youth in relation to community needs.

7. Encourage the recruitment and preparation of more qualified instructors and counselors, instructors who have appropriate experience in employment outside the school and counselors who are aware of the problems of employment-bound youth.

8. Adopt reimbursement policies which will encourage boards of education to give principals of high schools large enough to operate specialized vocational programs an assistant (full- or part-time) whose responsibility it would be to give leadership to the development of more meaningful programs for employment-bound youth.

TABLE I. NUMBER OF QUESTIONNAIRES SENT AND PERCENT RETURNED

Position	Sent	Received N	Received %
Principals	125	123*	98.4

*Since 3 of the 123 received were not of the required size, the following tables are compiled on the basis of 120 respondents.

TABLE II. GRADE SPAN OF SCHOOLS RESPONDING

Grade Span	N	%
Three grades (10-12)	74	62
Four grades (9-12)	37	31
Five grades (8-12)	2	1
Six grades (7-12)	7	6
Total	120	100

TABLE III. ENROLLMENT OF SCHOOLS RESPONDING

Enrollment	N	%
700- 999	12	10
1000-1299	26	22
1300-1599	13	11
1600-1899	26	22
1900-2199	13	11
2200-2499	15	12
2500 or more	15	12
Total	120	100

TABLE IV. PRINCIPALS' RESPONSES TO THE QUESTION*
IN REGARD TO EACH OF THE SIX AREAS

Answer	Areas of Activity, %					
	1	2	3	4	5	6
NONE	8	6	4	3	7	6
LITTLE	12	12	8	4	6	17
SOME	53	44	44	46	53	52
MOST	23	25	37	33	23	18
ALL	1	1	3	3	3	-
No Response	3	12	4	11	8	7
TOTAL	100	100	100	100	100	100

*If state and federal funds earmarked for vocational education were reallocated, what part of these funds do you think should be spent to help you (in a particular area)?

TABLE V. RANKINGS GIVEN THE SIX AREAS

Rank Given	Areas of Activity					
	1	2	3	4	5	6
1	12	33	15	27	9	10
2	9	19	20	24	19	10
3	10	15	26	16	14	19
WEIGHTED RANK*	64	152	111	145	79	69
RANK ORDER	6	1	3	2	4	5

*A rank of 1 was given a weight of 3, a rank of 2 was given a weight of 2, and a rank of 3 was given a weight of 1.

TABLE VI. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE, IN ANSWER TO QUESTION 3*, PAGE A7

(Area 1)

Answer	Enrollment**							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	1	2	2	-	2	1	2	10
LITTLE	1	3	1	3	3	1	2	14
SOME	7	12	8	17	5	9	6	64
MOST	2	8	2	4	2	4	5	27
ALL	-	1	-	-	-	-	-	1
No Response	1	-	-	2	1	-	-	4
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help evaluate the offerings and examine the goals of your school?

**The frequency tables from two classifications, enrollment and grade size, were statistically checked by Chi square for independence, and no independence was found. Since either classification or grouping will give the same results, tables by enrollment, only, were reported.

TABLE VII. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,* IN ANSWER TO QUESTION 3, PAGE A7

(Area 1)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	2	4	2	2	-	10
LITTLE	2	2	6	3	1	14
SOME	5	20	31	7	1	64
MOST	1	12	11	-	2	26
ALL	-	-	1	-	-	1
No Response	2	-	1	1	-	4
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE VIII. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,*
IN ANSWER TO QUESTION 3, PAGE A7

(Area 1)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	2	4	2	-	1	9
LITTLE	6	1	6	-	-	13
SOME	18	20	14	5	4	61
MOST	5	11	6	2	1	25
ALL	-	-	-	1	-	1
No Response	1	-	-	1	-	2
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE IX. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE,
IN ANSWER TO QUESTION 2*, PAGE A9

(Area 2)

Answer	Enrollment							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	-	1	2	-	1	1	2	7
LITTLE	-	2	1	2	5	1	3	14
SOME	9	11	6	12	4	8	3	53
MOST	3	5	2	8	3	4	5	30
ALL	-	-	1	-	-	-	-	1
No Response	-	7	1	4	-	1	2	15
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help assess the needs of in-school and out-of-school youth and the needs of employers?

TABLE X. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,*
IN ANSWER TO QUESTION 2, PAGE A9

(Area 2)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	2	3	1	1	-	7
LITTLE	2	4	5	2	1	14
SOME	5	15	23	8	2	53
MOST	1	12	16	1	-	30
ALL	-	1	-	-	-	1
No Response	2	3	7	1	1	14
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE XI. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,*
IN ANSWER TO QUESTION 2, PAGE A9

(Area 2)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	2	2	2	1	-	7
LITTLE	5	-	6	-	1	12
SOME	13	18	11	5	4	51
MOST	7	12	6	3	-	28
ALL	-	-	1	-	-	1
No Response	5	4	2	-	1	12
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE XII. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE, IN ANSWER TO QUESTION 3*, PAGE A11

(Area 3)

Answer	Enrollment							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	-	2	-	-	1	-	2	5
LITTLE	-	3	-	1	2	1	2	9
SOME	8	8	8	14	5	9	1	53
MOST	3	10	4	9	3	5	10	44
ALL	1	1	1	-	1	-	-	4
No Response	-	2	-	2	1	-	-	5
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help develop new programs to meet the needs of youth and employers in your community?

TABLE XIII. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,* IN ANSWER TO QUESTION 3, PAGE A11

(Area 3)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	1	2	1	1	-	5
LITTLE	2	3	2	1	1	9
SOME	6	14	27	6	-	53
MOST	2	16	18	4	3	43
ALL	-	1	3	-	-	4
No Response	1	2	1	1	-	5
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE XIV. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,* IN ANSWER TO QUESTION 3, PAGE A11

(Area 3)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	-	3	1	1	1	6
LITTLE	3	-	5	-	-	8
SOME	13	17	13	5	3	51
MOST	13	14	8	3	1	39
ALL	2	1	1	-	-	4
No Response	1	1	-	-	1	3
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE XV. INDIVIDUALS PREFERRED BY PRINCIPALS TO HELP IN AREAS 1, 2, AND 3

Individuals	Percent Answering Yes*		
	Area 1	Area 2	Area 3
Members of your staff	88	82	92
A group of principals from other schools	22	11	13
Personnel from the State Department of Public Instruction	58	53	57
Individuals from the community	85	77	87
A consultant or survey team from a college or university	58	59	61
Number answering**	96	99	106

*See Appendix, question 4, page A8; question 3, page A10; question 4, page A12.

**The percentages listed are of the number of principals who answered SOME, MOST, or ALL, for the area involved.

TABLE XVI. PRINCIPALS' OPINIONS ON THREE TYPES OF ASSISTANCE FOR AREA 1

Type of Assistance	Percent Answering*		
	Yes	No	No Response
Sample evaluation forms	69	16	15
Standards to evaluate by	77	7	16
Written plan or procedure to carry on such activities	82	4	14

*Answers to this question: What, besides help from people, would you want to aid you in Area 1?

TABLE XVII. PRINCIPALS' OPINIONS ON THREE TYPES OF ASSISTANCE FOR AREA 2

Type of Assistance	Percent Answering*		
	Yes	No	No Response
Materials used for assessing youths' needs	91	3	6
Materials used for assessing employers' needs	91	3	6
Methods to evaluate data after it is collected	87	3	10

*Answers to this question: What, besides the services of people, would you want to help you in Area 2?

TABLE XVIII. PRINCIPALS' OPINIONS ON THREE TYPES OF ASSISTANCE FOR AREA 3

Type of Assistance	Percent Answering*		
	Yes	No	No Response
A sample pilot program to study and compare with	81	10	9
Samples of new instructional materials	85	7	8
Information on new or better equipment for such programs	81	9	10

*Answers to this question: What, besides help from people, would you want to aid you in Area 3?

TABLE XIX. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE, IN ANSWER TO QUESTION 1*, PAGE A13

(Area 4)

Answer	Enrollment							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	-	-	-	1	1	-	2	4
LITTLE	-	2	1	1	1	-	-	5
SOME	8	9	7	11	5	11	4	55
MOST	3	10	4	11	4	2	6	40
ALL	1	-	1	1	-	-	-	3
No Response	-	5	-	1	2	2	3	13
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help operate special programs for in-school youth?

TABLE XX. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,*
IN ANSWER TO QUESTION 1, PAGE A13

(Area 4)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	1	1	2	-	-	4
LITTLE	-	1	3	1	-	5
SOME	5	19	22	6	3	55
MOST	4	11	22	3	-	40
ALL	-	1	2	-	-	3
No Response	2	5	1	3	1	12
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE XXI. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,*
IN ANSWER TO QUESTION 1, PAGE A13

(Area 4)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	-	1	2	1	-	4
LITTLE	-	3	1	-	-	4
SOME	14	16	15	3	4	52
MOST	11	14	7	4	1	37
ALL	2	1	-	-	-	3
No Response	5	1	3	1	1	11
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE XXII. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE, IN ANSWER TO QUESTION 1*, PAGE A14

(Area 5)

Answer	Enrollment							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	2	1	1	1	1	1	1	8
LITTLE	-	2	2	1	2	-	-	7
SOME	6	13	7	14	7	9	7	63
MOST	2	8	1	7	2	3	5	28
ALL	1	-	1	1	-	1	-	4
No Response	1	2	1	2	1	1	2	10
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help operate special programs for out-of-school youth?

TABLE XXIII. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,* IN ANSWER TO QUESTION 1, PAGE A14

(Area 5)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	1	3	3	1	-	8
LITTLE	-	5	-	2	-	7
SOME	5	17	31	6	3	62
MOST	3	11	12	2	-	28
ALL	1	1	2	-	-	4
No Response	2	1	4	2	1	10
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE XXIV. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,* IN ANSWER TO QUESTION 1, PAGE A14

(Area 5)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	4	2	1	1	-	8
LITTLE	3	1	3	-	-	7
SOME	15	20	17	3	4	59
MOST	4	9	7	5	1	26
ALL	1	3	-	-	-	4
No Response	5	1	-	-	1	7
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE XXV. OPINIONS OF PRINCIPALS, BY SCHOOL SIZE, IN ANSWER TO QUESTION 1*, PAGE A15

(Area 6)

Answer	Enrollment							
	700-999	1000-1299	1300-1599	1600-1899	1900-2199	2200-2499	2500 or More	Total
NONE	-	3	1	-	1	1	1	7
LITTLE	1	5	4	5	4	1	1	21
SOME	6	12	7	16	7	10	4	62
MOST	5	5	1	3	-	2	6	22
ALL	-	-	-	-	-	-	-	-
No Response	-	1	-	2	1	1	3	8
TOTAL	12	26	13	26	13	15	15	120

*If state and federal funds earmarked for vocational education were reallocated: What part of these funds do you think should be spent to help provide more adequate vocational guidance to in-school and out-of-school youth in your community?

TABLE XXVI. OPINIONS OF PRINCIPALS, BY COLLEGE PERCENTAGE,* IN ANSWER TO QUESTION 1, PAGE A15

(Area 6)

Answer	College Percentage					
	0-19	20-39	40-59	60-79	80-100	Total
NONE	1	3	2	1	-	7
LITTLE	3	7	7	2	1	20
SOME	5	18	29	8	2	62
MOST	2	7	12	1	-	22
ALL	-	-	-	-	-	-
No Response	1	3	2	1	1	8
TOTAL	12	38	52	13	4	119**

*College percentage: percent of last year's graduating class that entered college.

**Since one school did not give its college percentage, the Grand Total was 120.

TABLE XXVII. OPINIONS OF PRINCIPALS, BY PERCENT OF DROP-OUTS,* IN ANSWER TO QUESTION 1, PAGE A15

(Area 6)

Answer	Percent of Drop-Outs					
	0-9	10-19	20-29	30-39	40 or More	Total
NONE	1	2	3	1	-	7
LITTLE	7	5	5	1	-	18
SOME	16	20	12	5	5	58
MOST	5	7	7	2	1	22
ALL	-	-	-	-	-	-
No Response	3	2	1	-	-	6
TOTAL	32	36	28	9	6	111**

*Percent of drop-outs: percent of those who entered the 9th grade in 1959 and are not now attending school.

**Since 9 schools did not give their percent of drop-outs, the Grand Total was 120.

TABLE XXVIII. HELP PREFERRED BY PRINCIPALS
IN AREAS 4, 5, AND 6

Type of Help	Percent Answering Yes*		
	Area 4	Area 5	Area 6
More and better instructors (counselors in Area 6)	68	64	76
More and better supervision and administration programs	45	50	47
More and better instructional materials (guidance materials in Area 6)	81	77	77
More and better equipment	79	73	not listed for Area 6
More consultation services	70	72	
Number answering**	111	105	92

*See Appendix, question 2, page A13; question 2, page A14; question 2, page A15.
**The percentages listed are of the number of principals who answered SOME, MOST, or ALL, for that particular area.

TABLE XXIX. WHAT SCHOOLS HAVE DONE
ABOUT THREE TYPES OF ACTIVITIES IN AREA 1

Have you done any of these within the past two years in your school?	Answers		
	Yes	No	No Response
A follow-up study of graduates	79	31	10
A follow-up study of drop-outs	43	48	29
A conference of teachers, employers, parents, and others, on the role of the school in educating the employment-bound youth	46	44	30

TABLE XXX. HOW OFTEN PRINCIPALS INVOLVE OTHERS,*
FROM OUTSIDE THE SCHOOL, IN AREA 1

	Answer*						
	All the Time	Most of the Time	Usually	Sometimes	Never	No Response	Total
Number of Principals	7	10	14	69	17	3	120

*Answers to this question: How often are the business and industrial interests, the youth agencies, the employment agencies of the community, involved in examining you school's goals and evaluating its offerings?

TABLE XXXI. WHAT SCHOOLS HAVE DONE ABOUT
THREE TYPES OF SURVEYS IN AREA 2

Have you done any of these within the past two years in your school?	Answers		
	Yes	No	No Response
A survey to find out the needs of in-school youth individually and as a group	44	51	25
A survey to find out the needs of out-of-school youth individually and as a group	23	68	29
A survey of the area where your students look for work to see what jobs are available, what skills are needed for these jobs, and what employers expect of beginning employees	58	46	16

TABLE XXXII. NUMBER OF SCHOOLS HAVING VARIOUS PROGRAMS IN OPERATION

Program	Answers		
	Yes	No	No Response
Slow readers and slow learners—to give them a saleable skill	82	30	8
After-school-hours program for out-of-school youth	31	70	19
Area vocational program	16	84	20
Specifically for potential drop-outs	31	65	24
Specifically for employment-bound youth	66	38	16

TABLE XXXIII. HOW OFTEN PRINCIPALS INVOLVE OTHERS,* FROM OUTSIDE THE SCHOOL, IN AREA 3

	Answer*						
	All the Time	Most of the Time	Usually	Sometimes	Never	No Response	Total
Number of Principals	7	12	14	59	21	7	120

*Answer to this question: How often do you ask the business and industrial interests of your community, both labor and management, to help develop new programs for employment-bound youth?

TABLE XXXIV. ANSWERS TO VARIOUS QUESTIONS
ABOUT EXISTING CONDITIONS FOR EMPLOYMENT-BOUND YOUTH

Questions	Answers		
	Yes	No	No Response
Do you accept as a goal for your school the responsibility for giving employment-bound youth saleable skills?	109	5	6
Do you believe your faculty accepts this as a goal of your school?	84	23	13
Is this goal reflected in the courses you offer?	87	21	12
Do you feel that your school is presently doing all that can be expected of it for employment-bound in-school youth?	19	95	6
Do you feel that your school is presently doing all that can be expected of it for employment-seeking out-of-school youth?	22	90	8
Do you think the majority of your teachers look upon the vocational courses as a dumping ground for the "less gifted" youth"	45	68	7
Do you feel you have time to give leadership to the development and operation of more effective programs for employment-bound youth?	46	66	8
Could the employment-bound youth programs in your school be improved by using reallocated funds to provide an extra assistant whose job would be to give leadership to the program?	89	20	11

APPENDIX

THE UNIVERSITY OF MICHIGAN
ANN ARBOR
SCHOOL OF EDUCATION

DATE: May 3, 1963

TO: Selected High School Principals in Michigan

FROM: Ralph C. Wenrich, Chairman
Department of Vocational Education and Practical Arts

SUBJECT: A Study of High School Principals' Views on What Is Needed in Order to Provide More Adequate Programs for Employment-Bound Youth

The University of Michigan, in cooperation with the Michigan State Board of Control for Vocational Education, is engaged in a study to learn about the kinds of assistance high school principals would consider to be most helpful in developing and/or operating special programs and services for employment-bound youth.

In a study done in 1961 by The University of Michigan, about two-thirds of the school administrators questioned thought that if state and federal vocational funds were no longer used to support the present high school vocational offerings, these funds should be used to stimulate the future development of new vocational programs and services for high school youth.

This study, therefore, is designed to determine the kinds of assistance you, as a high school principal, consider to be essential in order to provide better educational experiences appropriate to the needs of employment-bound youth.

Questionnaires are numbered merely to enable us to follow up those who are tardy in their responses. Please be assured that YOUR RESPONSES WILL BE KEPT CONFIDENTIAL. Reports and analyses of data will not identify individuals, schools or school systems.

A self-addressed envelope is enclosed for the return of your questionnaire. Your cooperation in returning this questionnaire as soon as possible will be greatly appreciated.

INSTRUCTIONS

1. For most questions no writing is needed; just check the answer that fits each item best.

2. Feel free to write in any comments or explanations.

3. In some questions we have added lines for written answers; you may use all the space between questions to write your answer, and if you need more space, you may use the back of the page.

THE UNIVERSITY OF MICHIGAN

May 17, 1963

SUBJECT: EMPLOYMENT-BOUND YOUTH QUESTIONNAIRE

About two weeks ago we mailed you a copy of the enclosed letter and questionnaire. Since your completed questionnaire has not been received, we are assuming that the first copy sent has been either mismailed or misplaced.

Your opinions on this subject are needed in order to make the study as valid as possible. Even though there is a possibility you have sent in this questionnaire before, please fill out this one and return it soon. Enclosed is a self-addressed, stamped envelope which may be used to return the questionnaire.

A QUESTIONNAIRE OF

HIGH SCHOOL PRINCIPALS' VIEWS ON

IMPROVING PROGRAMS FOR EMPLOYMENT-BOUND YOUTH

1. How many grades are there in your school?

   - [ ] 3 grades (10-12)
   - [ ] 4 grades (9-12)
   - [ ] 6 grades (7-12)
   - [ ] Other (please specify) _____

2. What is the enrollment in your school?

   - [ ] 700-999
   - [ ] 1000-1299
   - [ ] 1300-1599
   - [ ] 1600-1899
   - [ ] 1900-2199
   - [ ] 2200-2499
   - [ ] 2500 or more

3. What percentage of last year's graduating class, including boys and girls, entered college?

   - [ ] 0-19% entered college.
   - [ ] 20-39% " "
   - [ ] 40-59% " "
   - [ ] 60-79% " "
   - [ ] 80-100% " "

4. What percentage of last year's graduating class, including boys and girls, sought employment?

   - [ ] 0-19% sought employment.
   - [ ] 20-39% " "
   - [ ] 40-59% " "
   - [ ] 60-79% " "
   - [ ] 80-100% " "

5. What percentage of last year's graduating class, including boys and girls, found employment?

- ☐ 0-19% found employment.
- ☐ 20-39% " "
- ☐ 40-59% " "
- ☐ 60-79% " "
- ☐ 80-100% " "

6. What percentage of last year's graduating class, including boys and girls, went into the armed service?

- ☐ 0-4% went into armed service.
- ☐ 5-9% " " " "
- ☐ 10-14% " " " "
- ☐ 15-19% " " " "
- ☐ 20-100% " " " "

7. What is your school's percentage of drop-outs over the four-year high school period? Please estimate this percentage in this manner: how many students who enrolled in the ninth grade in 1959 are <u>not</u> now attending any school? Those of you in schools with grades 10-12 will have to estimate how many dropped out during the ninth grade.

- ☐ 0-9% dropped out of school.
- ☐ 10-19% " " " "
- ☐ 20-29% " " " "
- ☐ 30-39% " " " "
- ☐ 40% or more, dropped out of school.

Examining the goals of the school and evaluating the offerings available to employment-bound youth.

1. Have any of these been done within the past two years in your school?

Yes	No	
☐	☐	A follow-up study of graduates
☐	☐	A follow-up study of drop-outs
☐	☐	A conference of teachers, employers, parents, etc., on the role of the school in educating the employment-bound youth.

2. How often are the business and industrial interests, the youth agencies, and the employment agencies of the community, involved in examining your school's goals and evaluating its offerings? (Check one)

- ☐ All the time
- ☐ Most of the time
- ☐ Usually
- ☐ Sometimes
- ☐ Never

3. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help evaluate the offerings and examine the goals of your school? (Check one)

- ☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.
- ☐ LITTLE. I am satisfied with what we are now doing to evaluate our offerings and examine our goals.

If you checked one of these, turn to Page A9

- ☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.
- ☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.
- ☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, turn to Page A8

4. If help were given by making it possible for one or more individuals to work on examining the school's goals and evaluating the school's offerings, indicate who you think should do this by checking each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	Members of your staff
☐	☐	A group of principals from other schools
☐	☐	Personnel from the State Department of Public Instruction
☐	☐	Individuals from the community (representing labor, management, parents, etc.)
☐	☐	A consultant or survey team from a college or university
☐	☐	_____ Other (please specify)

5. What, besides help from people, would you want to aid you in examining the school's goals and evaluating its offerings? Please check each of the following either Yes or No. Write in your choice if not listed.

Yes	No	
☐	☐	Sample evaluation forms
☐	☐	Standards to evaluate by
☐	☐	Written plan or procedure to carry on such activities
☐	☐	_____ Other (please specify)

Assessing the needs of in-school and out-of-school youth and the needs of employers.

1. Have you done any of these within the past two years in your school?

Yes	No	
☐	☐	A survey to find out (identify) the needs of in-school youth individually and as a group.
☐	☐	A survey to find out (identify) the needs of out-of-school youth individually and as a group.
☐	☐	A survey of the area where your students look for work to see what jobs are available, what skills are needed for these jobs, and what employers expect of beginning employees.

2. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help assess the needs of in-school and out-of-school youth and the needs of employers? (Check one)

☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.

☐ LITTLE. I am satisfied with what we are now doing to assess the needs of youth and employers.

If you checked one of these, turn to Page A11

☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.

☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.

☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, turn to Page A10

3. If help were given by making it possible for one or more individuals to work on assessing the needs of youth and employers, indicate who you think should do this by checking each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	Members of your staff
☐	☐	A group of principals from other schools
☐	☐	Personnel from the State Department of Public Instruction
☐	☐	Individuals from the community
☐	☐	A consultant or survey team from a college or university
☐	☐	_____ Other (please specify)

4. What, besides the services of people, would you want to help you assess the needs of youth and employers? Please check each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	Materials used for assessing youth's needs
☐	☐	Materials used for assessing employers' needs
☐	☐	Methods to evaluate data after it is collected
☐	☐	_____ Other (please specify)

Developing new programs to meet the needs of youth and employers.

1. Do you have any of these programs in operation now?

Yes	No	
☐	☐	A program for slow readers and slow learners to give them a saleable skill
☐	☐	An after-school-hours program for out-of-school youth
☐	☐	An area vocational program where several schools have joined together to use available facilities
☐	☐	A program designed specifically for potential drop-outs
☐	☐	A program designed specifically for employment-bound youth

2. How often do you ask the business and industrial interests of your community, both labor and management, to help develop new programs for employment-bound youth? (Check one)

- ☐ All the time
- ☐ Most of the time
- ☐ Usually
- ☐ Sometimes
- ☐ Never

3. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help develop new programs to meet the needs of youth and employers in your community? (Check one)

- ☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.
- ☐ LITTLE. I am satisfied with the design of the programs we now have.

If you checked one of these, turn to Page A13

- ☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.
- ☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.
- ☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, turn to Page A12

4. If help were given by making it possible for one or more individuals to work on developing programs to meet the needs of youth and employers in your community, indicate who you think this should be by checking each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	Members of your staff
☐	☐	A group of principals from other schools
☐	☐	Personnel from the State Department of Public Instruction
☐	☐	Individuals from the community
☐	☐	A consultant or survey team from a college or university
☐	☐	_____ Other (please specify)

5. What, besides help from people, would you want to aid you in developing programs to meet the needs of youth and employers in your community? Please check each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	A sample pilot program to study and compare with
☐	☐	Samples of new instructional materials
☐	☐	Information on new or better equipment for such programs
☐	☐	_____ Other (please specify)

Operating specialized programs designed to prepare in-school youth for employment.

1. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help operate special programs for in-school youth? (Check one)

- ☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.
- ☐ LITTLE. I am satisfied that we can operate programs for our in-school youth without aid.

If you checked one of these, turn to Page A14

- ☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.
- ☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.
- ☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, go on to Question 2 below

2. If assistance were given to help operate specialized programs for employment-bound in-school youth, what kind of assistance would you want? Please check each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	More and better instructors
☐	☐	More and better supervision and administration of our programs
☐	☐	More and better instructional materials
☐	☐	More and better equipment
☐	☐	More consultation services.
☐	☐	_____ Other (please specify)

Operating specialized programs designed to prepare out-of-school youth for employment.

1. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help operate special programs for out-of-school youth? (Check one)

- ☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.
- ☐ LITTLE. I am satisfied that we can operate programs for our out-of-school youth without aid.

If you checked one of these, turn to Page A15

- ☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.
- ☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.
- ☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, go on to Question 2 below

2. If assistance were given to help operate specialized programs for employment-seeking out-of-school youth, what kind of assistance would you want? Please check each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	More and better instructors
☐	☐	More and better supervision and administration of such a program
☐	☐	More and better instructional materials
☐	☐	More and better equipment
☐	☐	More consultation services
☐	☐	_____ Other (please specify)

Providing more adequate vocational guidance services for in-school and out-of-school youth.

1. If state and federal funds earmarked for vocational education were reallocated:

What part of these funds do you think should be spent to help provide more adequate vocational guidance to in-school and out-of-school youth in your community? (Check one)

- ☐ NONE. If we are to improve our program for employment-bound youth, we need help in other areas, not this one.
- ☐ LITTLE. I am satisfied with the guidance services we now have.

If you checked one of these, turn to Page A16

- ☐ SOME. If we are to improve our program for employment-bound youth, we need help in this and in other areas.
- ☐ MOST. If we are to improve our program for employment-bound youth, we need a lot of help here, but we need help in other areas also.
- ☐ ALL. If we are to improve our program for employment-bound youth, this is the first thing our school must do.

If you checked one of these, go on to Question 2 below

2. If assistance were given to improve your guidance services, what kind of assistance would you want? Please check each of the following either Yes or No. Write in your choice if it is not listed.

Yes	No	
☐	☐	More and better prepared counselors aware of the problems of employment-bound youth
☐	☐	More supervisory and administrative help for your guidance services
☐	☐	More and better guidance materials (occupational information, etc.)
☐	☐	_____ Other (please specify)

Yes	No		
☐	☐	1.	Do you accept as a goal for your school the responsibility for giving employment-bound youth saleable skills?
☐	☐	2.	Do you believe your faculty accepts this as a goal of your school?
☐	☐	3.	Is this goal reflected in the courses you offer?
☐	☐	4.	Do you feel that your school is presently doing all that can be expected of it for employment-bound in-school youth?
☐	☐	5.	Do you feel that your school is presently doing all that can be expected of it for employment-seeking out-of-school youth?
☐	☐	6.	Do you think the majority of your teachers look upon the vocational courses as a dumping ground for the "less gifted" students?
☐	☐	7.	Do you feel you have time to give leadership to the development and operation of more effective programs for employment-bound youth?
☐	☐	8.	Could the employment-bound youth program in your school be improved by using reallocated funds to provide an extra assistant whose job would be to give leadership to the program?

This is the last item and thank you for your time and effort. The problems concerning employment-bound youth today are such that assistance is desirable in all areas of programs for them; however, funds will stretch just so far. Therefore, we would like to know if assistance is available in only one area, which would you prefer? Place (1), (2), and (3) before three of the following areas in order of preference for assistance.

<u>Areas Where Assistance Could be Given</u>

☐ Examine the goals of your school and evaluate offerings

☐ Assess the needs of in-school and out-of-school youth, and employers

☐ Develop new programs

☐ Operate specialized programs for in-school youth

☐ Operate specialized programs for out-of-school youth and adults

☐ Provide adequate vocational guidance services

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THE UNIVERSITY OF MICHIGAN

ED013338

SCHOOL OF EDUCATION

A Study of Organization for the Administration of Vocational Education in Selected Michigan High Schools

(A Summary Report)

CLARENCE C. MASON

A PART OF THE MICHIGAN VOCATIONAL EDUCATION EVALUATION PROJECT

Sponsored by:

State Board of Control for Vocational Education
Lansing, Michigan
through
Michigan State University
East Lansing, Michigan

VT 00016

Administered through:

June 1963

OFFICE OF RESEARCH ADMINISTRATION • ANN ARBOR

THE UNIVERSITY OF MICHIGAN

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A STUDY OF ORGANIZATION FOR THE ADMINISTRATION OF VOCATIONAL EDUCATION IN SELECTED MICHIGAN HIGH SCHOOLS

(A Summary Report)

Clarence C. Mason

ORA Project 04114

A PART OF THE MICHIGAN VOCATIONAL EDUCATION EVALUATION PROJECT

Sponsored by:

STATE BOARD OF CONTROL FOR VOCATIONAL EDUCATION
LANSING, MICHIGAN

through

MICHIGAN STATE UNIVERSITY
EAST LANSING, MICHIGAN

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OFFICE OF RESEARCH ADMINISTRATION ANN ARBOR

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FOREWORD

In the fall of 1958 the State Board of Control for Vocational Education authorized a three-year study and evaluation of vocational education in Michigan. In June 1960 The University of Michigan was requested by the Executive Committee (see Appendix A for list of members) to take the responsibility for that portion of the Michigan Vocational Education Evaluation Project having to do with organization, administration, and supervision of vocational education in Michigan.

In September 1960 Willard C. Olson, Dean of the University's School of Education, appointed an advisory committee (see Appendix B for list of members) to assist with this phase of the project. The advisory committee met six times during the two years. At the first meeting the committee identified a list of problems having to do with organization, administration, and supervision of vocational education which they felt needed special study and consideration. This list was later reduced to a list of ten problems arranged in rank order of importance.

The second of these problems was "to determine the most effective plan of organization for vocational education within a school, for a community-school system, and for the state of Michigan." Mr. Clarence C. Mason, then departmental assistant in the Department of Vocational Education and Practical Arts and a candidate for the Specialist in Education degree, chose one segment of the problem as the subject of his research report required for the Ed.S. degree. This report deals with the organization for the administration of vocational education in selected high schools in Michigan. The complete report is on file in the Graduate Office of Education at The University of Michigan.

This report represents the outcome of one study done as a part of the overall Michigan Vocational Education Evaluation Project; it has not been approved by the Executive Committee for the project.

Ralph C. Wenrich
Project Director

PART I. BACKGROUND INFORMATION

PURPOSE

The purpose of this particular study is to shed more light on the organization of vocational education in Michigan high schools to determine to which positions authority has been distributed, and to attempt to relate the pattern of distribution of authority to the effectiveness of the vocational education programs.

PROCEDURE

The procedure was to identify two groups of schools: Group X, schools whose programs were thought to be more effective than the average; and Group Y, schools whose programs were thought to be less effective than the average. As the most practical method of identifying these schools, heads of services of the Department of Public Instruction's Division of Vocational Education were used as a jury of experts. These people, along with their assistants, have close contacts with a large number of schools in the state and are acquainted with all the fields of vocational education. They make frequent visitations to the local school districts and are in written and oral contact with the teachers, directors, and administrators of the school districts.

No set criteria defining what constituted the "effectiveness" of a program were given the jury members. They were merely asked to select the two groups of schools, each using his knowledge of the existing programs in Michigan and in the individual schools and making a subjective judgment based on his individual interpretation of effectiveness. The lists which the five jurors separately drew up were then consolidated and re-presented to the assembled jurors for consensus. The two groups of schools, X and Y, were chosen at two different periods.

The researcher then devised a questionnaire which attempted to determine who within a particular school or school system had the initial responsibility for performing selected administrative functions. The questionnaire underwent a series of refinements, review by professionals, and a trial run before being sent to the following personnel in each school system selected for inclusion in the study: the superintendent, the high school principal, the director of vocational education (if such a position had been designated by the school), and teachers of courses presumed to be preparing students for post-high school employment.

A total of 268 questionnaires were sent to personnel in the 39 Group X schools; of these, 240 or 90 percent were returned. Seventy-eight questionnaires were sent to personnel in the 12 Group Y schools; of these, 60 or 77 percent were returned.

Later a sub-group of the X schools was designated. This sub-group (Group Xx) consisted of ten Group X schools whose figures for system-wide enrollment and number of professional teachers employed were closer to those for the Y schools than were those for the total Group X. Sixty-three questionnaires were sent to personnel in the Xx schools, and 55 or 87 percent were returned.

Data from the returned questionnaires were punched on IBM cards and later run on the University's computer to derive frequency distributions.

An additional procedure related to the study was the visitation of several high schools to gain greater background and insights into administration, organization, and vocational education. These visits afforded an opportunity to make personal checks on some of the functions covered by the survey instrument; moreover, face-to-face contact aided in gaining clarification of actual practice, provided an in-depth extension of the survey, and assisted in developing a "feeling" for the school and effectiveness of the educational enterprise.

DEFINITIONS USED

The researcher took care in discussion and in the survey instrument to use terminology which would be readily understood and commonly accepted. However, the term "vocational education" has evolved in the minds of many to be synonymous with reimbursed vocational education; consequently, a definition of that term as it is being used in this study was deemed advisable. Likewise, the terms "high school committee," "system-wide committee," and "lay advisory committee" were defined to avoid any difference in meaning between the respondent's common usage and the researcher's intent. Another term, "not applicable," was presented as a possible response on the questionnaire in order to force an answer to every item.

The definition for each of these terms, as presented in the cover letter sent with the questionnaire, follows:

> Vocational Education -- Those courses or programs which seek to prepare students for immediate entry into gainful agricultural, homemaking, business, or industrial occupations; these courses or programs need not be reimbursed to be considered vocational.
>
> High School Committee -- Any group consisting mainly or entirely of faculty, administrative, or staff personnel, which group is finally responsible to the high school principal.
>
> System-wide Committee -- Any group consisting mainly or entirely of faculty, administrative, or staff personnel, which group is finally responsible to the superintendent of schools.
>
> Lay Advisory Committee -- Any organized group composed primarily of non-school people which is charged with advising the school or school system on matters related to one or more areas of vocational education.

Not Applicable -- A response which indicates the item under question does not exist in the school or school system and therefore could not be answered by the respondent.

In coding the responses another term, "not ascertained," was used. This term means that there was no response to the question or that the respondent, contrary to instructions, multi-checked the possible answers in such a manner the coder could not determine his intent; in either event, the intended answer cannot be ascertained.

LIMITATIONS OF THE STUDY

Though the data are presented in quantitative manner, there is admittedly a great deal of subjectivity involved in each step of the procedure. The selection of the schools in the two groups was based on the subjective judgments of a half dozen people who arrived at consensus and not necessarily unanimity. A survey instrument, regardless of how well constructed and refined, leaves room for questions concerning the effectiveness of communication between researcher and respondent.

Despite the acknowledged limitations and others that may be detected, the researcher feels this study presents valuable information on the current status of the organization for vocational education in certain Michigan high schools selected by a reputable jury of experts on the basis of effectiveness or strength of their programs of vocational education. An extensive review of the related literature suggests this is the first comprehensive type of study of the status of vocational education organization in Michigan.

PART II. RELATED LITERATURE

A 53-item bibliography is submitted to support the review of related literature. In this part of the study the researcher refers to a variety of administrative and social science sources to explore the terminology of organization, which is defined as the distribution of authority, in contra-distinction to administration, which is defined as the use of authority. The need for organizational structure was reviewed through the writings of school and industrial administrative and organizational theorists ranging from current doctoral dissertations to the ideas of Henri Fayol.

Factors contributing to internal organization were reviewed prior to an examination of organization for vocational education and can be summarized as follows:

> A survey of the literature indicates a careless use of such basic terminology as "organization," "staff," and "internal organization." The studies dealing directly with organization, when defined as the distribution of authority, are quite meager; the tendency has been to concentrate on studies of administration, the use of authority. The effect of this concentration has been to leave a gap in our knowledge of organization--the patterns of organization being used in our schools and school systems and the extent of utilization of whatever variations of patterns may exist. This gap is widened when one seeks to study the organization of vocational education.
>
> Relatively small size of school enterprise, lack of widespread interest in the school enterprise, and general unwillingness to change structural patterns--especially in governmental agencies--have undoubtedly contributed to the present situation. An about-face in relation to size and interest and at least a willingness to review structure, as evidenced by widespread district reorganization, indicate the need for additional intensive study of school and school-system organization.

PART III. FINDINGS

The findings are presented in the complete report through a series of 34 tables and explanatory text beginning with documentation indicating that the original identification of Groups X and Y by the jury was confirmed by self-identifications made by personnel within the schools studied.

Specific topics covered in the findings are: Self-Identification, Hiring New Personnel, Supervision, Dismissals, Evaluation, Budgets, Job Descriptions, Lay Advisory Committees, Summer and Evening School Programs, Statements of Objectives, Departmental Structure, Directors of Vocational Education, Relation of Practical Arts and Vocational Programs, Follow-up Studies, and Structure of Organization.

The summarization of the findings is based on the two-fold purpose of the study: to determine to which positions authority over administrative matters has been distributed and to relate the pattern of authority distribution to the effectiveness of the vocational education program.

DISTRIBUTION OF AUTHORITY

In analyzing the positions to which authority has been distributed, we can immediately say that in all groups of schools studied there has been almost total delegation of authority by the school boards to the professional personnel. Table I indicates only a one percent retention of authority at the board of education level in the three groups of schools studied. This table also indicates only a one percent authority level for lay advisory committees in the three groups. This suggests that lay advisory committees are used as advisory bodies rather than as administrative boards.

System-wide committees are even less significant in possession of authority. Group X schools give this position a one percent response; the other two groups show no response. The high school committee has response varying from one percent in Group Y schools to three percent in Group Xx schools which is still an insignificant amount of authority.

Presumably boards of education and school executives do not regard committees as proper agencies to exercise administrative authority; such thinking would be consistent with generally accepted administrative theory.

The department heads or chairmen are shown in Table I as having an authority delegation of five percent in the Group Y schools, six percent in Group X schools, and nine percent in Group Xx schools. Somewhat surprisingly, departmentalization does not carry with it a strong delegation of authority, for the extent of delegation indicated above is in contrast to a positive response (running from 76 percent in Group Y schools to 84 percent in Group Xx schools) to the question of whether or not there were departments for

TABLE I

OPINION BY GROUP AS TO WHO IN THE SCHOOL OR SCHOOL SYSTEM INITIALLY MAKES DECISIONS
(In Percent)

Response	Group X N-240	Group Xx N-55	Group Y N-60
Teacher, Coordinator, Counselor	18	21	19
Department Head or Chairman	6	9	5
High School Committee	2	3	1
Principal or Assistant Principal	22	28	28
Director of Vocational or Adult Education	28	11	13
System-wide Committee	1	--	--
Superintendnet, Assistant Superintendent, Curriculum Director, Director of Special Services	21	26	32
Lay Advisory Committee	1	1	1
Board of Education	1	1	1

vocational education in the respondent's school. This portion of the study would seem to bear out the contention of writers of administrative and organizational literature who have said the department head or chairman is merely a figurehead, possibly with influence but certainly without authority.

We are left with 86 percent of responsibility in Group Xx schools, 89 percent in Group X schools, and 92 percent in Group Y schools to be distributed among the superintendent, high school principal, director of vocational education, and individual teachers.

Table I indicates the superintendent of schools or one of his immediate central staff personnel retains 32 percent of the authority for initial administrative decisions in the Group Y schools as compared with a 26 percent retention in Group Xx schools and a 21 percent retention in Group X schools.

The amount of delegated authority which is retained at the high school principal's level is 28 percent for both the Group Y and Group Xx schools, and 22 percent for the Group X schools.

Individual teachers are seen as having 21 percent of the authority distributed to them in the Group Xx schools, 18 percent in Group X schools, and 19 percent in Group Y schools.

The amount of authority delegated to the director of vocational education is shown as 28 percent in Group X schools and 11 and 13 percent respectively in Group Xx and Group Y schools. These figures are from Table I. However, when we ask whether or not the school system has a director of vocational education, we see the following positive response: Group X, 63 percent; Group Xx, 36 percent; and Group Y, 55 percent. The apparent dichotomy is similar to that seen when the amount of responsibility held by department heads or chairmen is compared with the extent to which that position exists in the schools studied. The explanation of the dichotomy is probably the same in both cases: the position exists more as a title than as an authority position.

EFFECTIVENESS OF PROGRAM

That respondents tend to agree with the jury of experts' value judgment concerning the effectiveness of the vocational education programs in the schools selected for study was borne out by the answer to Question 22: "How well does your school's total program compare with the programs of other Michigan high schools in preparing graduates for immediate entry into gainful occupations?" Group X respondents tended to see their program as more successful than the Group Y respondents--72 percent "very good" and "good" responses in the X group compared with only 47 percent such responses in the Y group. The Xx group fell into a middle position with a 60 percent response. The differences in patterns of authority distribution between the Y schools and the Group X and sub-Group Xx schools may be considered as organizational factors contributing to the relative effectiveness of the programs.

The Group X school systems average 5,683 pupils and 232 teachers; the Group Y school systems average 1,862 pupils and 71 teachers. With such a great difference in the size of the educational operation, a great difference in the distribution of authority between the organizational structures of the two groups of schools was expected. Therefore sub-Group Xx was derived as being more similar to Group Y in size of operation. Group Xx school systems average 2,082 pupils and 80 teachers.

The study was not expected to show more similar patterns of response for Group X and Group Y schools than it shows for Group Xx and Group Y or even for Group Xx and Group X schools. However, similarity of response between Group X and Group Y did permeate the findings.

It is interesting to note that according to the response patterns, Group X and Group Xx schools are similar in effectiveness of program, dissimilar in size of operation, and dissimilar in organizational structure; whereas Group Y schools are dissimilar to Group X and Group Xx schools in effectiveness of program, but similar to Group Xx schools in size of operation and similar to Group X schools in organizational structure. These anomalies are not explained by data in the present study; however, the researcher suggests the answer may lie in the fact that Group Y schools have based their organizational structure on how other, larger schools are organized rather than on their particular organizational needs.

Another organizational factor which may influence the effectiveness of vocational education programs is the delegation of authority. Table I indicates that Group Y boards of education have delegated as much authority to the professional personnel as have the boards of education in the other groups. However, this table indicates that the Y superintendent of schools retains 32 percent of the authority as compared with the 26 percent retained by Xx superintendents.

It is difficult to comment on delegation of authority to department heads and to directors of vocational education since the study does not show how closely title is related to authority. However, it is safe to say that in all groups of schools meaningless titles should be disposed of and authority distributed where it can carry out the purpose of the organization most effectively.

PART IV. RECOMMENDATIONS

Based on the findings of the study, the conclusions, and the researcher's observations in the field, the following recommendations are made to strengthen programs of vocational education through organizational structure:

1. That written policies be established which clearly indicate the place of and goals for vocational education programs in the school enterprise.

2. That written policies be established which clearly indicate the duties and relationships of personnel in the vocational education programs.

   The response to the questions "who prepares written objectives for vocational departments?" and "who prepares written objectives for individual vocational courses?" indicated a direct relationship between the existence of such written objectives and the strength of the school program. Likewise, the answer to the questions "who prepares job descriptions for various vocational positions?" "does your school or school system have a job description for the position of director of vocational education?" and "have the respondent's duties been clearly defined so he knows what is expected of him?" also suggested some direct relationship between a positive response and the strength of the school's program.

3. That designated positions carry responsibility and authority as well as title, and that the position of either departmental chairman or director of vocational education be designated where the size of operation and/or need for such position is warranted. Further, that titles without corresponding responsibility and authority be eliminated.

   When the responses in Table I are compared with the response to the question whether or not there is a director of vocational education, it seems that many positions exist in title but not in corresponding responsibility and authority.

4. That the superintendent be encouraged to delegate to the principal responsibility for program appraisal, for supervision, and for hiring and dismissal of teachers, and that where the size of operation warrants sub-delegation the principal continue to be charged with primary responsibility for these functions of administration.

   Response to the question of how well the school's total program compares with the programs of other Michigan

high schools in preparing graduates for immediate entry into gainful occupations shows that the principal is in an advantageous position to evaluate the effectiveness of the vocational program. Response to the question of "who directly supervises teachers of high school vocational subjects?" shows that the Group Xx principal is the chief supervisor of vocational courses; this principal is also shown to be the primary person to recommend non-renewal of contracts for unsatisfactory vocational teachers.

5. That teachers be delegated a clearly stated role in preparation of budget requests and requests for purchase of material and supplies.

   Group Xx teachers are indicated as playing an important role in response to the questions "who prepares budget requests for vocational education?" and "who initiates requests for purchase of materials and supplies for vocational programs?"

6. That graduates of vocational programs as well as drop-outs receive the same degree of attention in follow-up studies as college-bound youth; further, that such information be used as part of the appraisal of effectiveness of vocational programs.

7. That each school and school system study its organizational structure in light of the character and extent of the vocational education program needed for the community.

This study has one other dimension which the researcher has "read between the lines" of the responses to the survey instrument, encountered in discussions with leaders in the field, and verified through school visitations. Though not documented in this study, it is a dimension of equal importance with the statistical findings: namely, that the effectiveness of any program of vocational education is largely determined by how much interest the chief administrators and the faculty have in preparing students for immediate entry into gainful occupations and how sound their ideas are for doing so. The organizational structure can facilitate or impede the effectiveness of a program, but by itself cannot make an otherwise ineffective program effective.

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APPENDIX A

EXECUTIVE COMMITTEE
for
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Brookover, W. R., Chairman - Assistant Dean for Research, Michigan State University

Borosage, Lawrence, Secretary - Director of the Project

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Wenrich, Ralph C. - Director, Vocational Teacher Education, The University of Michigan

Winger, Robert M. - Assistant Superintendent for Vocational Education, Department of Public Instruction

APPENDIX B

ADVISORY COMMITTEE FOR RESEARCH PROJECT
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ORGANIZATION, ADMINISTRATION AND SUPERVISION OF VOCATIONAL EDUCATION
(in cooperation with the Michigan Vocational Education Evaluation Project)

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A SURVEY OF OCCUPATIONS IN AGRICULTURAL BUSINESSES AND SERVICES OF SIX NORTHERN MICHIGAN COUNTIES

by

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September 1965

A report on a study of occupations in agricultural businesses and services conducted in Antrim, Charlevoix, Cheboygan, Emmet, Otsego, and Presque Isle counties as part of a larger study of vocational and technical education in the same six counties.

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SURVEY OF OCCUPATIONS IN AGRICULTURAL BUSINESSES AND SERVICES IN SIX NORTHERN MICHIGAN COUNTIES*

Introduction

Manpower in farming and in other agricultural occupations is one of the subjects of study now by many groups in Michigan and other states as attempts are made to determine need and feasibility for vocational and technical education before making decisions to implement the intent of the 1963 Vocational Education Act.

This report is based on a study of agricultural businesses and services in six northern Michigan counties: Antrim, Charlevoix, Cheboygan Emmet, Otsego, and Presque Isle. These six counties have a combined population of about 75,000 and cover more than two million acres, compared with nearly 80,000 population and less than 483,000 acres in the southern Michigan county of Lenawee. These six northern Michigan counties have more than 60 per cent of their land in nonfarm forests.

An obvious decline in the number of farms and farmers in the six-county area has prompted some educators and many persons in non-agricultural businesses to ask important questions about the nature of need for education and services for agricultural occupations, usually implying education and services for farming occupations. This study was conducted to learn more about the nature and extent of employment in the broad field of agriculture, including forestry and conservation, in a low-density population area, an area more famous for its attractions to vacationers, hunters, fishermen, and winter sports enthusiasts than for its agricultural industry.

Objectives. The objectives of this study were:

1. To locate and identify businesses and services which employ persons who may need agricultural competencies.

2. To determine the functions performed and extent to which the businesses and services are considered to be agriculturally oriented.

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*This was a sub-study conducted as part of a study of need and feasibility for vocational and technical education in two Intermediate School Districts in northern Michigan: Antrim-Charlevoix-Emmet District and Otsego-Cheboygan-Presque Isle District.

3. To determine the number of persons by job title employed full-time and part-time.

4. To determine annual entry opportunities by job title for employees in these businesses and services.

Need for the Study. This study was conducted as one part of an area study designed to determine need and feasibility for vocational and technical education.. The larger study sought information about existing programs, facilities, staff and interest of students and parents in vocational and technical education as well as needs of employers for occupationally competent persons and the educational and occupational experiences of recent graduates from the twenty-one high schools in the area.

State and national trends in the field of agriculture have clearly indicated a major reduction in labor requirements for producing food and fiber crops and at the same time a great increase in the purchased services used by farmers. During the past seventeen years, farm workers in the U.S. dropped by more than two-fifths, from 8.1 million in 1947 to 4.4 million in 1964. Meanwhile, there has been a major increase in purchased services in such forms as feed, seed, fertilizers, insecticides, machinery, and management services. Improved technology and the greater investment of capital in such items as machinery and agri-chemicals has been partly responsible for the increased productivity in agriculture to the point that in 1964 it has been estimated that one farmer in the United States produced food and fiber for himself and 32 others. Farm production assets per farm in the United States increased from about $17,200 in 1950 to nearly $47,600 in 1962; on a per farm worker basis the figures changed from about $9,500 in 1950 to about $23,500 in 1962.

A study* recently completed in West Virginia indicates that about nine per cent of the labor force is engaged in agricultural occupations (both farm and non-farm) with the non-farm occupation representing about 3.6 per cent of the labor force. Those persons in the non-farm agricultural occupations were classified in the following groups:

Forestry	33%
Livestock and Poultry Industries	18%
Farm Supplies and Equipment	13%
Agricultural Service	10%
Ornamental Horticulture	10%
Wildlife & Recreation	6%
Produce Industry	6%
Farm Service	4%

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*Joseph K. Bailey, "Identifying non-farm agriculture," The Agricultural Magazine, August, 1965, p. 37.

There is a general lack of information about the present employment in agricultural occupations in northern Michigan. Such information is needed by youth, their parents, and vocational counselors as well as teachers as one basis for helping youth make wise choices regarding career plans and the educational programs needed to follow a career in agricultural occupations (including forestry and conservation). Some information has been made available based on state-wide or national data, but very little information has been developed from local sources.

Information about the number and nature of agricultural occupations is needed for planning more adequate programs of vocational education at both the high school and post-high school levels. The opinions of employers regarding competencies needed by workers for initial employment and for advancement would provide many details for course building and curriculum planning. However, data in this study on the number of employees in various job titles and employer opinions regarding annual entry opportunities should provide one basis for the policy decisions affecting the extent to which programs for agricultural occupations should be provided.

Method of Conducting the Study

All of vocational agriculture teachers and Cooperative Extension Directors in the six-county area were invited to participate in the study through a general planning session and through the interviewing of managers, owners and/or personnel directors in agricultural businesses and services.

The telephone directories were one of the sources of names, addresses and telephone numbers of agricultural-businesses. Most of the businesses and services were contacted but there were several exceptions. For example, no interviews were conducted with bankers, and interviews were reported for only one animal hospital even though there are at least seven veterinarians servicing the area. The Michigan Department of Conservation was contacted to secure a list of their employees in their administrative region II which includes most of the counties in the lower peninsula of Michigan north of the Bay City-Muskegon line.

The instruments for collecting data (see Appendices) were adapted from a similar study conducted in Monroe County and reported by Nevel and Malcomnson.*

Participants in the study were:

Teachers of Vocational Agriculture

Donald H. Crandall, Gaylord, Michigan
John R. Emshwiler, Petoskey, Michigan

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*Nevel, F. Paul and Malcomnson, John L., A survey of non-farm agricultural occupations in Monroe County, Michigan, (mimeographed by Michigan State University, College of Education), February, 1965, 18 pp.

Lowell Fleury, Onaway, Michigan
Lester J. Howard, Cheboygan, Michigan
Edward J. Huls, Pellston, Michigan
James S. Shephard, East Jordan, Michigan
Ray Terpening, Harbor Springs, Michigan

County Extension Directors

Karl Festerling, Emmet County, (Petoskey)
Richard M. Kirch, Cheboygan County, (Cheboygan)
Walter G. Kirkpatrick, Antrim County, (Bellaire)
Raymond M. McMullen, Otsego County (Gaylord)
Edward F. Rebman, Charlevoix County, (Boyne City)
Rex Sieting, Presque Isle County, (Rogers City)

Others

Bert Cook, Senior in Agricultural Education, MSU
John B. Hodge, District Extension Agent for Community Development, Petoskey, Michigan
Floyd Merritt, Coordinator Top-of-Michigan Vocational Study, Otsego-Cheboygan-Presque Isle Intermediate School District
Carl Spitler, Coordinator Top-of-Michigan Vocational Study, Antrim-Charlevoix-Emmet Intermediate School District
John Thompson, Doctoral Student Vocational Education, MSU

Agricultural occupations were defined as those occupations in which persons were thought to need some competencies in one or more of the primary areas of animal science, plant science, soil science, agricultural economics and agricultural engineering.

Meetings were held with the ASC Office Manager, SCS Work Unit Conservationist and Cooperative Extension Director in each of the six counties except Presque Isle, and Antrim, to discuss the vocational study and this sub-study of agricultural occupations.

The completed interview instruments were classified by counties and by type of business or service before the data were recorded and summarized.*

Findings

A total of 98 businesses and services were included in the interviews within the six county area. Not all of the agricultural businesses were included but the coverage was quite complete and comprehensive for Charlevoix, Cheboygan, Emmet and Otsego counties. Some professional workers were not interviewed because of a lack of time. The number of businesses and services in which interviews were conducted by counties was as follows:

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*Most of the recording and summarizing of data was done by Emerson Sanders, graduate student in agricultural education, MSU and Edward Huls, teacher of vocational agriculture, Pellston, Michigan, as a special project while enrolled in ED 822N, Principles of Vocational Education, July 1965.

County	Number Businesses & Services for Interviews
Antrim	3
Charlevoix	21
Cheboygan	17
Emmet	44
Otsego	9
Presque Isle	4
Total	98

The businesses and services were classified into ten groups. A list of the names of the businesses and services may be found in the Apendix. Table 1 gives a summary of the types of businesses, per cent of business agriculturally oriented and number of people employed, both part-time and full-time. The businesses classified as "Recreation and Conservation" were the largest employers. This included the employees of the Michigan Department of Conservation in Region II.

There were more part-time (including seasonal) employees reported than full-time. The businesses in which large numbers of the part-time employees were reported were "Nursery and Tree Farms," "Greenhouse and Floral Shops," "Food Processing," and "Recreation and Conservation."

The distribution of the various kinds of businesses and services amo the six counties is shown in Table 2. Emmet county had the largest number of agricultural businesses and services interviewed. Few interviews were conducted and consequently few businesses and services were identified in Antrim and Presque Isle counties. (The larger study included only the northern partof Antrim county and the western part of Presque Isle county.)

Nearly 2400 persons were reported as employed part-time (including seasonal workers) or full-time by the 99 agricultural businesses and services interviewed. About three-fourths of these persons were employed in three counties: Charlevoix, Cheboygan, and Emmet. The nurseries, greenhouses, floral shops, and tree farms reported were concentrated mainly in Charlevoix and Emmet counties, as shown in Table 3, with one large tree farm operation extending into several counties with headquarters in Cheboygan.

The agricultural machinery, supplies, and other production services were found scattered throughout the six-county area with a smaller proportion of the seasonal and/or part-time workers than in some of the other businesses.

Functions. Most of the businesses and services indicated they performed several functions as shown in Table 4. The functions of "retailing," and "service" were most frequently reported. Most of the businesses indicated more than one major function and many indicated they performed serval functions in varying degrees of magnitude.

TABLE 1

SUMMARY OF EMPLOYMENT DATA BY TYPE OF BUSINESS FOR SIX NORTHERN MICHIGAN COUNTIES, (June, 1965)

Type of Business	Percent of Business Ag. Oriented	Part-Time	Full-Time	Total	Number of Businesses Interviewed
Agricultural Machinery	60	13	50	63	12
Farm Supply and Service	70	19	62	81	13
Small Animal Farms	100	--	3	3	1
Nurseries and Tree Farms	70	189	33	222	6
Greenhouses and Floral Shops	90	83	30	113	11
Forest Products Marketing & Processing	60	30	206	236	6
Milk Marketing & Processing	95	13	70	83	7
Other Food Processing	100	243	48	291	6
Recreation and Conservation	40	678	559	1237*	17*
Professional Agricultural Services	80	13	38	51	20
TOTAL		1281	1099	2380	99

*Includes the Michigan Department of Conservation, Region II as one employer.

TABLE 2

NUMBER OF VARIOUS KINDS OF AGRICULTURAL BUSINESSES AND SERVICES INTERVIEWED IN EACH OF SIX NORTHERN MICHIGAN COUNTIES. (June 1965)

Type of Business	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Bresque Isle	Total
Agricultural Machinery	1	1	3	6	1	--*	12
Farm Supply & Service	1	3	2	6	1	--	13
Small Animal Farms	--	--	--	1	--	--	1
Nurseries & Tree Farms	--	--	1	5	--	--	6
Greenhouses & Floral Shops	--	4	2	5	--	--	11
Forest Products Marketing & Processing	--	2	--	2	--	2	6
Milk Marketing & Processing	--	2	2	2	--	1	7
Other Food Processing	1	1	1	3	--	--	6
Recreation & Conservation	--	4	2	7	3	--	17**
Professional Agricultural Services	--	4	4	7	4	1	20
TOTAL	3	21	17	44	9	4	99

*No interviews reported

**Includes the Michigan Department of Conservation, Region II as one employer.

TABLE 3

NUMBER EMPLOYED IN VARIOUS TYPES OF BUSINESSES IN EACH OF SIX MICHIGAN COUNTIES. (June 1965)

Type of Business	Antrim			Charlevoix			Cheboygan			Emmet			Otsego			Presque Isle			TOTAL		
	PT	FT	T	PT	FT	T	PT	FT	T	PT	FT	T	PT	FT	T	PT	FT	T	PT	FT	T
Agricultural Machinery	1	11	12	--	5	5	--	7	7	8	19	27	4	8	12	--	--	--	13	50	63
Farm Supply & Service	2	5	7	2	34	36	1	8	9	10	11	21	4	4	8	--	--	--	19	62	81
Small Animal Farms	--	--	--	--	--	--	--	--	--	--	3	3	--	--	--	--	--	--	--	3	3
Nursery & Tree Farms	--	--	--	--	--	--	143	7	150	46	26	72	--	--	--	--	--	--	189	33	222
Greenhouses & Floral Service	--	--	--	9	7	16	2	6	8	72	17	89	--	--	--	--	--	--	83	30	113
Forest Products Marketing & Processing	--	--	--	--	22	22	--	--	--	--	102	102	--	--	--	30	82	112	30	206	236
Milk marketing & Processing	--	--	--	4	24	28	4	27	31	3	14	17	--	--	--	2	5	7	13	70	83
Other Food Processing	150	25	175	60	4	64	4	9	13	29	10	39	--	--	--	--	--	--	243	48	291
Recreation & Conservation	--	--	--	302	68	370	6	1	7	75	113	188	12	4	16	--	--	--	678	559	1237*
Professional Agricultural Services	--	--	--	2	6	8	5	5	10	4	21	25	2	5	7	--	1	1	13	38	51
TOTALS	153	41	194	379	170	549	165	70	235	247	336	583	22	21	43	32	87	120	1281	1099	2380

*Includes the 656 (283 part-time; 373 full-time) employees of the Michigan Department of Conservation, Region II. Region II includes additional counties in the northern part of the lower peninsula.

TABLE 4

MAJOR FUNCTIONS REPORTED BY AGRICULTURAL BUSINESSES AND SERVICES IN SIX NORTHERN MICHIGAN COUNTIES. (June 1965)

Functions	Number Reporting
Manufacturing	8
Purchasing	11
Service (Insurance, Finance, Education,etc.)	59
Constructing	1
Warehousing	20
Processing	14
Wholesaling	22
Contracting	1
Producing	18
Retaling	42
Recreation-Service	14
Total	210

Job titles. The job titles reported (seeAppendix A) included most of the titles of all persons employed, not just those which might be classified as agricultural occupations. These included such job titles as clerks, bookkeepers, typist, salesmen, truck drivers, carpenters, maintenance personnel, laborers, and office managers.

Some employers, after giving information on the total number of persons employed, gave job titles for only those persons which they believed needed some technical agriculture background. Therefore, the number of persons listed by job titles is less than the total number employed. Also, it is obvious that many of the employees are in jobs which normally are not considered agricultrual occupations but for which occupational education is needed.

Agricultural occupations. Many job titles were reported which have previously been classified as agricultural occupations. These job titles were in many kinds of positions such as professional, technical, managerial, skilled, simi-skilled, sales and supervisory. Determining the extent to which persons in various jobs needed competencies in the broad field of agriculture (including conservation and forestry) was not a part of this study. Obviously there could be considerable variation in the kind and amount of competencies required. For example, the competencies required of the service

manager in an agricultural machinery business, of the artificial inseminator, of the Christman tree harvesters, of the landscaper, of the cheesemaker, of the butcher, and of the greenskeeper would be quite different, yet there might have been many competencies which tend to be common to the requirements for success in more than one job. Also, the competencies required of the person in a job such as service manager might vary considerably from one agricutural machinery business to the next, depending mainly upon the extent to which the size of business affects the degree of specialization of the employees.

The large number of persons employed and the many different job titles indicate a potential need for much occupational education. The many job titles in such employment areas as conservation, recreation, farm supply, agricultural machinery, greenhouses and nurseries, and professional services indicate a pattern of present employment, and from the pattern, when compared with state, regional, and national trends, some suggestions may be made regarding (1) areas of instruction for persons interested in preparing for careers in agriculture, and (2) kinds of agricultural occupations in which people are currently employed.

Annual entry opportunities. Information about annual entry opportunities was sought but it was difficult to obtain for several reasons:

1. Employers of only a few workers often reported no expected turnover of employees within the forseeable future.
2. Some of the services and businesses are family owned and operated with very limited employment of non-family members.
3. Many of the reported "opportunities" seem to require individual enterpreneurship.

More than 400 annual entry opportunities were reported with many of these on a seasonal and/or part-time basis. The greatest number of entry opportunities were reported in the areas of recreation and conservation, forest products marketing and processing, food processing, nurseries and tree farms, as shown in Appendix B. However, obviously not all of the positions require extended periods of occupational education, especially in the agricultural sciences, while others such as machinery mechanic, artificial inseminator, cheesemaker, greenskeeper, park ranger, and salesman might require much more occupational education in the areas of agriculture, business, and/or industry.

Conclusions and Recommendations

1. There are more than 100 businesses and services in the six county area which are oriented to some extent to the supply of goods and services for agriculture, including conservation and

forestry. These businesses and services employ more than 2500 persons and provide annual entry opportunities for more than 400 persons, including part-time, seasonal, and/or full-time employees.

2. The wide range and large number of job titles reported suggests that many of the workers employed in the businesses may need varying levels of competencies in the areas of animal science, crop science, plant science, soil science, agricultural economics and/or agricultural mechanization.

3. Based on the responses from the interviews many of these businesses are having difficulty securing qualified workers and providing needed retraining for present workers.

4. There were many businesses reporting service, retailing, wholesaling, processing and purchasing as major functions. Training programs in these areas are probably needed.

5. The list of agricultural businesses and services together with the job titles provided in the appendices of this report could be used by teachers and vocational counselors to provide youth and their parents with information about agricultural occupations within the six county area.

6. It appears that considerably more attention should be given by both the schools and other educational services (such as Cooperative Extension Service) to providing occupational education programs designed to prepare new workers and up-grade or retrain present workers in the fields of agricultural machinery, farm supply and service, horticultural businesses and services, farm and forest products marketing and processing, recreation, and conservation.

7. Further study should be made of the competencies required for entrance and advancement in the most prevalent occupations as one basis for program planning, course building, and counseling.

APPENDIX

APPENDIX A

NUMBER OF PERSONS REPORTING VARIOUS JOB TITLES IN AGRICULTURAL BUSINESSES AND SERVICES IN SIX NORTHERN MICHIGAN COUNTIES

Agricultural Machinery:

Job Title	Number of Workers Reported
Manager-Owner	8
Manager	3
Parts	2
Parts and Service	3
Service Manager	1
Mechanics	21*
Mechanic's Helper	5*
Salesman	4
Set-Up and Delivery	4
All Purpose Man	4*
Bookkeeper	7
Carpenter	1
Sub-Total	63

Farm Supply and Service:

Manager	14
Bookkeeper	5
Millman	8
Truck Driver	16
Laborers	8
Salesmen - Drivers	5
Administration	3
Service Station and Mechanic	4
Maintenance	1
Clerks	5
Sprayers	1
Tree Trimmer	1
Artificial Inseminator	2
Salesmen (insurance)	7
Landscaper Helpers	2
Sub-Total	79

Small Animal Farms:

Manager	1
Waste Disposal	1
Maintenance	1
Sub-Total	3

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*Need for personnel in this field

Nurseries and Tree Farms:

Office personnel	3
Registered Forester	1
Assistant Forester (trainee)	1
Landscape Architect	1
Field Foreman	7
Landscape personnel (skilled)	10
Christmas Tree Shearers (seasonal)	110
Christmas Tree Harvesters (seasonal)	48
Semi-skilled	8
Laborer	27
Manager	3
Repairman	1
Teamster	1
Truck Driver	1
Sprayer	10
Cultivator	1
Owner	1
Sub-Total	234

Greenhouses and Floral Shops:

Nursery Stockman	4
Designer	8
Grower (gardener)	6
Transplanter	1
Owner	3
Bookkeeper	2
Helper-laborer	21
Retail Sales	4
Delivery (Truck Driver)	1
Landscaper Helper	1
Manager	2
Flower Manager	2
Landscaper	1
Assistant Manager	1
Greenhouse Workers	6
Sub-Total	61

Job Title	Number of Workers Reported
Forest Products Marketing & Processing:	
Manager	5
Sawyer	2
Edger	2
Cut-Off Man	1
Lumber Handler	3
Lift Truck Operator	2
Logger	102*
Carriage Man	1
Deck Man	1
Slab Saw Man	1
Office Clerk	4
Sales Manager	1
President and Vice President	2
Foreman	5
Laborers (assemblers)	90
Truck Drivers	1
Planers	12
Sut-Total	235
Milk Marketing & Processing:	
Receiver of Milk	1
Evaporation Operator	4
Dryer Operator	4
Maintenance	3
Butter Maker	1
Butter Maker's Helper	1
Truck Driver (salesmen)	27
Clean-Up and Equipment Crew	3
General Plant Work	6
Bookkeeper	7
Laboratory	1
Manager	4
Processing	4
Supervisory	3
Cheesemaker	6
Sub-Total	75

*Need for personnel in this field

Job Title	Number of Workers Reported
Other Food Processing:	
Inspection - Belt Workers	103
Filling lines	18
Machine Operator	30
Retort Operator	7
Receiving Clerks	2
Mechanic	10
Firemen	2
Laborer	94
Bookkeeper	9
Plant Superintendent	3
Maintenance Foreman	1
Warehouse Man	2
Truck Drivers	5
Cider Mill - Graders	37
Pickers	150
Butcher	3
Meat Cutter	5
Tilting-Loading	5
Salesmen	1
Lift Truck Operator	1
Packaging	2
Total -	490
Recreation and Conservation:	
Greenskeeper	14
Shop Attendant	5
Greenscutter	1
Irrigator	2
Handy Man	1
Secretarial	70
Waitresses	63
Golf Course Workers	19
Greens Superintendent	1
Greens Keeper Assistant	7
Caddy Master	2
Bartender	2
Kitchen Worker	6
Manager	59
Laborer	55
Mechanic	13
Housekeeper	1
Horse Keeper (driver, trail guides, stable boys)	21
Gardeners	4
Atheletic Department	6
Foreman	35
Treasurer	1
Executives	2
Stores Keeper	3
Trades Helper	2
Janitors	22
Heavy Equipment Operator	1

Job Title	Number of Workers Reported
Recreation and Conservation (cont'd):	
Supervisors	51
Maintenance Machinist	1
Tailor	1
Painter	1
Park Naturalists	4
Park Rangers	123
Life Guard	15
Carpenters	4
Forest Fire Officer	56
Forest Fire Lookout	21
Radio Dispatcher	2
Fishery Biologist	4
Fish Culturalists	51
Conservation Officers	56
Game Biologist	5
Architect	1
Land Surveyor	2
Bldg. Construction Superintendent	2
Instrumentman	2
Rodman	1
Airplane Pilot	4
Patrol Boat Officer	2
Radio Technician	3
Conservation Education Representative	1
	Total - 831
Professional Agricultural Services:	
Work Unit Conservationist	3
Soil Conservation Technician	1
County Extension Director	5*
County Extension Agent, Home Ec.	4
County Office Manager, ASC	4
County Office Clerk	2
Farm Reporter	4
Scale Attendant	1
Secretary	9
Veterinary	3
Kennel Worker	1
District Resource Development	1
FHA County Supervisor	1
FHA Assistant Supervisor	1
FHA Area Supervisor	1
Agricultural Teachers	7*
	Total - 48
GRAND TOTAL	2,111

*Need for personnel in this field.

APPENDIX B

REPORTED ANNUAL ENTRY OPPORTUNITIES BY JOB TITLES FOR SIX NORTHERN MICHIGAN COUNTIES.

Type of Business	Job Title	No. Annual Entry
Agricultural Machinery	Mechanic	4
	Mech. Helper	1
	Secretary	1/3*
	SUB-TOTAL - 5	
Farm Supply & Service	Manager	1
	Truck Driver	1
	Bookkeeper	1/2
	Service Station Mech.	1
	Secretary	1
	Administration	1/3
	Artificial Insemination	1/2
	SUB-TOTAL - 4	
Nurseries and Tree Farms	Laborer (part-time)	14
	Tree Shaper	14
	Semi-Skilled	2
	Landscape Helper	1
	SUB-TOTAL - 31	
Greenhouses & Floral Shops	Transplanter	1
	Laborer	5
	Greenhouse workers	2
	Sales	2
	SUB-TOTAL - 10	
Forest Products, Marketing and Processing	Bookkeeper	1
	Log Cutter	2
	Manager	1/4
	Sawyer	1/4
	Edger	1/4
	Cut-Off Man	1/4
	Lumber Stacker	1/4
	Lift Truck Operator	1/4
	Loggers	25
	Assemblers	10
	SUB-TOTAL - 38	

*Means one every three years.

Milk Marketing & Processing	Evaporator	1
	Dryer Operator	1
	Maintenance	1
	Truck Driver (salesman)	2
	Secretary	1
	Cheesemaker	2
	SUB-TOTAL - 8	
Other Food Processing	Inspection Belt Operator	35
	Fillers	5
	Machine Operator	10
	Retort Operator	2
	Mechanic	2
	Laborer	22
	Clinical	3
	Warehouse	1
	Pickers	75
	SUB-TOTAL - 155	
Recreation and Conservation	Greenskeeper	9
	Greens cutter	2
	Laborers	44
	Secretary	22
	Waitress	21
	Kitchen Help	4
	Horse Driver Operation	1
	Foreman	3
	Manager	1
	Auto Mechanic	1
	Life Guard	15
	Park Ranger	32
	Forest Fire personnel	5
	Fisheries personnel	1
	Game personnel	1
	Conservation personnel	2
	Airplane pilot	1
	SUB-TOTAL - 165	
Professional Agricultural Services	Kennel Worker	1
	District Extension Agent, 4-H	
	SUB-TOTAL - 1	
	GRAND TOTAL - 417	

APPENDIX C

NAMES AND ADDRESSES OF BUSINESSES AND SERVICES INCLUDED IN INTERVIEWS

Agricultural Machinery

County		
Antrim	Conrad Klooster, Inc. Ellsworth, Michigan	
Charlevoix	Jim Brannan Box 210, Rte. 2 Boyne City, Michigan	F. W. Delworth Boyne City, Michigan
	Burnett Bros. Implement Bay Shore, Michigan	
Cheboygan	Conrad Klooster, Inc. Cheboygan, Michigan	Ormsbee Implement Afton, Michigan
	Chimner Bros. Main St. Cheboygan, Michigan	Ginops Farm Supply Alanson, Michigan
Emmet	Bachelor Sales E. Mitchell Rd. Petoskey, Michigan	Haines Implement Alanson, Michigan
	Sam's Tractor Sales Conway, Michigan	
Otsego	Zaremba Implement Co. Elmira, Michigan	

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Farm Supply and Service

Antrim	Ellsworth Farmers Exchange Ellsworth, Michigan	
Charlevoix	Boyne City Cooperative Co. Boyne City, Michigan	East Jordan Cooperative Co. East Jordan, Michigan
	Charlevoix Cooperative Co. Charlevoix, Michigan	
Cheboygan	Baker & Co. Huron St. Cheboygan, Michigan	Cheboygan Co-op Co. Cheboygan, Michigan
Emmet	Farm Bureau Michigan St. Petoskey, Michigan	R.D. Figg Pest Control Service North U.S. 31 Petoskey, Michigan

Emmet (continued)	Grulers' Seed Co. 125 Fulton St. Petoskey, Michigan	Standard Oil Co. Standish Rd. Petoskey, Michigan
	Hinkley Artificial Breeders Blackbird Road Petoskey, Michigan	Wolverine Tree Co. 4711 Cincinnati Dr. Petoskey, Michigan
Otsego	Gaylord Feed & Grain Gaylord, Michigan	

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Small Animal Farms

Emmet	Petoskey Fur Farm Route #2 Harbor Springs, Michigan	

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Nurseries and Tree Farms

Cheboygan	Sno-Kist Tree Corporation Cheboygan, Michigan	
Emmet	Indian Gardens Farms Harbor Springs, Michigan	Huffman Nurseries Petoskey, Michigan
	Johnston's Motel Harbor Springs, Michigan	Hoffman Landscaping 709 Kalamazoo Petoskey, Michigan
	Mathews Nursery Ann St. Harbor Springs, Michigan	

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Greenhouses and Floral Shops

Charlevoix	Jordan Valley Greenhouse East Jordan, Michigan	Frank's Flowers Charlevoix, Michigan
	Willson Floral Co. Charlevoix, Michigan	Boyne Avenue Greenhouse Boyne City, Michigan
Cheboygan	Cheboygan Floral & Greenhouse 524 E. State Cheboygan, Michigan	Harrison's Flowers 805 Court St. Cheboygan, Michigan

Emmet	Hoover Flower Shop Petoskey Rd. Harbor Springs, Michigan	Pontius Flower Shop 588 E. Main Harbor Springs, Michigan
	Petoskey Floral Co. 427 E. Mitchell Petoskey, Michigan	Roe F ower Shop 467 E. Lake Rd. Harbor Springs, Michigan
	Renolda Greenhouse Hoyt & Lake Harbor Springs, Michigan	

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Forest Products Marketing & Processing

Charlevoix	Byrds Sawmill East Jordan, Michigan	Pecks Sawmill Route 1 Boyne City, Michigan
Emmet	C. M. Harris Lumber Co. Box 117 Petoskey, Michigan	Michigan Maple Block Standish Ave. Petoskey, Michigan
Presque Isle	Claude Post Forest Products Onaway, Michigan	Onaway Wood Products Leonard Reiger, Owner Onaway, Michigan

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Milk Marketing & Processing

Charlevoix	Ideal Dairy 337 State St. Boyne City, Michigan	Michigan Milk Producers 101 Spring St. East Jordan, Michigan
Cheboygan	Inverness Dairy Route #3 Cheboygan, Michigan	
Emmet	Home Dairy 406 Liberty Petoskey, Michigan	Richland Dairy Route #1 Petoskey, Michigan
	R & S Dairy W. Lake St. Petoskey, Michigan	
Presque Isle	Onaway Cheese Factory Onaway, Michigan	

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Other Food Processing

Antrim	Michigan Fruit Canners, Inc. Ellsworth, Michigan	
Charlevoix	Sherman Bros. Canning Co. East Jordan, Michigan	
Cheboygan	Northern Orchard Cheboygan, Michigan	
Emmet	Bluff Gardens 658 W. Bluff Harbor Springs, Michigan	Coeling Packing Co. Petoskey, Michigan
	Bonters Grocery Pellston, Michigan	Emmet County Growers Co-op Levering, Michigan

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Recreation and Conservation

Charlevoix	Belevadere Golf Course Charlevoix, Michigan	City Golf Course Charlevoix, Michigan
	Boyne Mountain Lodge Boyne Falls, Michigan	Ye Olde Nyne Route #2 East Jordan, Michigan
Cheboygan	Cheboygan Golf & Country Club Cheboygan, Michigan	
	Mullett Lake Country Club Mullett Lake, Michigan	
Emmet	Bay View Country Club Bay View, Michigan	Camp Pellston Pellston, Michigan
	Birchwood Farm Harbor Springs, Michigan	Harbor Point Association Harbor Springs, Michigan
	Boyne Highland Harbor Springs, Michigan	Margaret Stanton (Stable) Harbor Springs, Michigan
	Snowberry Farm Hoyt Road Harbor Springs, Michigan	
Otsego	Au Sable Ski Club Gaylord, Michigan	Gay El Rancho Gaylord, Michigan
	Hidden Valley Gaylord, Michigan	The Pinnacles Gaylord, Michigan

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Professional Agricultural Services

Charlevoix	Cooperative Extension Service Federal Building Boyne City, Michigan	Vocational Agriculture Dept. East Jordan Public Schools East Jordan, Michigan
	Soil Conservation Service Box 103 Boyne City, Michigan	Agricultural Stabilization and Conservation Office P.O. Building Boyne City, Michigan
Cheboygan	Cooperative Extension Service Courthouse Cheboygan, Michigan	Vocational Agriculture Dept. Cheboygan Public Schools Cheboygan, Michigan
	Soil Conservation Service Courthouse Cheboygan, Michigan	Agricultural Stabilization and Conservation Office 212 N. Huron St. Cheboygan, Michigan
Emmet	Cooperative Extension Service Courthouse Petoskey, Michigan	Vocational Agriculture Dept Harbor Springs Public Schools Harbor Springs, Michigan
	Agricultural Stabilization and Conservation Office Route #2 Petoskey, Michigan	Vocational Agriculture Dept Pellston Public Schools Pellston, Michigan
	Farmers Home Administration 411 Michigan St. Petoskey, Michigan	Vocational Agriculture Dept Petoskey Public Schools Petoskey, Michigan
	Jensen's Animal Hospital W. Charlevoix Ave. Petoskey, Michigan	
Otsego	Cooperative Extension Service Courthouse Gaylord, Michigan	Vocational Agriculture Dept Gaylord Community Schools Gaylord, Michigan
	Soil Conservation Service Courthouse Gaylord, Michigan	Agricultural Stabilization and Conservation Office 200 S. Court St. Gaylord, Michigan
Presque Isle	Vocational Agriculture Dept. Onaway Public Schools Onaway, Michigan	

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Some Other Agricultural Businesses & Services NOT INTERVIEWED

Charlevoix	Rich-Wick Equipment Rte. 2 Charlevoix, Michigan	(Farm Equipment)
	George Matelski Boyne Falls, Michigan	(Forest Products Processing)
	East Jordan Box & Crate East Jordan, Michigan	(Forest Products Processing)
	Golf Driving Range U.S. 31 & State St. Charlevoix, Michigan	(Recreation & Conservation)
	Beaver Lodge Golf & Country Club Beaver Island, Michigan	(Recreation & Conservation)
	Tousley's Circle T Riding U.S 131 Boyne Falls, Michigan	(Recreation & Conservation)
	Daugherty's Stable Norwood Road Charlevoix, Michigan	(Recreation & Conservation)
	Maple Hills Bridle Path Inc. N. Ranney Road East Jordan, Michigan	(Recreation & Conservation)
Cheboygan	Hartaker Fur Farm Wolverine, Michigan	(Small Animal Farm)
	Gearhardt Evergreen Wolverine, Michigan	(Nurseries & Tree Farms)
	Stempky Nursery Cheboygan, Michigan	(Nurseries & Tree Farms)
	Decker Log Cabin & Sawmill Onaway, Michigan	(Forest Products Processing)
	Cheboygan Maple Products Cheboygan, Michigan	(Forest Products Processing)
	Indian River Golf & Country Club Indian River, Michigan	(Recreation & Conservation)
Emmet	Manthei Veneer Mill Route 1 Petoskey, Michigan	

Otsego	Dowker Equipment Co. Johannesburg, Michigan	(Farm Equipment)
	Gaylord Equipment Co. Gaylord, Michigan	(Farm Equipment)
	Gaylord Livestock Yards Gaylord, Michigan	(Farm Supply & Service)
	Northern Michigan Beef Breeders' Association Gaylord, Michigan	(Farm Supply & Service)
	Gaylord Flower Shop Gaylord, Michigan	(Greenhouses & Floral Shops)
	U.S. Plywood Gaylord, Michigan	(Forest Products Processing)
	O.W. Rowley's & Sons Vanderbilt, Michigan	(Forest Products Processing)
	Dowker Packing Co. Gaylord, Michigan	(Food Processing)
Presque Isle	Agricultural Stabilization & Conservation Office City Hall Onaway, Michigan	

APPENDIX D

Interviewer_____ Date_____

SURVEY OF AGRICULTURAL BUSINESSES IN THE TOP-OF-MICHIGAN

1. Name of Business or Firm:_____

2. Address:_____

3. Names of persons contacted:_____Tel._____

_____Tel._____

4. Position in the business of persons interviewed:

___a. Owner
___b. Manager-hired
___c. Sales Manager
___d. Owner-Manager
___e. Personnel Director
___f. Office Manager
___g. Other (specify) _____

5. Functions of the Business:

___a. Manufacturing
___b. Purchasing
___c. Service
___d. Constructing
___e. Retailing
___f. Warehousing
___g. Processing
___h. Wholesaling
___i. Contracting
___j. Producing
___k. Other (specify)

_____

_____

6. Main products, services, or functions of the business:

_____

_____

_____

7. Extent of Agricultural Orientation of Business

_____Percentage of business agriculturally oriented

8. Number of Employees (Owners & Employees)

Part Time_____
Full Time_____
Total: _____

9. Job titles, number employees, and annual entry opportunity:

Job Titles (Description of Work)	Number Employed	No. Annual Entry

Note: Put asterick (*) on anticipated or future job titles.

APPENDIX E

Interview Guide for
TOP-OF-MICHIGAN STUDY OF AGRI-BUSINESSES

1. Select the persons, business or firm, whom you plan to contact for interviewing within a two-week period. Send letter of introduction.

2. Interview the person who has the highest degree of over-all administrative responsibility at the local (county) level.

3. You will in most cases be well known to those you interview. If there is any doubt as to your identity or your official responsibility, be sure to make this known at the beginning of the interview.

4. Preface your interview with a brief review of the purpose of the survey, "to identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available."

5. Record the official name of the business or firm. Where a firm has no official name other than the name of the owner or operator, record the name of the owner or operator.

6. Record the complete address: number, road or street, and post office.

7. A copy of the interview instrument may be given to the person being interviewed so that he may anticipate the questions, while you are recording answers, and thereby reduce the time required for the interview.

8. Obtain the best estimates possible for question 7.

9. Most of the agricultural jobs have no official job titles. In this case write down the description of the work done.

10. Make a direct inquiry about anticipated job titles, but don't make up or suggest job titles for the approval of the person interviewed.

11. When the interview is finished, it would be helpful if you would pave the way for a possible cooperative program which might place a student in this business for training. In other words, ask "Would you be willing to work with the school in a training program by hiring a student to work part-time while he is still in school and to give him some training in selected jobs?"

12. Express your appreciation for the cooperation on this survey.

APPENDIX F

AN OPEN LETTER OF INTRODUCTION AND EXPLANATION TO ALL PERSONS AND FIRMS ENGAGED IN ONE OR MORE TYPES OF AGRICULTURAL BUSINESS IN THE TOP-OF-MICHIGAN AREA

The teachers of vocational agriculture and the Cooperative Extension Service in the Top-of-Michigan area are cooperating with a consultant from Michigan State University to conduct a survey which we believe is of great importance to everyone employed in the various segments of our agricultural economy.

This survey will be an effort to identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available, within our area. It is hoped that we can also determine present and anticipated numbers of employees in these occupations, as well as some of the competencies needed by the employees.

This survey is part of a larger study being made to determine the need and feasibility for vocational and technical education in the six county area which includes Antrim, Charlevoix, Cheboygan, Emmet, Otsego, and Presque Isle.

Some time within the next few days a call will be made at your place of business to arrange a brief interview. Since you are a key person with respect to the information needed in this survey, we hope you will be able to give a few minutes of your time to this worthy effort.

For your further information, we are enclosing some background information relating to this survey and its purpose.

Very truly yours,

APPENDIX G

FOR YOUR INFORMATION

The following background information is presented here so that you may more fully understand why this survey is being made and what use will be made of the data.

The Need for This Study

Developments in technology and automation have caused tremendous changes to take place within our agricultural industry. Significant among these changes is the decrease in the number of persons needed in the production phase of agriculture, accompanied by an increase in the number of persons needed in the off-farm agricultural occupations.

It is generally agreed that there are many opportunities for persons in the non-farm agricultural occupations but no specific data has been collected in this area on the jobs at various levels. This is partly due to the fact that most of the agricultural service and business job aspects of the agricultural industry have evolved fairly recently. There is some evidence that a number are evolving at the present time.

If our young people are to receive adequate counseling, and the educational needs of all our own people are to be met, it becomes imperative that immediate and continuing identification be made of those businesses which embrace jobs requiring some competency in agriculture. With information concerning the number of employment opportunities in these occupations and the nature of the jobs, future needs for educational programs in agriculture may be more accurately projected than is now possible.

Such information is needed in planning more adequate vocational programs for off-farm agricultural occupations in the high schools and post high school institutions in our area. The information will also be valuable to the Cooperative Extension Service for planning improvements and expansion of the extension education programs.

Objectives

1. To identify present and emerging agricultural occupations, for which vocational and technical education in agriculture should be available.

2. To determine present and anticipated numbers of employees in these occupations.

3. To estimate the annual entry opportunities in these occupations.

VT 00020

ED013338

STATE OF WASHINGTON

OCCUPATIONAL TRENDS

IN

HEALTH CARE INDUSTRIES

KING COUNTY

1965 - 1970

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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DEPARTMENT OF EMPLOYMENT SECURITY

AND

STATE BOARD FOR VOCATIONAL EDUCATION

VT 00020

DECEMBER 1965

FOREWORD

In recent years we have seen a growing need for preparation of both youth and adults for the world of work. At one time a High School diploma certified to the basic requirements for entrance into the working population. But general education, as important as it is, no longer provides the skills and specialized knowledge required for many occupations. Therefore, young workers have considerable difficulty finding suitable employment without additional education. And for many an older worker, technological advances have resulted in obsolescent skills, with retraining the only means to continued employment.

This lack of marketable skills for both the young and the older worker has encouraged greater emphasis toward vocational orientation in our public schools and has resulted in legislation for manpower programs such as the Area Redevelopment Act (ARA) and the Manpower Development and Training Act (MDTA). A major key to the success of these programs is the identification of labor demand.

People concerned with the design or approval of training projects and those responsible for advising job seekers about employment opportunities ask: "Which occupations are in demand? What are their significant characteristics? How many workers are needed? What is the outlook for the future?"

These and similar questions led to the present survey, "Occupational Trends in Health Care Industries". As a departure from more commonly used methods of reporting labor market data, it identifies and describes a wide range of occupations, rather than a select few. Personal interviews allowed freer and more subjective responses from employers. In addition to gathering the usual statistics, it views occupational trends in terms of worker tasks, worker characteristics, and working environments. It also includes hiring practices as they relate to education, experience, physical capacities, age, and sex.

It is hoped that this report will provide information to those involved in providing qualified personnel for health care services.

ACKNOWLEDGEMENTS

The Employment Security Department and the State Board for Vocational Education appreciate the assistance given by the many people in the health service field. Cooperation from hospital administrators, personnel managers, owners and managers of retirement homes, convalescent centers and rest homes, medical and dental laboratories, and individual doctors and dentists, enabled this project to be accomplished. Without the helpful suggestions, repeated requests, and sustained support from the school districts, this project might have been immeasurably delayed or not undertaken at all.

Acknowledgement is made to the various community organizations, government agencies, and departments of education throughout the country, whose publications of manpower research provided valuable source material for this study.

The Washington State Employment Security Department, Seattle Office, James G. Scanlan, Manager, provided a project director, Virginia O. Hannig, to design the survey, train the interviewers and coordinate the field work. Five counselors and one placement representative, also from the Employment Security staff, performed the interviewing. Advisory assistance and duplicating were furnished by the State Board for Vocational Education, E. G. Kramer, Assistant Superintendent for Vocational Education and its Research Coordinating Unit, Ray E. Jongeward, Director. Key-punching of information was provided by the Clover Park Vocational-Technical School, District #400. Programming and tabulating were provided by the Educational Data Processing Center of the State Department of Public Instruction. Cooperating agencies and survey participants are listed on page 95 of this report.

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INTRODUCTION

This is a pilot study of manpower problems in medical industries of King County, conducted by the Washington State Employment Security Department and the State Board for Vocational Education. Planned through inter-agency cooperation as a community service, its purpose is to try out a procedure to analyze occupational shortages and training requirements on a continuing basis for a wide range of occupations and industries.

Previous methods of collecting data on which to base training programs have consisted primarily of single occupational surveys from selected employers or industry spokesmen. These studies have tended to assess manpower requirements in terms of comparative growths of various industries and to provide general requirements in relation to broad categories of skill levels. But in addition to total employment forecasts, educators, counselors, and personnel representatives need an understanding of the worker characteristics and educational requirements that contribute to successful performance on the job. Of the many publications on manpower research projects, few detail these specific occupational needs, and none have been done for the Seattle area on an industry-wide basis. Complicating an understanding of manpower needs are the differing opinions among employers concerning qualifications for the same job classification, and the significant variations in manpower forecasts for different labor market areas within the same state. These difficulties point up the need for definitive surveys of occupations within the local labor market.

Many educators, foreseeing the need to modify or add to existing programs, have looked to the Employment Service for information that will assist them to determine the labor market potential and to identify the kinds of training that will secure employer acceptance for their students. Determining basic guidelines for the educational needs of the King County area is a complex and critical task because of the need to adapt educational courses and standards to the rapidly changing and expanding occupational structure in industry. These changes must be coordinated with the enlarging post-high school program planned for September, 1966 and 1967. For this reason, seven school districts of the County with vocational-technical programs have cooperated in the survey, in order to acquire occupational information more useful to them than has previously been available.

According to recent information from the U. S. Department of Labor, Health Services is now a major economic activity, with an annual expenditure of some eight billion dollars and second only to the Federal Government in the number of people it employs. In the decade of 1950-60, while the U. S. population increased 19% and all employment increased 14%, the number of workers in Health Services grew 60%. Of the 2.6 million workers now employed in Health Services, there are 1.2 million professional and technical workers, 0.8 million service workers, 0.4 million clerical workers and 0.2 million other workers such as officials, craftsmen, operators, and laborers.

In King County and in the State of Washington, as is true throughout the nation, Health Services is one of the most rapidly expanding and changing industries. It was chosen for this survey because of its high demand for workers and its anticipated expansion in present occupations and into new occupations expected to develop. It also offers potential employment to large numbers of workers with relatively short periods of training, and is therefore, a fruitful source of jobs for young people who have the highest rate of unemployment. The medical

field also has severe shortages of manpower supply in some occupations that may become more critical as new facilities are put into operation to serve the growing population. The broadening of various public and private medical insurance programs is expected to increase demand for medical care as more people avail themselves of these services. Technological advances also contribute to present and anticipated shortages of manpower.

Problems encountered in coordinating the various methods by which the health industry is attempting to resolve manpower requirements, as well as meeting the increased demand for health services, have resulted in formation of the Health Occupational Education Council. This ad hoc committee has a wide representation of public agencies, schools, and employers, and is planning comprehensive research of health care facilities and training programs under sponsorship of the U. S. Public Service. As members of the Council, the Employment Service and the Board for Vocational Education agreed to the incorporation of this survey into the Council's research program.

In adopting a method of research, liberal use was made of the many recent publications throughout the country on manpower selection and training. A number of these research concepts and procedures were modified, adapted, and revised, in an effort to provide meaningful information bearing on local problems. No attempt was made to survey new facilities in the medical field, which is being done by the Health Facilities Planning Board, or to determine the availability of future labor supply, which is expected to be covered in the research of the Health Occupations Education Council. These exclusions of labor demand and supply should be borne in mind when considering conclusions as to numbers of new workers needed in certain occupations or industries.

Though the research used valid statistical methods and approved empirical procedures, it does not attempt to evaluate all aspects of manpower supply and demand. Rather, it is an eclectic and selective sampling of a vast problem area. As such, it is intended to be informative and suggestive. It is expected to be helpful in the planning of more extensive and comprehensive research. It is presented here with the hope that it will lend support for continuing research of other occupations and industries.

S E C T I O N I

OBSERVATIONS

OBSERVATIONS

King County health care industries employed approximately 19,526 workers in December, 1964, according to an estimate based on reports from employers interviewed in this survey. Total employment in the occupations surveyed was estimated at 19,307, to which another 551 new jobs are expected to be added by December, 1965 because of expansion to existing plant facilities or services. Within five years, the total of new jobs is estimated at 2876. The anticipated net increase, then, is 3% for 1965 and 14% by 1970. However, the number of workers hired to fill vacancies created by turnover is expected to reach 3016 within one year and 13,331 within the next five years. These replacements are tabulated separately from expansion figures to distinguish the number of workers hired from the actual net increase in jobs:

EMPLOYMENT FORECAST FOR THE MEDICAL INDUSTRY

WORKERS TO BE HIRED BY 12/65

1964 Employment Estimate	Replacement	Expansion	Total No. to be Hired
19,307	3,016	551	3,567

WORKERS TO BE HIRED BY 1970

1965 Employment Estimate	Replacement	Expansion	Total No. to be Hired
19,858	13,331	2,876	16,207
1970 Employment Estimate			
22,183			

Net employment forecasts derived from this survey are conservative estimates, because they exclude replacement figures and because they represent projections from only those institutions currently in operation. Medical care facilities being constructed or planned for were not included in the survey.

By 1970 the highest number of additional jobs will occur in hospitals. Next highest is convalescent centers and rest homes. But convalescent centers and rest homes have the greatest net growth forecast (33%), more than twice that of hospitals.

Twenty-six of the 327 occupations identified in the survey show current vacancies or an anticipated net increase of twenty or more jobs within the next five years. (See Table III) In these twenty-six "demand" occupations it is expected that employment will increase more than the industry as a whole (20% by 1970) and that they will account for 80% of the new jobs available within the next five years. Almost half of these new jobs will occur in the nursing field:

NURSING & OTHER PATIENT CARE OCCUPATIONS	1970 NET INCREASE	CURRENT EMPLOYMENT 1964
Nurse, General	374	1793
Nurse Aide	335	2416
Nurse, Licensed Practical	315	827
Orderly	280	376
Nurse, Office	117	569
Physician's Assistant	20	210
	1441	6391

The next highest growth rate is found in clerical occupations and in institutional housekeeping such as ward maids and porters, which have an expected increase of approximately 17%. Food Service Occupations such as cooks, cook helpers, trayline and cafeteria workers, waitresses, and dishwashers, will increase about 14%. (See Tables XV through XV-C)

During the time of the survey, 376 job vacancies were recorded by interviewers - positions for which employers were actively recruiting new workers. Ninety percent of these job openings were in the twenty-six demand occupations. The highest number of current job opportunities were for dental hygienists - a total of 140 positions; only 20 were for full-time employment, however. Nursing and other patient care occupations showed the highest number of full-time vacancies, with a total of 109 available positions.

The occupation of orderly is the fastest growing of all in the medical field and has the lowest training output. According to employers, the present employment figure will almost double by 1970 and will account for 280 new jobs and for 439 replacements. Most of the demand for orderlies is expected to be in convalescent centers and rest homes.

The supply of dental technicians, bookkeepers and dental assistants is considered adequate to meet the demand.

Of the twenty-six demand occupations, nine were selected as warranting further investigation involving more definitive and descriptive information-gathering. A supplemental report on the follow-up study follows the appendix.

TABLE I

ESTIMATED EMPLOYMENT IN SELECTED MEDICAL INDUSTRIES - KING COUNTY, DECEMBER, 1964

	IND. CODE	CURRENT EMPLOYMENT	FORECAST 12/65		FORECAST 1970	
			TOTAL	NET INCREASE	TOTAL	NET INCREASE
RETIREMENT HOMES	704	1900	1900	---	1840	-60
DOCTORS' OFFICES	801	3240	3320	80	3400	160
DENTISTS' OFFICES	802	1320	1440	120	1600	280
OSTEOPATHIC PHYSICIANS	803	40	40	---	40	---
CHIROPRACTORS	804	20	40	20	80	60
PRIVATE HOSPITALS	806	10,166	10,507	341	11,687	1521
MEDICAL-DENTAL LABS	807	320	340	20	340	20
CONVC. & REST HOMES	809	2520	2520	---	3340	820
TOTALS		19,526	20,107	581	22,327	2801

TABLE II

FORECAST FOR EMPLOYMENT IN TWENTY-SIX DEMAND OCCUPATIONS 1965 - 1970

	12/64 Employment Estimate	WORKERS TO BE HIRED BY 12/1965			1965 Employment Estimate	WORKERS TO BE HIRED BY 1970			1970 Employment Estimate
		Replacement	Expansion	Total		Replacement	Expansion	Total	
TOTAL:	12,247	2,130	626	2,756	12,873	9,441	2,456	11,897	14,703
Nurse, General Duty	1,793	387	86	473	1,879	1,605	374	1,979	2,167
Nurse, Office	569	23	45	68	614	40	117	157	686
Medical Technologist	566	50	2	52	568	229	28	257	594
X-Ray Technician	162	41	2	43	164	93	20	113	182
Dental Technician	120	---	20	20	140	---	20	20	140
Dental Hygienist	280	40	80	120	360	80	80	160	360
Nurse, Lic. Practical	827	117	112	229	939	475	315	790	1,142
Bookkeeper II	136	---	1	1	137	---	21	21	157
Receptionist, Doctors	700	---	80	80	780	60	120	180	800
Hosp. Receiving Clerk	182	30	21	51	203	99	36	135	238
Dental Assistant	861	40	40	80	901	101	160	261	1,021
Physician's Assistant	410	25	---	25	410	45	20	65	430
Medical Secretary	179	1	---	1	179	31	22	53	201
Maid, Ward	472	106	5	111	477	463	116	579	588
House Cleaner, Med.	240	---	---	---	240	---	20	20	260
Cook, Institutional	312	87	1	88	313	277	25	302	337
Floor Girl, Cafeteria	80	200	20	220	100	1,000	20	1,020	100
Waitress, Hospital	40	20	---	20	40	100	20	120	60
Tray Line Worker	402	94	-2	92	400	474	64	538	466
Cook Helper	188	25	20	45	208	42	82	124	270
Dishwasher, Machine	200	4	---	4	200	40	27	67	227
Orderly	376	103	3	106	379	438	280	718	656
Nurse Aide	2,416	548	28	576	2,444	2,995	335	3,330	2,751
Porter	587	148	22	170	609	589	69	658	656
Groundskeeper	29	1	20	21	49	5	25	30	54
Laundryman	120	40	20	60	140	160	40	200	160

TABLE III

Job Vacancies in Twenty-Six Demand Occupations
King County Area Health Care Industries

CURRENT VACANCIES 12/64

	Current Employment	Total Vacancies	Full Time	Part Time	1965 Net Increase	1970 Net Increase
Total--Twenty-Six Demand Occupations	12,247	347	227	120	626	2,456
0-33.10 Nurse, Gen. Duty	1,793	27	27	---	86	374
0-33.87 Nurse, Office	569	20	20	---	45	117
0-50.01 Medical Technologist	566	2	2	---	2	28
0-50.04 X-Ray Technician	162	---	---	---	2	20
0-50.06 Dental Technician	120	20	20	---	20	20
0-50.07 Dental Hygienist	280	140	20	120	80	80
0-52.83 Nurse, Lic. Prac.	827	60	60	---	112	315
1-01.02 Bookkeeper II	136	---	---	---	1	21
1-18.4302 Receptionist, Dr.'s Office	700	40	40	---	80	120
1-18.4303 Hosp. Rec. Clerk	182	1	1	---	21	36
1-32.10 Dental Assistant	861	20	20	---	40	160
1-32.20 Physician's Asst.	410	---	---	---	---	20
1-33.0103 Medical Secretary	179	1	1	---	---	22
2-24.12 Maid, Ward	472	---	---	---	5	116
2-24.14 House Cleaner, Med. Serv.	240	---	---	---	---	20
2-26.32 Cook, Institutional	312	6	6	---	1	25
2-27.22 Floor Girl, Cafeteria	80	---	---	---	20	20
2-27.94 Waitress, Hospital	40	---	---	---	---	20
2-27.9402 Tray Line Worker	402	3	3	---	-2	64
2-29.01 Cook Helper II	188	---	---	---	20	82

	Current Employment	Total Vacancies	Full Time	Part Time	1965 Net Increase	1970 Net Increase
2-29.62						
Dishwasher, Machine	200	---	---	---	---	27
2-42.10						
Orderly	376	1	1	---	3	280
2-42.20						
Nurse Aide	2,416	1	1	---	28	335
2-86.10						
Porter I	587	5	5	---	22	69
3-40.04						
Groundskeeper	29	---	---	---	20	25
7-57.991						
Laundryman	120	---	---	---	20	40

S E C T I O N II

INDUSTRY CHARACTERISTICS

INDUSTRY CHARACTERISTICS

The high rate of turnover characteristic of the health care industry is related to several factors: high percentage of women employees, irregular working hours, part-time employment, and low wages. Women outnumber male employees eight to one. They tend to interrupt their working careers for marriage, pregnancy, and other family responsibilities. They often work temporarily for added income during periods of family financial stress. The "round-the-clock" nature of medical service requires working second or third shifts and over week-ends and holidays. In addition to being less desirable, these hours conflict with the working mother's family responsibilities. Part-time employment is found in 17% of the jobs in the industry, and over 80% of these are held by women. Wages are generally lower than those paid for similar occupations in other industries.

The experience of employment agencies is that employers in many industries tend to request workers more highly endowed in intelligence, experience, and physical qualifications than are necessary for performance on the job. In too many cases the same job for which an employer may request a "bright, alert, and experienced worker" consists of tedious, repetitious, and routine work that allows for little display of initiative or responsibility. High turnover rates are a logical result of hiring overqualified workers.

In the medical industry the high employment of women, irregular working hours and minimum wages, are certain to cause a high rate of turnover. Yet employers generally failed to assign reasons for the movement of workers from one employer to another, or for their retirement from the labor market. Furthermore, estimates by employers of future turnover were often a good deal lower than past experience would suggest. Though the turnover rate in medical service occupations for the past year averaged 36% and ranged to a high of 375%, a large number of employers said they didn't have a problem with turnover; they didn't know the reason for it when it existed; or they expected no problem in the future.

According to employer records, the twenty-six occupations most in demand have an overall turnover rate of 47%. But in a separate part of the survey when asked about occupations that could be characterized as being in short supply or with an unstable work force, employers gave hours of work as a reason in less than 2% of the responses, wages in only 4%, and training needs in 8%. In 82% of the cases employers stated there was no difficulty securing or keeping workers. It is apparent that the survey failed to bring out the employers' knowledge of the reasons for turnover or a willingness to state those reasons.

Though employment in convalescent centers and rest homes is growing more than twice as fast as in hospitals, rates of pay are generally lower. Thus, though more job opportunities are strongly indicated for convalescent centers and rest homes, their less favorable pay differential compared to hospitals should be noted by those persons involved in training or advising future job seekers regarding their employment prospects.

Table III and IV show characteristics of the twenty-six demand occupations as they relate to wages, sex, full or part-time employment, and turnover.

Table VI lists the occupations for which employers would consider work-experience training programs and the types of training in which they are willing to participate. Those occupations offering potential employment for youth under eighteen or for inexperienced workers are also indicated.

Table VII lists the occupations for which employers would consider hiring handicapped persons. Twenty-eight of the 94 employers surveyed indicated an interest in employing in this category.

TABLE IV

Job Characteristics of Twenty-six Demand Occupations in
King County Health Care Industries
December, 1964

	Total Employ.	FEMALE Full	FEMALE P.T.	FEMALE Total	MALE Full	MALE P.T.	MALE Total	Turn-over	Monthly Wage Range
Total-Twenty-six Demand Occupations	12,247	8213	2551	10,764	1182	301	1483	5752	
Nurse, General Duty	1,793	1297	491	1,788	---	5	5	754	398-407
Nurse, Office	569	422	147	569	---	---	---	103	300-400
Medical Technologist	566	355	123	478	68	29	88	293	322-400
X-Ray Technician	162	97	10	107	50	5	55	51	365
Dental Technician	120	20	---	20	80	20	100	80	400-600
Dental Hygienist	280	60	220	280	---	---	----	40	524-562
Nurse, Lic. Prac.	827	723	98	821	6	---	6	292	265-284
Bookkeeper II	136	116	20	136	---	---	---	40	242-387
Receptionist Doctor's Office	700	600	100	700	---	---	---	340	243-350
Hosp. Rec. Clerk	182	88	94	182	---	---	---	39	291-400
Dental Assist.	861	681	140	821	---	40	40	440	225-307
Physician's Assist.	410	410	---	410	---	---	---	85	225-271
Medical Secretary	179	97	82	179	---	---	---	44	329-398
Maid, Ward	472	381	91	472	---	---	---	202	216-254
House Cleaner, Med. Serv.	240	220	20	240	---	---	---	5	221-233
Cook, Institutional	312	306	---	306	6	---	6	100	246-347
Floor Girl, Cafeteria	80	40	40	80	---	---	---	300	216-
Waitress, Hospital	40	40	---	40	---	---	---	---	216-
Tray Line Worker	402	238	157	395	3	4	7	108	212-259
Cook Helper II	188	128	58	186	2	---	2	26	216-281

	Total Employ.	FEMALE Full	FEMALE P.T.	FEMALE Total	MALE Full	MALE P.T.	MALE Total	Turn-over	Monthly Wage Range
Dishwasher, Machine	200	22	11	33	105	62	167	30	216-258
Orderly	376	---	---	---	340	36	376	183	216-291
Nurse Aide	2,416	1770	629	2,399	17	---	17	1782	216-250
Porter I	587	22	---	22	456	109	565	335	228-305
Groundskeeper	29	---	---	---	29	---	29	---	290-294
Laundryman	120	80	20	100	20	---	20	80	216-

Relatively few occupations are considered suitable for workers below 18 years of age. Acceptability to the 18-22 year range is much greater. Those occupations for which employers will hire workers in the age group to 18 are listed below:

1-03.12	Diet Clerk	2-29.62	Dishwasher, Machine
1-05.0102	Ward Clerk	2-29.71	Kitchen Helper
1-36.14	Medical Records Clerk	2-86.10	Porter
1-37.34	Clerk Typist	7-57.511	Presser, Machine
2-27.9402	Tray Line Worker	7-60.100	Storage Garage Attendant
2-27.9403	Nourishment Worker	7-60.500	Garage Man
2-29.51	Bus Girl	9-09.41	Pack Maker
2-29.6102	Pot Washer	9-68.50	Glass Washer

Within the twenty-six demand occupations, employers will hire in certain age groups as follows:

TABLE V

DOT CODE	OCCUPATION	16-60	-18	18-22	-45
0-33.10	Nurse, General Duty	X			X
0-33.87	Nurse, Office	X		X	X
0-50.01	Medical Technologist	X		X	X
0-50.04	X-Ray Technician	X		X	X
0-50.07	Dental Hygienist	X			X
0-52.83	Nurse, Licensed Practical	X		X	X
1-01.02	Bookkeeper II	X		X	X
1-18.4302	Receptionist, Dr.'s Office	X		X	X
1-18.4303	Hospital Receiving Clerk				X
1-32.10	Dental Assistant	X		X	X
1-32.20	Physician's Assistant				X
1-33.0103	Medical Secretary	X		X	X
2-24.12	Maid, Ward				
2-24.14	House Cleaner, Medical	X			
2-26.32	Cook, Institutional	X			X
2-27.22	Floor Girl, Cafeteria	X			
2-27.94	Waitress, Hospital				X
2-27.9402	Tray Line Worker		X	X	X
2-29.01	Cook Helper II	X		X	X
2-29.62	Dishwasher, Machine	X	X	X	
2-42.10	Orderly	X		X	X
2-42.20	Nurse Aide	X		X	X
2-86.10	Porter	X	X	X	X
3-40.04	Groundskeeper	-	-	-	-
7-57.991	Laundryman	X		X	X

Workers over 45 years of age were preferred by some employers in these three occupations:

2-24.14	House Cleaner, Medical Service
3-40.04	Groundskeeper
2-86.10	Porter

TABLE VI

EMPLOYMENT OPPORTUNITIES FOR YOUTH AND INEXPERIENCED OR UNTRAINED WORKERS

DOT Code	-18 Age Accepted	No Related Education Required	No Related Work Exper. Required	Employers Willing to Participate in Work-Experience Training Programs: Summer	Part-Time	School-Job Connected	Job Trng.	More Than one or All
0-50.01		X	X	X				
0-50.0105	X	X	X				X	
0-50.07		X	X					
0-50.14	X		X					
0-85.10		X						
0-91.60		X						
0-99.8402		X						
1-01.52		X						
1-03.12	X	X	X	X				
1-05.0102	X	X	X				X	
1-18.43		X	X					
1-18.4302		X						
1-18.4303		X	X				X	
1-19.11		X	X					
1-23.14		X	X				X	X
1-32.10		X	X					
1-36.14	X				X			
1-37.34	X						X	
1-38.01		X						
1-38.08		X	X				X	
1-38.51		X						
1-42.32		X					X	
2-24.11		X	X					
2-24.12		X	X	X			X	X
2-24.14		X	X				X	
2-24.5103		X	X					
2-25.23		X	X				X	
2-25.24		X	X	X			X	X
2-25.240		X						
2-26.03		X	X					
2-26.18		X						
2-26.32		X	X					
2.27.12		X	X					
2-27.21		X	X					X
2-27.94		X	X	X			X	X
2-27.9402	X	X	X	X			X	X
2-29.01		X	X				X	X
2-29.03		X	X				X	
2-29.12		X						
2-29.13		X	X					
2-29.17		X	X				X	
2-29.21	X	X	X	X				
2-29.51		X	X					

DOT Code	-18 Age Accepted	No Related Education Required	No Related Work Exper. Required	Employers Willing to Participate in Work-Experience Training Programs: Summer	Part-Time	School-Job Connected	Job Trng.	More Than one or All
2-29.61		X	X					
2-29.6102	X	X	X				X	
2-29.62	X	X	X				X	
2-29.71	X	X	X		X		X	X
2-29.72		X	X					
2-38.20		X	X					
2-42.10		X	X				X	X
2-42.1002		X						X
2-42.1004		X						X
2-42.20		X	X		X		X	X
2-42.2003		X						X
2-42.2005		X	X				X	
2-61.03		X	X				X	
2-63.15		X						
2-63.1501		X					X	
2-82.10		X					X	
2-82.30		X	X				X	
2-82.40		X	X					X
2-86.10	X	X	X	X			X	X
2-86.1001		X					X	
2-86.1003		X	X					X
2-95.20		X	X					
2-95.30		X	X				X	
3-17.70		X	X				X	
3-40.02		X	X					
3-40.04		X	X					
4-01.400		X						
4-25.020		X					X	
4-97.420		X						
5-25.830		X						
5-25.8303		X						
5-27.010		X					X	
5-30.410		X						
5-58.100		X						
5-72.010		X						
5-72.020		X						
5-83.611		X						
5-83.6412		X						
5-97.050		X					X	
6-02.910		X	X					
6-27.516		X					X	
7-36.260		X	X				X	
7-57.005		X	X				X	
7-57.021		X	X				X	
7-57.251		X	X				X	
7-57.511	X	X	X					

DOT Code	-18 Age Accepted	No Related Education Required	No Related Work Exper. Required	Employers Willing to Participate in Work-Experience Training Programs: Summer	Part-Time	School-Job Connected	Job Trng.	More Than one or All
7-57.991		X	X				X	
7-57.993		X	X				X	
7-60.100	X	X	X				X	
7-70.040		X						
9-09.41	X	X	X				X	
9-57.21		X	X				X	
9-57.2102		X	X	X				
9-57.2103		X	X				X	
9-57.2104		X	X					
9-57.2105		X	X					
9-57.2106		X	X				X	
9-57.2108		X	X					X
9-57.2109		X	X	X				
9-68.30		X	X					
9-83.41		X	X					
9-83.91		X					X	
9-88.40		X	X					

TABLE VII

EMPLOYMENT OPPORTUNITIES FOR HANDICAPPED PERSONS

OCCUPATION	DOT CODE	INDUSTRY
Medical Technologist	0-50.01	801 Doctors' Offices 806 Hospitals 807 Medical-Dental Laboratories
Surgical Technician	0-50.015	806 Hospitals
Receptionist, Dr. Office	1-18.4302	801 Doctors' Offices 802 Dentists 804 Chiropractors
Hospital Receiving Clerk	1-18.4303	806 Hospitals
Physician's Assistant	1-32.20	801 Doctors' Offices 803 Osteopathic Physicians 809 Conv. & Rest Homes
Cook, Institutional	2-26.32	704 Retirement Homes 806 Hospitals 809 Conv. & Rest Homes
Orderly	2-42.10	806 Hospitals
Nurse Aide	2-86.10	704 Retirement Homes 806 Hospitals 809 Conv. & Rest Homes

SECTION III

OCCUPATIONAL CHARACTERISTICS

OCCUPATIONAL CHARACTERISTICS

Out of the 327 job titles identified in the survey, significant occupations and occupational groups with some common characteristics are set apart for special comment in this section. Each occupational subdivision begins with a brief description of job characteristics followed by a discussion of current and future employment, replacement forecasts, and other pertinent aspects of the occupation.

No attempt is made here to write a complete job analysis, precise definition, or to itemize worker tasks. Rather, certain occupational characteristics are described in order to give a general concept sufficient to differentiate one occupation from another. For these descriptions, use has been made of employer job specifications, the Dictionary of Occupational Titles - Volume I and Supplement, industry publications, and information from representatives of the establishments cooperating in the survey.

Estimates of employment and of replacements are tabulated separately in Tables XVIII-XX. Replacements are defined as the gross number of workers hired by an employer to keep one job position filled. This then, encompasses all the various occasions for which an employer may need to refill a position during a period of time: death, retirement, transfer, promotion, discharge for unsatisfactory performance, or a voluntary quit by an employee. How many times one worker in a certain occupation leaves one employer to be subsequently hired by another employer, is anybody's guess. Therefore, replacements represent not the actual number of workers needed or the total jobs available, but the <u>number</u> of <u>times</u> persons are hired by an employer to fill a specific job opening. For example, a cook who has left one employer and gone to work for another is merely "job-hopping". He thereby forces his first employer to hire a replacement. This replacement fills one vacant position; it does not add another job to the economy.

Employment is defined as the number of employees in an occupation at one point in time. These employment figures compared year by year are the most reliable forecast of the real number of opportunities available for future job seekers.

LIST OF OCCUPATIONS IDENTIFIED IN SURVEY

DOT CODE	
0-01.20	Accountant, General
0-06.97	Public Relations Man I
0-06.9701	Public Relations Man, Head
0-17.01	Electrical Research Engineer
0-23.20	Medical Librarian
0-23.2003	Patients Librarian
0-23.25	Medical Records Librarian
0-23.2501	Med. Rec. Librarian, Head
0-23.2502	Med. Rec. Technician
0-25.10	Pharmacist
0-25.1001	Pharmacist, Head
0-25.1002	Head Pharmacist Assist.
0-25.11	Pharmacist Apprentice
0-27.10	Admitting Officer
0-27.20	Social Worker Medical
0-32.04	Occupational Therapist
0-32.0401	Occup. Therapist, Head
0-33.03	Director, Nursing Service
0-33.0302	Director, Nursing Serv. Assist
0-33.06	Nurse Supervisor
0-33.0602	Nurse Supv. Assist.
0-33.0603	Nurse Supv., Clinic
0-33.07	Nurse, Head
0-33.0702	Nead Nurse Assist.
0-33.0703	Head Nurse, Emergency Room
0-33.10	Nurse, General Duty
0-33.1001	Nurse, Operating Room
0-33.1002	Nurse, Maternity
0-33.1003	Nurse, Retirement Home
0-33.1004	Nurse, Obstetrics
0-33.1005	Nurse, Emergency Room
0-33.1006	Nurse, Heart Specialist
0-33.1007	Nurse, Clinic
0-33.1008	Nurse, Cardiovascular
0-33.1009	Nurse, Allergy Lab.
0-33.1000	Nurse, Cystology Lab.
0-33.1011	Nurse, I.V.
0-33.1012	Nurse, Recovery Room
0-33.1013	Nurse, Intensive Care
0-33.23	Nurse, Instructor
0-33.2302	Nurse, Instructor Assist.
0-33.55	Nurse Supv., Public Health
0-33.56	Nurse, Staff, Public Health
0-33.6303	Nurse Supv., Hosp. Personnel
0-33.86	Nurse, Anesthetist
0-33.87	Nurse, Office
0-35.22	Cytologist
0-35.75	Statistician II
0-39.83	Manager, Personnel

DOT CODE	
0-39.93	Dietitian
0-39.9301	Dietitian, Administrative
0-39.9302	Dietitian, Admin. Assist.
0-39.9303	Dietitian, Therapeutic
0-39.9304	Dietitian, Teaching
0-44.41	Medical Illustrator
0-50.01	Medical Technologist
0-50.0101	Med. Tech., Chief
0-50.0103	Med. Tech., Specialist
0-50.0104	Med. Tech., Research
0-50.0105	Laboratory Helper
0-50.0106	Lab. Assist., Medical
0-50.0107	Office Assist., Dr.'s Lab.
0-50.0108	Tissue Technician
0-50.0109	Hematology Technician
0-50.0110	Bacteriology Technician
0-50.0111	Bio-Chemistry Technician
0-50.0112	Heart Specialist Tech.
0-50.0113	Serology Technician
0-50.0114	Isotope Technician
0-50.015	Surgical Technician
0-50.0153	Pump Oxygenator Technician
0-50.0154	Artificial Kidney Technician
0-50.0155	Artificial Kidney Tech. Trainee
0-50.03	Oxygen Therapy Equip. Tech.
0-50.04	X-Ray Technician
0-50.0401	X-Ray Tech., Chief
0-50.0402	X-Ray Tech., Supv.
0-50.0403	X-Ray Tech., (Non-Registered)
0-50.0404	X-Ray Tech., Heart Spec.
0-50.0405	X-Ray Tech., Specialist
0-50.0406	X-Ray Tech., Deep Therapy
0-50.05	E.K.G. Technician
0-50.0503	Cardiovascular Technician
0-50.06	Dental Technician
0-50.07	Dental Hygienist
0-50.14	E.E.G. Technician
0-50.17	Inhalation Therapist
0-52.80	Physical Therapist
0-52.8001	Physical Therapist, Head
0-52.8003	Physical Therapist, Visiting
0-52.83	Nurse, Licensed Practical
0-52.8301	Nurse, Lic. Prac., Supv.
0-52.8302	Nurse, Lic. Prac., Emergency Room
0-52.8303	Nurse, Lic. Prac., Clinic
0-52.95	Supervisor, Central Supply
0-52.9501	Manager, Central Supply
0-52.9502	Supervisor Assist., Central Suppl
0-56.9603	Medical Photographer

0-67.110	Electronics Technician
0-68.71	Employment Interviewer
0-69.98	Systems Analyst
0-69.981	Programmer
0-71.21	Manager, Cafeteria
0-71.2102	Assist. Mgr., Cafeteria
0-71.2103	Cafeteria Mgr. Trainee
0-85.10	Manager, Credit & Collections
0-85.1002	Assist. Mgr., Credit & Collect.
0-87.10	Superintendent Building II
0-91.60	Purchasing Agent
0-97.03	Secretary, Administrative
0-97.05	Controller
0-97.0502	Controller, Assist.
0-97.12	Manager, Office
0-97.1201	Office Mgr., Assist
0-97.13	Business Manager
0-97.15	Adm. Assist. (Med. Serv.)
0-99.70	Director, Volunteer Services
0-99.80	Director, Medical Service
0-99.84	Manager, Institution
0-99.8402	Manager, Institution, Assist.
0-99.8403	Supt., Hospital
0-99.8404	Supt., Hospital Assist.
1-01.02	Bookkeeper II
1-01.0203	Night Auditor
1-01.03	Bookkeeper III
1-01.0301	Medical Voucher Clerk
1-01.31	Accounting Clerk
1-01.3101	Accounting Clerk Supv.
1-01.3102	Accounts Payable Clerk
1-01.3103	Accounts Receivable Clerk
1-01.32	Audit Clerk
1-01.38	Insurance Clerk II
1-01.43	Posting Clerk
1-01.47	Insurance Clerk, Medical
1-01.52	Cashier I
1-01.5201	Cashier I Supv.
1-01.5202	Cashier, Payments Received
1-01.53	Cashier II
1-02.01	Bookkeeping Machine Opr. I
1-02.02	Bookkeeping Machine Opr. II
1-02.0203	Bkg. Mach. Opr. Accts. Rec.
1-02.03	Bookkeeping Machine Opr. III
1-02.04	Posting Machine Opr. II
1-03.02	Insurance Checker
1-03.03	Food Tabulator, Cafeteria
1-03.06	Kitchen Clerk
1-03.07	Invoice Control Clerk
1-03.12	Diet Clerk
1-04.01	Clerk, General
1-05.01	Clerk, General Office
1-05.0101	Ward Clerk Supervisor
1-05.0102	Ward Clerk
1-05.0103	Clerk, Laboratory
1.-5.0104	Clerk, Surgery Scheduling
1-12.02	Credit Clerk II
1-15.02	Tracer I
1-17.01	File Clerk I
1-17.02	File Clerk II
1-17.0201	File Clerk, Film
1-17.0202	File Clerk, Soundex System
1-18.01	Mail Clerk
1-18.31	Employment Clerk
1-18.32	Personnel Clerk
1-18.41	Appointment Clerk
1-18.42	Information Clerk
1-18.43	Receptionist I
1-18.4301	Supv., Rec. Clerk
1-18.4302	Receptionist, Dr.'s Office
1-18.4303	Hospital Receiving Clerk
1-18.4304	Admitting Clerk, Clinic
1-18.4305	Receptionist, X-Ray
1-18.82	Billing Clerk
1-18.8201	Billing Clerk, Head
1-18.84	Collection Clerk
1-19.11	Procurement Clerk
1-20.01	Librarian Assistant
1-23.14	Messenger (Clerical)
1-25.02	Billing Machine Operator I
1-25.03	Billing Machine Operator II
1-25.22	Mimeograph Operator
1-25.23	Duplicating Machine Operator
1-25.43	Embossing Machine Operator
1-25.62	Key Punch Operator
1-25.6201	Key Punch Supv.
1-25.64	Tabulating Machine Operator
1-26.02	Payroll Clerk
1-26.0201	Chief Payroll Clerk
1-26.03	Timekeeper
1-32.10	Dental Assistant
1-32.20	Physician's Assistant
1-33.01	Secretary (Clerical)
1-33.0101	Medical Secretary Supv.
1-33.0102	Private Secretary
1-33.0103	Medical Secretary
1-34.04	Receiving Clerk
1-36.01	Statistical Clerk
1-36.14	Medical Records Clerk
1-37.12	Stenographer
1-37.34	Clerk-Typist
1-37.36	Transcribing Machine Opr.
1-37.3601	Supervisor, Transcribing

1-38.01	Stock Clerk
1-38.04	Stock Control Clerk
1-38.08	Pharmacy Helper
1-38.51	Storekeeper, Chief
1-42.31	Telephone Operator I
1-42.3101	Telephone Opr., Chief
1-42.32	Telephone Opr. II
1-47.03	Supervisor Data Processing
1-57.10	Salesman, Insurance
2-24.12	Maid, Ward
2-24.14	House Cleaner, Med. Serv.
2-24.5103	Linen Room Houseman
2-25.23	Housekeeper (Med. Serv)
2-25.2301	Housekeeper, Executive
2-25.2302	Housekeeper, Assistant
2-25.24	Linen Room Woman
2-25.2401	Linen Room Supv.
2-25.41	Kitchen Supv.
2-26.03	Relief Cook
2-26.15	Cook, Vegetable
2-26.18	Cook, Pastry II
2-26.31	Chef II
2-26.32	Cook, Institutional
2-27.12	Waitress
2-27.21	Countergirl, Cafeteria
2-27.22	Floor Girl, Cafeteria
2-27.94	Waitress, Hospital
2-27.9401	Tray Line Supervisor
2-27.9402	Tray Line Worker
2-29.01	Cook Helper II
2-29.03	Special Diet Worker
2-29.12	Pantry Man
2-29.13	Sandwich Man
2-29.17	Salad Girl I
2-29.21	Vegetable Man
2-29.51	Bus Girl
2-29.61	Dishwasher, Hand
2-29.6102	Pot Washer
2-29.62	Dishwasher, Machine
2-29.71	Kitchen Helper
2-29.72	Garbage Man
2-38.20	Nurse, Practical
2-42.10	Orderly
2-42.1001	Orderly, Chief
2-42.1002	Orderly, Surgical
2-42.1003	Orderly, Physical Therapy
2-42.1004	Charge Orderly
2-42.20	Nurse Aide
2-42.2003	Sterilizer, Hosp. Equip.
2-42.2004	Nurse Aide, Therapy
2-42.2005	Nurse Aide, X-Ray
2-42.2006	Nurse Aide, Delivery Room
2-42.2007	Nurse Aide, Surgery
2-42.22	Ward Attendant
2-42.50	Morgue Man
2-43.55	Clothes Room Worker
2-61.03	Watchman I
2-61.0301	Watchman Head
2-63.15	Fire Inspector
2-63.1501	Fire Inspector, Head
2-82.10	Charwoman
2-82.30	Window Cleaner
2-82.40	Wall Washer
2-86.10	Porter I
2-86.1001	Porter, Head
2-86.1002	Kitchen Porter
2-86.1003	Clean-up Man
2-95.20	Elevator Operator, Passenger
2-95.30	Elevator Operator, Freight
3-17.70	Animal Keeper
3-40.02	Gardener Helper
3-40.04	Groundskeeper
4-01.400	Baker
4-25.020	Seamstress
4-97.010	Electrician
4-97.420	Electrical Repairman
5-08.010	Optician
5-09.410	Orthopedic Appl. & Limb. Tech.
5-25.830	Carpenter, Maintenance
5-25.8303	Carpenter, Hospital
5-27.010	Painter, Maintenance
5-29.100	Plasterer, Maintenance
5-30.410	Steamfitter
5-58.100	Butcher, Meat
5-72.010	Stationary Engineer
5-72.0101	Stationary Engineer Foreman
5-72.020	Maintenance Engineer I
5-72.0201	Maintenance Engineer Foreman
5-83.611	Maintenance Man, Building
5-83.641	Maintenance Mechanic II
5-83.6412	Laundry Machine Mechanic
5-83.981	Hospital & Surgical Equip. Servicema
5-86.510	Dark Room Technician
5-97.050	Laundry Foreman
5-97.0501	Supt., Laundry
5-97.0502	Supt., Laundry, Assist.
5-99.050	Utilities & Maintenance Foreman
6-02.910	Bakers Helper
6-27.516	Sewing Machine Opr., Laundry
7-08.041	Optician, Dispensing
7-36.010	Chauffeur
7-36.260	Truck Driver, Light
7-57.005	Laundryman III
7-57.021	Marker (Laundry)
7-57.251	Washer, Machine
7-57.511	Presser, Machine
7-57.5111	Presser, Machine Supv.
7-57.991	Laundryman, Hand
7-57.993	Laundry Operator

7-60.100	Storage Garage Attendant
7-60.500	Garage Man
7-70.040	Fireman Stationary Boiler
7-86.516	Chemical Mixer
7-86.521	X-Ray Developing Machine Operator
9-09.41	Pack Maker (Med. Service)
9-57.21	Laborer, Laundry
9-57.2102	Flatwork Feeder
9-57.2103	Tumbler Operator
9-57.2104	Glove Girl (Med. Serv.)
9-57.2105	Laundry Collector
9-57.2106	Extractor Operator
9-57.2107	Flatwork Catcher
9-57.2108	Shaker Flatwork
9-57.2109	Flatwork Folder
9-68.30	Bundler
9-83.41	Maintenance Mechanic Helper
9-83.91	Laborer, Misc. Equip. Maintenance
9-88.40	Laborer, Stores

PROFESSIONAL NURSING

DOT REFERENCE: 0-33.10 NURSE, GENERAL DUTY

ALTERNATE TITLES: Staff Nurse; Registered Nurse; Professional Nurse

Renders general nursing care to patients in hospital, infirmary, sanitarium or similar institution. Administers prescribed medications and treatments in accordance with approved nursing techniques. Assists PHYSICIAN during treatment and examination of patients. Usually rotates among various clinical services of institution, as medicine, obstetrics, operating room, orthopedics, out-patient and admitting, pediatrics, psychiatry, surgery, etc.

RELATED OCCUPATIONS:

0-33.1001 NURSE, OPERATING
0-33.1002 NURSE, MATERNITY
0-33.1003 NURSE, RETIREMENT HOME
0-33.1004 NURSE, OBSTETRICS
0-33.1005 NURSE, EMERGENCY ROOM
0-33.1006 NURSE, HEART SPECIALIST
0-33.1007 NURSE, CLINIC
0-33.1008 NURSE, CARDIOVASCULAR
0-33.1009 NURSE, ALLERGY LAB.
0-33.1010 NURSE, CYSTOLOGY LAB
0-33.1011 NURSE, I.V.
0-33.1012 NURSE, RECOVERY ROOM
0-33.1013 NURSE, INTENSIVE CARE

Renders nursing care to patients, specializing in one clinical service.

0-33.03 DIRECTOR, NURSING SERVICE
0-33.0302 DIRECTOR, NURSING SERVICE, ASSISTANT

Administers nursing service program in a hospital to maintain standards of patient care and acts as advisor to SUPERINTENDENT, HOSPITAL; medical staff; and department heads in matters relating to nursing service.

0-33.06 NURSE, SUPERVISOR
0-33.0602 NURSE, SUPERVISOR, ASSISTANT
0-33.0603 NURSE, SUPERVISOR, CLINIC

Directs activities of nursing personnel in one department such as obstetrics, pediatrics, and surgery, consisting of two or more units, each administered by NURSE, HEAD.

0-33.07 NURSE, HEAD
0-33.0702 NURSE, HEAD, ASSISTANT
0-33.0703 NURSE, HEAD, EMERGENCY ROOM

Administers nursing activities in single assigned unit. Assigns duties to and coordinates activities of professional and non-professional nursing staff.

0-33.23 NURSE, INSTRUCTOR
0-33.2303 NURSE, INSTRUCTOR, ASSISTANT

Demonstrates and teaches patient care to nursing students or instructs them in principles and application of one or more subjects related to nursing.

0-33.55 NURSE SUPERVISOR, PUBLIC HEALTH NURSING

Assists in directing and supervising nursing service concerned with public health. Works in a public health agency or private organization.

0-33.56 NURSE STAFF, PUBLIC HEALTH

Assists in directing and supervising nursing service concerned with public health. Works in a public health agency or private organization.

0-33.63 NURSE SUPERVISOR, INDUSTRIAL NURSING
0-33.6303 NURSE SUPERVISOR, HOSPITAL PERSONNEL

Administers employee health services for an industrial organization, hospital or clinic.

0-33.83 NURSE, ANESTHETIST

Administers intravenous, spinal, and other anesthetics during surgical operations, deliveries, or other medical and dental procedures.

0-33.87 NURSE, OFFICE

Assists PHYSICIAN in care and treatment of patients in office. May conduct laboratory tests (MEDICAL TECHNOLOGIST). May take and develop x-rays (X-RAY TECHNICIAN). May act as receptionist, perform secretarial duties, and prepare monthly statements (RECEPTIONIST, DR'S OFFICE).

COMMENTS:

There were only 54 job vacancies recorded for all PROFESSIONAL NURSING occupations, which had an estimated current employment of 3893 during the time of the survey. (Self-employed private duty nurses were not included in these figures.) But within one year employers expect to have 134 additional positions on their staffs and to hire another 615 women as replacements for those leaving their jobs. By 1970 the number of new positions was estimated at 571, with 2598 more women hired as replacements. The net increase in new jobs by 1965 of 3.4% and 14.7% by 1970 corresponds to the percentage increase of the medical industry as a whole.

Some employers commented on the need for supervisory courses in nurses' training and for expansion of the two and three-year programs; but a tally of specific employer requirements was not attempted. As field interviewers were generally restricted to acquiring information from personnel officers, hospital administrators, or their assistants, it is not known how closely their expressions of training needs and personality factors parallel the opinions of Director of Nursing Service or of Nursing Supervisors, for example. This comment on interviewing restrictions is not intended to cast reflection upon the cooperation of

employers who gave generously of their time to participate in this survey, but to point out the practical limitations on hours that could be made available to other than patient care activity.

Though the shortage in nursing occupations has been known for some years, suburban areas tend to have less difficulty filling vacancies from married women not wishing to commute to the down-town area. There is considerable speculation, though the subject was not directly covered in the survey, that more nurses would be available for employment on a part-time basis, if working hours that do not conflict with family responsibilities could be scheduled by employers.

Age restrictions also play a part in the shortage problem, as only four employers indicated a willingness to hire women over forty-five, and each of these was for a nurse in a doctor's office where presumably the physical demands are somewhat less than those required of a nurse in a hospital or clinic. Wages for nurses in doctors' offices average only $320.00 compared to $400.00 in hospitals, however. Doctors had less of a problem with turnover in office nurses (17% in 1964) than did hospitals, which had a turnover rate of 42% for general duty nurses.

Doctors' offices and clinics need nurses with training in office skills. Many employers in this category made comments similar to that of one physician who said, "Both RN's and LPN's should have good business background, bookkeeping, typing, etc."

Table VIII gives the current employment and 1965-1970 forecasts for all related professional nursing occupations.

TABLE VIII

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

INDUSTRY AND OCCUPATIONAL CODE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-33.10								
Hospital	1613	1608	5	27	1699	347	1907	1425
Conv. & Rest Home	180	180			180	40	260	180
	1793	1788	5	27	1879	387	2167	1605
0-33.1001								
Hospital	213	213			213	29	233	110
0-33.1002								
Hospital	139	139			144	28	144	102
0-33.1003								
Retirement Home	40	40			40		40	
0-33.1004								
Hospital	147	147			147	40	147	172
0-33.1005								
Hospital	82	82			82	20	82	80
0-33.1006								
Hospital	10	10			10		10	
0-33.1007								
Dr's Office, Clinic	140	140		5	140	40	140	200
0-33.1008								
Dr's Office, Clinic	10	10			10		10	
0-33.1009								
Dr's Office, Clinic	5	5			5		5	
0-33.1010								
Dr's Office, Clinic	5	5			5		5	
0-33.1011								
Hospital	10	10			11	3	13	13
0-33.1012								
Hospital	2	2			2		2	
0-33.1013								
Hospital	3	3			3		3	
0-33.03								
Hospital	27	27			27	1	27	
0-33.0302								
Hospital	44	44			44	2	49	9
0-33.06								
Dr's Office, Clinic	5	5			5		5	
Hospital	111	111			111	3	118	24
Conv. & Rest Home	40	40			40		40	
	156	156			156	3	163	24
0-33.0602								
Hospital	29	29			26		26	3

INDUSTRY AND OCCUPATIONAL CODE	DECEMBER, 1964 Employ.	Female	Male	Vacancies	YEAR-1965 Employ.	Replace.	YEAR-1970 Employ.	Replace.
0-33.0603								
Hospital	4	4			4		4	
0-33.07								
Retirement Home	20		20		20		20	
Dr's Office, Clinic	20	20			20		20	10
Hospital	217	216	1	1	215	14	242	80
Conv. & Rest Home	60	60			60		60	40
	317	296	21	1	315	14	342	130
0-33.0702								
Hospital	54	54		1	54	24	66	95
0-33.0703								
Hospital	6	6			6		6	11
0-33.23								
Dr's Office, Clinic	5	5			5		5	
Hospital	7	7			7		7	
	12	12			12		12	
0-33.2302								
Hospital	1	1			1		1	
0-33.55								
Hospital	1	1			1		1	
0-33.56								
Hospital	8	8			10		12	1
0-33.6303								
Hospital	4	4			4		5	
0-33.86								
Dr's Office, Clinic	15	15			15		15	
Hospital	47	47			47	1	48	3
	62	62			62	1	63	3
0-33.87								
Dr's Office, Clinic	480	480		20	520		580	
Osteopathic Physician	20	20			20		20	
Hospital	69	69			74	23	86	40
	569	569		20	614	23	686	40
TOTALS:	3893	3867	26	54	4027	615	4464	2598

1965	Employment Forecast	4027
11/64	Current Employment	3893
	One Year Net Increase	134
	Replacements	615
Total Number of Hires		749

1970	Employment Forecast	4464
Current Employment		3893
	Five Year Net Increase	571
	Replacements	2598
Total Number of Hires		3169

MEDICAL TECHNOLOGY AND RELATED OCCUPATIONS

DOT REFERENCES: 0-50.01 MEDICAL TECHNOLOGIST

ALTERNATE TITLES: Hospital Technician; Laboratory Assistant; Laboratory Technician, Medical Technician

Performs chemical, microscopic, and bacteriologic tests to provide data for use in treatment and diagnosis of disease. Receives laboratory specimens, or obtains specimens of body materials such as urine, blood, sputum, pus, and tissues directly from patient. Makes qualitative and quantitative chemical analyses of body fluids and exudates. Cultivates, isolates, and identifies pathogenic bacteria, parasites, and other micro-organisms. Cuts, stains, and mounts tissue sections. Performs blood tests and studies morphology of blood. Prepares vaccines and serums and conducts serological tests. May collect, type, and process blood, and perform transfusions. May take electrocardiograms and determine basal metabolism rate. May assist or engage in medical research.

RELATED OCCUPATIONS:

0-50.0101 MEDICAL TECHNOLOGIST, CHIEF

Supervises workers engaged in performing chemical, microscopic, and bacteriologic tests to obtain data for use in diagnosis and treatment of diseases. Assigns workers to duties and supervises performance of tests in fields of bacteriology, bio-chemistry, histology, hematology, or serology. Reviews reports of completed analyses. May assist during autopsies.

0-50.0103 MEDICAL TECHNOLOGIST, SPECIALIST

Performs tests and studies specimens to provide data for use in treatment and diagnosis of disease as does MEDICAL TECHNOLOGIST, but usually required to specialize in only two fields such as bio-chemistry and hematology.

0-50.0104 MEDICAL TECHNOLOGIST, RESEARCH

Performs chemical, microscopic, and bacteriologic tests to provide data for medical research. Generally performs diagnostic tests from specimens of laboratory animals.

0-50.0105 LABORATORY HELPER

Cleans and washes laboratory glassware. Performs more difficult cleaning procedures, using various solutions and acids. May cut tissues, stain slides. Delivers laboratory reports.

0-50.0106 LABORATORY ASSISTANT, MEDICAL

Performs simple tests on blood, tissues, and secretions of patients. In large laboratories may assist with routine mechanical work such as staining slides while under close supervision. May work alone in doctors'

offices, from which more complex laboratory procedures are referred to professional laboratories. May take and develop x-rays (X-RAY TECHNICIAN).

0-50.0107 OFFICE ASSISTANT, DOCTOR'S LABORATORY

Performs simple tests (or highly trained independent work, if has the formal training) such as blood count, urinalysis, and metabolism. In addition may perform duties of SECRETARY.

0-50.0108 TISSUE TECHNICIAN

Cuts, stains, and mounts specimens of human or animal tissue for microscopic examination, to provide data on functioning of tissues and organs and cause of progress of diseases. May dehydrate, clear, and impregnate tissue in an autotechnician (automatic machine with time controls).

0-50.0109 HEMATOLOGY TECHNICIAN

Performs blood tests and studies morphology of blood to obtain data for use in diagnosis and treatment of diseases. May collect and process blood and plasma for blood bank.

0-50.0110 BACTERIOLOGY TECHNICIAN

Cultivates, isolates, and assists in identifying bacteria and other micro-organisms, and performs bateriological tests.

0-50.0111 BIOCHEMISTRY TECHNICIAN

Performs qualitative and quantitative chemical analyses of blood fluids and exudates to provide information used in diagnosing and treating infectious diseases.

0-50.0112 HEART SPECIALIST TECHNICIAN

Performs blood analysis for heart center. Monitors equipment during heart surgery. Checks for correct flow of blood, oxygen, etc. during operation of heart-lung machine. Positions patients for heart-machine tests.

0-50.0113 SEROLOGY TECHNICIAN

Prepares serums and vaccines used to treat, diagnose, and confer immunity against infectious diseases, and performs serological tests to identify diseases. May perform immunology tests such as pollen sensitization tests, by injection of antigens in patient. May conduct tests to determine susceptibility of micro-organisms to chemical and physical agents.

0-50.0114 ISOTOPE TECHNICIAN

Performs X-Ray diagnosis with radio-active material given to patients either orally or by injection. Trace various types of radio-active material with rays as it traverses through the body. Work with radio-active iodine and carbons.

COMMENTS:

There were eight job vacancies recorded for MEDICAL TECHNOLOGISTS and related specialities at the time of the survey. All of these were in hospitals. Women comprise 88% of the 901 estimated employment in the field. Within one year employers expect to add only two positions to their staffs, but also expect to hire 94 replacements for workers leaving their place of employment. The number of new positions by 1970 is estimated at 47, with 437 hired for replacement, but last year's turnover rate of 51.8% suggests a replacement figure more reasonably estimated at 466 for one year and 2,330 by 1970.

The negligible increase due to expanding facilities (less than 1/4 of 1% within one year and 5% by 1970) is much less than that of the twenty-six demand occupations combined, which have an increase of 5% forecast for 1965 and 20% by 1970.

Wages range from $270 to $337 per month for the LABORATORY ASSISTANT (0.50.0106) who performs only simple or routine tests. Salaries for MEDICAL TECHNOLOGIST (0-50.01) range from $322 to $400 monthly, and up to $558 per month for supervision.

Three hospitals indicated no age restrictions in hiring, but all the other employers interviewed stated a preference for workers under forty-five, and half of these considered the occupation most suitable for the 18-22 age bracket.

Doctors expressed a strong need for LABORATORY ASSISTANTS (0-50.0106) who could do x-ray work and for X-RAY TECHNICIANS able to perform routine laboratory work. This is not true in hospitals, however, where occupations are becoming increasingly specialized and where one out of three workers in the field of MEDICAL TECHNOLOGY is in a speciality area.

LABORATORY HELPERS (0-50.0105) who wash and sterilize laboratory glassware are paid at the rate of $216 to $248 monthly. Almost half of the 102 jobs are on a part-time basis, and women occupy 90% of the available positions. Employers prefer to hire girls in the younger age group; experience is not generally required. Though only nine additional positions as LABORATORY HELPERS are expected to be available by 1970, employers expect to hire 60 replacements. This turnover factor will provide some employment opportunities for young women wishing part-time work.

Table IX gives the current employment and 1965-1970 forecasts for MEDICAL TECHNOLOGY and related occupations.

TABLE IX

MEDICAL TECHNOLOGY AND RELATED OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

INDUSTRY AND OCCUPATIONAL CODE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-50.01								
Dr.'s Office, Clinic	200	195	5		200	15	200	60
Hospitals	246	163	83	2	248	35	274	169
Med-Dental Lab.	120	120			120		120	
	566	478	88	2	568	50	594	229
0-50.0101								
Dr.'s Office, Clinic	5	5			5		5	
Hospitals	19	10	9	6	19	1	20	5
	24	15	9	6	24	1	25	5
0-50.0103								
Hospitals	5	2	3		5	1	5	6
0-50.0104								
Hospitals	9	9			9	2	9	8
0-50.0106								
Dr.'s Office, Clinic	95	95			95	10	95	50
Hospitals	29	27	2		29	2	30	10
	124	122	2		124	12	125	60
0-50.0107								
Dr.'s Office, Clinic	30	30			30	5	30	25
0-50.0108								
Dr.'s Office, Clinic	10	10			10		10	
Hospitals	15	15			15	1	21	5
	25	25			25	1	31	5
0-50.0109								
Dr.'s Office, Clinic	50	45			50	10	50	50
Hospitals	14	12			14	5	19	16
	64	57			64	15	69	66
0-50.0110								
Hospitals	14	14			14	1	16	8
0-50.0111								
Hospitals	27	27			27		29	2
0-50.0112								
Hospitals	1	1			1		1	
0-50.0113								
Dr.'s Office, Clinic	10	10			10	5	10	20
0-50.0114								
Hospitals	2	2			2	1	4	3
TOTALS	901	792	10	8	903	94	948	437

LABORATORY HELPER

0-50.0105

Dr.'s Office, Clinic	10	10		10		10	6
Hospitals	52	42	10	52	2	61	14
Med-Dental Labs.	40	40		40		40	40
	102	92	10	102	2	111	60

X-RAY TECHNICIAN AND RELATED OCCUPATIONS

DOT REFERENCE: 0-50.04 X-RAY TECHNICIAN

ALTERNATE TITLES: Radiographer; Radiotherapist

Assists in application of roentgen rays and radioactive substances for diagnostic and therapeutic purposes. Positions patient under machine, adjusts immobilization devices, and affixes lead plates to protect unaffected areas. Administers drugs and chemicals to render organs more opaque. Adjusts switches regulating length and intensity of exposure. Takes x-ray photographs of various portions of body to assist medical personnel in detection of foreign bodies and diagnosis of diseases and injuries. Develops film in accordance with photographic techniques. Assists in treating diseased or affected areas of body, under close supervision, by exposing area to specified concentration of x-rays for prescribed lengths of time. May assist in radium therapy. Prepares reports and maintains records of services rendered. Makes minor adjustments to x-ray equipment. May specialize in taking x-rays of specific areas of body.

RELATED OCCUPATIONS:

0-50.0401 X-RAY TECHNICIAN, CHIEF

Supervises and directs X-RAY TECHNICIANS engaged in taking and developing x-ray photographs and assisting in x-ray therapy. Assigns workers to special examinations such as bone, chest, or gastro-intestinal. Instructs assistants on technical aspects of work. Coordinates x-ray activities with other departments to insure efficient service. Administers x-ray therapy under supervision. Makes minor repairs to equipment.

0-50.0402 X-RAY TECHNICIAN, SUPERVISOR

Assists in directing and supervising X-RAY TECHNICIANS

0-50.0403 X-RAY TECHNICIAN (Non-Registered)

An X-RAY TECHNICIAN not registered with the American Registry of Radiologic Technologists.

0-50.0404 X-RAY TECHNICIAN, HEART SPECIALIST

An X-RAY TECHNICIAN specializing in heart patients. Assists in catheterization and in operation of oscilloscope. Prepares patients for tests and positions them for x-rays. Operates special machine and equipment for x-ray procedures of the heart.

0-50.0405 X-RAY TECHNICIAN, SPECIALIST

Operates fluoroscope. Develops x-ray film in accordance with photographic technique. Alternate Titles: Dark Room Technician.

X-RAY TECHNICIAN AND RELATED OCCUPATIONS

DOT REFERENCE: 0-50.04 X-RAY TECHNICIAN

ALTERNATE TITLES: Radiographer; Radiotherapist

Assists in application of roentgen rays and radioactive substances for diagnostic and therapeutic purposes. Positions patient under machine, adjusts immobilization devices, and affixes lead plates to protect unaffected areas. Administers drugs and chemicals to render organs more opaque. Adjusts switches regulating length and intensity of exposure. Takes x-ray photographs of various portions of body to assist medical personnel in detection of foreign bodies and diagnosis of diseases and injuries. Develops film in accordance with photographic techniques. Assists in treating diseased or affected areas of body, under close supervision, by exposing area to specified concentration of x-rays for prescribed lengths of time. May assist in radium therapy. Prepares reports and maintains records of services rendered. Makes minor adjustments to x-ray equipment. May specialize in taking x-rays of specific areas of body.

RELATED OCCUPATIONS:

0-50.0401 X-RAY TECHNICIAN, CHIEF

Supervises and directs X-RAY TECHNICIANS engaged in taking and developing x-ray photographs and assisting in x-ray therapy. Assigns workers to special examinations such as bone, chest, or gastro-intestinal. Instructs assistants on technical aspects of work. Coordinates x-ray activities with other departments to insure efficient service. Administers x-ray therapy under supervision. Makes minor repairs to equipment.

0-50.0402 X-RAY TECHNICIAN, SUPERVISOR

Assists in directing and supervising X-RAY TECHNICIANS

0-50.0403 X-RAY TECHNICIAN (Non-Registered)

An X-RAY TECHNICIAN not registered with the American Registry of Radiologic Technologists.

0-50.0404 X-RAY TECHNICIAN, HEART SPECIALIST

An X-RAY TECHNICIAN specializing in heart patients. Assists in catheterization and in operation of oscilloscope. Prepares patients for tests and positions them for x-rays. Operates special machine and equipment for x-ray procedures of the heart.

0-50.0405 X-RAY TECHNICIAN, SPECIALIST

Operates fluoroscope. Develops x-ray film in accordance with photographic technique. Alternate Titles: Dark Room Technician.

0-50.0406 X-RAY TECHNICIAN, DEEP THERAPY

Assists X-RAY TECHNICIANS with cobalt and deep therapy treatments. Positions patients and operates machines. Schedules patients.

COMMENTS:

There were no job vacancies for X-RAY TECHNICIANS and RELATED OCCUPATIONS recorded by our interviewers during the time of the survey. This is a comparatively small occupational field, with little growth expected. Hospitals employ 59% of the technicians, and women comprise over two-thirds of the 195 workers in the field. Though replacements will bring the total number of hires to 121 by 1970, only two positions are expected to be added in one year and 21 positions within the next five years. The turnover rate for X-RAY TECHNICIAN (0-50.04) of 31.5% suggests a much higher replacement figure than the 121 estimate given by employers - 600 replacements is more likely. With the number of new jobs in the next five years forecast at only 21, by far the largest number of job opportunities will develop because of workers leaving their place of employment, rather than through the creation of additional jobs.

Workers in the field of X-Ray Technology who specialize in developing film or in assisting with deep therapy treatment are not necessarily fully-qualified X-RAY TECHNICIANS. These specialized occupations are in the salary range of from $275 to $315 per month. Non-Registered Technicians average $338 monthly. Earnings of Registered Technicians begin at $365 and rise to $465 for a Chief Technician.

Contrary to some national publications that indicate a shortage of X-RAY TECHNICIANS in the 60's, Seattle and King County appear to have an adequate labor supply.

Table X gives the current employment and 1965-1970 forecasts for X-RAY TECHNICIANS AND RELATED OCCUPATIONS.

TABLE X

X-RAY TECHNICIANS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

INDUSTRY AND OCCUPATIONAL CODE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-50.04								
Dr.'s Office, Clinic	75	70	5		75	10	75	50
Hospital	87	37	50		89	31	107	43
	162	107	55		164	41	182	93
0-50.0401								
Dr.'s Office, Clinic	5	5			5		5	
Hospital	10	6	4		10		10	1
	15	11	4		15		15	1
0-50.0402								
Hospital	3		3		3		3	1
0-50.0403								
Hospital	2	2			2		2	2
0-50.0404								
Hospital	2	2			2	2	3	4
0-50.0405								
Hospital	1	1			1		1	
0-50.0406								
Hospital	10	10	—		10	—	10	—
TOTALS	195	133	62		197	43	216	101

1965	Employment Forecast	197
12/64	Current Employment	-195
	One Year Net Increase	2
	Replacements	43
Total Number of Hires		45

1970	Employment Forecast	216
64	Current Employment	-195
	Five Yr. Net Increase	21
	Replacements	101
Total Number of Hires		122

SURGICAL TECHNICIAN

DOT REFERENCE: 0-50.015 SURGICAL TECHNICIAN

ALTERNATE TITLES: Operating Room Technician; Scrub Nurse; Orderly Technician; Surgical Orderly**

Performs variety of tasks in operating room to assist professional nursing and medical staff. Washes, shaves, and sterilizes operative region of patient in preparation for operation. Scrubs hands and dons cap, mask, sterile gown, and rubber gloves. Places equipment and supplies in operating room according to type of operation and surgeon's directions, and arranges instruments as specified by NURSE, GENERAL DUTY. Maintains specified supply of such fluids as blood, plasma, saline, and glucose for use during operation. Adjusts lights or other surgical equipment as directed. Places contaminated instruments and supplies in receptacles to prevent spread of infection, using forceps. Labels surgical specimens for laboratory analysis. Cleans operating room, and washes and sterilizes contaminated instruments and equipment, following prescribed aseptic methods. May take sponge, needle, and instrument count. May assist in administering blood, plasma, glucose, or other intravenous transfusions and injections. May hand specified instruments and supplies to surgeon during operation and hold retractors of clamps and cut sutures as directed.

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

	DECEMBER, 1964				YEAR-1965		YEAR-1970	
INDUSTRY	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
806 Hospitals	44	33	11	---	45	4	62	21

COMMENTS:

The specialized occupation of SURGICAL TECHNICIAN has evolved from the separation of some operating room duties from those formerly performed by the REGISTERED NURSES. Workers with nursing experience have been upgraded through hospital in-service training programs. However, some hospitals prefer to train only LICENSED PRACTICAL NURSES for this kind of work.

No vacancies were recorded for SURGICAL TECHNICIANS at the time of the survey, and only one additional position was forecast for the next year. A 41% growth potential by 1970 is due to the expected addition of 18 new positions. Employers expect to hire 21 replacements within the next five years. The turnover for 1964 was 17%.

Three times as many women as men are employed as SURGICAL TECHNICIANS, which pays from $295 to $369 monthly.

**Workers performing the same duties may be called SURGICAL ORDERLY by some employers or SURGICAL TECHNICIAN by others. In a few instances, the same institution employs both, and in these cases the SURGICAL ORDERLY (2-42.1002) has less

responsibility than the SURGICAL TECHNICIAN. All workers with tasks similar to the job description of SURGICAL TECHNICIAN are given that title in this report, regardless of the employer's job title. A description of SURGICAL ORDERLY, when differentiated by job duties from that of SURGICAL TECHNICIAN, is in a section of this report under ORDERLY and RELATED OCCUPATIONS.

DENTAL ASSISTANT

DOT REFERENCE: 1-32.10 DENTAL ASSISTANT

ALTERNATE TITLES: Chairside Assistant

A trained Dental Assistant's primary duty is assisting the dentist at the chairside. She prepares patients for treatment, sets out instruments, and, during treatment, hands the required instruments to the dentist, mixes filling materials and dental cement as the dentist needs them, and assists in taking x-rays. The Dental Assistant also sterilizes instruments, orders supplies, and does laboratory work; she develops, dries, and mounts x-ray film. Her clerical duties usually include acting as receptionist, scheduling appointments, keeping the books, and billing the patients. The job of Dental Assistant should not be confused with that of the DENTAL HYGIENIST, for which additional study and licensing are required.

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

	DECEMBER, 1964				YEAR-1965		YEAR-1970	
INDUSTRY	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
802 Dentists	860	820	40	20	900	40	1020	100
806 Hospitals	1	1			1		1	1
	861	821	40	20	901	40	1021	101

COMMENTS:

A pleasant personality, poise, and self-control are essential qualities for the DENTAL ASSISTANT. She should also be able to work quickly and deftly with her hands. One out of ten dentists interviewed would hire only DENTAL ASSISTANTS with previous experience in that capacity. One out of every four employers prefer applicants with some similar experience. But two-thirds of the employers said they would hire applicants with no work experience, if vocational training for the job was considered to be adequate; and those dentists willing to hire inexperienced workers employ 75% of the DENTAL ASSISTANTS in the county. Therefore, three out of four graduates from a vocational course in DENTAL ASSISTING should find employer acceptance, if job openings are available, even though they have had no actual work experience. Only one dentist expressed a willingness to hire an applicant with no vocational training and no experience. However, employer preferences regarding experience and training requirements are not necessarily adhered to in every instance. A young woman who has followed a general business program in high school or who has had courses in biology and chemistry, bookkeeping, typing, and business arithmetic, would have useful preparation for a job as DENTAL ASSISTANT.

At the time of the survey there were 20 estimated job vacancies for DENTAL ASSISTANTS. Employers expect to have 40 jobs available within one year, because of additions to present staffs and 160 additional jobs by 1970. To replace those leaving their place of employment, dentists anticipate hiring another 40 women in one year and 101 replacements by 1970.

The turnover rate for 1964 was 51.1%, somewhat higher than the average rate of the twenty-six demand occupations. In that one year, employers hired 440 DENTAL ASSISTANTS to maintain a work force of 861. According to this experience, their replacement estimate is extremely low. A repetition during the next five years of the turnover experienced in 1964, would mean that approximately 2300 DENTAL ASSISTANTS would be hired by 1970 for an average of 880 jobs, instead of the 101 replacements estimated by employers. However, the sampling procedure of the survey was based on a selection of one employer out of twenty with a payroll of less than one hundred employees. Since all the dentists fall into this category, one response was multiplied by twenty to maintain the statistical relationship. The smallness of the sample and the resulting statistical weights assigned each dentist employer may have given an inordinate amount of influence on the totals, from a few employers with excessive turnover. On the other hand, the majority of DENTAL ASSISTANTS are attractive and bright young women. They are alert to opportunities with other employers, if their present employment is unsatisfactory; a high percentage will marry; and a number will leave their jobs to go on to higher levels of education. In an occupation characteristically composed of the younger age group, a high turnover rate is to be expected.

Salaries for DENTAL ASSISTANTS range from $225 to $307 monthly in King County.

DENTAL TECHNICIAN

DOT REFERENCE: 0-50.06 DENTAL TECHNICIAN

ALTERNATE TITLES: Dental-Lab. Assistant; Dental Mechanic

Prepares metal, vulcanite, or other composition plates from wax impressions taken by DENTIST. Constructs metal clamps, inlays, and bridgework, according to specifications. Develops x-ray pictures and keeps records. May bake porcelain teeth. May repair chipped or fractured dental plates.

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

	DECEMBER, 1964				YEAR-1965		YEAR-1970	
INDUSTRY	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
802 Dentists	40	20	20		40		40	
807 Med-Dental Labs.	80		80	20	100		100	
	120	20	100	20	140		140	

COMMENTS:

Because of the small sample, the statistics here are misleading. The twenty vacancies and the twenty new jobs for 1965 indicated by the survey resulted from the response of one employer with an assigned statistical weight of twenty. To verify the statistical data, every Medical-Dental Laboratory was contacted by telephone after the survey was made. None had openings for a DENTAL TECHNICIAN and none were expected.

This follow up by telephone established that the occupation of DENTAL TECHNICIAN is not expected to show an increase in demand for workers within the next five years.

DENTAL HYGIENIST

DOT REFERENCE: 0-50.07 DENTAL HYGIENIST

ALTERNATE TITLES: Oral Hygienist; Prophylactician

Administers dental prophylactic treatment and instructs groups in care of teeth and mouth. Charts cavities and recommends dental care. Lectures on oral hygiene, using motion pictures, charts, and other visual aids. When employed in DENTIST'S office, may assist by developing x-ray films, preparing filling material, and sterilizing instruments. May perform other dental duties not reserved by law to DENTIST.

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

	DECEMBER, 1964				YEAR-1965		YEAR-1970	
INDUSTRY	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
802 Dentists	280	280	--	140	360	40	360	80

COMMENTS:

There were more job vacancies for DENTAL HYGIENISTS in the King County area than in any other occupation surveyed, but only one in twenty was for full-time employment. Most hygienists work on a part-time basis for more than one dentist at an average wage rate of $525 per month. All are female. Though a few dentists are willing to hire women to age sixty, most indicated an age limit of forty-five.

Many dentists expressed the opinion that the long term training requirement in the State of Washington is responsible for the shortage of DENTAL HYGIENISTS. These dentists stressed the feasibility of two years' vocational preparation rather than the present four-year program required in this state. They indicated that graduates from two-year courses offered in some other states were acceptable and were being hired by them when available. However, spokesmen for the Washington State Dental Association held the reverse opinion and affirmed that four-year training is necessary and that the dentists opposing this standard are not representative of the profession as a whole.

NURSE, LICENSED PRACTICAL
AND
RELATED OCCUPATIONS

DOT REFERENCE: 0-52.83 NURSE, LICENSED PRACTICAL

ALTERNATE TITLES: Practical Nurse; LPN

Performs assigned nursing duties, under supervision, in caring for patients in hospital or at home. Prepares patients and assists physician with examination and/or treatments. Prepares and applies dressings, compresses, and packs; takes patient's pulse, temperature, and blood pressure, recording when authorized, on patient's chart. Pours, measures, and/or counts out authorized medicines and administers prescribed dosage to patient. Prepares patients for either surgery or obstetrical treatment; sets up equipment in operating and delivery rooms; hands instruments and supplies to surgeon or obstetrician or professional nurse during surgery or delivery (SURGICAL TECHNICIAN).

RELATED OCCUPATIONS:

0-52.8301 NURSE, LICENSED PRACTICAL, SUPERVISOR

Directs activities of practical nurses assigned to hospital wards.

0-52.8302 NURSE, LICENSED PRACTICAL, EMERGENCY ROOM
0-52.8303 NURSE, LICENSED PRACTICAL, CLINIC

Renders nursing care to patients, specializing in one clinical service.

2-38.20 NURSE, PRACTICAL (Unlicensed)

Performs nursing duties as NURSE, LICENSED PRACTICAL, but prohibited by state law from administering medication.

1-32.20 PHYSICIAN'S ASSISTANT

Receives patients, makes out general personal data cards for new patients, provides the physician with the medical record of regular patients, and ushers the patients in turn into the consultation or examination office. She usually assists or directs the patients in preparing for examination, treatment, or minor surgery. She sets out the necessary instruments, and may assist her employer by handing him instruments and performing other duties. She may assist the patient to dress, and then prepare the examining room for the next patient. She sterilizes instruments and keeps adequate supplies in the examining room. She may take patients temperature and pulse, apply or remove surgical dressings, operate an electrocardiograph or diathermy machine, and make simple laboratory tests. Her clerical duties may include ordering supplies, receiving payment for services, preparing and mailing statements, completing insurance forms, taking and transcribing dictation from the physician, and preparing correspondence.

COMMENTS:

Employment of NURSE, LICENSED PRACTICAL in King County was estimated at 851 in December, 1964, and there were 60 full-time vacancies. One hundred twelve new positions are expected to be available within one year and 324 by 1970. Replacements for those workers leaving their jobs is expected to account for another 122 new hires within one year and 501 within five years.

The occupation LPN has a 38% growth potential for the next five years, ranking third below ORDERLY at 73% and COOK HELPER at 44%. The turnover rate for LPN of 35.3% is less than the 47% average turnover of the twenty-six demand occupations as a whole.

Nursing homes and convalescent centers had no vacancies for LPN's at the time of the survey, but forecast more growth (50% by 1970) than did hospitals who anticipate an increase of 33% within the next five years.

Women with experience as Practical Nurses, either licensed or unlicensed, also find work in doctors' offices, as do registered nurses. When primarily engaged in assisting patient and doctor, practical nurses are classified in this report as PHYSICIAN'S ASSISTANT (1-32.20). When the major responsibilities are receptionist work and record-keeping, their designation is RECEPTIONIST, DR'S OFFICE (1-18.4302). Registered nurses employed in doctors' offices have the title NURSE, OFFICE (0-33.87), if their main functions have to do with nursing. These various titles covering the employment of practical or registered nurses is because occupational titles used throughout this report are based on an evaluation of the primary functions of the worker, rather than the license held or the degree of education achieved. Therefore, LPN'S may be classified in this survey as PHYSICIAN'S ASSISTANT, RECEPTIONIST, DR'S OFFICE, LABORATORY ASSISTANT, X-RAY TECHNICIAN, SURGICAL TECHNICIAN, etc., depending upon the main duties performed.

There were 11 males employed as NURSE, LICENSED PRACTICAL, four of them in supervision (0-52.8301); of the 840 women LPN's only ten were employed in a supervisory capacity. Every employer interviewed, except two, indicated a hiring preference for women under forty-five years of age. Wage scales range from $265 to $284 per month, with those in supervisory work being paid $295 monthly.

The work of a NURSE, LICENSED PRACTICAL is becoming more specialized and technical, creating opportunities for advancement. Certain specialized occupations (See MISC. TECHNICAL JOBS) that are potential sources for upgrading of LPN's, in turn provide avenues of advancement for PRACTICAL NURSE, UNLICENSED and for NURSE AIDES. For example, hospitals have been selecting LPN's with superior skills and desirable personal traits for six month's training as SURGICAL TECHNICIANS. But most specialized occupations have limited growth prospects, and some employers are now questioning the advisability of removing LPN's from bedside care to the most limited speciality fields.

PRACTICAL NURSES (unlicensed) are prohibited by Washington State Law from passing medication. Other than this major exception, they perform the same general bedside care as do LPN's and are employed in hospitals, convalescent centers and rest homes in approximately one-fourth the ratio to LPN's. Beginning wages for unlicensed nurses average about $30 per month less than those of LPN's, but with experience their earning capacity is almost equal to those with licenses. Hospitals had ten vacancies for PRACTICAL NURSE (unlicensed) at the time of the survey.

Employers expect to have fewer on their payrolls next year than they do now, so future employment prospects are limited, however.

As indicated previously in this section, the PHYSICIAN'S ASSISTANT (1-32.20) is not necessarily a practical nurse. But she may very well have had that experience and be licensed as such, because her major responsibility to assist the patient and the doctor places emphasis on a nursing background. In its entirety the job of PHYSICIAN'S ASSISTANT consists of serving the common needs of the doctor, his office, and his patients. In doing this - though she is not exclusively secretary, technician, or nurse - she uses her knowledge in these several fields.

Current employment and 1965-1970 forecasts for NURSE, LICENSED PRACTICAL AND RELATED OCCUPATIONS are given in Table XI.

TABLE XI

LICENSED PRACTICAL NURSE AND RELATED OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE & INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-52.83								
Retirement Homes	60	60		40	100		100	
Hospitals	647	641	6	20	719	97	862	395
Conv. & Rest Homes	120	120			120	20	180	80
	827	821	6	60	939	117	1142	475
0-52.8301								
Hospitals	14	10	4		14	5	19	20
0-52.8302								
Hospitals	4	4			4		6	2
0-52.8303								
Hospitals	6	5	1		6		8	4
	851	840	11	60	963	122	1175	501
2-38.20								
Hospitals	368	366	2	10	353	115	363	483
Conv. & Rest Homes	20	20			20		20	
	388	386	2	10	373	115	383	483
1-32.20								
Doctor's Office	350	350			350	25	370	45
Osteopathic Doctors	20	20			20		20	
Conv. & Rest Homes	40	40			40		40	
	410	410			410	25	430	45
TOTALS	1649	1636	13	70	1746	262	1988	1029

ORDERLY AND RELATED OCCUPATIONS

DOT REFERENCE: 2-42.10 ORDERLY

ALTERNATE TITLES: Hospital Attendant

Assists professional nursing staff by performing various heavy duties: Lifts patients to and from bed. Wheels patients to and from the operating room. Carries meal trays. Does cleaning and odd jobs. Bathes, shaves, and dresses patients. Answers call bells. Makes beds. Gives alcohol rubs. May give catheterizations, enemas. May collect specimens. May prepare and apply dressing, compresses and packs. May set up oxygen tents.

RELATED OCCUPATIONS:

2-42.1001 ORDERLY, CHIEF

Directs activities and supervises orderlies on the staff. Also performs the various duties of ORDERLY.

2-42.1002 SURGICAL ORDERLY

Prepares operating room, surgical equipment, and patients for operations. Positions instruments, surgical supply, and other tables in operating room. Sets up oxygen, carbon dioxide, and anesthetic tanks by standard procedure. Prepares patients by washing, shaving, and sterilizing region of operation. Washes instruments and supplies. May sterilize surgical instruments (STERILIZER, HOSPITAL EQUIPMENT 2-42.2003).

2-42.1003 ORDERLY, PHYSICAL THERAPY

Transports patients to Hydro-Therapy. Assists patients in and out of Hydro Tanks. Keeps area sterile. May assist with minor therapy.

2-42.1004 CHARGE ORDERLY

Assists ORDERLY, CHIEF in administrative tasks. Performs various duties of ORDERLY.

COMMENTS:

To quote one employer, "This is the greatest shortage occupation in the nursing home field". His statement is supported by the employment forecast for ORDERLY, which shows a 73.2% increase by 1970 - the highest of any occupation surveyed. Convalescent centers and rest homes will more than double their employment, and hospitals predict an 18% increase in this group. Although only one vacancy was recorded at the time of the survey and only three new positions were forecast for the next year, by 1970 there will be an estimated 284 new positions available and an additional 462 men hired as replacements for those leaving their jobs. But according to past turnover experience an estimate of 940 replacements would be a more likely figure.

Beginning wage scales are approximately the same as for NURSE, LICENSED PRACTICAL, at $265 per month, but range somewhat higher to $300 monthly plus another $10 for supervisory work. However, in convalescent centers and rest homes ORDERLIES earn an average of $50 per month less and in retirement homes $20 less than in hospitals.

In recent years, the introduction of more efficient equipment has released the ORDERLY from many heavy jobs involving lifting of patients, and has freed him for more nursing care and other specific duties. Such tasks as giving catheterizations and enemas, and setting up oxygen tents and other miscellaneous equipment have been added to the ORDERLY'S responsibilities. This utilization of ORDERLIES for more technical assignments and the growth prediction of the occupation indicate possibilities for training programs.

Yet employers are reluctant to set up in-service training, and public educational facilities in this state are almost non-existent. Thus employers find their best source of selection from those who have had comparable experience in the Armed Services.

An excessive rate of turnover and the poor caliber of available candidates are given as reasons for a reluctance to institute training courses. But the turnover rate for ORDERLIES, though high, is less than 1% above the average of the other demand occupations, and at 473, ranks below seven other occupations on the demand list:

OCCUPATIONS	1964 TURNOVER RATE
Floor Girl, Cafeteria	375.0%
Nurse Aide	73.8%
Dental Technician	66.7%
Laundryman	66.7%
Porter I	57.1%
Medical Technologist	51.8%
Dental Assistant	51.1%
Orderly	47.3%

According to the figures given by employers, less than 20% of the turnover was due to lay-offs, presumably for inadequate or unsatisfactory performance. The other 80% quit their jobs voluntarily.

This occupation appears to be one that will offer the greatest number of job opportunities within the next five years and one for which there will be a definite shortage of workers. If the problem of personnel selection and maintenance of a reasonably stable work force could be examined and corrected, the occupation of ORDERLY could provide a good possibility for establishment of expansion of educational programs.

Table XII gives current employment and 1965-1970 forecasts for ORDERLY and related occupations.

TABLE XII

ORDERLY AND RELATED OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE & INDUSTRY	DECEMBER, 1964 Employ.	Female	Male	Vacancies	YEAR-1965 Employ.	Replace.	YEAR-1970 Employ.	Replace.
2-42.10								
Retirement Homes	40		40		40		40	
Hospitals	236		236	1	239	103	276	438
Conv. & Rest Homes	100		100		100		340	
	376		376	1	379	103	656	438
2-42.1001								
Hospitals	1		1		1		1	1
2-42.1002								
Hospitals	5		5		5	4	8	15
2-42.1003								
Hospitals	6		6		6	1	6	6
2-42.1004								
Hospitals	1		1		1	1	2	2
	389		389	1	392	109	673	462

NURSE AIDE AND RELATED OCCUPATIONS

DOT REFERENCE: 2-42.20 NURSE AIDE

ALTERNATE TITLES: Aide

Assists professional nursing staff in hospitals and other institutions by performing routine or lesser skilled tasks in the care of patients. Bathes and dresses patients. Answers call bells. Makes beds. Serves food and nourishment. Assists patients to walk. Gives alcohol rubs and performs other services. Cleans rooms and equipment. ORDERLY for male worker.

2-42.2003 STERILIZER, HOSPITAL EQUIPMENT

Cleans and sterilizes hospital equipment, supplies, and instruments. Makes up packs of supplies (PACKMAKER) and instruments, dressing and treatment-trays, and solutions for sterilizing; scrubs and washes instruments and equipment, and sterilizes by soaking in solutions, boiling, or by operating autoclave.

2-42.2004 NURSE AIDE, THERAPY

Transports patients. Assists therapist with treatments, such as administering hot packs. Keeps area clean. May keep charts, file department records, and make appointments.

2-42.2005 NURSE AIDE, X-RAY

Transports patients to and from x-ray department. Stores and maintains linens. Aids X-RAY TECHNICIAN in positioning patients on table. Cleans up x-ray area. May file department records and make appointments.

2-42.2006 NURSE AIDE, DELIVERY ROOM

Transports patients to delivery room. Cleans room, showers. Makes beds. Makes up packs of supplies (PACKMAKER). Scrubs for deliveries.

2-42.2007 NURSE AIDE, SURGERY

Transports patients to operating room. Washes instruments and supplies. Sends supplies to central supply to be sterilized.

2-42.22 WARD ATTENDANT (Psychiatric Aide, Psychiatric Technician)

Assists in care and treatment of mentally ill or retarded patients, working under the direction of nursing and medical staff. Bathes, dresses, and feeds patients, and administers prescribed medications or treatment to provide physical care for patients. Assists in familiarizing patients with hospital routine and encourages them to participate in social and recreational activities to promote rehabilitation. Observes patients to detect unusual behavior and prevent them from disturbing or injuring themselves or other patients. Accompanies patients to and from wards for examination, treatment, recreation, visiting, and other activities. May supervise and assist patients in housekeeping and maintenance tasks such as cleaning and

polishing floors, painting and moving furniture, and picking up debris around hospital grounds. When responsible for patient care and other services of a single assigned ward, may be designated as WARD SUPERVISOR.

9-09.41 PACKMAKER

Assembles and wraps linen packs, pans, and dressing basins, following standard procedures and special make-up lists for each type, preparatory to sterilization.

COMMENTS:

Nurse aides rank third in the nursing care echelon, backing up the LPN and the RN with tasks of lesser skill and responsibility, as do their male counterparts, the orderlies. The trend toward specialization is evident for NURSE AIDES as it is for ORDERLIES. But NURSE AIDES tend to be assigned lighter physical duties having to do with bedside care and some clerical tasks in certain departments; ORDERLIES are more likely to be doing the heavier physical work such as moving and transporting patients and semi-skilled tasks involved in setting up and maintaining certain kinds of mechanical and technical equipment. When assigned to a certain department, the name of that department is usually added to the job title, such as NURSE AIDE, DELIVERY ROOM. In other cases, the job title may be different, as STERILIZER, HOSPITAL EQUIPMENT or WARD ATTENDANT, but because these jobs have such closely related duties to that of NURSE AIDE, they are grouped together in this report.

By 1970 employment of NURSE AIDES and RELATED OCCUPATIONS is expected to reach 2971, a net increase of 14% which represents 369 new jobs created by additions to present staffs. To maintain the present number of positions and the additional 369 new jobs, employers said they expected to hire 3133 women in the next five years. This estimate, high as it is, is far below what past experience would suggest - as the turnover rate for NURSE AIDES (2-42.20) was 73.8% in 1964. On this basis one could estimate the number of new hires would reach 9000 or above in the next five years.

Employers estimated that 26 new jobs would be available within one year, and that they would hire 576 replacements during that time. There were five vacancies recorded by interviewers in December, 1964.

Convalescent centers and rest homes will account for 260 of the 369 new positions available by 1970, for a growth rate of 24%. Hospitals expect to add 109 of these new positions, for a net increase of approximately 8%.

Wages for NURSE AIDES range from $216 to $250 per month, with hospitals paying the higher rates.

The random sampling used in the survey did not result in a selection of any convalescent center or rest home operating for the care of mentally ill patients; and only one hospital surveyed maintains a psychiatric ward. Therefore, the estimate of a net increase of two positions for WARD ATTENDANT by 1970 and eight replacements is probably a low figure, influenced by the small statistical sample. The one hospital surveyed that employs WARD ATTENDANTS pays a monthly wage of $292. However, this employer consistently pays higher salaries than most of the others in the hospital classification.

TABLE XIII

NURSE AIDE AND RELATED OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE & INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-42.20								
Retirement Homes	160	160			160		160	
Dr's Office, Clinic	30	30			30	5	30	25
Hospitals	1126	1109	17	2	1154	243	1201	1250
Conv. & Rest Homes	1100	1100			1100	300	1360	1720
	2416	2399			2444	548	2751	2995
2-42.2003								
Hospitals	94	93	1	3	90	17	105	79
2-42.2004								
Dr's Office, Clinic	5	5			5		5	
Hospitals	11	11			12		17	
	16	16			17		22	
2-42.2005								
Dr's Office, Clinic	5	5			5	1	5	5
Hospitals	14	14			14		15	
	19	19			19	1	20	5
2-42.2006								
Hospitals	15	15			15	5	20	25
2-42.2007								
Hospitals	15	15			15	2	15	15
2-42.22								
Hospitals	15		15		15	2	17	8
9-09.41								
Hospitals	12	12			13	1	21	6
TOTALS:	2602	2569	33	5	2628	576	2971	3133

MISCELLANEOUS TECHNICIAN OCCUPATIONS

0-50.0153 PUMP OXYGENATOR TECHNICIAN

Cleans and sets up pump oxygenator for open-heart surgery. Primes pump with blood and maintains surveillance of pump during surgery. Evaluates functioning of pump and makes minor adjustments and repairs.

0-40.0154 ARTIFICIAL KIDNEY TECHNICIAN

Cleans and prepares artificial kidney machine to be used on patient. Prepares dialysate bath. Operates and maintains machine.

0-50.0155 ARTIFICIAL KIDNEY TECHNICIAN TRAINEE

An on-the-job training position where the individual is being taught the functions, operations, and maintenance of the artificial kidney machine, through supervised practice and experience.

0-50.03 OXYGEN THERAPY EQUIPMENT TECHNICIAN

Sets up various pieces of oxygen equipment such as oxygen tent, iron lung, or infant resuscitator used to revive or keep patients alive. Assembles necessary equipment. Sets up apparatus and makes it ready for use. Adjusts and repairs equipment already in operation. Administers gases during surgery under supervision.

0-50.05 ELECTROCARDIOGRAPH TECHNICIAN (EKG Technician)

Records, as irregular wave tracings on electrocardiograph, electromotive variations in action of heart muscle to provide data for use in diagnosis of heart ailments: Attaches electrodes to specified areas of patient's body. Manipulates selector switch, and moves chest electrode to successive positions across chest to record electromotive variations occurring in various areas of heart muscle. Presses marker button to identify various positions of check electrode. Develops film, if machine is type that records tracings on sensitized paper. Replenishes supply of paper and ink in machine and reports its malfunctioning.

0-50.0503 CARDIOVASCULAR TECHNICIAN (CVL Technician)

Operates basal metabolism and electrocardiographic equipment. Types and files patient records.

0-50.14 ELECTROENCEPHALOGRAPH TECHNICIAN

Measures impulse frequencies and differences in electrical potential between various portions of the brain, using an electroencephalograph that records data as a series of irregular lines on a continuous graph for use by physician in diagnosing brain disorders: Instructs patient in procedures, attaches electrodes to patient's head, and operates equipment to obtain graphic readings. Observes patient's behavior, making pertinent notes on graph. Notes any malfunctions of equipment and makes minor adjustments and repairs.

0-50.17 INHALATION THERAPIST

Under the general supervision of the chief inhalation therapist, treats patients in a hospital or in a home for a lack of oxygen in the tissues, using oxygen and various other gases and drugs as prescribed by a PHYSICIAN: Gives positive pressure breathing, using equipment such as respirators, resuscitators, humidifiers, nebulizers, and aerosols. Administers gases and drugs using an oxygen tent, hood, mask, or other partial or total enclosure with or without a regulator or some other mechanical device. May transport heavy equipment such as oxygen cylinders.

COMMENTS:

Though this is a very small field of employment, MISCELLANEOUS TECHNICIAN jobs are included here for comment because of the interest displayed by personnel administrators and educators in their potential growth and in the prospects for training programs. But according to the survey results, little opportunity exists for employment in these occupations within the next five years. Vocational preparation is usually through on-the-job training by the employer or through completion of certificate courses at the university level.

The 1964 turnover rate was less that 3%, indicating little likelihood of vacancies occurring for replacement purposes. There were no vacancies at the time of the survey, but employers estimated that by 1970 eleven new positions will be needed for expansion and that 18 replacements will be hired. Only one additional position is expected for the next year - an EKG TECHNICIAN.

Salaries range from $300 monthly for a trainee position to $465 for the PUMP OXYGENATOR TECHNICIAN.

TABLE XIV

MISCELLANEOUS TECHNICIAN OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE & INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-50.0153								
Hospitals	2	1	1		2		2	
0-50.0154								
Hospitals	4	2	2		4		4	
0-50.0155								
Hospitals	2		2		2		2	
0-50.03								
Hospitals	3		3		3		3	
0-50.05								
Hospitals	9	9			10		12	
0-50.0503								
Dr's Office, Clinic	20	15	5		20	5	20	15
Hospitals	1	1	—		1	—	1	—
	21	16	5		21	5	21	15
0-50.14								
Dr's Office, Clinic	5	5			5		5	
Hospitals	10	10			10		15	2
	15	15			15		20	2
0-50.17								
Hospitals	1	—	1		1	—	2	1
	57	43	14		58	5	68	18

FOOD SERVICE OCCUPATIONS

COOKING

DOT REFERENCE: 2-26.03 COOK, RELIEF

ALTERNATE TITLES: Roundsman; Relief Chef

An all around cook who substitutes for and assists other cooks during their absences or during rush periods. May act as COOK, BREAKFAST.

2-26.15 COOK, VEGETABLE

Bakes, boils, steams, or otherwise cooks and seasons vegetables for use in the dining room or by other cooks. May perform work of VEGETABLE MAN. May supervise VEGETABLE MEN in the preparation of vegetables for cooking.

2-26.18 COOK, PARTRY II (Baker; Cake Maker; Pie Maker; Pastry Man or Woman)

Mixes ingredients for and bakes cakes, cookies, pies and other pastries or desserts. Follows recipes and methods of his own or those suggested by PASTRY CHEF. In large establishment, frequently specializes in preparing one or more types of pastry or dessert.

2-26.31 CHEF II (Chief Cook; Kitchen Chef)

Estimates consumption of and orders foodstuffs, and plans menus. Supervises and usually assists the several cooks to prepare meats, soups, sauces, vegetables, and other foods. May decide size of food portions. May portion orders and cut meats. Works in a small establishment not employing a number of skilled specialists. In large establishments the worker's duties are typically limited to supervising cooks and buying food.

2-26.32 COOK, INSTITUTIONAL

Prepares, seasons, and cooks, by appropriate methods, all food consumed by employees and/or residents of a fraternity, sorority, small hospital, etc. Mixes ingredients and bakes bread and pastry. Plans menus, estimates consumption and orders foodstuffs. Supervises one or more helpers.

2-29.01 COOK HELPER II

Helps cook by performing specific or general cooking duties, usually of a lesser skill.

MISCELLANEOUS FOOD PREPARATION

DOT REFERENCE: 2-29.03 SPECIAL DIET WORKER

ALTERNATE TITLES: Diet-Kitchen Worker; Diet-Kitchen Helper

Portions food in accordance with diets in a hospital under the direction of a DIETITIAN: Weighs out proper amounts of specified foods, and may perform some cooking as directed. Places food on dishes and on trays to be delivered to patients. May wash and scour equipment used such as mixers, fruit juice reamers, carts, pantry shelves, and refrigerator compartments.

2-29.12 PANTRYMAN

Prepares and mixes various ingredients to be used in salads, fruit cocktails, waffles, beverages, and sandwiches. Serves these foods to waiters as requested. Works in the pantry. Feminine title: Pantrygirl.

2-29.13 SANDWICH MAN

Prepares and mixes ingredients to be used in making sandwiches (PANTRYMAN) and makes sandwiches as ordered. Feminine title: Sandwich Girl.

2-29.17 SALAD GIRL I

Prepares variety of salads consisting of meat, fish, fruit, or other ingredients. Mixes ingredient to make salad dressings. May prepare hors d'oeuvres. Carves and slices meats. May open clams and oysters and prepare corresponding cocktails.

2-29.21 VEGETABLE MAN (Cook Assistant; Vegetable Cleaner)

Prepares vegetables for cooking by washing, peeling, cutting, seeding, or mashing them, using such kitchen equipment as paring knives, paring machines, and vegetable mashers. Feminine title: Vegetable Girl

2-29.71 KITCHEN HELPER

Performs duties in the kitchen requiring little skill such as scrubbing, scraping, and scouring work tables and meat blocks, sweeping and mopping floors, obtaining and distributing supplies and utensils, and watching cooking foods to prevent burning. May cut and peel or otherwise prepare vegetables for the cooks (VEGETABLE MAN). May wash dishes.

4-01.400 BAKER

Produces finished baked goods such as bread, cake, cookies, pastries, and pies, from raw materials. Measures and mixes ingredients. Forms dough, prepares fillings, and decorates specialties with icing. Bakes products in ovens.

5-58.100 BUTCHER, MEAT

Cuts, trims, and removes bones to prepare meats, usually entire packing house carcasses, for frying, roasting, or broiling, using knives, saw, and cleaver. Chops or grinds meats, using a hand-powered or electrically powered meat grinder. May clean fish and sea food and fowls.

6-02.910 BAKER'S HELPER

Helps baker by performing specific or general duties, usually of a lesser skill.

WAITRESSES
AND
RELATED OCCUPATIONS

2-27.12 WAITRESS

Serves food to patrons in a quick and efficient manner. Sets tables with clean linen and silverware. Removes dirty dishes to kitchen. Cleans equipment.

2-27.21 COUNTERGIRL, CAFETERIA

Serves food from a steam table or counter to patrons of a cafeteria. Prepares food for consumption. Slices meats, cheese, bread, and butter. Prepares salads and sandwiches (SANDWICH MAN); cooks cereals, eggs, and waffles; and makes coffee and tea. Cleans counters, steam tables, and other equipment.

2-27.22 FLOOR GIRL, CAFETERIA

Assists patrons by carrying their trays from the food counters to the tables and by obtaining additional food required by the patrons after they are seated. Carries dirty dishes to kitchen. Sets tables with clean linens, sugar bowls, and condiment containers. Washes tables.

2-27.94 WAITRESS, HOSPITAL

Prepares and delivers food trays to patients of a hospital or sanitarium. Fills trays with food according to diet lists. Carries trays to patient. May remove trays from room. May wash and sterilize dishes.

2-27.9401 TRAY-LINE SUPERVISOR

Supervises workers engaged in filling food trays from hospital patients.

2-27.9402 TRAY-LINE WORKER

Fills food trays for hospital patients and performs related duties. Transports food from kitchen by dumbwaiter or food cart. Places silverware, glassware, dishes, and other items on tray. Apportions food and beverage to tray according to diet list. Examines filled tray for completeness and places it on food cart. May serve tray to patient (WAITRESS, HOSPITAL). Collects and stacks dirty dishes. May wash dishes and clean floors. May be designated according to type of food trays prepared, such as NOURISHMENT WORKER, SPECIAL DIET WORKER.

2-29.51 BUS GIRL

Carries dirty dishes from dining or banquet room to kitchen. Replaces soiled table linens with clean ones, and sets tables with clean silverware and glassware. Maintains supply of clean linens, silverware, and dishes in dining room. Cleans and dusts floors, furniture, and equipment. Fills patrons' glasses with ice water and supplies them with butter. May keep serving counters supplied with food and ice from kitchen.

DISHWASHERS

2-29.61 DISHWASHER, HAND

Scrapes dishes and washes dishes, silverware, and glassware by hand in tubs of hot, soapy water. Rinses tableware. Sorts and stacks dishes and glassware. May perform various other duties requiring little skill such as washing windows, obtaining and distributing supplies, and assisting kitchen workers to wash or prepare vegetables. This job is usually found in small establishments. May wash pots and pans.

2-29.6102 POT WASHER

Washes pots and pans by hand, performing essentially same duties as described under DISHWASHER, HAND.

2-29.62 DISHWASHER, MACHINE

Performs on assignment any of the following duties connected with washing dishes, silverware, and glassware by machine: Scrapes and stacks dirty dishes; feeds trays of dishes into machine; removes trays of washed dishes from machine; sorts and stacks washed dishes according to size and type.

COMMENTS:

Medical industries surveyed in December, 1964, employed 1889 people in Food Service Occupations - cooking, food preparation, serving, and miscellaneous kitchen work. Women outnumbered men almost six to one. Employment in these occupations is expected to increase just 1% within one year, but 13.7% within five years. Though the 1965 forecast was for only 19 actual new jobs, the 1970 forecast indicated 259 new jobs. The medical industry also expects to hire 530 workers in one year and 2351 replacements in five years for those workers leaving their places of employment.

COOKING

Only one job opening was recorded by our interviewers - for a RELIEF COOK (2-26.03). But COOKS (2-26.32) and COOK HELPERS (2-29.01) have a higher growth rate (21.4%) than all Food Service Occupations as a whole. There will be an addition of 21 employees to present staffs of COOKS and COOK HELPERS by 1965 and 107 additions by 1970. Besides this increase in the actual number of new jobs, employers expect to hire 319 replacement COOKS and HELPERS during this five-year period.

These are two closely related occupations, in which the position of COOK is often reached through an informal apprenticeship as COOK HELPER. The growth rate of almost 44% for COOK HELPERS forecast by 1970 indicates favorable employment possibilities for younger workers interested in cooking as a career. But even though a worker theoretically can advance to the full position of COOK with sufficient experience as a HELPER, the 8% growth forecast by 1970 for COOKS will restrict such advancement to a select few.

The turnover rate was 32% for COOKS and 13.8% for COOK HELPERS in 1964. Pay scales range from $246 to $347 monthly for COOKS and from $216 to $280 for COOK HELPERS. Convalescent centers and rest homes offer more job opportunities for COOK HELPERS, but pay lower wages than do retirement homes or hospitals.

More than twice the number of employers interviewed preferred to hire COOKS under forty-five, but were evenly divided on the matter of age for COOK HELPERS, half of them having no age restriction for the helper category. Most employers would provide on-the-job training for COOK HELPERS, if the applicant had had prior experience in the cooking field.

MISCELLANEOUS FOOD PREPARATION

Occupations considered here under the category, MISCELLANEOUS FOOD PREPARATION, are expected to decrease slightly in employment during the next year and to have a small growth potential of 17 new jobs during the next five years - less than a 9% increase.

BAKERS (4-01.400) and BUTCHERS (5-58.100) are small and stable occupations made up of skilled workers who have usually devoted four years or more to learning their craft.

KITCHEN HELPER (2-29.71), though not a growing occupation, is estimated to require the hiring of 290 hospital workers in five years to maintain the present

work force of 126 employees. This prediction of 290 replacements is much lower than past experience would suggest, however, as a repetition of the 74% turnover rate in 1964 would require the hiring of over 500 workers by 1970. Such a low estimate of replacement needs is characteristic of employer responses throughout the survey. (See Page 7, Industry Characteristics; Page 37, Comments on Dental Assistants; and Page 48, Nurse Aide.)

Experience as a KITCHEN HELPER is one way of advancing to COOK HELPER and then to a COOK position. Even though employment for KITCHEN HELPERS is not expected to increase, the number of openings created by turnover and the possibilities of advancement to more highly skilled and better paying cooking occupations makes the work of a KITCHEN HELPER a good employment source for young people interested in the cooking field.

Hospitals offer most opportunities for KITCHEN HELPERS and pay them about $252 per month.

WAITRESSES AND RELATED OCCUPATIONS

The greatest number of new jobs forecast for 1965 in WAITRESS and RELATED OCCUPATIONS is for FLOOR GIRL, CAFETERIA (2-27.22). But this is due to the responses of one retirement home that, according to the survey's sampling procedure, carried a statistical weight of twenty. Therefore, the increase of 20 new jobs for this occupation actually represents a forecast of one additional position by one employer. The retirement home had a 375% turnover rate for FLOOR GIRL, CAFETERIA, which is unusually high and not necessarily characteristic of the occupation; but the employer has had difficulty selecting those whose personalities are adaptable to serving elderly people from the young women who usually apply for jobs of this kind.

By 1970 employment of TRAYLINE WORKERS (2-27.9402) is expected to increase to 466, an addition of 64 new positions. Employers will also hire 94 replacements within one year and 475 replacement within five years, to keep the 462-466 positions filled. The turnover rate of 26.9% in 1964 is compatible with the employers' estimates. The occupation TRAYLINE WORKER offers job possibilities for the younger worker, as employers generally prefer girls between 18-22 years of age. Their average wage is $216 per month.

Convalescent centers and rest homes expect to add 20 HOSPITAL WAITRESSES (2-27.94) to their payrolls by 1970. This occupation differs from TRAYLINE WORKER in that the TRAYLINE WORKER in hospitals does not necessarily deliver food trays to the patient, which is a regular duty of the WAITRESS, HOSPITAL. Employers will hire applicants without experience for both occupations, and wages are the same.

DISHWASHERS

The occupation of DISHWASHER is one of the few in the medical industry that consists primarily of male workers; only 25% of the DISHWASHERS are women. Thirty-three new positions are forecast by 1970, but no increase is expected within the next year. DISHWASHER, MACHINE (2-29.62) will account for 27 of the new jobs. The occupation had a low turnover rate of 15% last year; only five others on the demand list had less:

OCCUPATION	RATE OF TURNOVER
Dishwasher, Machine	15.0%
Dental Hygienist	14.3%
Cook Helper II	13.8%
House Cleaner, Medical Service	2.1%
Waitress, Hospital	.0%
Groundskeeper	.0%

Employers generally hire young men for DISHWASHERS, and little or no experience is required. Wages range from $216 in convalescent centers and rest homes to $258 in hospitals.

FOOD SERVICE OCCUPATIONS

TABLE XV

COOKING

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-26.03								
Retirement Homes	20	20			20		20	
Hospitals	8	8		1	9		9	
Conv. & Rest Homes	20	20			20		20	
	48	48		1	49		49	
2-26.15								
Hospitals	4	3	1		4		4	1
2-26.18								
Retirement Homes	20	20			20		20	
2-26.31								
Hospitals	6	6			6		6	1
2-26.32								
Retirement Homes	40	40			40		40	
Hospitals	92	86	6		93	27	117	57
Conv. & Rest Homes	180	180			180	60	180	220
	312	306	6		313	87	337	277
2-29.01								
Retirement Homes	40	40			40		40	
Hospitals	108	106	2		128	25	130	42
Conv. & Rest Homes	40	40			40		100	
	188	186	2		208	25	270	42
TOTALS:	578	569	9	1	600	112	686	321

FOOD SERVICE OCCUPATIONS

TABLE XV-A

MISCELLANEOUS FOOD PREPARATION

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-29.03								
Hospitals	10	10			10	1	12	6
2-29.12								
Hospitals	8	7	1		8	1	11	8
2-29.13								
Hospitals	5	5			5	1	5	5
2-29.17								
Hospitals	17	17			17	1	25	6
2-29.21								
Hospitals	1		1		1		2	1
2-29.71								
Retirement Homes	20		20		20		20	
Hospitals	123	98	25		119	72	126	290
	143	98	45		139	72	146	290
4-01.400								
Hospitals	11	8	3		11		11	3
5-58.100								
Hospitals	1		1		1			
6-02.910	1	1			1		2	2
	197	146	51		193	76	214	311

FOOD SERVICE OCCUPATIONS

TABLE XV-B

WAITRESSES AND RELATED

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-27.12								
Retirement Homes	160	160			160		160	
Hospitals	1	1			1		1	
	161	161			161		161	
2-27.21								
Hospitals	85	85			68	17	78	64
2-27.22								
Retirement Homes	80	80			100	200	100	1000
2-27.94								
Conv. & Rest Homes	40	40			40	20	60	100
2-27.9401								
Hospitals	2	2			2		3	2
2-27.9402								
Hospitals	402	395	7		400	94	466	474
2-29.51								
Retirement Homes	60	60			60		60	
Hospitals	4	1	3		4	3	7	15
	64	61	3		64	3	67	15
TOTALS:	834	824	10		835	334	935	1655

FOOD SERVICE OCCUPATIONS

TABLE XV-C

DISHWASHERS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-29.61								
Hospitals	1	1			1	1	1	5
Conv. & Rest Homes	20	20			20		20	
	21	21			21	1	21	5
2-29.6102								
Retirement Homes	20		20		20		20	
Hospitals	39	16	23		39	3	45	19
	59	16	43		59	3	65	19
2-29.62								
Retirement Homes	80		80		80		80	
Hospitals	40	33	7		40	4	67	20
Conv. & Rest Homes	80		80		80		80	20
	200	33	167		200	4	227	40
TOTALS:	280	70	210		280	8	313	64

HOUSEKEEPING SERVICE WORKERS

DOT REFERENCE: 2-24.12 MAID, WARD

Performs cleaning duties in a hospital ward such as mopping floors, cleaning windows, woodwork, and furniture, and dusting rugs. Attends to patients' plants and flowers. May serve patients' meals and remove trays and dishes. Seldom performs any personal service for patient (NURSE AIDE).

2-24.14 HOUSECLEANER (Med. Service)

Cleans bedrooms and bathrooms in dormitories of hospitals and other institutions, counts and stores clean linens, requisitions new linens (LINEN ROOM WOMAN) and other household supplies such as mops, soaps and buckets.

2-25.23 HOUSEKEEPER (Med. Service)

Supervises the work of the cleaning personnel of a hospital or institution, usually performing part of the work herself. Assigns duties to workers. Gives out supplies and equipment. Inspects work to determine that prescribed standards of efficiency and cleanliness are met. Has charge of linens, cleaning equipment, and supplies. Takes periodic inventories.

2-25.2301 HOUSEKEEPER, EXECUTIVE

Directs activities of housekeeping personnel in hospital or institution. May perform duties of PURCHASING AGENT and STOREKEEPER.

2-25.2302 HOUSEKEEPER, ASSISTANT

Assists HOUSEKEEPER, EXECUTIVE with supervision of cleaning personnel of a hospital or institution, and in various administrative housekeeping duties as assigned.

2-25.24 LINEN ROOM WOMAN

Performs duties arising from the issuance, repair, marking, and laundering of linen to insure a constant supply of bed and table linen. Makes monthly and yearly inventories of linen room stock, and submits list of replacements to LINEN ROOM SUPERVISOR or HOUSEKEEPER.

HOUSEKEEPING SERVICE WORKERS

PORTERS AND RELATED OCCUPATIONS

DOT REFERENCE:

2-29.72 GARBAGE MAN

Dumps garbage and rakes through it for trash, bottles, dishes, and silverware: Places sorted garbage and incombustible trash in cans, pushing cans to collection station. Transports combustible trash to incinerator. Cleans cans and table with hot water and steam. Sorts bottles, placing returnable ones in a case.

2-82.10 CHARWOMAN (Janitress; Maid; Scrubwoman)

Keeps premises of a public building, office, commercial establishment, or apartment house in clean, orderly condition: Sweeps floors and disposes of waste or litter. Scrubs floors. Polishes metal fixtures and fittings. Male Title: Cleanup Man.

2-82.30 WINDOW CLEANER

Cleans windows in office buildings, hotels, and similar structures: Washes windows with water or cleaning powder, and brush and wet cloth. Dries window with a squeegee, dry cloth, or chamois skin. Usually wears a safety belt when working above the ground floor. May be a task performed by PORTER I.

2-82.40 WALL WASHER

Cleans walls and ceilings, using sponge and soapy water or chemical solution. Rinses washed surfaces with clean water and dries with a cloth. Cleans wallpaper, using cleaning compound. May be a task performed by PORTER I.

2-86.10 PORTER I

Performs any combination of duties involved in cleaning the premises, furnitures, and equipment. Cleans floors and stairways (CLEAN-UP MAN), washes walls (WALL WASHER), washes windows (WINDOW CLEANER), burns trash, polishes fixtures. May scrub and wax floors, using power machines and buffers. May assist maintenance man by helping with lesser skilled carpentry tasks, changing light bulbs, etc.

2-86.1001 PORTER, HEAD

Supervises PORTERS I in maintaining cleanliness of establishments: Assigns duties involved in cleaning of premises, furniture, and equipment, and inspects completed work. Reports supplies needed in cleaning operations and necessary repairs to cleaning equipment to SUPERINTENDENT, BUILDING II. Feminine Title: Housekeeper, Executive.

2-86.1002 KITCHEN PORTER

Cleans kitchen floors. Removes garbage (GARBAGE MAN). Cleans certain kitchen equipment such as kitchen hoods.

2-86.1003 CLEANUP MAN

A PORTER I, whose main duties consist of cleaning floors and stairways.

COMMENTS:

Workers in HOUSEKEEPING SERVICES numbered 1533 in December, 1964, which is about 8% of the total employees in all the occupations surveyed. This group ranks sixth among the occupational categories that are the subjects of special comments in this report:

OCCUPATIONAL GROUP	TOTAL EMPLOYEES
Professional Nursing	3893
Clerical Occupations	3041
Nurse Aides	2602
Licensed Practical Nurses & Related	1649
Food Services	1609
Housekeeping Service Workers	1533

Very little change in employment was forecast for the next one-year period for workers in HOUSEKEEPING SERVICES. But by 1970, the population increase and the impact of Medicare are expected to result in an 18% net increase of new jobs for HOUSEKEEPING occupations and a 12% net increase for PORTERS and RELATED OCCUPATIONS. (See Charts XVI and XVI-A)

Three occupations in these two groups are among the twenty-six on the demand list: MAID, WARD; HOUSECLEANER, MED. SERVICE; and PORTER I. That is, they have current vacancies or expected net increases within a five year period of 20 or more workers. According to employer estimates, these three occupations will account for 205 new positions by 1970 plus the hiring of 1055 replacements for workers leaving their places of employment.

No vacancies were recorded for MAID, WARD (2-24.12) at the time of the survey; five new jobs were forecast for the next year; and 116 new jobs by 1970. According to employers, the replacement figure will reach 463 by 1970, to maintain the present number of workers. This replacement estimate is very low, however, when the 1964 turnover rate of 42.8% is taken into consideration. A continuation of this high turnover would result in almost 1000 replacements - more than twice the number of estimated. Wages range from $216 to $254 monthly.

Applicants for positions as MAID, WARD or HOUSECLEANER, MED. SERVICE are considered for employment whether or not they have previous experience in these jobs. Neither are there any significant age restrictions, though a majority of employers prefer women under forty-five because of the physical demands of these occupations.

No new jobs were forecast for HOUSECLEANER, MED. SERVICE (2-24.14) within the next year, and an increase of 20 new jobs was estimated for 1970. All of these new jobs are expected to be in retirement homes. This occupation has a low turnover rate - 2.1% last year - and is therefore not expected to have an appreciable replacement figure. Pay rates range from $221 to $233 monthly.

Each of the six vacancies in the HOUSEKEEPING SERVICE field were in the PORTER category; all of these were in hospitals. Pay scales range from $228 to $305 per month, with $350 being paid for supervisors. Employers expect to add 22 new positions for PORTER I (2-86.10) within one year and 69 within the next five years. To maintain the present 587 employees, they estimate hiring 148 replacements in one year and 589 replacements within the next five years. But again, the replacement estimate is much lower than past turnover would suggest. In 1964 this occupation had a turnover rate of 57.1%, the fourth highest of the demand occupations:

OCCUPATION	TURNOVER RATE, 1964
Floor Girl, Cafeteria	375.0
Nurse Aide	73.8
Dental Technician	66.7
Laundryman, Hand	66.7
Porter I	57.1

A continuation of such a high rate of turnover would mean a replacement figure more than double the estimate given by employers. It is probably more accurate to expect that the medical industry will hire approximately 335 PORTERS in one year and 1750 PORTERS by 1970 to maintain a work force of about 600!

The traditional view of this kind of job as being suitable for the older worker is not borne out by employer hiring preferences, as most of them would choose men under forty-five, with the 18-22 age group considered preferable. Several employers indicated a willingness to consider a handicapped person for the occupation however.

HOUSEKEEPING SERVICE WORKERS

TABLE XVI

HOUSEKEEPING

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-24.12								
Retirement Homes	140	140			140		140	
Hospitals	292	292			297	106	348	463
Conv. & Rest Homes	40	40			40		100	
	472	472			477	106	588	463
2-24.14								
Retirement Homes	160	160			160		180	
Hospitals	89	89			89	3	89	3
Conv. & Rest Homes	20	20			20		20	
	269	269			269	3	289	3
2-25.23								
Retirement Homes	40	40			40		40	
Hospitals	23	21	2		23		29	
	63	61	2		63		69	
2-25.2301								
Hospitals	16	14	2		16	1	16	
2-25.2302								
Hospitals	12	12			12	1	14	2
2-25.24								
Hospitals	44	39	5		44	7	56	22
TOTALS:	876	867	9		881	118	1032	490

HOUSEKEEPING SERVICE WORKERS

TABLE XVI-A

PORTERS AND RELATED OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND INDUSTRY	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
2-29.72								
Hospitals	1		1		1		1	1
2-82.10								
Dr's Offices, Clinics	20	20			20		20	
Hospitals	4	4			4		4	
	24	24			24		24	
2-82.30								
Hospitals	2		2		2		2	
2-82.40								
Hospitals	4	3	1		4	1	7	6
2-86.10								
Retirement Homes	100		100		100		80	
Dr's Offices, Clinics	45		45		45	5	45	25
Dentist's Offices	20		20		20		20	
Hospitals	342	2	340	5	364	83	411	364
Conv. & Rest Homes	80	20	60		80	60	100	200
	587	22	565	5	609	148	656	589
2-80.1001								
Retirement Homes	20		20		20		20	
Hospitals	13	4	9		16		19	1
	33	4	29		36		39	1
2-82.1002								
Hospitals	4		4		4		4	
2-86.1003								
Hospitals	2		2	1	2	1	4	3
TOTALS	657	53	604	6	682	150	737	600

MAINTENANCE OCCUPATIONS

COMMENTS:

Maintenance occupations are a small and stable employment group and one of the few categories of occupations in the medical industry with predominately male workers. The only occupation included in the maintenance group that employs women is ELEVATOR OPERATOR, PASSENGER (2-95.20).

The 294 workers in the maintenance field comprise approximately 1-1/2% of all the occupations surveyed, and MAINTENANCE OCCUPATIONS have a growth rate forecast of 12% for the next five years. No vacancies were listed at the time of the survey, but employers estimate that 17 new positions will be added within one year and 35 new positions by 1970. The replacement figure is estimated to reach 49 workers in the next five years.

GROUNDSKEEPER (3-40.04), also known as Caretaker or Gardener, is a job that consists of maintaining and protecting grounds surrounding the buildings of a commercial enterprise. GROUNDSKEEPERS mow lawns, trim hedges, rake and burn leaves and refuse, and trim driveways and sidewalk edges. They may also plant and maintain flower beds, select shrubs and flowers to be planted, and perform other landscaping duties. The occupation offers some favorable employment prospects, because retirement homes who now employ 20 of the 29 workers in this group expect to double that figure within a year, which would increase employment to 49. Hospitals expect to add another 5 GROUNDSKEEPERS by 1970, for a total employment figure of 54. Wages are low, however. Retirement homes pay their gardeners at the rate of $290 per month; hospitals average about $5.00 per month higher. Both hospitals and retirement homes prefer men with either previous work experience in gardening or with acceptable vocational training.

Table XVII lists job titles and employment forecasts for MAINTENANCE OCCUPATIONS.

TABLE XVII

MAINTENANCE OCCUPATIONS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964	YEAR-1965		YEAR-1970	
	Current Employment	Employ.	Replace.	Employ.	Replace.
2-61.03 Watchman I	52	47		47	
2-61.0301 Watchman, Head	1	1		1	2
2-95.20 Elevator Operator, Passenger	4(F)	4		5	2
2-95.30 Elevator Operator, Freight	3	3		3	2
3-17.70 Animal Keeper	1	1		1	1
3-40.02 Gardener Helper	20	20		20	
3-40.04 Groundskeeper	29	49	1	54	5
4-97.010 Electrician	1	1		2	1
4-97.420 Electrical Repairman	1	1		1	
5-25.830 Carpenter, Maintenance	24	25		25	1
5-25.8303 Carpenter, Hospital	6	6		6	1
5-27.010 Painter, Maintenance	5	5		7	2
5-29.100 Plasterer, Maintenance	1	1		1	1
5-30.410 Steamfitter	11	11		11	2
5-72.010 Stationary Engineer	9	9		9	4
5-72.0101 Stationary Engineer Foreman	3	3		3	
5-72.020 Maintenance Engineer	24	24		26	4
5-72.0201 Maintenance Engineer Foreman	2	2		2	
5-83.611 Maintenance Man, Bldg.	92	93	5	99	24
5-83.641 Maintenance Mechanic II	4	4		5	1
5-83.6412 Laundry Machine Machanic	1	1		1	
TOTALS	294	311	6	329	51

LAUNDRY WORKERS

COMMENTS:

There were no vacancies for LAUNDRY WORKERS at the time this survey was made, but an increase in employment of 15 was forecast for the following year. Employers estimate that by 1970 there would be 63 new positions added to their staffs and that 409 replacements would be hired. The 11% increase forecast for LAUNDRY WORKERS is less than the overall growth rate estimated for the other occupations covered in the survey and is partly the result of some convalescent centers and rest homes sending their laundry out to commercial laundry establishments.

LAUNDRYMAN, HAND (7-57.991) is one of the twenty-six demand occupations because of the 40 additional positions expected by 1970. This classification refers to workers who perform a variety of laundering duties such as washing, drying, and ironing, using simpler equipment usually found in a household or in a small laundry. Most of these jobs are found in small hospitals, convalescent centers, and rest homes. Of the 120 workers presently employed in the occupation 100 are women with a monthly pay scale of $216. The turnover rate last year of 66.7 suggests a replacement figure of 80 per year or approximately 400 replacements by 1970. Employers give an estimate of only 160 replacements, however. Women without actual work experience are usually considered for employment, as those familiar with household laundry tasks can perform the job satisfactorily.

LABORER, LAUNDRY (9-57.21) occupies such the same position in hospitals that have larger and more complex laundry facilities, as does the LAUNDRYMAN, HAND (7-57.991) in smaller laundries. Workers in both of these occupations perform a variety of tasks in the laundry, but work in different environments and with different equipment.

Many of the jobs in hospital laundries have become specialized, as is evidenced by the job titles and code numbers in the series 9-57.2102 through 9-57.2109. LABORER, LAUNDRY and these related specialities employ 184 workers, with an increase of 20 jobs and the hiring of 162 replacements expected within the next five years.

Job titles and employment forecasts for LAUNDRY WORKERS are listed in Table XVIII.

TABLE XVIII

LAUNDRY WORKERS

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964			YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Employ.	Replace.	Employ.	Replace.
5-97.050 Laundry Foreman	11	7	4	11		11	2
5-97.0501 Supt., Laundry	3		3	3		3	
5-97.0502 Supt., Laundry Assist.	1		1	1		1	
	15	7	8	15		15	2
6-27.516 Sew.Mach.Opr., Laundry	12	12		11	3	12	8
7-57.005 Laundryman III	5		5	5		5	
7-57.021 Marker (Laundry)	2	2		2		2	
7-57.251 Washer, Machine	39	21	18	39	14	41	68
7-57.511 Presser, Mach.	35	34	1	35		36	4
7-57.5111 Press.,Mach.Supv.	2	2		2		2	
	37	36	1	37		38	4
7-57.991 Laundryman, Hand	120	100	20	140	40	160	160
7-57.993 Laundry Operator	18	13	5	18	1	18	3
9-57.21 Laborer, Laundry	69	51	18	65	6	80	20
9-57.2102 Flatwork Feeder	65	63	2	65	25	69	115
9-57.2103 Tumbler Opr.	9	1	8	9		9	2
9-57.2104 Glove Girl (Med. Serv.)	3	3		3		3	1
9-57.2105 Laundry Collector	11	3	8	11	2	11	11
9-57.2106 Extractor Oper.	8	1	7	8		8	
9-57.2107 Flatwork Catcher	8	8		8		10	5
9-57.2108 Shaker Flatwork	6	6		6		7	4
9-57.2109 Flatwork Folder	5	5		5		7	4
	184	141	43	180	33	204	162
9-68.30 Bundler	1	1		1		1	2
TOTALS:	433	333	100	448	91	496	409

CLERICAL OCCUPATIONS

COMMENTS:

Clerical workers totaled 3051 or 15.7% of the employment in the medical service occupations surveyed. (See Tables XIX through XXIV). Second only to PROFESSIONAL NURSING in numbers employed, they offer excellent job opportunities for young women with limited work experience. For all kinds of clerical work, however, employers continually stress the need for training in medical terminology and orientation in hospital protocol. Here are a few sample remarks:

1-01.02 Bookkeeper II

"Need medical vocabulary"
"Bookkeeping training with medical orientation"

1-01.47 Insurance Clerk

"Medical terminology"

1-12.02 Credit Clerk

"Clerks need training in hospital protocol and health insurance"

1-37.12 Stenographer

"Medical terminology and anatomy"

1-42.32 Telephone Operator II

"Would be an advantage in having people with knowledge of hospital protocol and environment."

An increase in new positions of 3.8% within one year and 12.3% in five years will provide 379 new clerical jobs by 1970, exclusive of the replacement factor, which employers estimate will require the hiring of 1171 workers. There were 45 job openings in clerical occupations at the time of the survey.

Four of the twenty-six demand occupations selected for special comment throughout this report are in the clerical field:

1-01.02 Bookkeeper II
1-18.4302 Receptionist, Dr's Office
1-18.4303 Hospital, Receiving Clerk
1-33.0103 Medical Secretary

Within these four categories are more than one-third (39.4%) of the employed clerical workers, and in these groups are 199 of the new jobs expected to be available in the clerical field by 1970.

Over one hundred separate clerical job titles were identified and tabulated - some of them closely related in terms of their nature or immediate work environment. BOOKKEEPING, RECEPTIONIST, AND SECRETARIAL workers can be segregated into

occupational groups with many common characteristics. The other categories, OFFICE, FOOD SERVICE, CLERICAL, and MISCELLANEOUS CLERICAL, are less clearly defined, but are separated in Tables XXIII-XXV to simplify the task of describing this large occupational field.

BOOKKEEPING

Little change is expected within the next year for BOOKKEEPER and RELATED OCCUPATIONS, but a growth rate of 11% or 56 new jobs is expected by 1970. More than half of these new positions will be for BOOKKEEPERS and ACCOUNTING CLERKS. Only one additional position was forecast within the groups of workers such as BOOKKEEPING and BILLING MACHINE OPERATORS.

A BOOKKEEPER II (1-01.02) keeps a complete and systematic set of business transactions for an establishment, which involves balancing books and compiling reports at regular intervals to show receipts, expenditures, accounts payable, accounts receivable, profit or loss, and many other items pertinent to the operation of a business. This function of maintaining a complete set of books distinguishes the BOOKKEEPER II from the BOOKKEEPER III (1-01.03) who works with only one phase or section of records such as the Accounts Receivable or the Accounts Payable section. Because doctors' offices and clinics are usually small establishments, their primary need is for workers who can keep a complete set of books, and these firms employ 110 workers as BOOKKEEPER II. Convalescent centers and rest homes employ only 20, hospitals only 6. Doctors' offices and clinics expect to add another 20 positions by 1970. Convalescent centers and rest homes forecast only one additional position. No increase is expected in hospitals.

Bookkeeping operations are in greater volume and are more specialized in hospitals, so most of the occupations listed in Table XIX such as ACCOUNTING CLERK, MACHINE OPERATOR, CREDIT CLERK, CASHIER, and BOOKKEEPER III, are found in these establishments. It is interesting to note though, that a BOOKKEEPER II who can perform all phases of bookkeeping earns an average $345 monthly in doctors' offices and clinics; whereas the BOOKKEEPER III who works with only one phase of the bookkeeping process, also earns an average of $345 in hospitals.

This disparity of income may be a factor in the 36.4% turnover rate for BOOKKEEPERS in doctors' offices and clinics, as these employers hired 40 people in 1964 to maintain 110 BOOKKEEPERS on the payroll; but hospitals and rest homes had no turnover problem last year. And, as has been the case for other occupations covered in this survey, the replacement estimate for BOOKKEEPERS in the future is very much under what one would anticipate. Judging from past performance, approximately 200 replacements are likely to be hired by doctors' offices and clinics in addition to the 20 net increase in positions by 1970.

RECEPTIONIST AND RELATED OCCUPATIONS

Women employed as INFORMATION CLERKS, APPOINTMENT CLERKS, RECEPTIONISTS, and TELEPHONE OPERATORS number more than one-third (41.2%) of the clerical workers in the medical industry. There will be 60 new positions added in one year and 137 new positions in five years for workers in this general category of occupations, besides the hiring of 360 replacements.

RECEPTIONIST, DR'S OFFICES (1-18.4302) and HOSPITAL RECEIVING CLERK (1-18.4303) account for the majority of present employment (70%) in the receptionist field and a high percentage of the new jobs expected to be available within this group by 1970, (88%). The largest of these two occupations, RECEPTIONIST, DR'S OFFICE, had an employment of 700 workers and 40 vacancies at the time of the survey; a net increase amounting to 40 new positions for the next year and 80 new positions for the next five years was forecast by employers. Unlike the NURSE, DR'S OFFICE or PHYSICIAN'S ASSISTANT, the RECEPTIONIST, DR'S OFFICE does no patient care. Her duties are at the front desk, where she receives patients in an office of a physician or dentist, arranges for their comfort while they are waiting, makes appointments, and receives money in payment of bills. She also keeps medical records pertaining to the patients. Though her major concerns are with clerical functions, most doctors want an employee in this position to be familiar with medical terminology. In situations where no nurse is in the office, some past experience as a practical nurse is often required because of the RECEPTIONIST'S conversations with patients over the telephone and her exposure to emergency situations concerning critically ill or injured persons. Wages range from $243 to $350 per month for this occupation.

An applicant for RECEPTIONIST, DR'S OFFICE is considered suitable if she has specialized vocational preparation, even though she has had no actual work experience. But according to every employer interviewed - she should be under forty-five years of age. Here is a sample of what some employers had to say when asked for training needs:

> "Edison should institute a course, because they do a real good job on LPN's"
> "Basic bookkeeping, medical terminology, composing business letters"
> "Good public contract girls oriented to medical terminology, insurance forms"
> "More courses in telephone techniques"
> "Need medical terminology"

Last year's turnover rate of 48.6% means that employers lost roughly one RECEPTIONIST, DR'S OFFICE for every two they hired. In 1964 340 replacements were needed in order to maintain 700 receptionists on the payroll; yet their replacement estimate for the next five years was only 60. A more accurate estimate, if the past rate of turnover continues, would be nearer 1700!

Turnover for HOSPITAL RECEIVING CLERK (1-18.4303) was less than half that of the RECEPTIONIST, DR'S OFFICE. Just 39 workers were replaced in 1964 to maintain the work force of 182 HOSPITAL RECEIVING CLERKS - a turnover rate of 21.4%. This is the second largest group in the Receptionist field, for which an additional 21 positions are expected to be available within one year and 36 additions within the next five years. Sometimes called Admitting Clerks, these women receive incoming patients for hospitalization. A typical job description reads:

> "Interviews patient or representative to obtain patient's name, address, nearest relative, and other pertinent data. Types data on admittance sheet. Records patient's condition as infectious, contagious, or benign from physician's diagnosis. Assigns patient to appropriate ward. Enters dismissal data, such as date and hour of discharge, days spent in hospital, and physician's name on card. Receives personal property and valuables from patient, and returns them to him upon discharge. May collect deposits on hospital bills. May assist in giving first aid."

Hospitals are more restrictive in their hiring requirements than are doctors' offices: only half the hospital employers would consider hiring an Admitting Clerk without previous work experience; whereas most doctors would hire a Receptionist with just vocational preparation. HOSPITAL RECEIVING CLERKS earn higher salaries - from $291 to $400 - compared to the $243 to $350 per month earned by RECEPTIONIST, DR'S OFFICE. These differences in pay scales and hiring requirements may be causal factors in the comparative turnover rates for the two occupations. In addition, the RECEPTIONIST DR'S OFFICE is often called upon to work longer hours than is true for the HOSPITAL RECEIVING CLERK.

Table XX gives the current employment and 1965-1970 forecasts for RECEPTIONIST and RELATED OCCUPATIONS.

SECRETARIAL AND RELATED OCCUPATIONS

The occupation of MEDICAL SECRETATARY (1-33.0103), which employed 179 women at the time of the survey, is the largest in the Secretarial group; but no increase in jobs was forecast for the next year. Twenty-one new positions are expected to be available by 1970, however. Again employers tended to under-estimate the replacement forecast for the next five years. The turnover rate of 24.6% for 1964 when 44 replacements were hired, indicates a possible replacement total of nearer 200 by 1970, instead of the 31 estimated by employers.

Salaries ranged from $329 to $398 per month, and as an exception to the general rule, Dr's offices and clinics averaged $398, while the average pay scale in hospitals was at the lower end of the range at $329 per month. MEDICAL SECRETARIES differ from other secretaries in medical industries by virtue of the degree of technical terminology required. A MEDICAL SECRETARY (1-33.0103) is primarily concerned with taking and transcribing dictation involving medical case histories. A SECRETARY (clerical), (1-33.01) may be transcribing correspondence involving accounting, purchasing, insurance, or many other aspects of the medical industry. Therefore, a SECRETARY (clerical) does not require the facility with medical terminology that is needed by a MEDICAL SECRETARY who is transcribing the technical correspondence of a physician. The monthly salary for a secreatary (clerical) is about $50 per month less than that of the MEDICAL SECRETARY.

OFFICE CLERICAL

Depending on the size and type of office, a CLERK, GENERAL OFFICE (1-05.01) performs any combination of the following or similar clerical duties: Makes up and files reports, tabulates and posts data in record books, checks cash registers, checks calculations, and sends out bills. She may keep a small set of books (BOOKKEEPER II), take inventory (INVENTORY CLERK), adjust complaints (ADJUSTMENT CLERK), take telephone orders, and give information to callers. She operates various office machines such as a calculating machine, and may be required to do miscellaneous typing (CLERK-TYPIST), or to take and transcribe shorthand (STENOGRAPHER).

CLERK, GENERAL OFFICE can be distinguished from WARD CLERK (1-05.0102) by the working environment. A WARD CLERK also performs various clerical tasks, but

under the supervision of the head nurse in a large ward or in a floor station. She is working with clinical records as opposed to the CLERK, GENERAL OFFICE who may be recording, filing, or tabulating records of a more general nature.

More specialized segments of the many tasks performed by the CLERK, GENERAL OFFICE are represented by such occupations as WARD CLERK, CLERK-TYPIST, and FILE CLERK. These jobs pay somewhat less, because they do not require the versatility and adaptability of the CLERK, GENERAL OFFICE; but they do offer avenues of entry for younger and less experienced workers, with possibilities of promotion into other clerical positions of wider scope. Salaries range from $250 per month for a FILE CLERK to $350 per month for a CLERK, GENERAL OFFICE.

Table XXII lists related occupations in the office clerical category and their employment forecasts for 1965-1970. Though very little increase is expected within these occupations for the next year, an additional 65 positions are expected to be available by 1970, with 418 workers hired as replacements. For CLERK, GENERAL OFFICE, employers forecast a replacement of 96 workers by 1970; but with a turnover rate last year of 32% in this one occupation, the replacement hiring is more likely to reach 240.

FOOD SERVICE, CLERICAL & ADMINISTRATIVE

Certain clerical occupations are found in the kitchen environment or in the Dietary Department. These are listed in Table XXIII. It is possible for kitchen workers with experience in a variety of food service occupations (See Tables XV through XV-C) to move up the advancement ladder to positions such as CHEF or MGR., CAFETERIA (0-71.21) provided they have supervisory ability. Though promotion is theoretically possible without certain formal preparation, a large group of workers at the lesser skilled levels must contend for the few available administrative positions. This makes advancement quite remote in reality, unless the worker has sufficient vocational or academic education. Of all the occupations in this group, however, that of DIETITIAN (0-39.93) is the only one actually requiring a college degree program.

MISCELLANEOUS CLERICAL OCCUPATIONS

The miscellaneous clerical occupations listed in Table XXV are characterized in main by the large percentage of male workers employed. Yet, as is true throughout the economy, clerical employment for male workers in the medical industry is limited in scope and in potential growth. Only one additional position was forecast for the next year in this miscellaneous group. An increase in employment of less than 10% is expected within the next five years.

STOCK CLERKS AND STOREKEEPERS consist entirely of male workers; INSURANCE CLERKS are positions filled entirely by women workers. These occupations comprise the bulk of employment in the miscellaneous clerical category. The occupation of MESSENGER (1-23.14) offers more opportunity for employment than do the others because of the very high turnover rate. In 1964 employers hired 23 replacements to maintain the 11 MESSENGERS on their payrolls. At this rate, there would be another 115 replacements hired within the next five years, although the more conservative estimate by employers is 83 replacements. Pay scales for MESSENGERS average $260 per month.

CLERICAL OCCUPATIONS

TABLE XIX

BOOKKEEPING

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
*1-01.02 Bookkeeper	136	136			137		157	
1-01.0203 Night Auditor	40		40		40		40	
1-01.03 Bookkeeper III	10	10		1	11		16	5
1-01.0301 Med. Voucher Clerk	1	1			1		1	
1-01.31 Acctg. Clerk	79	79			79	11	82	51
1-01.3101 Acctg. Clerk Supv.	1	1			1		1	2
1-01.3102 Accts Payable Clerk	5	5			5		5	
1-01.3103 Accts Rec. Clerk	10	5	5		10		15	
1-01.32 Audit Clerk	1	1			1		1	
1-01.43 Posting Clerk	17	17			17		22	10
1-01.52 Cashier I	22	22			22	1	23	6
1-01.5201 Cashier I, Supv.	1	1			1		1	1
1-01.5202 Cashier, Pay Received	2	2			2		2	
1-02.01 Bkpg. Mach. Opr.I	7	7			7		8	1
1-02.02 Bkpg. Mach. Opr. II	16	16			16		16	1
1-02.0203 Bkpg. Mach. Accts Rec.	3	3			3		3	
1-02.03 Bkpg. Mach. Opr. III	9	9			9		9	1
1-02.04 Posting Mach Opr	1	1			1	2	1	5
1-03.07 Invoice Control Clerk	3	3			3		3	1
1-12.02 Credit Clerk II	21	20	1		21		27	1
1-15.02 Tracer I	1	1			1		1	

1-18.82 Billing Clerk	53	53			53	5	53	16
1-18.8201 Billing Clerk, Head	1	1			1		1	
1-18.84 Collection Cl.	18	18			18		21	3
1-25-02 Billing Mach. Opr. I	6	6			6		6	3
1-25.03 Billing Mach. Opr. II	25	25			25		25	
1-26.02 Payroll Clerk	15	15			15		20	2
1-26.0201 Chief Payroll Clerk	1	1			1		1	
1-26.03 Timekeeper	5	5			5		5	5
TOTALS:	510	464	46	1	512	19	566	114

CLERICAL OCCUPATIONS

TABLE XX

RECEPTIONIST & RELATED

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964 Employ.	DECEMBER, 1964 Female	DECEMBER, 1964 Vacancies	YEAR-1965 Employ.	YEAR-1965 Replace.	YEAR-1970 Employ.	YEAR-1970 Replace.
1-18.41 Appointment Clerk	1	1		1		2	
1-18.42 Information Clerk	3	3		3		3	2
1-18.43 Receptionist I	110	110		110	43	112	115
1-18.4301 Supv. Rec. Cl.	9	9		9		9	
*1-18.4302 Recept. Dr's Office	700	700	40	780		820	60
*1-18.4303 Hosp. Rec. Cl.	182	182	1	203	30	218	99
1-18.4304 Adm. Cl., Clinic	32	32		32	10	35	35
1-18.4305 Recept., X-Ray	21	21		21		21	1
1-42.31 Telephone Opr. I	24	24		24	6	26	20
1-42.3101 Tel. Opr., Chief	2	2		2		2	1
1-42.32 Telephone Opr. II	178	178		178	2	192	27
TOTALS:	1262	1262	41	1363	91	1440	360

CLERICAL OCCUPATIONS

TABLE XXI

SECRETARIAL & RELATED

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
1-33.01 Secretary (clerical)	40	40			40		41	1
1-33.0101 Med. Secy., Supv.	5	5			5		5	
1-33.0102 Private Secy.	9	9			9		9	1
*1-33.0103 Medical Secretary	179	179		1	179	1	201	31
1-37.12 Stenographer	20	20			20		23	6
1-37.36 Transcribing Mach. Opr.	27	27			27	5	32	23
1-37.3601 Trans. Supv.	1	1			1		1	
TOTALS:	281	281		1	283	6	312	62

CLERICAL OCCUPATIONS

TABLE XXII

OFFICE CLERICAL

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
1-04.01								
Clerk, General	43	43			43	5	47	18
1-05.01								
Clerk, General Office	151	151			151	19	155	96
1-05.0101								
Ward Clerk, Supv.	10	10			10		10	5
1-05.0102								
Ward Clerk	118	118			123	24	135	90
1-05.0103								
Clerk, Laboratory	2	2			2		2	
1-05.0104								
Clerk, Surgery Schedule	4	4			4	2	4	6
1-17.01								
File Clerk I	62	52	10		62	11	63	55
1-17.02								
File Clerk II	21	21			26	15	40	55
1-17.0201								
File Clerk, Film	13	13			13		15	2
1-17.0202								
File Clerk, Soundex	15	15			15		15	
1-36.01								
Statistical Clerk	17	17			17	5	18	18
1-36.14								
Med. Records Clerk	86	86			86	9	95	46
1-37.34								
Clerk-Typist	77	77			72	22	85	27
TOTALS:	619	609	10		624	112	684	418

CLERICAL OCCUPATIONS

TABLE XXIII

FOOD SERVICE, CLERICAL & ADMINISTRATIVE

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
0-39.93 Dietitian	56	56			55	1	59	8
0-39.9301 Dietitian, Admin.	11	10	1		11		11	
0-39.9302 Dietitian, Assist.	11	11			11		12	3
0-39.9303 Dietitian, Therap.	30	30			31	3	33	9
0-39.9304 Dietitian, Teaching	17	17			17		17	5
0-71.21 Manager, Cafeteria	28	27	1		30	1	31	1
0-71.2102 Assist. Mgr. Cafet.	1	1			1		1	
0-71.2103 Mgr. Trainee	2	2			4	2	6	6
1-01.53 Cashier II	16	16			17	4	19	15
1-03.03 Food Tab., Cafeteria	7	7			7		7	
1-03.06 Kitchen Clerk	1		1		1		1	
1-03.12 Diet Clerk	27	27			27	2	43	25
2-25.41 Kitchen Supervisor	1	1			1		1	
TOTALS:	208	205	3		213	13	241	72

CLERICAL OCCUPATIONS

TABLE XXIV

MISCELLANEOUS CLERICAL

CURRENT EMPLOYMENT AND 1965-1970 FORECAST

OCCUPATIONAL CODE AND TITLE	DECEMBER, 1964				YEAR-1965		YEAR-1970	
	Employ.	Female	Male	Vacancies	Employ.	Replace.	Employ.	Replace.
1-01.38 Insurance Clerk II	24	24			24	1	26	5
1-01.47 Insurance Clerk, Med.	17	17			17		17	1
1-03.02 Insurance Checker	3	3			3	2	5	4
1-18.01 Mail Clerk	14	11	3		14		14	
1-18.31 Employment Clerk	3	3			3		3	1
1-18.32 Personnel Clerk	1	1		1	1		1	1
1-19.11 Procurement Clerk	5	4	1		5		5	1
1-23.14 Messenger	11	4	7	1	12	18	14	83
1-25.22 Mimeo. Operator	1		1		1		1	
1-25.23 Dup. Mach. Opr.	2	1	1		2		2	
1-25.43 Embossing Mach. Opr.	3	3			3	1	3	4
1-25.62 Key Punch Opr.	5	5			5		6	3
1-25.6201 Supervisor	2	2			2		2	
1-25.64 Tab. Mach. Opr.	3	2	1		3		4	

1-34.04 Receiving Clerk	5		5		5	4	5	10
1-38.01 Stock Clerk	36		36		36		36	2
1-38.04 Stock Control Clerk	7		7		7		8	6
1-38.08 Pharmacy Helper	19	17	2		19	6	25	22
1-38.51 Storekeeper, Chief	8		8		8		8	1
1-47.03 Supervisor, Data Proc.	2		2		2		2	1
TOTALS:	171	97	74	2	172	32	187	145

S E C T I O N IV

APPENDIX

METHODOLOGY

The present study was undertaken for two main purposes:

1. To try out a pilot program of research in the health service field that would identify and describe a range of occupations in relation to their present and future employment needs, and which could be adapted to a variety of other industries in the community.

2. To present significant findings as to the growth potential and employer hiring requirements of certain occupations that would assist and encourage the development of training facilities and programs designed to fit the pattern of local needs.

Information on manpower and training needs was obtained from King County employers grouped according to the Standard Industrial Classification system. These eight groups are:

S.I.C.	Industry
704	Organization Hotels and Lodging Houses (Retirement Homes)
801	Offices of Physicians and Surgeons
802	Offices of Dentists and Dental Surgeons
803	Offices of Osteopathic Physicians
804	Offices of Chiropractors
806	Hospitals (Except government-operated institutions)
807	Medical and Dental Laboratories
809	Health and Allied Services, Not Elsewhere Classified (Convalescent Centers and Rest Homes)

Employment Security Department records that list the names of employers within each S.I.C. group were used for the sampling procedure. These groups were subdivided into three categories according to the number of employees in each establishment. From this list were selected all firms with 500 or more employees, one employer out of five with from 100-499 employees, and one of twenty firms with from 1-99 employees. This completed the selection process, which yielded a spread of 94 firms employing 8000 workers. Projections based on the sample provided an estimate of 19,526 employees in King County medical industry. Under this projection method, the firms surveyed represent 41% of the total employment in the King County medical industry. However, current records of the Department of Employment Security estimate the total employment in the industry at only 14,759, which would give a higher sample for the survey of 55%

For the first phase of the survey, personal interviews were conducted with all selected employers to elicit the following information:

Employer Job Title
Job Description
Number Employed (As of December, 1964)
Number of Vacancies
Employment Forecast for 1965 and 1970

Turnover for 1964
Entrance Age Requirement
Training Needs
Work Experience Requirement
General Questions Regarding Labor Shortages or Surpluses
Attitudes Regarding Occupational Training Programs

A separate questionnaire was completed for each job listed by each employer. As different employers often call the same kind of job by different names, these jobs were classified and assigned occupational titles and code numbers according to the Dictionary of Occupational Titles, Volumes I, II, and Supplements. The D.O.T. title used is a reflection of the major job tasks, irrespective of the license held by the worker or his degree of education. To differentiate related occupational titles that have the same code number in the D.O.T., a sixth or seventh digit was added to the coding structure. Code numbers and the data reported by employers were key-punched on IBM cards and tabulated on the basis of calculations that expanded the sample data by the assignment of weighting factors of one, five, or twenty, according to the size of the establishment.

After an appraisal of the first phase survey, a list of occupations with current vacancies or an anticipated net increase of twenty or more jobs within the next five years was made. These were categorized as "demand occupations", some of which were selected for a second phase of the pilot study. Return interviews to each establishment employing one or more workers in the selected occupations were conducted for the second phase. More detailed information regarding occupational trends, worker characteristics, and training needs was asked for as follows:

Wage Scale
Promotional Possibilities
Performance Specifications
Selection Factors
Worker Characteristics of Aptitudes and Temperaments
Physical Demands
- Working Conditions
- Physical Capacities
- Height and Weight Requirements

Skills, Knowledges, and Abilities
- Mathematics
- Physics
- Chemistry
- English
- Business
- Shop and/or Laboratory Manipulative Skills
- Drawings, Reports, Records, Handbooks, Manuals
- Recruitment Sources

A supplemental report on the second phase follows the appendix.

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LIST OF SURVEY PARTICIPANTS

704 ORGANIZATION HOTELS AND LODGING HOUSES

Exeter House
Masonic Home

801 OFFICES OF PHYSICIANS AND SURGEONS

J. S. Arnason
John L. Bakke
James Hallard Berge
William P. Berard
B. F. Bruenner
John Caputo
J. J. Dragovich
Arnold E. Friborg
C. D. Goodhope
Harvard Psychiatric Group
John R. Henry
James E. Jackson
Rodney M. Jarvis
Emil Jobb
Joslin & Griffin
Leslis A. Kremer
Samuel Lippman
Ralph H. Loe
Mason Clinic
Patrick H. McNellis
Park Avenue Clinic
Chauncey G. Paxson
L. H. Pinkers
Robert K. Plant
Rainier Beach Medical
Mortimer S. Rayman
Fred W. Reebs
Drs. Robinson & Robinson
Robert L. Siverling
C. Robert Smith
K. M. Soderstrom
Ralph L. Sweet
Drs. Taylor & Stark
Gerald F. Thomas
William A. Young

802 OFFICES OF DENTISTS AND DENTAL SURGEONS

Jack Akamine
Fred P. Barnhart
Neil Beasley
Donald K. Borg
Clifford L. Dally
Robert V. Friedrich
R. W. Gehring
Howard C. Gilbert
James L. Gill
Robert E. Hampson
Walter R. Kintner
Richard P. Knowlton
Leon Levy
Robert P. Lewis, Jr.
Calvin L. Lien
W. T. Monson
Morris L. Morby, Jr.
T. T. Nakumura
L. A. Piper
Henry Richards
George A. Russon
Ralph Schumacher
Leonard A. Siebert
John M. Stopherd
Dean Sullivan
Malcolm M. Teller
Robert S. Terkla
Keith R. Timberlake
R. V. Van Derschelden
Joseph W. White

803 OFFICES OF OSTEOPATHIC PHYSICIANS

W. D. Holt

804 OFFICES OF CHIROPRACTORS

Kanistanaux Chiropractic Center

806 HOSPITALS (Except government-operated institutions)

Doctors Hospital
Firland Sanitorium
Group Health Hospital
King County Hospital
Nelems Memorial Hospital
Northwest Hospital
Providence Hospital
George L. Standring Hospital
Swedish Hospital
University Hospital
Virginia Mason Hospital

807 MEDICAL AND DENTAL LABORATORIES

Hoff's Laboratory
Mason-Busteed Medical Laboratory
Ray's Dental Laboratory

809 HEALTH AND ALLIED SERVICES, NOT ELSEWHERE CLASSIFIED

Burien Manor
Ferncrest Sanitarium
First Hill Physical Therapy
Giles D. Graves
Greenwood Manor Nursing Home
Osborn's Guest House
Progressive Care, Inc.
Cora M. Raymond
Daniel J. Santoro, O.D.
Valley Lodge, Inc.

LIST OF COOPERATING ORGANIZATIONS

Auburn School Dist. #408

Bellevue School Dist. #405

Clover Park Vocational-Technical School

Edison Technical School

Greater Seattle League for Nursing

Health Facilities Planning and Development Board

Health Occupations Education Council

Highline College

Highline School Dist. #401

King County Health Department

King County Hospital

King County Medical Society

King County Nurses Association

Lake Washington School Dist. #414

Renton School Dist. #403

Rest Lodge of Seattle

Seattle Area Hospital Council

Seattle School Dist. #1

Shoreline Community College

Shoreline School Dist. #412

University of Washington

Washington League for Nursing, Division of Mental Health

Washington State Board for Vocational Education

Washington State Employment Security Department

Washington State Hospital Education & Research Foundation

Washington State Hospital Association

Washington State Nursing Home Association

STATE OF WASHINGTON
EMPLOYMENT SECURITY DEPARTMENT

P. O. Box 1748
Seattle
November 30, 1964

A skill survey of manpower requirements in selected occupations in health and medical institutions in King County is being conducted by the Washington State Employment Security Department and the State Board for Vocational Education. The two agencies are conducting this survey in cooperation with seven school districts in King County and with the recommendation of the Health Occupations Education Council.

The need for coordination of new training programs in the medical field resulted in the formation of the Health Occupations Education Council. This Council includes State and local representatives of education, health and planning.

Readjustments in job assignments and retraining in many occupations require modifications in our present educational system, which must relate to worker characteristics and educational requirements. Therefore, expansion into vocational-technical schools, community colleges, and enlarged adult education programs can be established only by determining requirements of employers in King County.

You can be of valuable assistance in accumulating the necessary information. The information will be kept confidential and a copy of the completed study will be sent to you.

A representative of the Employment Security Department will contact you very soon. We will greatly appreciate your cooperation.

Sincerely,

James G. Scanlan,
Manager

STATE OF WASHINGTON
EMPLOYMENT SECURITY DEPARTMENT

P. O. Box 1748
Seattle
February 4, 1965

On behalf of the State Board for Vocational Education, the school districts of King County, and ourselves, we thank you for the assistance and cordial reception given our staff interviewers during the manpower skill survey of the medical industry.

The information acquired will assist the schools when considering modifications and additions to their present curriculum. It will be helpful also to those people today who need special assistance to prepare them for employer acceptance and for productive participation in the world of work.

When the statistical data from the survey is tabulated and analyzed, a final report will be sent to you.

Sincerely,

James G. Scanlan,
Manager

vh

S A M P L E Q U E S T I O N N A I R E - PHASE I

TITLE SHEET

Employer Name _____ Date _____

Address _____

_____

Industry Code _____

1. Total No. Employees nearest 15th of _____ 1964
2. Total No. expected nearest 15th of _____ 1965
3. Total No. expected _____ 1970

Name of Person Completing Questionnaire _____

Title _____

Telephone No. and Extension _____

JOB TITLE (EMPLOYER) _____

Employer # .....
SIC Code .....
DOT Code .....
Entry Code .....

JOB TITLE (DOT)

Apt. Test #.....
Trainee.....Apprentice.....Other..... .....
Entry Wage Scale $.....Per..... .....

JOB DESCRIPTION

EMPLOYMENT	(a) TOTAL	(b) FULL-TIME	(c) PART-TIME	
1. Current Total	.....	.....	.....	1a.....
2. Male	.....	.....	.....	3a.....
3. Female	.....	.....	.....	1b.....
	.....	.....	.....	3b.....
EMPLOYMENT NEEDS				
4. Current Vacancies	.....	.....		4a.....
				4b.....
FORECAST EMPLOYMENT		EXPANSION	REPLACEMENT	5a.....
5. 1965	.....	.....	.....	5c.....
6. 1970	.....	.....	.....	6a.....
				6c.....
7. TURNOVER - 1964	.....			7 .....
8. ENTRY AGE _____	-18 18-22 -45 45+			8 .....
9. TRAINING NEEDS		(a) LENGTH	(b) COST	9 .....
a - None	...			9a.....
b - GED	...			
c - High School	...			9b.....
d - Special Courses	...			
e - In Plant	...	.....	.....	
f - Vocational School	...	.....	.....	
g - Certificate	...	.....	.....	
h - College	...			
i - College Associate	...			
j - College Degree	...	Maj.....	Min.....	
10. WORK EXPERIENCE REQUIRED		LENGTH		10 .....
a - Direct	...	.....		
b - Related	...	.....		
c - Casual	...			
d - None	...			

1. Occupation for which employer has experienced difficulty in hiring qualified workers in past year.

   a. Occupation

   Causes

   1. Seasonal
   2. Emergency Demand
   3. Hours
   4. Wages
   5. Training Needs
   6. Work Experience
   7. Other

2. Labor Surplus

   a. Occupation

   Causes

   1. Seasonal
   2. Automation
   3. Other

3. Would you accept qualified graduates from a special occupational course or program without actual work experience to fill your vacancies?

4. Would you participate in a work experience training program_____

   a. In what ways:

   (1) Summer_____
   (2) Part Time_____
   (3) Job connected assignments and study_____
   (4) On-the-job training_____

5. Employer Suggestions

   a. Types of occupational programs needed most in the area

   b. If qualified experienced workers were available for higher level jobs, would this eliminate your need for such specialized occupations as the technician, assistant, or aide_____For Example:_____

   c. Other

SUPPLEMENT

INTRODUCTION

Nine occupations were the basis for a second-phase study and for this supplemental report:

Medical Technologist	0-50.01
Surgical Technician	0-50.015
Receptionist, Dr's Office	1-18.4302
Hospital Receiving Clerk	1-18.4303
Physician's Assistant	1-32.20
Cook, Institutional	2-26.32
Orderly	2-42.10
Nurse Aide	2-42.20
Porter I	2-86.10

In the second phase of the research program, our interviewers returned to each firm who had participated in the initial study and who had employees in any one of these nine occupations. Our main purpose was to gather additional and more definitive information regarding occupational trends, worker characteristics, and training needs. No conclusive results were obtained, with the exception of additional information on turnover. Phase II interviews provided some revealing statistics on the reasons given for certain classes of workers leaving their place of employment, voluntarily or otherwise. This information resulted in an upward revision of the number of actual job opportunities that may be available for some occupations within the next five years.

A secondary purpose for the follow-up study, to verify certain information previously secured from employers, was generally satisfied. Though the two phases of the research were separated by a six-week interval, and though in some instances different individuals represented the same employers, their statements to the interviewers showed no significant variations of responses.

MEDICAL TECHNOLOGY

Phase II of the research project indicated a lesser turnover rate of 41.5% in 1964 than had been indicated in the Phase I report. The reasons for turnover were given as: marriage or pregnancy (64%); lack of job satisfaction (21%); and other, personal reasons (15%). Only 6% were involuntary terminations for poor performance or other reasons. The main factor of marriage or pregnancy as a cause of turnover is a likely one when considering the high percentage of women in the occupation and the employers' preference for hiring in the 18-22 age group. Eighty-eight per cent of the Medical Technologists in King County are women and they represented 94% of the turnover in 1964. Because of marriage or pregnancy, 141 of them left the labor force last year. These women create job vacancies that should be added to the 29 new positions estimated to be available by 1970, if the present rate of resignations for marriage or pregnancy continues. Assuming that probability, 169 Medical Technologists will be needed in King County within the next year and 752 by 1970.

It is not known how many of the Medical Technologists who leave the labor force during the child-bearing years, will return to it, or when they will return, but facts pointed out by the President's Commission in the "American Women" suggests that married women are out of the labor force approximately 7 to 10 years during their working careers. Because of the rapidly changing occupational patterns and the skill requirements in the medical industry, a period of retraining is often necessary after more than a short absence from active employment. The time interval out of the labor force for the average woman worker supports the assumption that resignations of Medical Technologists, because of marriage or pregnancy, will result in the need to train or retrain a corresponding number of women to fill the vacancies thus created.

Assuming the percentage turnover and the reasons for it would hold for the 901 employees in the entire field, which includes the primary occupation of Medical Technologist and its related specialities, there may be as many as 1125 job vacancies added to the 47 new positions estimated to be available by 1970. In other words, out of the 2330 replacements forecast for 1970, firm job opportunities can be said to exist for 1125 workers in the next five years. Another 47 jobs will be available, due to expansion of existing services.

Another large group of Medical Technologists - one out of every five - left their places of employment for lack of job satisfaction in 1964. Since they are only moving from one employer to another and are not removing themselves from the labor market, no additional workers are needed because of this turnover factor. But it is in order to look for possible inconsistencies between the worker characteristics (his aptitudes, temperaments, etc.), which may be required by the employer and those characteristics required by the nature of the job itself.

SURGICAL TECHNICIAN 0-50.015

Only hospitals were surveyed in the second phase of the research program in regard to this occupation. A 14% turnover rate in that industry contrasts with the 17% turnover rate for all industries employing Surgical Technicians. Lack of job satisfaction was the reason given by 50% of the technicians who left their place of employment; 40% gave other, personal reasons; and 10% were laid off because of unsatisfactory personality factors.

RECEPTIONIST, DOCTOR'S OFFICE 1-18.4302

The turnover rate of 44% is somewhat less than the 48.6% indicated from Phase I. Of the 280 women who left their jobs as Receptionist, Dr's Office, 50% quit, 43% were laid off, and 7% were promoted. Reasons for quitting were given in 21% of the cases as marriage or pregnancy; in 14% as lack of job satisfaction; and in another 14% as other, personal reasons. Using the more conservative turnover rate of 44% from the Phase II results, one could estimate that approximately 300 replacements would be hired within a year and 1500 within five years. If 21% of the employees quit each year because of marriage or pregnancy, we can conclude that in addition to the 80 new positions forecast for 1970, another 735 positions will be available because of women removing themselves from the labor market.

Poor performance was given as a reason for the involuntary termination of 28% of the receptionists, and personality factors in 7%. Fourteen per cent of the women resigned because of lack of job satisfaction. This means that almost half of the women who left their jobs voluntarily or by forced termination, did so because of unsuitability to the job. To what extent this is due to insufficient screening by the employer, inadequate training on the job, insufficient or inappropriate vocational preparation, or lack of information as to the nature of the job in relation to certain desirable aptitudes and temperaments, is a proper subject of investigation, if successful efforts can be made to stabilize employment in the occupation. It is apparent that the differences between what the employer wants and what he gets - and what the employee expects and what she gets are so far apart that the employer must hire two women to keep one satisfactory employee.

Salary was not given as a reason for termination in any of the cases. However, this factor could be hidden under other reasons given to an employer when an employee intends to leave, such as "lack of job satisfaction", or "other, personal reasons".

HOSPITAL RECEIVING CLERK 1-18.4303

The turnover rate showed no deviation between the Phase I and Phase II interviews. Lay-offs accounted for 2.6% of the turnover, promotions 2.6%, and voluntary terminations 94.9%. Other, personal reasons came up as a cause of voluntary terminations in 80% of the cases.

PHYSICIAN'S ASSISTANT 1-32.20

Employment turnover figures remained unchanged from Phase I to Phase II. The 85 women who left their jobs did so voluntarily - 20 for lack of job satisfaction, 35 for marriage or pregnancy, and 40 for other, personal reasons. The women who left for reasons of marriage or pregnancy, since they have removed themselves from the labor market for some period of time at least, will provide 25 job vacancies each year, provided the same rate of turnover and the reason for it continues. The 20 new positions forecast because of expanding services added to the 125 positions vacated annually by women during the child-bearing years means that approximately 145 Physician's Assistants will be needed in King County by 1970.

COOK. INSTITUTIONAL 2-26.32

Contrary to the general rule that women account for the greatest amount of turnover, male institutional cooks had a 50% turnover rate in 1964, but the rate of turnover for women in the occupations was only 3.2%. Involuntary terminations because of unsatisfactory personality factors accounted for 22% of the turnover. Retirements made up another 21%; resignations accounted for the balance of 22% of the turnover. Retirements made up another 21%; resignations accounted for the balance of 57%. Of those who resigned, 70% gave wages as a reason, 28.5% gave other, personal reasons, and 1.5% said they were dissatisfied with working conditions.

Assuming that retirements would continue at the rate of 21% each year, these could be added to the additional positions forecast by reason of expanding services. This formula provides a probable estimate of 22 institutional cooks needed in King County within the next year and approximately 130 cooks by 1970.

ORDERLY 2-42.10

As was discussed in the Phase I report, the turnover rate for Orderlies, though high, is not excessive in comparison with other demand occupations in the health care field. Furthermore, less than 20% of the turnover in 1964 was due to dismissal because of unsatisfactory performance. The far greater number (80% of the turnover) was due to voluntary terminations. In the Phase II interviews, employers told us that 36% of those who resigned did so because of dissatisfaction with their jobs, 10% because of wages, and 80% for other, personal reasons.

The turnover rate in the Orderly classification was 67% in convalescent centers and rest homes. Hospitals had a turnover rate in this occupation of 42%.

NURSE AIDE 2-42.20

According to the Phase I research, the turnover rate for Nurse Aides was 73.8% for all industries in the health service field. In Phase II our interviewers covered only convalescent centers, rest homes and retirement homes, since these industries will have the most significant increase in employment of Nurse Aides. Retirement homes had no turnover in Nurse Aides during the past year, but convalescent centers and rest homes had to contend with a turnover rate of 234% in 1964.

Nurse Aides resigned in 59% of the cases; lay-offs accounted for the other 41%. Of those who resigned, 62.5% did so because of wages, 5% for marriage or pregnancy, and 32.5% gave other, personal reasons. According to employer records, all of the lay-offs were due to poor performance.

Using the 73.8% turnover rate, we predicted that 9,000 Nurse Aides would have to be hired in the next five years to maintain an average work force of approximately 2,600. The turnover rate of 234% for convalescent centers and rest homes, should it continue, indicates that they will probably hire 6,800 of the 9,000 replacements forecast for 1970, as well as providing 260 of the 335 new positions expected to be available because of expanding facilities and services.

PORTER I 2-86.10

Employment estimates and turnover rates remained the same from the information gathered in Phase I to Phase II. Of the 335 Porters who left their jobs last year 155 quit; 174 were laid off; 5 were promoted; and 1 was transferred. Dissatisfaction with the wage scale was given as a reason for resignation in 32.3% of the cases. Of those who were laid off, 88% were terminated for poor performance and 12% because of unsatisfactory personality factors.

JOB TITLE (EMPLOYER)

Employer # .....
SIC Code .....
DOT Code .....
Entry Code .....

JOB TITLE (DOT)

Apt. Test #..... .....
Promotion (No) (Yes)..... .....
Entry Wage Scale $..... .....

JOB DESCRIPTION

a .....
b .....
c .....

	(a) TOTAL	(b) MALE	(c) FEMALE	
CURRENT EMPLOYMENT	.....	.....	.....	
FORECAST EMPLOYMENT		EXPANSION	REPLACEMENT	1a.....
				1c.....
1. 1965	.....	.....	.....	2a.....
2. 1970	.....	.....	.....	2c.....
TURNOVER-1964	MALE	FEMALE	REASON	
				3 .....
3. Total.....	.....	.....		3a.....
4. Promotion	.....	.....		4a.....
5. Separation:	.....	.....		
(1) Quit	.....	.....	.....	5a.....
(2) Layoff	.....	.....	.....	5-1a.....
(3) Other	.....	.....	.....	5-2a.....

6. PERFORMANCE SPECS. (Rate in order to importance and describe) 3b.....

4b.....

a. Responsibility 5b.....

CARD 2...

b. Job Knowledge

5-1b.....

c. Mental Application 5-2b.....

d. Dexterity & Accuracy 5-1c.....

5-2c.....

e. Not Applicable 5-3c.....

7. OTHER SELECTION FACTORS 6 .....

a. None
b. Tools 7 .....
c. License
d. Car
e. Physical Exam
f. Health Permit
g. Uniforms

Employer # .....
DOT Code .....

8. APTITUDES (Limit to not more than three)

a. None
b. Intelligence
c. Verbal
d. Numerical
e. Spatial
f. Form Perception
g. Clerical Perception
h. Motor Coordination
i. Finger Dexterity
j. Eye-hand-foot coordination
k. Manual Dexterity

8 .....

9. TEMPERAMENTS 9 .....

a. Variety
b. Repetition
c. Routine
d. Initiative
e. Social
f. Isolation
g. Persuasion
h. Tension
i. Evaluation, Sensory Material
j. Evaluation, Measurable or verifiable criteria
k. Evaluation, Personal Viewpoints
l. Precision

10. WORKING CONDITIONS 10 .....

a. None
b. Inside or outside
c. Extremes of Cold plus Temperature Changes
d. Extremes of Heat plus Temperature Changes
e. Wet & Humid
f. Noise and Vibration
g. Hazards
h. Fumes, Odors, Toxic Conditions, Dust, and Poor Ventilation

11. PHYSICAL CAPACITIES (1) Height_____(2) Weight_____(3) No_____ 11-1.....

a. Lifting, Carrying, Pushing, and Pulling 11-2.....
(a) S. (b) L. (c) M. (d) H. (e) V.H.
f. Climbing and Balancing 11 .....
g. Stooping, Kneeling, Crouching, and Crawling
h. Reaching, Handling, Fingering, and Feeling
i. Talking and Hearing
j. Seeing
k. Color Discrimination

12. Is this considered a stand-up job? (No) (Yes) 12-13.....

13. Is this considered a sit-down job? (No) (Yes)

14. Does this demand constant, daily exertion (No) (Yes) 14 .....

15. What type of qualified handicapped person could fill this job 15 .....
(deaf, wheelchair, amputee)_____

Employer # .....
DOT Code .....

16. CHECK LIST OF SKILLS, KNOWLEDGES AND ABILITIES IN PERFORMING THIS JOB

	Unnecessary	Desirable	Must Have	
a. MATHEMATICS				
1. Simple addition, subtraction, multiplication				a1.....
2. Work with fractions				a2.....
3. Computing equations				a3.....
4. Solving equations				a4.....
5. Computing ratios				a5.....
6. Solving formulas				a6.....
7. Interpreting and evaluating reports				a7.....
8. Geometrical layouts				a8.....
9. Computing angles and shapes				a9.....
10. Calculus				a10.....
b. SCIENCE - PHYSICS				
1. Heat				b1.....
2. Light				b2.....
3. Electricity and magnetism				b3.....
4. Gases and fluids				b4.....
5. Mechanics				b5.....
6. Atomic and nuclear theory				b6.....
7. Sound and optics				b7.....
c. SCIENCE - CHEMISTRY				
1. General chemistry				c1.....
2. Qualitative analysis (oxidation states of important elements, etc.)				CARD 3... c2.....
3. Quantitative analysis (gravimetric, volumetric, colorimetric analytical methods)				c3.....
4. Organic chemistry				c4.....
5. Bio-chemistry				c5.....
d. ENGLISH				
1. Spelling				d1.....
2. Grammar - sentence constructions, parts of speech				d2.....
3. Legible handwriting				d3.....
4. Reading - for speed and comprehension				d4.....
5. Speaking - giving instructions and reports				d5.....
6. Listening and sensing - understanding directions				d6.....
7. Business English - letters, written reports				d7.....
8. Writing - instructions and reports				d8.....

Employer # .....
DOT Code .....

	Unnecessary	Desirable	Must Have	
e. BUSINESS				
1. Filing methods				e1.....
2. Business arithmetic				e2.....
3. Record keeping - bookkeeping principles				e3.....
4. Typing				e4.....
5. Shorthand				e5.....
6. Transcribing machine				e6.....
7. Operation of business machines				e7.....
8. Accounting principles				e8.....
9. Statistical methods				e9.....
10. Business economics - concepts of cost & production				e10.....
11. Business organization - problems of operating a small business, including merchandising and personnel				e11.....
12. Industrial organization - knowledge of capital, labor, and management relative to production				e12.....
13. Human Relations - understanding personal and social aspects of organizational behavior				e13.....
14. Labor Relations				e14.....
15. Sales techniques - basic salesmanship				e15.....
16. Knowledge of fundamentals and terminology in particular field				e16.....
f. SHOP AND/OR LABORATORY MANIPULATIVE SKILLS				
1. Use of hand tools related to this job				f1.....
2. Use of single machines related to this job				f2.....
3. Use of a variety of machines related to this job				f3.....
4. Performs experiments with equipment, instruments, apparatus				f4.....
5. Adjusts equipment, instruments, apparatus				f5.....
6. Trouble shoots equipment, instruments, apparatus				f6.....
7. Inspects with equipment, instruments, apparatus				f7.....
8. Measures with equipment, instruments, apparatus				f8.....
9. Makes computations from equipment, instruments, apparatus				f9.....
10. Uses the slide rule				f10.....
11. Operates specialized computers				f11.....
12. Operates calculating machines				f12.....

Employer # .....
DOT Code .....

g. DRAWINGS, REPORTS, RECORDS, HANDBOOKS, MANUALS

		Unnecessary	Desirable	Must Have	
1.	Plots curves, graphs, etc.				g1.....
2.	Reads technical reports				g2.....
3.	Uses technical handbooks, manuals, etc.				g3.....
4.	Makes freehand sketches				g4.....
5.	Makes working drawings				g5.....
6.	Records and compiles data				g6.....
7.	Works from blueprints and sketches				g7.....
8.	Works from wiring diagrams				g8.....
9.	Works with materials and production processes				g9.....
10.	Works with principles of design				g10.....
11.	Lays out and/or plans work				g11.....
12	Estimates cost of time and/or materials				g12.....

17. LIST SPECIFIC TOOLS, INSTRUMENTS, MACHINES, OR APPARATUS USED IN THE PERFORMANCE OF THIS JOB _____ 17.....

18. LIST ANY SPECIAL REQUIREMENTS OR SKILLS NOT PREVIOUSLY MENTIONED NEEDED ON THIS JOB _____ 18.....

19. TESTS 19.....

a. None
b. GATB
c. Bennett Mech.
d. Kuder
e. Strong
f. Wonderlic
g. Otis
h. Minn. Clerical
i. Other

20. WORK EXPERIENCE 20.....

a. Direct — Job Title _____ DOT # _____ .....
b. Related (Military or similar) — Entry # _____
c. Casual
d. None CARD 4...

21. RECRUITMENT 21.....

a. Professional organization or college placement
b. Union
c. WSES
d. Gate
e. Employment Agencies
f. Advertising or Other CARD 5...

EMPLOYMENT SECURITY DEPARTMENT

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VT 00021

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ENROLLMENT IN HOME ECONOMICS --

A RESEARCH STUDY

UNIVERSITY OF KENTUCKY
COLLEGE OF EDUCATION
JUNE, 1963

VT 00021

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A SUMMARY REPORT OF THE RESEARCH STUDY

Enrollment in Vocational Home Economics Programs in Kentucky

College of Education, University of Kentucky

June, 1963

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Chapter I

INTRODUCTION

In Kentucky, the enrollment in the vocational home economics day-school program increased from 502 in 1918 to 29,388 in 1960. This growth in enrollment has been quite gratifying. Yet, since 1958 (with the event of Sputnik), there has been a re-shuffling of objectives and values in education, and in some schools enrollments in home economics classes have drastically decreased.

Are there specific factors affecting enrollment in home economics? Are these factors immediately related to the home economics program? If so, could the findings give suggested guides for proposed changes in the home economics program so as better to fulfill the requisites of the "quality" program for high school youth. The purpose of this research project was to study certain factors that may have influenced enrollment in home economics as the secondary level in Kentucky.

Since changes in enrollment in home economics was not a problem unique to Kentucky, clues for the factors to study were selected from knowledge of the Kentucky situation and from studies completed in other states. Studies from California, West Virginia, Maine, Texas, Idaho, and Washington, D. C. were reviewed.

Factors

Six factors were studied in this research project. The factors that may be influencing enrollment in home economics at the high school level investigated in this study were:

1. The effect of the quality of the home economics program on enrollment.
2. The effect of pressures (including curricular requirements) to take other subjects on enrollment in home economics.
3. The influence of schedule on enrollment in home economics.
4. The influences of attitudes toward home economics (including attitude towards the home economics teacher) on enrollment.
5. The effect of patterns of home economics offerings on enrollment.
6. The effect of junior-high homemaking on enrollment in home economics in high school.

Limitations

These limitations were observed in the study:

1. Data expressing student opinion were collected from senior high school girl students only.
2. Only high schools having departments of vocational home economics in Kentucky in 1957-58 and retaining the department in 1960-61 were used in the sample.

3. No school was used in the study where re-districting or consolidating had occurred during this time interval.

4. High schools having only Negro students were not included in this study.

5. A school having junior-high organization (7th, 8th, and 9th grades) only was not included in the study.

Definitions

1. Junior-high homemaking was designated as a day-school program in home economics centering on personal and family problems, usually involving 7th and 8th grade pupils only. All schools offering home economics in the junior high school in this study also offered home economics in the senior high school.

2. Pressure as used in this study refers to any force exerted by self or others to influence behavior.

3. Schedule, in this study, was used to refer to periods in a school day and to the total scheduling of a student's yearly program.

4. The quality of the program was judged by recognition of certain satisfactions or dissatisfactions as to the worth of phases or aspects of the home economics program by students and others.

5. The effect of pattern of offerings involved any suggested change in the offerings of home economics, any sequence suggestions, any suggestions related to home economics being offered as an elective or a required course, etc.

6. Attitudes relating to home economics were classified thus when the expression involved feeling toward a situation, person, the home economics department, etc.

7. The "Topics" were statements of goals or objectives in eight areas of home economics which might have been learned by high school students. The "Topics" were part of the questionnaire completed by high school senior girls.

8. The areas of home economics included in the 74 Topics were: Child Development, 1.1 - 1.9; Clothing and Grooming, 2.10 - 2.19; Foods and Nutrition, 3.20 - 3.29; Health and Home Nursing, 4.30 - 4.38; Management, 5.39 - 5.48; Housing and Home Furnishing, 6.49 - 6.59; Family Living, 7.59 - 7.68; and Consumer Education, 8.69 - 8.74.

9. Increasing-enrollment schools are the 31 high schools in this study where enrollment in home economics increased over the total school-enrollment by 25 percent or more between the school years of 1957-58 and 1960-61.

10. Decreasing-enrollment schools are the 40 high schools in this study where enrollment in home economics decreased over the total school-enrollment by 25 percent or more between the school years of 1957-58 and 1960-61.

Hypothesis

There are certain specific factors which influenced enrollment in home economics to increase or decrease at the high school level.

Chapter II

PROCEDURES

Selection of Schools

In order to have less-biased information in the study, the sampling of schools was not limited to those with decreasing enrollments. The sample also included schools with outstanding increases in enrollment in home economics.

As a basis for selection of the sample for this study, the percent of increase or decrease of total-school enrollment in high schools having departments of vocational home economics and enrollments in home economics between the school year 1957-58 and 1960-61 were determined. The high schools included in the study were those where the rate of home economics enrollment increase or decrease was 25 percent or more. This percent of increase or decrease was determined by subtracting the differences between the percent of total-school enrollment increase or decrease and that of home economics enrollment increase or decrease.

The total-school enrollment for these high schools was obtained from the Kentucky Educational Bulletins: Kentucky High Schools, 1957-58 and Kentucky High Schools, 1960-61. Data for home economics enrollments and daily schedules were obtained from the Division of Home Economics Education, State Department of Education. Of the 361 high schools on the original list for examination, 112 were eliminated because of the limitations of the study. The 249 remaining schools were examined for rate of increase or decrease in enrollment in home economics.

There were 44 schools (41.3 percent) with enrollments in home economics that had increased 25 percent or more; 45 schools (58.7 percent) had enrollments that had decreased 25 percent or more. Nine additional schools were eliminated from the sample because of the home economics teacher's schedule.

The principal in each of these 80 schools was contacted by letter by the State Director of the Division of Home Economics Education. Seventy-eight high schools desired to participate in the study. Of these 78 schools, 31 schools with increasing home economics enrollment returned 30 teacher questionnaires and 876 student questionnaires; 40 schools with decreasing enrollment in home economics returned 39 teacher questionnaires and 1,254 student questionnaires. Thus, the sample for this study included 2,130 student questionnaires, 52 principal opinionnaires, and 69 teacher questionnaires.

Methods of Collecting Data

Instruments and Devices

Home Economics Teacher Questionnaire

A questionnaire was developed to obtain information and opinions from the home economics teachers involved in the study. (Appendix, A.) The 69 home economics teachers who answered the questionnaire responded with a total of 201 reactions to the question "What factors do you think are influencing the girls to elect or not to elect home economics in high school?" Of these comments,

111 were of favorable conditions which were influencing girls to enroll in home economics; 90 were reactions which they believed were influencing girls not to enroll in home economics.

Principal Opinionnaire

An opinionnaire was developed to obtain opinions on the conditions which a principal believed were responsible in his school for the status of home economics enrollment. (Appendix, B.) The 52 principals who answered the opinionnaire responded with a total of 268 reactions to the question "What factors do you think are influencing the girls to elect or not to elect home economics in high school?" Of these reactions, 143 were of favorable conditions which they believed were influencing girls to enroll in home economics; 121 were reactions which they believed were influencing girls not to enroll in home economics; and four statements could not be classified into either category.

Student Questionnaire-Opinionnaire

This instrument consists of six parts. (Appendix, C.) Parts I, IV, V, and VI were taken from a questionnaire developed for the Cooperative Curriculum Pattern Study in Home Economics, 1960. Parts II and III were developed for this study.

Part I of the student questionnaire requested the students to check the amount of help they had in school on 74 Topics related to eight areas of home economics. For example, number 1.1 Topic "Understanding what children are like at different age levels" is an objective in the child development area of home economics. The students were to check the "Amount of Help I Had" in four categories: "Much"; "Some"; "Little"; or "None". Then, if they "Wish for Some or More", they were to check under this column heading.

Part II of the questionnaire was designed to seek those factors which may have influenced students to enroll in high school home economics beyond that which was required. For example, number 10.75 "I liked the home economics I had in 7th or 8th grade" was included as a factor to find out the influence of junior high home economics on senior high school enrollment. There were 18 statements in this Part.

In Part III of the questionnaire the sentences were designed to be checked by those students who had elected not to enroll in home economics in high school beyond that which was required. For example, number 14.93 "I had all I needed in the required (home economics) course in the 7th or 8th grade" was included to find out the influence that 7th and/or 8th grade home economics had for students when they decided not to enroll in home economics in high school. There were 25 statements in Part III.

In Part IV section of the questionnaire, the student was to check the amount of home economics taken at the different grade levels of junior and senior high school. Part V was designed to collect data related to grade-point-averages in all school-subjects and home economics.

Six of the high schools in the sample group were visited for one day by a Team member. Letters explaining the purpose of the interviews were sent to the principal. The home economics teacher was to arrange for interviews of 20 to 30 minutes each with girl and boy students (some enrolled in home economics, some not), parents, guidance counselors, fellow teachers, administrators, and other school personnel.

A structured interviewing technique was used. (Appendix, D.) One question asked of all the people interviewed was "What do you think students can gain, or learn from enrolling in home economics?"

The Team members completed 76 interviews in six high schools. Three of the schools had increasing enrollment in home economics; three schools had decreasing enrollment in home economics. A total of 225 comments could be classified into the six factor categories.

Analysis of Data

The free-responses made by the home economics teachers on the questionnaire and by principals on the opinionnaire were recorded by number and percent within the six factor categories. No tests of significance were applied to these data.

All data from the home economics teacher questionnaire (other than the free-response) were coded and placed on IBM cards. This data classification included: high school number, trend in home economics enrollment, enrollment by classes, requirements for graduation, requirements in home economics, pattern of home economics, and laboratory facilities and their adequacy.

The data from the student questionnaires were coded and placed on IBM cards. Additional data related to size of school, trend of home economics enrollment, and type of school district were also placed as identifications on the individual student cards. The programs were operated on the IBM-1410.

Two statistical tests of significance were used on data from the student questionnaire. These statistics, the K and the Z, relate to how many times, by chance alone, the proportions (or parts, p) and the means (or averages, $\bar{X}$) would differ (increasing from decreasing-enrollment schools) by this amount. The level of significance used in the study was the .05 level or greater (.04, .01, .005, .001, etc.) -- by chance alone, this could happen only 5 times in 100 occurrences or more.

A correlation (relationship) test was used to determine the degree of relationship between the eight subject matter areas in home economics, the eight subject matter areas and the all school-subject grade, and the eight subject matter areas and the home economics grade. The levels of significance for these correlations were determined by use of a table from Guilford's Fundamental Statistics in Psychology and Education, page 539.

Chapter III

FINDINGS AND SUMMARY

Seventy-one schools participated in the study. Thirty-one of them had increased-enrollments in home economics (25 county schools and six independent-district schools.) Forty schools had decreased in home economics enrollment (30 county schools and 10 independent-district schools).

The data revealed that there were distinguishing differences in certain general characteristics between the 31 increasing-enrollment and the 40 decreasing-enrollment in home economics schools. Also, there were significant differences evidenced between these two enrollment groups and certain of the factors studied.

Characteristics of Schools

Size of the Schools

Increased-Enrollment Schools

As can be noted in Figure 1, over half of the schools in the increased in home economics enrollment group fall below 300 in total-school enrollment (16 of the 31 schools). Approximately two-thirds of the schools with increased-enrollment in home economics were smaller than 400 in student population (21 of the 31 schools). Further, only one in four schools of 800 and larger had enrollments that were increasing in home economics. In the schools with increasing enrollment in home economics, the average total-school enrollment in 1960-61 was 354.

Decreased-Enrollment Schools

Approximately half of the schools with decreased-enrollment in home economics fall below 350 in total-school enrollment. (Figure 1.) Approximately two-thirds of the schools with decreased-enrollment were smaller than 500 in total-student pupulation (28 of the 40 schools). Of the four schools that were 800 or larger in total-school enrollment, three had decreasing in home economics enrollment. The schools with decreasing-enrollment in home economics had an average size of 401.

Summary, Size of Schools

One of the distinguishing differences in the general characteristics of the schools involved in the study was in the number of students enrolled in the high school. The schools where home economics enrollment was increasing (in general) were smaller in size. More schools with enrollment of 800 or larger were decreasing in enrollment in home economics.

Units Required for Graduation

In most high schools in Kentucky, 18 units of work are required for graduation. In the study-sample, the largest group of high schools (52 of the 70) had 11 to 12 specific subjects (of the 18) required for graduation. (Table 1.)

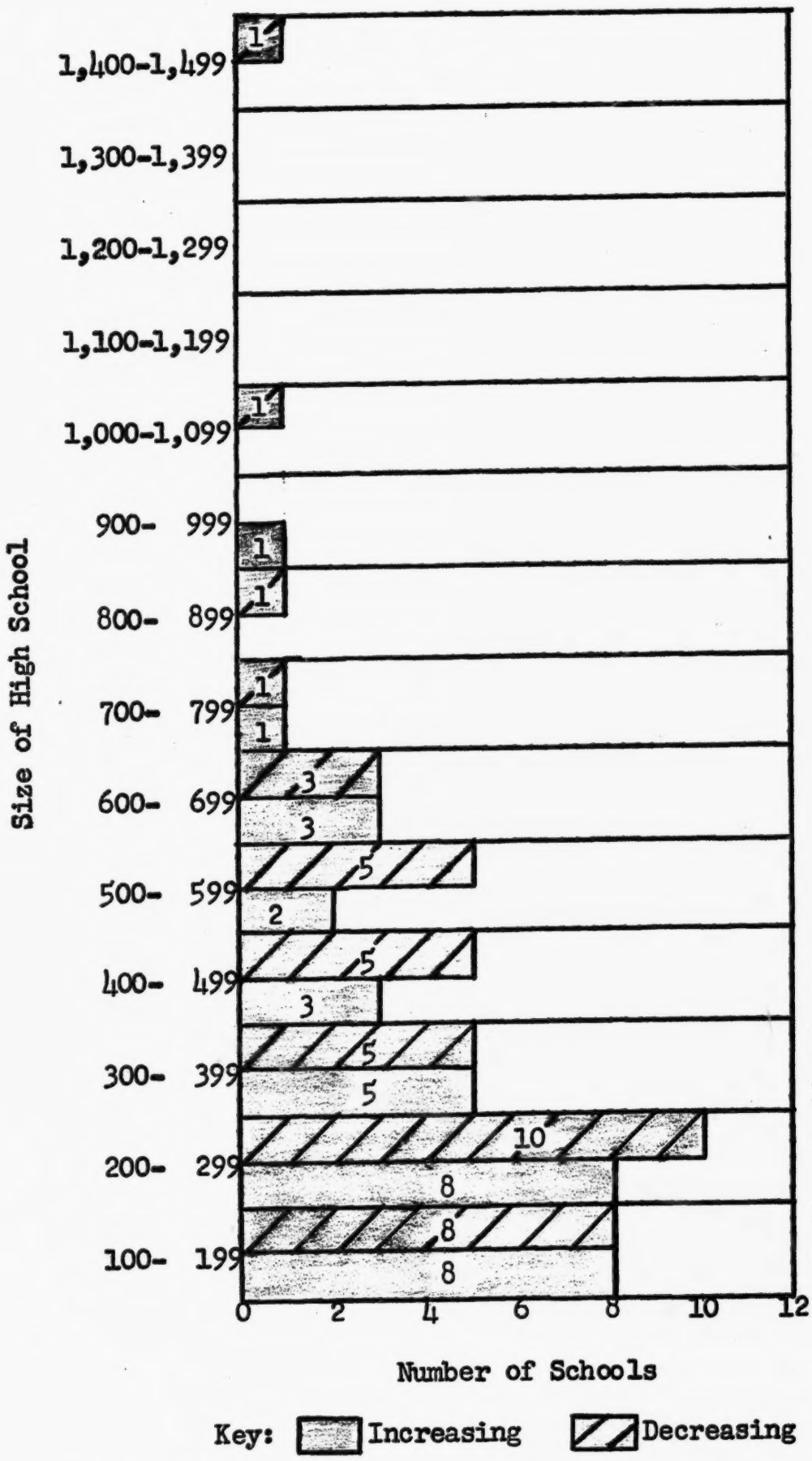


Figure 1. Number and size of high schools having increasing or decreasing enrollments in home economics.

TABLE 1

TOTAL UNITS REQUIRED FOR HIGH SCHOOL GRADUATION IN THE 31 SCHOOLS WITH INCREASING AND IN 39 OF THE 40 SCHOOLS WITH DECREASING ENROLLMENT IN HOME ECONOMICS

Number of Units Required	Home Economics Enrollment			
	Increasing		Decreasing	
	n	%	n	%
10 units or less	9	29.0	5	12.8
11 to 12 units	21	67.8	31	79.5
13 or more	1	3.2	3	7.7
Total	31	100.0	39	100.0

Increased-Enrollment Schools

Schools with increasing enrollment in home economics had a high percent (29 versus 12.8) of fewer-unit requirements than did the schools with decreasing home economics enrollment.

Decreased-Enrollment Schools

In a higher percent of the decreasing-enrollment schools (7.7 versus 3.2) 13 or more units of specified subjects were required. These schools also had a higher percent (79.5 versus 67.8) of 11 to 12 units required for graduation.

Summary, Units Required for Graduation

As a whole, fewer specific subjects (or units) were required for graduation in the high schools where home economics enrollment was increasing.

Home Economics Teachers

Increased-Enrollment Schools

There were 43 home economics teachers in the 31 schools with increasing enrollment in home economics. These schools had more two-teacher departments than did the decreasing-enrollment schools -- 32 percent versus 28 percent. Schools with increasing enrollment in home economics had a larger percent (51.2) of home economics teachers who were the same from 1957-58 through 1960-61 than schools with decreasing enrollment (31.4 percent).

Decreased-Enrollment Schools

There were 51 teachers in the 40 schools with decreasing enrollment in home economics. Seventy-two and five-tenths percent of the decreasing-enrollment schools had one-teacher departments, while in only 64.5 percent of the increasing-enrollment schools was this true.

Summary, Home Economics Teacher

The increasing-enrollment schools had more two-teacher departments than the decreasing-enrollment schools. Also, the increasing-enrollment schools had more teachers who were the same home economics teachers from 1957 through 1961 than the decreasing-enrollment schools.

Home Economics, Grade Levels Offered in Senior High

The minimum home economics that can be taught in order to qualify as a vocational department is Home Economics I and II, in grades nine and ten.

Increased-Enrollment Schools

As can be noted from Table 2, in the high schools where home economics enrollment was increasing, more programs (51.6 versus 44.7 percent) of three grade-levels of home economics were offered, and more programs of four grade-levels of home economics were offered, and more programs of four grade-levels (35.5 versus 34.2 percent) were reported.

Decreased-Enrollment Schools

Schools with decreasing-enrollment in home economics offered more programs of Home Economics I and II only (18.4 versus 12.9 percent). In one decreasing-enrollment school, five grade levels of home economics were offered.

Summary, Grade Levels of Home Economics Offered

More schools with increasing enrollment in home economics offered Home Economics III and IV, and more schools with decreasing enrollments in home economics offered only Home Economics I and II.

TABLE 2

GRADE LEVELS OF HOME ECONOMICS OFFERED IN THE 31 INCREASING AND IN 38 OF THE 40 DECREASING-ENROLLMENT HIGH SCHOOLS

Grade-Levels of Home Economics Offered	Home Economics Enrollment			
	Increasing		Decreasing	
	n	%	n	%
One	0	0	0	0
Two	4	12.9	7	18.4
Three	16	51.6	17	44.7
Four	11	35.5	13	34.2
Five	0	0	1	2.6
Total	31	100.0	38	99.9

Home Economics, Number Enrolled at Different Grade Levels

Table 3 shows that the greatest percent of enrollment was in the ninth grade -- with 1,424 of the 2,130 students in the sample, or 66.9 percent. The percent of enrollment drops sharply at the tenth and eleventh grade-levels. There was a virtual plateau in home economics enrollment from the eleventh to the twelfth grades.

Increased-Enrollment Schools

A slightly higher percent of the girls from increasing-enrollment schools had taken home economics in the eighth grade. The decline in enrollment in home economics is less in the increasing-enrollment school group at the eleventh and twelfth grades than in the decreasing-enrollment group.

Decreased-Enrollment Schools

In the schools where home economics enrollment was decreasing, a higher percent of girls were enrolled at the ninth grade, 69.1 as compared with 63.7 percent where enrollment was increasing. A slightly higher percent of the girls from these schools had taken home economics in the seventh grade.

Summary, Enrollment at Different Grade Levels

The increasing-enrollment schools retained a larger percent of the students from 10th through 12th grades than the decreasing-enrollment schools -- even though the decreasing-enrollment schools had a larger percent of enrollment in the 9th grade.

TABLE 3

NUMBER OF SENIOR GIRLS IN THE SAMPLE WHO DID OR DID NOT ENROLL IN HOME ECONOMICS AT THE DIFFERENT GRADE LEVELS IN THE SCHOOLS WHERE ENROLLMENT IN HOME ECONOMICS WAS INCREASING OR DECREASING

Grade Levels	Home Economics Enrollment					
	Increasing School Enrollment		Decreasing School Enrollment		Total Enrollment Sample	
	n	%	n	%	n	%
Seventh grade						
None	815	93.0	1,154	92.0	1,969	92.4
Some	17	1.9	28	2.2	45	2.1
Year	44	5.1	72	5.8	116	5.5
Total	876	100.0	1,254	100.0	2,130	100.0
Eighth grade						
None	767	87.6	1,058	84.4	1,825	85.7
Some	25	2.8	88	7.0	113	5.3
Year	84	9.6	108	8.6	192	9.0
Total	876	100.0	1,254	100.0	2,130	100.0
Ninth grade						
None	304	34.7	369	29.4	673	31.6
Some	14	1.6	19	1.5	33	1.5
Year	558	63.7	866	69.1	1,424	66.9
Total	876	100.0	1,254	100.0	2,130	100.0
Tenth Grade						
None	466	53.2	632	50.4	1,098	51.6
Some	5	.6	17	1.4	22	1.0
Year	405	46.2	605	48.2	1,010	47.4
Total	876	100.0	1,254	100.0	2,130	100.0
Eleventh grade						
None	576	65.8	895	71.4	1,471	69.1
Some	7	.8	21	1.6	28	1.3
Year	293	33.4	338	27.0	631	29.6
Total	876	100.0	1,254	100.0	2,130	100.0
Twelfth grade						
None	582	66.4	929	74.1	1,511	70.9
Some	17	2.0	22	1.7	39	1.9
Year	277	31.6	303	24.2	580	27.2
Total	876	100.0	1,254	100.0	2,130	100.0

Grades

The girls from both groups who had had home economics had a 4.44 (between "about equal B's and C's" and "mostly B's" categories) all-school-subject grade average. The girls from decreasing-enrollment schools who had not had home economics in high school had a 4.02 average ("about equal B's and C's"), and the girls from increasing-enrollment schools who had not had home economics had an all-school-subject grade of 3.40 (between "mostly C's" and "about equal B's and C's").

Students from both enrollment groups had larger percentages of lower grades in all-school-subjects and in home economics when they had had more than two years of home economics at the high school level.

Increasing-Enrollment Schools

As can be noted from Table 4, students from increasing-enrollment schools had the highest percent of A's in all-school subjects when they had had home economics in junior high only. The second highest percent of A's was achieved when they had had home economics in the 9th grade only. The highest percent of A's in home economics was achieved by the group of students in increasing-enrollment schools when they had had home economics in the 9th grade only.

Decreasing-Enrollment Schools

Students from decreasing-enrollment schools had the highest percent of A's in all-school-subjects when they had had home economics at the junior-high and the 9th grade levels. The highest percent of A's in home economics was achieved by the students who had had home economics in the 9th grade only.

Summary, Grades Received

Students who had had some home economics had higher all-school-subject grade averages than students who did not take home economics. The students who had the highest all-school grade usually had some home economics at the upper level of junior high and/or at the 9th grade level in high school. Generally speaking, there was a higher percent of A's and B-A's given in home economics than in other subjects taken in high school.

TABLE 4

ALL-SCHOOL-SUBJECTS AND HOME ECONOMICS GRADE-POINT AVERAGES FOR STUDENTS FROM INCREASING- AND DECREASING-ENROLLMENT SCHOOLS HAVING TAKEN VARYING AMOUNTS OF HOME ECONOMICS

Amount of Home Economics	Grade-Point Average														Total
	D		D-C		C		C-B		B		B-A		A		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Girls with some home economics in junior high															
Increasing															
Over-all average	0		0		2	8.7	5	21.7	2	8.7	9	39.2	5	21.7	23
Home Ec. average	0		0		1	8.3	0		4	33.3	5	41.7	2	16.7	12
Decreasing															
Over-all average	0		2	2.8	9	12.7	18	25.4	13	18.3	16	22.5	13	18.3	71
Home Ec. average	0		0		2	3.8	9	17.0	11	20.8	13	24.5	18	34.0	53
Girls with junior high and 9th grade home economics only															
Increasing															
Over-all average	0		1	3.7	2	7.4	9	33.3	8	29.7	4	14.8	3	11.1	27
Home Ec. average	0		0		5	17.9	2	7.0	5	17.9	8	28.6	8	28.6	28
Decreasing															
Over-all average	0		2	4.9	4	9.7	8	19.5	9	22.0	8	19.5	10	24.4	41
Home Ec. average	0		0		4	9.7	4	9.7	12	29.3	9	22.0	12	29.3	41
Girls with 9th grade home economics only															
Increasing															
Over-all average	1	.8	7	5.5	14	10.9	32	25.0	23	18.0	27	21.1	24	18.7	128
Home Ec. average	1	.8	1	.8	13	10.2	26	20.3	19	14.8	28	21.9	40	31.2	128
Decreasing															
Over-all average	1	.6	7	3.9	21	11.7	42	23.5	42	23.5	37	20.7	29	16.1	179
Home Ec. average	0		1	.6	16	9.1	24	13.7	33	18.9	37	21.1	64	36.6	175
Girls with 9th and 10th grade home economics only															
Increasing															
Over-all average	0		4	5.1	8	10.1	21	26.6	10	12.7	26	32.8	10	12.7	79
Home Ec. average	0		0		5	6.2	10	12.5	21	26.2	29	36.3	15	18.8	80
Decreasing															
Over-all average	1	.5	15	7.9	29	15.2	54	28.3	31	16.2	48	25.1	13	6.8	191
Home Ec. average	2	1.0	7	3.6	22	11.5	30	15.6	44	22.9	36	18.8	51	26.6	192

TABLE 4 (continued)

Amount of Home Economics	Grade-Point Average														Tot.
	D		D-C		C		C-B		B		B-A		A		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
Girls with more than two years of home economics in high school															
Increasing															
Over-all average	1	.2	28	5.9	85	17.9	159	33.5	94	19.9	78	16.5	29	6.1	474
Home Ec. average	0		3	.7	15	3.6	84	19.9	100	23.7	121	28.7	99	23.4	422
Decreasing															
Over-all average	6	1.1	41	7.2	79	13.9	148	26.1	101	17.8	115	20.2	78	13.7	568
Home Ec. average	1	.2	9	2.0	34	7.5	64	14.0	93	20.4	113	24.8	142	31.1	456
Girls with junior high and more than two years of home economics in high school															
Increasing															
Over-all average	0		5	7.1	13	18.6	21	30.0	12	17.1	16	22.9	3	4.3	70
Home Ec. average	0		1	1.4	1	1.4	13	18.3	16	22.5	22	31.0	18	25.4	71
Decreasing															
Over-all average	0		15	12.3	23	18.9	36	29.5	21	17.2	21	17.2	6	4.9	122
Home Ec. average	0		4	3.2	10	8.1	22	17.9	31	25.2	28	22.8	28	22.8	123

Factor: Quality of the Home Economics Program

In the research project the quality of the home economics program was judged by the learning acknowledged by the students (in subject matter, in needs met, in social and emotional development, etc.), by the physical facilities available for laboratory and other types of learning settings, by the attractiveness of home economics for girls with a range of intellectual abilities, and by the effectiveness of the home economics teacher in the educational environment.

Student Response

Part II of the Questionnaire

In Part II of the questionnaire, which was completed by the students who had elected to enroll in home economics in high school beyond that which was required, five items were related to the quality of the program. Table 5 is a summary of the findings.

These five items related to the quality factor received the greatest response from the students in both of the enrollment groups.

TABLE 5

RANKED RESPONSE TO THE FIVE QUALITY ITEMS ON PART II OF THE QUESTIONNAIRE BY STUDENTS FROM BOTH ENROLLMENT GROUPS WITH HOME ECONOMICS BEYOND THE REQUIRED AMOUNT IN HIGH SCHOOL

Item	Description	Enrollment		Rank
		Increasing	Decreasing	
		Percent	Percent	
13.90	Was of value now and will be helpful in the future	68.0	57.0	1
13.91	Learned the things I needed to know	65.0	55.0	2
13.89	Home economics is good preparation for marriage	40.0	34.0	3
13.88	Gave us the opportunity to develop leadership	39.0	30.0	4
13.92	Was a challenging course	30.0	22.0	5

In Table 25 in the Appendix, it can be observed that the percent of students from increasing-enrollment schools who responded to these five items was significantly greater than the responses made by girls from decreasing-enrollment schools.

Part III of Questionnaire

For those students who decided not to enroll in home economics in high school beyond that which was required, there were ten items in Part III of the student-questionnaire for them to check which related to the factor of quality of the home economics program. Table 6 contains a summary of the findings.

TABLE 6
RANKED RESPONSES OF STUDENTS FROM BOTH ENROLLMENT GROUPS TO THE TEN QUALITY ITEMS IN PART III OF THE QUESTIONNAIRE

Item	Description	Enrollment		Rank
		Increasing	Decreasing	
		Percent	Percent	
17.110	Other courses were more interesting	10.0	18.0	1
17.115	Can learn homemaking at home	8.0	12.0	2
17.112	Too much teaching of the things I know	2.0	8.0	3
17.113	Not interested in the material covered	3.0	5.0	4
17.117	Home economics is not a very challenging course	2.0	6.0	5
17.109	Not much choice in what I want to study	1.0	4.0	6
17.114	Material learned is of little value to me	0.3	3.0	7
17.116	Has too many outside activities	1.0	2.0	8
17.111	Classes are too crowded for the space	0.4	2.0	9
17.108	Equipment and the room are out-dated	0.2	1.0	10

The larger percent of students who checked these items was from schools with decreasing enrollment in home economics. The percent of response on most of these ten items was low. But, these qualities were influencial to a small percent of the students and more so to the group of students from decreasing-enrollment schools.

Girls from decreasing-enrollment schools checked these ten items in significantly greater numbers than did girls from increasing-enrollment schools. (Appendix, Table 26.)

Part I of Questionnaire

"Topics" in Home Economics

Part I of the student questionnaire had 74 Topics related to objectives in eight areas of home economics subject matter. The students were to check each item as to the "Amount of Help" they had received in high school on each of these Topics, and if they "Wish for Some or More."

Seven Topics ranked highest in the "Much" help recieved for all of the students in the study. The first five Topics were within two areas of home economics (clothing-and-grooming and foods-and-nutrition). These Topics were ranked highest by students (35 to 43 percent response). The Topics were:

Topic Number	Description	Increasing	Decreasing
2.12	"Making myself well-groomed and attractive"	✓	✓
2.10	"Caring for clothing -- keeping clean and neat, laundering, mending"	✓	✓
3.20	"Cooking food"	✓	✓
3.21	"Serving food"	✓	
3.25	"Learning about the food I need every day"		✓
7.61	"Getting along well with friends"	✓	
7.63	"Preparing for marriage"		✓

Five other Topics received the fewest number of checks in the "Much" help column. These Topics were:

Topic Number	Description	Increasing	Decreasing
1.5	"Finding out about groups in the community that work with children"	✓	✓
2.17	"Making draperies, slipcovers, etc., for the home"	✓	✓
3.28	"Preparing and serving foods from different countries"	✓	✓
6.51	"Learning about housing in the community"	✓	
7.59	"Finding out about community agencies that help families"		✓

These five Topics were also checked with a high response (36 to 50 percent) in the "None" category on the questionnaire by both groups.

Ten to 14 percent of the students checked the "Wish for Some or More" and "None" combination categories on the following Topics:

Item Number	Description	Increasing	Decreasing
1.6	"Caring for mother after baby is born"	✓	✓
2.17	"Making draperies, slipcovers, etc., for the home"	✓	✓
3.28	"Preparing and serving foods from different countries"	✓	✓
1.7	"Caring for mother and baby"	✓	
6.53	"Painting, refinishing, or making over furniture"	✓	
1.8	"The responsibilities of a baby sitter"		✓

When the data were analyzed for the students who had had some home economics in high school and whether or not they checked the "Wish for Some or More" column, it was found in both enrollment groups that there were significantly higher mean values for the 74 "Topics" achieved by students who did not check this column. When the students had had no home economics in high school, there were very few significantly different mean values (10 for the increasing and 11 for the decreasing-enrollment groups) between the students who checked or did not check the "Wish for Some or More" column. Thus, it appeared as if the students from both enrollment groups with some home economics were satisfied with the amount of help received in home economics as judged by the response to the 74 "Topics" for the group with the higher averages did not check the "Wish for Some or More" column on the questionnaire.

Twenty significantly higher mean "Topics" were achieved by the increasing-enrollment group when the students from both enrollment groups did not check the "Wish for Some or More" column. There were 23 significantly higher mean "Topics" in the increasing-enrollment group when the students from both enrollment groups checked the "Wish for Some or More" column. The greatest number of significant difference "Topics" were in the Foods and Nutrition and the Clothing and Grooming areas of home economics.

When the students had had some home economics and checked the "Wish for Some or More" column on the questionnaire, there were 19 of the 74 "Topics" with significantly higher mean values in the increasing-enrollment group. When the students had had some home economics and did not check the "Wish for Some or More" column, there were ten significantly higher means achieved by the increasing-enrollment group.

The mean values were computed for students from increasing- and decreasing-enrollment groups in different categories of home economics taken. Tables 27 and 28 in the Appendix summarize the findings. The ranking of the eight highest mean values for the 74 "Topics" by different categories can be noted in Tables 7 and 8.

TABLE 7

MEAN VALUES FOR THE HIGHEST RANKING "TOPICS" FOR ALL STUDENTS AND FOR STUDENTS WITH SOME HOME ECONOMICS AT THE DIFFERENT LEVELS

All Students		Some Home Economics		
$\bar{X}$	Topic	$\bar{X}$	Level(s)	Topic
3.15	2.12: Making myself well-groomed and attractive	3.78	7,8, & 9	2.12: Making myself well-groomed and attractive
3.07	2.10: Caring for clothing	3.56	7,8, & 9	3.29: Being well-mannered at the table and as hostess and guest
3.04	3.20: Cooking food			
3.01	3.25: Learning about the food I need each day	3.33	9 and 10	2.10: Caring for clothing
2.90	3.29: Being well-mannered at the table and as hostess and guest	3.33	7,8, & 9	3.20: Cooking food
		3.29	10, 11, &/or 12	2.12: See above
2.89	7.62: Planning for family recreation and entertaining	3.27	9 and 10	2.12: See above
		3.21	9 and 10	3.20: See above
2.88	3.21: Serving food	3.20	9 and 10	2.11: Making clothing
2.86	7.60: Getting along well with family members			

TABLE 8

MEAN VALUES FOR THE HIGHEST RANKING "TOPICS" WITH THE LEVELS OF HOME ECONOMICS TAKEN FOR THE INCREASING- AND DECREASING-ENROLLMENT GROUPS

Increasing			Decreasing		
$\bar{X}$	Levels	Topic	$\bar{X}$	Levels	Topic
4.00	7, 8 & 9	3.29: Being well-mannered at the table and as hostess and guest	3.63	7, 8 & 9	2.12: Keeping myself well-groomed and attractive
3.93	7, 8 & 9	2.12: Keeping myself well-groomed and attractive	3.50	7, 8 & 9	2.11: Making clothing
3.42	7, 8 & 9	6.54: Selecting colors and furnishings for the home	3.39	10,11 or 12	2.12: See above
3.38	7 and 8	1.9: Learning the meaning of discipline for children	3.38	7, 8 & 9	3.20: Cooking food
3.37	9 and 10	2.12: See above	3.38	7, 8 & 9	3.21: Serving food
3.36	7, 8 & 9	3.24: Managing time, energy, and money in planning, preparing, and serving family meals	3.24	9 and 10	2.10: Caring for clothing
3.32	9 and 10	3.21: Serving food	3.24	10,11 or 12	2.10: See above
			3.24	10,11 or 12	3.20: See above

The "Topics" where students acknowledged the greatest amount of help received were in the areas of Clothing and Grooming and Foods and Nutrition. It can be noted from Table 8 that the greatest range of objectives or "Topics" was acknowledged by the increasing-enrollment group and especially by the group of students who had had home economics at the 7th, 8th, and 9th grade levels or the 7th and 8th grade levels. The group from the decreasing-enrollment schools seemed to acknowledge the most help received in the "Topics" that were skill-centered.

The number of students that fell into the category involving the 7th, 8th, and 9th grade levels of home economics taken was very small. (Table 4). The fact of high and low means for these groups can also be noted in Table 28. Thus, for a very small number of students who had home economics at the 7th, 8th, and 9th grade levels, the students listed the "Topics" as having received much help.

Areas of Home Economics

As can be noted from Table 8, there were five areas of home economics where the means of the increasing-enrollment schools were significantly higher than the means of the decreasing-enrollment schools for those students who had had some home economics. These areas were: Child Growth and Development, Clothing and Grooming, Foods and Nutrition, Housing and Home Furnishings, and Consumer Education.

TABLE 9

DIFFERENCE OF MEANS FOR THE EIGHT HOME ECONOMICS AREAS BETWEEN GIRLS FROM INCREASING- AND GIRLS FROM DECREASING-ENROLLMENT SCHOOLS WHO HAVE HAD HOME ECONOMICS AT SOME GRADE LEVEL

Areas	Home Economics Enrollment						z	Level of Significance
	Increasing			Decreasing				
	Rank	$\bar{X}$	σ	Rank	$\bar{X}$	σ		
Child Growth and Development	6	2.50	0.66	6	2.42	0.63	2.00	.05
Clothing and Grooming	2	2.75	0.58	2	2.68	0.58	2.33	.02
Foods and Nutrition	1	2.85	0.63	1	2.78	0.64	2.33	.02
Health of the Family	4	2.63	0.70	4	2.59	0.68	1.00	
Home Management	3	2.66	0.74	3	2.62	0.76	1.00	
Housing and Home Furnishings	8	2.40	0.70	8	2.32	0.75	2.00	.05
Family Relationships	5	2.60	0.65	5	2.55	0.68	1.67	
Consumer Education	7	2.43	0.74	7	2.34	0.78	2.25	.03

The mean values for the eight areas of home economics were ranked by different categories in Tables 9 and 10. The Foods and Nutrition area had the highest mean values in all of the various categories. With the exception of the decreasing-enrollment group, the means of the Clothing and Grooming area ranked number 2. For all of the students in the study and for all of the students from the increasing- and the decreasing-enrollment schools, the Health of the Family area ranked 3rd. For the students from both of the enrollment groups and with some home economics taken, the Home Management area ranked number 3.

All of the areas had means or averages that ranged from 2.09 to 2.85. Therefore most of the students by their scores on the 74 "Topics" made averages that showed students acknowledged "Some" to "Much" help received in the eight areas of home economics.

TABLE 10

MEAN VALUES AND THEIR RANKS FOR THE EIGHT HOME ECONOMICS AREAS

Rank	All Students		Increasing group		Decreasing group	
	$\bar{X}$	Area	$\bar{X}$	Area	$\bar{X}$	Area
1	2.56	Foods and Nutrition	2.63	Foods and Nutrition	2.50	Foods and Nutrition
2	2.48	Clothing and Grooming	2.55	Clothing and Grooming	2.44	Family Relationships
3	2.46	Health of the Family	2.48	Health of the Family	2.43	Health of the Family
4	2.45	Family Relationships	2.47	Family Relationships	2.41	Clothing and Grooming
5	2.41	Home Management	2.46	Home Management	2.37	Home Management
6	2.26	Child Growth and Development	2.31	Child Growth and Development	2.21	Child Growth and Development
7	2.19	Consumer Education	2.26	Consumer Education	2.21	Consumer Education
8	2.15	Housing and Home Furnishings	2.21	Housing and Home Furnishings	2.09	Housing and Home Furnishings

The coefficient correlation was used to determine the degree of relationship between the eight home economics areas, the eight home economics areas, all-school-grade and home economics grade, and all-school-grade and home economics grade. For both enrollment groups, with and without home economics, there were positive relationships among all of the areas of home economics that were significant beyond the .01 level. (Appendix, Tables 29 and 30.) Thus, the students checked rather consistently in all areas as to the amount of help acknowledged in home economics.

The students with home economics in high school in both enrollment groups had positive-related grades with all-school-subject grades that were significant beyond the .01 level. As students achieved higher grades in all-school-subjects, they also achieved highers grades in home economics.

In both enrollment groups when the students had some home economics in high school, there were significant positive relationships (the .01 level) between the Clothing and Grooming and the Foods and Nutrition areas and home economics grades received. In the increasing-enrollment group, there was also a positive significant relationship for the Child Development area and home economics grade average.

With only one exception, the all-school-subject grades were negatively related to the amount of help acknowledged in the eight areas of home economics. The degrees of help acknowledged by students had significantly negative relationships with all-school-subject grades for the:

1. Increasing group, with home economics, in the areas of Child Growth and Development, Home Management, Housing and Home Furnishings, Family Relationships, and Consumer Education

2. Decreasing group, with home economics, in the areas of Child Growth and Development, Clothing and Grooming, Home Management, Housing and Home Furnishings, Family Relationships, and Consumer Education

3. Increasing group, without home economics, in the areas of Child Growth and Development, Clothing and Grooming, Foods and Nutrition, Home Management, Housing and Home Furnishings, and Consumer Education

4. Decreasing group, without home economics, in the areas of Child Growth and Development, Clothing and Grooming, Foods and Nutrition, Home Management, Housing and Home Furnishings, and Consumer Education.

In the increasing-enrollment group, the students without home economics in high school checked the amount of help received in the Consumer Education area so that a positively significant relationship with all-school-subject grade was established.

There were no tests of significance used to determine the degree of differences among the eight areas in home economics when the students checked or did not check the "Wish for Some or More" column, and when varying levels of home economics were taken. Figures 2 through 9 in the Appendix point out the general picture for these categories.

It can be noted that:

1. In general, the students who did not check the "Wish for Some or More" column had higher means than the group of students who checked the column.

2. The greatest variability in means in the areas occurred in the group that checked the "Wish for Some or More" column.

3. The greatest spread of means for the two-enrollment groups ("Wishers" and "Non-wishers") occurred in the category of 7th, 8th, and 9th levels of home economics taken.

4. The highest mean values and the levels of home economics taken were:

	Increasing				Decreasing			
Area	Checked	Non-wishers		Levels	Checked	Non-wishers		Levels
Child Dev.	✓	✓	*	10,11 or 12 9 and 10	✓	✓		10,11 or 12 9 and 10
Clo.& Gro.	✓	✓	*	7, 8 and 9 9 and 10	✓	✓		Some 9 and 10
Foods & Nut.	✓	✓	*	7, 8 & 9 9 and 10	✓	✓		Some 9 and 10
Health	✓	✓	*	7, 8 and 9 9 and 10	✓	✓		7 and 8 9 and 10
Home Mgt.	✓	✓	*	7, 8 and 9 9 and 10	✓	✓		Some 9 and 10
Housing	✓	✓	*	Some 10,11 or 12	✓	✓		Some 9 and 10
Family Rel.	✓	✓		7 and 8 Some	✓	✓*		7 and 8 9 and 10
Consumer Ed.	✓	✓		Some 7, 8 and 9	✓	✓*		7 and 8 9 and 10

* Designates highest mean for each area.

Summary of Student Responses to the Quality Factor

1. Students from increasing-enrollment schools in significantly larger numbers took home economics because it: a) was of value now and helpful in the future; b) gave them the opportunity to learn things they needed to know; c) was good preparation for marriage; d) gave them a good opportunity to develop leadership; and e) was a challenging course.

2. Students from decreasing-enrollment schools in significantly larger portions did not take home economics in high school (beyond what was required) because: a) other courses were more interesting; b) can learn homemaking at home; c) too much teaching of the things I know; d) not interested in the material covered; e) home economics is not a very challenging course; f) not much choice in what I want to study; g) material learned is of little value to me; h) has too many outside activities; i) classes are too crowded for the space, and j) equipment and the room are out-dated.

3. Of the 74 Topics in Part I of the questionnaire, students from both enrollment groups checked that they had received "Much" help in three of these Topics: a) "Making myself well-groomed and attractive"; b) "Caring for clothing -- keeping

clean and neat, laundering, mending"; and c) "Cooking food". As can be noted, these three Topics are related to the clothing-and-grooming area and the foods-and-nutrition area of home economics. The students also checked these items highest in the "Wish for Some or More" column.

4. Both enrollment groups checked that they had received the least help in three Topics: a) Finding out about groups in the community that work with children"; b) "Making draperies, slipcovers, etc., for the home"; and c) "Preparing and serving foods from different countries." Ten to 14 percent checked the "Wish for Some or More" column for the last two Topics -- one in the clothing-and-grooming area, and one in the foods-and-nutrition area of home economics.

5. The highest means for the 74 "Topics" in home economics for all students were: a) "Making myself well-groomed and attractive; b) "Caring for clothing"; c) "Cooking food"; and d) "Learning about the food I need each day." The mean values for these four "Topics" ranged from 3.01 to 3.15 which designates that students acknowledged that had received "Some" help on each of the "Topics". These "Topics" were in the Clothing and Grooming and Foods and Nutrition areas.

6. Students from increasing-enrollment schools who had had home economics ranked the following Topics highest: a) "Being well-mannered at the table and as a guest; b) "Keeping myself well-groomed and attractive"; c) "Selecting colors and furnishings for the home"; and d) "Learning the meaning of discipline for children." The means were sufficiently high to show that these students acknowledged from "Some" to "Much" help received for each of these Topics.

Most of these high means came from questionnaires of students who had had home economics in the 7th, 8th, and 9th grades or at the 7th and 8th grade levels. These "Topics" were in the Foods and Nutrition, Clothing and Grooming, Housing and Home Furnishings, and Child Growth and Development areas of home economics.

7. Students from decreasing-enrollment schools who had had home economics in schools who had had home economics in school ranked the following "Topics" highest: a) "Keeping myself well-groomed and attractive"; b) "Making clothing"; c) "Cooking food"; and d) "Serving food." These "Topics" had means sufficiently high to see that students acknowledged receiving from "Some" to "Much" help for each of them.

The levels of home economics that were taken by students to obtain these high means were the 7th, 8th and 9th combination of home economics and the 10th, 11th and/or 12th grades combination. These high means "Topics" were in the Clothing and Grooming and Foods and Nutrition areas of home economics.

8. In five areas of home economics the means were significantly higher for the increasing-enrollment group when the students had had home economics in high school.

9. The Child Growth and Development, Consumer Education, and Housing and Home Furnishings areas of home economics ranked lowest in amount of help acknowledge in the study.

Principal Response

The factor of quality of the program in home economics ranked first in number of responses made by principals. The 111 reactions of the principals regarding the influence of the quality of the program on the election or non-election of home economics were 41.4 percent of all reactions made by the 52 principals. (Table 11.) Seventy-eight of the total responses (54.5 percent) indicated that the "goodness" of the quality of the program influenced students to elect home economics. Thirty-three of the 111 reactions (27.3 percent) of the principals indicated that lack of quality influenced the students not to take home economics.

Nineteen of the reactions indicated that the personal qualities of the teacher and the teaching procedure the teachers used were important factors influencing the student to elect home economics. Eight of the group praised their teachers for having desirable personal qualities, and 11 said that the teaching procedures of their home economics teachers were excellent.

Another group of 18 statements made by the 52 principals revealed that enrollment was low in their schools, and they concluded that a lack of desirable personal qualities and a lack of good teaching procedures influenced the enrollment in home economics in their schools.

The principals made a total of 41 statements concerning the worthwhileness of home economics subject matter in meeting the students' present interest and needs, in helping prepare them for marriage, and in preparing them to meet other future responsibilities.

Summary of Quality Statements by Principals

The principals wrote more statements related to the quality of the program than to any other factor. Seventy-eight of the 111 responses were of qualities in the program that attracted students to take home economics. Teaching procedures and personal qualities of the home economics teachers greatly influenced enrollments, according to these principals.

The responses of the principals indicated that the subject matter taught was also influencing enrollment in home economics. They saw quality in subject matter when students were prepared for marriage, learned basic skills, and when the needs and interests of the students were met.

Teacher Response

Eighty-six statements were written by home economics teachers which related to the quality of the program and its effect on students electing to enroll or not to enroll in home economics in high school. This response gave a rank of 1 to the number of times this factor was listed. (Table 12.)

A total of 70 responses from home economics teachers indicated that the quality of the program was the outstanding factor which they believed influenced students to elect home economics. The teachers placed little or no significance to the importance of personal qualities and teaching procedures of the teacher as being influential toward enrollment. Rather, they felt home economics subject matter itself had the most influence on the girls' electing to enroll.

TABLE 11

FACTORS INFLUENCING ELECTION OR NON-ELECTION OF HOME ECONOMICS IN HIGH SCHOOL, AS INDICATED BY 52 PRINCIPALS

Factors	Influence on Home Economics Enrollment				Total	
	Favorable		Unfavorable			
	n	%	n	%	n	%
I. Junior High	1	0.7	2	1.6	3	1.1
II. Pressures						
A. Individuals						
1. Home economics teachers	10		-		10	
2. Parents	4		6		10	
3. Peer group	3		1		4	
4. Other school personnel	4		2		6	
5. Self (I like)	-		-		-	
6. Prestige	-		-		-	
B. Home Economics career planned	3		1		4	
C. Easy - improve grade average	2		1		3	
D. Science requirement	4		9		13	
E. Background for many fields	-		-		-	
F. Other career planned	-		3		3	
G. Meeting college requirements	-		11		11	
H. Increased requirement for graduation	1		4		5	
Total	31	21.7	38	31.4	69	25.7
III. Schedule						
A. Increased requirement for graduation	1		-		1	
B. Preference of other fields	2		13		15	
C. Science requirement met with Home Economics	1		-		1	
D. No conference period	-		-		-	
E. More subjects offered	-		6		6	
F. Additional period in day	-		-		-	
G. Not much other choice	-		-		-	
H. Schedule conflicts	1		6		7	
Total	5	3.5	25	20.7	30	11.2
IV. Quality of the Program						
A. Teacher						
1. Personal qualities	8		6		14	
2. Teaching procedures	11		12		23	
a. Interesting	(2)		(9)			
b. Challenging	(3)		-			
c. Variety in experience	(3)		-			
d. Well-planned	(3)		(3)			

TABLE 11 (continued)

IV. Quality of Program (continued)	Favorable		Unfavorable		Total	
B. Home economics subject matter						
1. All phases	-		-		-	
2. Preparation for marriage	7		-		7	
3. Likes, interests, needs	12		3		15	
4. Different	2		-		2	
5. Valuable in future	13		-		13	
6. Skills	9		2		11	
C. Enrichments						
1. F.H.A.	2		-		2	
2. Adult	1		-		1	
D. Laboratory	7		8		15	
E. Personal development						
1. Leadership	2		-		2	
2. Practical	2		1		3	
F. Home projects	2		-		2	
G. Summer employment	-		-		-	
H. Expense	-		-		-	
I. Hard	-		1		1	
Total	78	54.5	33	27.3	111	41.4
V. Patterns						
A. Requirement	5		2		7	
B. Junior high	1		-		1	
C. Majority take	-		-		-	
D. Classes filled to capacity	5		-		5	
E. More needs to be offered	1		5		6	
F. Classes include boys	1		-		1	
Total	13	9.1	7	5.8	20	7.5
VI. Attitudes						
A. People	-		-		-	
1. Parent	-		5		5	
2. Home economics teacher	3		-		3	
3. School personnel	-		1		1	
4. Peer group	-		1		1	
B. Concerning the program	2		1		3	
1. Easy	2		1		3	
2. Popular	8		7		15	
Total	15	10.5	16	13.2	31	11.6
VII. Unclassified						
Total	0		0		4	1.5
Total	143	100.0	121	100.0	268	100.0

TABLE 12

FACTORS INFLUENCING ELECTION OR NON-ELECTION OF HOME ECONOMICS IN HIGH SCHOOL AS INDICATED BY 69 HOME ECONOMICS TEACHERS

Factors	Influence on Home Economics Enrollment				Total	
	Favorable		Unfavorable			
	n	%	n	%	n	%
I. Junior-high home economics	-	-	-	-	-	-
II. Pressures						
A. Individuals						
1. Home economics teacher	-		1		1	
2. Parents	4		-		4	
3. Peer group	2		1		3	
4. Other school personnel	4		5		9	
5. Self (I like)	-		-		-	
6. Prestige	-		-		-	
B. Home economics career planned	3		-		3	
C. Easy - Improve grade average	1		-		1	
D. Science requirement	-		9		9	
E. Background for many fields in college	1		-		1	
F. Other career planned	-		3		3	
G. Meeting college requirement	-		3		3	
H. Increased requirement for graduation	-		9		9	
Total	15	13.5	31	34.4	46	22.9
III. Schedules						
A. Increased requirement for graduation	2		7		9	
B. Preference of other fields	-		8		8	
C. Science requirement met	3		3		6	
D. No conference period	-		1		1	
E. More subjects offered	-		2		2	
F. Additional period in day	1		-		1	
G. Not much other choice	2		1		3	
H. Conflicts	-		4		4	
Total	8	7.2	26	28.9	34	16.9
IV. Quality of the Program						
A. Teacher	-		-		-	
1. Personal qualities	-		1		1	
2. Teaching procedures	-		-		-	
a. Interesting	3		-		3	
b. Challenging	2		-		2	
c. Variety in experiences	2		-		2	
d. Well planned	-		1		1	

TABLE 12 (continued)

IV. Quality of Program (continued)	Favorable		Unfavorable		Total	
B. Home economics subject matter						
1. All phases	9		1		10	
2. Preparation for marriage	13		-		13	
3. Meets likes, interests, needs	8		2		10	
4. Different	1		-		1	
5. Valuable in future	7		-		7	
6. Family living - boys	1		-		1	
7. Skills	5		-		5	
C. Enrichments						
1. F.H.A.	7		-		7	
2. Adult	-		-		-	
D. Laboratory	6		7		13	
E. Personal development	-		-		-	
1. Leadership	1		-		1	
2. Practical	-		-		-	
F. Home projects	3		1		4	
G. Summer employment	2		-		2	
H. Expense	-		2		2	
I. Hard	-		1		1	
Total	70	63.1	16	17.8	86	42.8
V. Patterns						
A. Requirement	1		-		1	
B. Junior high	2		2		4	
C. Majority take	3		-		3	
D. Classes filled to capacity	4		-		4	
E. More needs to be offered	-		1		1	
Total	10	9.0	3	3.3	13	6.5
VI. Attitudes (feeling toward)						
A. Expression of individual's attitudes						
1. Parents	-		1		1	
2. Home economics teacher	3		3		6	
3. School personnel	-		-		-	
4. Peer group	1		5		6	
B. Concerning the program	-		1		1	
1. Easy	-		-		-	
2. Popular	1		-		1	
3. Meets needs	-		-		-	
4. Want to take	-		2		2	
5. Academic	1		-		1	
C. Communications	-		2		2	
	2		-		2	
Total	8	7.2	14	15.6	22	10.9
Total	111	100.0	90	100.0	201	100.0

The home economics teachers suggested that the home economics courses were "Good preparation for marriage," "Met students' needs, interests, and likes," "Prepared students for the future," and "Contributed to all areas of home living." These contributions, they said, influenced the girls to elect the subject in high schools. Forty-four of the 86 responses centered on subject matter in home economics.

Sixteen responses were made that the home economics teachers attributed to poor quality of the program -- thus influencing students not to enroll. Inadequate laboratory facilities was most often given as having an unfavorable influence on enrollment.

Summary of Quality Statements by Teachers

Home economics teachers wrote more statements related to quality of the program than any other factor affecting enrollment. Most of the statements were influences related to why girls elected to take home economics.

Very few statements related to teaching procedures and the personal qualities of the home economics teacher. Forty-four of the 86 total-quality statements related to the subject matter taught. The teachers thought that home economics was good preparation for marriage, prepared girls for the future, and met the needs, interests, and likes of the students.

The FHA activities and the attractiveness of the facilities were also listed as influencing enrollment in home economics.

Interview Responses

In terms of the number of responses classified under quality of the program, the factor is the most significant one found in the interviews. A total of 166 statements regarding quality gave it a rank of 1. (Table 13.)

TABLE 13

NUMBER OF PERSONS INTERVIEWED WHO MENTIONED EFFECT OF THE QUALITY OF THE HOME ECONOMICS PROGRAM ON ENROLLMENT OR NON-ENROLLMENT IN HOME ECONOMICS

Quality Factor	Groups						Total	
	Students		School Personnel		Parents			
	Inc.	Decr.	Inc.	Decr.	Inc.	Decr.	n	%
A. Teacher								
1. Personal qualities								
a. Easy to get along with	1						1	
b. Helps students with personal problems	3	1	2				6	
c. Students like	3	2	1				6	
d. Enthusiastic					1		1	
e. Gracious, friendly				1			1	
f. Accepted by students			1				1	
g. Cooperates with school and community			6	3	1		10	
Sub-total	7	3	10	4	2		26	15.7

TABLE 13 (continued)

Quality Factor	Groups						Total	
	Students		School Personnel		Parents			
	Inc.	Decr.	Inc.	Decr.	Inc.	Decr.	n	%
2. Teaching procedures								
a. Capable, excellent, outstanding	7	1	5	5	2	1	21	
b. Teacher is the department; department is as strong as the teacher			1	2			3	
c. Knows so much	1						1	
d. Has us work hard	1						1	
e. Has us solve problems	1						1	
f. Is improving the department			1				1	
Sub-total	10	1	7	7	2	1	28	16.9
B. Home economics subject matter								
a. Preparation for marriage	10	8	8	4	1	1	32	
b. Develops skills	5	3	2	6		2	18	
c. Teaches better management		3	1	1	2	1	8	
d. Useful now and the the future	1	1	2	1			5	
e. Helps with decision making	1		1			1	3	
Sub-total	17	15	14	12	3	5	66	39.8
C. Enrichments								
1. Has an FHA	1	2	1	1	1		6	
2. Adult classes			2			2	4	
Sub-total	1	2	3	1	1	2	10	5.9
D. Laboratory								
1. Adequate physical facilities	3	6	4	3	1		17	
2. Physical facilities need improvement	2	2	2	3			9	
3. Attractive and home-like	5	1	1				7	
4. Crowded		1		2			3	
Sub-total	10	10	7	8	1		36	21.7
Total Number	45	31	41	32	9	8	166	100.0
Percent of Total	27.1	18.7	24.7	19.3	5.4	4.8		100.0

The outstanding items mentioned were those related to subject matter in home economics. Such items as "Preparation for marriage" and "Develops skills" were mentioned 66 times, 39.8 percent. Of these 66 reactions 32 (or 45 percent) listed "Preparation for marriage" as being a value in taking home economics. In both increasing- and decreasing-enrollment schools, this item was most often mentioned and was the largest response given by students and school personnel in both school groups.

The teacher and teaching procedures were the second most-often mentioned item in the quality of a good program. A total of 54 responses were either of a personal quality of teaching procedures as being important to enrollment. The most significant item under teaching procedures was the home economics teacher is "Capable, excellent, and outstanding." These traits were listed by students, school personnel, and parents in the increasing-enrollment schools and by school personnel and parents in the decreasing-enrollment schools. Fourteen of the persons interviewed made these observations in increasing-enrollment schools as compared with seven in the decreasing-enrollment schools.

The personal quality of the teacher most often mentioned was "She cooperates with the school and community." However, this trait was mentioned by the school personnel group and parent group rather than by the students. In the increasing-enrollment schools the students most often said, "I like the teacher" and "The teacher helps students with their personal problems," while in the decreasing schools, more students said they "Liked the teacher."

The third-ranking groups under the quality factor was the laboratory, with 36 reactions. The largest number, 17 mentioned that there were adequate physical facilities. There were three student reactions in this category from increasing schools and six student reactions from the decreasing-enrollment schools, among the school personnel the greatest number of reactions stated that the physical facilities were adequate, while an equal number in the decreasing schools mentioned this fact as well as that the physical facilities needed improving.

The enrichment phase of the home economics program was mentioned by 10 people. There were six statements regarding the FHA, three from increasing, and three from decreasing-enrollment schools. Four of the persons interviewed mentioned adult classes as being a part of the home economics program -- two from increasing, and two from decreasing-enrollment groups.

Summary of Quality Statements by Interviewees

The greatest number of statements made by the persons interviewed related to the quality of the home economics program. The greatest number of these statements centered on the subject matter being taught. The people believed that home economics was good preparation for marriage and taught the basic skills (66 statements).

Also a total of 54 statements related to the personal qualities and teaching procedures of the home economics teachers and their influence on enrollment in home economics. The physical facilities were mentioned 36 times as being a contributing factor to the quality to the program.

Factor: Influence of Pressures

What forces were exerted on high school students to influence their electing to enroll or not to enroll in home economics? Fourteen items in Parts II (for those who elected to enroll) and III (for those who elected not to enroll) of the questionnaire were classified as pressure items.

The principals and home economics teachers responded with sufficient statements related to pressures to rank this factor second only to the quality of the home economics program factor.

Student Response

Part II of Questionnaire

In Part II of the questionnaire, seven items were related to the pressure factor. Table 14 contains a summary of the findings.

Item 11.83 "I wanted to take it" ranked first in number of students who responded to any of the 43 items on Parts II and III of the student-questionnaire. Most students in the study elected to enroll in home economics (beyond what was required) because they wanted to do so. This finding was true for girls from both enrollment groups.

The parents of students from increasing- and decreasing-enrollment schools wanted their daughters to enroll in home economics. Also, the peer groups' acceptance of home economics influenced approximately one-fifth of the group to enroll in home economics. The other five pressure items received a small response from the groups; but, for some girls, the home economics teacher, the principal, college majoring plans, and the guidance counselors influenced them to elect home economics as a subject in high school.

TABLE 14

RANKED RESPONSES TO THE SEVEN PRESSURE ITEMS ON PART II OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO ENROLLED IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Description	Enrollment		Rank
		Increasing	Decreasing	
		Percent	Percent	
11.83	"I wanted to take it"	71.0	60.0	1
11.77	"Parents wanted me to take home economics"	35.0	30.0	2
11.82	"Most girls take it"	19.0	18.0	3
11.79	"I took it because of the home economics teacher"	8.0	5.0	4
11.80	"The principal thought I should take it"	5.0	4.0	5
11.78	"Plan to major in home economics in college"	3.0	4.0	6.5
11.81	"Guidance counselor thought I should take it"	5.0	2.0	6.5

The students from schools with increasing enrollment in home economics responded to four of these items in significantly larger numbers. (Appendix, Table 25.) More girls from these increasing-enrollment schools took home economics because: "I wanted to take it"; "My parents wanted me to take home economics"; "I took it because of the home economics teacher"; and "The guidance counselor thought I should take it."

Part III of the Questionnaire

There were seven items in Part III of the questionnaire (for those students who elected not to enroll in home economics, beyond that which was required) which related to the pressure factors. The responses to these items are tabulated in Table 15.

TABLE 15

RANKED RESPONSES TO THE SEVEN PRESSURE ITEMS IN PART III OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO DID NOT ENROLL IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Description	Enrollment		Rank
		Increasing Percent	Decreasing Percent	
15.96	"Liked home economics, but wanted other subjects"	12.0	19.0	1
15.100	"I'm going to college; needed to take other subjects"	10.0	18.0	2
15.101	"Parents didn't think I needed home economics"	4.0	6.0	3
15.99	"Friends were not enrolling in home economics"	2.0	4.0	4
15.97	"Principal advised me to take other subjects"	2.0	2.0	5
15.98	"Counselor advised me to take other subjects"	1.0	2.0	6
15.102	"Member of the crowd look down on home economics"	0.5	2.0	7

Students responded to two of the seven pressure items by the largest percent "Liked home economics, but wanted other subjects" and "I'm going to college; needed to take other subjects." The percent of response to the other pressure items was very small.

The students from decreasing-enrollment schools checked four items in significantly larger portions. These items were: "Like home economics, but wanted other subjects"; "Going to college; needed to take other subjects"; "Members of the crowd look down on home economics," and "Counselors advised me to take other subjects." (Table 26, Appendix.)

Summary of Pressure Factor by Students

The pressure related to students wanting to take home economics was a determining factor in their taking home economics. Girls from increasing-enrollment schools chose to enroll in home economics because they "wanted to" do so in significantly greater numbers than girls from decreasing-enrollment schools.

The parents of students influenced their daughters to enroll in home economics; this influence was felt by a significantly greater portion of students from increasing-enrollment schools. The home economics teacher and the guidance counselor influenced some girls to enroll in home economics; girls from the increasing-enrollment schools checked these influences in significantly larger portions than did girls from decreasing-enrollment schools.

Even though some girls liked home economics, they elected to take other than home economics subjects in high school. One clue for non-enrollment was that going to college made the election of home economics less desirable. So preference for other subjects and college plans were influential pressures for non-election of home economics in high school. Girls from decreasing-enrollment schools checked these items in significantly larger numbers.

Principal Response

The 52 principals wrote 69 statements suggestive of pressures that influenced girls to elect or not to elect home economics in high school. Thirty-eight of the statements (31.4 percent) were about pressures that influenced girls not to elect home economics; 31 statements (21.7 percent) were of pressures for election of home economics. (Table 11.)

The outstanding pressure written by principals against electing home economics was that of meeting college requirements. The increased requirements for graduation (including the increased science requirements) also influenced some girls not to elect home economics, according to these principals.

The principals wrote that the home economics teacher was the greatest pressure factor influencing girls to elect to take home economics. Parents were mentioned as being influential for the election or the non-election of home economics at the high school level.

Summary of Pressure Statements by Principals

The increased requirements for graduation (including the increased science requirements) from high school and the meeting of requirements for college entrance were the two pressures that influenced girls not to elect home economics, according to the principals. They also indicated that the home economics teacher exerted the greatest pressure influence on girls to elect home economics in high school.

Teacher Responses

The teachers made 46 statements (22.9 percent) which related to the pressure factor. Thirty-one (34.4 percent) of the statements were of pressures that influenced girls not to elect home economics; 15 statements (13.5 percent) were statements of pressures for the election of home economics in high school. (Table 12.)

The outstanding pressure mentioned by this group of teachers was that home economics could not be taken by girls because of the increased requirements for high school graduation (including an increase in the science requirements). There were mixed feelings about the influence of other school personnel on election or non-election of home economics; some wrote that this group influenced girls to take home economics; other teachers thought that other school personnel influenced girls not to enroll in home economics.

Summary of Pressure Statements by Teachers

The increased requirements for graduation from high school (including the increased requirements in science) was the outstanding pressure influencing girls not to elect to take home economics in high school, according to statements by the home economics teachers. There was also some acknowledged influence of other school personnel on enrollment in home economics.

Interview Responses

Only 14 statements (Table 16) relating to pressures were made in the 76 interviews. Meeting college requirements and the meeting of requirements for high school graduation were mentioned as influencing students not to enroll in home economics in high school. All seven of these responses came from school personnel in decreasing-enrollment schools.

TABLE 16

NUMBER OF INTERVIEWEES IN THE SIX SCHOOLS WHO MENTIONED DIFFERENT PRESSURES AND THEIR EFFECT ON HOME ECONOMICS ENROLLMENT

Pressure Factor	Groups						Total	
	Students		School Personnel		Parents			
	Inc.	Decr.	Inc.	Decr.	Inc.	Decr.	n	%
Academic subjects first, if college bound	1			3			4	28.6
Background for many fields					1		1	7.1
Mother wants everyone to take home economics	1					1	2	14.3
Career in home economics planned	1	1					2	14.3
My group do not enroll in home economics		1					1	7.1
Added requirements make for a full Schedule				4			4	28.6
Total	3	2		7	1	1	14	100.0

Summary of Pressure Statements by Interviewees

College-entrance requirements and high school graduation requirements influenced some students not to take home economics in high school.

Factor: Influence of Schedule

What effect did the schedule have on enrollment or non-enrollment of girls in home economics in high school? Four items in Part II (for girls who elected to take home economics beyond the required amount) of the questionnaire were classified as schedule items.

Student Response

Part II of the Questionnaire

Four items in Part II of the questionnaire related to the factor of schedule. A summary of the findings for both enrollment groups is given in Table 17.

TABLE 17

RANKED RESPONSES TO THE FOUR SCHEDULE ITEMS IN PART II OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO ENROLLED IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Descriptions	Home Economics Enrollment		Rank
		Increasing Percent	Decreasing Percent	
12.87	"Could be scheduled with other courses"	20.0	17.0	1
12.84	Because home economics fit into my schedule"	15.0	16.0	2
12.86	"Needed credit for graduation"	7.0	8.0	3
12.85	"No other courses for me to take"	2.0	2.0	4

Girls from both enrollment groups seemed to indicate that enrollment in home economics was influenced by the schedule factor to the extent that they could schedule other courses with home economics and that home economics could be fitted into a schedule.

None of the four schedule items revealed significant differences between the two enrollment groups.

Part III of Questionnaire

Five items were included in Part III of the student-questionnaire which related to the schedule factor. A summary of the findings is contained in Table 18.

TABLE 18

RANKED RESPONSES TO THE FIVE SCHEDULE ITEMS IN PART III OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO DID NOT ENROLL IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Description	Home Economics Enrollment		Rank
		Increasing Percent	Decreasing Percent	
16.104	"My program was too full"	10.0	18.0	1
16.103	"Other courses prepare me for a job"	10.0	16.0	2
16.105	"Could not fit into schedule because of required courses	7.0	12.0	3
16.107	"Since it is required for a year, I had no time for additional"	1.0	3.0	4
16.106	"Not offered beyond what is required"	1.0	1.0	5

In four of the five schedule items, more students from decreasing-enrollment schools checked the items as influencing them not to enroll. Students from both enrollment groups checked that they did not enroll in home economics because their programs were too full, other courses prepared them for a job, and they could not fit into schedule because of required courses.

Four of the items checked by girls who had not elected to take home economics in high school (beyond what was required) revealed significant differences in the number of girls checking. Girls from decreasing-enrollment schools checked in significantly larger numbers that they did not elect to take home economics in high school because: my program was too full; other courses prepare me for a job; could not fit it into schedule because of required courses, and since it was required for a year there was no time left for additional. (Table 26, Appendix.)

Summary of Schedule Factor by Students

The schedule did not seem to be a distinguishing factor (for the two groups) as related to its influence on enrollment in home economics. But to the extent that home economics could be scheduled with other courses and that it fit into a student's schedule, schedules influenced some students to elect to take home economics.

There were four schedule factor items that a significantly larger number of girls from decreasing-enrollment schools checked as influencing them not to enroll in home economics in high school. These factors were: their programs were too full; other courses prepared them for a job; could not fit into schedule because of required course, and since home economics had been required for a year, they had no time for taking additional courses. The first three items were checked by

a modest portion of the decreasing-enrollment group; the first two items were checked by only 10 percent of the girls from the increasing-enrollment group. (Table 26, Appendix.)

Principal Response

The principals reacted with a total of 30 statements indicating the schedules incluenced students to enroll or not to enroll in home economics in high school. (Table 11.) Thirteen of the 25 principals who made statements related to schedule and non-enrollment wrote that "students preferred other fields."

In addition, six statements indicated that conflicts in the schedule made enrollment in home economics classes impossible. Only five statements were written expressing a good influence of schedule on enrollment. These 30 reactions (11.2 percent) of the influence of schedule on enrollment gave this factor a rank of 4.

Summary of the Schedule Statements by Principals

Five times more statements were written by principals stating that the schedule was influencing girls not to be able to elect home economics than statements that indicated the schedule was influencing girls to elect home economics. These principals wrote that girls preferred other courses and would schedule them first. There was also some evidence of conflicts in the schedule which made enrollment in home economics impossible.

Teacher Response

There were 34 reactions by home economics teachers which related to the effect of schedule on election or non-election of home economics in high school. This response comprised 16.9 percent of the total reactions -- a rank of 3. (Table 12.)

Eight scheduling responses were favorable for the election of home economics; 26 statements indicated that schedules were responsible for a decrease in enrollment. Two outstanding reasons listed for not electing home economics were preference for other courses and the increased requirements for graduation (including the increased science requirements) which made it impossible for girls to schedule elective courses.

Summary of Schedule Statements by Teachers

Over three times as many statements were made by home economics teachers that the schedule was influencing girls not to be able to elect home economics than being able to take home economics. Home economics teachers wrote that preference for other fields and increased requirements for graduation (including the increased science requirements) were causing students not to take home economics in high school.

Interview Response

Only nine responses made by people being interviewed related to scheduling and enrollment in home economics. (Table 19.) This over-all response gave a rank of 5 to the scheduling factor.

TABLE 19

NUMBER OF PEOPLE INTERVIEWED WHO MENTIONED EFFECT OF SCHEDULE ON ENROLLMENT OR NON-ENROLLMENT IN HOME ECONOMICS

Schedule Factor	Groups						Total	
	Students		School Personnel		Parents			
	Inc.	Decr.	Inc.	Decr.	Inc.	Decr.	n	%
If college bound, cannot be fit into schedule	0	1	1	0	0	0	2	22.2
It is difficult to arrange schedules	0	1	1	2	0	0	4	44.4
I could not take because of the schedule	1	0	1	0	0	0	2	22.2
I tried to fix the schedule so more could enroll	0	0	0	1	0	0	1	11.1
Total	1	2	3	3	0	0	9	99.9

Of these nine statements, eight were reasons why students could not enroll in home economics because of schedule. "It is difficult to arrange the schedule" was mentioned by four people.

Summary of Schedule Statements by Interviewees

Very few remarks were made indicating the influence on enrollment or non-enrollment in home economics by the persons interviewed. Conflicts and difficulties in arranging schedules were voiced as influencing enrollment in home economics.

Factor: Influence of Attitudes

The statements made by principals and teachers in opinionnaires and by the persons interviewed were classified as attitudinal when the expression involved feeling toward a situation, a person, or the home economics department.

There were sufficient attitude responses made to give this factor a rank of 4.

Principal Response

In the 31 attitudinal statements made by the 52 principals, 15 were favorable toward the election of home economics and 16 were unfavorable, as can be seen in Table 11. A large number of favorable responses indicated that home economics was a popular course.

One-hundred forty-three (approximately 53%) of the total 268 statements made by principals were responses indicating influences which increased enrollment in

home economics. This was considered an implication that the administrators believed a greater number of influences affect enrollment in home economics than affect non-enrollment in home economics.

Summary of Attitudes Statements by Principals

It is apparent that attitudes both favorable and unfavorable to home economics existed among the administrators. Implied favorable attitudes were indicated by the large percent of statements regarding influences favorable to election of home economics.

Teacher Response

The 69 home economics teachers made 22 responses (11%) indicating the influence of attitudes on election of home economics, Table 12. Eight expressions indicated that attitudes influenced girls to take home economics with parents' attitudes mentioned most often. Fourteen responses were of attitudes causing girls not to take home economics, with most references made to unfavorable attitudes toward home economics by school personnel.

Summary of Attitudes Statements by Teachers

The home economics teachers believed that attitudes were somewhat responsible for enrollment in home economics. Attitudes of parents were most often listed as contributing to increased enrollment and unfavorable attitudes of school personnel toward home economics were most often listed as influencing girls not to take home economics.

Interview Responses

Fifty-five (72.3 percent) of the 76 persons interviewed indicated they would recommend that students enroll in home economics. None of the remaining 45 percent indicated a completely negative response but qualified their recommendation by such statements as "if the girl is interested in home economics."

Twenty-three of the statements made indicated unfavorable attitudes; 19 came from persons in schools where home economics was decreasing and four from schools where home economics was increasing. Thus over four times as many unfavorable attitudes toward home economics were expressed in decreasing enrollment schools as in increasing schools. The largest number indicated attitude existing that "it is a snap course" or "for the slow student."

Summary of Attitudes Statements by Interviewees

There is generally prevailing a favorable attitude toward home economics since nearly three-fourths of the persons interviewed indicated their willingness to recommend enrollment. More-unfavorable attitudes were in decreasing-enrollment schools.

Factor: Patterns of Home Economics Offerings

What effect did the patterns of home economics offerings have on students to enroll or not to enroll in home economics in high school? One item in Part II and two items in Part III of the student questionnaire related to patterns of offerings. The response from the principals, the home economics teachers, and the interviewees was very small.

Student Response

Part II of the Questionnaire

One item in Part II related to the requiring of home economics at the 9th grade level as one pattern of home economics offerings. Table 20 contains a summary of the findings.

TABLE 20

RESPONSE TO THE ONE ITEM RELATED TO PATTERNS IN PART II OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO ENROLLED IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Description	Home Economics Enrollment	
		Increasing	Decreasing
		Percent	Percent
10.76	"Liked required home economics I had in the 9th grade"	31.0	30.0

There was quite a substantial response to this item from both enrollment groups. Serious doubt existed that this high percent of required home economics gave an accurate picture. Even though the students believed it was required (when there is doubt that it was), they still were influenced to enroll in additional home economics because of their experience in 9th-grade home economics.

More students from increasing-enrollment schools checked this pattern item. There was no significant difference between the percent of girls who checked this item from increasing-and decreasing-enrollment schools.

Part III of the Questionnaire

Two items were related to patterns in Part III of the questionnaire, as checked by students who did not enroll in home economics classes beyond what was required. The findings are shown in Table 21.

TABLE 21

RANKED RESPONSES TO THE TWO ITEMS RELATED TO PATTERNS IN PART III OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO DID NOT ENROLL IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item	Item Description	Home Economics Enrollment		Rank
		Increasing	Decreasing	
		Percent	Percent	
14.95	"Did not like the required courses(s)"	5.0	8.0	1
14.94	"Had all I needed, required at 9th grade	2.0	5.0	

Few students from both enrollment groups responded to these two pattern of offerings items. Even though the response was small, for some students (especially in decreasing-enrollment schools), the requiring of home economics influenced them not to take any more home economics -- either because they didn't like the course or they had all they needed in the required course.

There were significantly larger responses from the decreasing-enrollment schools for both of these pattern items. (Table 26, Appendix.)

Summary of Pattern Factor by Students

A large percent of students from both enrollment groups checked that they liked the required home economics they had in the 9th grade; but, there were no significant differences in response for the two enrollment groups.

A very small percent of students responded to the pattern items. Of the students who did respond to the items, a significantly larger portion was from the decreasing-enrollment group. They didn't elect any home economics beyond what was required because they didn't like the required course(s) and they had all they needed in the required courses(s).

Principal Response

Twenty comments made by the principals indicated a belief that patterns of offerings in home economics influenced the election or non-election of home economics classes. (Table 11.)

The very few comments gave a rank of 5 for this factor. Five statements said that "One year should be required for all girls," and five other statements related that the classes were already filled to capacity.

Summary of Pattern Statements by Principals

The number of statements made regarding pattern of offerings in home economics by principals was very small. The statements centered on requiring of home economics and the problem of classes being filled to capacity.

Teacher Response

The home economics teachers wrote only 13 statements related to the patterns factor. (Table 12.) Ten of the statements were of patterns that were influencing girls to enroll in home economics; only three statements were on how the pattern of offerings influenced girls not to take home economics. Junior-high homemaking encouraged some to elect and others not to elect home economics, according to the teachers. Four teachers stated that the home economics classes were filled to capacity.

Summary of Pattern Statements by Teachers

The home economics teachers made very few comments regarding patterns of offerings. They expressed concern over the effect of junior-high homemaking on enrollment in high school and the classes being filled to capacity.

Interview Response

Thirteen responses were made by the 76 interviewees which were classified under the factor of patterns of home economics offerings. (Table 22.)

TABLE 22

NUMBER OF PERSONS INTERVIEWED WHO MENTIONED EFFECT OF PATTERN OF HOME ECONOMICS OFFERINGS ON ENROLLMENT OR NON-ENROLLMENT IN HOME ECONOMICS

Pattern Factor	Groups					Total	
	Students		School Personnel		Parents		
	Inc.	Decr.	Inc.	Decr.	Inc. Decr.	n	%
Unit offerings too rigid at the different grade levels			1			1	7.7
Not enough girls are taking			1	2		3	23.1
I wonder why girls do not elect			1			1	7.7
Wish boys could take	1		1	1		3	23.1
Not as many students in upper classes take home economics			1			1	7.7
Need for more adult education			1	3		4	30.7
Total	1		6	6		13	100.0

The most-often mentioned item in this classification was the need for more adult education. This was expressed most often by school personnel in decreasing-enrollment schools.

Summary of Pattern Statements by Interviewees

Only 13 remarks were expressed by the persons interviewed which related to patterns of offerings. The pattern mentioned most was the need for more adult education.

Factor: Influence of Junior-High Home Economics

Since approximately 87 percent of all the schools were not teaching any home economics in the 7th or 8th grades, a very limited sampling reacted to items concerning the influence of junior high.

Student Response

Part II of the Questionnaire

Item 10.75, Part II of the student questionnaire, was to be checked by the students who believed they had been influenced to take home economics in senior-high because they liked the home economics they had in junior-high.

As can be seen in Table 23, the response to the junior-high item was very small.

TABLE 23

RESPONSE TO THE ONE ITEM RELATED TO JUNIOR-HIGH HOMEMAKING IN PART II OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO ENROLLED IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item Number	Item Description	Home Economics Enrollment	
		Increasing Percent	Decreasing Percent
10.75	"Liked home economics had in 7th and/or 8th grade"	10.0	9.0

Therewere no significant differences in the percent of response between the two enrollment groups.

Part II of the Questionnaire

As can be noted in Table 24, only 4 percent of the students from decreasing-enrollment schools and two percent of the students from increasing-enrollment schools checked that they had all the home economics they needed at the 7th and/or 8th grade levels. The percent of students who checked this item was significantly larger for the decreasing-enrollment schools. (Table 26, Appendix.)

TABLE 24

RESPONSE TO THE ONE ITEM RELATED TO JUNIOR-HIGH HOMEMAKING IN PART III OF THE QUESTIONNAIRE AS CHECKED BY STUDENTS WHO DID NOT ENROLL IN HOME ECONOMICS BEYOND WHAT WAS REQUIRED

Item Number	Item Description	Home Economics Enrollment	
		Increasing Percent	Decreasing Percent
14.93	"Had all needed in required at 7th or 8th grade"	2.0	4.0

Summary of Junior-High Homemaking Factor by Students

Since homemaking in the 7th and/or 8th grade is taught in so few schools in Kentucky, it is possible to make only a tentative summary. From the sample, it would seem that homemaking in junior-high, as taught in certain schools, had a favorable influence on enrollment in senior-high home economics; this is especially true in increasing-enrollment schools. But for other students, a larger portion of which were enrolled in decreasing-enrollment school, junior-high homemaking influenced them not to enroll in home economics in senior-high because they had all they needed.

Chapter IV

GENERAL CONCLUSIONS

Characteristics of Schools

1. Schools in which enrollment in home economics increases are more often medium-sized and small schools than large ones. In these smaller schools, in general, there are fewer requirements for graduation.

2. In schools in which enrollment in home economics increases, advanced courses in home economics are offered more often than in schools where enrollment decreases, a higher proportion of students enroll in more years of home economics, and a higher proportion are multiple-teacher departments.

Factors Influencing Enrollment

1. Students, principals, and home economics teachers differ in the pressures they think influence enrollment in home economics.

   a. According to the students themselves, the person who influences students to take home economics to a greater degree than any other person is the student herself. The persons who are the next highest in influencing students to take home economics are the parents. Less influential are the home economics teacher and the guidance counselor.

   b. According to principals, the pressure which influences students to take home economics is the home economics teacher; the pressures which influence students not to take home economics are increased admission requirement for college and requirements for graduation, including the science requirement.

   c. According to home economics teachers, the pressure which is most influential in discouraging students to enroll is the increased requirement for graduation, including the science requirement.

2. Quality of the home economics program is the most important factor which influences students to enroll or not enroll in home economics.

   a. Schools having an increase in enrollment in home economics have a higher quality program than schools having a decrease in enrollment.

   b. Students are encouraged to enroll in home economics when they feel the program: (1) is of value now and in the future; (2) provides opportunities to learn what students need to know; (3) offers good preparation for marriage; (4) gives opportunities for developing leadership, and (5) is challenging.

   c. School principals judge the quality of the program in relation to the personal qualities of the home economics teacher, the teaching procedures used, and the subject matter taught. Home economics teachers judge quality more often in relation to the subject matter content of the program.

d. Students gain more help in the home economics program in the areas of Foods and Nutrition and Clothing and Grooming than in other areas, especially, Child Development, Consumer Education, and Housing and Home Furnishings.

e. Students who enroll in home economics have higher all-school grade averages than students who do not take home economics. As the amount of home economics taken increases, the all-school grade average decreases. Grade averages in home economics tend to be higher than all-school grade averages.

3. In general, school schedules and patterns of offerings of home economics have little influence upon whether or not students enroll in home economics. However, among students who do not elect home economics, a considerable number cannot take home economics because their programs are too full, and because they need to meet college requirements or to prepare for a job. This tendency is more likely to occur in schools where enrollment in home economics decreases rather than in schools where enrollment increases.

4. In general, there is a positive attitude toward the home economics program, with only a slight indication, in schools where enrollment decreases, that home economics is a "snap" course and is for the slow student.

5. The number of schools in which junior-high home economics was offered was so limited in this study that no conclusions can be drawn about this factor as an influence on enrollment.

Chapter V

IMPLICATIONS

Implications for the Home Economics Education Program in the Secondary Schools in Kentucky

1. Since this study showed that enrollment in home economics tended to be decreasing in the large schools, it is suggested that special study be made and help provided for:

   a. Improving the quality of the home economics program in these schools so that the content of the program is closely related to the needs of the students, the level of teaching procedures is raised, and personal qualities of the teachers enhanced.

   b. Findings ways to increase the number of home economics teachers in these schools so that advanced courses, and courses for students preparing for jobs and/or going to college may be offered.

   c. Interpreting the home economics program to students, parents, principals, and other personnel.

   d. Raising the status of home economics in these schools.

2. Since the quality of the home economics program was judged to be the most important factor in influencing students to enroll in home economics, it is suggested that supervisors, teacher educators, and others in position to help teachers, work with them in evaluating their programs in relation to student needs and in helping them to improve their teaching procedures and their personal qualities.

3. Teachers need to be encouraged to examine the home economics program and find ways to decrease the emphasis given to Foods and Nutrition and Clothing and Grooming, and to expand the emphasis on other areas of home economics, particularly Child Development, Consumer Education, and Housing and Home Furnishings.

4. Teachers need to be encouraged to develop home economics programs so that students of high academic ability may be able to enroll in a sequence of courses, or students of high academic ability or with special needs, such as those preparing for a job or for college, may elect advanced courses.

5. Home economics teachers need to be encouraged to study the bases they use for assigning grades and evaluate their grading standards in relation to those used by other teachers in the school.

6. As programs of interpretation of home economics are developed in schools to encourage more students to enroll, efforts should be given first to interpreting to the students themselves what home economics can offer them. Next in order of importance should be efforts to interpret the values of home economics to parents. Home economics teachers and principals need to recognize that requirements for graduation, for admission to college, and science requirements do have some influence on enrollment in home economics, but the most important influence is the fact that students will want to take it if it meets their needs.

A P P E N D I X

A

ENROLLMENT IN HOME ECONOMICS

Response from Home Economics Teachers

I. Information concerning enrollment during the school year 1958-59.

a. Total girl-student enrollment in your school by grade level, 1958-59

_____ 9th grade
_____ 10th grade
_____ 11th grade
_____ 12th grade

b. Girl-student enrollment <u>in home economics</u> in your school by classes, 1958-59

_____ Junior high homemaking (exclusive of 9th grade)
_____ Home Economics I
_____ Home Economics II
_____ Home Economics III
_____ Home Economics IV

II. Information concerning graduation requirements in your school.

a. List the <u>present</u> requirements for graduation for all students in your school.

b. Have these present requirements been the same for the past four years? If not, note the changes in the space below.

III. Information regarding courses and requirements in home economics in your school, 1961-62.

a. Check (x) the home economics classes offered in your school

_____ Homemaking, 7th or 8th
_____ Home Economics I
_____ Home Economics II
_____ Home Economics III
_____ Home Economics IV
_____ Family Living
_____ Other

b. Are any courses in home economics required by your school, 1961-62?
_____ yes _____ no

If yes, check (x) the required course or courses.

_____ 7th grade Homemaking
_____ 8th grade Homemaking
_____ Home Economics I
_____ Home Economics II
_____ Home Economics III
_____ Home Economics IV
_____ Family Living
_____ Other

c. What length is the 7th and/or 8th grade homemaking course?

_____ Two semesters
_____ One semester
_____ Less than one semester
_____ Other

d. How many periods a week are scheduled for 7th and/or 8th grade homemaking course?

_____ daily _____ two or three days a week _____ other

IV. Adequacy of space in the home economics laboratory

a. How many students is the clothing laboratory planned to accomodate? _____

b. Is the equipment adequate for this number of students? _____

c. How many students is yourfoods laboratory planned to accomodate? _____

d. Is the equipment adequate for this number? _____

V. What factors do you feel are influencing the home economics enrollment in your school?

ENROLLMENT IN HOME ECONOMICS

Response from Principals

Your opinion as a principal will contribute greatly to the research project concerning enrollment in home economics. Will you list the factors you think are influencing girls to take or not to take home economics in <u>your school</u>? Your reactions will be considered confidential; you need not sign this statement. Attached is a self-addressed envelope for return of this response directly to the coordinator of the home economics education research team. Thank you.

School _____

OPINIONS OF HIGH SCHOOL GIRLS RELATIVE TO
THEIR HIGH SCHOOL PROGRAM

Now that you are finishing high school, you are probably thinking about what you have studied in relation to what you want to do.

The schools are interested in providing the very best possible program for helping young people deal successfully with the problems they are meeting now or may meet in the future. We need your help in getting information which may strengthen the school program. Will you please fill in the following questionnaire? Give your honest opinions--there are no right or wrong answers. This survey is for the purpose of studying the school program and all results will be combined. Your name will not be revealed in any way.

Part I

1. Mark with an (x) the amount of help you have had IN SCHOOL in grades seven through twelve on each of the following topics.
   Much means you learned all you think you could have learned about the topic while IN SCHOOL.
   Some means you have learned a part of what could be learned but probably could have learned more IN SCHOOL.
   Little means that what you learned IN SCHOOL was limited.
   None means you did not learn anything about the topic IN SCHOOL.

2. Mark with an (x) in the last column if you wish you had had some or more help on any topic. If you check the last column, be sure you have also checked one of the other columns.

	Topics	Amount of help I had: Much	Some	Little	None	Wish for some or more
1.1	Understanding what children are like at different age levels	___	___	___	___	___
1.2	Helping young children learn	___	___	___	___	___
1.3	Caring for an infant	___	___	___	___	___
1.4	Caring for young children	___	___	___	___	___
1.5	Finding out about groups in the community that work for children	___	___	___	___	___
1.6	Caring for mother before baby is born ...	___	___	___	___	___
1.7	Caring for mother and baby	___	___	___	___	___
1.8	The responsibilities of a baby sitter ...	___	___	___	___	___
1.9	Learning the meaning of discipline for children	___	___	___	___	___
2.10	Caring for clothing--keeping clean and neat; laundering, mending	___	___	___	___	___
2.11	Making clothing	___	___	___	___	___
2.12	Keeping myself well-groomed and attractive	___	___	___	___	___
2.13	Making over clothing.....	___	___	___	___	___
2.14	Selecting and buying clothes for myself..	___	___	___	___	___

	Topics	Amount of help I had: Much	Some	Little	None	Wish for some or more
2.15	Planning a clothing wardrobe for myself..	___	___	___	___	___
2.16	Selecting and buying different materials (textiles)	___	___	___	___	___
2.17	Making draperies, slipcovers, etc. for the home	___	___	___	___	___
2.18	Deciding when to make, when to make over, when to buy clothes ready-made	___	___	___	___	___
2.19	Selecting and caring for sewing equipment	___	___	___	___	___
3.20	Cooking food	___	___	___	___	___
3.21	Serving food	___	___	___	___	___
3.22	Preserving food by canning, freezing, etc.	___	___	___	___	___
3.23	Preparing foods for special occasions and for entertaining	___	___	___	___	___
3.24	Managing time, energy, and money in planning, preparing, and serving family meals	___	___	___	___	___
3.25	Learning about the food I need each day..	___	___	___	___	___
3.26	Planning meals to meet my family's needs.	___	___	___	___	___
3.27	Buying foods to get one's money's worth..	___	___	___	___	___
3.28	Preparing and serving foods from different countries	___	___	___	___	___
3.29	Being well-mannered at the table and as hostess and guest	___	___	___	___	___
4.30	Using simple first aid	___	___	___	___	___
4.31	Caring for the sick at home	___	___	___	___	___
4.32	Preventing accidents in the home	___	___	___	___	___
4.33	Keeping my family well	___	___	___	___	___
4.34	Keeping myself well	___	___	___	___	___
4.35	Understanding facts about common diseases	___	___	___	___	___
4.36	How to care for a child when he is ill...	___	___	___	___	___
4.37	Planning, preparing, and serving food for the sick in the home	___	___	___	___	___
4.38	Planning for and caring for the home medicine chest	___	___	___	___	___
5.39	How to simplify work to save time and energy	___	___	___	___	___
5.40	How to make wise choices and decisions in managing time, energy and money, to reach my goals	___	___	___	___	___
5.41	Planning wise use of my money	___	___	___	___	___
5.42	What it means to be a good home manager for successful family living	___	___	___	___	___
5.43	Learning the value of making and carrying out a plan	___	___	___	___	___
5.44	Arranging house and equipment to save time and energy	___	___	___	___	___

	Topics	Amount of Help I had: Much	Some	Little	None	Wish for some or more
5.45	Learning disadvantages and advantages of buying with cash and on credit (on time)	___	___	___	___	___
5.46	Planning together in a family for such things as: use of money, getting work done, sharing in responsibilities	___	___	___	___	___
5.47	Planning convenient kitchens	___	___	___	___	___
5.48	How to keep the house neat and clean ...	___	___	___	___	___
6.49	Choosing a home for a family	___	___	___	___	___
6.50	Planning a home for a family	___	___	___	___	___
6.51	Learning about housing in the community	___	___	___	___	___
6.52	Arranging furnishings in different rooms	___	___	___	___	___
6.53	Painting, refinishing, or making over furniture	___	___	___	___	___
6.54	Selecting colors and furnishings for the home	___	___	___	___	___
6.55	Caring for home furnishings	___	___	___	___	___
6.56	Selecting household equipment	___	___	___	___	___
6.57	Using and caring for household equipment	___	___	___	___	___
6.58	Improving home yards	___	___	___	___	___
7.59	Finding out about community agencies that help families	___	___	___	___	___
7.60	Getting along well with family members	___	___	___	___	___
7.61	Getting along well with friends	___	___	___	___	___
7.62	Planning for family recreation and entertaining	___	___	___	___	___
7.63	Preparing for marriage	___	___	___	___	___
7.64	Understanding myself and others	___	___	___	___	___
7.65	Planning for wise use of leisure time ..	___	___	___	___	___
7.66	Understanding basic needs of all people	___	___	___	___	___
7.67	Understanding special problems of older people and/or the handicapped	___	___	___	___	___
7.68	Understanding what causes friction in families and how to have as little as possible	___	___	___	___	___
8.69	Getting my money's worth when buying ...	___	___	___	___	___
8.70	Understanding programs for protecting consumers	___	___	___	___	___
8.71	Understanding how to read labels	___	___	___	___	___
8.72	Practicing acceptable shopping ethics ..	___	___	___	___	___
8.73	How to judge advertising	___	___	___	___	___
8.74	Learning about kinds of jobs for those who study home economics	___	___	___	___	___

Will you do Part II or Part III? Read the directions carefully to see which one you will do.

Part II

Directions: If you took any home economics in your school beyond what was required (if any was required), you complete this section.

Place a check (x) before each statement that is true for you.

I took some home economics in high school when it was not required because:

_____ 10.75 I liked the home economics I had in 7th or 8th grades
_____ 10.76 I liked the required home economics I have in the 9th grade
_____ 11.77 My parents wanted me to take home economics
_____ 11.78 I plan to major in home economics in college
_____ 11.79 I took it because of the home economics teacher
_____ 11.80 The principal thought I should take home economics
_____ 11.81 The school guidance person suggested I take home economics
_____ 11.82 Most girls in my school take home economics
_____ 11.83 I wanted to take it
_____ 12.84 I took home economics because it fit into my schedule
_____ 12.85 There were no other courses for me to take
_____ 12.86 I needed the credit for graduation
_____ 12.87 Home economics could be scheduled with other courses I wanted to take
_____ 13.88 Home economics gave me the opportunity to develop leadership
_____ 13.89 I expect to get married after graduation, and I think home economics is good preparation for marriage
_____ 13.90 Home economics is of value to me now and will be helpful in the future
_____ 13.91 Home economics helped me learn the things I needed to know
_____ 13.92 Home economics was a challenging course to take

Are there other reasons for your taking home economics? If so, list here.

Part III

Directions: If you have not taken any home economics beyond the amount required in your school or if none was required and you did not take any home economics, you complete this section.

Place a check (x) before each statement which is true for you.

____	14.93	I had all I need in the required course in the 7th or 8th grade
____	14.94	I had all I need in the required course in the 9th grade
____	14.95	I did not particularly like the required courses(s)
____	15.96	I liked home economics, but I wanted to take other subjects
____	15.97	My principal advised me to take other subjects
____	15.98	The guidance counselor advised me to take other subjects
____	15.99	My friends were not enrolling in home economics
____	15.100	I plan to go to college and needed to take other subjects
____	15.101	My parents didn't think I needed to take home economics
____	15.102	Other members of the high school crowd look down on home economics
____	16.103	Other courses will enable me to be prepared to get a job after graduation
____	16.104	My program was too full
____	16.105	I could not fit home economics into my schedule because of other required courses
____	16.106	Home economics is not offered beyond that which is required
____	16.107	Since it was required for a year, I had no time for additional home economics courses
____	17.108	The equipment and the room certainly are out-dated
____	17.109	You don't get much choice in what you want to study in home economics
____	17.110	Other courses were more interesting to me
____	17.111	the classes were too crowded for the space
____	17.112	There is too much teaching of things I already know
____	17.113	I'm just not interested in the material covered in home economics
____	17.114	What is learned is of little value to me
____	17.115	I can learn homemaking in my own home
____	17.116	A student has to do too many outside activities
____	17.117	Home economics is not a very challenging course

Are there other reasons for your not taking home economics? If so, list here.

Part IV

Directions: Everyone is to complete this section. If you have taken home economics, check (x) the grade level at which you took the course or courses. Place this check in the correct length-of-course column. Check (x) the none column at each grade level that you did not take home economics.

Grade Levels	Length of the Course			
	None	Full Year	One Semester	Less than a Semester
1. Seventh grade	___	___	___	___
2. Eighth grade	___	___	___	___
3. Ninth grade	___	___	___	___
4. Tenth grade	___	___	___	___
5. Eleventh grade	___	___	___	___
6. Twelfth grade	___	___	___	___

Part V

Check (x) in the proper column one of the following blanks which best described your marks in all subjects throughout high school. Place a second check (x) in the column which best describes your marks in home economics throughout high school. (If you did not take home economics, do not check.)

All School Subjects	Home Economics	
___	___	1. Mostly D's
___	___	2. About equal C's and D's
___	___	3. Mostly C's
___	___	4. About equal B's and C's
___	___	5. Mostly B's
___	___	6. About equal A's and B's
___	___	7. Mostly A's

D

INTERVIEW TECHNIQUE

A. Introduction to the interview by the Team member.

"I am _____ (name); I have the position of _____ at _____ (name of institution). We are doing a research study in home economics education, and your school was selected to be one of the schools where we can study home economics a little more thoroughly. If you don't mind, as we talk together I'd like to take notes. After I ask you a few questions, then, you will have the chance to add comments to help me better understand the home economics program. Your school has a number, not a name, in the study and you will not be identified in the study by name."

B. General interview questions

"1. What do you think students can gain, or learn from enrolling in home economics?
2. Describe the home economics department in you school.
3. Where did you find out about home economics in your school?
4. If you had a chance to take or to advise someone else to enroll in home economics, would you? Why?"

C. Principal's interview

1. How long have you been in your present position?
2. May I have a copy of the daily schedule? (Make arrangements)
3. How long have you known the present home economics teacher(s)?
4. How often do you visit the home economics department?
5. Do most of the students and faculty know the home economics teacher(s)?

Then, the general interview questions are asked.

D. Home economics teacher's interviews

1. Will you please describe your home economics program.
2. Are there "drawbacks" or "stumbling blocks" in putting the program into action?
3. What do you see as the role of home economics in the whole school? in the community?
4. What suggestions do you have for improving the program?

TABLE 25

(K)

STANDARD NORMAL VARIABLE FOR THE 18 ITEMS ON PART II OF THE QUESTIONNAIRE, P_1 DESIGNATING INCREASING AND P_2 DESIGNATING DECREASING ENROLLMENT IN HOME ECONOMICS SCHOOLS

Item Number	Item Description	Increasing P_1	Decreasing P_2	σp	K	Level of Significance
10.75	Liked home ec. had in 7th and/or 8th grade	0.10	0.09	0.01	0.51	
10.76	Liked required home ec. had in 9th grade	0.31	0.30	0.20	0.40	
11.77	Parents wanted me to take home economics	0.35	0.30	0.02	2.09	< .05
11.78	Plan major home ec. in college	0.03	0.04	0.01	1.34	
11.79	Took it because of the home ec. teacher	0.08	0.05	0.01	3.16	< .002
11.80	Principal thought I should take	0.05	0.04	0.01	1.89	
11.81	Guidance counselor thought I should take it	0.05	0.02	0.01	3.02	< .01
11.82	Most girls take it	0.19	0.18	0.02	0.16	
11.83	I wanted to take it	0.71	0.60	0.02	5.05	< .001
12.84	Because it fit into my schedule	0.15	0.16	0.02	0.77	
12.85	No other courses for me to take	0.02	0.02	0.01	0.58	
12.86	Needed credit for graduation	0.07	0.08	0.01	0.86	
12.87	Could be scheduled with other courses	0.20	0.17	0.02	1.50	
13.88	Gave opportunity to develop leadership	0.39	0.30	0.02	4.36	< .001
13.89	Home ec. good preparation for marriage	0.40	0.34	0.02	2.85	< .01

TABLE 25 (continued)

Item Number	Item Description	Increasing P_1	Decreasing P_2	σp	K	Level of Significance
13.90	Value now and helpful in future	0.68	0.57	0.02	5.11	< .001
13.91	Learned things I needed to know	0.65	0.55	0.02	4.68	< .001
13.92	Was challenging course	0.30	0.22	0.02	4.14	< .001

TABLE 26

(K)

STANDARD NORMAL VARIABLE FOR THE 25 ITEMS ON PART III OF THE QUESTIONNAIRE, P_1 DESIGNATING INCREASING AND P_2 DESIGNATING DECREASING ENROLLMENT IN HOME ECONOMICS SCHOOLS

Item Numbers	Item Description	Increasing P_1	Decreasing P_2	σp	K	Level of Significance
14.93	Had all needed in required at 7th or 8th grade	0.02	0.04	0.01	2.67	< .01
14.94	Had all needed; required at 9th grade	0.02	0.05	0.01	4.35	< .001
14.95	Did not like required course(s)	0.05	0.08	0.01	3.25	< .002
15.96	Liked home ec., but wanted other subjects	0.12	0.19	0.02	3.83	< .001
15.97	Principal advised me to take other subjects	0.02	0.02	0.01	0.55	
15.98	Counselor advised me to take other subjects	0.01	0.02	0.01	2.23	< .05
15.99	Friends were not enrolling in home ec.	0.02	0.04	0.01	1.56	
15.100	Going to college; needed to take other subjects	0.10	0.18	0.02	5.41	< .001

TABLE 26 (continued)

Item Number	Item Description	Increasing P_1	Decreasing P_2	σp	K	Level of Significance
15.101	Parents didn't think I needed home economics	0.04	0.06	0.01	1.56	
15.102	Members of crowd look down on home ec.	0.005	0.02	0.005	2.68	< .01
16.103	Other courses prepare me for a job	0.10	0.16	0.02	4.14	< .001
16.104	My program was too full	0.10	0.18	0.02	5.05	< .001
16.105	Could not fit into schedule because of required courses	0.07	0.12	0.01	3.83	< .001
16.106	Not offered beyond what is required	0.01	0.01	0.004	0.99	
16.107	Since required for a year, no time for additional	0.01	0.03	0.01	3.45	< .001
17.108	Equipment and room outdated	0.002	0.01	0.004	2.47	< .02
17.109	Not much choice in what you want to study	0.01	0.04	0.01	3.31	< .001
17.110	Other courses more interesting	0.10	0.18	0.02	4.92	< .001
17.111	Classes too crowded for the space	0.004	0.02	0.005	2.45	< .02
17.112	Too much teaching of things I know	0.02	0.08	0.01	6.18	< .001
17.113	Not interested in material covered	0.03	0.05	0.01	2.69	< .01
17.114	Material learned of little value to me	0.003	0.03	0.01	4.12	< .001
17.115	Can learn homemaking at home	0.08	0.12	0.01	3.18	< .002
17.116	Student has too many outside activities	0.01	0.02	0.01	2.20	< .05
17.117	Home ec. is not very challenging course	0.02	0.06	0.01	5.07	< .001

TABLE 27

MEAN VALUES FOR THE 74 HOME ECONOMICS "TOPICS" AND THE EIGHT AREAS OF HOME ECONOMICS FOR STUDENTS FROM BOTH ENROLLMENT GROUPS, FOR STUDENTS WITH NO HOME ECONOMICS AND FOR STUDENTS WITH VARYING AMOUNTS OF HOME ECONOMICS

Areas and Topics	All Students		No Home Economics		Some Home Ec. Taken		7 and 8 Grade Home Ec.	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Child Growth and Development	2.31	2.21	1.75	1.78	2.50	2.42	2.27	1.92
1.1	2.72	2.59	2.00	2.23	2.80	2.62	2.38	2.85
1.2	2.32	2.19	1.79	1.86	2.38	2.23	2.67	1.21
1.3	2.43	2.31	1.57	1.61	2.52	2.39	2.13	1.95
1.4	2.55	2.40	1.69	1.74	2.65	2.48	2.83	1.67
1.5	1.76	1.69	1.62	1.60	1.77	1.68	1.08	1.00
1.6	1.88	1.79	1.40	1.30	1.92	1.83	1.50	1.71
1.7	2.00	1.90	1.51	1.35	2.04	1.96	2.10	1.85
1.8	2.60	2.58	1.91	1.97	2.66	2.67	2.38	2.58
1.9	2.52	2.47	1.91	2.03	2.59	2.52	3.38	2.50
Clothing and Grooming	2.55	2.41	1.80	1.76	2.75	2.68	2.02	2.03
2.10	3.11	3.04	2.18	2.34	3.24	3.15	2.80	1.64
2.11	3.01	2.85	1.66	1.65	3.22	3.09	2.50	2.85
2.12	3.20	3.10	2.53	2.64	3.29	3.18	3.38	1.79
2.13	2.13	2.01	1.41	1.47	2.17	2.09	1.10	1.30
2.14	2.86	2.72	1.99	2.07	2.95	2.80	2.10	2.83
2.15	2.68	2.54	1.94	1.87	2.74	2.67	2.50	3.00
2.16	2.53	2.36	1.58	1.50	2.65	2.54	1.75	2.92
2.17	1.59	1.46	1.20	1.15	1.60	1.51	1.33	1.08
2.18	2.01	1.83	1.37	1.37	2.07	1.88	1.50	1.83
2.19	2.34	2.19	1.41	1.33	2.49	2.42	1.20	1.07
Foods and Nutrition	2.63	2.50	1.86	1.85	2.85	2.78	2.08	2.25
3.20	3.15	2.94	1.80	1.84	3.34	3.10	2.50	2.60
3.21	2.97	2.79	1.76	1.71	3.18	2.96	2.30	2.40
3.22	2.28	2.07	1.59	1.39	2.34	2.22	1.80	1.29
3.23	2.48	2.34	1.60	1.58	2.62	2.47	2.17	2.38
3.24	2.68	2.56	1.75	1.66	2.83	2.75	1.40	2.54
3.25	3.05	2.97	2.59	2.63	3.10	3.05	2.50	1.71
3.26	2.69	2.61	1.85	1.93	2.83	2.76	2.10	2.75
3.27	2.50	2.36	1.65	1.67	2.66	2.50	2.00	2.25
3.28	1.50	1.50	1.24	1.28	1.49	1.53	1.13	1.20
3.29	2.98	2.83	2.34	2.34	3.08	2.90	2.88	3.40

TABLE 27 (continued)

Areas and Topics	All Students		No Home Economics		Some Home Ec. Taken		7 and 8 Grade Home Ec.	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Health of the Family	2.48	2.43	2.06	2.30	2.63	2.59	2.27	2.40
4.30	2.61	2.64	2.24	2.55	2.66	2.68	2.67	2.85
4.31	2.58	2.57	2.06	2.40	2.64	2.56	2.40	2.33
4.32	2.67	2.68	2.41	2.54	2.72	2.71	2.63	1.57
4.33	2.46	2.38	2.08	2.17	2.48	2.37	2.00	2.83
4.34	2.67	2.63	2.36	2.51	2.70	2.63	2.10	3.00
4.35	2.51	2.55	2.34	2.69	2.49	2.50	2.50	2.67
4.36	2.32	2.24	1.80	1.84	2.40	2.28	2.50	2.25
4.37	2.27	2.13	1.74	1.70	2.35	2.18	1.88	1.60
4.38	2.24	2.05	1.94	1.80	2.29	2.11	1.75	2.50
Home Management	2.46	2.37	1.84	1.91	2.66	2.62	1.66	2.10
5.39	2.46	2.32	1.74	1.90	2.58	2.41	1.25	1.95
5.40	2.54	2.41	1.98	2.02	2.59	2.46	2.00	2.17
5.41	2.48	2.45	1.97	1.96	2.54	2.50	2.00	2.25
5.42	2.38	2.32	1.74	1.77	2.45	2.37	2.00	2.25
5.43	2.39	2.36	1.92	2.08	2.46	2.40	1.42	1.29
5.44	2.44	2.33	1.60	1.66	2.52	2.41	1.70	2.00
5.45	2.28	2.26	1.90	2.02	2.33	2.29	1.88	2.38
5.46	2.50	2.36	2.01	1.92	2.55	2.44	1.00	1.95
5.47	2.30	2.12	1.48	1.48	2.40	2.20	1.63	1.88
5.48	2.82	2.75	1.94	2.05	2.92	2.83	1.75	2.85
Housing and Home Furnishings	2.21	2.09	1.60	1.59	2.40	2.32	1.91	1.80
6.49	2.12	2.05	1.49	1.58	2.15	2.11	2.30	1.88
6.50	2.24	2.15	1.58	1.58	2.26	2.22	2.40	2.21
6.51	1.86	1.79	1.53	1.52	1.87	1.81	1.50	1.75
6.52	2.53	2.35	1.53	1.60	2.66	2.47	2.63	2.00
6.53	2.05	1.94	1.45	1.38	2.06	2.01	1.67	1.17
6.54	2.57	2.41	1.62	1.67	2.68	2.52	1.83	2.15
6.55	2.38	2.20	1.58	1.62	2.47	2.30	1.42	1.21
6.56	2.20	2.12	1.49	1.51	2.30	2.23	2.00	2.10
6.57	2.27	2.16	1.60	1.59	2.36	2.28	2.00	2.00
6.58	1.84	1.75	1.52	1.62	1.82	1.75	1.33	1.55

TABLE 27 (continued)

Areas and Topics	All Students		No Home Economics		Some Home Ec. Taken		7 and 8 Grade Home Ec.	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Family Relationships	2.47	2.44	2.05	2.34	2.60	2.55	2.49	2.42
7.59	1.81	1.85	1.66	1.96	1.79	1.77	0.58	2.42
7.60	2.90	2.81	2.28	2.60	2.96	2.83	3.00	1.71
7.61	2.93	2.85	2.50	2.51	2.98	2.89	3.20	1.79
7.62	2.47	2.40	2.00	2.15	2.51	2.41	3.00	2.50
7.63	2.55	2.53	2.09	2.30	2.56	2.55	3.13	2.90
7.64	2.66	2.63	2.19	2.59	2.68	2.58	2.88	3.17
7.65	2.51	2.45	2.12	2.36	2.52	2.46	2.63	2.80
7.66	2.30	2.37	2.16	2.39	2.28	2.36	2.63	1.50
7.67	2.22	2.23	2.07	2.21	2.20	2.19	2.25	2.38
7.68	2.32	2.28	2.00	2.17	2.31	2.29	1.63	3.00
Consumer Education	2.26	2.12	1.72	1.78	2.43	2.34	1.80	2.14
8.69	2.52	2.41	1.86	1.78	2.57	2.50	1.50	2.58
8.70	2.00	1.88	1.78	1.57	2.02	1.90	1.75	1.92
8.71	2.45	2.25	1.71	1.94	2.55	2.29	1.80	2.08
8.72	2.19	2.03	1.52	1.66	2.27	2.08	2.63	2.40
8.73	2.18	2.11	1.97	1.81	2.20	2.20	1.40	2.79
8.74	2.23	2.03	1.52	1.47	2.30	2.07	1.70	1.07

TABLE 28

MEAN VALUES FOR THE 74 HOME ECONOMICS "TOPICS" AND THE EIGHT AREAS OF HOME ECONOMICS FOR STUDENTS FROM BOTH ENROLLMENT GROUPS FOR STUDENTS WITH VARYING AMOUNTS OF HOME ECONOMICS TAKEN

Areas and Topics	AMOUNT OF HOME ECONOMICS TAKEN							
	7th, 8th, and 9th		9th Grade		9th and 10 Grade		10, 11, or 12 Grade	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Child Growth and Development	1.66	2.14	2.21	1.96	2.29	2.27	2.41	2.32
1.1	1.56	2.67	2.60	2.30	2.90	2.61	2.86	2.79
1.2	1.44	2.13	2.27	1.98	2.29	2.27	2.30	2.24
1.3	2.67	2.50	2.33	1.98	2.30	2.40	2.56	2.50
1.4	1.38	2.25	2.51	2.07	2.61	2.57	2.72	2.58
1.5	2.00	1.75	1.67	1.55	1.69	1.69	1.80	1.64
1.6	1.40	1.50	1.69	1.49	1.67.	1.61	2.16	1.83
1.7	1.33	1.67	1.94	1.57	1.74	1.78	2.08	2.10
1.8	1.69	2.50	2.50	2.43	2.80	2.87	2.61	2.56
1.9	1.44	2.25	2.36	2.23	2.62	2.67	2.62	2.60
Clothing and Grooming	2.13	2.24	2.45	2.31	2.67	2.55	2.54	2.56
2.10	2.07	1.60	3.14	3.02	3.42	3.24	3.11	3.24
2.11	1.56	3.50	2.94	2.87	3.28	3.12	3.23	3.03
2.12	3.93	3.63	3.19	3.10	3.37	3.17	3.19	3.39
2.13	1.58	3.13	1.93	1.88	2.25	2.20	1.98	1.96
2.14	3.08	3.13	2.81	2.58	2.96	2.84	2.89	2.85
2.15	2.43	1.40	2.62	2.48	2.84	2.69	2.56	2.65
2.16	2.43	2.88	2.32	2.24	2.56	2.46	2.55	2.47
2.17	0.86	1.25	1.41	1.25	1.44	1.43	1.60	1.39
2.18	1.83	0.80	1.81	1.57	2.10	1.92	1.93	1.80
2.19	1.50	1.10	2.28	2.06	2.44	2.44	2.33	2.80
Foods and Nutrition	2.21	2.27	2.47	2.35	2.75	2.61	2.60	2.58
3.20	3.29	3.38	3.15	2.76	3.32	3.11	3.12	3.24
3.21	1.69	3.38	2.93	2.71	3.11	3.01	2.93	2.92
3.22	0.81	0.70	2.04	1.87	2.44	2.21	2.21	1.98
3.23	2.42	2.50	2.32	2.11	2.61	2.38	2.39	2.43
3.24	3.36	2.83	2.48	2.42	2.93	2.77	2.57	2.82
3.25	1.94	1.40	2.79	2.99	3.17	2.97	3.17	3.03
3.26	1.69	2.38	2.50	2.46	2.76	2.73	2.74	2.74
3.27	1.63	2.38	2.29	2.07	2.71	2.53	2.32	2.33
3.28	1.25	0.60	1.30	1.42	1.36	1.33	1.48	1.42
3.29	4.00	3.13	2.94	2.66	3.12	3.01	3.10	2.87

TABLE 28 (continued)

Areas and Topics	7th, 8th and 9th		9th Grade		9th and 10 Grade		10, 11, or 12 Grade	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Health of the Family	1.59	2.06	2.46	2.14	2.57	2.65	2.40	2.35
4.30	1.75	2.63	2.68	2.49	2.75	2.98	2.42	2.50
4.31	1.69	1.60	2.50	2.18	2.82	2.80	2.29	2.45
4.32	1.56	1.50	2.68	2.45	2.79	2.82	2.51	2.77
4.33	1.25	1.30	2.42	1.99	2.44	2.59	2.32	2.16
4.34	1.38	1.40	2.65	2.32	2.76	2.82	2.60	2.52
4.35	1.86	2.50	2.40	2.28	2.36	2.57	2.66	2.45
4.36	1.79	2.50	2.37	1.96	2.40	2.45	2.41	2.19
4.37	1.79	2.50	2.25	1.79	2.41	2.49	2.17	1.97
4.38	1.25	2.63	2.22	1.83	2.39	2.34	2.18	2.12
Home Management	2.08	1.92	2.29	2.15	2.48	2.48	2.47	2.39
5.39	1.25	2.75	2.25	2.08	2.53	2.50	2.60	2.64
5.40	2.92	2.00	2.40	2.27	2.58	2.51	2.53	2.40
5.41	3.29	2.38	2.31	2.25	2.52	2.56	2.43	2.30
5.42	2.43	2.13	2.12	2.00	2.51	2.42	2.24	2.30
5.43	2.07	1.20	2.29	2.13	2.23	2.37	2.41	2.31
5.44	1.44	1.00	2.23	2.04	2.29	2.51	2.41	2.39
5.45	1.57	2.63	2.06	2.07	2.24	2.20	2.31	1.98
5.46	1.31	2.50	2.29	2.13	2.57	2.40	2.50	2.34
5.47	1.38	1.00	2.14	1.89	2.23	2.23	2.48	2.31
5.48	3.14	1.60	2.80	2.64	3.10	3.07	2.80	2.89
Housing and Home Furnishings	1.90	1.52	2.04	1.80	2.19	2.26	2.20	2.07
6.49	1.70	1.20	1.94	1.84	2.03	1.99	2.13	2.02
6.50	1.87	2.13	2.08	1.86	2.25	2.22	2.17	2.14
6.51	1.43	1.00	1.59	1.49	1.43	1.81	1.92	1.53
6.52	3.00	2.25	2.46	2.01	2.65	2.73	2.59	2.31
6.53	1.43	1.00	1.96	1.64	2.01	2.11	1.86	1.80
6.54	3.42	2.50	2.54	2.08	2.74	2.77	2.50	2.13
6.55	2.14	1.30	2.33	1.88	2.52	2.50	2.50	2.23
6.56	2.43	1.30	1.86	1.83	2.29	2.34	2.06	2.38
6.57	1.06	1.00	1.87	2.00	2.39	2.34	2.37	2.31
6.58	0.56	1.50	1.77	1.41	1.57	1.74	1.87	1.80

TABLE 28 (continued)

Areas and Topics	7th, 8th and 9th		9th Grade		9th and 10 Grade		10, 11, or 12 Grade	
	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing	Increasing	Decreasing
	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Family Relationships	1.89	1.72	2.32	2.27	2.43	2.43	2.42	2.38
7.59	1.00	1.10	1.67	1.69	1.60	1.69	1.86	1.92
7.60	3.14	1.60	2.82	2.59	3.15	2.97	2.92	2.75
7.61	3.14	1.60	2.92	2.57	3.25	3.12	2.90	2.92
7.62	1.25	1.40	2.25	2.10	2.52	2.45	2.27	2.23
7.63	2.77	2.88	2.46	2.26	2.11	2.51	2.56	2.44
7.64	1.44	1.50	2.42	2.52	2.60	2.50	2.63	2.50
7.65	1.44	1.88	2.35	2.35	2.54	2.44	2.35	2.34
7.66	2.57	2.63	2.10	2.41	2.23	2.25	2.40	2.27
7.67	1.06	1.40	2.08	2.18	2.06	2.17	2.06	2.14
7.68	1.12	1.40	2.05	2.03	2.25	2.23	2.24	2.27
Consumer Education	2.34	1.15	2.03	1.84	2.25	2.25	2.31	2.13
8.69	1.71	1.40	2.23	2.21	2.59	2.50	2.53	2.36
8.70	2.57	0.90	1.66	1.73	2.04	2.00	2.10	1.77
8.71	3.14	1.30	2.23	1.77	2.44	2.34	2.62	2.31
8.72	2.50	1.40	1.98	1.68	2.18	2.42	2.16	2.04
8.73	2.50	1.10	1.99	1.85	2.10	2.39	2.19	2.10
8.74	1.64	0.80	2.07	1.78	2.15	1.85	2.24	2.19

TABLE 30

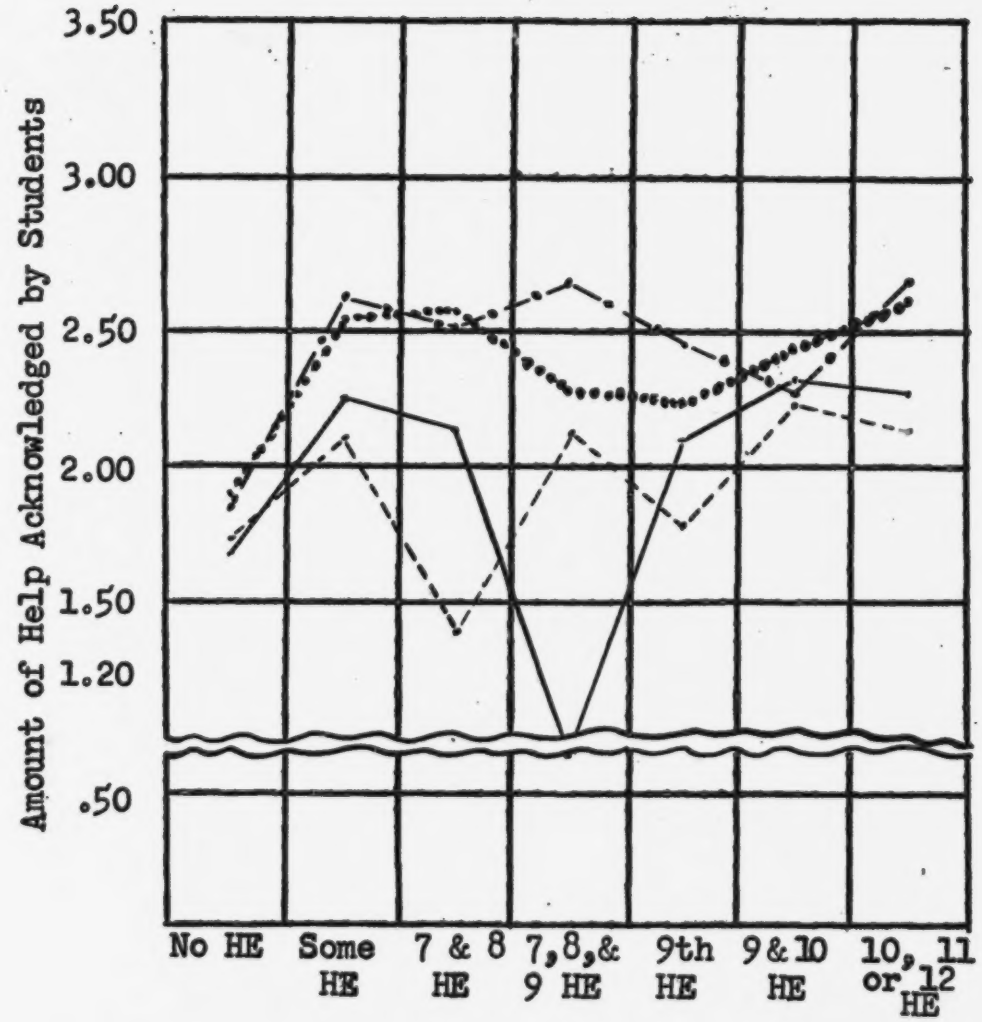
CORRELATIONS OF EIGHT AREAS OF HOME ECONOMICS, ALL-SCHOOL GRADES, AND HOME ECONOMICS AVERAGE GRADE FOR GIRLS (FROM INCREASING AND DECREASING GROUPS) WHO HAVE HAD HOME ECONOMICS IN HIGH SCHOOL

School Categories	Correlations (Parts I and V, Questionnaire)								
	Child Dev.	Clo & Groom	Food Nut.	Family Health	Home Mgt.	House Furn.	Family Living	Cons Ed.	All Sch. Grade	HE Grade
Increasing enrollment (759)										
Child Development		.56	.55	.59	.56	.54	.59	.47	-.07	.07
Clothing and Grooming			.72	.61	.68	.62	.58	.58	-.06	.13
Foods and Nutrition				.65	.72	.58	.56	.55	-.03	.14
Health of the Family					.69	.61	.64	.57	-.03	.03
Home Management						.73	.70	.68	-.11	.05
House and Furnishings							.73	.70	-.15	.02
Family Relationships								.73	-.09	.01
Consumer Education									-.09	.02
All-school-subject grade										.52
Home ec. average grade										
Decreasing enrollment (1,065)										
Child Development		.56	.53	.45	.57	.55	.53	.48	-.13	.001
Clothing and Grooming			.73	.53	.70	.62	.55	.56	-.07	.14
Foods and Nutrition				.64	.75	.59	.53	.55	-.03	.09
Health of the Family					.66	.55	.57	.54	-.06	-.02
Home Management						.73	.66	.67	-.09	.06
House and Furnishings							.70	.69	-.16	-.04
Family Relationships								.70	-.15	-.03
Consumer Education									-.14	-.01
All-school-subject grade										.46
Home ec. average grade										

TABLE 31

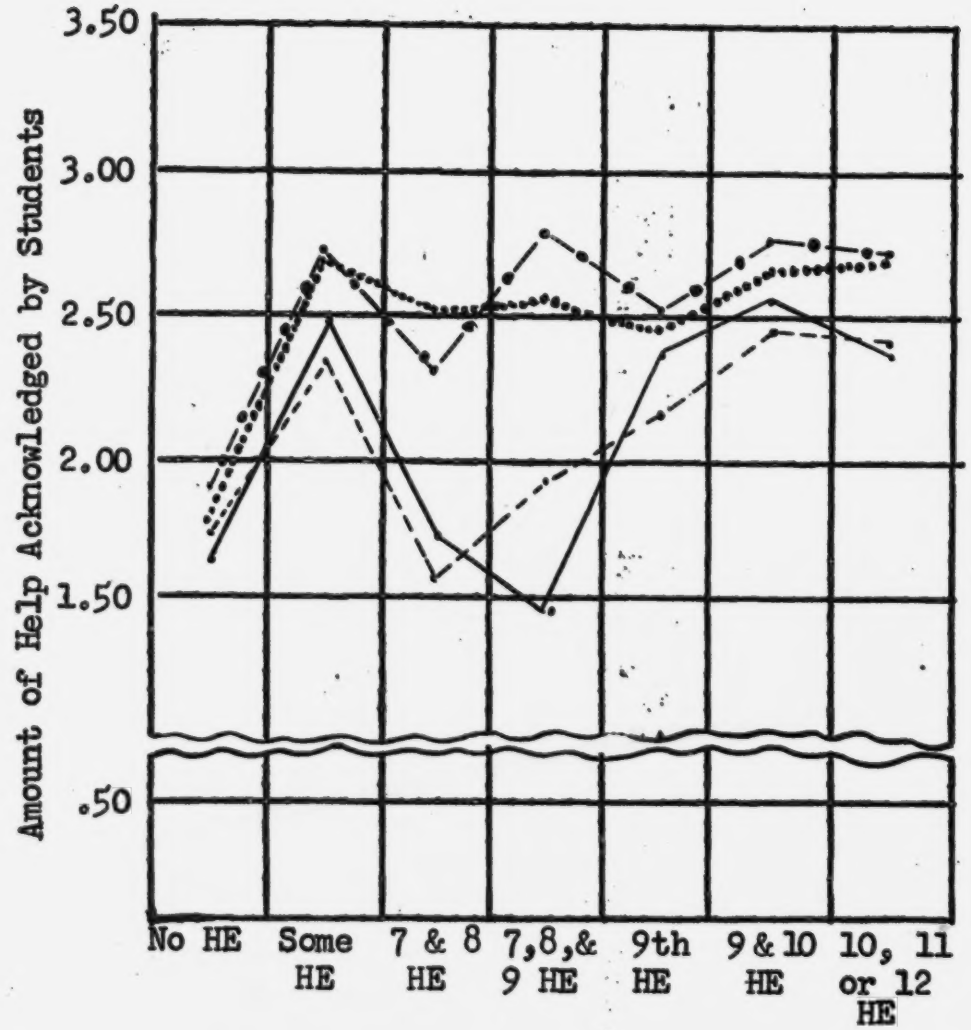
CORRELATIONS OF EIGHT AREAS OF HOME ECONOMICS AND ALL-SCHOOL-AVERAGE GRADE FOR GIRLS (FROM INCREASING AND DECREASING GROUPS) WHO HAD NOT HAD HOME ECONOMICS IN HIGH SCHOOL

School Categories	Correlations (Parts I and V of Questionnaire)								
	Child Dev.	Clo & Groom	Foods Nut.	Family Health	Home Mgt.	House & Furn	Family Living	Cons Ed.	All School Grade
Increasing enrollment (117)									
Child Development		.74	.70	.51	.61	.60	.46	.38	-.34
Clothing and Grooming			.86	.60	.75	.75	.43	.54	-.27
Foods and Nutrition				.70	.78	.72	.45	.54	-.22
Health of the Family					.74	.54	.62	.54	-.002
Home Management						.82	.72	.73	-.13
House and Furnishings							.52	.62	-.24
Family Relationships								.68	.12
Consumer Education									-.08
All-school-subject grade									
Decreasing enrollment (189)									
Child Development		.75	.74	.57	.77	.73	.58	.63	-.19
Clothing and Grooming			.84	.58	.80	.77	.53	.60	-.30
Foods and Nutrition				.67	.83	.78	.52	.62	-.27
Health and the Family					.71	.57	.60	.60	-.04
Home Management						.80	.66	.75	-.16
Housing and Furnishings							.60	.69	-.21
Family Relationships								.64	-.02
Consumer Education									-.15
All-school-subject grade									



Key: "Wish For Some or More" ___Inc. ---Decr.
Did Not Check -.-Inc. ...Decr.

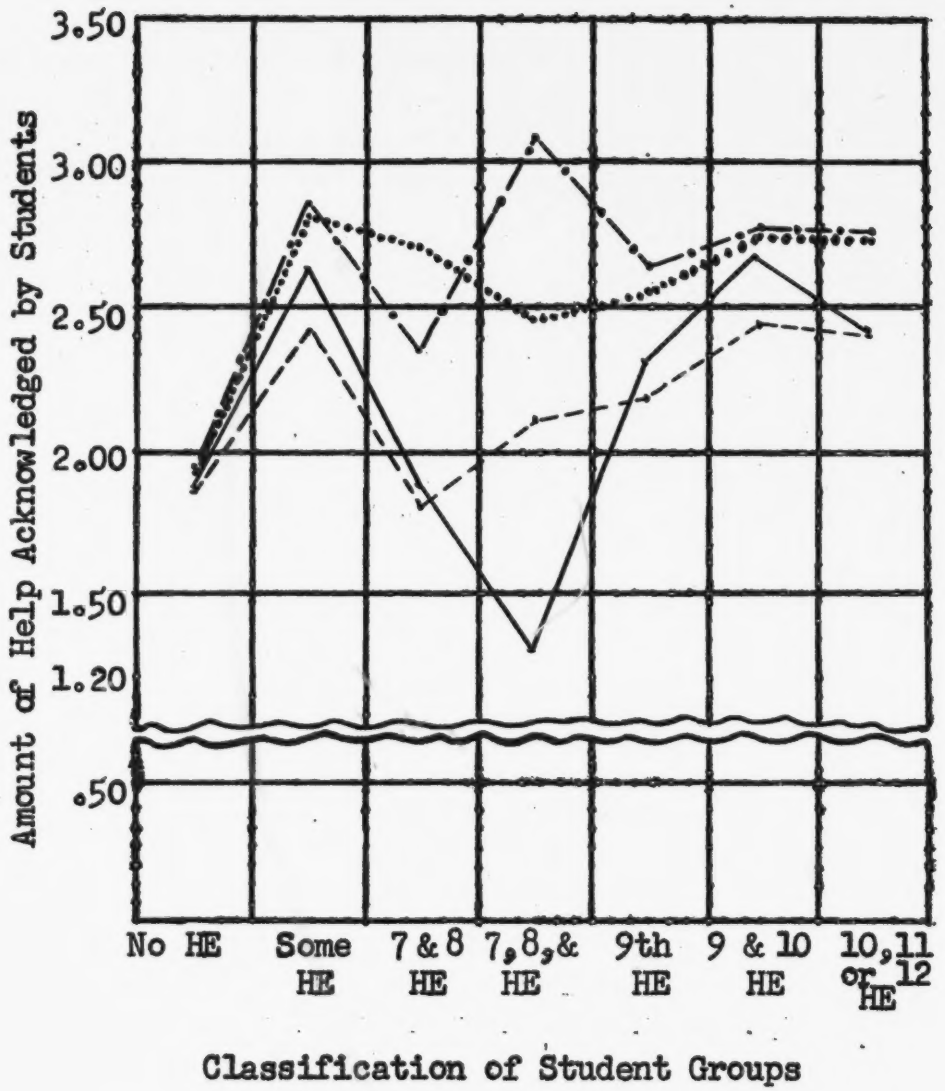
Figure 2. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Child Development.



Key: "Wish For Some or More" ___Inc. ---Decr.
Did Not Check -.-Inc. ...Decr.

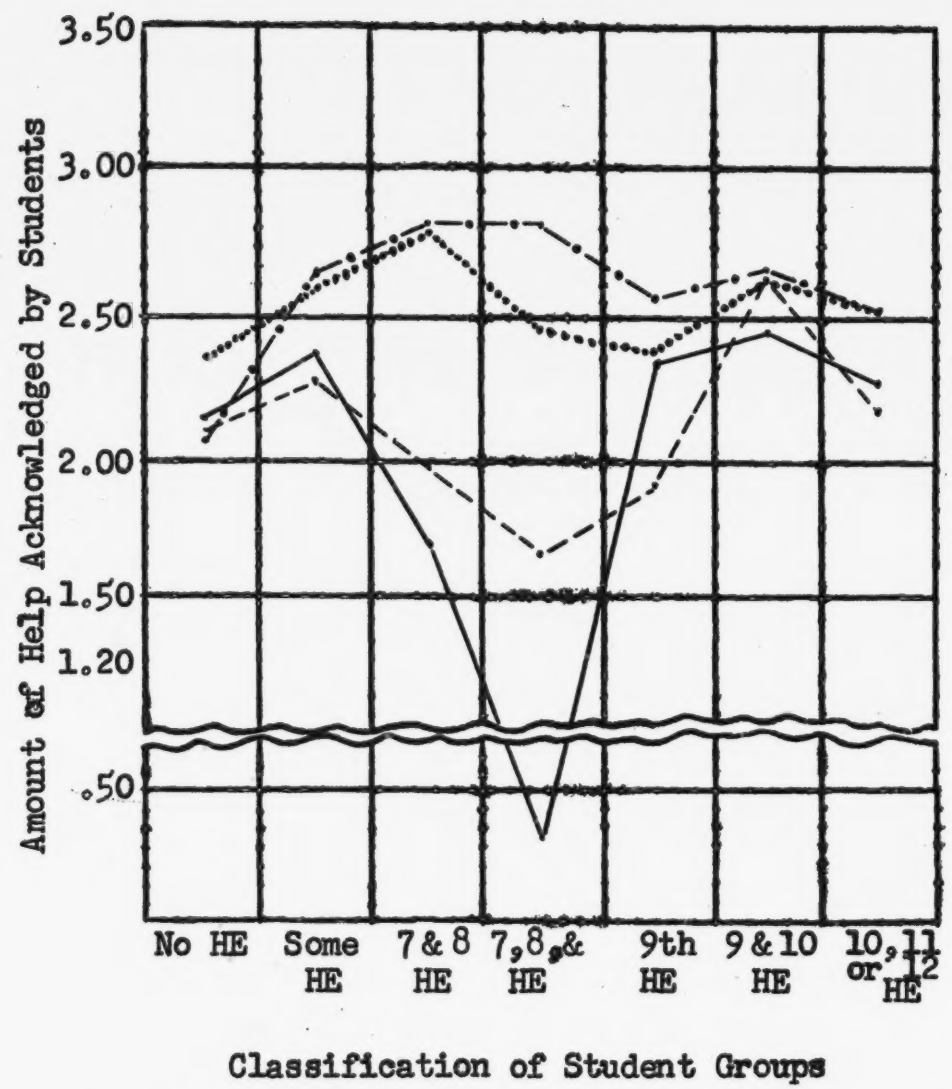
Figure 3. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Clothing and Grooming.

18



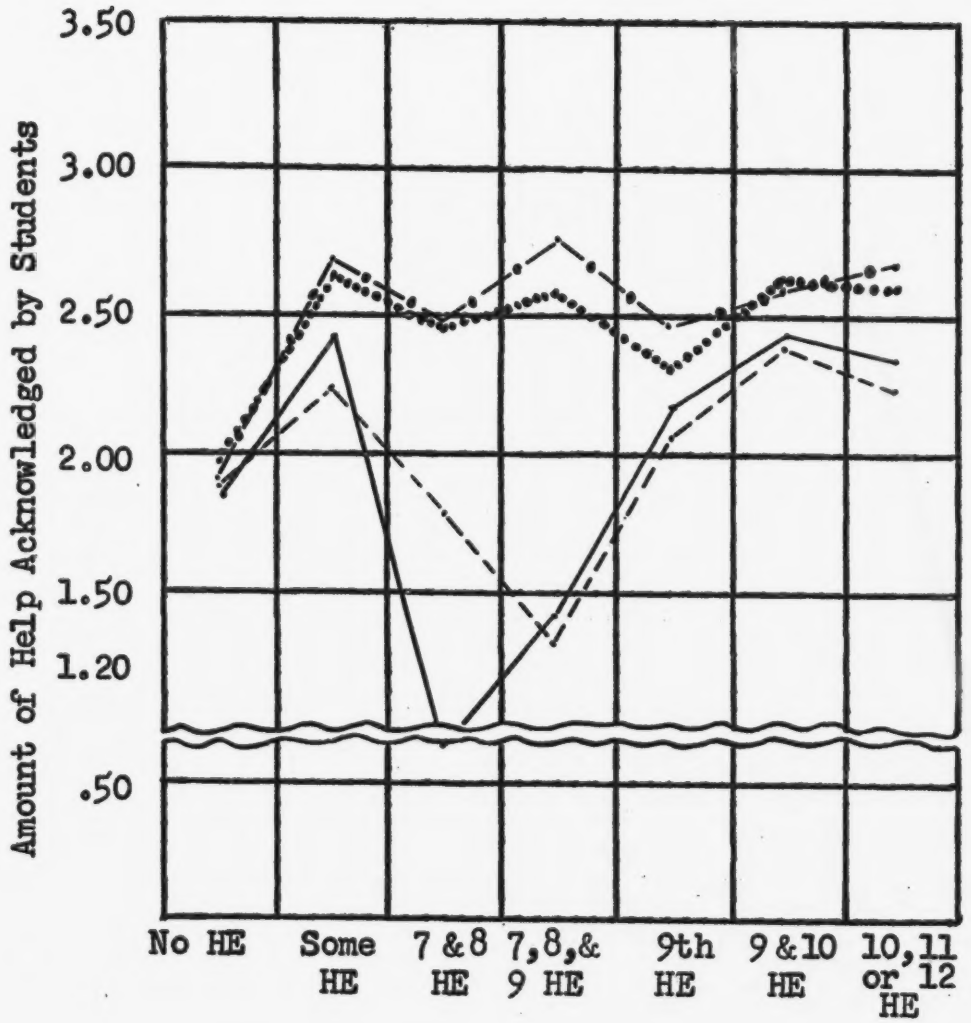
Key: "Wish For Some or More" —— Inc. ---Decr.
Did Not Check —.— Inc. ...Decr.

Figure 4. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Foods and Nutrition.



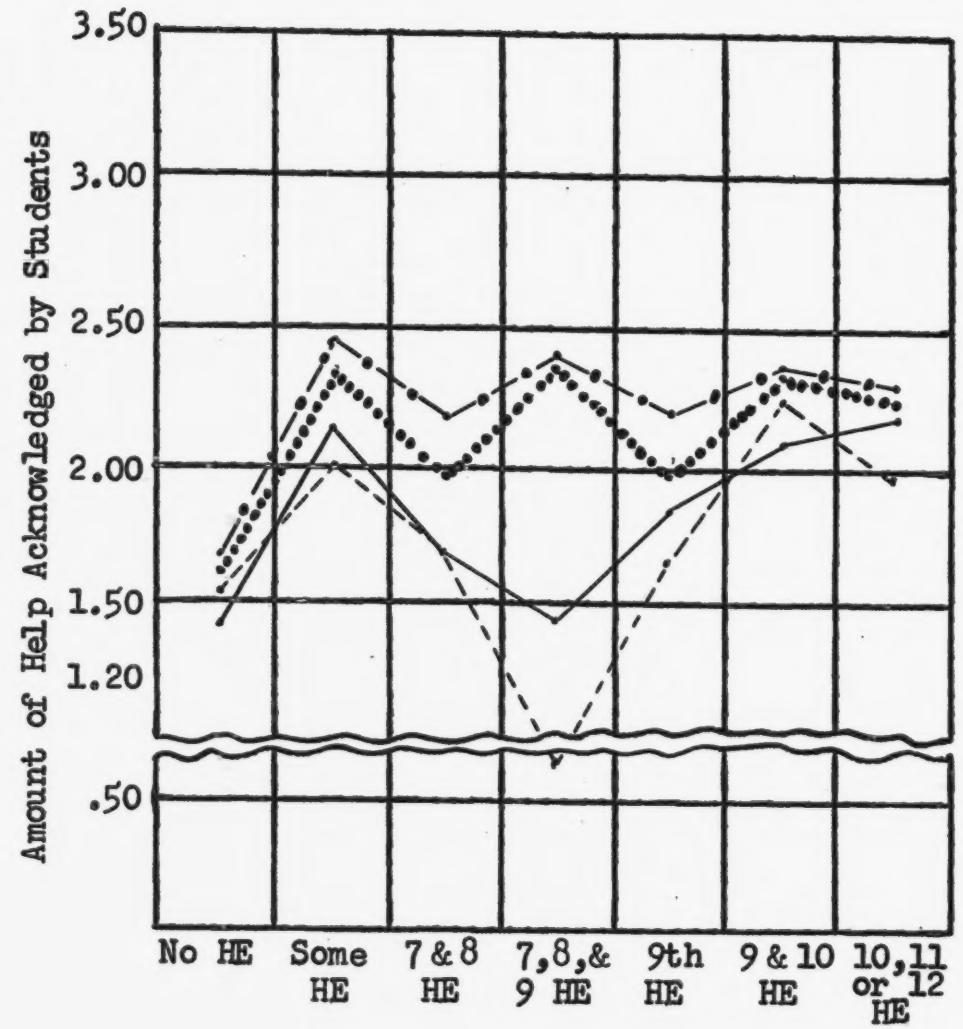
Key: "Wish For Some or More" —— Inc. ---Decr.
Did Not Check —.— Inc. ...Decr.

Figure 5. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Health of the Family.



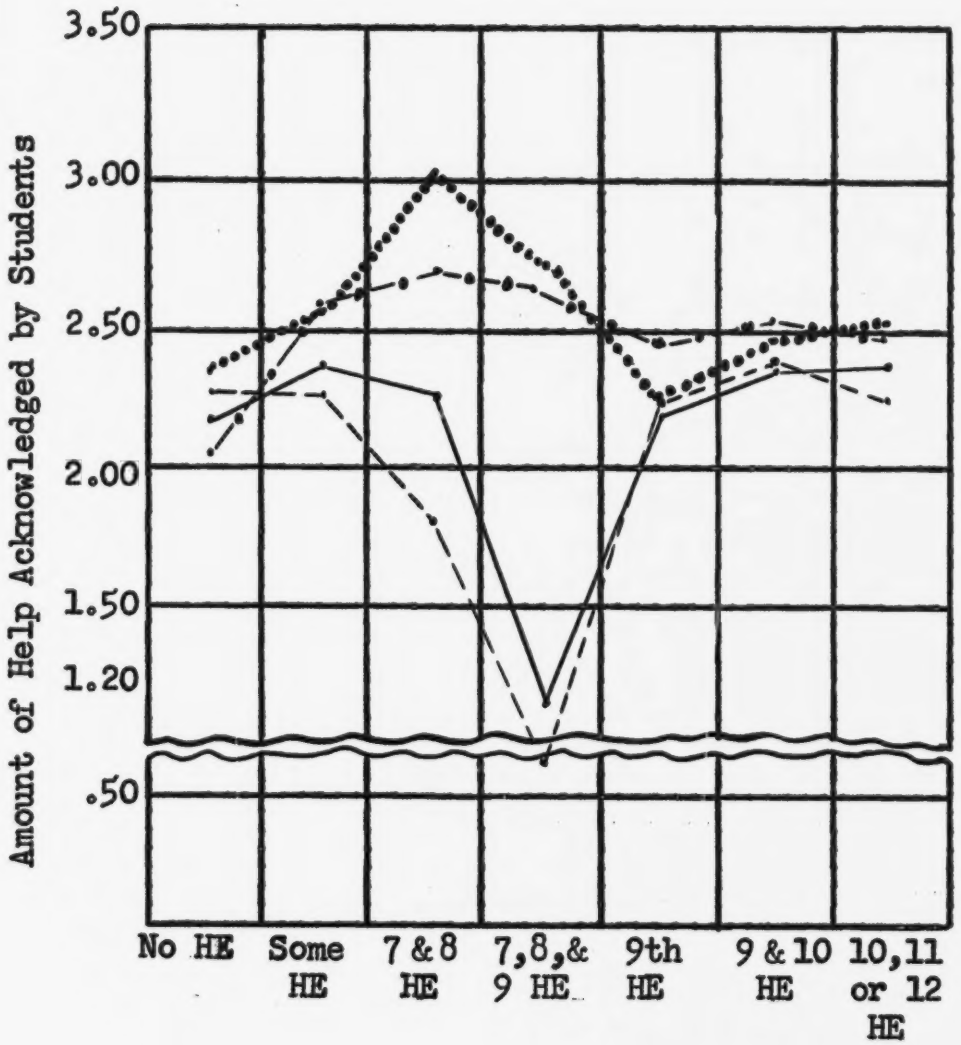
Key: "Wish For Some or More" ___Inc. ---Decr.
Did Not Check _._Inc. ...Decr.

Figure 6. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Home Management.



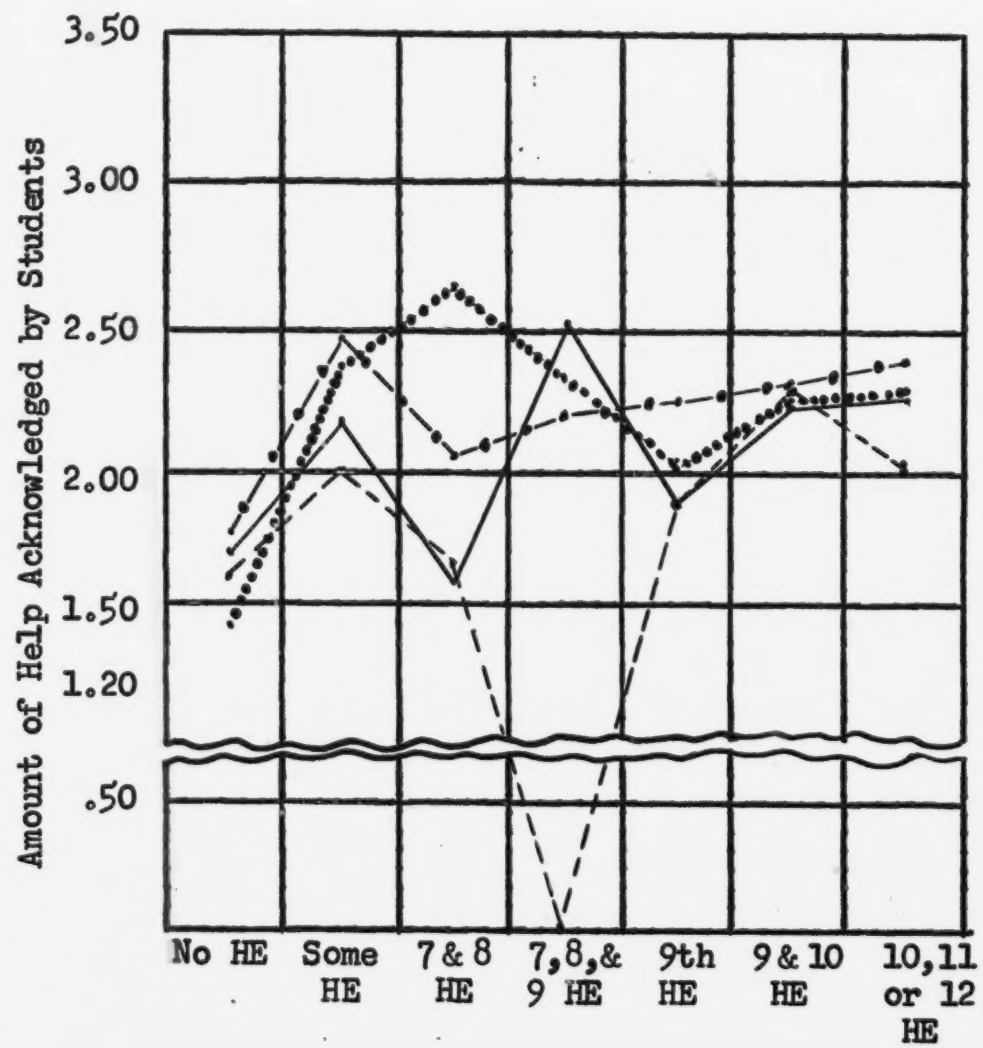
Key: "Wish For Some or More" ___Inc. ---Decr.
Did Not Check _._Inc. ...Decr.

Figure 7. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Housing and Home Furnishings.



Key: "Wish for Some or More" ___Inc. ---Decr.
Did Not Check _._Inc. ...Decr.

Figure 8. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Family Relations.



Key: "Wish for Some or More" ___Inc. ---Decr.
Did Not Check _._Inc. ...Decr.

Figure 9. Mean values of help acknowledged by students from the two enrollment groups when some students checked the "Wish for Some or More" column and some did not in the area of Consumer Education.

VT 00023

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ED013338

A PILOT RESEARCH PROJECT OF TECHNIQUES USED IN TEACHING A UNIT ON CHILD DEVELOPMENT

Home Economics Education
College of Education
University of Kentucky
1965

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Research projects in Home Economics Education in Kentucky are coordinated through a Research Committee. The Research Committee is made up of two members of the home economics supervisory staff, State Department of Education and three members from three institutions of higher education in Kentucky. The Committee's responsibilities center on selection of research projects and development of general guides. The members from the institutions of higher education constitute a research Team. The Team members plan research projects, execute the procedures, summarize the data, write the report, and disseminate the findings.

INTRODUCTION

Enrollment in Home Economics in High Schools in Kentucky[1] was completed in 1963. The direction for research projects in Home Economics Education in Kentucky was determined, in part, from the findings and recommendations of the Enrollment study.

The Enrollment study revealed that the quality of the home Ecoconims program was the most influential factor in causing girls to elect to take or not to take home economics. Two factors influenced pupil enrollment in home economics. They were teaching techniques used and the depth of learnings in the seven areas of home economics. Child development, consumer education, and housing and home furnishings were the areas of home economics that ranked lowest in amount of help received by the girls in senior-high school.

With this background of findings from the Enrollment study, a pilot research project was organized to deal with improving the quality of teaching child development. The research project had as its purpose evaluating the effectiveness of procedures used in teaching a unit on child development.

The research Team[2] cooperated in the project. The planning of the project and the seminar held for the participating teachers of home economics was done by the research Team. Team members assumed responsibilities for developing evaluation devices, for analyzing the lesson plans, for analyzing the teachers' observations of pupils' attitudes toward small children, for designing the programs, for analyzing the data at the Computing Center, and for analyzing the pupils' written statements for generalizations regarding young children. The report to the State

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[1] Ruby Simpson, Lucile Stiles, and Anna M. Gorman. Enrollment in Home Economics in High Schools in Kentucky. Lexington, Kentucky: University of Kentucky, College of Education, August, 1963.

[2] Ruby Simpson, Home Economics Department, Murray State College, Murray; Lucile Stiles, Home Economics Department, Western Kentucky State College, Bowling Green; and Anna M. Gorman, Coordinator, College of Education, University of Kentucky, Lexington.

Department of Education was prepared by the reasearch Team. This publication was prepared by the Coordinator for distribution to the home economics teachers in Kentucky.

Objectives

The research project "A Pilot Study of Techniques Used in Teaching a Unit on Child Development" was to be completed within the 1963-64 school year. Therefore, the objectives of the project were limited to those aspects of such a study which could be completed during this period. The objectives were:

1. To develop devices for use in evaluating change in pupil (a) attitudes toward young children and (b) developing generalizations related to child development.

2. To develop a method of determining teaching techniques used by teachers.

3. To determine the relationship between the procedures used in teaching and the pupil's attitudes toward an understanding of young children.

4. To assess the ability of pupils to generalize on matters related to child development.

The Teaching Unit

The first unit on child development is usually taught in Kentucky at the 9th grade level, Home Economics I. This unit "Living with Small Children"[1] was selected as the teaching unit for the research project.

Time to teach the unit was limited to four weeks. The unit was organized by the research Team to include four topics with 14 goals. The generalizations or "Big Ideas" which appeared to be relevant, or to apply to the goals, were selected for the list of child development generalizations developed at the Merrill Palmer Workshop in the summer of 1963. The generalizations selected were further refined by the research Team and the participating home economics teachers. The topics, goals, and generalizations used in the research project appear in the Appendix, pages 15 to 18.

The Hypotheses

The research project was organized to collect data for analysis related to the following hypotheses.

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[1]Kentucky Home Economics Curriculum Guide, Frankfort, Kentucky: State Department of Education, Division of Vocational Education, June 1955, p. 37.

1. Problem solving is an effective procedure to use in teaching child development.

2. A variety of experiences is needed to develop generalizations and to make applications.

3. Effective teaching procedures include:

   a. Working on a problem recognized by the pupils
   b. Guiding pupils to secure information with a purpose
   c. Leading pupils to develop statements of generalizations
   d. Encouraging pupils to make use of generalizations
   e. Providing experiences which are appropriate for the learning levels of the pupils
   f. Guiding pupils to evaluate progress made toward the goal or solution of the problem.

4. Experiences with children are instrumental in developing a positive attitude toward children.

Selection of the Home Economics Teachers

Each member of the research Team visited public schools located near her college or university. The name of the home economics teacher(s) and the administrator of the school were submitted to the State Director of Home Economics Education if: 1) the teacher and administrator had positive feelings toward the project; 2) the unit in child development had not been taught; 3) there appeared to be excellent rapport between the teacher and the pupils; 4) the teacher could have released time for a training session; and 5) the teacher and pupils were not too disturbed by having an observer in the classroom. The State Director of Home Economics Education contacted the administrators of the schools selected for the research project. Seven schools with nine home economics teachers agreed to participate in the project. There were 18 classes of Home Economics I, with 315 pupils participating.

Procedures

1. A research seminar was held for the nine participating teachers at Bowling Green in January, 1964. The research Team reviewed the research project, reviewed principles of lesson planning, discussed and altered the generalizations related to child development, provided each home economics teacher the evaluation forms to be completed during the research project, and provided each teacher time to study materials and aids which could be helpful in teaching the unit.

2. In February, the teachers returned to the Coordinator the "All About Her" questionnaires for all 315 pupils. The questionnaire requested personal information about each pupil in the research project. Since no particular sampling technique was used to select the participating pupils, the data collected were used to assist in determining how pupils and classes were alike or different.

3. Also in February, the teachers sent the Coordinator the completed

check list on "What Experiences Have You Had with Young Children?" The check list gave data relative to brothers and sisters, experiences in caring for children, and experience and interest in 22 activities with young children.

4. Lesson plans were used to determine the techniques each teacher used. The teachers agreed to send lesson plans to a member of the research Team each week. All changes in the lesson plans which occurred during the actual teaching were noted on the plans. To determine if the pupils recognized the techniques used by the teacher, each class member was given five minutes each day to complete a form "Today We". The information recorded in the forms, completed by the students, was used to compare with the teachers' lesson plans. Approximately 180 daily lesson plans and 6,000 pupil forms were analyzed.

The lesson plans gave a fair picture of the kinds of techniques used by the teachers. However, a judgment could not be made on how effective each teacher was in using the techniques and the appropriateness of the technique for the pupils and the goals.

The research project estimated the effectiveness of the techniques used by gains in attitudinal scores and gains in knowledge of generalizations about young children. The changes (or gains) were determined by using the pretest technique (giving tests to pupils before the unit was taught) and the post test technique (giving the same tests after the unit was completed.)

5. Since the research project was concerned with the effect of techniques of teaching child development upon attitudes of pupils toward young children, an attitudinal check list was developed. The principal or guidance counselor in each school gave the attitude check list, "How Do You Feel About Young Children?", before the unit was started. The only limitation given to the teachers was that 20 lessons had to be completed by the middle of May. The post test was given to the pupils the day after the unit was finished. The pre-and post-tests were sent to the Coordinator for scoring.

6. The research project was also concerned with the effect of techniques used in teaching a unit in child development upon the pupils' understanding of the "Big Ideas" or generalizations related to the unit. A multiple-choice test "Living with Small Children" was developed. The principal or guidance counselor in each school gave the pupils a knowledge test before the unit was started. The post test was given to each pupil the day after the unit was completed. The pre-and post-tests were sent to the Coordinator for scoring.

7. One of the objectives of the project was to actuate the ability of pupils to develop generalizations related to the area of child development. Since the oral evolving of generalizations during the classroom experiences could not be accurately recorded (because of the lack of continuous observations), a device, "In class this week, the 'Big Ideas' I learned were", was developed. Once a week each pupil was given 15 minutes to write down the "Big Ideas" or generalizations she had learned about young children during the week. The completed forms were sent to the Coordinator, weekly.

The Coordinator and graduate student in Home Economics Education evaluated the pupils' written statements from the "This Week" form. A written expression was judged to be a generalization when the basic ideas and/or principles of child development were involved in the statement. Approximately 1,250 completed forms were returned, and 292, or 92 percent of the 315 pupils wrote 3,861 statements which were judged to be statements of generalizations about young children.

8. To validate the findings obtained from the attitude check list, the teachers were encouraged to record observations of the pupils when attitudes toward children were expressed. The completed observation forms were returned periodically during the instructional period.

Summary and Conclusions

Personal Data about the Pupils

When the variables related to personal characteristics were considered, the pupils enrolled in the 18 Home Economics classes in the seven high schools were more alike than different. There were no significant differences among the 18 classes in the following categories.

1. Ninety-nine percent of the girls were between 14.1 and 15 years of age.

2. Most of the pupils were living in households with both mother and father.

3. Seventy percent of the pupils had fathers with occupations in the skilled, unskilled, or farming categories.

4. Less than 25 percent of the fathers had a high-school education or better.

5. Seventy percent of the mothers were full-time homemakers; those who were employed outside the home had jobs which which classified them as unskilled laborers.

6. Thirty-one percent of the mothers had completed high school.

7. Eighty-five percent of the pupils came from homes where there were seven or more modern conveniences; 57.2 percent were from homes with nine or more conveniences.

8. Twenty-seven or 8 percent of the 315 pupils did not have brothers or sisters.

9. Fifty percent of this group had three or less brothers and/or sisters. Four and one-tenth percent had nine brothers and/or sisters. The age groupings were evenly distributed among younger and older brothers and sisters.

10. Sixty-eight percent reported they did not have a single

health handicap.

11. Eighty-eight percent of the group were not paid for taking care of their brothers or sisters.

12. Seventy-one percent, or 311 of the pupils, said they did babysitting.

    a. Sixty-one and eight-tenths percent reported being paid for babysitting.
    b. The pupils did babysitting "occasionally" rather than according to a regular schedule.
    c. The pupils did babysitting for a two-hour period, for the entire afternoon or evening, or all day.

13. The teachers rated 40 to 60 percent of the pupils enrolled in their classes as being "above average" in personality characteristics: attractiveness; likableness; friendliness; sportsmanship; cooperativeness, and enthusiasm. The teachers rated their pupils "average" on maturity of behavior.

14. The teachers listed intelligence scores for 272 or 89 percent of the pupils. The pupils by classes varied in average intelligence. One class had an average intelligence score of 84.9; another class an average of 112.6. Even though there was a wide range in average class intelligence, these differences had little relationship 1) to the ability of pupils to write statements of generalization ($r = .10$), 2) to score high on the post-attitude check list ($r = .23$), and 3) to the ability to score high on the post-knowledge generalization test ($r = .20$)

There was a significant difference in one category of personal data for the pupils. The pupils in some classes resided in areas which were mostly rural, while others resided mainly in urban areas.

Pupils Interest in Young Children

There were 314 pupils who completed the form: "What Experiences Have You Had with Young Children?". One part requested a checking of an interest column eliciting 22 experiences with young children. Approximately 70 percent checked 10 or more of the 22 experiences in the interest column. There were no significant differences among the 18 classes regarding the number of interest items checked. Thus, the students in the study were interested in learning more about young children. This conclusion is reinforced by the fact that only 14.5 percent checked 10 or more items in the "no" interest column.

Changes in Attitudes

The "How Do You Feel About Young Children?" check list was completed by the 315 pupils both as a pretest and as post-test measure of attitude towards children. A wide range of individual scores resulted on both

administrations of the attitudinal check list. The highest individual score on the pretest was 139.5 out of a possible 150 points; the lowest 51. The highest individual score on the post-test was 138.5; the lowest 90. The average score for the 18 classes on the pretest was 120.52; the post-test average 122.27 -- a positive gain of 1.75 points on the post test over the pretest average. Therefore, the check list was discriminating, and the pupils had more positive attitudes toward children (as measured by the "How Do You Feel About Young Children?" check list) after they had studied the unit on child development.

Even though no statistical tests of significance could be computed among the average scores made by the different classes, some of the classes had greater positive gains in average scores than did some of the other classes. Class #7 made the greatest gain in average score on the attitude check list between the pretest and post test -- a gain of 7.8 points. Class #15 made the second greatest gain in average -- gain of 6.2 points.

Reactions of the Pupils

As the home economics teachers taught the unit "Living with Small Children," they kept a record of the reactions of their pupils toward young children and also a record of pupils' reactions toward various class experiences. Of the total observations made, 249 evidenced positive pupil responses toward young children. The positive response data from the forms were analyzed 1) by categories of types of attitudes expressed and 2) by technique employed by the teacher at the time the reaction occurred.

Of the 249 positive responses listed, 105 or 41 percent were classified as observations revealing an increased interest in young children. For example, a teacher wrote "I observed how wide-eyed and attentive the children were as they listened for details of a story the librarian told about a small child." Sixty-nine responses were tabulated in the change of attitudes category. Forty-seven observations gave clues that the pupils were interested in gaining a better understanding of children. A teacher wrote that her " . . . pupils were searching for information in most of the libraries within a 20-mile radius of the school." Twenty-eight were classified as public reactions toward the unit.

At the time the 249 positive reactions were occurring, the teachers were using 16 different techniques. The largest proportion, or 56 percent, of reactions reported by teachers occurred as the pupils entered into discussions, gave reports of readings, participated in "Buzz" sessions, completed check lists, and participated in "popcorn" sessions. This suggested that pupils developed an interest in young children and were apt to do so when they were participating in the learning experience themselves.

Changes in Knowledge

The "Living With Young Children" pre-and post-tests were given to 315 pupils to determine if the pupils had a better understanding of the "Big Ideas" or generalizations related to child development after completing the unit. The highest possible score was 40. The average score made by the group on the pretest was 15.67 points; the average score on the post test was 16.29 -- a positive gain was .62 of a point. The highest score made on the pretest was 32 points; the lowest 2. The lowest score made by

a pupil on the post test was 3. This test was very difficult for the pupils as revealed by the number of items missed on both the pre- and post- tests.

No statistical treatment could be made of the test-score data, related to differences in average class scores for the 18 classes. Some of the classes made greater gains in average scores. Class #8 made the greatest gain -- 3.47 points. Class #2 made the second greatest gain -- 3.3 points.

Generalizations Written

Approximately 1,250 of the "Big Ideas" forms completed by the 315 pupils were returned for analysis during the teaching of the unit on child development. Each statement was analyzed before it was judged as to whether or not the statement was a generalization about young children. Of all the statements written by these pupils, 3,861 were judged to be generalizations about young children.

The average number of generalizations written per pupil was 12.31. The average range of statements per student per class was 44.87 to 2.47.

No statistical analysis was used to establish a significant level. However, great differences existed among the classes. The pupils in class #7 wrote the greatest number of statements of generalizations about young children -- an average of 44.87 per pupil. Class #8 ranked second highest with an average of 28.82 statements per class member.

No classification was made regarding the levels of the generalization written. The generalizations written by the pupils were analyzed by comparing them with the generalizations planned by the teachers. A few examples of the comparisons follow.

Teacher Planned	Written by the Pupils
Habit is a behavior which through practice is accomplished without conscious thought of what is being done.	Habits are things we do and because of repetition, we are unconscious of the doing.
Each individual is unique in his rate of development.	Not all people develop at the same rate.

Twenty-three pupils or 7.3 percent of the 315 failed to write a single generalization during the four-week unit. Some examples of their written expressions, which are not generalizations, appear below.

"The 'Big Ideas' I learned this week were"

--"the types of clothing children should wear and what we should look for in choosing this clothing"

--"the value of play and the characteristics of good equipment."

The range in IQ's for the group of "non-writers of generalizations"

ranged from 79 to 120; the average was 92.43. From this range in intelligence scores, it is evident that (1) motivation and interest of pupils and (2) the way they were taught, was a more powerful influence on ability to write statements of generalization than intellectual ability. The correlation between intelligence scores and number of generalizations written for the group was r = .10, which revealed an almost negligible relationship.

Techniques of Teaching Used

The nine teachers were free to select the techniques they wanted to use in teaching the "Living with Young Children" unit. They sent in 180 lesson plans for analysis during the time they dealt with the unit. There was a quantitative aspect of reporting of the techniques used --- how many different techniques were used? The qualitative aspect of techniques was only done in relationship to 1) positive changes in attitudes toward children, 2) positive changes in understanding of generalized statements about children, and 3) ability to write generalizations about children.

Analysis of Techniques for the Entire Group

A variety of techniques was used by the teachers. They used an average of 14 teaching techniques during the 20-teaching days. One teacher utilized 22 techniques in teaching the unit.

No conclusions were reached regarding the effect of classroom observation on children. The teachers did not use sufficient classroon experiences with children to enable valid conclusions to be drawn.

Four aspects of the teaching process were prevalent in the lesson plans used by teachers. The first aspect had to do with "searching for" and acquiring information pertinent to the problem. The teachers used techniques such as having students read references, showing of films and filmstrips, and use of guest speakers.

The second phase common in the techniques used by the teachers was "talking about" or sharing of the findings by the pupils. The pupils discussed, listed, "buzzed", and reported.

The third aspect of the teaching-learning process, which all teachers utilized, involved assignments. The 315 pupils who participated were required to read, search for additional information, prepare reports, and observe children outside-the-classroom. The use of this technique may account (in part) for the teachers and the pupils being able to complete the scope of generalizations, which they did, in four weeks.

The fourth aspect of teaching, which six of the nine teachers used, had to do with summarizing or drawing conclusions related to the problem under study.

Eight of the nine teachers utilized, to a certain extent, the problem-solving approach to learning. Results indicated that pupils under these teachers were better able to write statements of generalizations.

Techniques Judged to be Most Effective

The techniques of planning and teaching used by one of the home economics teachers were analyzed. The techniques were analyzed because the pupils in the two classes she taught: 1) achieved the greatest positive changes in attitudes toward children; 2) made the greatest gain in average score related to understanding of generalizations about young children, and 3) wrote the greatest number of generalized statements about young children. The following findings were drawn from analyzing the techniques used by this teacher.

1. Lesson planning

   a. Different lesson plans were used for the two classes, thus making allowances for individual differences between the two classes.

   b. The original list of generalizations were reworded so that the statements were more appropriate for the problems and the goals of each class.

   c. Generalizations were written out in the lesson plans.

   d. Many generalizations related to young children were incorporated in the teaching situation.

2. Techniques used.

   a. The greatest variety of teaching techniques was used by this teacher during the four weeks.

   b. References, films and filmstrips, demonstrations, exhibits, bulletin boards, guest speaker, charts and posters, and observation of children were techniques utilized to assist the pupils to gain knowledge of young children.

   c. "Brain storming," skits, discussions, "buzz" sessions, reports, and debates were planned which enabled the pupils to be actively involved in learning by expressing their findings and ideas.

   d. Techniques were used which allowed the pupils the opportunity to summarize the data presented in the class. For example, the pupils listed conclusions and summaries on the board.

   e. The greatest number of assignments were made during the teaching of the unit. The assignments varied for the different pupils.

   f. All steps in the problem-solving procedure were more consistently used in the teaching of the lessons.

3. Class unit planning

   This teacher chose not to teach both of her classes at the same time. The second class was started approximately two weeks after starting the first class.

Clues for Teaching and Evidence from the Study

Even though statements of a generalized nature regarding effectiveness of different teaching procedures cannot evolve from one pilot research project, invaluable clues emerge which give direction for improving the quality of teaching. The following clues regarding the effectiveness of teaching procedures, with evidence accumulated from the research study, are enumerated.

Clues for Effective Teaching Procedures	Evidence from the Pilot Study
1. The program of study in Home Economics I should contain a unit in child development because pupils of this age are interested in learning about young children and they need these learnings.	1. Seventy percent of the group checked the interest column for 10 or more of the 22 experiences with young children. Only 14.5 percent checked 10 or more items in the "no" interest column. The pupils were interested in learning about young children. Seventy-one percent of the girls said that they did baby-sitting. Also, 60 percent had some responsibilities for the care of younger children in their families. The girls need such experiences.
2. Each class studying child development should have lessons planned especially for individual needs, interest, and abilities of the pupils.	2. The greatest positive changes in attitudes toward young children, in understanding of generalizations related to young children, and in ability to develop statements of generalization about young children, occurred in situations where the two Home Economics I classes were taught by a teacher who made different lesson plans for each class.
3. When a teacher is assigned two classes of Home Economics I to teach, the teaching of the "Living with Young Children" unit is more effective when the two classes do not concide on the block plan. When similar units are not taught during the same time period, the teacher is more effective in planning for the individual class needs. And, this practice may remove some of the monotony and repetitiveness associated with reteaching the same lesson the same day.	3. The plan for having one class start the unit on child development approximately two weeks later than the other, was done by only one home economics teacher in the research project. The pupils in the two classes which were involved in this type of planning made the greatest positive changes in attitudes toward young children, in understanding of generalizations related to young children, and in ability to develop statements of generalization about young children.

4. In planning for the learning experiences in a unit in child development, an interest check list should be given to pupils before the teacher does the pre-planning for the unit. Pupil-teacher planning should be used in setting up the goals for the unit.

5. When the child development learnings are centered on teaching for generalizations, teaching plans should be organized with focus on the "Big Ideas" or generalization of the unit.

6. In planning to teach for generalization, the teacher must provide (plan for) the pupils with the opportunity to express their discovery of "Big Ideas".

7. Lesson plans should contain the statements of generalization about young children which are to be taught. The statements of generalization should be in the language to be taught (in the teacher's own words.)

8. A variety of learning experiences (different techniques) contributes to effective changing of pupil behavior.

4. From the "What Experiences Have You Had with Young Children?" form, it was found that there were significant differences among the 18 classes related to depth of interest in the 22 activities. The pupils who made up the membership in the different classes were not interested in having similar learning experiences related to young children.

5. The nine home economics teachers cooperating in the research project planned for teaching of generalizations related to the unit. They were very successful. It was found that Home Economics I pupils were able to generalize about young children.

6. In the research project, the pupils were given 15 minutes each week to write the "Big Ideas" or generalizations about young children they had learned. The pupils wrote over 3,860 statements which were judged to be generalizations about young children.

7. One of the lesson-planning procedures used was the teacher writing statements of generalization in her own words on the lesson plans for each of the classes she taught. This procedure was effective because it enabled the pupils in two classes (taught by the teacher who employed this procedure) to be most successful in writing statements which were judged to be generalizations about young children.

8. The 315 pupils in the research project made positive changes during the unit in child development. They made higher average scores on the attitude and knowledge evaluation instruments. They wrote statements which were judged to be generalizations about young children. All of the pupils were taught by home economics teachers who used a variety of teaching techniques. An average of 14 different techniques was used, and one teacher utilized 22 different techniques.

9. In planning to teach for generalization, experiences related to collecting or gaining knowledge and understanding of young children must be provided. The experiences may include reading references, observing demonstrations, observing films and filmstrips, hearing guest speakers, or observing children.

9. All of the teachers planned for experiences which enabled pupils to search for and acquire information related to the problems they were encountering in child development. This procedure was judged to be effective since an overwhelming marjority of the pupils were able to write genealizations about young children.

10. Planning experiences which allow the pupils the opportunity to share their newly acquired information are essential for effective teaching. This aspect of teaching can be accomplished by planning for discussions, listing, "buzzing", and reporting.

10. All of the teachers who participated in the study made use of procedures which involved sharing of learnings by the pupils. For example, the teachers would follow-up a film with a class discussion.

11. In order for pupils to generalize on learnings, experiences should be planned whereby the pupils can arrive at conclusions involving the utilization of past and present understandings of young children.

11. Six of the nine teachers made use of this aspect of teaching for generalizations. They used techniques which encouraged pupils to draw conclusions about the problem. The teacher who used techniques which were judged to be most effective, utilized this step many times with the pupils during the teaching of the unit.

12. To enable pupils to be able to change attitudes, acquire understandings, and arrive at generalizations, assignments should be planned for class members. The assignments will be more effective when they are geared to the needs of individual pupils.

12. All of the teachers used the technique of assignments. The teacher who was judged to have used the most effective teaching techniques, gave continuing assignments during the unit and also gave attention to individualized needs in making the assignments.

13. The use of the problem-solving technique adds to the effectiveness of the teaching of the unit on "Living with Young Children."

13. Eight of the nine home economics teachers more consistently used steps involved in the problem-solving technique. The teacher who was judged to have used the most effective techniques utilized more steps in the problem solving-procedure the greatest number of times.

We know that when a person is involved in a research project changes are brought about. The project stimulated the home economics teachers quest for effective teaching. They said the pupils were very proud of the fact that they had participated in a research project dealing with effectiveness of teaching techniques. Teachers can help us to further understand what techniques are effective in the attainment of certain teaching objectives.

WHAT MIGHT THIS STUDY MEAN TO TEACHERS?

**If teachers are using some of the techniques which were judged to be effective, they should pat themselves on the back and continue to use them.

**If teachers pick up different ideas for planning (lessons and/or units), for use of techniques, for evaluating changes in pupils, they should incorporate them into their teaching in all areas of home economics.

**Teachers should try wording generalizations (found in the Appendix) so they are meaningful to them. Then, attempt to teach for the "Big Ideas" or generalizations in child development.

**Utilize the practice of taking 5 minutes each day and 15 minutes at the end of each week for pupils to reflect on what they have learned. Have the pupils put their ideas together by writing them down.

**If teachers desire to use some of the evaluation instruments involved in the study, they should write the Coordinator.

APPENDIX

TOPICS, GOALS, AND GENERALIZATIONS
"LIVING WITH SMALL CHILDREN"

TOPIC I. Understanding the characteristics of children from 1 to 6 years of age.

GOAL A. To understand the patterns of human development within the age range of 1 to 6.

GENERALIZATIONS

1. Human development is the emerging and expanding of capabilities of the individual to provide progressively greater facility in functioning.
2. The developmental processes are intra-related throughout life and are achieved through growth (change in size), maturation (change not induced by learning), and learning (change through experience.)
3. The processes of growth, maturation, and learning indicate that the development of a person has two aspects. A child "grows" and "grows up". He "grows" in size; he matures "grows up" as a person.
4. For each stage of development, certain behavior can be anticipated. When the sequence of development is known, experiences can be provided which allow for maximum development and preparation for the next phase of development.
5. Human development is modified and enhanced by experience. Nutrition, activity, rest, psychologic challenge, ability and opportunity to learn, security in affection, understanding and adequate discipline, and many other circumstances are of great importance in determining how fast and to what extent the potentialities of the child will be realized.

GOAL B. To understand how children of the same family and unrelated group may resemble or differ.

GENERALIZATIONS

1. Each individual is unique in his rate of development.
2. Since individuals differ in the rate of development, no two individuals are alike although there are similarities within any stage of development.

TOPIC II. Guiding the development of children from 1 to 6 years of age.

GOAL A. To understand the meaning of behavior, discipline, guidance, needs, habits, and self.

GENERALIZATIONS

1. Guidance of children means treating (handling) them with a combination of affection and discipline so as to enable them to form functional behavioral patterns for their stage of development.

2. Discipline is defined as those controls, rules or courses of action placed on children, which being neither permissive or submissive, functions as a means of learning the expectations of individuals and groups.
3. Behavior is defined as those actions of the child which can be seen with the maturity of the actions dependent upon the stage of the child's development.
4. Needs are basic drives or motivating forces which are essential for activity.
5. Habit is a behavior which because of practice is accomplished without conscious thought of what is being done.
6. The self is a unique biological structure with unique experiences, purposes, and values.

GOAL B. To understand the importance of guidance in the child's development.

GENERALIZATIONS

1. Individuals learn who they are and what they are from the inter-actions with those who surround them throughout life.
2. The kind of adult the child models (follows) is one of the important determiners in choosing his (the child's) values.
3. Human behavior is "set off" or motivated by certain basic drives, needs, or urges. These motivating forces vary according to the child's social-emotional experiences.
4. One of the basic aspects of maturity is the ability to understand and accept reality.
5. The more secure the individual the more open he can be in relating to the world about him.

GOAL C. To develop guides for assisting the child as he: 1) attempts to fulfill his pattern of developmental needs, 2) strives to form habits at the various stages of development, and 3) forms behavioral patterns in a manner characteristic of his stage of development.

GENERALIZATIONS

1. When an individual is free to be himself, his behavior tends to be consistent with his values.
2. One learns that his behavior is acceptable only by being accepted.
3. Evading experiences reduce the chance to learn skills and abilities needed to cope with situations.

GOAL D. To develop ability in guiding the behavior of children from 1 to 6 years of age.

TOPIC III. Playing as related to development in children from 1 to 6 years of age.

GOAL A. To understand the importance of play in the lives of children.

GENERALIZATIONS

1. Socialization occurs when an individual learns the ways of a given group so that he can function within it.
2. An individual's level of maturation, previous learnings, aspirations, and uniqueness determine his selection of learnings from a given experience.
3. Individuals seek relationship with others to satisfy the need for recognition, affection, self-expression, and empathy.
4. Identification is the process by which a person attempts to be like another person.

GOAL B. To recognize the relationship between kinds of play (including equipment used) and developmental levels.

GENERALIZATIONS

1. Creativity is the capacity to innovate, invent, or recognize elements in ways new to the individual.
2. The environmental climate the allows freedom for an individual to explore, to express, and to test, will foster creativity.
3. Play, including the equipment, is functional when it is geared to the stage of the development of the child.

GOAL C. To develop ability to guide children's play.

TOPIC IV. Caring for children from 1 to 6 years of age.

GOAL A. To understand the relationship of patterns of child development and caring for the child.

GENERALIZATIONS

1. An understanding of children is essential as a bases for providing the type of enviornment conducive to maximum development.
2. The older person is responsible for providing the environment in which a child develops.

GOAL B. To develop criteria for use in guiding the young child.

GENERALIZATION

1. Consitency in type of guidance from older persons tends to strengthen a child's pattern of behavioral response.

GOAL C. To understand the role of an older individual in the play-life of the child.

GENERALIZATION

1. Adults can establish relationship with children through guidance of play activities.

GOAL D. To recognize one's own assets and limitations in caring for small children.

GENERALIZATIONS

1. The more secure the older individual, the more open he can be in relating to the child's world.
2. An individual is never a completed being; he is always developing.
3. The process of coping is purposeful problem-solving behavior which is related to experience and knowledge.

GOAL E. To understand ways of maintaining a safe environment and be able to meet emergencies when caring for children.

GENERALIZATIONS

1. Cooperation and caution in any activity may prevent serious accidents and injuries to children.
2. Some play activities must be restricted because of the danger involved.
3. Children will accept reasonable rules about where and how to play.
4. In case of an emergency, one should keep calm, act quickly, and know what to do.
5. A child's safety in emergencies often depends upon prompt response to adult commands.

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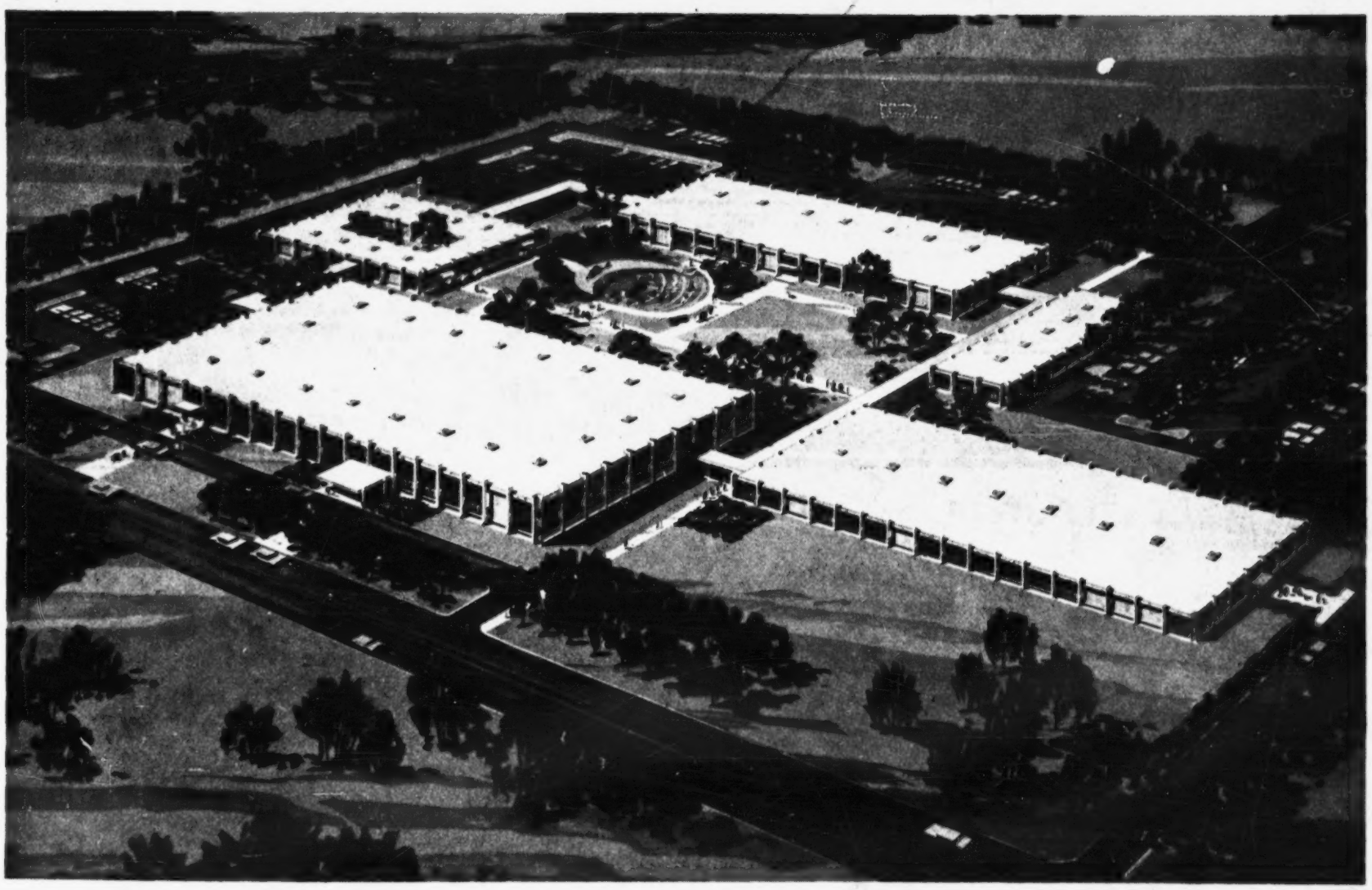

RESEARCH STUDY 1965

VT000024

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PRACTICAL NURSING RESEARCH PROJECT

1947 to 1965

KENOSHA TECHNICAL INSTITUTE

June 30, 1965

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FOREWORD:

The success of a research study is dependent upon the sincere efforts and enthusiastic interest of many people. The Kenosha Board of Vocational, Technical, and Adult Education believes that the Practical Nursing Research Study for 1965 would not have been possible without the services of interested members of the Kenosha Technical Institute.

The Board wishes to express their appreciation to Margaret Dykeman, coordinator of the practical nursing program; Keith Stoehr, instructional supervisor, and Ted Sather, student services supervisor at Kenosha Technical Institute.

Acknowledgement is given also to Beatrice Palen, supervisor of practical nursing, and Donald Brill, supervisor of vocational and adult education, of the State Board of Vocational, Technical, and Adult Education for their encouragement prior to and during completion of the study.

Special recognition is given to Arthur Cothran, administrative intern from Stout State University, for his untiring efforts in initiating the project, developing the data received, and setting the guidelines for completion of the study.

The Board further wishes to recognize the efforts of Jack Banerdt, business supervisor at Kenosha Technical Institute, who originated the study under Public Law 88-210 and conducted the project to its completion.

Eugene Lehrmann
Director

Kenosha Technical Institute
June 30, 1965

CHAPTER I

THE PURPOSE AND METHOD OF STUDY

Introduction

The shortage of nursing personnel led to the establishment of many practical nursing schools. With 737 accredited practical nursing schools[1] in the United States today, a limited number of studies have been reported in this area. These have generally attempted to explore the employment, opportunities for employment, curriculum offerings and many other aspects of the program.

This study was planned and conducted with the expectation of using the information it provided to assist students to make a vocational choice in practical nursing, and to provide the Board of Vocational, Technical, and Adult Education with information on placement as well as the opinion of graduates of the practical nursing curriculum as it relates to the needs of the respondent's position.

1. The U. S. Department of Health, Education, and Welfare Public Health Service Publication Nc. 992: "Toward Quality in Nursing." Chapter III, Page 11.

The Purpose

We would like to point out that this study is undertaken in an effort to obtain useful information for the local program and was not intended to be a state or regional study. The objectives of the study are not given in any specific order to suggest importance of the findings, as the total results of the study should be viewed concurrently in order to arrive at a fair and valid conclusion.

A prime consideration in the use of the study results was to obtain information that could and would be used in the counseling of prospective and presently enrolled students. For the prospective Practical Nurse student, information that would assist in determining a vocational choice would be important.

Secondly, this same information will be useful for the enrollment of students, and allow a greater predictability of success for the student who enrolls in the program. Furthermore, this information can be used by interested instructors, head teachers, coordinators, guidance counselors, and the student services supervisor for counseling the prospective as well as the presently enrolled Practical Nurse student.

A third purpose of the study is to collect data which may be used for revision and/or additions to the total practical nursing curriculum. The information, it is hoped, will also allow planning for extension offerings and possible in-service training or special institutes which

would assist the practicing Practical Nurse now.

A fourth purpose of the study was to establish a complete record file for the past graduates of the Practical Nurse program. The respondents, it was assumed, would indicate their name used while in school, as well as any change in name and address since graduation. A complete check could be made of numbers graduated from the program and their places of employment. This information will be valuable for future follow-up studies and further research effort.

The fifth purpose of the study is to determine the growth and interest exhibited by the Practical Nurse graduates. The type and amount of additional training, and the degree of growth they now exhibit will thus be determined.

A sixth purpose was to identify items or areas for future research, and create an active interest for participation of the practical nursing staff in any research that will assist in classroom and instructional competence. It was intended to create an atmosphere which would be conducive to further research in the department, as well as the total school staff.

Finally, it is believed that the purpose or objectives as outlined above will be reinforced by the study data. The mechanics of the study will be presented in the next chapter discussion.

The Method

The design of the study was centered around the approximately 600 graduates from the practical nursing program since 1947 from the Kenosha Technical Institute (formerly known as the Kenosha Vocational School of Practical Nursing.) The normative survey technique was used to gather the desired data so as to reach the largest number of graduates. Because of the length of time involved between the first graduating class (1947) and the January, 1965 class, the survey method seemed the most feasible way of conducting the study.

Population

The practical nursing division of the Kenosha Technical Institute, since 1947, has maintained a file of graduates. This card file listed the name of the graduate and home address, and any changes of name or address as reported by the graduate since graduation. Since 1948, through the efforts of the Kenosha Practical Nurses Alumnae Association, all graduates had been contacted to determine their interest in attending an annual banquet. Any change in name or address reported was noted on the individual file card at that time.

All cards were reviewed, and those lacking current address and/or correct names were removed from the file for updating. A "List of Lost Alumnae Practical Nursing Graduates" (see appendix A) was printed

to be included in a letter of transmittal to the known graduates. A total of 27 unknown graduates were identified prior to the beginning of the study. A description will follow of the instrument used in the study.

Instrument

The survey form was designed for easy handling by clerical staff as well as by a key punch operator (see appendix B). At the same time it seemed important to have a form that would be easy to read and filled in by the respondent. This should insure a minimum of required time to complete the form. The design included both checks, typed, and completion inquiries on both sides of a single sheet of paper. A discussion of the form will follow, and the programming of the instrument will be discussed in a separate section.

Personal Information

The first section of the form dealt with personal information. The full name of the respondent was checked against the name used while in practical nursing school, and any changes were recorded on the original graduate file card. Item #3 was designed to determine the respondent's Social Security Number. This number was noted on the graduate's file card and also used for programming purposes. The graduate's permanent home address was determined and also noted on the individual file card.

Item #5 was designed to include other personal information.

Marital and employment status were determined and also whether the graduate was now employed in a field related to practical nursing. An inquiry was made into the availability of in-service training at the place of employment, attendance requirement, and the time when the training was offered. The respondent was asked if a need was felt for further training in the present position. To determine interest in vocational growth, the graduate was asked to indicate membership in the National Federation of Licensed Practical Nurses. If they did not hold membership, they were asked to indicate reasons for this.

Experience and Training

Under the experience and training section, the graduate was asked to indicate any further schooling other than in-service training, and to list the subject and faculty or school that provided the training. (Item #7.)

The graduate was also asked (Item #8) to give the name and address of the last or present employer that he had worked for. Item #8 inquired as to the number of different institutions or agencies that the respondent had worked for since graduation.

In the following three items, the graduate was asked to indicate minimum and maximum length of employment in one position (Item #9), starting weekly salary in their first position as a Licensed Practical Nurse (Item #10), and minimum and maximum salary earned (Item #11).

Education

The teaching units or education provided (Item #12) in the practical nursing program since 1947 were grouped under the heading of "Education." The graduate was asked to indicate by choice (1st to 5th) the teaching units that he felt should have more emphasis, less emphasis, or should be removed or dropped from the present practical nurse program.

In Item #13, the graduate was asked to give additional teaching units not listed in Item #12 that could be added to the present program. This list was to be added by preference, i. e., 1st choice to 5th choice.

The last item, #14, asked the graduate to indicate what she might now be doing that she felt the school of Practical Nursing did not prepare her to do.

A discussion follows concerning the programming of the instrument used to gather the data in this study.

Programming

The instrument and its design were affected by the programming requirements of the tabulation and sorting equipment.

Questionnaire

The questionnaire was designed to be keypunched into five data cards according to the field designation printed on the questionnaire. For

an example, Section One (see appendix B) has 1-30: 1 printed below the word Name. This indicates that the respondent's name would be printed from one through thirty on card number one.

For the objective items, sections and subsections were punched according to the letter printed below the response marked. On Item #5 (see appendix B), an A would be punched into column 31 on card three (31:3) if the response to Section five, subsection one, was married. If any section or subsection was unanswered, it was punched by the operator with an "X." By punching the "X" for no response instead of leaving it blank, oversight in punching could be detected.

All statistical data gathered by the computer was obtained from cards three and five. Each of these cards had responses validated through programming. Counters were set up for each of the various responses. During the read-in phase, the appropriate counters were increased. Upon the completion of this phase, percentages, means, mediums, ranges, and deviations were calculated and printed.

Mailing

With the establishment of a mailing list, a tape was punched on the flex-o-writer for all known graduates and their mailing address. This tape was then used for the addressing of all transmittal envelopes and was updated as any change in addresses or names were noted.

Follow-Up Technique

The population involved in the study was widely scattered within the state and region. Perhaps the most difficult aspect of the follow-up planned was the length of time between the first and last graduating class. To encourage participation of all graduates since 1947, a follow-up technique was devised that had a personal touch as well as loyalty to the practical nursing program. All letters of transmittal and reminder cards originated from the practical nursing coordinator's office. In some cases a personal signature was used, and in others a printed signature sufficed.

The following description explains the follow-up calendar and devices used.

The follow-up calendar was established in five steps or phases. These phases were then used to establish the lapse in time between mailings.

Phase 1 included the questionnaire (see Appendix B) and a printed letter of transmittal (see Appendix C). The mailing also included a stamped, addressed envelope for the return of the questionnaire.

For phase 2, a printed post card (see Appendix D) was designed to call attention to the questionnaire and urge the respondent to return it as soon as possible.

A mailing of the second card (see Appendix E) was planned for phase 3. The card was signed by the practical nursing coordinator. Once

again it called attentiocn to the questionnaire.

A second letter of transmittal (see Appendix F) with an additional copy of the entire questionnaire was used for phase 4. The letter was designed to create interest in the school and events taking place at the school, and to encourage the graduate to take part in the study.

The fifth phase was planned as a last minute reminder to those graduates who had not yet completed the questionnaire. Because of the press of time devoted to other assignments, it was not possible to initiate phase 5.

A total calendar for the follow-up techniques will be found in appendix G.

CHAPTER II

THE HISTORY OF THE KENOSHA VOCATIONAL SCHOOL OF PRACTICAL NURSING

The Kenosha Technical Institute has had a long and varied history. With the passage of a Vocational Bill by the Wisconsin Legislature in 1911, the Kenosha Vocational School was established.

By 1946, the Kenosha Vocational School was already considering the addition of programs in the health field. At the June 14, 1946 meeting of the Kenosha Board of Vocational and Adult Education, a motion was made by William H. Byrne and seconded by Morton C. Frost authorizing Director H. M. Clark to organize the first state accredited Practical Nursing School in Wisconsin. It would be known as the Kenosha School for Attendants; it would be a nine month program.

The first coordinator of the program was Gladyce O. Budd. The training including formal classes, was held at the Kenosha Hospital, now known as Kenosha Memorial Hospital. There were three students in the January 27, 1947 class, and seven in the September, 1947 class. All students in the program lived at the Kenosha Hospital Nurses Home.

In 1949, the program was taught and carried out at the new Keno-

not feel the need for further training, and 152 did not respond.

Membership in the National Federation of Licensed Practical Nurses was reported by only slightly less than one fifth of the graduates as given in the following tabulation.

TABLE IV

Membership in The National Federation of Licensed Practical Nurses

Yes	No	No Response
82	347	34

Of those graduates responding, three quarters indicated that they did not belong to the Federation, while only 34 did not respond. A part of this item asked the graduate to indicate the reason(s) for not belonging to the Federation of the response was "No" to the item above.

As indicated by the tabulation below, the largest response was in the "Other" section.

TABLE V

Indicated Reasons for Not Being a Member of The Federation

No chapter	17
Always working	63
Cost	71
No interest	60
Other	158
No response	29

In the preceding item, 347 graduates responded as not having membership

in the Federation; thus 51 responses (out of 398) were given which indicated that some graduates gave more than one response.

Less than one fifth of the responses (71) were for "Cost" as a factor in belonging to the Federation, while "always working" (63) and "No interest" (60) were also factors. Included as "Other" reasons were "Would not have tried to attend" (41), "Not working at present" (22), "Haven't had a chance to join" (23), and "Inactive in nursing" (11).

Also included were "Never contacted" (18), "Just graduated" (5), and "Didn't like the organization" (6), "Not licensed" (9), and "Plan on joining" (6). See Appendix N for a complex listing of responses to this item.

Experience and Training: The section which follows will provide information on schooling, employers, and salary and length of employment.

Education: The graduate was asked, in item six, to write in all schooling other than in-service training which she had received since graduation. The respondent was also asked to indicate the school or faculty which provided training.

The responses indicated that 68 had some further education and various technician training. Three indicated that they had completed professional nurse training. Many institutions and various courses had been attended by the respondents since graduation. (See appendix O).

Employers: The Licensed Practical Nursing graduate was asked to write in the name and address of her present (or last) employer. (See Appendix G1). The tabulation given below gives a numerical accounting by state.

Table I

Licensed Practical Nursing Graduates Employed by State

Wisconsin	392	Massachusetts	1
Illinois	22	Michigan	2
Alaska	1	Minnesota	2
Arizona	1	New Mexico	1
California	6	North Carolina	1
Colorado	2	South Carolina	1
Florida	2	Virginia	3
Indiana	2	No response	18

Over three quarters of the respondents indicated employers in Wisconsin. A complete listing for all employers by state will be found in Appendix G1.

Item #12 asked the graduate to identify how many different institutions or agencies she had worked for since graduation. The responses are given in the tabulation below.

TABLE II

Institutions or Agencies Employing Licensed Practical Nurse Grads.

Number of Employers	Number of Graduates
0	11
1	209
2	143
3	40
4	22
5	7
6	9
7	4
8	1

Seventeen of the graduates did not respond, while nearly one half (209) indicated that they had worked for one employer since graduation. Over one fourth had worked for two employers, 40 for three employers, 22 for four employers, and 27 for five to eight employers since graduation. The range was thus from 0 (11 that were not employed) to 8 employers, with a median of 2.0 employers.

Salary and Length of Employment: Under the Experience and Training section, items 9 through 11 dealt with the salary and length of employment for the Licensed Practical Nursing Graduate.

Table II presents this information, and it should be noted that item 9 (see appendix B) asked the graduate both minimum and maximum months of employment in one position.

TABLE III

Salary and Length of Employment for the Licensed Practical Nurse

	Range	Median	No Response
Length (Monthly) of Employment			
Minimum	0-120	8.0	149
Maximum	1-144	24.0	119
Starting (Weekly) Salary	0-$105	$60	$92
Earnings (Weekly)			
Minimum	$ 12-112	56	129
Maximum	$ 20-130	70	109

Although almost one third (149) did not respond to this item, a minimum range of 0 to 10 years (120 months) was reported by the graduates. The maximum length of employment ranged from 1 to 144 months (12 years). The median for the former was 8.0 months and 24.0 months for the latter (see appendix H and I).

The median weekly starting salary for graduates was found to be $60.00 (39 graduates) with a range of 0 to $105.00 and only 92 graduates not responding to item 10. Further information may be found in Appendix J.

Information (Item 11) was gathered concerning the minimum and maximum salary earned by the graduates. A minimum median of $56.00 per week was computed with a range from $12.00 to $112.00 per week while the maximum range reported was $20.00 to $130.00 per week, with a $70.00 median per week. (see appendix K and L).

Education: The last section included in the questionnaire (Education) dealt with the opinion of the graduate as to the training received and its applications to their present position. In the following tabulation, the teaching units that are in the present practical nursing program are given, along with any titles that were used to describe the content over a period of 19 years.

Teaching Units in The Present Practical Nursing Program

A. Structure, Function of Body
B. Home Management
C. Foods, Cookery
D. Diets (Diet Therapy)
E. Occupational Diversion
F. First Aid
G. Medical Self Help (Civil Defense)
H. Family, Community Living (Personal Adjustment)
I. Elementary Nursing
J. Vocational Relationships (Personal)
K. Adult Nursing (Medical Surgical; Care of Chronic; Care of Convalescent; Care of Aged; Tuberculosis Nursing)
L. Maternal, Child Care (Care of Mothers and Infants: Care of Children)
M. Home Nursing
N. Care of Mentally Ill
O. Nursing Experience (Review Course)

The graduate was asked to indicate, by the letter found in front of each teaching unit, those that need more emphasis in the present practical nurse program.

Each of the teaching units and data collected will follow. Further information for each teaching unit may be found in Appendix M.

Structure and Function of Body. The teaching unit deals with the understanding of the normal structure of the body, its functions, normal and abnormal conditions, and prepares the graduate to correlate effective nursing care with specific diseases.

See the tabulation below, which indicated that "more emphasis" should be given to the teaching unit of "Structure and Function of Body."

Teaching Unit A - Structure and Function of Body

More Emphasis	Less Emphasis	Remove
244	4	0

It is important to note that only four responses were made in the "Less Emphasis" column, while there were no responses in the "Remove" column.

Home Management. Teaching unit B can best be described as a unit that develops basic skills for the Licensed Practical Nurse in caring for a home, to plan and follow work schedules and to know how to use modern equipment, methods and techniques of home management. The graduates' responses are given below.

Teaching Unit B - Home Management

More Emphasis	Less Emphasis	Remove
12	243	110

Of the 366 responses, the greatest number (244) were found to be for "Less Emphasis," while 110 were in the "Remove" column. Only a small number (12) were in the "More Emphasis" column.

Foods and Cookery. Included in the Teaching Unit C are the fundamentals of nutrition, planning, and preparing and serving meals, and skills, techniques and modern methods used in foods and cookery.

It can be seen from the tabulation that follows that 209 of the 288 responses were in the "Less Emphasis" column.

Teaching Unit C - Foods and Cookery

More Emphasis	Less Emphasis	Remove
3	209	76

Seventy-six responses were in the "Remove" column, and only three were in the "More Emphasis" column.

Diets: The Teaching Unit D - Diets - is primarily the basic fundamentals and facts of therapeutic diets and the role of the nurse in regard to the dietary treatment of the patient.

Data given below describes the Licensed Practical Nursing graduates' responses to this item.

Teaching Unit D - Diets

More Emphasis	Less Emphasis	Remove
129	68	17

Over half of the responses (129 out of 214) indicated "More Emphasis" for the teaching unit of "Diets." Over one quarter (68) indicated "Less Emphasis" while there were 17 responses in the "Remove column.

Occupational Diversion Included in the Occupational Diversion (Teaching Unit E) course was the study of the need for diversion, recreation and occupational planning for the patient and how the Licensed Practical Nurse can guide and assist this planning.

The response for this teaching unit can be found below.

Teaching Unit E - Occupational Diversion

More Emphasis	Less Emphasis	Remove
37	130	72

The responses in the "Less Emphasis" column (130 out of 239) were over one half of those tabulated for this unit. 72 responses were in the "Remove" column, while 37 were tabulated for "More Emphasis."

First Aid: The First Aid Unit (F) concerns itself with increasing the Licensed Practical Nursing competence to attend to emergency physical needs (prior to professional care) of either a patient or any other person needing assistance. 93 out of 161 responses were in the "More Emphasis" column.

Teaching Unit F - First Aid

More Emphasis	Less Emphasis	Remove
93	51	17

Fifty-one responses were tabulated for "Less Emphasis" of the First Aid teaching unit, while 17 were tabulated in the "Remove" column.

Medical Self Help: The Teaching Unit G (Medical Self Help) stresses civilian reference teaching for the Licensed Practical Nurse. The responses are tabulated below.

Teaching Unit G - Medical Self Help

More Emphasis	Less Emphasis	Remove
45	89	54

Of the 188 responses, 89 (less than one half) were in the "Less Emphasis" column, 54 (over one quarter) in the "Remove" column and 45 responses for "More Emphasis."

Family and Community Living: Teaching Unit H as

"Family and Community Living" included the development of the practical nursing candidates' attitudes toward nursing and the nursing profession. As seen below, of the 200 responses that were tabulated, over one half (117) were in the "Less Emphasis" column.

Teaching Unit H - Family and Community Living

More Emphasis	Less Emphasis	Remove
36	117	47

Of the remaining 83 responses, 47 were in "Remove" and 36 were in "More Emphasis."

Elementary Nursing: The Teaching Unit I, Elementary Nursing, helps the student to develop skills to attain and maintain health in the hospital and in the home, and to plan nursing care for the patient. The tabulation given below shows the division of the responses for this teaching unit.

Teaching Unit I - Elementary Nursing

More Emphasis	Less Emphasis	Remove
195	12	6

Of the 213 responses, 195 were found to be in the "More Emphasis" column, while 12 were in the "Less Emphasis" and 6 were in the "Remove" column.

Vocational Relationships: The Teaching Unit J, Vocational Relationships, includes the teaching of hospital policies and procedures, attitudes toward nursing, ethics, and legal responsibilities

of the practical nurse. The candidate is also acquainted with the requirements and procedures for state board exams. The tabulation below gives the responses for this teaching unit.

Teaching Unit J - Vocational Relationships

More Emphasis	Less Emphasis	Remove
60	110	31

With a total of 201 responses, 110 (over one half) were for "Less Emphasis," while over one quarter (60) were for "More Emphasis" and 31 were in the "Remove" column.

Adult Nursing: Teaching Unit K consists of a combination of these subjects under the Adult Nursing heading. These consist of chronic, convalescent, and tuberculosis nursing procedures and techniques. It should be noted that only 9 responses were listed in "Less Emphasis" (8) and "Remove" (1), while 278 were calculated in the "More Emphasis" column.

Teaching Unit K - Adult Nursing

More Emphasis	Less Emphasis	Remove
278	8	1

Maternal and Child Care: The Teaching Unit listed as Maternal and Child Care consists of information concerning obstetrics and pediatrics as it relates to the Licensed Practical Nurse. In the tabulation given below will be found the graduates' responses to Teaching Unit L.

Teaching Unit L - Maternal and Child Care

More Emphasis	Less Emphasis	Remove
175	7	1

The responses are such that 175 out of 183 were in "More Emphasis", while 7 were in "Less Emphasis" and only 1 in the "Remove" column.

Home Nursing: Teaching Unit M allows the practical nurse candidate to become familiar with nursing care given in the home. The response to the Home Nursing unit are given below.

Teaching Unit M - Home Nursing

More Emphasis	Less Emphasis	Remove
48	114	43

Of the 205 responses, 114 (over one half) were for "Less Emphasis," 48 for "More Emphasis," and 43 for Remove."

Care of Mentally Ill: This Teaching Unit develops self-understanding, good mental hygiene and mental health to better understand mental illness, basic knowledge of the principles of mental nursing and how to assist the physician and registered nurse in giving total patient-centered care. The following tabulation shows the graduates' responses:

Teaching Unit N - Care of Mentally Ill

More Emphasis	Less Emphasis	Remove
164	17	0

A total of 181 responses were tabulated. Of these, 164 were for "More Emphasis", and 17 for "Less Emphasis." There were no responses in the "Remove column.

Nursing Experience: Teaching Unit O is primarily a review course to help the candidate prepare for the National League of Nursing achievement tests. As shown in the tabulation given below, of the 181 responses, 156 were for "More Emphasis," 19 for "Less Emphasis," and 6 in the "Remove" column.

Teaching Unit O - Nursing Experience

More Emphasis	Less Emphasis	Remove
156	19	6

Additional Teaching Units: The Licensed Practical Nursing graduate was asked to suggest teaching units in addition to those in the present program (Item #13, Appendix B). A listing of all responses received may be found in Appendix P. It should be noted in the tabulation given below, that 108 respondents listed the teaching unit of Medication (Drugs) as the most important addition.

Additional Teaching Units

Medications (Drugs)	108
Pharmacology	65
Psychology	12

Pharmacology (65) and Psychology (12) were also listed as additional subjects wanted. Many additional units were listed (see Appendix P).

A total of 181 responses were tabulated. Of these, 164 were for "More Emphasis", and 17 for "Less Emphasis." There were no responses in the "Remove column.

Nursing Experience: Teaching Unit O is primarily a review course to help the candidate prepare for the National League of Nursing achievement tests. As shown in the tabulation given below, of the 181 responses, 156 were for "More Emphasis," 19 for "Less Emphasis," and 6 in the "Remove" column.

Teaching Unit O - Nursing Experience

More Emphasis	Less Emphasis	Remove
156	19	6

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Additional Teaching Units

Medications (Drugs)	108
Pharmacology	65
Psychology	12

Pharmacology (65) and Psychology (12) were also listed as additional subjects wanted. Many additional units were listed (see Appendix P),

however, the units given above were most frequently mentioned.

Preparation: Item #14 asked the graduate to indicate what they are now doing or performing that they feel the school did not prepare them to do. A complete list of suggestions is included in Appendix Q.

From a close examination of the data collected, Medications and Pharmacology were important as areas in which the graduates were working, and felt that they did not have adequate training in these areas.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The conclusions as stated are a result of work by an evaluation committee consisting of the coordinator of the practical nursing program, the instructional supervisor, and the business supervisor of the Kenosha Technical Institute. These conclusions are not to be construed as being the only valid conclusion that could originate from the data, but should rather be considered as most important as they relate to the expectations of the study.

Furthermore, these conclusions represent a fairly common type of conclusion, in which the committee generalizes or suggests further implication not supported by documentation.

Summary

The research evaluation committee in summary of this study wishes to reiterate the original thought stated in the Introduction:

> "This study was planned and conducted with the expectation of using the information it provided to assist students to make a vocational

choice in practical nursing and to provide the Board of Vocational, Technical, and Adult Education with information on placement as well as the opinion of graduates of the practical nursing curriculum as it relates to the needs of the respondent's position."

As a result of their evaluation, the committee feels that their expectations of this project can be realized if the information gathered through this study is made available in a usable form to students, counselors, instructors, administrators, and the Board.

It is not the purpose of the committee to determine the reliability and validity of the data represented in this study, but to report conclusions which seemed to be apparent and significant only.

The committee recognizes that other connotations can be made from the data presented, and therefore recommends that perhaps other educators, administrators, and interested persons review the data as it relates to their own situation, and develop their own pertinent conclusions.

Conclusions:

1. As a result of the large number of graduates who married, it can be concluded that practical nurse education has

value for personal use as well as employment use.

2. Employment data of licensed practical nurses indicates that full and part time employment opportunities exist for the practical nurse who marries as well as the single person. With the demand in the area for licensed practical nurses, it can be assumed that the large unemployed figure consists of graduates who do not seek employment because of family responsibilities rather than those who cannot obtain employment but are available.

3. From data on related employment and education, it can be noted that approximately 80% of the respondents indicated that they are still employed in a field related to practical nursing. It can be concluded then that basic practical nurse education provides a basis for continuing employment.

4. Because of the low number of those responding to participation in in-service training, extension education in practical nursing is indicated and should be provided by the local school, the employer, or a cooperative program by both the school and the employer.

5. Regarding in-service training and the attendance require-

ments during on-duty time, it is apparent that in-service training for practical nurses is receiving positive recognition by employers.

6. The large number of graduates who have indicated a need for further educational experience is consistent with the technological advances in the health field.

7. The number of graduates, 68 of the 463, who indicated additional schooling other than in-service training, is evidence that practical nursing education at Kenosha Technical Institute is adequate for an entry job because of the number who did not continue their education. Also, it can be concluded from the number who did continue their schooling, approximately 15%, that practical nursing education provides an educational base for further schooling. Furthermore, the courses taken (see appendix O) which are primarily in the health field, indicate that practical nurse graduates were updating and upgrading present knowledge and skills.

8. From the large per cent of graduates (approximately 75%) employed in Wisconsin, it can be concluded that funds spent by the State of Wisconsin and local communities

for tuition, equipment, and instruction for the practical nursing program at Kenosha Technical Institute was well spent as a result of return of nursing care services to the citizens of Wisconsin. The City of Kenosha has benefited to a large extent by the number of graduates employed in local hospitals and health agencies--209 graduates of the 392 employed in Wisconsin.

9. The response indication of 209 of the 463 graduates employed with the same employer, provides indication that the practical nursing graduate is dependable, stable, and is satisfactory in her work relation to the institution or agency of which she is a member. The large number who have had only two employers is further indication of good characteristics of the practical nurse graduate for mobility is a factor for most employees in our society.

A breakdown of the type of employers (see appendix G 1) is enlightening in that many opportunities exist for the graduate other than in general hospital work. Of the number of responses, 445 in total, 40 were employed in medical doctor's offices and clinics, others found employment in nursing homes, state institutions, Veterans Administration Hospitals, public health agencies, and industrial

health offices. It is significant in that a large group of graduates are finding employment and doing satisfactory work in medical doctor's offices.

10. The median range for employment after graduation of 8 to 24 months is evidence that the investment of time and monies by both the student and the citizens of the State of Wisconsin warrants operation of the practical nursing program at Kenosha Technical Institute.

The starting salary of $60 per week and the median range for salary, $56 to $70 per week, is evidence that the compensation is inadequate for the time and money spent by the student in preparation for employment.

11. The committee on analyzing the responses of the graduates to teaching units in the present practical nursing program and the frequency of choices toward emphasis, the conclusion reached is that the respondents indicate favor for increased emphasis toward practical nursing skills rather than toward related education.

12. From the large number of responses which indicated additional teaching units in the practical nursing program--185 responded--it is significant to note that the graduate believes some medical

care experience should be included in the practical nurse curriculum.

13. In analyzing the response to Item #14 in the survey, the committee concludes that there is a relationship in the graduate's opinion of preparation and present work functions.

Recommendations:

The committee recommends that the data be given serious consideration in improving counseling, curriculum development, extension offerings, and school-employer relationships. It is further recommended that as soon as feasible further research be conducted by Kenosha Technical Institute as follow-up to the present study to determine employer evaluation of the graduate's skill, knowledge, and performance.

Finally the committee sincerely believes that the practical nursing program is accomplishing its function in its relationship to the graduate and the health needs of the community and that future suggested research will affirm this assumption.

APPENDIX

APPENDIX A-1

Kenosha Technical Institute

A Division of
Kenosha School of Vocational Technical and Adult Education

625 Fifty-Second Street Phone 657-5171

KENOSHA, WISCONSIN 53140

Dear Graduate:

The Kenosha Technical Institute Practical Nursing School is participating in a very important research project. One of the objectives of the project is to determine whether or not the School curriculum is meeting the needs of its graduates. Still another purpose is to obtain the current addresses and other information about the almost 600 school graduates!

We would appreciate very much your assisting the School with this survey. You may rest assured that no graduate furnishing information will be identified in the final report of this study. A self-addressed stamped envelope is included for your reply. Won't you please answer the questions now, and slip the envelope in a mailbox?

In a few weeks, you will be receiving information about the Annual Alumni Banquet. We will look forward to meeting with you then.

Yours - in Good Nursing,

Margaret Dykeman, R.N.

Margaret Dykeman, R. N.
Coordinator: Practical Nursing
Kenosha Technical Institute

APPENDIX A

LIST OF LOST ALUMNAE - PRACTICAL NURSING GRADUATES

Mrs. Barbara Gallo
3539 - 19 Avenue
Kenosha, Wisconsin

Mrs. Carole Becker
1003 - Eighth Street
Kenosha, Wisconsin

Mrs. Cecilia Ingram
5718 - 13 Court
Kenosha, Wisconsin

Mrs. Melba Webb
836 Valerie Court
Racine, Wisconsin

Mrs. Imogene Williams
5003 - 93 Street
Kenosha, Wisconsin

Miss Diane Hayes
949 Washington Avenue
Racine, Wisconsin

Mrs. Marie Hanson
1432 State Street
Racine, Wisconsin

Mrs. Dona Cody
70 Red Wing Land
Oak Park Trailer Court
Madison, Wisconsin

Jean Reda
1610 - 62 Street
Kenosha, Wisconsin

Mrs. Lillian Lawrence
8959 Cooper Road
Kenosha, Wisconsin

Mrs. JoAnn Jurgens
Route 1
Burlington, Wisconsin

Miss Kaye Orwig
714 Park Avenue
Racine, Wisconsin

Miss Evelyn Hollister
836 - 64 Street
Kenosha, Wisconsin

Mrs. Rachael Keilholz
146 - Second Avenue
Salt Lake City, Utah

Mrs. Margaret Berg
6328 - 28 Avenue
Kenosha, Wisconsin

Mrs. Betty Jones
7301 - 45 Avenue
Kenosha, Wisconsin

Mrs..Margaret Manulik
Route 1
Kenosha, Wisconsin

Mrs. Hildred Wanless
2415 Jerome Blvd.
Racine, Wisconsin

Mrs. Roxanne Newhouse
6019 Sheridan Road
Kenosha, Wisconsin

Mrs. Una Peterson
Box 252 Cooper Road
Kenosha, Wisconsin

Mrs. Marlene Leornard
2009 Taylor Avenue
Racine, Wisconsin

Mrs. Lillian Holm
Route 2
Salem, Wisconsin

Mr. James Burns
1648 1/2 Douglas
Racine, Wisconsin

Mrs. Ollie Cummings
Rt. 1, Box 553
Kenosha, Wisconsin

Mrs. Betty Hogbin
c/o Mrs. Kronenberg
835 - Ninth Street
Racine, Wisconsin

Mrs. Janice Frederickson
5533 - 26 Avenue
Kenosha, Wisconsin

Mrs. Pamela Johnson
2639 Markridge Drive
Racine, Wisconsin

APPENDIX B

LICENSED PRACTICAL NURSE SURVEY
KENOSHA TECHNICAL INSTITUTE

PERSONAL INFORMATION:

1. Name:_____
1-30:1 (Last) (First) (Middle)

2. Name if different while in practical nursing school: _____
31-60:1 (Last) (First) (Middle)

3. Social Security Number:___ ___ ___ ___ ___ ___ ___ ___ ___
61-69:1

4. Permanent address:_____
(Street) (City) (State) (Zip)
31-50:2 51-74:2 75-79:2

5. Please indicate by marking (X) in the appropriate space your present status.

Marital:
31:3 ____married (A) ___single (B) ___divorced (C) ___widowed (D) ___separated (E)

Employment:
32:3 ___fully employed (A) ___part time (B) ___unemployed (C) ___self-employed (D)

Are you employed in a field related to practical nursing? ___ Yes (A) ___No (B)
33:3

Is there an in-service program for LPNs where you work? ___Yes (A) ___No (B)
34:3

If yes, are you required to attend? ___Yes (A) ___No (B)
35:3

Is this offered during on-duty time? ___Yes (A) ___ No (B)
36:3

Have you felt a need for further training in your present position? ___Yes (A) ___No (B)
37:3

Are you a member of the National Federation of Licensed Practical Nurses?___
38:3 ___Yes (A) ___No (B)

If no, indicate your reasons(s):
39-43:3
___no chapter (A) ___always working (B) ___cost (C) ___no interest (D) ___other:_____ (E) (Please specify)

EXPERIENCE AND TRAINING (Fill in the blank space, please be specific)

6. If you have had any further schooling other than in-service training, list the subject and school or faculty providing the training:

Subject or Training	School or Faculty

7. Give the name and address of present (or last) employer:_____
44-79:3 Name)

_____
31-50:4 (Street) 51-74:4 (City) (State) 75-79:4 (Zip)

Experience and Training (Continued)

9. In how many different institutions or agencies have you worked since graduation?
31-32:5 (Number)_____

10. What was your minimum length of time in one position? _____ Maximum? _____
33-35:5 (Months) 36-38:5 (Months)

11. What was your starting salary in your first position as an LPN? _____
39-41:5 (Weekly salary)

12. What has been your minimum salary earned? _____Maximum?_____
42-44:5 (Weekly Salary) 45-47:5 (Weekly salary)

EDUCATION

12. Teaching units in the present practical nursing program:

A. Structure, Function of Body
B. Home Management
C. Foods, Cookery
D. Diets (Diet Therapy)
E. Occupational Diversion
F. First Aid
G. Medical Self Help(Civ. Def.)
H. Family, Community Living (Personal Adjustment)
I. Elementary Nursing
J. Vocational Relationships (Personal)
K. Adult Nursing (Medical Surgical; Care of Chronic;Care of Convalescent; Care of Aged; Tuberculosis Nursing)
L. Maternal, Child Care (Care of Mothers and Infants: Care of Children)
M. Home Nursing
N. Care of Mentally Ill
O. Nursing Experience (Review Course)

Please list by letter from the above teaching units any that you feel should have:

More emphasis in the present practical nurse program?
48-52:5
___First choice ___Second choice ___Third choice ___Fourth choice ___Fifth choice

Less emphasis in the present practical nurse program?
53-57:5
___First choice ___Second choice ___Third choice ___Fourth choice ___Fifth choice

Been removed or dropped from the present practical nurse program?
58-62:5
___First choice ___Second choice ___Third choice ___Fourth choice ___Fifth choice

13. What teaching units in addition to those listed above would you suggest be added to the present practical nurse program?

First choice: _____
Second choice: _____
Third choice: _____
Fourth choice: _____
Fifth choice: _____

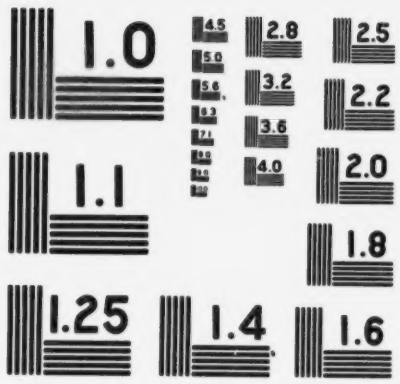
14. What are you now doing that you feel your school did not prepare you to do? (Please list)

_____
_____
_____
_____

13 OF 102

ED

013338



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963

APPENDIX C

Kenosha Technical Institute

A Division of
Kenosha School of Vocational Technical and Adult Education

625 Fifty-Second Street Phone 657-5171

KENOSHA, WISCONSIN 53140

April 16, 1965

Dear Graduate:

Enclosed is a copy of the request made to you in March, 1965, for information on your current address, work experience, and other information that will assist the Kenosha Technical Institute to evaluate the Practical Nursing program. Possibly this failed to reach you or the reply is now in process.

It is our desire to have complete data from each graduate, and we would appreciate receiving your reply to make the report more complete. Your prompt reply will allow an early report of the study.

You may rest assured that no school or person furnishing information will be identified in the final report. A self-addressed stamped envelope is included for your reply. We will appreciate your sending the questionnaire back. If a good return is received, we will have much more information with which to evaluate the Kenosha Program. We desire our School to continue to progress, and be updated in regards to Practical Nursing practices.

Yours In Good Nursing!

Sincerely,

Margaret Dykeman R.N.

(Mrs.) Margaret Dykeman, R.N.
Coordinator - Health Occupations

MD:jb

Enclosure

APPENDIX D

April 2, 1965

Dear P.N. Graduate:

The completion of the research project in Practical Nursing at the Kenosha Technical Institute depends on you mailing to us the survey form you received recently.

Won't you please answer the questions now?

Margaret Dykeman, R.N.
Margaret Dykemann, R.N.
Coordinator: Practical Nursing
Kenosha Technical Institute

APPENDIX E

April 9, 1965

Dear P.N. Graduate:

It appears that the practical nursing graduate research project is going to be a success. The many responses from the graduates indicate acceptance of the project. We would like to include your data to make the project a greater success.

I shall look forward to receiving your survey form within the next week. Thanks for your assistance.

Margaret Dykemann, R.N.
Coordinator: Practical Nursing
Kenosha Technical Institute

APPENDIX F

Kenosha Technical Institute

A Division of
Kenosha School of Vocational Technical and Adult Education

625 Fifty-Second Street Phone 657-5171

KENOSHA, WISCONSIN 53140

April 16, 1965

Dear Graduate:

The date of the Annual Alumni Banquet has been set for Monday, May 24, 1965. The banquet will be held at the Elk's Club (5706 - 8th Avenue) and begins at 7:00 P.M. The cost is $4.00 per person. We all hope that you will be able to attend!

There have been many changes at K.T.I. during this past year. The Practical Nursing department now admits two Classes of 60 students per year. The Students spend an entire semester at the School, and receive the same vacation as K.T.I. Students do. Imagine - having a weeks' vacation at Easter, or two weeks vacation at Christmas!

The Student educational stipend is being withdrawn gradually. The class, which was admitted in February, 1965, will receive no stipends at all. We are confident that the program will now become more educationally centered.

Our biggest news is that the K.T.I. will break ground by July 1st for a brand New School! It will be located near the University of Wisconsin Center, and will be campus style with four separate buildings. We are looking forward to many new resources such as using closed circuit television in the Classrooms. Perhaps we will all become T.V. Stars!

Changes continue to be made in the faculty and classes. Our 588 graduates, too, continue to marry, have babies and move. We are enclosing a List of "lost alumnae". Will you contact the School if you know the whereabouts of any of the graduates on the list?

We appreciate very much your taking the time to answer the survey questionnaire. Kenosha was honored to be chosen for this Survey, and we know that our practical nursing graduates will make the Survey a success.

We hope to see you on May 24th. The entire Faculty sends greetings to you and joins with me in wishing you -

Good Health and Good Nursing in the Year Ahead!

Sincerely,

Margaret Dykeman, R.N.

(Mrs.) Margaret Dykeman, R.N.
Coordinator - Health Occupations

MD:jb

Enclosure

- - -- -

APPENDIX G

Suggested Follow-Up Techniques:

Date:	
March 22, 1965 START	Mail survey and letter to all graduates. (Include stamped, addressed envelope)
April 2, 1965	Mail a printed post card calling attention to the questionnaire. Urge them to return it as soon as possible.
April 9, 1965	Mail second card (printed) with personal signature of LPN coordinator calling attention to the questionnaire.
April 16, 1965	A second mailing of the entire questionnaire, with a new cover page or accompanying letter. (Person may have misplaced the first one, or it may be buried on a desk.)
April 23, 1965	A personal letter from the coordinator individually written and signed, as a special appeal for cooperation.
May 10, 1965.	Finish Date.

APPENDIX GI

EMPLOYERS BY STATES EMPLOYING LPN GRADUATES FROM KENOSHA TECHNICAL INSTITUTE

State	Employer & Address	Graduates Employed
Wisconsin	Kenosha Memorial Hospital, Kenosha 6308 - Eighth Avenue	89
Wisconsin	St. Catherines Hospital, Kenosha 3556 - Seventh Avenue	82
Wisconsin	St. Luke's, Racine 1320 Wisconsin Avenue	39
Wisconsin	St. Mary's, Racine 1526 Grand Avenue	20
Wisconsin	Brookside, Kenosha 3506 Washington Road	11
Wisconsin	Mount Sinai Hospital, Milwaukee 948 North 12 Street	7
Wisconsin	Fort Atkinson Hospital, Ft. Atkinson W. Sherman Avenue	6
Wisconsin	Dr. Harry Swartz, Kenosha Sixth Avenue & 60 Street	4
Wisconsin	Southern Colony Union Grove	4
Wisconsin	Racine County Institution, Racine 2433 S. Green Bay Road	4
Wisconsin	St. Nicholas, Sheboygan 918 Huron Avenue	6
Wisconsin	Burlington Hospital, Burlington Randolph Street	3
Wisconsin	Sheridan Nursing Home, Kenosha 8400 Sheridan Road	3
Wisconsin	Watertown Memorial Hospital, Watertown Main Street	3
Wisconsin	Dr. Paul Bassewitz, Sheboygan 704 Penn Avenue	2

State	Employer & Address	Graduates Employed
Wisconsin	Miss Irene Stenseth, Kenosha 6308 - Eighth Avenue	2
Wisconsin	Waukesha Memorial Hospital Waukesha	2
Wisconsin	Kaukauna Community Hospital 408 E 14, Kaukauna	2
Wisconsin	Visiting Nurse Association, Kenosha 6038 - Eighth Avenue	2
Wisconsin	Racine Medical Clinic, Racine 5625 Washington Blvd.	2
Wisconsin	Lincoln Lutheran Home, Racine 2015 Prospect Street	2
Wisconsin	St. Francis Hospital, Milwaukee 3237 S. 16 Street	2
Wisconsin	Rattan & Barnes, M.D.'s, Kenosha 6530 Sheridan Road	2
Wisconsin	Waupun Memorial Hospital Waupun	2
Wisconsin	R. Powell, M.D., Kenosha 80 Street & 14 Avenue	2
Wisconsin	Visiting Nurse Ass., Milwaukee 3321 N. 76 Street	1
Wisconsin	Richards & Meeter, M.D.'s, Kenosha 6215 - 10 Avenue	1
Wisconsin	Maynard Electric Steel Casting Co. 2856 S. 27 Street, Milwaukee	1
Wisconsin	St. Vincent's Hospital, Green Bay 50 Van Buren Street	1
Wisconsin	Sheboygan Clinic, Sheboygan 1011 N. Eighth Street	1
Wisconsin	Methodist Hospital, Madison 309 W. Washington	1
Wisconsin	Caravilla, Janesville East Happy Hollow Road	1
Wisconsin	Sacred Heart Hospital, Tomahawk 216 N. Seventh Street	1

State	Employer & Address	Graduates Employed
Wisconsin	Mental Health Association, Racine 221 - Sixth Street	1
Wisconsin	H. Carey, M.D., Lancaster Lancaster	1
Wisconsin	Divine Savior Hospital, Portage W. Pleasant	1
Wisconsin	Roman Bilak, M.D., Kenosha 6032 - 40 Avenue	1
Wisconsin	L. C. Thomsen & Sons, Kenosha 1303 - 43 Street	1
Wisconsin	W. Williamson, M.D., Racine 500 Walton Avenue	1
Wisconsin	Bellin Hospital, Green Bay 744 S. Webster	1
Wisconsin	Rogers Memorial Hospital, Oconomowoc 34810 W. Pabst Road	1
Wisconsin	Charles Shields, M.D., Fennimore Fennimore	1
Wisconsin	Henry Lindenthal, Sheboygan Ninth Street	1
Wisconsin	John Martin, M.D., Delavan 517 E. Walworth Avenue	1
Wisconsin	Rosemary Strauss, Jefferson Highway K	1
Wisconsin	American Brass Co., Kenosha 1420 - 63 Street	1
Wisconsin	Milwaukee Hospital, Milwaukee 2200 Kilbourn	1
Wisconsin	Mr. William Lehman, Kenosha, 2522 - 34 Street	1
Wisconsin	Trinity Lutheran Hospital, W. Ashland 522 - Seventh Avenue	1
Wisconsin	Poser Clinic, Columbus 635 Park Avenue	1
Wisconsin	D. Synder, R.N., Marinette 2611 Parkridge Avenue	1

State	Employer & Address	Graduates Employed
Wisconsin	Westview Nursing Home, Racine Racine	1
Wisconsin	Walworth, Elkhorn County Home	1
Wisconsin	G. Rothenmaier, M.D., Racine 834 S. Main Street	1
Wisconsin	St. Joseph's Nursing Home, La Crosse 2415 Cass Street	1
Wisconsin	St. Joseph's Hospital, Beaver Dam S. University Avenue	1
Wisconsin	Lakeland Hospital, Elkhorn Elkhorn	1
Wisconsin	St. Joseph's Hospital, Milwaukee 5000 Chamber	1
Wisconsin	Memorial Hospital, Manitowoc 333 Reed Avenue	1
Wisconsin	Community Hospital, Stoughton Ridge	1
Wisconsin	H. Demorest, M.D., Menasha 222 Washington Street	1
Wisconsin	St. Mary's Hospital, Superior 1017 Clough Avenue	1
Wisconsin	St. Joseph Hospital, Hartford Hartford	1
Wisconsin	Catholic Social Services, Racine 316 - Fifth Street	1
Wisconsin	St. Joseph's Hospital, Marshfield Marshfield	1
Wisconsin	Wausau Memorial Hospital, Wausau Grand Avenue	1
Wisconsin	J. Jamieson, M.D., Racine 812 Main Street	1
Wisconsin	Methodist Hospital, Madison Madison	1
Wisconsin	Luther Hospital, Eau Claire 310 Chestnut Street	1

State	Employer & Address	Graduates Employed
Wisconsin	Municipal Hospital, Two Rivers Garfield Street	1
Wisconsin	David Synder, Marinette 2611 Parkridge Avenue	1
Wisconsin	St. Mary's Hospital, Rhinelander Rhinelander	1
Wisconsin	Whitewater Electronics Main Street	1
Wisconsin	R. & C. Quandt, M.D.'s, Jefferson 202 N. Main Street	1
Wisconsin	S. C. Johnson & Sons, Racine 1525 Howe Street	1
Wisconsin	Mrs. Kay Singleton, Twin Lakes Twin Lakes	1
Wisconsin	Lancaster Memorial Hospital Lancaster	1
Wisconsin	M. Siegel, M.D., Kenosha 7533 - 22 Avenue	1
Wisconsin	Vanleier & Sioka, M.D.'s, Burlington Burlington	1
Wisconsin	Rolling Meadows Fond du lac	1
Wisconsin	R. Powell, M.D., Kenosha 6814 - 14 Avenue	1
Wisconsin	Levinson & Fisk, M.D.'s, Milwaukee 945 N. 12 Street	1
Wisconsin	Milwaukee Sanitorium, Wauwatosa 1220 Dewey	1
Wisconsin	M. Peterman, M.D., Milwaukee 411 C Mason Street	1
Wisconsin	Hilpert & Jacobsen, M.D.'s, Racine 500 Walton Avenue	1
Wisconsin	Schick Clinic, Rhinelander Schick Plaza	1
Wisconsin	O. Wilson & R. Brodhead, M.D.'s, Wausau P. O. Box 838	1

State	Employer & Address	Graduates Employed
Wisconsin	Sixth Avenue Med. Center, Kenosha Sixth Avenue & 60 Street	1
Wisconsin	Oconomowoc Memorial Hospital Summit Avenue, Oconomowoc	1
Wisconsin	Self-employed (Nursing Home), Madison 175 Talmadge	1
Wisconsin	County Home, Jefferson Wisconsin Avenue	1
Wisconsin	Mrs. Gwen Shapiro, Madison 1300 University Avenue	1
Wisconsin	St. Mary's Hospital, Green Bay Shawano Avenue	1
Wisconsin	Milwaukee County Hospital, Wauwatosa 8700 Wisconsin Avenue	1
Wisconsin	St. Catherines Infirmary, Racine 1209 Park Avenue	1
Wisconsin	Plymouth Hospital Plymouth	1
Wisconsin	R. Schacht, M.D., Racine 1632 Douglas Avenue	1
Wisconsin	Earl Mayew, Kenosha 3710 - 10 Avenue	1
Wisconsin	Wood V. A. Hospital, Wood Wood	1
Wisconsin	Dan's Pastry Shop, Waterford 218 W. Main Street	1
Wisconsin	Veteran's Administration, Madison Hospital Overlook Terrace	1
Wisconsin	The Ranch, Kenosha Sheridan Road	1
Wisconsin	Veteran's Administration Hospital R R, Tomah	1
Wisconsin	St. Mary's Hospital, Milwaukee 2320 N. Lake Drive	1
Wisconsin	Mrs. Iris Ford, Vhinelander 402 Lennox Street	1

State	Employer & Address	Graduates Employed
Wisconsin	H. Bischof, M.D., Lake Geneva 845 Main Street	1
Wisconsin	Columbia Hospital, Milwaukee 3321 N. Maryland	1
Wisconsin	St. Mary's Hospital, Sparta K & Main	1
Wisconsin	Racine County (Sunny Rest), Racine 5301 Durand Avenue	1
Wisconsin	L. Turner, M.D., Kenosha 2525 - 63 Street	1
Wisconsin	American Motors Corporation Kenosha	1
Wisconsin	J. Pearson, M.D., Kenosha 624 - 57 Street	1
Wisconsin	F. Bachhuber, M.D., Mayville 410 Short Street	1
Wisconsin	St. Elizabeth Hospital, Appleton 1506 S. Onieda Street	1
Wisconsin	Miss Myrtle Werth, Menomonie 1003 - 11 Street	1
Wisconsin	Sheboygan Memorial Hospital, Sheboygan 2629 N Seventh	1
Wisconsin	T. Dugan, M.D., Waukesha 336 Wisconsin Avenue	1
Wisconsin	Luther Hospital, Eau Claire 310 Chestnut Street	1
Illinois	Downey Vets. Administration, Downey Buckly Road	4
Illinois	Victory Memorial Hospital, Waukegan 1324 N Sheridan Road	4
Illinois	St. Therese Hospital, Waukegan W. Washington Street	2
Illinois	Mrs. Neyrick, R.N., Zion Shelioh Blvd.	1
Illinois	Paul Fox, M.D., Chicago 6710 W North Avenue	1

State	Employer & Address	Graduates Employed
Illinois	Mattoon Memorial Hospital Mattoon	1
Illinois	A. Yaney, M.D., Oak Park 505 N. Ridgeland	1
Illinois	Mrs. Lise Maclean, River Forest 1501 William	1
Illinois	A. Berke, M.D., Antioch 543 Orchard	1
Illinois	Paul Wilson, M.D., Crystal Lake 388 W. Terra Cotta	1
Illinois	Lake Bluff's Children Home, Lake Bluff 200 Scranton Avenue	1
Illinois	Memorial Nursing Home, Belleville 4315 Memorial Drive	1
Illinois	Westsuburban Hospital, Oak Park 518 Austin	1
Illinois	Abbott Laboratories, North Chicago Sheridan Road	1
Illinois	Gefco Company, Antioch Antioch	1
Alaska	Sr. Philias, Anchorage Providence Road	1
Arizona	Melvin Hellwitz, Phoenix 126 W. Maryland	1
California	U. S. Vet's. Administration, Palo Alto 3801 Junipera Serra Blvd.	1
California	St. John's Hospital, Santa Monica 1328 - 22	1
California	Napa State Hospital, Imola Imola	1
California	Vet's Hospital, W. Los Angeles Sawtelle Wilshile Blvd.	1
California	United Air Lines, San Bruno San Bruno	1
California	Letterman Army Hospital, San Francisco San Francisco	1

State	Employer & Address	Graduates Employed
Colorado	Porter Memorial Hospital, Denver 2500 S. Downing Street	1
Colorado	Penrose Hospital, Colorado Springs Colorado Springs	1
Florida	East Coast Railroad Hospital St. Augustine	1
Florida	Mrs. R. F. Taylor, Winter Park 1061 McKean Circle	1
Indiana	St. Elizabeth's Hospital, Lafayette Lafayette	1
Indiana	Home Hospital, Lafayette 2400 South Street	1
Kentucky	Trigg Community Hospital, Cadiz Cadiz	1
Massachusetts	Centerville Nursing Home, Centerville R 28	1
Michigan	Anderson Memorial Hospital, Norway Main	1
Michigan	Dearborn Health Department, Dearborn 13711 Michigan	1
Michigan	Sister Mary Grace, Pontiac 2380 Watkins Lake Road	1
Minnesota	Redwood Falls Hospital, Redwood Falls 600 S Gould	1
Minnesota	Lutheran Deaconess Hospital, S. Minneapolis 2317 - 14 Avenue	1
New Mexico	Cannon A.F.B. Hospital, Cannon A.F.B. 832 Tac Hospital	1
North Carolina	Forest Hill Nursing Home, Goldsboro 501 Forest Hill Drive	1
South Carolina	Greenville General Hospital, Greenville 100 Mallard Street	1
Virginia	Norfolk General Hospital, Norfolk Norfolk	1
Virginia	St. Vincent De Paul Hospital, Norfolk Grandy Street	1

State	Employer & Address	Graduates Employed
Virginia	Comfy Inc., Pillow Div., Portsmouth 4015 Victory Blvd.	1
No Responses		18
		463

APPENDIX H

WHAT WAS YOUR MINIMUM LENGTH OF TIME IN ONE POSITION(IN MONTHS)?
0 - 120 RANGE 8.00 MEDIAN 13.12 MEAN

10.37 MEAN DEVIATION 16.88 STANDARD DEVIATION 149 NO RESPONSE

NUMBER OF MONTHS	NUMBER OF GRADUATES
0	2
1	19
2	21
3	33
4	14
5	9
6	46
7	10
8	13
9	21
10	7
12	34
13	4
14	3
15	4
16	3
17	3
18	10
19	2
20	3
23	3
24	13
25	1
26	2
29	2
30	3
31	2
33	1
36	8
40	1
42	2
48	2
52	1
54	2
58	1
60	2
72	1
77	1
84	1
85	1
108	1
120	2

APPENDIX I

W AT WAS YOUR MAXIMUM LENGTH OF TIME IN ONE POSITION(IN MONTHS)?
1 - 144 RANGE 24.00 MEDIAN 33.03 MEAN

21.25 MEAN DEVIATION 27.68 STANDARD DEVIATION 119 NO RESPONS

NUMBER OF MONTHS	NUMBER OF GRADUATES
1	1
2	7
3	9
4	4
5	6
6	10
7	6
8	11
9	10
10	6
11	4
12	20
13	7
14	8
15	2
16	4
17	1
18	14
19	2
20	6
21	2
22	6
23	1
24	33
25	3
26	3
27	5
28	1
29	2
30	13
31	3
33	1
36	31
39	2
40	1
41	1
42	9
43	2
44	2
46	2
48	12
50	1
52	1
53	2
54	4
60	14
61	1

APPENDIX K

IT HAS BEEN YOUR MINIMUM SALARY EARNED?

$ 12 -$ 112 RANGE $ 56.00 MEDIAN $ 54.88 MEAN

$ 9.88 MEAN DEVIATION $ 12.46 STANDARD DEVIATION 129 NO RESPONSE

SALARY	NUMBER OF GRADUATES
$ 12	2
$ 20	1
$ 21	1
$ 22	1
$ 24	3
$ 27	1
$ 28	1
$ 29	1
$ 30	4
$ 32	1
$ 35	7
$ 36	1
$ 37	1
$ 38	3
$ 39	1
$ 40	16
$ 41	1
$ 42	4
$ 43	3
$ 44	7
$ 45	15
$ 46	8
$ 47	6
$ 48	7
$ 50	32
$ 51	2
$ 52	4
$ 53	6
$ 54	9
$ 55	9
$ 56	10
$ 57	2
$ 58	8
$ 59	5
$ 60	30
$ 61	4
$ 62	5
$ 63	7
$ 64	34
$ 65	18
$ 66	19
$ 67	8
$ 68	8
$ 69	3
$ 70	1
$ 72	3
$ 75	2
$ 76	2

$ 77	1
$ 79	1
$ 80	1
$ 81	1
$ 85	1
$ 94	1
$ 112	1

STOCK FORM 14113-P

APPENDIX L

HAT HAS BEEN YOUR MAXIMUM SALARY EARNED?
$ 20 -$ 130 RANGE $ 70.00 MEDIAN $ 71.28 MEAN

$ 9.97 MEAN DEVIATION $ 14.14 STANDARD DEVIATION 109 NO RESPONSE

SALARY	----- NUMBER OF GRADUATES
$ 20	1
$ 22	1
$ 29	1
$ 32	1
$ 34	1
$ 35	1
$ 38	1
$ 42	1
$ 43	2
$ 47	1
$ 48	3
$ 50	12
$ 52	1
$ 53	2
$ 54	2
$ 55	6
$ 56	4
$ 57	1
$ 58	4
$ 59	3
$ 60	17
$ 61	3
$ 62	2
$ 63	1
$ 64	13
$ 65	18
$ 66	8
$ 67	9
$ 68	25
$ 69	13
$ 70	27
$ 71	9
$ 72	18
$ 73	8
$ 74	7
$ 75	23
$ 76	6
$ 77	3
$ 78	6
$ 79	3
$ 80	22
$ 81	3
$ 82	3
$ 83	1
$ 84	6
$ 85	6
$ 86	7
$ 87	2

$ 88	4
$ 90	10
$ 93	1
$ 94	3
$ 95	2
$ 96	1
$ 98	2
$ 100	5
$ 101	1
$ 105	1
$ 112	2
$ 120	1
$ 121	1
$ 125	1
$ 130	1

APPENDIX M

MORE EMPHASIS
FIRST CHOICE

116	STRUCTURE, FUNCTION OF BODY	25.05 0/0
3	HOME MANAGEMENT	.65 0/0
0	FOOD, COOKERY	0.00 0/0
16	DIETS	3.46 0/0
7	OCCUPATIONAL DIVERSION	1.51 0/0
19	FIRST AID	4.10 0/0
5	MEDICAL SELF HELP	1.08 0/0
5	FAMILY, COMMUNITY LIVING	1.08 0/0
57	ELEMENTARY NURSING	12.31 0/0
9	VOCATIONAL RELATIONSHIPS	1.94 0/0
90	ADULT NURSING	19.44 0/0
11	MATERNAL, CHILD CARE	2.38 0/0
3	HOME NURSING	.65 0/0
11	CARE OF MENTALLY ILL	2.38 0/0
23	NURSING EXPERIENCE	4.97 0/0
7	PHARMACOLOGY	1.51 0/0
0	SURGICAL	0.00 0/0
81	NO RESPONSE	17.49 0/0

MORE EMPHASIS
SECOND CHOICE

60	STRUCTURE, FUNCTION OF BODY	12.96 0/0
1	HOME MANAGEMENT	.22 0/0
0	FOOD, COOKERY	0.00 0/0
20	DIETS	4.32 0/0
6	OCCUPATIONAL DIVERSION	1.30 0/0
19	FIRST AID	4.10 0/0
8	MEDICAL SELF HELP	1.73 0/0
8	FAMILY, COMMUNITY LIVING	1.73 0/0
62	ELEMENTARY NURSING	13.39 0/0
9	VOCATIONAL RELATIONSHIPS	1.94 0/0
90	ADULT NURSING	19.44 0/0
25	MATERNAL, CHILD CARE	5.40 0/0
6	HOME NURSING	1.30 0/0
26	CARE OF MENTALLY ILL	5.62 0/0
24	NURSING EXPERIENCE	5.18 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
99	NO RESPONSE	21.38 0/0

MORE EMPHASIS
THIRD CHOICE

30	STRUCTURE, FUNCTION OF BODY	6.48 0/0
1	HOME MANAGEMENT	.22 0/0
1	FOOD, COOKERY	.22 0/0
23	DIETS	4.97 0/0
6	OCCUPATIONAL DIVERSION	1.30 0/0
24	FIRST AID	5.18 0/0
11	MEDICAL SELF HELP	2.38 0/0
7	FAMILY, COMMUNITY LIVING	1.51 0/0
29	ELEMENTARY NURSING	6.26 0/0
16	VOCATIONAL RELATIONSHIPS	3.46 0/0
60	ADULT NURSING	12.96 0/0
45	MATERNAL, CHILD CARE	9.72 0/0
9	HOME NURSING	1.94 0/0
39	CARE OF MENTALLY ILL	8.42 0/0
34	NURSING EXPERIENCE	7.34 0/0
0	PHARMACOLOGY	0.00 0/0
1	SURGICAL	.22 0/0
127	NO RESPONSE	27.43 0/0

MORE EMPHASIS
FOURTH CHOICE

21	STRUCTURE, FUNCTION OF BODY	4.54 0/0
5	HOME MANAGEMENT	1.08 0/0
0	FOOD, COOKERY	0.00 0/0
31	DIETS	6.70 0/0
7	OCCUPATIONAL DIVERSION	1.51 0/0
14	FIRST AID	3.02 0/0
12	MEDICAL SELF HELP	2.59 0/0
8	FAMILY, COMMUNITY LIVING	1.73 0/0
30	ELEMENTARY NURSING	6.48 0/0
13	VOCATIONAL RELATIONSHIPS	2.81 0/0
28	ADULT NURSING	6.05 0/0
60	MATERNAL, CHILD CARE	12.96 0/0
8	HOME NURSING	1.73 0/0
43	CARE OF MENTALLY ILL	9.29 0/0
28	NURSING EXPERIENCE	6.05 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
155	NO RESPONSE	33.48 0/0

MORE EMPHASIS
FIFTH CHOICE

17	STRUCTURE, FUNCTION OF BODY	3.67 0/0
2	HOME MANAGEMENT	.43 0/0
2	FOOD, COOKERY	.43 0/0
30	DIETS	6.48 0/0
11	OCCUPATIONAL DIVERSION	2.38 0/0
17	FIRST AID	3.67 0/0
9	MEDICAL SELF HELP	1.94 0/0
8	FAMILY, COMMUNITY LIVING	1.73 0/0
17	ELEMENTARY NURSING	3.67 0/0
13	VOCATIONAL RELATIONSHIPS	2.81 0/0
10	ADULT NURSING	2.16 0/0
34	MATERNAL, CHILD CARE	7.34 0/0
22	HOME NURSING	4.75 0/0
45	CARE OF MENTALLY ILL	9.72 0/0
47	NURSING EXPERIENCE	10.15 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
179	NO RESPONSE	38.66 0/0

Nr P M

LESS EMPHASIS
FIRST CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
109	HOME MANAGEMENT	23.54 0/0
95	FOOD, COOKERY	20.52 0/0
6	DIETS	1.30 0/0
30	OCCUPATIONAL DIVERSION	6.48 0/0
7	FIRST AID	1.51 0/0
27	MEDICAL SELF HELP	5.83 0/0
13	FAMILY, COMMUNITY LIVING	2.81 0/0
4	ELEMENTARY NURSING	.86 0/0
9	VOCATIONAL RELATIONSHIPS	1.94 0/0
1	ADULT NURSING	.22 0/0
0	MATERNAL, CHILD CARE	0.00 0/0
22	HOME NURSING	4.75 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
4	NURSING EXPERIENCE	.86 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
136	NO RESPONSE	29.37 0/0

LESS EMPHASIS
SECOND CHOICE

2	STRUCTURE, FUNCTION OF BODY	.43 0/0
62	HOME MANAGEMENT	13.39 0/0
56	FOOD, COOKERY	12.10 0/0
22	DIETS	4.75 0/0
33	OCCUPATIONAL DIVERSION	7.13 0/0
15	FIRST AID	3.24 0/0
9	MEDICAL SELF HELP	1.94 0/0
26	FAMILY, COMMUNITY LIVING	5.62 0/0
2	ELEMENTARY NURSING	.43 0/0
25	VOCATIONAL RELATIONSHIPS	5.40 0/0
1	ADULT NURSING	.22 0/0
1	MATERNAL, CHILD CARE	.22 0/0
26	HOME NURSING	5.62 0/0
3	CARE OF MENTALLY ILL	.65 0/0
2	NURSING EXPERIENCE	.43 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
178	NO RESPONSE	38.44 0/0

LESS EMPHASIS
THIRD CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
36	HOME MANAGEMENT	7.78 0/0
30	FOOD, COOKERY	6.48 0/0
18	DIETS	3.89 0/0
28	OCCUPATIONAL DIVERSION	6.05 0/0
11	FIRST AID	2.38 0/0
23	MEDICAL SELF HELP	4.97 0/0
36	FAMILY, COMMUNITY LIVING	7.78 0/0
2	ELEMENTARY NURSING	.43 0/0
25	VOCATIONAL RELATIONSHIPS	5.40 0/0
2	ADULT NURSING	.43 0/0
1	MATERNAL, CHILD CARE	.22 0/0
18	HOME NURSING	3.89 0/0
5	CARE OF MENTALLY ILL	1.08 0/0
4	NURSING EXPERIENCE	.86 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
224	NO RESPONSE	48.38 0/0

LESS EMPHASIS
FOURTH CHOICE

1	STRUCTURE, FUNCTION OF BODY	.22 0/0
22	HOME MANAGEMENT	4.75 0/0
17	FOOD, COOKERY	3.67 0/0
11	DIETS	2.38 0/0
21	OCCUPATIONAL DIVERSION	4.54 0/0
10	FIRST AID	2.16 0/0
13	MEDICAL SELF HELP	2.81 0/0
23	FAMILY, COMMUNITY LIVING	4.97 0/0
2	ELEMENTARY NURSING	.43 0/0
30	VOCATIONAL RELATIONSHIPS	6.48 0/0
2	ADULT NURSING	.43 0/0
2	MATERNAL, CHILD CARE	.43 0/0
27	HOME NURSING	5.83 0/0
3	CARE OF MENTALLY ILL	.65 0/0
3	NURSING EXPERIENCE	.65 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
276	NO RESPONSE	59.61 0/0

LESS EMPHASIS
FIFTH CHOICE

1	STRUCTURE, FUNCTION OF BODY	.22 0/0
14	HOME MANAGEMENT	3.02 0/0
11	FOOD, COOKERY	2.38 0/0
11	DIETS	2.38 0/0
18	OCCUPATIONAL DIVERSION	3.89 0/0
8	FIRST AID	1.73 0/0
17	MEDICAL SELF HELP	3.67 0/0
19	FAMILY, COMMUNITY LIVING	4.10 0/0
2	ELEMENTARY NURSING	.43 0/0
21	VOCATIONAL RELATIONSHIPS	4.54 0/0
2	ADULT NURSING	.43 0/0
3	MATERNAL, CHILD CARE	.65 0/0
21	HOME NURSING	4.54 0/0
6	CARE OF MENTALLY ILL	1.30 0/0
6	NURSING EXPERIENCE	1.30 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
303	NO RESPONSE	65.44 0/0

BEEN REMOVED OR DROPPED
FIRST CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
61	HOME MANAGEMENT	13.17 0/0
33	FOOD, COOKERY	7.13 0/0
1	DIETS	.22 0/0
20	OCCUPATIONAL DIVERSION	4.32 0/0
4	FIRST AID	.86 0/0
29	MEDICAL SELF HELP	6.26 0/0
9	FAMILY, COMMUNITY LIVING	1.94 0/0
1	ELEMENTARY NURSING	.22 0/0
3	VOCATIONAL RELATIONSHIPS	.65 0/0
0	ADULT NURSING	0.00 0/0
0	MATERNAL, CHILD CARE	0.00 0/0
9	HOME NURSING	1.94 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
0	NURSING EXPERIENCE	0.00 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
293	NO RESPONSE	63.28 0/0

BEEN REMOVED OR DROPPED
SECOND CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
25	HOME MANAGEMENT	5.40 0/0
37	FOOD, COOKERY	7.99 0/0
5	DIETS	1.08 0/0
20	OCCUPATIONAL DIVERSION	4.32 0/0
5	FIRST AID	1.08 0/0
9	MEDICAL SELF HELP	1.94 0/0
8	FAMILY, COMMUNITY LIVING	1.73 0/0
2	ELEMENTARY NURSING	.43 0/0
6	VOCATIONAL RELATIONSHIPS	1.30 0/0
0	ADULT NURSING	0.00 0/0
0	MATERNAL, CHILD CARE	0.00 0/0
8	HOME NURSING	1.73 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
2	NURSING EXPERIENCE	.43 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
336	NO RESPONSE	72.57 0/0

BEEN REMOVED OR DROPPED

THIRD CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
12	HOME MANAGEMENT	2.59 0/0
3	FOOD, COOKERY	.65 0/0
8	DIETS	1.73 0/0
15	OCCUPATIONAL DIVERSION	3.24 0/0
2	FIRST AID	.43 0/0
6	MEDICAL SELF HELP	1.30 0/0
14	FAMILY, COMMUNITY LIVING	3.02 0/0
1	ELEMENTARY NURSING	.22 0/0
6	VOCATIONAL RELATIONSHIPS	1.30 0/0
1	ADULT NURSING	.22 0/0
0	MATERNAL, CHILD CARE	0.00 0/0
11	HOME NURSING	2.38 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
0	NURSING EXPERIENCE	0.00 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
384	NO RESPONSE	82.94 0/0

BEEN REMOVED OR DROPPED
FOURTH CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
8	HOME MANAGEMENT	1.73 0/0
2	FOOD, COOKERY	.43 0/0
2	DIETS	.43 0/0
11	OCCUPATIONAL DIVERSION	2.38 0/0
1	FIRST AID	.22 0/0
5	MEDICAL SELF HELP	1.08 0/0
6	FAMILY, COMMUNITY LIVING	1.30 0/0
0	ELEMENTARY NURSING	0.00 0/0
11	VOCATIONAL RELATIONSHIPS	2.38 0/0
0	ADULT NURSING	0.00 0/0
1	MATERNAL, CHILD CARE	.22 0/0
9	HOME NURSING	1.94 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
1	NURSING EXPERIENCE	.22 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
406	NO RESPONSE	87.69 0/0

BEEN REMOVED OR DROPPED

FIFTH CHOICE

0	STRUCTURE, FUNCTION OF BODY	0.00 0/0
4	HOME MANAGEMENT	.86 0/0
1	FOOD, COOKERY	.22 0/0
1	DIETS	.22 0/0
6	OCCUPATIONAL DIVERSION	1.30 0/0
5	FIRST AID	1.08 0/0
5	MEDICAL SELF HELP	1.08 0/0
10	FAMILY, COMMUNITY LIVING	2.16 0/0
2	ELEMENTARY NURSING	.43 0/0
6	VOCATIONAL RELATIONSHIPS	1.30 0/0
0	ADULT NURSING	0.00 0/0
0	MATERNAL, CHILD CARE	0.00 0/0
6	HOME NURSING	1.30 0/0
0	CARE OF MENTALLY ILL	0.00 0/0
4	NURSING EXPERIENCE	.86 0/0
0	PHARMACOLOGY	0.00 0/0
0	SURGICAL	0.00 0/0
413	NO RESPONSE	89.20 0/0

APPENDIX N

"OTHER" RESPONSES TO ITEM 5:39"

LICENSED PRACTICAL NURSE SURVEY

I. Answers to (E) other:

1. Forgot to send in fee. 111
2. Haven't had a chance to join. 111
3. Am helping raise five grandchildren.
4. Never gave it a thought.
5. I intend to in..the very near future. 111
6. Just graduated. 1111
7. Not working at present time. ~~1111~~ ~~1111~~ 1111
8. License pending.
9. Other commitments.
10. Have not been working since organization was formed in Sheboygan.
11. The lack of respect for LPN's and few opportunities for employment for LPN's in this area, other than working on the same level as an aide.
12. Haven't worked for nine years.
13. Have had a transportation problem.
14. My husband is working all the time.
15. To busy with family life.
16. Colorado did not have licensure for Practical Nurses when I came here and now I have not had the opportunity to join.
17. Not licensed. 111
18. Working all night.
19. Would not have time to attend. ~~1111~~ 1111
20. None.
21. Moving from Wisconsin to California.
22. Personal.

I. (E) other - cont'd.

23. Just licensed.

24. Haven't looked into it as yet. 111

25. Never contacted. 11

26. Not invited yet.

27. Because I'm not a LPN.

28. Due to family obligations. 1111

29. Don't like meetings.

30. Would need a babysitter. 1

31. I never received any information of an Illinois Chapter.

32. No chance.

33. Didn't know of it. 1

34. Not in the nursing field at present.

35. Small attendance, therefore placing all responsibility and work on same few.

36. Too far from district. 1

37. Inactive in nursing. ~~1111~~ 11

38. My husband works evenings and I have much to do with my children being only 11 months apart.

39. Medical Assistance Group.

40. Have not received my North Carolina license at present.

41. Didn't get around to joining.

42. Can't keep up too many things outside of home.

43. Never been asked to join.

44. Didn't renew my membership this year. 1

45. On nights off - should be with family.

46. No babysitter.

47. I don't know where to join! 1

I. (E) other - cont'd.

48. I do not know just how to go about obtaining a license again. Also if exam is required, I let my license expire and now would like to renew it and return to work at least part-time as children get older.

49. Never approached. Have no idea of specific functions of N.F.L.P.

50. Professional nurse.

51. Plan on joining. 11

52. Meetings start before I'm through working.

53. I work so infrequently.

54. This takes place at a time I'm not able to attend.

55. Haven't taken state boards yet.

56. As a Religion, I do not have the freedom to attend meetings, etc. (Yet)

57. Have little contact with members.

58. Little work past few years.

59. Fairly new in state and unemployed.

60. I have a newborn.

61. Too soon after graduation.

62. Local chapter weak.

63. I work 3rd shift.

64. Work on and off, not steady.

65. Graduated 1962 - Have been inactive until February, 1965.

66. It is more like a social meeting than a professional organization.

67. I am planning to join in the Spring when the weather is nicer. I drive back and forth and the roads have been too bad.

68. Lack of cooperation of others - lost interest.

69. Time element but I intend to pay dues.

I. (E) other - cont'd.

70. I go to night school on nights that meetings are held.

71. Haven't heard much about it.

72. Neglect on my part.

73. Have another meeting on same nights.1

74. Raising four children; out of contact.

75. Going to school.

76. Not able because I have entered convent.

77. Am now R.N.1

78. Boring.

79. Now licensed.

80. How do you join??

81. Neglect.

82. Work and go to school nights.

83. I'm not settled as yet in my home.

84. To busy.

85. Usually due to my daughter.

86. Don't know.

87. Presently waiting to take State Board.

88. Four children.

89. I also have taken a state test and have become a certified psychiatric technician. I belong to the C.S.E.A.

90. I have been out of nursing for several years.

91. Not licensed in California.

92. Not working as LPN

93. I dropped it last year when I began to travel.

APPENDIX O

SCHOOLING OTHER THAN IN-SERVICE TRAINING

LICENSED PRACTICAL NURSE SURVEY

II. If you have had any further schooling other than in-service training, list the subject and school or faculty providing the training:

Subject or Training	School or Faculty
1. Obstetrics Pediatric Six Months Course	1. Saint Mary's School of Practical Nursing Post Graduate Section At Pierre, South Dakota
2. Two Reviews	2. K.V.S. of P.N.
3. Advanced psychology Physical therapy Occupational therapy Educational therapy	3. Downey Veterans Adm. Same Same Same
4. One year Junior College Psychology, Sociology, Chemistry, English, Zoology, and U. S. History.	4. MIT, Milwaukee
5. Whirlpool Therapy - for frostbites only	5. Mrs. McGine's Providence Hospital, Physical Therapist.
6. Ed.B152-Adol. Characteristics and Problems Psych B121-Social Psychology SP. B4 Voice and Diction	6. University of Maryland Same Same
7. Typing Business Course French	7. KTI Same Same
8. Practical Nursing	8. KTI
9. Operating & Emerg. Room	9. Memorial Hospital - Surgery Supervisor R.N.
10. Shorthand	10. Emily Griffin Opportunity School
11. Refresher Course Course in Lab.	11. St. Luke's Hospital staff Same Courses taught to Racine County Med. Assistants.
12. Surgical	12. St Catherines Hospital

II. No. 6 cont'd.

Subject or Training	School or Faculty
13. Licensed in technician for taking EKG readings Emergency Health Care "Bomb Shelter".	13. Home Study Course Fort Atkinson Voc. School
14. Psychology	14. Carthage College
15. Refresher Med. & Surgical	15. KTI
16. Psychology	16. Racine Voc. School
17. Geriatric care	17. Racine County Institutions
18. Elementary Education	18. Wisconsin State College Whitewater, Wisconsin
19. General Refresher Course	19. Kenosha Voc. School
20. Surgical technician	20. St. Luke's Hospital, Racine
21. Pharmacology	21. Miss Pedarian, R.N.
22. Medical Terminology English	22. Elgin Night School (Ill.)
23. English Sociology Political Speech	23. University of Wisc. Extension Same Same Same
24. State Medical Society for Medical Assistants Office Procedures	
25. Inhalation Therapy	25. St. Luke's Hospital, Racine
26. Surgery	26. Mount Sinai, Milwaukee
27. Surgical technician	27. Mount Sinai, Milwaukee
28. Dominician College evening clàsses	28. Dominician College
29. Recovery Room	29. St. Catherines Hospital
30. Pharmacology	30. Kenosha Memorial Hospital
31. Registered Nurse - graduated '58	31. St Therese School of Nursing Waukegan, Illinois

II. No. 6 cont'd.

	Subject or Training		School or Faculty
32.	R. N. Training	32.	Milwaukee County Hospital
33.	Operating Room Technician	33.	St. Luke's Hospital, Racine
34.	Lab work (Blood Chemistries, EKG & BMR) Public Health Nursing	34.	Milwaukee Institute of Tech. Peace Corps
35.	Trained Technician - Delivery Room	35.	On-job-training, Delivery Roo St. Mary's Hospital, Racine
36.	Medical Secretarial	36.	Prospect Hall, Milwaukee
37.	Freshman English	37.	University of Wisconsin, Kenosha Extension
38.	Professional Nursing	38.	St. Luke's Hospital School of Nursing
39.	Office Training - specific for Drs. office, Typing, lab work, x-ray, Diathermy massage	39.	Offered by Medical Assists Asoor of Univ. of Wisconsin Extension, Racine.
40.	Refresher Course Pharmacology	40.	Kenosha School of P.N. Kenosha Memorial Hospital
41.	Office procedures and lab training relative to employment	41.	Dr. R. J. Schacht
42.	Refresher Course	42.	Kenosha School for P.N.'s.
43.	English - 6 hrs. credit Soc. - 3 hrs. credit	43.	Purdee University Same
44.	Medical-Surgical Nursing	44.	KTI
45.	Medications & Dosages	45.	Downey Veterans Hospital
46.	Two years R.N. training	46.	St. Luke's Hospital, Racine
47.	Operating Room Technique	47.	Irene Stenseth
48.	Eng. 2 years, Hist. 1 year Intensive care unit Orientation	48.	MIT Mount Sinai Hospital, Milwauk
49.	Scrub nurse on O.B.	49.	St. Catherines Hospital
50.	Surgical Scrub	50.	Memorial Hospital, Menomonie

II. No. 6 cont'd.

	Subject or Training		School or Faculty
51.	Mental Illness Surgical Recovery	51.	V. A. Hospital, Downey, Ill. On the job training, movies, lectures and books.
52.	Psychology in Human Relations	52.	KTI
53.	20 Months Nursing Training '31-'32	53.	St. Lukes - Racine, Wis.
54.	Pharmacology class	54.	Kenosha Memorial Hospital Kenosha, Wisconsin
55.	R.N. Training	55.	St. Anne's Hospital, Chicago Loyola University
56.	Refresher Course	56.	Kenosha Vocational School
57.	OB Scrub Nurse	57.	Maternity floor R.N.'s.
58.	Taking x-rays, B.M.R.'s EKG's Assisting in surgical procedures Blood Chemistry	58.	Medical Center A. N. Berke, M.D.
59.	300 hours psychiatric training	59.	Napa State Hospital
60.	Professional Nursing	60.	Luther Hospital School of Nursing, Eau Claire, Wis.
61.	Registered Nurse B.S. in Nursing	61.	St. Luke's Hosp. School of Nursing, Racine, Wis. Seattle University, Seattle Washington
62.	Surgery training	62.	St. Catherines Hosp., Kenosha
63.	Refresher Course	63.	Kenosha School for LPN's
64.	Refresher Course	64.	K.T.I.
65.	Refresher Course in Practical Nursing English course General Psychology Socialogy	65.	K.T.I. Night School - K.T.I. Carthage College U.W.C.
66.	Nursing, 11 months which included Liberal Arts also nine months Hosp. experience	66.	Miserricordia Sch. of Nursing Marquette University Miserricordia Hospital
67.	R.N.	67.	Holy Angel School of Nursing Los Angeles, California

II. No. 6 cont'd.

	Subject or Training		School or Faculty
68.	Anatomy and Physiology Chemistry Four Semesters English Zoology Psychology Sociology Speech Botany French Political Science	68.	U.W. Kenosha Extension

APPENDIX P

ADDITIONAL TEACHING UNITS

LICENSED PRACTICAL NURSE SURVEY

III. What teaching units in addition to those listed above would you suggest be added to the present practical nurse program? (1) for first choice, (2) for second choice, (3) for third choice, (4) for fourth choice, and (5) for fifth choice.

1. 1 - drugs ~~1111 1111 1111 1111 1111~~ 1
   2 - types of sutures and there uses.

2. 1 - more on medications and treatments.
   2.- learning more how various machines work

3. 1 - Surgical technique - review
   2 - more extensive adult nursing course
   3 - body positioning
   4 - physical therapy 111
   5 - diagnostic procedures, lab, x-ray

4. I feel that every field of nursing was covered and explained very well.

5. 1 - laboratory test procedures and their importance in diagnosis.

6. 1 - pharmacology ~~1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111~~
   2 - surgical nursing
   3 - Laboratory results (blood, urine counts)

7. 1 - a more exact anatomy program
   2 - a class on communications

8. 1 - more time and experience on medications.

9. 1 - more surgical room procedures since more LPN's are used as scrub and circulating nurses. 1

10. 1 - medications ~~1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111 1111~~
    2 - Emergency treatment to hospital work

11. 1 - more practical experience in the hospital.
    2 - more experience in use of equipment. 1
    3 - more on medications ~~1111 1111~~ 11

12. 1 - pharmacology ~~1111 1111 1111~~
    2 - be more modern and up to date in your teaching (Elementary Nursing)
    3 - Teach today's methods

13. 1 - course on medication and experience passing medication.
    2 - more on psychology ~~1111 1111~~ 11

III. No. 13 (cont'd)

14. 1 - Principles of psychology - for better understanding.

15. 1 - more about reaction and counter indications.

16. 1 - some type of physical theraphy training.
2 - lab tests and how to preform them.

17. 1 - assisting doctors and their counts, dressings, examinations as proctoscopic, more sterile technique.

18. 1 - more participation in surgery.

19. 1 - one unit strictly on the care of burned patients
2 - on how to use different types of equipment and why used.

20. 1 - lab tests.

21. 1 - medical assistant's course.

22. 1 - chemistry.
2 - medical assistance
3 - more on elementary nursing.

23. 1 - doing and reading blood tests.
2 - studying different types of cells and bacteria.

24. 1 - dosage - equations - arithmetic (review)
2 - how to talk with patients.
3 - more on mentally ill.
4 - surgical OB nursing.

25. 1 - more time devoted to medications, their usages and dosages and spelling.

26. 1 - emergency nursing (training for emergency room)

27. 1 - increase in length of course.

28. 1 - The responsibility of an LPN on night duty.

29. 1 - inhalation therapy ~~1111~~

30. 1 - more on x-ray and lab procedures.
2 - more on working with mentally ill patient.

31. 1 - orthopedic nursing. ~~1111-1~~

32. 1 - bandaging - putting on ace bandages, etc.

33. 1 - more emphasis on treatments.

34. 1 - delivery room training. ~~1111~~ 1111
2 - intensive care training. 1111

III. No. 13 (cont'd)

35. 1 - more time with V.N.A.

36. 1 - mouth-to-mouth resuscitation in first aid.

37. 1 - speech improvement.
2 - more anatomy.

38. 1 - nursing in delivery room
2 - nursing in operating rooms - how to "scrub" for deliveries and operations.

39. 1 - more actual practice on procedures.
2 - more information and time spent on medications.

40. 1 - known usages of common medicines.
2 - advanced techniques in treatments.
3 - cardiac, CVA, and cancer treatments.
4 - advanced learning of reproductive system.
5 - vitamins.

41. 1 - lab work.

42. 1 - post-op care of neurosurgical pt. and equipment used on pt.
2 - knowledge of Baron Food Pump.

43. 1 - management of help.

44. 1 - care of the teenager.

45. 1 - public nursing.

46. 1 - more emphasis in aseptic techniques.

47. 1 - refresher course for mothers who can't get away.
2 - also advancement courses in all subjects.

48. 1 - communicable diseases - care and RX.

49. 1 - team nursing, as a leader, as a unit.

50. 1 - care of the cancer patient.
2 - course on treatments.
3 - course on more warmth toward the patients.
4 - course on more bedside care.
5 - course on all types of illnesses.

51. 1 - more English and vocabulary.

52. 1 - neurological nursing.
2 - more concentration on medications, dosages, etc.

53. 1 - disaster nursing.

III. No. 13 (cont'd)

55. 1 - a program in emergency room aid. 11
2 - surgical room preparation.
3 - care of post-op - more emphasis. 1
4 - labor room set-up and delivery.

56. 1 - legal aspects.

57. 1 - special course geared to nursing homes for the aged.

58. 1 - more attention to the pts. care and comfort. 1
2 - laboratory procedures - blood, urine analysis and tests. 11111
3 - equipment - ice mattress - iron lung - tilt table - traction - etc.

59. 1 - more experience (clinical) in RX for students (primarily in procedures)

60. 1 - knowledge of medical machines as electrocardiogram, hypothermia, bennett respirator, etc.
2 - experience in surgery such as holding retractors so one actually views the organs which they study.
3 - names of common laboratory tests and reasons for doing them. (blood chemistry studies)

61. 1 - at least six months spent in class room study.

62. 1 - to help understand laboratory reports.
2 - to be taught to assist doctors in procedures.
3 - to be taught elementary procedures in inhalation therapy and orthopedic nursing.

63. 1 - oxygen units.
2 - tracheotomy cases.

64. 1 - reading and meaning of laboratory findings.
2 - terminology (medical terms and instruments).
3 - surgery observing.

65. 1 - more detailed teaching and several weeks added to each unit of teaching. (1 1/2 year course)
2 - orthopedic and neuro-surgical nursing.

66. 1 - T B nursing
2 - learn to draw blood - necessary, usually in doing office nursing.

67. 1 - observations of signs and symptoms of diseases.
2 - observations of procedures in orthopedics and pediatrics.
3 - E.G. various cast applications - and observations and administering children's medications.
4 - setting up and assisting with various examinations.

68. 1 - preparing a patient for surgery. (shaving area involved for surgery)

III. No. 13 (cont'd)

68. 2 - how to be courteous to a doctor on the phone when you refuse to take doctors orders.
3 - how to take lab reports on urinalysis and blood work over telephone.

69. 1 - neurosurgery. 11

70. 1 - assisting the doctor in physical examinations (procedures, names of instruments, etc.)

71. 1 - coreater preparation on medication administration.

72. 1 - scrub nurse in delivery room.

73. 1 - more on the care of newborn babies. 1

74. 1 - teaching on first aid (emergency)

75. 1 - floor supervisor for in hospitals where an LPN can take over in emergency.

76. 1 - family planning.

77. 1 - more on care of cardiacs.

78. 1 - oral hygiene.
2 - instructions on levines and their functions.
3 - explain I.V.'s, effects and importance.
4 - skin care - crutch therapy.

79. 1 - some added surgical teaching.

80. 1 - how to give reports to the next team coming on duty.
2 - sterile technique.

81. 1 - general nursing in more detail.

82. 1 - more care for the elderly - arthritic patients.

83. 1 - more procedures should be taught.

84. 1 - how to handle sterile equipment.

85. 1 - more hospital experience.
2 - more hospital equipment to work with.

86. 1 - physical therapy.

87. 1 - art of self-confidence.

88. 1 - more experience in surgery technique.
2 - more experience in emergency cases. 1111

89. 1 - more about I.V.'s, O_2, and levine suction. 11

III. No. 13 (cont'd)

90. 1 - speech.
2 - English. 1
3 - chemistry.

91. 1 - more charting. ~~1111~~
2 - more responsibility.

92. 1 - respect for others.

93. 1 - more experience in surgery. 1
2 - more experience in recovery room. 1

94. 1 - more in-service experience in all departments.
2 - lengthen course to 18 months or two years.
3 - more time in break down of terminology. 11
4 - more knowledge of laboratory terminology.
5 - more experience in execution of techniques.

95. 1 - technique in assisting physician. 111

96. 1 - more surgical - how a colostomy is done (intestines involved, etc.)

97. 1 - private duty instructions. 11

98. 1 - handling the office patient, and medical office management.
2 - further training and experience in care of syringe and needle.
3 - prepare the students for childbirth, have them see as many births as possible.

99. 1 - more modern nursing procedures. 1
2 - use of present day hospital equipment.

100. 1 - supervisory positions and responsibilities.
2 - team leadership. 11

101. 1 - please tell LPN's not to join any union of aides or other employees anywhere.
2 - more preparation to take charge when RN is absent.

102. 1 - less bed making.
2 - more training in noticing change in condition.

103. 1 - communications.

104. 1 - mental health - emotional disturbances.
2 - minor surgery - scrub.
3 - office nurse training - minor lab tests.

105. 1 - the do's and don't's of conversation.
2 - more on maternal nursing.

III. No. 13 (cont'd)

106. 1 - more study of assistance in charge.

107. 1 - rehabilatation of C.V.A. patients.
2 - more emphasis on isolation technique.1

108. 1 - seeing more autopsy.
2 - seeing more surgery on certain cases.
3 - head surgery and the care.

109. 1 - care of the diabetic patient - insulin, shock, etc.

110. 1 - more on types of traction.
2 - teach "Z" tech of giving IM's.

111. 1 - surgical and post surgical care

112. 1 - giving IM's and hypo's.

113. 1 - drawing of a patient's blood for laboratory work.
2 - electrocardiogram technique.

114. 1 - orientation on x-rays.
2 - physical therapy.

115. 1 - practicing treatment.

116. 1 - oxygen therapy.1
2 - sterile dressings and other sterile procedures.1

117. 1 - more supervised ward practice.
2 - professional ethics
3 - better understanding of LPN role on nursing team.
4 - more required reading.

118. 1 - office management.

119. 1 - normal and abnormal blood reports - how to read.

120. 1 - some course in assisting doctors with dressings.
2 - some short course in emergency room.1

121. 1 - more experience in operating room.

122. 1 - teach students how to scrub for deliveries.

123. 1 - more information on legal status of LPN.

124. 1 - industrial nursing.

125. 1 - spelling.1
2 - printing.
3 - handling and positioning of the disabled.

126. 1 - self grooming - hair, uniform, shoes, etc.

III. No. 13 (cont'd).

127. 1 - practice with positioning and turning a live patient.

128. 1 - more on the job training.
2 - procedures for removing IV's, suctioning, savages, lavages.

129. 1 - more emphasis on observation of symptoms. 1

130. 1 - care of recovery room patient.

131. 1 - types of electrical equipment and use.

132. 1 - care of deceased and filling out papers, etc.
2 - care of tracheotomy patient.

133. 1 - a class in understanding lab reports.

134. 1 - supervised hospital experience.
2 - nurse-patient relationship.
3 - more ward classes.
4 - more testing in classes.
5 - instructors (qualified instructors) more discipline.

135. 1 - much more on post surgical care
2 - child psychology.
3 - special emphasis on bed side manner and personal appearance.

136. 1 - diets for special tests - why are they given?
2 - emergency procedures.

137. 1 - better program in child care and diseases.
2 - better instruction for observations.
3 - more knowledge about parental fluids.
4 - a course in proper usage of cronpettes, k-thermia, and other equipment that we are expected to know about.

138. 1 - more detail on paper work.

139. 1 - experience in administering I.M.'s, EKG and BMR experience.

140. 1 - nursing home care.

141. 1 - psychiatric patient care and understanding the psychiatric patient.

142. 1 - different burn techniques.

143. 1 - all treatments.
2 - team nursing.

144. 1 - public health and or VNA nursing.

145. 1 - manners or ways to approach the family of a patient who has just expired.

III. No. 13 (cont'd)

146. 1 - observing symptoms of disorders such as collapsed lung cardiac failure.

147. 1 - instruction in modern surgical equipment.

148. 1 - more teachings in care of the chronically ill.

149. 1 - more in isolation (too many people are afraid of it)

150. 1 - neurological training.

151. 1 - limitations of a practical nurse in various positions.

152. 1 - use of the P.D.R.

153. 1 - stress proper body mechanics.

APPENDIX Q

PREPARATION

LICENSED PRACTICAL NURSE SURVEY

IV. 14. What are you now doing that you feel your school did not prepare you to do?

1. I have been away from hospital nursing for six years and sometime next year I plan to go back to full time nursing. I wish there was a review course and a brush up on new equipment available for people like me. Is there such a course available?

2. Medication and desk work.

3. I am now staying home keeping house. I feel if there were more time spent in teaching procedures and doing them in the hospital, students would gain more confidence and could adjust better after they graduate.

4. Working with children. Giving IM's and hypo's to children.

5. Analysis of vital body fluids as blood, urine, etc.

6. As a LPN, I think the school has taught me everything I should know for the field of nursing.

7. I feel they should emphasize drugs more - the actions and side effects. To have a good review of all courses at the end of the year.

8. I did work with an assistant head nurse while at the hospital in Florida. I did not have enough knowledge concerning medicines, etc. I was taught some while I worked there but I sure wish that we as LPN's could administer more medicines and injections - also different situations concerning some drugs more than others.

9. Medications and team work.

10. I feel that the school did not prepare us for surgical and medical nursing as it should have nor have we been prepared as far as equipment and medications.

11. My school prepared me very well. I went to a G-S-5 in six months from a G-S-3. It had never happened to any one before. It always takes a year to go from one G-S step to another. I went two steps in six months due to my training, plus loving my work and my patients.

12. Many of the procedures we learned in school must be practiced at work before a person feels secure. It is easy to memorize but doing something that you've only read about is all together different.

IV. No. 14 (cont'd)

13. I was an O.B. scrub nurse at Kenosha Memorial Hospital for eight months. I felt almost totally unprepared for it with the exception of knowing what a few instruments were and how to scrub, gown, and glove; I think the school lacks in this area. It should be taught because most LPN's working in O.B. are expected to be able to scrub.

14. Industrial nursing, however, I feel confident, because I worked in surgery for one year, and also worked nights while attending college, and gained much experience. However, I will never regret any of the wonderful experience I received at Kenosha Vocational. It was the mold to the person I now am.

15. I feel that the course dealing with the administering of drugs and medicines was a good course but where I work I can't use it.

16. Pass meds regularly; am also in charge of floor at times - have more responsibility, work without an R.N., although there is always someone to call on.

17. Discontinuing IV's. Working with suction machine. Changing dressings.

18. I feel that I have been taught sufficiently. I have no trouble on any floor. It takes a while to get in the swing of the floor, but in no time it comes back.

19. I am now unemployed. I worked on Orthopedic floor at Waukesha Memorial Hospital and everything that I learned during my training helped me with all of my assignments.

20. Medications on a large scale. Dosages.

21. Being in three places at once!
Working for little or nothing!

22. I am now working for an E E N T specialist. It is interesting work and you come in contact with many people but you do not have the patient contact as in the hospital. I am learning various things while here, but am satisfied with the training I received in school. Thank you for everything!

23. Passing medications.
Carrying for critically ill patients.
Assisting doctors.

24. Passing medications.

IV. No. 14 (cont'd)

25. Care of the critically ill patient. Experience in contacting the doctor when a patient becomes critically ill, and the only R.N. on duty is caring for another emergency and can not help you.

26. A) Intensive care nursing - would have liked more on specific nursing care of surgical post-ops.
B) Instruction of using common hospital machinery: Bird Resperators, oxygen sets, Gamcos, K-pads.
C) I.V. Therapy - importance and precautions

27. Emergency room care.

28. More O.B. training.

29. Too much work - but I don't mind it - infact I like it.

30. Passing more medication.

31. Surg. Preps of patients. Positioning of fractured legs without sand supports.

32. The school did not prepare me (as much as I felt it should had) in the way of accepting more responsibilities.

33. I feel I was very well prepared to give good nursing care upon my graduation and those things I was in doubt about I have been taught at my place of employment. There is no better teacher than experinece and how well I realize this since I have been working on my own.

34. Passing meds. Insufficient amount of time spent on learning meds. and their uses.

35. Suctioning pts. Inserting nasal catheters. Care of traceotomy's.

36. Maybe by now you are offering both mentally ill care and T.B. training. I did not receive T.B. When I started at St. Nicholas, they trained me to take care of the Post-op. Chest Surgery, which I was not qualified to do. On the average, there would be two or three of these cases a month. As you know this is a intense care of coughing them and trying to expand the lungs. We had a very helpful doctor, who was very patient and willing to teach me!

37. I am working in obstetrics and there I learned to scrub for new deliveries and how to take care of patients in labor. At St. Lukes while I was in training we weren't allowed to work with labor patients at all.

for new [illegible] obstetrics and there I learned to scrub and willing to in labor. At St. Lukes while I was in training we weren't allowed to work with labor patients at all.

IV. No. 14 (cont'd)

38. Caring for Thorocotomy and other chest cases.

39. At one time or another, the percentage of us are thrown into the responsibility of taking over an entire floor. I don't feel we had enough training in medicines or the charge of a floor to take over and do the best possible job. I realize this is not what an LPN is trained to do but many of us do have to and should have preparation for such a situation.

40. Giving meds.

41. Intensive care work.

42. Thus far I have not run across anything that was not covered in the course of studies in my school. I am proud to say that you offer the best practical nurse course. I work with practical nurses from the surrounding area schools and my training was much more impressing and more informed than others.

43. I am presently employed in a home and took over the job of caring for four small children who lost their mother last year. In a case like this much phrenalogical help is needed each day.

44. As it now stands, I am not permitted to preform many of the procedures we were taught due to state and colony regulations and restrictions.

45. Reading blood!

46. I am now working the night shift and many times a patient is in need of a service, which as an LPN, I am unable to render. However, I feel with a basic course I could be qualified, such as: 1) levine insertion, 2) taking phone orders from a doctor.

47. Office nursing - x-ray, lab. work, office equipment, surgical assistant @ office, EKG's.

48. I feel well prepared for visiting nurse work since I do mainly bedside nursing. I felt inadequate at St. Catherines since they expect you to assume responsibilities for which we have not been trained, but which many LPN's assume.

49. Giving out medications and also oxygen.

50. Mostly medication.

IV. No. 14 (cont'd)

51. In the hospital where I work practical nurses aren't really recognized. I feel Kenosha has an excellent program and I'm really not doing anthing. I haven't gotten to use a lot of the knowledge I have been taught.

52. While I was working as a surgical nurse, I felt my training had been adequate. I am now working in a Sanatorium. I would have liked more knowledge of medications and respiratory diseases. Also some experience would have been helpful in some orientation of x-rays and reading of some. Such as what does pneumonia, Silicosis, T.B., Fibrosis look like? The Dr. reads them, but it would be interesting to know the difference between these. I work with the Dr. on outpatient clinic, I would feel more confident.

53. Take blood pressure.
Taking care of critically ill patients.
Take more responsibility.
Be able to write orders from doctor.

54. I now have to take and develop x-rays, do electrocardiograms, draw blood (veinous punctures), urinalysis, white counts, hemacrit hemoglobin, sterilize equipment and instruments. It would be difficult, in the time allowed, to receive proper training in all of these fields, but I feel that it would have been profitable if I had received some general background information regarding these things.

55. Since graduation I've only done work in O.R. Scrubbing - One year I spent on the floor, that was in Calif. two years ago - So Ifeel its rather difficult to answer this. In all I feel the LPN course was very complete for only one year in length. It should be maybe two years with more classes added.

56. The most difficult thing I found was medications.

57. Giving of medication - purpose - Symptoms and what to do of over-dosage.
Intramuscular shots.
What can be given as a standing order with Dr's. order for minor disorders such as headache, upset stomach, etc.

58. I am not doing anything that I haven't been prepared for but I do believe more emphasis should be given to diabetes and the coronary patient.

59. My school prepared me very well. I feel myself much better informed than other LPN's.

IV. No. 14 (cont'd)

60. Taking doctors orders - I feel the sisters expect this of us.

61. I believe we need a longer term of study than a year. You do not have enough experience that is expected of you when you graduate.

62. Passing medications.

63. Medications

64. Pharmacology.

65. I think more should be taught in charting on what to put on a chart and what to look for and how to say these things in charting.

66. I feel one should be better prepared for floor duty and the responsibility of being in charge. Also, there should be much more emphasis on medications - (dosages, kinds, etc.) - More emphasis should also be placed on how to carefully care for the acutely ill patient needing oxygen therapy, etc. More time should be placed on actual hospital cases - RX, etc.

67. Get married and having your children by Cesarean, which I did.

68. Occasionally a child is admitted, critical or near critical, with the croup. Much suctioning is required, which I was taught on duty. We are not to care for the critical, but with a shortage of RN's here, we care for them. I feel we could have been taught more in this field. A tracheotomy is sometimes performed with this type of condition and my knowledge to care for this was at a minimum.

69. Rehabilatation of C.O./A patients.
Caring for orthopedic patients.

70. Laboratory work - as taking of E.C.G.'s.
Urinalysis, Throat cultures - Some P.T. giving diathermy and U.S. treatments - heat lamps and lights. Assist with minor surgery and office work.

71. When I was employed at Marinette General Hospital, I was Med. nurse and assistance charge of men. Surgery and OB. (Delivery Room). As I stated above, we should have had more med's, assistant charge and delivery room.

72. I have found very few procedures with which I was not previously acquainted. Of course, one must adjust to the different types of equipment offered by various hospitals. However, the procedures learned in school

IV. No. 14 (cont'd)

72. (cont'd)
without difficulty.

73. I feel that I was well prepared by the school for the field of nursing I've chosen - O.B. (Nursery). Naturally when working you gain more knowledge which benefits greatly.

74. Scrubbing in surgery.

75. I'm President of our Inservice Program at the hospital. Wish I had more on legislation. Also as a post-partum nurse, would have liked to have more teaching on premie baby care.

76. Emotionally disturbed patients.

77. Passing meds. and being in charge of a ward.

78. "Preparing medication dosage" - I'm learning on the job the mathmaticsof injectable solutions as cc's, grains, grams, etc.

79. Medications and making rounds with doctors.

80. For the job I had, I felt that my training was adequate.

81. When I worked at St. Mary's, I was not prepared to make out aides work schedule as team captain.

82. Learn more medications - their purpose and their effects-- also to do the actual follow through with certain new techniques and kinds of treatments which are being used.

83. Intramuscular injections
Office procedures in nursing.

84. Supervisory nursing.

85. Seven years ago, I worked in a doctors office doing blood work, running E.C.G., x-ray work, etc. The doctor taught me most of these things. I think more in detail of treatments and nursing procedures would be good. When employed at Fort Memorial, I couldn't (nor any LPN) do any more than the aides. Many girls have been quite disappointed about this.

86. Catherize
Give "IM's"
Changing and dressing nonsterile wounds.

IV. No. 14 (cont'd)

87. I would like to take a special course on Nursing Home Care for the aged person. I would like it to cover medications, general health, emergency measures, occupational diversions, treatments, how to run a home and anything else pertinent to the subject.

88. Presently I'm enjoying mothering three pre-school children and my training and hospital experiences have come in handy many times due to three very active children who are constantly falling on their heads, nails, eating or drinking poison foods that require a doctors attention. I've had one with pneumonia, and adopted one at the age of 31 hours. Without previous training I don't believe I'd have enough knowledge to cope with the many unexpected adventures that occur when raising a family and running a home.

89. Experience in doing procedure.
Experience in passing medications.

90. We should learn more about the new methods that are in the hospital now.

91. Patient interaction in psychology.

92. Drugs and medications (emergency drugs, stimulants, etc.)

93. Some of the hospitals are allowing an LPN to work alone on a floor without the RN there as head nurse. I feel this is too great a responsibility to have in most cases.

94. Passing medicines and knowing what they are used for.

95. Scrub nursing - (delivery room)

96. Pharmacology
Orthopedic nursing
We had a good course in isolation but understand it has been cut drastically.
Our class of March, 1959 had the most informative teachers available.

97. Passing medications.

98. I am working in Intensive care. Most students do not get any training in this field and I feel they could benefit a lot from this. It is strictly bedside nursing. Nowadays a new graduate thinks she belongs behind the desk and doesn't like to do the so called "dirty work". But this is the real nursing.

99. Injections, Pharmacy, drugs, Medications, Surgery and surgical procedures.

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99. Injections, Pharmacy, drugs, Medications, Surgery and surgical procedures.
we are taught in [illegible]
at present. I was supervised by a [illegible]
each procedure. They are just wonderful in teaching in this particular area.

107. The school was fine but I don't feel I got the right experience in the hospital. I had to learn quite a bit after graduation because my eight months in the hospital included little but bath and cleaning units. I realize these are important but I think St. Catherines carried it too far.

108. I am very satisfied with all the training. The Kenosha school is so much more advanced than in Phoenix.

109. Assisting in inserting levine tubes.
Blood transfusions, assisting in, watching for reactions.

110. Office nurse - would like to have a little more knowledge about newborns, their growth and different diseases that strike in years one through five, or near this group.

111. Being a teamleader sometimes.

112. Passing medications.

113. The many new machines used in Occupational Therapy.

IV. No. 14 (cont'd)

114. 1. Scrub for deliveries
2. Prep
3. Catherization
4. Use of suction machines
5. Take B.P.
6. Check post partum patients
7. Start oxygen

115. Chart I.V. intake and figure it out on in and out slips
Give inhalation therapy with Bennet respirator
Suction - "tracheal throat" to congested patients
Use porter lift, care of prisoners.

116. I enjoy working on 2 east - everyone is willing to help me anytime. I have gained knowledge and confidence since beginning to work.

117. The present program has been much improved at the time I attended school. We were not taught passing of medicines or how to give I.M.'s. For this reason, I do not do these things.

118. I feel that we should have had more on medications. As we studied each system, we should have had some important medications to go with each. We should have more time with our elementary nursing class - more time should be spent on procedures.

119. To go about teaching personnel under you the proper procedures in doing their work and trying to promote in them an interest in taking pride in their work and the care for their patients.

120. Two months ago, I delivered my fourth son in the automobile, my delivery knowledge was the poorest received during training not because of the above mentioned but it was barely touched in training.

121. I feel the school prepared me very well for what I am expected to do. I feel though more time should be spent on taking care of your medical, surgical and chronically ill patient.

122. Acting as charge nurse. I was not prepared for the large amount of paperwork.

123. I was working part time up until five months ago. We are expecting a baby in May so I quit but while working I was asked to special neurosurgery patient and did a couple times, but did not feel I knew enough in this field so I refused to special neurosurgical patients at all. All the LPN's on my shift refused for the same reason.

124. Take lab reports over telephone.

IV. No. 14 (cont'd)

125. I only hope training is being given in the operation of the many types of machines we must use when no one else is available. Usually it is the LPN who is called on to special new neurosurgical, accident and chest surgery patients. Sadly there are not enough RN's to take over these delicate machines. The LPN should be given all available help in learning about them.

126. Helping in recovery room

127. Tracheostomy care - including suctioning and cleaning of tracheostomy - However note: I have been taught these procedures by a physician and perform this duty under a physician or professional nurse's supervision.

128. I am a housewife and mother now. Everything I've learned has been a real help in making a home and raising a family.

129. I feel a more thorough course in medicines is necessary for in some hospitals the LPN gives out the daily medicines.

130. Any new procedures I wasn't prepared for have been taught by RN's on the floor, with the exception of the brain surgery patients. LPN's were expected to care for these patients without any preparation, due to shortage of RN's.

131. Working in a doctor's office.

132. Nursing care of orthopedic and neurosurgical patients. Care of critically ill patients.

133. More experience in and understanding of medications.

134. I found to be prepared with basic background in most areas. It has been a matter of accumulating experience and adapting to each particular area of nursing.

135. When I was working, I would of liked to have known more about the medication I was giving out. Patients ask questions and one should be able to answer them.

136. I am working in Pediatrics now and am enjoying it very much. I think we should know how to handle more children's illnesses especially a case of tetony. We have had two cases in the ward, one seven months old died and the nine month old survived.

137. A number of things, however I feel most of them are learned better by experience.

138. I feel I have not been taught nursing procedures such as:

IV. No. 14 (cont'd)

138. Cont'd.
elementary inhalation therapy and LPN treatments, medication should have been stressed more instead of six weeks on Bed Baths.

139. Care of mentally ill - no affiliation

140. I work in a doctor's office, therefore had to be taught Shorthand, Typing, Bookkeeping. In Practical Nursing I wish we had learned the names of instruments, autoclaving and more in Maternity Nursing. Of course this is because I work for obstetricians and Gynecologists. The Practical Nursing course as a whole should be l lengthened to at least one and a half years. My reasoning for this is because many girls I know were not able to do many of the procedures supposedly required. I heard some girls say that they had not even given one IM. This is a disgrace to both the person and the school as well as the nursing profession! If we want to uphold the standards of the LPN's we ourselves along with the school's help must be given the chance to practice what we learned in the classroom.

The LPN as a whole is a new type of nurse. What do we want most ---- recognition. The girls should be taught to appreciate the meaning and worth of an LPN. Too many students are not mature enough to accept the responsibilities that we are to accept. This means that the prospective student should be interviewed and tested more. Intelligence, maturity, desire and appearance should be the pre-requisites. The student attitude is very important and when the person begins to show a lack of interest she should be dropped from the program. The hospital is not a place for a disinterested person or mistakes.

The classes should also be made smaller. This way the students can get individual help and their shortcomings corrected.

I am by far not the best nurse in the world but I have come to realize how valuable I could be if I put my mind to it and I am trying. It is a wonderful feeling to be needed and even better when you know you are capable of helping someone. This is why I went to nurse's training and that is why I hope all others have gone --- to help those who need it because you want too!

141. I feel a great deal depends on the institution one is employed by and what is expected of an LPN in this particular hospital. Many have their own rules and standards for LPN's.

142. Pharmacology - Basic needs in all fields of medications.

IV. No. 14 (cont'd)

143. When I was working I found I was well trained for whatever I was told to do. Although new equipment keeps coming out, the technique is the same. I found I was better qualified than other LPN's that had gone to other schools.

144. My present position does not require any special duties that my school hadn't taught me.

145. Nothing other than specific on floor training which is and only must be obtained through the hospital.

146. At the time - I believe I was totally unprepared for the care of the mentally ill - because of outdated or uninformed teaching of the care of the mentally ill. I shall never forget the shock of seeing and working with the mentally ill on my first affiliation, violent ward in Milwaukee. It was beyond words.

147. Med's. Too much responsibility. Grossly unprepared for - need to know because expected in many institutions not only as students but as graduates. Example: Southern Colony, St. Luke's and St. Mary's. Simple divided dosages, example 1/2 or 1/4 of things. Seem to comprehend this easier.

148. Your duties as an office nurse are quite different except for your relationship with your patient of which you come to know, and look forward to seeing. I found it very stimulating learning how to draw blood, do blood counts, EKG's, which otherwise I would never of had the opportunity to do. None of which we had any training.

149. Making "rounds" with doctors.

150. Since graduation I never did any bedside nursing care. I worked as a surgical technician and seven years assistant for Ophthalmologist in his office.

151. Drawing blood from veins.
Doing electrocardiograms.
Filing.
Reading blood results - (hematology)

152. When I last work it was a small community hospital and I worked in the emergency room. I could have used some training in that field.

153. Orthopedics - in placing tractions for different types of injuries and bone surgical patients.

154. The pre-entrance exam should be made more difficult.

155. I am giving narcotics including divided dosages.

IV. No. 14 (cont'd)

156. Medication but I wouldn't say the school did not prepare me but not enough of it.

157. I do not do anything that I have not been taught and the hospital does not allow me to do anything the school does not teach - except several times I was asked to work in the emergency room and since I am not able to take phone orders or check orders - I feel this was an imposition. Since then though, the hospital has not asked practical nurses to work there.

158. As I have spent most of my time working with elderly patients, I often felt more need of occupational diversions.

159. Understand medications - prescriptions, etc. How they can be helpful and harmful in every day life - raising a family.

160. Assisting with spinal taps - cut downs - blood exchanges.

161. I work part time at University Hospitals and I float all the time and there we practical's do most of the treatments and by floating I work with every kind of patient. So I would list:
    1. Treatments - more training with that - stressing vital signs - dressing changes.
    2. Bedside care - more of
    3. Working faster and more efficiency stressed
    4. How to care for the many types of illnesses

162. I am very well satisfied with my teaching I had at school.

163. Working nights, I worked as a team leader, so relations with co-workers and the ways of working together until the work is done should be emphasized.

164. This might have changed since I was in school (10 years) but the first hospital I worked in away from school required me to insert nasal (O_2) catheters and folup and also irrigate levines, none of which I'd been taught at school. Yet all LPN's are required to know and do them in all our hospitals here.

165. Working with the mentally ill and retarded. The service was not long enough to prepare a LPN for the actual work she would have to do especially with children.

166. More studies in Function of the Body and Structure, elementary nursing. The same for all the chronic care and diseases.

167. The study of pharmacology.

IV. No. 14 (cont'd)

168. I feel our program was very good. You will never get all in one program, therefore, I feel LPN's should attend workshops offered and also take extra courses.

169. I have only admiration for my school, and my thanks to my teachers. Carry on your good work. I am proud to be a graduate from such a wonderful school.

Judith Rubinstein

170. At present I am caring for the aged and I feel well prepared to do this especially because of our excellent mental classes.

171. Medication - I think it would be very profitable to have a special class just on medication.

172. Teaching students things. (when on o.b.) Having too much responsibility for training we receive.

173. Medical Assist receptionist, bookkeeping and ability to handle people in person and over the phone.

174. I think the present program is a well rounded program and offers even more now than when I attended (1950). It has helped me considerably in my home, with children and an ailing husband. If I should have to go back to work, I would be in favor of a Review Course, as so much is forgotten as far as terms and possibly new methods of doing things are concerned.

175. There are probably many things I'm doing the school did not prepare me for, however, I was taught by nurses on the floor. However, I wonder if any training is given in the care of a patient before and after brain surgery. It seems many times the LPN is assigned to care for these patients with little or no training which seems unfair to both patient and nurse.

176. Giving many different injections and vaccinations. Drawing blood and doing different chemical lab tests. Also all office book work and general office care. Of course I see things differently than the graduates who work in the hospital as I use few of my teaching units everyday.

177. Nothing in particular. But I do feel I need to know mouth-to-mouth resuscitation along with the conventional method I was taught. Thank you.

178. At the present time I am on the in-active list because of my health. Nothing serious. I intend to be put back on the active list in July. I had surgery.

IV. No. 14 (cont'd)

179. My school prepared me well for all I was taught to do. In service program at the hospital has helped me to perform these duties better.

180. I am now a housewife and mother and I feel that my nursing experience has helped me greatly.

181. Oral suctioning, tube feedings, tracheotomy care.

182. Scrub nurse.

183. Taking some courses toward a two year R.N. degree.

184. Scrub for delivery.
More time on medications.

185. Inhalation therapy.

186. My school of nursing, I feel, has taught me as much as possible to work on the maternity floor. All that I was not taught in school I learned by the experience of working but I'm still learning.

187. Medications.

188. I feel the school prepared me very well for the work I am doing. Nothing seems to have been left out. Things I don't know the head nurse teaches me so there is no problem.

189. OB work.

190. I increased my knowledge on medications and proper dosages. I've tried to learn more about the care of mentally ill patients.

191. Doctor's office nurse. Doing EKG - blood tests. Reading results of urine tests and blood tests.

192. At present have ideal working conditions. I work in Intensive Care Unit under an R.N. at all times. In past, have been asked to take charge of a floor which I think is very wrong for the hospital to ask an LPN.

193. I wish there would be a register for the LPN's who are semi-retired, but who work part-time, for example, to help out during vacation periods, etc., or illness. I have difficulty getting someone to take over for me at such times.

194. I am working with burns and was completely lost when I started because there is so much involved. Such things

IV. No. 14 (cont'd)

194. (cont'd)
as a) dabbing b) sterile room technique c) rolling of grafts d) debridement of skin, etc.

195. In 1958 - I was a scrub nurse in surgery. In training we just sat and watched an operation. I did not feel like I had a full knowledge of what was going on when I started in surgery.

196. Operating Room technique. I am now a scrub nurse, working and assisting the doctors with operations.

197. Giving out medications.

198. I am not employed but my nursing knowledge and experiences have been invaluable to me as a wife and mother.

199. At present I'm not working. But I feel I could have used more education on drugs when I worked in the hospital and office.

200. I am at present a housewife with three children and feel that my nurses training gave me a very adequate training for this although personally I would like to see, I feel, I would like to have had more knowledge of Structure and function (including a more complete knowledge of lab tests in the doctors office and hospital) which would be of great assistance when working in a doctors office and when having a member of your family ill plus understanding more about your patient and his needs.

201. Set up medications and give them. Give all types of hypos. Have been charge nurse at times, but I was checked on by Superior at different times.

202. I am doing nothing the school did not prepare me to do.

203. IM's and track injections.
Sterilization and autoclaving.
Tracheotomy care with suctioning.
Moving Fx patients with back-brain or pelvic inj.

204. None - have been adequently prepared with a good basic foundation; so that with additional inservice program, adaptions can be made easily and effectively toward better nursing care.

205. Passing medications 11

206. Making rounds with doctors and assisting them.

207. To scrub in and assist in the delivery room.

IV. No. 14 (cont'd)

208. I'm happy with the training I received and also grateful. It has been worth every minute I put in it. Thanks again.

209. I'm a surgical scrub nurse. I feel my anatomy was not sufficient There is so much more to the human body than I was taught.

210. I am presently working in surgical recovery room. We did not have nearly enough training to qualify for this work.
I also worked in a mental institution in which I did not have enough training before hand.

211. Laboratory tests (WBC's - RBC's, etc.)

212. Foley cath
IM injections.

213. I am supervising a floor in a Home for the Aged. The residents are ambulatory, self-care and invalid cases. I have an RN over me so if I ever get in a pinch I can call on her.

214. I am preparing patients for surgery, which I didn't have, but I know some hospitals do it right in surgery and we didn't work there. I assist Dr's with examinations such as physicals and proctoscopic exams. The hospital trained me well to do the things that I hadn't had in school.

215. Surgical scrub et circulating technique.
Administering Sub-O infusion.
Surgical draping preparation.

216. I am giving medications daily without full knowledge of them and their side effects. Full responsibility of night shift at times.

217. I am working in a Dr's office and have done so before I was not taught how to do OBC's, urinalysis, take and develop x-rays, take EKG's and names and types of sutures there are, names of instruments and uses.

218. I am working on an orthopedic floor. Never having worked on such a floor while in training I lacked knowledge of some of the various equipment and techniques used.

219. Being in the position of nurse-in-charge of a particular unit.

220. Raising four normal healthy lively, rambuncious children. Training taught me how to care for them when they are ill. But they have never been really ill, and oh for a little knowledge on patients at times.

IV. No. 14 (cont'd)

221. Not enough emphasis on medications.

222. "Specialing" patients with major surgery - such as chest tubes and tracheotomities and so on. I think there should be courses on how to care for these type of patients - how to turn them, watch chest tubes, suction trachs, check pupils and patients reflexes of arms and legs.
Also more of how to assist doctors to changing dressings, etc.

223. Night duty routine.

224. I have no complaints about my schooling. I believe we had the best of teachers in our class. That was the Graduating Class of 1959. I do believe now that the students of the present training program are not taught sufficiently.. I believe their training program is putting out a lot of Glorified Aides.

225. Scrub nurse

226. I am not employed at present, but when I was working there was nothing I was required to do that I hadn't been adequately prepared for. One thing I was especially grateful to the school for was the sterile technique which was impressed into my character and work.

227. Surgical prep
O.B. prep
Heart tones
supportive care to labor patient.

Recovery room care
Surgical and O.B. scrubbing.

Perhaps let the girls pick a major, such as O.B. (as in R.N. training) and give them a short specialized course in their chosen field - i.e. in O.B., an O.B. prep and F.H.T.

228. None - I feel I was prepared very well for registered nurse's training.

229. Medications; dosage, usage and administration.

230. I feel that the school should try to teach their pupils more about assisting the Dr. with certain procedures such as - removing sutures, spinal taps, etc.

231. The school did not prepare us enough to pass meds. We should have spent more time on learning medicines. (name of, used for, side effects, etc.)

232. Team nursing.

233. [illegible]

IV. No. 14 (cont'd)

234. Medications and surgery techniques.

235. Passing meds and injections. Assisting Dr's. use of instruments. Making out Lab, x-ray requests and learning the normal blood and urine tests and what they mean.

236. School emphasis on bed making - Patients don't always like the top sheet tucked in.

237. When working, I felt we were made to do far more than we were taught to do. The pressure was so terrific I myself couldn't stand up to it. I still have my interest in nursing, but would not care to practice under these conditions. Of course this isn't the fault of the school. Many times an R.N. wasn't there to supervise the LPN.

238. We are running the floors and I don't think LPN's are prepare for this job. We are doing R.N.'s jobs. If we are to do this, couldn't we be taught this in school. Couldn't each basic subject be gone into a little further.

239. In some instances, I have had to take charge.
Giving reports.
Suctioning a patient.
Taking care of critical patients.

240. The use of hospital equipment.
The administration of drugs and the effects of drugs.
Care of hospital procedures; such as bed sores; irrigations of: catheters, bed sores, the eyes, etc.

241. I believe that medications should be more extensive.
In school we received very little in this subject and I think they should be taught the more used drugs more thoroughly including narcotics.
We should be taught the proper way to inject enferon - LPN are called upon to administer this injection very often.

242. I am working on a psychiatric unit at St. Catherines and I feel I have a good background for this work. I am very interested in my work and enjoy working.

243. Charge nurse on pediatrics (night shift)
Taking doctor orders. (under my supervisors orders)
The proper way to run a floor.

244. When working p.m.'s, I was expected to assume the same amount of responsibility as R.N.
In medical nursing, I feel we need more in the diabetic and cardiac diseases.

IV. No. 14 (cont'd)

245. We are house parents in a children's home. I could have used more childhood diseases or maybe I should have studied more.

246. I would like to know more about a review course. As I haven't been working for a few years now and would like to start again, I feel a review course would help me.

247. Starting IV's.
Cleaning tracheotomy tubes.

248. I feel schooling and actual nursing experience should be more closely related and combined with each other.

249. When I am working I just work part time and I am not doing anything the school did not prepare me to do. It has been eight years since I graduated and I am not sure how the present Practical Nursing program is run. So when I answered the questions on education, I tried to remember how the program was when I was in training.

250. The school equipped me well, but I feel time was a barrier - not enough! We learned so much so fast - it's difficult to retain. Basically, I've been able to meet most situations in the hospital - it's a big field and things change rapidly and with every hospital its been a fairly easy adjustment.

251. Psychiatric technician

252. Giving "IM" injections (I was taught this in the hospital where I worked)

253. Learning more about medications.

254. If I were to go back to nursing, I would have to take a refresher course as things have changed a great deal in the past years.

255. I own and administrate a nursing home and am in contact with other homes throughout the state and we all have problems employing LPN's and I feel one reason is that nursing homes are not included in schools of nursing. As a student practical nurse and student registered nurse, I had never come in contact or been to a nursing home and was not even made aware of their existence, care they offered or as a job opportunity. Nursing homes are becoming more and more important through gov't. insurance companies, etc.

256. Emergency room work

257. The program should be lengthen and more time spent in each subject.

IV. No. 14 (cont'd)

258. I work in surgery, but I feel the structure of body did help but I had to learn surgical techniques.

259. Working a bennett machine - tube feeding
Setting up croupettes, suctioning, assisting with cutdowns, irrigating cutdowns and levines, sponge alcohol baths.
Complete isolation unit (procedures differ somewhat)
There are some things that are taught in the course as far as reading about them but actually doing them is learning them.

260. Treatments, assisting doctors, experience in surgery.
Structure, function of body, medical terms of diseases
Medications.

261. Passing medications.

262. Taking phone orders
Observing symptoms of many disorders.
Giving insulin.

263. Since some of us are expected to know more than we have been adequately trained for, I think the practical nurse program should definitely be lengthened to 15 or 18 months.

264. Nursing care of crainiotomy patients.
Patients with chest surgery. (Head injuries in general)

265. Being in charge of floors.
Caring for critical patients.

266. Male cathaterizations. (was trained for at Brookside)

267. Scrub technician in Delivery Rooms and Surgery.
Working directly with doctors.

268. We did not pass medicines when we graduated but when I was working two years ago, I learned this plus going to class but the school teaches this now.

269. In my present position, I feel that the teachings in the program were very sufficient in accordance to the limitations that I have. I feel that I am not being able to use half of my knowledge that I've acquired from the course. So I have a hard time deciding what should be improved.

270. I am the LPN in charge of Sunny Rest County Home (under RN supervision). Must be alert as to diet of specials - such as different phases of their diet - diabetics (we have 15) - bland - low and high calorie. Be alert to lab reports - call attention of Dr. Haedike to variation of blood chemistry and morphology.

IV. No. 14 (cont'd)

271. I learned to scrub and assist in deliveries and while I was in training I never had the opportunity to observe a delivery.
While working nights on pediatrics there were occasions when I was left in charge of the floor for a whole evening and sometimes more, and I think this is too great a responsibility for an LPN to be expected to do.

272. Making rounds with doctors.
Assisting the doctors with different things.

273. When working - in charge of floor, I feel if they are going to do this in some hospitals we should be more prepared. I was told I was very reliable and efficient but thank good luck and good judgment for my ability.

274. Inhalation Therapy

275. Not enough orthopedics.

276. Medications.

277. Giving trach care - suctioning, cleaning they (hospitals) expect you to know this the day you start.

APPENDIX R

NURSE SURVEY

99	MARRIED	64.58 0/0
3	SINGLE	28.29 0/0
2	DIVORCED	4.54 0/0
9	WIDOWED	1.94 0/0
7	SEPARATED	.43 0/0
—	NO RESPONSE	.22 0/0

29	FULLY EMPLOYED	49.46 0/0
6	PART TIME	14.90 0/0
5	UNEMPLOYED	34.13 0/0
6	SELF-EMPLOYED	1.30 0/0
1	NO RESPONSE	.22 0/0

E YOU EMPLOYED IN A FIELD RELATED TO PRACTICAL NURSING?

291	YES	62.85 0/0	80	NO	17.28 0/0	92 NO RESPONSE	19.87 0/0

THERE AN IN-SERVICE PROGRAM FOR LPNS WHERE YOU WORK?

178	YES	38.44 0/0	138	NO	29.81 0/0	147 NO RESPONSE	31.75 0/0

IF YES, ARE YOU REQUIRED TO ATTEND?

121	YES	67.98 0/0	54	NO	30.34 0/0	3 NO RESPONSE	1.69 0/0

IS THIS OFFERED DURING ON-DUTY TIME?

97	YES	54.49 0/0	66	NO	37.08 0/0	7 YES AND NO	3.93 0/0
						8 NO RESPONSE	4.49 0/0

VI YOU FELT A NEED FOR FURTHER TRAINING IN YOUR PRESENT POSITION?

184	YES	39.74 0/0	127	NO	27.43 0/0	152 NO RESPONSE	32.83 0/0

E YOU A MEMBER OF THE NATIONAL FEDERATION OF LICENSED PRACTICAL NURSES?

82	YES	17.71 0/0	347	NO	74.95 0/0	34 NO RESPONSE	7.34 0/0

IF NO, REASONS WERE:

17	NO CHAPTER	4.27 0/0
63	ALWAYS WORKING	15.83 0/0
71	COST	17.84 0/0
60	NO INTEREST	15.08 0/0
158	OTHER	39.70 0/0
29	NO RESPONSE	7.29 0/0

HOW MANY DIFFERENT INSTITUTIONS OR AGENCIES HAVE YOU WORKED SINCE GRADUATION?

0 - 8 RANGE 2.00 MEDIAN 1.85 MEAN

.89 MEAN DEVIATION 1.26 STANDARD DEVIATION 17 NO RESPONSE

NUMBER OF INSTITUTIONS OR AGENCIES	----- NUMBER OF GRADUATES
0	11
1	209
2	143
3	40
4	22
5	7
6	9
7	4
8	1

62	1
63	1
64	1
65	2
66	2
67	1
68	1
72	8
73	1
74	1
77	1
78	1
82	1
84	5
85	1
90	3
92	1
96	1
100	1
102	2
108	5
117	1
120	3
123	1
132	1
144	1

STOCK FORM 14113-P

12
11
10
9
8
7
6
5
4

APPENDIX J.

HAT WAS YOUR STARTING WEEKLY SALARY IN YOUR FIRST POSITION AS AN LPN?

$ 0 -$ 105 RANGE $ 60.00 MEDIAN $ 56.96 MEAN

$ 9.24 MEAN DEVIATION $ 11.82 STANDARD DEVIATION 92 NO RESPONS

SALARY	NUMBER OF GRADUATES
$ 0	1
$ 20	1
$ 21	1
$ 23	1
$ 24	2
$ 30	2
$ 32	1
$ 35	6
$ 36	1
$ 37	1
$ 38	4
$ 39	1
$ 40	15
$ 41	1
$ 42	2
$ 43	2
$ 44	6
$ 45	18
$ 46	5
$ 47	7
$ 48	8
$ 50	30
$ 51	3
$ 52	4
$ 53	5
$ 54	8
$ 55	12
$ 56	8
$ 57	4
$ 58	7
$ 59	13
$ 60	39
$ 61	8
$ 62	3
$ 63	8
$ 64	37
$ 65	23
$ 66	22
$ 67	9
$ 68	9
$ 69	3
$ 70	7
$ 71	1
$ 72	5
$ 74	1
$ 75	3
$ 76	1
$ 77	1

$ 78	1
$ 80	4
$ 81	1
$ 85	2
$ 86	1
$ 94	1
$ 105	1

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Educational Service Series, Number 15
October 1965

Improving Vocational-Technical Education in the Top O' Michigan Area

ES 15

Bureau of Educational Research Services
College of Education
Michigan State University
East Lansing, Michigan

VT 00025

Educational Service Series, Number 15
October 1965

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Improving Vocational-Technical Education in the Top-O'-Michigan Area

A Study by the Vocational Teacher Education Service
College of Education, Michigan State University

(Under Private Contract with North Central Michigan College)

Bureau of Educational Research Services
College of Education
Michigan State University
East Lansing, Michigan

IMPROVING VOCATIONAL-TECHNICAL EDUCATION IN THE TOP-O-MICHIGAN AREA

A Research Study to Determine the Feasibility of Establishing One or More Area Vocational Schools and Technical Institutes in the Top-O-Michigan Area

by the

Vocational Teacher Education Service
College of Education
Michigan State University

under private contract with

North Central Michigan College
Petoskey, Michigan

Project Director: Peter G. Haines, Chairman
Business and Distributive Teacher Education

Associate Director: O. Donald Meaders, Agricultural Education

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College of Education
Michigan State University
East Lansing, Michigan

October 1965

FOREWORD

This study of vocational-technical education embraces all or parts of six counties in the northern part of the lower peninsula of Michigan. This area is known popularly as the TOP-O-MICHIGAN area. The study was done by a team of experienced vocational researchers from Michigan State University under private contract to the sponsors of the study.

This study was concerned with determining first what vocational education facilities and programs were currently being operated and with describing a way of improving such efforts in the six-county area. The study was designed with permission of the sponsors to pursue basically the same techniques and instruments as the study recently finished by the same study team in the five-county Grand Traverse area. Using a similar design helps make the studies comparable and facilitates planning a program in these two areas which adjoin one another. In some cases this report repeats some general information about the needs for vocational education using material from the Grand Traverse report. However, this report is quite different in its final recommendations.

The citizens and educational leaders of the Top-O-Michigan area should realize that few alternatives are given in this report because the research team believes that local citizens need an unequivocal plan for their consideration.

The sponsor of this study is North Central Michigan College at Petoskey, which provided funds for the study contract aided by state and federal funds granted by the Vocational Division, State Department of Education. Guiding over-all development of the study was an executive committee composed of Albert Shankland, Dean of North Central Michigan College, and three superintendents from each of the two intermediate school districts which formed the boundaries of the study. Two local study coordinators were employed and both gave much valuable assistance. They represented former superintendencies in both intermediate districts — Carl Spitler (Petoskey) and Floyd Merritt (Onaway). The organization of the study personnel is shown in Figure 0.1.

The study team wishes to acknowledge their individual and collective debt to everyone who aided and assisted in the study and to the manu educators and employers who provided such helpful information. To the graduate assistant, Ned Keys, and to the project secretary, Miss Dorothy Beck, goes our thanks for their dedicated service.

To everyone in the Top-O-Michigan area, citizens and educators are sent the best wishes of the researchers in their efforts to improve vocational-technical education to the end that each individual may have equal opportunity for a rewarding occupational career for his own maximum personal growth.

October 1, 1965

For the Study Team: Peter G. Haines, Project Director

O. Donald Meaders, Associate Director

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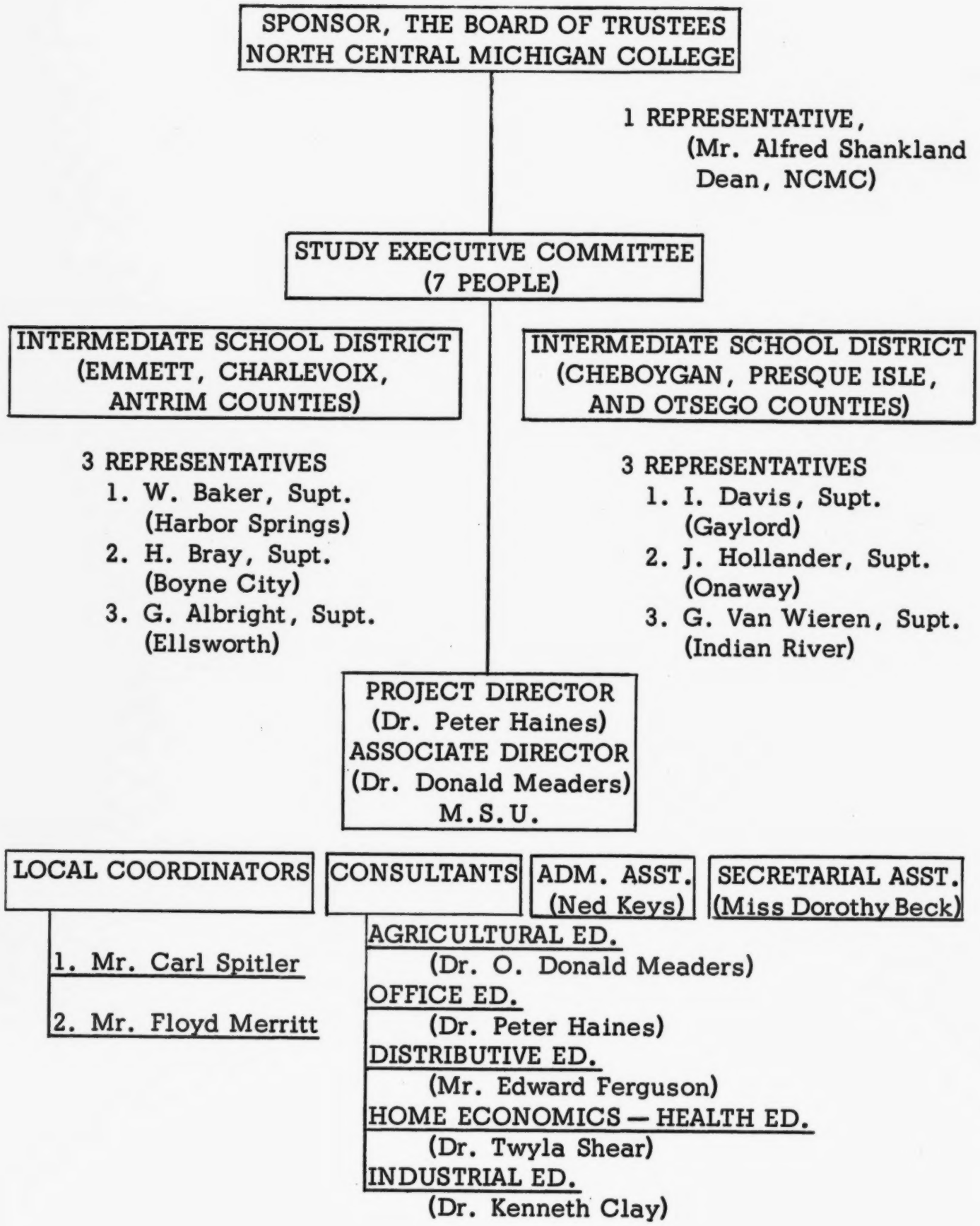

FIGURE 0.1

ORGANIZATION CHART — TOP-O-MICHIGAN AREA STUDY

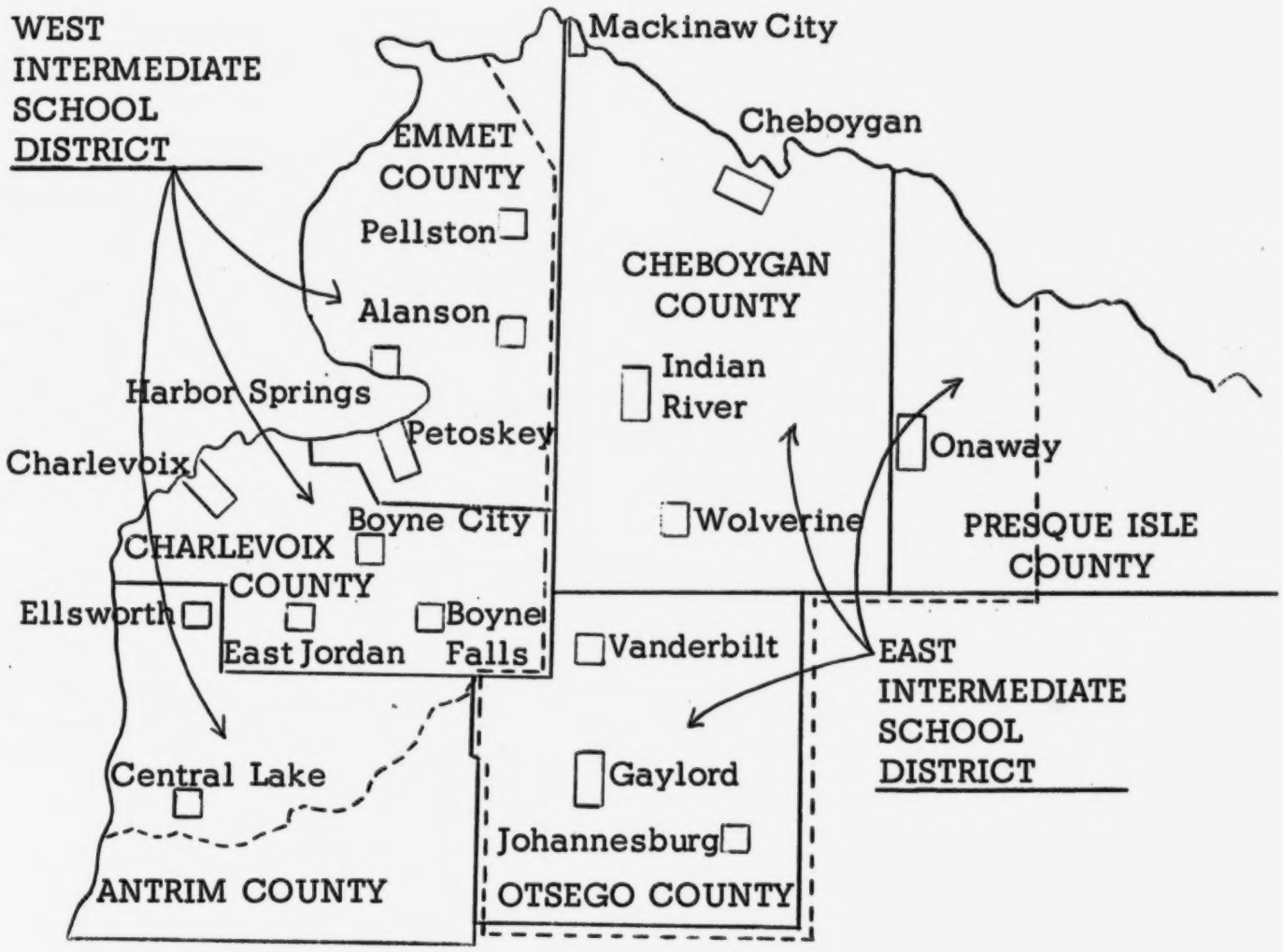

FIGURE 0.2

DISTRICTS COVERED BY THE
TOP-O-MICHIGAN AREA VOCATIONAL STUDY

CHAPTER 1

INTRODUCTION — HOW THIS STUDY WAS MADE

> Varied vocational programs in area high schools would interest young people in different types of vocations about which they know very little. If you don't have any idea about what kind of jobs exist in the world, how are you going to know what you would like to do in life.[1]

Today there are literally thousands of jobless workers and workerless jobs throughout the United States. The existence of this situation in a period characterized by general economic stability and prosperity, by large numbers of youth entering the labor market or approaching graduation from school, has caused citizens in many communities to focus attention on their educational institutions as one of the possible sources of help in solving the problem. The general concern for vocational and technical education on the part of the citizens in six of the counties near the top of Michigan's lower peninsula brought about this study.

The need for vocational and technical education is twofold: to meet the needs of individuals to be efficient, productive citizens, and to meet the needs of government, business and industry for competent individuals to produce goods and provide services necessary in a democratic society. The kind of vocational and technical education needed and how to provide it in a relatively low-density population area — these two major points form the heart of this study.

A. Purposes of the Study

The basic purposes of this study, as defined by the study sponsors and the research team, are to determine what vocational and technical education programs are needed and to propose a feasible plan for providing such programs. To determine the needs and a feasible plan, the study team sought answers to questions in the following six basic areas:

1. What are the current programs of occupational education in the high schools and the community college? How many persons

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[1]Comment written on a questionnaire received from one of the 1963 high school graduates.

are served? How adequate are the courses of study, facilities, and equipment? What are the qualifications of the teachers?

2. What are the educational and occupational aspirations of the students? What occupational aspirations do parents have for their children?

3. What are the occupational and educational achievements of the high school graduates and dropouts? Where do they find employment? What kinds of jobs do they secure? What post high school education have they acquired?

4. What are the occupational needs of the area? What are the employment opportunities? What do employers say about the adequacy of occupational preparation now provided by the schools? What are the training needs for new employees and for up-grading and up-dating present employees?

5. What are the beliefs about vocational and technical education held by administrators, employers, and other influential citizens?

6. What is the financial base for education? What are the current enrollments in the schools and the expenditures for education? What financial resources exist which might be used for an expanded and strengthened program of vocational and technical education?

The study team used data describing local as well as state and national situations. The mobility of people to find jobs and other opportunities to meet their social and economic needs demands that more than local data be used to determine the kinds of vocational and technical education programs needed. However, the major concern of the executive committee for this study, and this was shared by the research team, was to determine what was needed for the six-county area covered by the study and some feasible way of meeting the need. It was recognized that...

> identical opportunities do not represent equality of opportunity, for the youth living near a ... school which does not provide the program in which his interests and aptitudes lie is not served by that school.

B. Procedures of the Study

This study was conducted primarily through the use of a team of researchers, all professional vocational teacher educators with experience in programs of vocational education at local and state levels and in similar area vocational studies. This team made an intensive study of the area, collecting data through surveys, interviews, group meetings, on-the-spot inspections

of existing facilities and equipment, and other activities, and then analyzing these data:

1. Interviews with school administrators regarding evaluation of present programs, plans for the future, and basic beliefs about vocational and technical education. Interviews were also conducted with faculty members at the community college.
2. Observation of present facilities and equipment for vocational and technical education.
3. Collection of school enrollment data and other pertinent information by the local study coordinators.
4. Collection of information from many of the vocational and practical arts teachers regarding their beliefs concerning present and needed vocational education programs.
5. A questionnaire was mailed to the graduates and dropouts of the 1963 high school classes.
6. A questionnaire dealing with occupational interests was administered to all eleventh graders and their parents.
7. Compilation of demographic and economic data from such sources as U. S. Bureau of the Census, Michigan Employment Security Commission, and U. S. Department of Agriculture.
8. Visitations to significant places of employment and interviews with employers, chambers of commerce representatives and other organization and association representatives.
9. Processing of questionnaire data through the computer 3600 on campus.
10. Staff conferences in the area and at the University to analyze findings and draw conclusions.
11. Meetings with members of the executive committee.

The study team used the following guidelines for accomplishing the study:

1. The study is a staff project and both design and over-all conclusions reflects the thinking of the whole team rather than a compilation of separate reports from specialists in each field of vocational education.
2. The opinions and beliefs of local people are important in educational evaluation and planning. Consideration must be given to established patterns of educational organization and administration in the area.
3. The study and report are based on a master plan concept rooted

in educational law and policies concerning vocational education existent in Michigan.

4. The study reflects long-range views toward solution of a problem rather than stop-gap measures.

5. The report recognizes unique characteristics of the area as one basis for developing vocational and technical education programs rather than assuming that similar programs should be developed in all areas.

6. The report provides a perspective of the six-county area and does not concentrate upon evaluation of each school program nor upon solutions to specific problems in a given school. The staff views the area as an economic and educational unit for investigation.

7. The report embodies the combined years of experience and best judgments of the staff with their findings during days of field work followed by analysis of objective data.

This report contains data gathered in many ways and represents more than 30 man-days on-site in the local area plus many man-days in the preparation of instruments, analysis of data, and report writing. Table 1-1 contains a summary of the number of staff contacts while visiting schools, and interviewing employers and various other officials.

TABLE 1.1

STAFF CONTACTS FOR INTERVIEWS AND OBSERVATIONS

GROUP	NUMBER STAFF MEMBER CONTACTS
Educational Leaders & School Visitations	122
Employers	119
Government Agencies	61
TOTAL	302

Source: Reports of survey staff.

SECTION I.

A TOTAL PROGRAM OF

VOCATIONAL-TECHNICAL EDUCATION

CHAPTER 2

OCCUPATIONS IN THE MODERN WORLD AND THE NEED FOR VOCATIONAL TECHNICAL EDUCATION

The effect of social, economic, and technological change upon occupations, and consequently, upon education for occupational competence is well documented. Hence, this study need not discuss in detail these effects. But, an awareness of these trends is vital to the leaders in the Top-O-Michigan area for no geographical region is an economic island.

A. Effects of Social, Economic, and Technological Change

No Place for the Unskilled

Evidence is everywhere that the labor market for the unskilled is slow indeed. Occupations which require few skills or which do not require at least the competencies of the high school diploma are declining rapidly and will decline further. The U. S. Department of Labor reported in 1963 that 29% of the 17-24 year old school drop-outs were unemployed. Of those high school graduates of 1962 without skills, over 14% were unemployed.

The picture is clear; the unskilled do not find jobs and if they do, the job is not likely to last permanently. The unskilled not only do not contribute productively to the community, they take resources from it.

Service Occupations are Growing Rapidly

Among the most notable economic trends is the manner in which citizens are spending increasing proportions of their discretionary buying power on services — health, recreational, repair, financial, and personal. What we once did for ourselves, or did without, we now pay others to do for us. This unparalleled demand for services has caused certain occupations to expand rapidly. Consider the demands for health and paramedical workers; those occupations in the hotel, motel, restaurant, and resort trades; repairmen; cosmetologists and barbers; and persons in finance, insurance, and real estate. In many of these areas the ratio of supervisory and managerial personnel to workers is high and the need for advanced education is obvious.

Technology Calls for Increased Skill

The application of principles of technological development in manufacturing, processing, and agriculture calls for much higher levels of skills and technical knowledge on the part of skilled employees than formerly was the case. There is also an increasing demand for "support" type personnel to back up the theoretical engineer. As product and process become more complex, training beyond the vocational skill level is needed; advanced training is needed in the applied mathematics and sciences as well as additional education in design.

The Labor Force is Expanding

Because of the large increase in population of young people, the labor force is expanding. Perhaps a better word is "exploding." As these waves of young people enter the labor force, competition for jobs will increase; success will be on the side of those who are among the most competent. Similarly the woman who re-enters the labor market after marriage and children will encounter increased competition for jobs unless she has up-to-date salable skills.

Paperwork and the Office Worker

Although automated devices are seen by some as the death-knell of the clerical worker, the facts show that the volume of correspondence, financial record keeping, and preparation of records is demanding increased numbers of office workers. Particularly in demand are those with higher skills — stenographers, executive secretaries, office managers, junior accountants, and data processing personnel.

The Marketing Revolution

The last half of this century has been aptly termed "the age of distribution." The marketing and provision of goods and services of all kinds has become the most important segment of our economy, accounting for employment of over half of the labor force. In this marketing effort are many of the service workers referred to earlier, but in addition, there is much demand for those who can advertise, sell, merchandise, store, and otherwise distribute goods and services. In the marketing field, the ratio of supervisory and managerial personnel to workers is higher than in many fields, calling for a supply of well-educated individuals who can manage the enterprise and supervise others. In this field also is the greatest demand for those who have the capacity to own and operate businesses for themselves.

Continued Education is a Must

One of the most important lessons to be learned by those who will be in the labor force from here forward is that they must always continue their education. Change is so rapid and competition so intense that what was good yesterday will not be very useful tomorrow. Workers, supervisors, and managers will find it necessary to return to formal, part-time schooling occasionally if they are to keep up. Adult vocational education becomes their aid to continued productive employment.

Mobility is a Fact of Life

Studies show that in the United States over 20% of the people change their addresses annually and at least 3% of these move from one state to another. Vocational education must prepare people for jobs where the jobs are and help those who want to move to possess the ability to find employment. Likewise, local communities find themselves in a position of responsibility for educating for employment those who grew up elsewhere.

Basic Education is Requisite

A fact of life in education today is that vocational-technical education cannot be built on anything less than a solid base of social, emotional, and basic skill competence. Youth and adults who are limited in these characteristics cannot be occupationally competent. Thus, vocational-technical education programs must work closely with general educators to develop remedial programs for those prospective vocational students who lack required general education skills.

B. The Nature of Vocational-Technical Education in a Contemporary Society

Viewed in a broad sense, vocational education is any education which specifically prepares an individual to perform successfully in his chosen occupation. By this definition, such diverse efforts as the one-day company training program for the semi-skilled machine operator and the curriculum of the medical school are both vocational education. Yet, for this study a more restrictive definition must be found.

The definition used in this Top-O-Michigan study is that, vocational education consists of that formal instruction which prepares an individual for entry into employment or upgrades those who are already employed. The definition includes instruction for all occupations except those which are usually classified as "professional" with the meaning that a baccalaureate degree is

required. However, vocational education, as used in this study, does refer to education designed to upgrade and improve those who in managerial capacities already possess a college degree.

Vocational education can be equated with education for occupational competence. It concerns itself with teaching those skills, knowledges, and attitudes that are requisite to success in a given occupation.

This Top-O-Michigan study was concerned with that formal vocational instruction which is offered at the high school, post high school (13th and 14th grades), and adult education levels. No maximum age for enrollees in vocational courses is envisioned for the purpose of vocational education in the development of a trained manpower pool.

The term, pre-vocational education, is used in this study to mean that formal instruction which is specifically designed to provide the prospective student with: career orientation, basic knowledges, attitudes, and skills useful in a broad family of occupations, social and basic skills as they apply to an occupation. Pre-vocational education does not include the general education required of all students although the research team recognizes the value of general education in occupations.

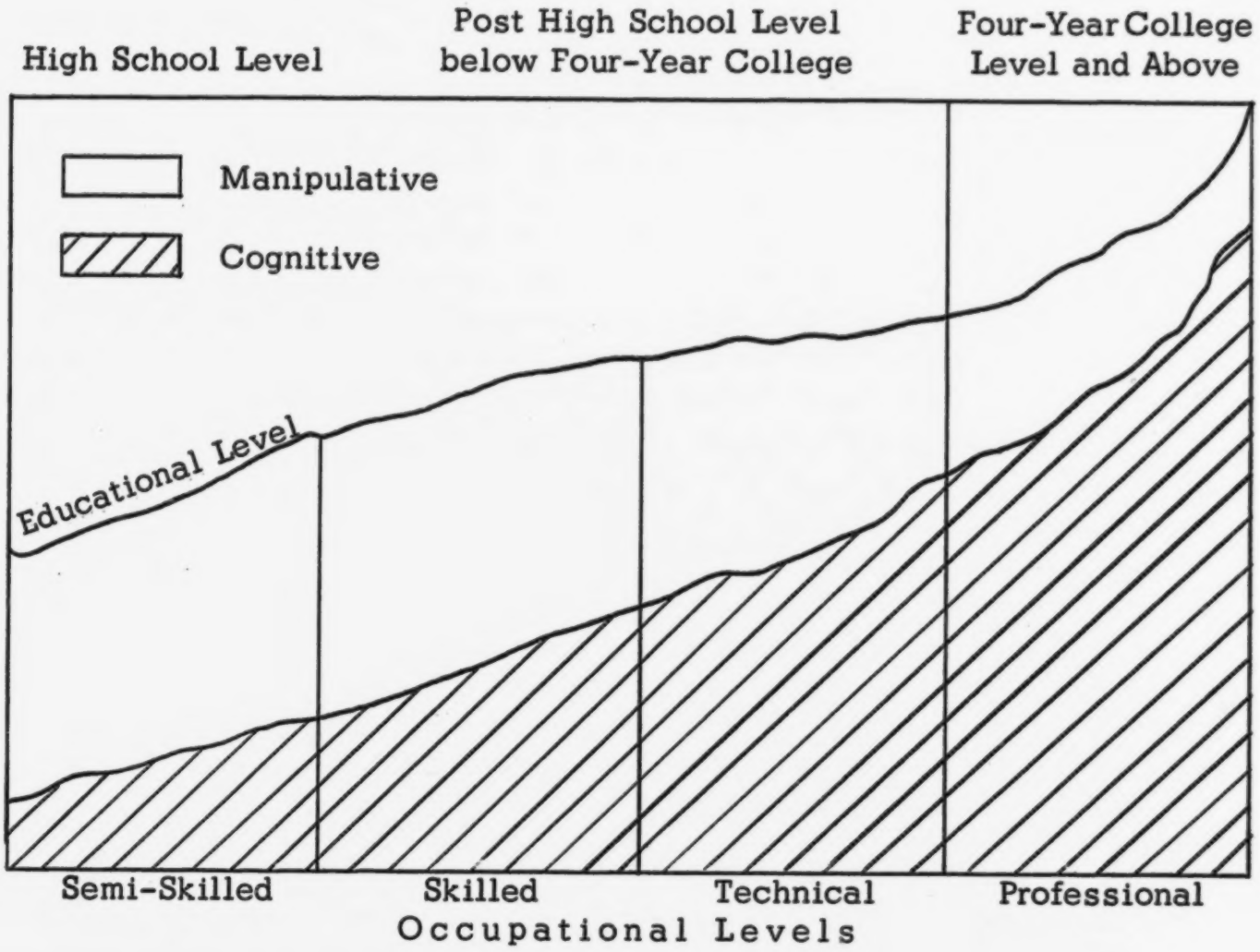
Differences between Vocational Education and Technical Education

Most vocational educators use the term, vocational education, to describe formal instruction for occupations at the skilled and semi-skilled levels while education for those jobs between the skilled classification and the professional category is usually termed technical or sub-professional education. The basic difference between vocational education and technical (subprofessional) education rests in the amount of cognitive knowledge versus manipulative skill required by a given occupation. Thus, to use the terms correctly one must determine the occupational requirements of skill and knowledge in any given occupation. Figure 2.1 provides some idea of the relationship between occupations which require vocational preparation and those which require technical or even professional education.

Some individuals claim that vocational education is high school level while technical (subprofessional) education is post high school level. Such a distinction is not valid because a 40-year-old may need retraining for a skilled trade, but will secure his vocational education in a post high school institution. Perhaps a more valid point is that vocational education is non-collegiate in quality and in credit while technical education is collegiate in quality and may be awarded collegiate credit.

A sample occupational classification is given in Table 2.1 which provides clues as to the relative amounts of manipulative skill and knowledge required

in occupations. It should be noted that business occupations at the technical level are usually called sub-professional because some educators think of the phrase, technical information, as referring only to industrial, engineering, or other scientifically related knowledges. But, the basic point is that there are, and there will be many more of, a group of occupations which require more than vocational preparation but less than four-year degree preparation.



Source: Vocational and Technical Education in Illinois (Urbana: University of Illinois, Bureau of Educational Research, 1960).

FIGURE 2.1

RELATIVE PROPORTIONS OF MANIPULATIVE AND COGNITIVE ELEMENTS IN EDUCATION PROGRAMS FOR DIFFERENT OCCUPATIONAL LEVELS

C. A Total Program of Vocational-Technical Education

Every community needs to use a model of a complete program of vocational-technical preparation against which to measure itself even though not every

community should meet every functional need shown by the model. But every community must know what functions it is not meeting and satisfy itself that no need exists locally. The model is shown below:

1. Preparation for entry jobs
   .... semi-skilled/skilled = vocational education
   .... technical/subprofessional = technical education
   .... professional = professional education

2. Retraining for a new job
   .... (a form of preparatory instruction for the levels in #1)

3. Upgrading
   .... helping the individual do his present job better and gain greater satisfaction
   .... preparing the individual for promotion to a higher ranking position in his present occupation

In providing for the functional occupational needs shown in the model above, a community should consider the following levels in its program of occupational preparation:

1. General education — Is it adequate to provide those personal characteristics, social skills, and basic skills requisite to success in a given occupation?

2. Prevocational education — Does it provide occupational orientation and exploration as well as general occupational skills and information applicable to a broad spectrum of jobs?

3. Vocational education — Is there preparation for semi-skilled and skilled jobs?

4. Technical education — Does there exist preparation for technical and sub-professional occupations?

Another way a local community should view its program of occupational preparation is by level of occupations: Is education provided for

1. Rank-and-file jobs?
2. Supervisory positions?
3. Managerial positions?

Lastly, the community should ask itself the following questions:

1. Are we offering preparation of the length required and according to a time schedule suitable to those who need the education?

2. Are we offering the kind of education adults need part time for those who are employed or wish to be employed?

   a. Short unit courses — four/ten sessions of 2-3 hours each

   b. Intensive clinics — four-twenty hours covering a few days successively

   c. Long unit classes — one or two sessions per week for a semester

   d. Sequenced programs — a series of courses leading to a certificate of competency

   e. Extension courses — offered during the working day with the cooperation of the employer

   f. Evening courses — offered during the non-working hours of the adult

3. Do we offer to adults occupational counseling services?

4. Are we making use of advisory committees of employers and employees to provide occupational education where and when it is needed?

5. Are we providing vocational education for:

   a. those who dropped out of school?

   b. those who attended schools where vocational education was not offered?

   c. those who graduated from high school but who did not take the vocational education that was offered? (See Figures 2.2 and 2.3.)

TABLE 2.1

CLASSIFICATION OF SOME SAMPLE OCCUPATIONS*

Professional	Technical	Skilled	Semi-Skilled
Electrical Engineer (0-17.01)	Instrument Maker (II, 4-75.130)	Construction Electrician (4-97.010)	Electric Range Assembler (7-00.924)
Mechanical Engineer (0-19.01)	Production Illustrator (0-48.32)	Machinist (4-75.010)	Engine-Lathe Operator (II, 6-78.011)
Architect (0-03.10)	Architectural Draftsman (0-48.05)	Carpenter (5-25.110)	Floor-Sanding Machine Operator (7-32.711)
Tax Accountant (0-01.40)	Clerical Technician (0-69.97)	Bookkeeper (II, 1-01.02)	Typist (1-37.32)
Lawyer (0-22.10)	Business Agent (1-48.01)	Secretary (1-33.01)	Clerk (1-04.01)
Economist (0-36.11)	Account Analyst (1-06.51)	Teller (1-06.02)	Key-Punch Operator (1-25.62)
Horticulturist (0-35.05)	Tree Surgeon (0-68.13)	Log Grader (4-29.020)	Nurseryman (II, 3-39.10)
Agronomist (0-35.01)	Dairy Tester (0-50.45)	Meat Dresser (4-09.208)	Farm Hand (3-16.10)
County Agent (0-12.20)	Commission Man (1-52.21)	Farm Mechanic (3-35.10)	Log Scaler (6-29.010)
Home Economist (0-12.35)	Interior Decorator (0-43.40)	Cosmetologist (2-32.15)	Manicurist (2-32.31)
Home Demonstration Agent (0-12.30)	Stylist (0-69.96)	Dressmaker (4-25.030)	Maid (2-06.11)
Dietician (0-39.33)	Laboratory Tester (0-50.46)	Chef (2-26.31)	Waitress (2-27.12)
President (0-97.01	Buyer (II, 0-74.11)	Floor Manager (0-75.10)	Sales Clerk (1-70.10)
Editor (0-06.44)	Commercial Photographer (0-56.11)	Motion Picture Projectionist (5-55.010)	Light Floorman (7-56.260)
Advertising Director (I, 0-06.97)	Display Man (II, 0-43.30)	Advertising Salesman (1-87.26)	Telephone Operator (I, 1-42.31)

*Number designations were taken from the U. S. Department of Labor, Bureau of Employment Security, Dictionary of Occupational Titles, Vol. I (Washington, D. C., 1949). The classification shown would be subject to re-evaluation following a complete occupational analysis.

Source: Vocational and Technical Education in Illinois (Urbana: University of Illinois, Bureau of Educational Research, 1960).

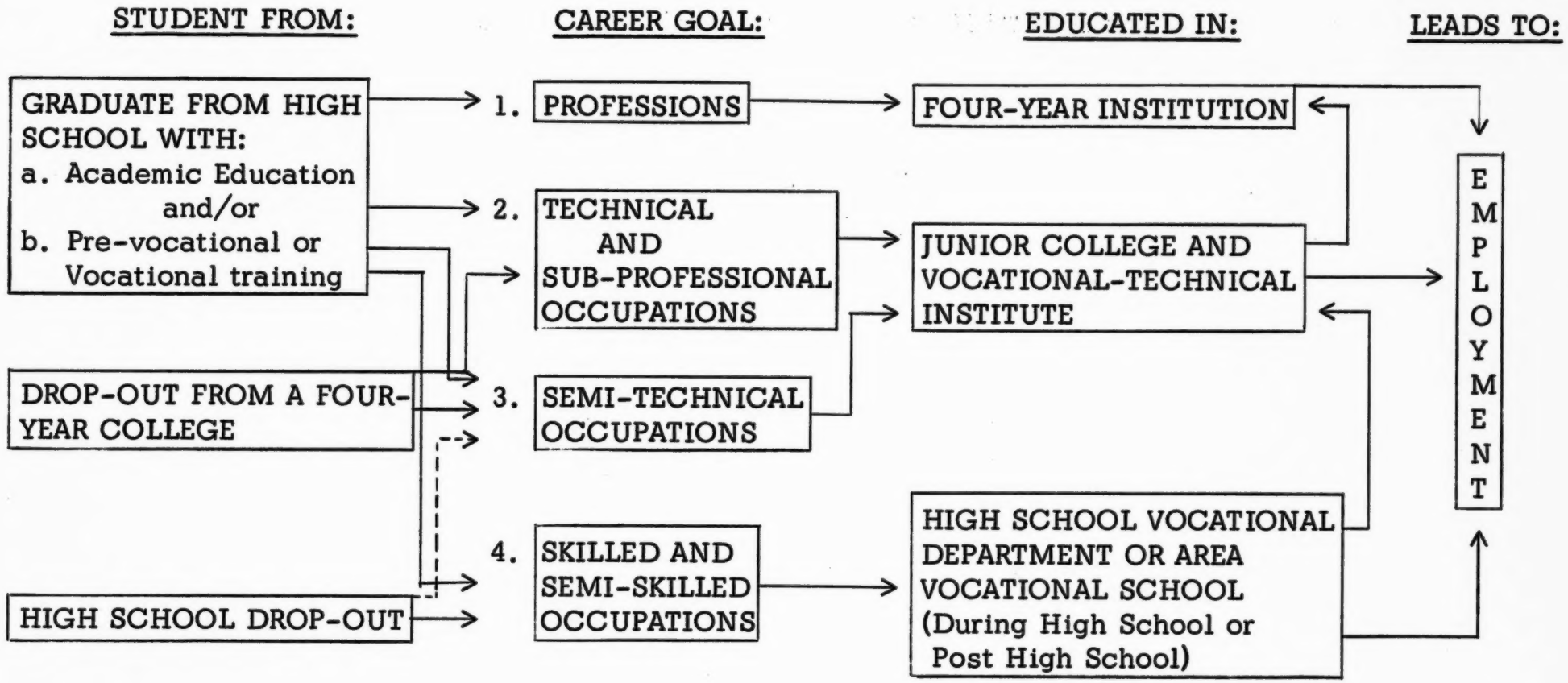


FIGURE 2.2

PATHWAYS FROM EDUCATION TO EMPLOYMENT VIA THE POST HIGH SCHOOL

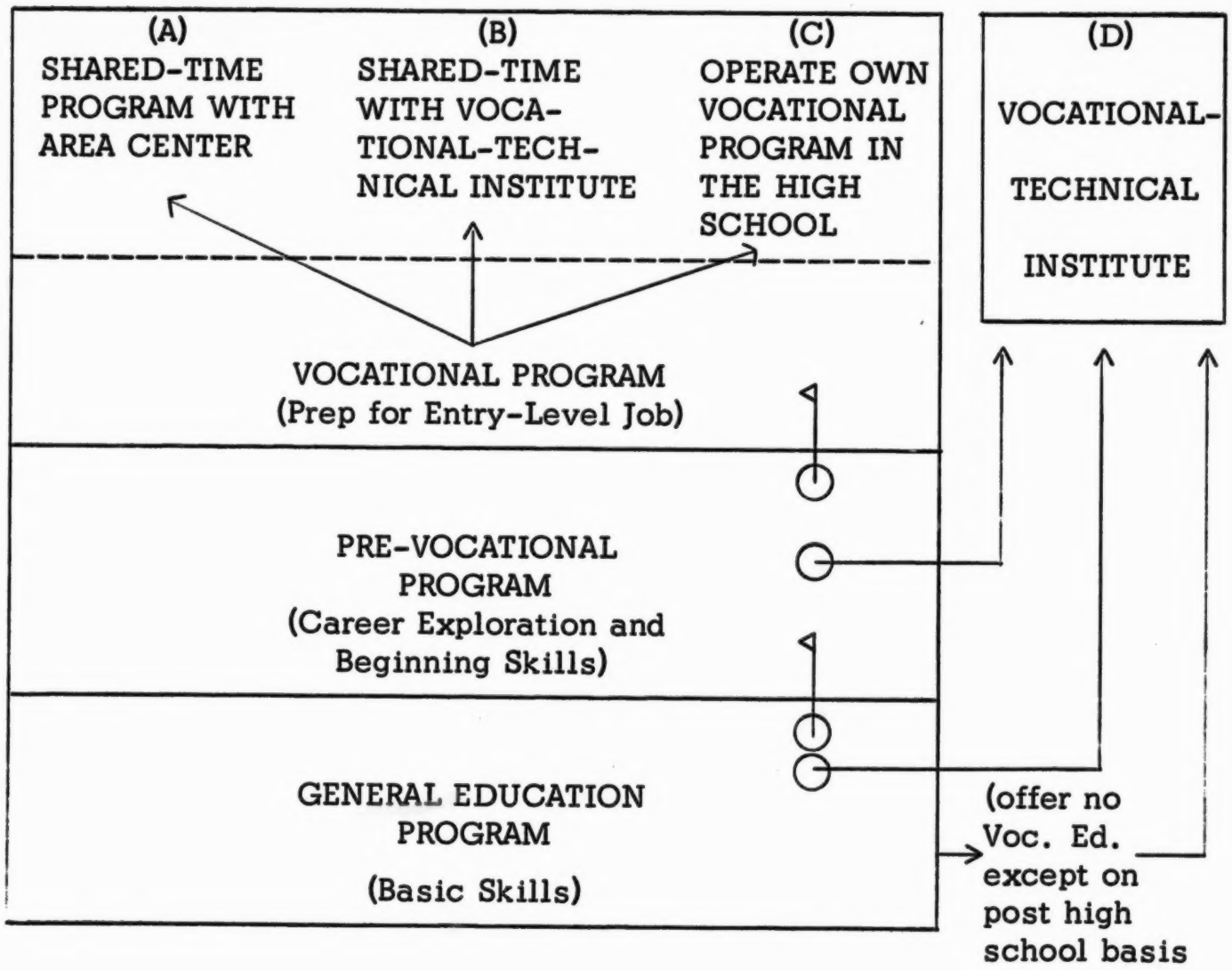


FIGURE 2.3

ALTERNATIVES FOR LOCAL HIGH SCHOOLS
IN PROVIDING EDUCATION FOR EMPLOYMENT
FOR THEIR STUDENT BODY

CHAPTER 3

THE TOP-OF-MICHIGAN AREA

The area under investigation consisted of four counties plus parts of two additional counties. All of Charlevoix, Cheboygan, Emmet and Otsego counties were included and parts of Antrim and Presque Isle counties. Two school districts in the northern part of Antrim County, Central Lake and Ellsworth, are a part of the Charlevoix-Emmett Intermediate School District and as such were included in this study. The Onaway Area Community School in the western part of Presque Isle County was included in the study even though the school districts in the remainder of the county preferred to be identified with a study to be conducted later in the Alpena area.

The study area, then, consisted of all of the Charlevoix-Emmett Intermediate School District (designated as the "West" district in this study report) and all of the Otsego-Cheboygan-Presque Isle Intermediate School District (designated as the "East" district) except the east two-thirds of Presque Isle County.

The area under investigation had been considered previously by the Michigan Council of Community College Administrators as the major portion of a regional grouping suited to the purposes of supporting a community college and area vocational-technical education programs. The area vocational study which is the subject of this report was approved by the Michigan Department of Education, evidence of the desire of that agency to consider the four counties plus portions of two additional counties as suitable for study as a center for vocational education.

A. Demographic Aspects of the Region

The full six counties in the region for this study include more than two million acres and about 75,000 people. The geographic area includes the extreme northern and northwestern part of the lower peninsula of Michigan. In general, the counties are sparsely populated with no major cities. The five cities with population (1960 Census) over 2,500 are Boyne City (2,797), Charlevoix (2,751), Cheboygan (5,859), Gaylord (2,568), and Petoskey (6,138). These five cities have approximately one-third of the population of the specific area studied. All other towns in the area are less than 2,000 population each. With the exception of Gaylord, the cities are located near the perimeter of the area.

The lack of urban centers constitutes one of the major problems for providing vocational and technical education, particularly of the type involving supervised occupational experience in cooperation with local business and industry.

Population Change

The total population in the six counties changed much less during the ten-year period 1950 to 1960 than did the population of the total state. While Michigan's population increased nearly 23 percent the change in these counties was as follows:*

Antrim	-3.2%
Charlevoix	-0.4%
Cheboygan	+6.0%
Emmet	-3.8%
Otsego	+17.2%
Presque Isle	+9.3%

As shown in Table 3.1, net migration offset natural increases in three of the counties, and Otsego County registered the largest proportional gain of all six counties. Emmet County, the most populous, lost population from both Petoskey and the balance of the County.

The total population of the six counties in 1960 was about 75,000 with about 40 percent in two counties — Cheboygan and Emmet, as shown in Table 3.2. Although the six-county population increased slightly during the 20-year period 1940 to 1960, Thaden has projected a slight decrease by 1970. It should be noted, however, that the area's population is increased substantially during the summer months when summer residents and tourists arrive in large numbers. Other periods of large influxes are seasons for hunting, fishing, and winter sports.

The importance of the temporary residents (tourists, sportsmen, summer residents, and others) to planning programs of vocational and technical education is quite significant. Employment tends to be seasonal in many businesses and consequently, opportunities for summer occupational experiences may be quite different than the opportunities during the fall and winter. Some summer residents also wish their children enrolled in school for enrichment programs.

This brief review of population suggests for education that the schools in some of the counties may continue to experience steady or slightly declining enrollments, especially at the high school level. Other schools, mainly

---

*Source: Michigan Population 1960: Selected Characteristics and Changes, Special Bulletin 438 (East Lansing: Michigan State University, Agricultural Experiment Station, 1962).

TABLE 3.1

POPULATION CHANGE IN SIX-COUNTY AREA

	ANTRIM	CHARLEVOIX	CHEBOYGAN	EMMET	OTSEGO	PRESQUE ISLE	TOTAL
1940 to 1950							
Population Change	-173	532	132	834	627	-209	+1,743
Natural Increase*	896	1,329	1,630	1,858	744	1,848	
Net Migration	-1,069	-797	-1,498	-1,024	-117	-2,057	
1950 to 1960							
Population Change	-348	-54	819	-630	1,110	1,121	+3,761
Natural Increase*	942	1,382	1,954	2,128	1,083	2,368	
Net Migration	-1,290	-1,436	-1,135	-2,758	27	-1,247	
							+5,504

Source: J. F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24 (East Lansing: Michigan State University, Continuing Education Service, March 1962).

*Corrected for underregistration of births.

TABLE 3.2

POPULATION: CHANGES AND PROJECTIONS

	Population			Population in percent			1940/1960 % Change of Pop.	Projection 1970**	Percent of Six County Total
	1940	1950	1960	1940	1950	1960			
Antrim	10,964	10,721	10,373	15.33	14.71	13.85	-05.39	9,160	12.55
Charlevoix	13,031	13,475	13,421	18.22	18.49	17.91	02.99	12,910	17.68
Cheboygan	13,644	13,731	14,550	19.07	18.84	19.42	06.64	14,380	19.70
Emmet	15,791	16,534	15,904	22.08	22.68	21.23	00.71	14,960	20.49
Otsego	5,827	6,435	7,545	08.15	08.83	10.07	29.48	8,580	11.75
Presque Isle	12,250	11,996	13,117	17.13	16.46	16.46	07.08	13,020	17.83
Total	71,507	72,892	74,910	100.00	100.00	100.00	41.51	73,010	100.00

Source: J. F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24 (East Lansing: Michigan State University, Continuing Education Service, March 1962).

**Projection is based on the ratio method assuming that the total population will be 9.6 million and the population of each county would be the same percentage as the ratio from 1940 to 1960.

those located in the cities, are more likely to experience growth but at a slower rate than schools in urban areas in southern Michigan. The location of some new industries in the area may alter the population picture but probably not for most of the towns with a population currently under 2,500.

B. School Districts and School Enrollments

Eighteen public school districts operated high schools during 1964-65 in the area under study. In addition, three parochial high schools were operated, all by the Roman Catholic Church. Total enrollment, grades 9-12, in these 21 high schools was 4,629 in 1964-65.

A community college, North Central Michigan College, located at Petoskey, established in 1958, and supported by tax monies from Emmet County and appropriations from the State of Michigan serves the surrounding area.

The area under study is relatively isolated from other institutions offering higher education or post high school vocational education. The approximate mileages between cities, as shown in Table 3.3, could be misleading to the person unfamiliar with the terrain and climate in northern Michigan. Much of Antrim, Charlevoix, and Emmet Counties are characterized by northwest-southeast drumlins and moraines which have made east-west road construction and travel difficult. Travel time from point to point is usually longer than expected in flatter areas. Added to this is the time required to get from a rural residence to the main highway or trunkline road.

TABLE 3.3

APPROXIMATE MILEAGE FROM SELECTED TOWNS AND CITIES TO INSTITUTIONS FOR HIGHER EDUCATION

Institution for Higher Education	Charlevoix	Cheboygan	Central Lake	Gaylord	Harbor Springs	Mackinac City	Onaway
North Central Michigan College, Petoskey	17	37	41	34	9	38	44
Northwestern Michigan College, Traverse City	53	107	34	66	79	105	114
Alpena Community College, Alpena	120	78	125	74	104	95	59
Central Michigan University, Mt. Pleasant	142	148	122	100	150	155	151

Snowfall, although heavy in much of the inland area of this six-county region, poses no major problem for movement of vehicles on major highways and trunklines. However, transportation is a problem for those people who live along other roads. The heaviest snowfall area of the entire lower peninsula is around Gaylord where the mean annual snowfall is 122 inches. The coastal cities have much less snowfall (Mackinaw City, 67"; Petoskey, 70"; Cheboygan, 73"; and Charlevoix, 79").

School Census and Enrollment

The census of school population in the area under study is 10,600 in elementary classes and about 7,900 at the secondary level, a membership below that normally considered as a desirable minimum for establishment and operation of a full-service vocational-technical institute. Added to this relatively low membership is the fact that these youngsters reside in a very large area (covering more than 3,000 square miles).

Enrollments in the 21 high schools under study are shown in Table 3.4. Two striking features are apparent immediately: first, there are no large high schools in the area, and second, more than half of the schools have less than 200 students enrolled in the top four grades. Only six of the 21 schools have graduating classes which include approximately 100 students, oftentimes referred to as a minimum size for an efficient general education program but far below the size needed to operate a full program of vocational education. It has been said that an enrollment of 200 seniors or 800-1,000 students in the top four grades is needed for a school to be able to offer rather limited vocational curricula. On that basis, none of the schools operating has enough students to justify an extensive vocational curricula.

One alternative which has been considered by some as the answer to the problem of low enrollments in consolidation or school district reorganization. This has been proposed in some previous studies conducted in parts of this six-county area, such as the Citizens School Study — Emmet County (1962) which proposed one school district for the entire county with an estimated enrollment of approximately 800 in one comprehensive high school, grades 10-12. If this were to be considered as an acceptable alternative, the estimated enrollments for four public high schools (grades 9-12) to cover the present study area might be as follows:

Emmet County		1,055
Harbor Springs	Pellston	
Littlefield	Petoskey	
Charlevoix County		1,233
Charlevoix	East Jordan	
Boyne City	Central Lake	
Boyne Falls	Ellsworth	

Cheboygan County. 1,158
Mackinaw City — Onaway
Cheboygan — Wolverine
Inland Lakes
Otsego County. 464
Gaylord — Vanderbilt
Johannesburg

TABLE 3.4

SECONDARY ENROLLMENTS, BY GRADE LEVEL, 1964-65

	ANTRIM COUNTY				CHARLEVOIX COUNTY							
	Central Lake		Ellsworth		Boyne City		Boyne Falls		Charlevoix		East Jordan	
	M	F	M	F	M	F	M	F	M	F	M	F
9th	11	12	14	11	47	47	7	10	44	51	32	28
10th	14	20	9	10	52	50	4	10	46	49	35	38
11th	9	14	14	11	53	39	7	6	44	34	33	24
12th	11	9	14	19	39	34	6	11	41	47	36	27
Total	45	55	51	51	191	170	24	37	175	181	136	117

	EMMET COUNTY											
	Harbor Springs		Littlefield		Mackinac City		Pellston		Petoskey		St. Francis	
	M	F	M	F	M	F	M	F	M	F	M	F
9th	34	39	6	11	10	9	23	29	65	76	33	36
10th	35	30	13	9	10	10	28	16	69	70	41	37
11th	24	23	9	12	15	8	18	17	75	67	36	36
12th	22	33	9	6	17	11	24	22	76	65	33	35
Total	115	125	37	38	52	38	93	84	285	278	143	144

TABLE 3.4--Continued

	CHEBOYGAN COUNTY								PRESQUE ISLE	
	Cheboygan		Cheboygan Catholic		Inland Lakes		Wolverine		Onaway	
	M	F	M	F	M	F	M	F	M	F
9th	73	68	43	32	24	22	11	8	38	35
10th	84	54	28	26	20	23	8	11	48	51
11th	67	67	32	38	17	19	8	12	37	34
12th	48	56	39	31	20	23	8	7	29	38
Total	272	245	142	127	81	87	35	38	152	158

	OTSEGO COUNTY										
	Gaylord		Johannesburg		St. Mary		Vanderbilt		21 Schools		
	M	F	M	F	M	F	M	F	M	F	Total
9th	47	28	13	7	29	22	12	6	616	587	1203
10th	44	39	9	7	25	23	8	12	630	595	1225
11th	40	50	6	6	17	18	7	8	568	543	1111
12th	41	42	9	6	19	10	11	6	552	538	1090
Total	172	159	37	26	90	73	38	32	2366	2233	4629

The rough terrain, the road conditions, the severe winter weather, and the scattered rural population constitute major factors to be considered when proposals are made to enlarge the existing high school districts. Some students are already spending more than one hour on a school bus to get to school. Major improvements could be made to strengthen the general education curricula through school district reorganization, but the study staff does not consider it to be a satisfactory solution to the problem of providing an adequate vocational education program.

The total high school enrollments (grades 9-12, public and non-public) in the study area is approximately 4,600, or about 1,100 seniors. These figures are most important when planning for vocational and technical education programs in a post-high school institution. Most of the entrants would come from this group. If the assumption is made that 25-40 percent of a graduating class (which has had little opportunity for vocational education) will need post-high school occupational education, 275-440 graduating seniors will be the potential annual entrants to vocational and technical education programs for training ranging from a few months to two years. Additional enrollees could and should be expected to come from the ranks

of currently employed persons seeking new or additional skills necessary for advancement in their present positions or movement into new positions.

The community college at the time of the study had a full-time equated enrollment of about 350. Enrollments increased last year and a full-time equated enrollment of nearly 400 is expected during the fall of 1965 and an enrollment of about 600 is predicted by the president of the college for the year 1970. This enrollment could furnish the base for an expanded technical education program to serve the surrounding area since certain student personnel facilities and administrative structure are already in existence.

Educational Level of the Population

The median number of years of school completed by the population in the six-county area ranges from 8.9 in Presque Isle to 11.0 in Emmet as shown in Table 3.5. Emmet County is above the state average while Otsego, Cheboygan, and Presque Isle counties are considerably below the state average. The proportion of persons with education beyond high school is relatively small in Antrim, Cheboygan, Otsego, and Presque Isle counties, considerably less than the 15 percent average for the state. The significance of this for economic development can readily be seen when one realizes the premium usually placed on the availability of skilled craftsmen, technicians, supervisory, and managerial personnel when business and industry seeks new locations or plans for expansion within a given area.

TABLE 3.5

YEARS OF SCHOOL COMPLETED BY PERSONS 25 AND OVER

County	Grades 1-8	High School		College		Median School Years Completed
		1-3 years	4 years	1-3 years	4 or more	
Antrim	2,336	1,162	1,573	377	298	10.3
Charlevoix	2,811	1,493	1,952	655	395	10.6
Cheboygan	3,641	1,463	1,667	581	299	9.3
Emmet	3,064	1,817	2,484	737	561	11.0
Otsego	1,809	763	952	281	180	9.6
Presque Isle	3,386	1,109	1,410	415	277	8.9
STATE	1,494,226	944,386	1,107,877	340,687	285,664	10.8

Source: Michigan Statistical Abstract (5th ed.; East Lansing: Michigan State University, Bureau of Business and Economic Research, 1964), pp. 43-45.

Further Education of High School Graduates

In the region as a whole, about 46 percent of the graduating seniors for the three years 1962-3-4 were reported by their administrators to have gone to either four-year colleges or other post-high school educational programs, as shown in Table 3.6. In other words, nearly half of the graduating seniors were reported to have enrolled at some post-high school educational institution and about half either did not or their status was unknown. Caution should be exercised when making generalizations from the data in the table. The data do not indicate the extent to which students failed or succeeded in their post-high school education, and the absence of definite information on a large proportion of the graduates makes it impossible to present the total picture. However, additional information about the 1963 graduates may be found in a later chapter.

Since there is little or no vocational education (education for employment) in most of the 21 high schools, the occupational attainments of those graduates who did not enter post-high school educational programs becomes more significant. In nine of the schools, representing more than one-fourth of all of the graduates each year, 60 percent or more of the graduates either did not enter post-high school educational programs or their status was unknown. In only two schools, representing about 10 percent of the graduates, were there less than 40 percent of the graduates in this classification. Obviously, if these data are representative of the general trend for the area, something must be done to make it possible to get more graduates into post-high school programs and to provide more occupational education for some of the students at the high school level.

C. Economic Aspects of the Region

The economic picture of the region — present employment, employment trends, levels of living — information on the extent to which the region may be capable of helping finance new and expanded programs of vocational and technical education. In turn, a pool of skilled and technical level manpower can be a great asset, affecting in a positive way the economic growth and productivity of the area.

Economically, the picture in the six-county area under study is mainly a reflection of the growing tourist, resort, and recreation business, declining population from rural areas, and to a certain extent, the increased wood products marketing and processing. Wage rates and taxable income are relatively low.

The estimates of effective buying income, shown in Table 3.7, are approximately equal for all of the counties and fall considerably below the state

TABLE 3.6

FURTHER EDUCATION OF HIGH SCHOOL GRADUATES (1962-64)
REPORTED BY SCHOOL ADMINISTRATORS

County & School	Graduates Who Entered 4-Year Colleges		Graduates Who Entered Less Than 4-Year Colleges		Graduates Who Did Not Enter A College or Status Unknown		Mean Number High School Graduates
	No.[1]	%	No.	%	No.	%	
ANTRIM							
Central Lake	3.0	14	4.3	20	14.7	67	22.0
Ellsworth	4.0	21	6.0	31	9.3	48	19.3
CHARLEVOIX							
Boyne City	13.0	20	14.0	21	39.3	59	66.3
Boyne Falls	0.3	.3	3.3	25	8.3	69	12.0
Charlevoix	21.0	34	18.0	29	22.3	36	61.3
East Jordan	9.0	19	11.0	24	26.7	57	46.7
EMMET							
Harbor Springs	8.3	19	10.0	23	24.3	57	42.7
Littlefield (Alanson)	0.7	6	3.7	34	6.7	61	11.0
Mackinac City	5.3	33	3.0	18	8.0	49	16.3
Pellston	3.7	8	6.0	13	35.3	78	45.0
Petoskey	27.3	27	30.3	30	44.7	44	102.3
St. Francis (Petoskey)	17.7	43	7.3	18	16.3	39	41.3
CHEBOYGAN							
Cheboygan	18.3	23	13.7	17	47.0	59	79.0
Cheboygan Catholic	18.7	41	6.0	13	21.0	46	45.7
Inland Lakes (Indian River)	6.0	22	0.7	3	20.3	75	27.0
Wolverine	2.7	22	1.7	14	8.0	65	12.3
OTSEGO							
Gaylord	26.7	38	14.7	21	28.7	41	70.0
Johannesburg	2.0	12	2.3	14	12.0	74	16.3
St. Mary (Gaylord)	6.7	25	4.0	15	15.7	60	26.3
Vanderbilt	2.3	19	3.0	25	6.7	56	12.0
PRESQUE ISLE							
Onaway	6.7	11	9.3	15	46.3	74	62.3
TOTAL	203.4	24	172.3	21	461.6	55	837.1

[1]Mean number for years 1962, 1963 and 1964.

Source: Questionnaires sent to the participating high schools of the six counties.

average. From 25 to 35 percent of the families in all six counties had incomes under $3,000 in 1959 when the national average was 21.4 percent. This would seem to indicate a relatively low level ability of many families to find financial resources to support their children in post-high school institutions.

TABLE 3.7

ESTIMATES OF BUYING INCOME, 1963

County	Effective Buying Income Per Capita	Effective Buying Income Per Household
Antrim	$1,427	$4,684
Charlevoix	1,552	5,260
Cheboygan	1,421	5,129
Emmet	1,565	5,283
Otsego	1,470	5,205
Presque Isle	1,620	5,910
STATE OF MICHIGAN	2,195	7,696

Source: "Survey of Buying Power," Sales Management, Inc., June 10, 1964, pp. 390-396.

Reports from the Michigan Department of Revenue indicate the importance of tourists, resorts, and recreation to the economic welfare of the region. The per capita sales tax collections for fiscal year 1964 were above the state average for all of the counties except Presque Isle. Otsego County had the highest collections per capita ($83.39) for the six-county area (State Average, $62.08).

Other Selected Economic Characteristics

Table 3.8 contains data regarding several selected indexes to the economy of the area. As a whole, they reflect a picture of economic status lower than the state average and point to the need not only for economic development, but for upgrading the labor force. In addition, the data reinforce the previous statements that there is a financial problem of establishing and maintaining improved facilities for vocational-technical education and of finding ways to support youth and adults from low income families while in such vocational training. Some of the key points from Table 3.8 are:

1. Nearly 30 percent of the families had incomes of less than $3,000 in 1959, and this represents a proportion of nearly twice as many as the state average.

2. The proportion of families with high incomes (over $10,000) was very low — about one-third of the state average.

3. The median income was below the state average in all six counties.

4. Unemployment among experienced workers was above the state average.

TABLE 3.8

SELECTED ECONOMIC CHARACTERISTICS OF THE REGION, 1960

County	Nonworker-Worker Ratios[1]	Unemployed[2]	Median Income of Families[3]	Percent of Families with Incomes of[3]	
				Under $3,000	Over $10,000
Antrim	1.90	10.3	$4,002	34.2	6.5
Charlevoix	1.75	10.9	4,502	27.1	6.3
Cheboygan	2.06	13.0	4,291	34.4	6.3
Emmet	1.74	10.7	4,694	26.7	5.5
Otsego	1.84	8.9	4,556	27.3	6.1
Presque Isle	1.96	5.3	5,140	25.5	9.5
STATE	1.66	6.9	6,256	15.7	17.4

Source: Michigan Statistical Abstract (5th ed.; East Lansing: Michigan State University, Bureau of Business and Economic Research, 1964).

[1] Ratio of persons not in labor force (including children under 14) to labor force.

[2] As of April 1, 1960.

[3] Based on income for the year 1959.

The property values for the area are reflected in the assessed and state equalized valuations, as shown in Table 3.9. Since the local property tax is a major source of funds for education the SEV (state equalized valuation) represents an important index to the ability of the local area to support

education. In general, the SEV, in the area under study, when placed on a per student basis, is below the average for the state — in other words one mill of tax levy will yield fewer dollars per student in the school districts included in this study than in many other areas of the state.

TABLE 3.9

ASSESSED AND EQUALIZED VALUATION FOR SIX NORTHERN MICHIGAN COUNTIES: MAY 24, 1965

County	Values as Assessed by Supervisors 1965	Equalized Valuation by County Board of Supervisors, 1965	Amount Added to Assessed by State Board of Equalization, 1965	Aggregate of Valuation as Equalized by State Board of Equalization, 1965
Antrim	$ 18,443,473	50,287,050	31,833,577	50,287,050
Charlevoix	55,506,143	55,763,300	257,157	55,763,300
Cheboygan	40,047,368	44,390,324	21,235,855	61,283,223
Emmet	37,491,807	56,212,094	18,720,287	56,212,094
Otsego	24,069,994	31,015,320	6,945,326	31,015,320
Presque Isle	23,999,461	34,363,213	10,363,752	34,363,213
TOTAL	199,558,246	272,031,301	89,355,954	288,924,200

Source: Report from Office of State Board of Equalization, Lansing, May 24, 1965.

D. Employment in the Six-County Area

Employment in the six-county area of both male and female workers by the major occupational groups is shown in Table 3.10. The table also shows trends of about a 20-year period 1940 to 1960. Detailed analysis of the table is reported in the separate sections dealing with the occupational specialities; however, some major trends have been noted. The overall number of employed males decreased slightly while the number of employed females doubled during the 20-year period.

Employment in farming occupations has decreased steadily in all six counties. However, employment of professional, technical, and kindred workers showed increases for both male and female employees in all six counties.

TABLE 3.10

EMPLOYED WORKERS BY MAJOR OCCUPATION

Major Occupations	Antrim County			Charlevoix County			Cheboygan County			Emmet County			Otsego County			Presque Isle County			Total		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Employed - Male	2,699	2,699	2,295	3,092	3,176	2,928	2,973	2,957	2,871	3,664	3,925	3,372	1,334	1,662	1,678	3,109	3,152	3,248	16,871	17,571	16,392
Professional, technical, and kindred workers	105	121	155	125	155	233	124	141	225	166	224	302	51	89	104	108	117	176	679	847	1,195
Farmers and farm managers	962	817	280	1,002	670	224	978	610	204	824	620	220	439	351	146	967	762	398	5,192	3,830	1,472
Managers, officials, and props., except farm	209	236	288	285	322	343	295	339	499	461	468	509	145	222	286	217	272	389	1,612	1,859	2,314
Clerical and kindred workers	107	59	81	182	123	80	208	100	162	336	141	157	79	40	80	133	70	108	1,045	533	668
Sales workers	*	107	90	*	152	198	*	153	146	*	259	240	*	89	75	*	92	108	*	852	857
Craftsmen, foremen, and kindred workers	172	347	421	294	507	626	321	506	525	470	741	658	72	214	302	313	504	605	1,642	2,819	3,137
Operatives and kindred workers	188	299	628	370	576	672	323	430	532	478	746	609	112	280	409	434	567	880	1,905	2,898	3,730
Private household workers	2	1	8	-	15	17	1	6	17	7	14	16	-	2	-	3	1	-	13	39	58
Service workers, except private household	61	80	85	127	133	195	111	194	156	155	192	188	68	92	125	100	114	205	622	805	954
Farm laborers, unpaid family workers	239	180	119	197	102	72	173	89	63	197	29	78	193	15	20	443	212	143	1,442	627	495
Farm laborers, except unpaid, and farm foremen	252	162	*	167	91	*	181	104	*	193	132	*	48	111	*	142	156	*	983	756	*
Laborers, except farm and mine	369	232	161	313	304	220	236	239	217	332	318	322	107	131	95	235	241	195	1,592	1,465	1,210
Occupation not reported	13	28	39	30	23	48	22	46	125	45	41	73	20	26	36	14	44	41	144	208	362
Employed - Female	386	590	903	615	791	1,392	623	805	1,392	1,009	1,462	1,802	267	456	742	582	700	903	3,482	4,804	6,850
Professional, technical, and kindred workers	90	84	118	103	143	170	83	134	148	209	258	248	55	76	65	95	102	160	635	797	909
Farmers and farm managers	51	24	18	50	12	12	59	10	9	37	12	8	25	10	4	48	16	10	270	84	61
Managers, officials, and props., except farm	23	38	37	43	58	60	140	71	53	42	81	123	16	30	39	26	28	37	290	306	349
Clerical and kindred workers	54	83	167	112	169	262	126	129	218	260	309	424	57	72	130	87	96	157	696	858	1,358
Sales workers	*	84	74	*	95	101	*	85	99	*	184	171	*	41	44	*	76	120	*	565	609
Craftsmen, foremen, and kindred workers	1	10	11	4	8	10	4	14	3	6	13	8	-	2	5	9	8	4	24	55	41
Operatives and kindred workers	4	38	197	46	34	294	113	109	78	50	109	72	11	69	146	128	50	86	352	409	873
Private household workers	103	47	92	132	89	134	95	50	120	207	154	238	40	21	49	124	61	45	701	422	678
Service workers, except private household	42	94	147	93	131	257	85	167	283	176	287	447	44	105	231	50	90	189	490	874	1,554
Farm laborers, unpaid family workers	5	57	13	21	22	17	6	13	10	9	19	-	6	7	-	5	95	66	52	213	106
Farm laborers, except unpaid, and farm foremen	2	19	*	1	5	*	1	4	*	1	7	*	-	18	*	1	13	*	6	66	*
Laborers, except farm and mine	3	4	4	1	9	8	4	2	-	1	5	4	1	3	-	-	4	4	10	27	20
Occupation not reported	8	8	25	9	16	67	7	17	87	11	24	59	12	2	29	9	61	25	56	128	292

*Included in above figure.

Source: U. S. Census.

The clerical-secretarial field showed a small increase for male employees but the number of female workers grew more than 180 percent.

The employment of craftsmen and foremen showed remarkable growths, almost doubling during the 1940-1960 period. A similar growth appears in the employment of operatives and other semi-skilled workers although the rate of increase for female employment in this area from 1940-1960 is high — more than 100 percent, in spite of a decrease in Cheboygan and Presque Isle counties.

The employment of service workers, especially females, increased considerably during the 20-year period. However, private household employees decreased in number during the same period.

Employment in the Area by Major Occupations

Knowing the kind of industry in which people work is helpful in knowing the general economic pattern for the area. However, when planning programs of vocational education, it is far more important to know the occupations in which people work because the skills and understandings needed by workers to perform the activities expected of them in the jobs help determine the instructional content to be provided by the school. Table 3.11 shows the distribution of employment in the six counties according to major occupational groups and also provides a longitudinal analysis of change from 1940 to 1960.

More people (almost one-fifth) in the labor force are employed as operatives and kindred workers than in any other occupational group. These jobs are typically in manufacturing or processing plants and are almost always semi-skilled in nature. Often, and other tables support this, the majority of operatives are women workers, often employed at low wage rates. Approximately 14 percent of the labor force are craftsmen, foremen and other skilled workers dealing with industrial processes. Such workers are found not only in manufacturing firms, but also in construction operations and in repair and service establishments.

In the six counties approximately equal numbers of people are employed in the professional and technical occupations, the managerial occupations, the clerical and office occupations, and the service occupations.

Changes in the numbers of people employed in the various occupational groups have been very marked since 1940. The number of farmers and farm managers declined by more than 70 percent while declines have also appeared in the unskilled areas such as farm laborers and laborers. Increases of more than 100 percent have occurred in service workers (except private

TABLE 3.11

CHANGES IN EMPLOYMENT IN THE SIX COUNTIES SHOWN BY MAJOR OCCUPATION, 1940 to 1960

Occupation in which Employed	1940	1960	% Each Category Is of Total Employment	% Change from 1940-1960
Total Employed — Male and Female	20,353	23,242	100.00	
Professional, technical, and kindred workers	1,314	2,104	9.05	52.51
Farmers and farm managers	5,462	1,533	6.60	-71.93
Managers, officials, and props., except farm	1,902	2,663	11.46	40.01
Clerical and kindred workers	1,741	2,026	8.72	16.37
Sales workers	**	1,466	6.31	--
Craftsmen, foremen, and kindred workers	1,666	3,178	13.67	90.76
Operatives and kindred workers	2,257	4,603	19.80	103.94
Private household workers	714	736	3.17	3.08
Service workers, except private household	1,112	2,508	10.79	125.54
Farm laborers, unpaid family workers	1,494	601	43.03	-59.77
Farm laborers, except unpaid, and farm foremen	989	**	--	--
Laborers, except farm and mine	1,602	1,230	5.29	-23.22
Occupation not reported	200	654	2.81	227.00

Source: U. S. Census of Population, 1960.

**Included in figure on line above.

household) and operatives. There was about a 90 percent increase in craftsmen, foremen and kindred workers. The picture is an obvious one: The six-county area has undergone farm consolidation and changed land use with increased employment in manufacturing and processing, and even more significantly, in the provision of goods and services, many of which result from serving the tourists, hunters, fishermen, and winter sports enthusiasts. (Note: Additional labor force data by counties are shown in Appendix A.)

Major Sources of Employment

The industry groups which provide the majority of the employment in the six counties are shown in Table 3.12. Generally, the six counties are similar in employment structure with manufacturing, distributive and service trades providing the bulk of the employment, except in Presque Isle where employment in mining (limestone quarries) and utilities is relatively high. Several aspects of the table have major significance for this study.

Manufacturing provides not more than 30 percent of the jobs which is a figure far below the state average. In fact, in only three counties does manufacturing employ more than 20 percent of the labor force. The employment in professional services is considerably higher in Emmet County than in the other counties, reflecting the health, medical, and educational facilities located there and the usual greater concentration of professional people in the more urban areas.

In two of the counties more than two-fifths of the labor force is employed in the distribution of goods and services, including retail and wholesale trade, finance, insurance, real estate, business, repair and personal services. It should be realized that the number employed in the distribution area is actually far greater than the table shows because of the additions to the work force during the tourist season of both full-time and part-time people.

In summary, Table 3.12 shows that the six-county area is dominated by a business economy providing goods and services including those of the health and education professions as well as for the tourism and recreation which are so important. Production and processing are not the major sources of employment and opportunities in these fields are limited compared to other areas of Michigan.

E. Relationships to Adjacent Areas

The six-county region under study lacks a strong central focus when viewed economically and educationally. Rather, it is characterized by relatively small units which have strong feelings about their own immediate areas.

TABLE 3.12

SUMMARY OF EMPLOYMENT IN SIX COUNTIES
BY MAJOR INDUSTRY GROUP, 1960

Major Industry Group	Counties					
	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle
1. Agriculture, Fisheries & Forestry	484 (15.1)*	387 (9.0)	327 (8.2)	366 (7.1)	207 (8.6)	641 (15.4)
2. Mining	0	0	8 (0.2)	-	5 (0.2)	733 (17.7)
3. Construction	252 (7.9)	320 (7.4)	469 (11.8)	468 (9.0)	184 (7.6)	171 (4.1)
4. Manufacturing	968 (30.3)	1,166 (27.0)	663 (16.7)	681 (13.2)	579 (23.9)	475 (11.4)
5. Utilities[1]	113 (3.5)	221 (5.1)	247 (6.2)	434 (8.4)	91 (3.8)	675 (16.3)
6. Trade[2]	457 (14.3)	772 (17.9)	960 (24.1)	1,447 (30.0)	479 (19.8)	675 (16.3)
7. Finance, Insurance and Real Estate	72 (2.3)	109 (2.5)	150 (3.8)	124 (2.4)	59 (2.4)	66 (1.6)
8. Business, Repair and Personal Service	305 (9.5)	630 (14.6)	509 (12.8)	590 (11.4)	323 (13.3)	214 (5.2)
9. Other Services[3]	387 (12.1)	500 (11.6)	378 (9.5)	973 (18.8)	306 (12.6)	454 (10.9)
10. Public Admin.	114 (3.6)	164 (3.8)	173 (4.3)	183 (3.5)	156 (6.5)	108 (2.6)
11. Industry not Reported	46 (1.4)	80 (1.9)	112 (2.8)	110 (2.1)	47 (1.9)	13 (0.3)

Source: U. S. Census of Population, 1960.

*Denotes percentage item is of county total.

[1]Includes transportation, communication, and other utilities.

[2]Includes wholesale and retail trade.

[3]Includes medical & health, education, and other professions & related services.

Most of the population is on the perimeter of each county, with the exception of Gaylord in Otsego County. There are active Chambers of Commerce functioning in at least ten of the population centers but no strong regional chamber.

The region to the east, consisting of the major portion of Presque Isle County and four other counties — Alcona, Alpena, Montmorency, and Oscoda — is to be the subject of an area vocational study similar to this study. Crawford County to the south, while in neither this study nor the Grand Traverse Area study, might logically look either to the north (Gaylord and Petoskey) or to the west (Traverse City) to affiliate with any vocational-technical education centers located there.

Two school districts in Antrim County (Ellsworth and Central Lake) while included in this study, are "swing districts." The people in the area look to both the north (Petoskey) and south (Traverse City) for some of their needs — shopping, banking, newspapers, TV, health services, etc.

CHAPTER 4

OCCUPATIONAL INTERESTS OF 11TH GRADERS AND THEIR PARENTS*

Principals in all public and parochial high schools administered on a given day an occupational interest questionnaire to all 11th graders present. At the same time, each student was given a questionnaire in an envelope addressed to his parents. Both instruments were to be returned unsigned. Several questions were similar on both instruments.

What Parents and Youth Think Important in a Job. Among the factors that greatly influence the choice of an occupation, and therefore preparation for it, are the beliefs of youth and their parents about what is important in a job. Many times, young people are criticized for wanting high pay and not much else in a job. The 11th graders in the Top-O-Michigan area do not apparently view high pay as the most important job factor as their responses in Table 4.1 show. The three most important job factors to them are in order: "a chance for advancement," "security," and "nice working conditions." The same three factors are most important also to the parents although the "chance for advancement" ranks first and "nice working conditions" was important to almost twice as many parents as students.

As Table 4.1 indicates, the responses of parents and children are very similar with but one major difference — "high pay." Twice as many parents as students value "high pay" as an important job factor. The patterns of responses are generally alike for all counties. However, Cheboygan and Presque Isle respondents appear more concerned with "security" and "being able to find a job" possibly reflecting depressed conditions in these areas. In general, the beliefs of students and their parents can be viewed as being realistic in a modern world.

Parent Belief About the Academic Ability of Their Child. A significant factor in a parent's being willing to support a post high school institution and in the guidance he gives his child rests in his belief about his child's academic ability. The parents were asked to estimate ability to profit from three kinds of post high school education or training: business or trade training, junior college work, and completion of the baccalaureate degree. Table 4.2 shows these beliefs.

About 40% of the 11th grade parents say their child has the ability to complete college with the proportion rising to 49% in Cheboygan County. Parents

*Written principally by Dr. Peter Haines.

TABLE 4.1

BELIEFS OF 11TH GRADERS AND THEIR PARENTS ABOUT FACTORS MOST IMPORTANT IN A JOB

Factors Deemed Important in a Job	Antrim		Charlevoix		Cheboygan		Emmet		Otsego		Presque Isle		Total	
	P[1]	St[2]	P	St	P	St	P	St	P	St	P	St	P	St
(Not in order of importance)	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1. Security	21	13	32	35	32	40	21	30	29	32	36	40	28	34
2. High Pay	12	0	7	5	10	2	13	9	13	1	10	2	11	5
3. Nice Working Conditions	26	3	21	13	16	14	21	10	11	11	11	1	18	11
4. Prestige	2	0	1	2	1	1	2	1	3	3	1	0	2	1
5. Chance for Advancement	26	21	32	39	27	31	29	41	31	42	34	35	30	39
6. Being Able to Find a Job	10	6	1	5	6	11	3	7	5	8	3	14	4	8
7. Others such as: a. liking what you do, b. interesting, c. contentment, d. helping others	2	0	5	0	7	0	9	0	7	0	3	0	7	0
8. No Response	1	57	1	1	1	1	2	2	1	3	2	5	0	2

Source: Questionnaire administered by school administrator.

[1] Parents of 11th Graders.

[2] 11th Graders.

TABLE 4.2

11TH GRADE PARENT'S OPINIONS ABOUT THE ABILITY OF THEIR CHILD TO UNDERTAKE EDUCATION BEYOND THE HIGH SCHOOL

Question: "Do you think your child has the ability to take further educational training?"	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Total
1. "I think my child has the ability to take further training — Business school, technical or trade school."	50	39	14	35	48	47	38
2. "I think my child has the ability to complete junior or community college."	6	12	14	15	13	16	13
3. "I think my child has the ability to take a four-year college program."	33	43	49	43	33	19	40
4. "Don't know."	11	4	14	7	6	9	7
5. No Response	0	2	9	0	0	9	2

Source: Questionnaire administered by school administrators.

appear to be realistic about the abilities of their children although in the three most populous counties the ability to complete college is more widely believed than a normal distribution of intelligence in a high school class would support. This over-estimate probably reflects parent aspiration. Generally the estimates of ability are similar among parents in the counties although some differences exist as Table 4.2 shows, particularly the lesser beliefs in Otsego and Presque Isle Counties.

Although some parents are somewhat overestimating the ability of their youngsters, this natural esteem will help motivate many to achieve providing undue pressure for success is not forced.

People Affecting Occupational Choice. Who influences the occupational choices of the 11th graders? The youth in the Top-O-Michigan area believe that their parents have the most influence, but teachers are also given considerable credit. Unfortunately, the students do not believe that their school counselors have had much influence, ranking them equal with the advice of fellow students. In most schools occupational counseling was found to be very limited.

TABLE 4.3

11TH GRADERS' BELIEFS REGARDING WHO HAS INFLUENCED GREATLY THEIR OCCUPATIONAL CHOICE

	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Total
1. Mother	23	19	23	22	23	20	21
2. Father	35	21	20	19	18	23	20
3. Grandparents	0	2	5	4	1	4	3
4. Older Brothers and Sisters	6	8	9	9	7	12	8
5. Teachers	12	14	15	15	16	14	15
6. Counselors	0	9	2	9	7	2	7
7. Fellow Students	12	8	10	7	13	9	9
8. Other	12	14	9	12	10	14	12
9. No Response	0	5	7	3	5	2	5

Source: Questionnaire administered by school administrator.

The parents believe that the school should provide more occupational counseling; over 80% of those queried felt this way. In addition, more than three out of four parents believed that the school should provide a placement service for its graduates.

Parents Views About High School Vocational Curricula. The parents of the 11th graders were asked to express positive and negative opinions regarding the possibility of their children enrolling in vocational courses while still in high school. As might be expected, the choices were many and varied. Generally, the industrial and business courses were most often favored; very few thought that agricultural education was desirable for their child,

but it should be clear that parents were thinking about females as well as males and that this would influence their responses. A good many parents checked the "have no feeling" response which in many cases is probably the result of their wanting the child to make the decision without undue adult pressure. (See Table 4.4. Note: The views of parents in the Top-O-Michigan area parallel very closely those of parents as reported in the Grand Traverse area study.)

Vocational-Technical Curriculum Preferences. If a vocational-technical institute were available in the Top-O-Michigan area, what curricula would appeal to present high school students? As Table 4.5 shows, about 25% of the students said that either they did not want further education or that they intended to enroll in a four-year institution.

The second largest group (about one out of six) preferred enrolling in a secretarial/office curriculum. Another 5% were interested in the area of distribution. Thus, about one out of four students chose a curriculum in the area of business.

Approximately 13% indicated interest in the skilled trades area while an additional 8% were interested in the industrial-technical curricula. Thus about one out of five students polled were interested in curricula in the industrial education area.

The health occupations including nursing were chosen by about one out of ten students. A scattering of other curricula were mentioned by students and accounted for 13% of the choices. Again, the great similarity between responses of these students and those in the Grand Traverse area is remarkable.

Parents' Beliefs About the Need for a Vocational Institute. The parents of 11th graders in the Top-O-Michigan area overwhelmingly believe in the need for a vocational-technical institute to serve the area. As Table 4.6 demonstrates, eight out of ten parents say that there is a definite need for such an educational institution.

Although parents believe that there is a need, the question remains as to whether they would support such a school. They were asked whether they would vote for additional tax levies on themselves if the vocational (non-collegiate) programs were tuition-free or of low tuition. Over half of the parents said they would vote for an additional levy. Importantly, as Table 4.7 shows, only 7% were against additional taxes while 34% were undecided. Presumably, this latter group would want to know more about the character of the school and the amount of the levy to support it before voting "yes."

TABLE 4.4

PARENTS OF 11TH GRADERS AND THEIR DESIRES TO HAVE THEIR CHILDREN ENROLLED IN VOCATIONAL EDUCATION COURSES

	Antrim			Charlevoix			Cheboygan			Emmet			Otsego			Presque Isle			Total		
	Yes	No	Have No Feeling	Yes	No	Have No Feeling	Yes	No	Have No Feeling	Yes	No	Have No Feeling	Yes	No	Have No Feeling	Yes	No	Have No Feeling	Yes	No	Have No Feeling
1. Trade and Industrial	33	0	25	35	4	20	22	24	18	26	15	18	25	17	22	17	0	33	28	15	20
2. Sales, Marketing, Retailing (Dist. Ed.)	7	0	25	13	25	14	10	19	18	13	15	18	11	17	22	14	0	17	12	18	17
3. Business Education (Office)	33	0	0	25	12	11	36	9	0	28	9	13	33	11	11	27	0	33	29	11	12
4. Home Economics	10	0	25	8	21	14	13	9	9	12	19	18	10	14	11	9	0	0	10	16	14
5. Agricultural Education	7	100	0	5	21	17	4	24	18	3	22	18	6	29	11	5	0	17	4	25	16
6. None of These — Want him to have General College preparatory only	10	0	25	14	17	23	15	14	36	18	19	15	13	11	22	9	0	0	15	15	20
7. No Response	0	0	0		0	1	0	1	1	0	1	1	2	1	1	19	0	0	2	0	1
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100

Source: Questionnaires administered by school administrators.

Note: Parents were asked to check one or more curricula, thus each figure shown is a percentage of total number of responses (in that particular column).

TABLE 4.5

CURRICULUM PREFERENCES OF 11TH GRADERS REGARDING THEIR FUTURE EDUCATION IN A VOCATIONAL-TECHNICAL INSTITUTE

Response to Question: "If a vocational-technical school were available in T-O-M area after your graduation, (a) What curriculum would you be interested in?"	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Total
1. None — prefer not to attend a vocational/technical school or want to go to a four-year college	13	29	21	31	15	18	25
2. Agriculture (farming or farm-related job)	9	6	3	2	5	3	4
3. Secretarial/office	9	14	18	16	22	11	16
4. Retailing	4	1	2	2	1	0	2
5. Sales	0	1	1	1	0	2	1
6. Distributive job such as real estate, hotel-motel, other	0	1	2	2	1	0	1
7. Skilled trade such as auto mechanic, carpenter, electrician	13	13	15	10	11	23	13
8. Technical job such as electronics technician, draftsman	9	8	6	9	6	5	8
9. Nursing	13	9	12	8	9	8	9
10. Bookkeeping/ Accounting	9	3	5	7	9	0	6
11. Others	21	14	11	7	20	26	14
12. No Response	0	1	4	5	1	4	1

Source: Questionnaire administered by school administrator.

TABLE 4.6

WHAT PARENTS OF 11TH GRADERS BELIEVE ABOUT THE NEED FOR A VOCATIONAL-TECHNICAL INSTITUTE

	Antrim	Charle-voix	Cheboy-gan	Emmet	Otsego	Presque Isle	Total
1. ...believe a V-T Institute should be established	100	85	78	84	90	81	85
2. ...believe one should not be established	0	3	2	3	0	0	2
3. Percentage who don't know	0	11	12	11	7	10	10
4. No Response	0	1	8	2	3	9	3

Source: Questionnaire administered by school administrator.

TABLE 4.7

PARENTS OF 11TH GRADERS AND THEIR INTERESTS IN SUPPORTING A VOCATIONAL-TECHNICAL INSTITUTE

Response to question:
"If a vocational-technical institute were to be established, would you vote for additional levies to support it if tuition were free or quite low?" (Assuming a tax increase of no more than 5% of what you are now paying.)

	Antrim	Charle-voix	Cheboy-gan	Emmet	Otsego	Presque Isle	Total
Percentage who would vote yes	39	54	49	50	68	45	55
Percentage who would vote no	6	7	9	8	5	0	7
Percentage who don't know at this point	50	33	34	39	21	23	34
No response	5	6	8	3	6	32	4

Source: Questionnaire administered by school administrator.

Student Ability to Finance Further Education. If a student is to enroll for one or two years in a vocational-technical institute, the question arises of financing his attendance. He not only has need for tuition, but also for books and supplies, transportation, living expenses, and at least a minimum of personal needs.

As Table 4.8 shows, from about 15% of the parents reported that they could meet completely the financial needs of their son or daughter while attending a vocational-technical institute, while 38% indicated that they could give partial support. Thus, over half of the 11th graders could get major support from home to cover their expenses of one or two years of further education. Generally less than one out of ten parents could give their child no financial support.

TABLE 4.8

11TH GRADERS' ABILITIES TO BE SUPPORTED WHILE ATTENDING ONE-TWO YEARS IN A VOCATIONAL-TECHNICAL INSTITUTE (ALL FIGURES ARE IN PERCENTAGE)

	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Total
A. Student Report on Self:							
1. Could commute up to 25-40 miles							
Yes	40	41	36	39	38	58	40
No	0	8	4	10	7	8	8
Don't know	60	39	48	43	46	25	43
No Response	0	12	12	8	9	9	9
2. Would work... to earn tuition and expenses							
Yes	67	73	74	78	77	76	75
No	0	4	2	6	2	5	4
Don't know	33	11	12	9	13	10	11
No Response	0	12	11	7	8	9	10
B. Parent's Beliefs:*							
1. Would not be able to help	5	10	8	12	4	11	9
2. Would be able if he lives at home	16	33	38	31	32	26	32

TABLE 4.8--Continued

	Antrim	Charle-voix	Cheboy-gan	Emmet	Otsego	Presque Isle	Total
3. Partial support	74	36	32	40	38	34	38
4. Completely support him	5	15	16	14	23	17	16
5. No Response	0	6	6	3	3	12	5

Source: Questionnaire administered by school administrator.

*Question: "Do you anticipate being able to support your son or daughter in a vocational-technical institute in the T-O-M area if one is available, giving 1-2 years of post high education?"

The 11th graders were queried as to what they could do to help finance their education. A large majority of these young people reported that they were willing to work part-time and summers to finance their further education in a vocational-technical institute. Assuming they averaged 20 hours per week for 30 weeks part-time and 40 hours for 10 weeks summers, they would each gross at a minimum:

1,000 hours x $1.25 min. wage = $1,250
Possible tuition per year (Comm. College) = $300.

If employment is available and the student has the capacity to work while maintaining education achievement standards, it is quite possible for most students to finance their education with partial support from their parents.

A high-cost aspect of a student's post high school education is his living away-from-home expenses which can amount to $600-$1,000 per year or more. Being able to commute is a major factor in student retention in any vocational-technical institute, especially in a low income area. About 40% of the students queried reported they could commute 25-40 miles. This range would not bring students from one end of the study area to a school located at the other side. Presumably the students who did not know if they could commute were not in a position to determine if they could afford an automobile.

Student Desires Concerning Migration. How do the present 11th graders feel about moving away? As Table 4.9 shows, only one out of four definitely wishes to move to a larger community away from the Top-O-Michigan area. About one in three definitely wishes to remain in the area. Significantly about 40% of the 11th graders say, "it depends." Presumably, the

chance for employment of their choice and gaining the necessary education to further that choice are among the factors that will cause students to stay or migrate. Certainly other factors such as marriage, movement of family, and going away to college will influence these young people in later years.

TABLE 4.9

PREFERENCES OF 11TH GRADERS REGARDING REMAINING IN THE TOP-O-MICHIGAN AREA (ALL FIGURES ARE PERCENTAGES)

Response to Question: "After finishing school do you:"	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Total
1. Prefer to remain in the ... Area if you can find a job?	9	41	29	39	21	22	33
2. Want to move to a larger community away from the ... Area?	27	17	30	22	31	38	25
3. Don't know — it depends.	64	40	39	36	45	40	40
4. No Response	0	2	2	3	3	0	2

Source: Questionnaire administered by school administrator.

Career Interests of 11th Graders. A comparison has been made of the career interests of 11th graders and their parents as shown by Table 4.10. In general, the occupational aspirations are realistic in that they pattern themselves after the occupational distributions in our society. Further, the students, unlike some queried in other schools, do not all aspire to professional careers. On the other hand, analysis of the responses leads to two questions which remain unanswered:

1. Most students put down only traditional occupations such as teacher, carpenter, secretary, and truck driver. Does this mean that these young people have had insufficient guidance and are unaware of the many newer occupations, especially those in the technician area?

2. The aspirations of a good many are towards low-level jobs. Does this mean that these youth are realistic or does it suggest that their socioeconomic and school situations have diminished their ambitions?

Taking this limited sub-study as a whole, the researchers are inclined to suggest that students have limited ambitions and that these arise partially from the fact that the idea of a total program of vocational-technical education is unknown in the area and that insufficient attention has been paid to occupational counseling and information.

TABLE 4.10

11TH GRADERS FIRST CHOICE OF OCCUPATION AND COMPARISON WITH CHOICE BY PARENTS FOR THEIR SONS AND DAUGHTERS

Occupational Choice	Percent	
	Students N=862	Parents N=477
Professional	23	31
Certified Public Accountant	(3)	(0)
Business	(4)	(14)
Doctor	(1)	(2)
Engineer	(5)	(5)
Lawyer	(1)	(0)
Nurse	(6)	(6)
A scientific field	(1)	(1)
All other professions	(2)	(3)
Services	20	15
Government	(9)	(2)
Teachers	(11)	(13)
Skilled and Semi-skilled Workers	37	23
Office, secretarial and related	(12)	(5)
Cosmetologist	(4)	(1)
Creative Arts	(6)	(4)
Electrician	(1)	(0)
Laboratory Technician	(1)	(1)
Draftsman, Tool & Die Maker & Other	(2)	(7)
Airline Hostess	(1)	(0)
Carpenter	(1)	(0)
Mechanic	(3)	(1)
Truck Driver	(0)	(0)
All Others	(5)	(4)

TABLE 4.10--Continued

Occupational Choice	Percent	
	Students N=862	Parents N=477
Labor	4	0
Construction	(2)	(0)
Industry	(1)	(0)
All Others	(1)	(0)
Miscellaneous	7	13
Armed Forces	(0)	(0)
Farmer	(2)	(0)
Housewife	(2)	(1)
Ministry	(1)	(0)
Don't Know	(2)	(0)
"Anything my child will be happy in"	(0)	(12)
No Response	19	18

Source: Questionnaire administered by school administrators.

CHAPTER 5*

HIGH SCHOOL GRADUATES AND DROPOUTS TWO YEARS AFTER GRADUATION

A sub-study was made of the class of 1963 to determine some of their occupational and educational attainments after leaving high school. About 65 percent, or 549, of the graduates and dropouts responded to a mail questionnaire sent during June 1965, approximately two years after their class had graduated.

The population of the sub-study was all of the known graduates and dropouts for the class of 1963 from the 19 public high schools and three non-public high schools in the study area and consisted of 915 individuals. However, addresses were provided for only 848 persons, including 79 out of 113 dropouts and 769 out of 802 graduates. The population, net population (those with addresses reported), and respondents were as follows:

TABLE 5.1

POPULATION AND PROPORTIONS RESPONDING

	Top 25%	Second 25%	Third 25%	Bottom 25%	Drop-outs	Total
Reported Population	196	205	197	204	113	915
Net Pop. (Addresses Known)	189	196	189	195	79	848
Respondents	161	135	123	104	26	549
% Pop. Responded	82	66	62	51	23	59
% Net Pop. Responded	85	69	65	53	33	65

Those who responded were mainly graduates rather than dropouts, and the graduates who ranked (scholastically) in the upper quartiles of their classes responded in greater numbers. The readers of this report must keep in mind the fact that the schools have somehow been able to keep in touch with a higher proportion of the graduates than of the dropouts, and with a higher proportion of the students who achieved at a higher scholastic level than

*This sub-study was conducted by Dr. O. Donald Meaders, Associate Director of the Top-O-Michigan Study.

than of those in the lower scholastic quartiles. In general, this follow-up study tells us much more about the students who achieved at the higher scholastic levels than it does about those lower achievers.

Residence at Time of Leaving School. About one-fourth of the respondents lived on farms, one-third in towns or cities (population over 2,500), and two-fifths were rural non-farm residents (including those in villages with population of 2,500 or less). At the time of graduation or leaving school, about three-fourths of the respondents lived in the three counties of Charlevoix, Emmet and Cheboygan.[1]

Residence at Time of Study (June 1965). Nearly three-fifths of the respondents were living in the same county where they had lived at graduation. The mobility was about 40 percent with 5 percent in an adjacent county, 22 percent in non-adjacent counties but within Michigan, and 12 percent in other states. Emmet County had the highest proportion of the respondents still residing in the same county as shown below:

TABLE 5.2

COUNTY OF RESIDENCE TWO YEARS AFTER GRADUATION

County of Residence at Time of Graduation	Percent of Respondents With Present Address in:	
	Same County	Adjacent County
Antrim (N:40)	60	3
Charlevoix (N:138)	59	7
Cheboygan (N:114)	54	6
Emmet (N:144)	66	2
Otsego (N:69)	52	4
Presque Isle (N:32)	50	9

The most frequently given reasons for moving were "To go to school," "To take a job," and "Got married." Most of those who moved, reported they moved within six months after graduating from (or leaving) school.

Post High School Education. Reports from the schools indicated nearly one of every two graduates had gone to some post high school program with about four going to four-year colleges or universities for every three going to other kinds of schools. But, the survey of the graduates and dropouts showed about 60 percent of the respondents had taken some post high school

[1] See Appendix — for additional data from the follow-up study.

education, or six out of every ten, and they were about equally divided in attendance among three kinds of institutions: community colleges, four-year institutions, and trade or technical schools. Eighty-one graduates reported they had attended North Central Michigan College (Petoskey) and 33 reported attendance at other community colleges. Eighteen reported attendance at Central Michigan University (Mount Pleasant) and 122 reported attendance at other four-year institutions. Ninety of the respondents listed trade, business, and technical schools which they had attended, such as nursing schools, beauty academies, business schools, barber colleges, schools for mechanics and technicians.

The proportion of graduates who reported attendance in post high school educational programs was highest from Charlevoix County and lowest from Cheboygan County (see Figure 5.1). This same chart also shows that the highest proportion going to community colleges was from Emmet County.

Most of the respondents had taken courses of study designed to transfer to four-year institutions. About two-thirds of those who went to post high school educational programs reported courses of study in the fields of education, business, liberal arts, and engineering, as shown in Figure 5.2. Less than 30 percent reported courses of study classified as two years or less in length.

Employment Since Graduation. Data illustrated in Figure 5.3 show the proportion of respondents in the various occupational groups. Employment in office occupations and in unspecialized jobs in factories or small industries was most common for the respondents who had secured employment. About 7 percent of the graduates were currently unemployed (exclusive of those as students or housewives) and 3 percent failed to indicate their employment status. Larger proportions of the respondents were found in health and office occupations when the present employment was compared with first full-time employment. Smaller proportions of the respondents were found in sales, food service and preparation, personal service, and general labor occupations.

The job titles for some of the most frequently listed jobs in each of the occupational groups are given in Table 5.3. The category "Other" includes students, military service, housewife, unemployed, and unknown (see Figure 5.3). However, the "student" classification is largest in both first employment (20 percent) and present employment (13 percent). Six percent were classified in military service for first full-time employment and this was increased to 9 percent for present employment.

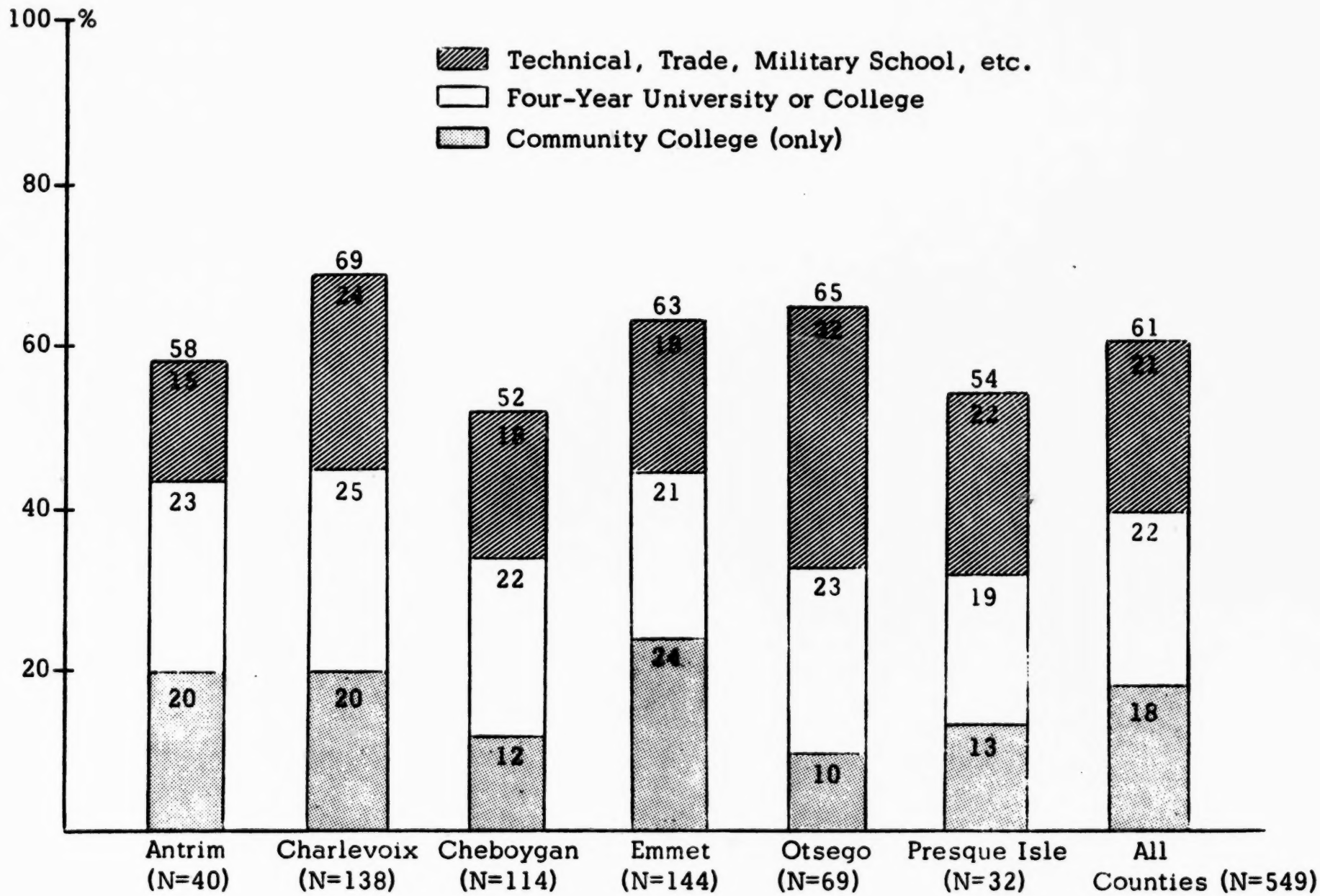


FIGURE 5.1

PROPORTION OF GRADUATES FROM EACH COUNTY
IN POST HIGH SCHOOL EDUCATION PROGRAMS

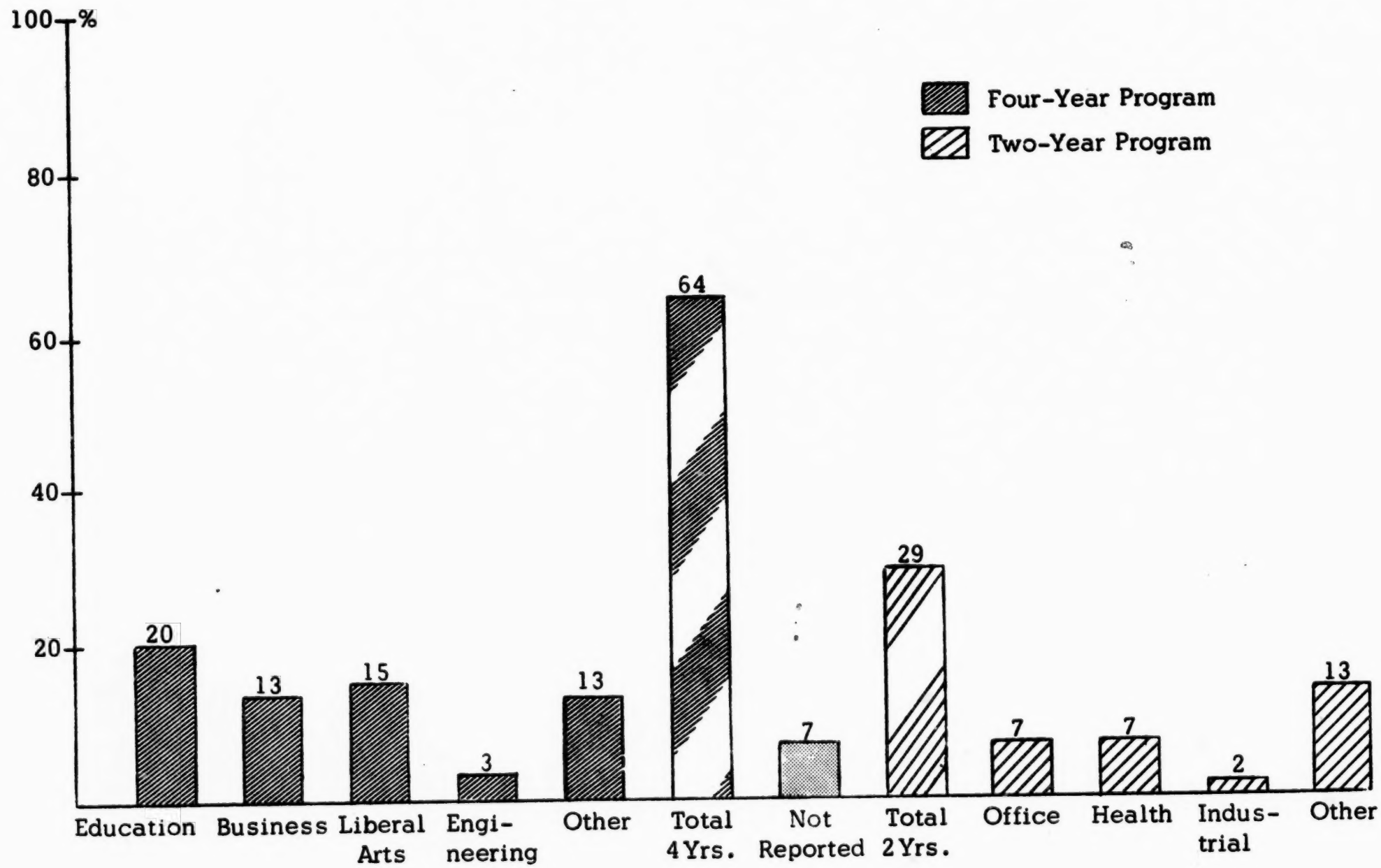


FIGURE 5.2

COURSES OF STUDY TAKEN IN POST HIGH SCHOOL EDUCATION PROGRAMS (N=334)

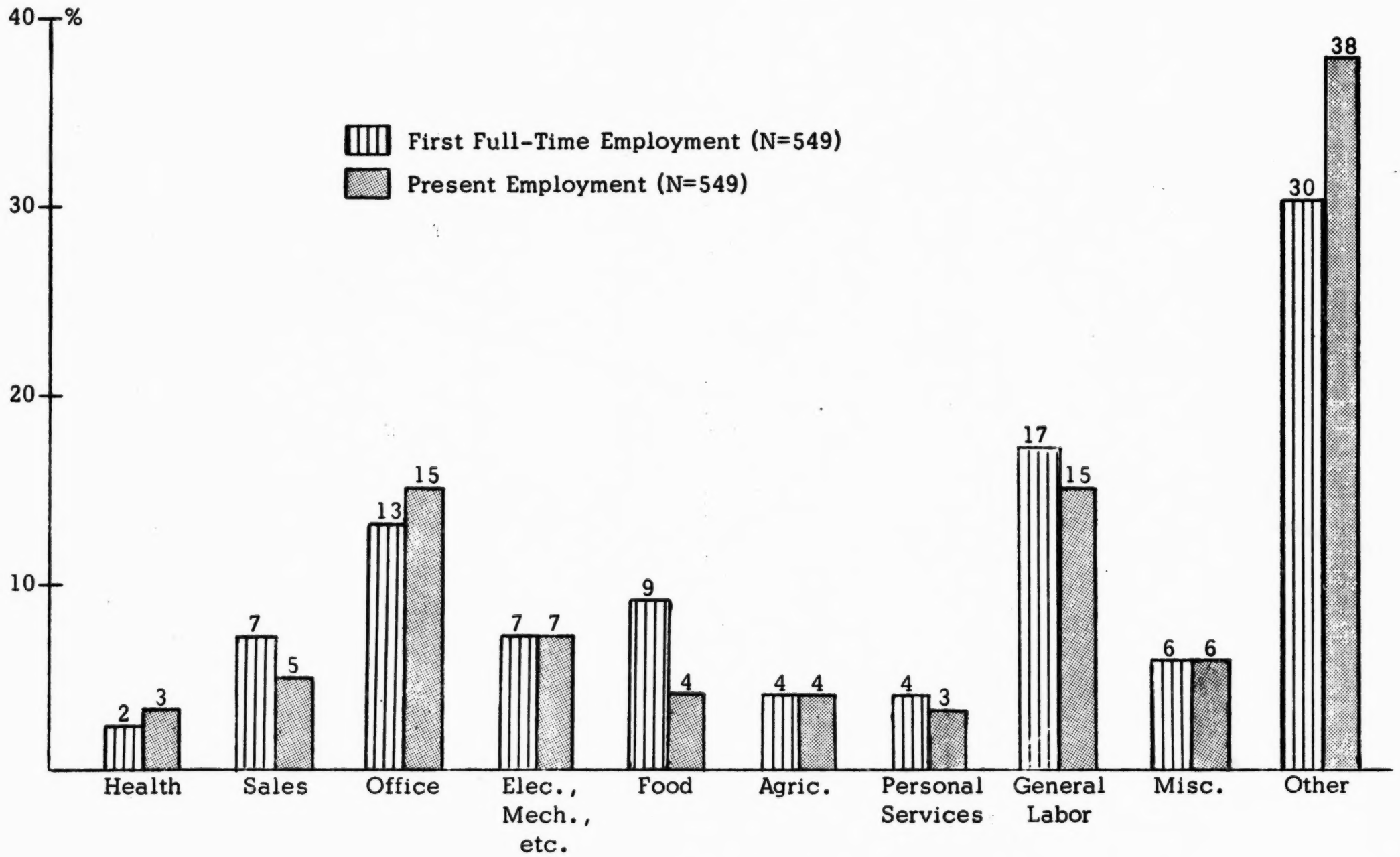


FIGURE 5.3

FIRST FULL-TIME EMPLOYMENT
AND PRESENT EMPLOYMENT: JUNE 1965

TABLE 5.3

JOB TITLES MOST FREQUENTLY FOUND IN VARIOUS OCCUPATIONAL GROUPS

Occupational Group	Job Titles Included
Health Occupations	Practical Nurse, Nurses' Aide, and Kindred.
Sales Occupations	Salesclerk, Cashier in Grocery, Routeman, Door-to-Door Sales, and Kindred.
Office Occupations	Secretary, Stenographer, Typist, File Clerk, Bookkeeper, Cashier, Keypunch Operator, Flex-O-Writer Operator, Telephone Operator, Stock Clerk, and Kindred.
Electrical, Mechanical, Structural and Small Manufacturer	Electrician, Mechanic, Plumber, Bricklayer, Painter, Welder, Roadbuilder, Carpenter, Manufacturer of Small Products, and Kindred.
Food Preparation and Service Occupations	Chef, Baker, Short-Order Cook, Butcher, Lunch Counter Attendant, Waiter, Waitress, Busboy, Dishwasher, and Kindred.
Farming and Other Agricultural Occupations	Farming, Hired Hand, Gardening, Ornamental Horticulture, Tree Trimmer, Nurseryman, and Kindred.
Personal Services	Hairdresser, Beautician, Cosmetologist, Maid in Motel or Hotel, Baby-Sitter, Housekeeper, and Kindred.
General Labor	General Labor (unspecialized), Factory, Assembly Line, Janitor, and Kindred.
Miscellaneous	Recreation, Transportation, Protective, Gas Station Attendant, and Others.

Wages for First and Present Employment

About 18 percent started employment for less than $42.50 per week (before deductions) and about 8 percent were receiving less than $42.50 per week in their present employment. The weekly pay for each occupational group is shown in Table 5.4. The salary range with the greatest frequency shifted upward from first employment to present employment for all the occupational groups except Food, Sales, Personal Service, Health, and Miscellaneous.

A considerably higher proportion of the respondents who moved to non-adjacent counties in Michigan reported they received weekly earnings of $102.50 or more on their present job as shown below:

	Percent Receiving $102.50 or More Per Week
Living in Same County as Time of Graduation (N=89)	10
Living in Adjacent County Now (N=39)	8
Living in Non-Adjacent County in Michigan (N=98)	30

About 20 percent of the respondents indicated they took their first full-time job to earn money to go to school, and about 60 percent of those currently enrolled in school reported they were also employed either part-time or full-time.

Job Satisfaction

The highest proportion of respondents indicating the most job satisfaction were those persons in health, office, and personal service occupations. In general, the respondents indicated a higher level of job satisfaction with their present jobs than for their first full-time employment.

Interest in Additional Training

About 20 percent of the respondents indicated they would like to have additional training for their present work and 30 percent preferred training for some other work. The remaining 50 percent either indicated no desire for additional training (20 percent) or failed to respond to the question (30 percent).

TABLE 5.4

OCCUPATIONS AND WEEKLY PAY (BEFORE DEDUCTIONS) FOR CLASS OF 1963
IN FIRST FULL-TIME EMPLOYMENT AND PRESENT EMPLOYMENT

Occupational Group	Percent in Various Weekly Pay Ranges													
	Military Service		Less than $42.50		$42.50 to $62.50		$62.50 to $82.50		$82.50 to $108.50		$102.50 or more		Unknown	
	First	Pres.	First	Pres.	First	Pres.	First	Pres.	First	Pres.	First	Pres.	First	Pres.
Not in Labor Market: unemployed, student, housewife, military, and unknown	19	20	1	4	0	0	1	2	0	0	0	1	79	73
General Labor	0	0	14	1	46	26	21	18	7	14	7	30	5	11
Office Occupations	0	0	17	11	47	35	26	36	6	7	0	4	4	7
Food Occupations	0	0	65	41	25	18	4	18	0	5	2	14	4	4
Electrical, Mechanical, and Similar	0	0	2	0	28	11	38	24	18	18	12	42	2	5
Sales Occupations	0	0	38	17	46	37	5	20	3	6	3	7	5	13
Farming and Other Agricultural Occupations	0	0	13	9	22	18	43	14	0	27	0	0	22	32
Personal Service Occupations	0	0	64	28	9	44	0	0	4	0	0	0	23	28
Health Occupations	0	0	18	27	46	47	0	20	0	0	0	0	36	6
Miscellaneous	0	0	9	9	53	25	22	13	6	16	9	18	0	19

In Retrospect, Kind of Vocational Education Preferred in High School

The vocational program areas preferred by the largest proportions of the graduates (assuming the programs had been available) were as follows:

Area	Percent
Office occupations	26
Industrial occupations	12
Health occupations	9
Retailing — Sales occupations	9

Another way of looking at the "hindsight" of the respondents is to determine what occupations they now hold and their preference for training in high school. Figure 5.4 shows that nearly 60 percent of the respondents now in office occupations indicated they would have preferred to take office occupational programs in high school.

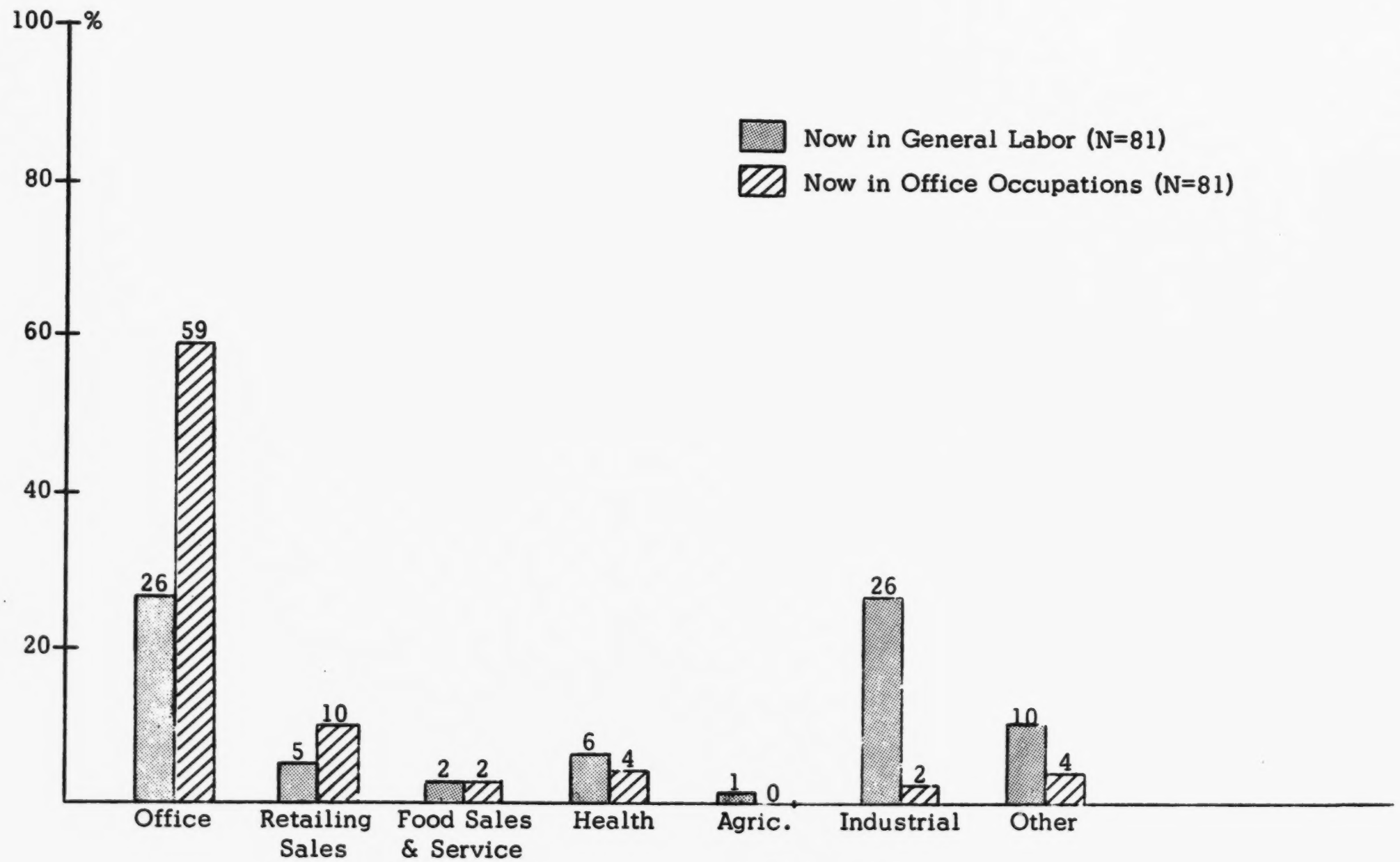


FIGURE 5.4

PROPORTION OF GRADUATES WHO INDICATED PROBABLE CHOICE OF VOCATIONAL COURSES IN HIGH SCHOOL, IF COURSES HAD BEEN AVAILABLE

SECTION II.

THE PRESENT PROGRAM OF VOCATIONAL-TECHNICAL EDUCATION WITH RECOMMENDATIONS FOR IMPROVEMENT

This section contains chapters which deal specifically with each specialized field of vocational education. Each chapter describes the present curricula as they were observed by a member of the research team. In addition, each chapter describes a "model" program, comparing what is with what ought to be. This section then describes the base upon which an improved and expanded program is to be built.

CHAPTER 6

EDUCATION FOR AGRICULTURAL OCCUPATIONS*

It is the purpose of this chapter: (1) to present and analyze the present offerings in education for agricultural occupations in the 21 schools included in the study area; (2) to identify the present situation and trends in agriculture in the six-county area and their relationship to needs for occupational education in agriculture; and (3) to recommend a plan of action for achieving a program of education for agricultural occupations feasible for the area under consideration.

A. A Program of Education for Agricultural Occupations

Agricultural occupations include those occupations requiring competencies in one or more of the areas of animal science, plant science, soil science, agricultural economics and/or agricultural engineering. These occupations are commonly identified with the production of food — farmers, farm managers, farm supervisors, farm laborers and others associated with the production of crops and livestock. They are less commonly identified with the production of forest products, nursery or greenhouse products and, until recent years, seldom identified with the services provided to farmers through various forms such as feed, seed and fertilizer; market and credit information and assistance; and other on-farm and off-farm technical and professional assistance.

A total program of education for agricultural occupations would involve high school youth and post-high school youth and adults. It would be concerned with the development of competencies necessary for entrance and advancement in farming and other agricultural occupations. It would be concerned with upgrading and retraining of skilled, technical and managerial level workers. It would provide a base for persons who desire to advance to professional level positions in the broad fields of agricultural production, marketing, research, and education.

A total program of education for agricultural occupations should be considered as including that instruction, in addition to technical agriculture, which helps develop competencies for initial employment, advancement, and success as a citizen in a democratic society. Leadership development is essential as a part of the total program.

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*Written principally by Dr. O. Donald Meaders, Assistant Professor of Agricultural Education, M.S.U.

B. Present Programs in the Public Schools

Seven of the 18 public high schools in the area offer instruction in agriculture. All three of the non-public high schools make it possible for their students to participate in the vocational agriculture programs, on a shared-time basis, in the public schools. During the school year 1964-65 approximately 340 students were enrolled in agricultural courses, with approximately equal numbers in grades 9, 10, and 11. However, enrollment in the 12th grade dipped to about one-half of the number in the 11th grade, as shown in Table 6.1. These ten high schools enrolled about two-thirds of all the students in the 21 high schools included in this study. In other words, about one-third of the students in the study area were enrolled in schools not presently served by vocational agriculture programs. Approximately five man-years of instruction time were assigned in agriculture to serve the students from ten high schools.

Instruction was offered to adult and/or young farmers at only two of the seven schools during the past school year. In general, the instructor-time was allocated to instruction for the high school students, mainly through classroom teaching, but with some time assigned for supervision of agricultural experience programs (primarily SUPERVISED FARMING PROGRAMS).

TABLE 6.1

ENROLLMENTS AND TEACHER-TIME ASSIGNED IN VOCATIONAL AGRICULTURE: 1964-65*

School	FFA Membership	Enrollments in Vo Ag by Grades					% Teacher-time for Ag.
		9th	10th	11th	12th	Total	
Cheboygan[a]	64	21	21	12	13	67	5/6
East Jordan	42	9	14	15	5	43	1/2
Gaylord[b]	34	11	11	11	5	38	1/2
Harbor Springs	25	10	11	7	4	32	2/3
Onaway	48	15	13	12	8	48	5/6
Pellston	28[c]	7	12	9	1	29	5/7
Petoskey[d]	64	27	13	27	14	81	5/6
Total	305	100	95	93	50	338	

[a]Includes enrollment of students from Cheboygan Catholic High School.

[b]Includes enrollment of students from Gaylord St. Mary High School.

[c]The FFA Chapter was reactivated during April 1965 and these data were reported by the teacher of vocational agriculture.

[d]Includes enrollment of students from Petoskey St. Francis High School.

*Source: The Michigan Department of Education, Agricultural Education Division.

The usual pattern for enrollment in vocational agriculture was found to be based on initial enrollment as a freshman and then, if the student continued his interest in farming or some other agricultural occupation, he usually was encouraged to continue his enrollment in vocational agriculture with membership in the Future Farmers of America (FFA). Frequently, students interested in professional careers in agriculture were encouraged to take only two or three years of agriculture if a scheduling conflict existed between the agriculture course and the science or mathematics courses. In the larger schools some students interested in professional careers in forestry and conservation had never enrolled in vo-ag courses. Some of the "vo ag students" take one or two business courses, and most of them take one or more years of industrial arts courses in addition to "farm mechanics," if it is offered.

School land laboratories, mainly school forests, were found to be available at nearly all of the schools, regardless of whether vocational agriculture was taught. In some of the schools, the school forest was nearby so as to be quite accessible for instruction. There appeared to be very little use of the school forests for instruction by teachers other than the vocational agriculture teachers.

The present classroom and laboratory facilities (including farm mechanics) were found to be ample in some schools but quite inadequate in others. No farm mechanics facilities were provided at East Jordan, Cheboygan, Pellston and Onaway. The classroom and farm mechanics laboratory were contained in one large room at Petoskey in a building which is destined to become part of the Junior High facilities when the new high school is completed. At Gaylord the classroom, although small, and the new room for farm mechanics, will probably be ample for the pre-vocational and vocational program at the high school level. Only East Jordan had a greenhouse available for use by the agricultural instructor.

Former Vo Ag Students

Some descriptive information about the students in the class of 1963 (graduates and dropouts) who enrolled in vocational agriculture for one or more years was taken from the follow-up study reported in Chapter 5. The following are highlights from those data:

1. About 38 percent of the male graduates from those schools where vocational agriculture courses were available took one or more years of vocational agriculture.
2. Nearly 80 percent of the students who enrolled in vocational agriculture were from the bottom half (scholastically) of the

graduating class: top quartile, 4%; second quartile, 17%; third quartile, 43%; and bottom quartile, 36%.

3. Most of the students who took vocational agriculture took the courses for four years: one year, 11%; two years, 20%; three years, 16%; and four years, 53%.

4. Approximately the same proportion of the students who enrolled in vocational agriculture courses have moved to other counties or out of Michigan as those who took no agriculture.

5. About 36 percent of the graduates who took one or more vocational agriculture courses went on to post-high school education programs: four to community college; four to four-year colleges and universities; seven each to armed forces schools and trade schools.

6. The occupations of the fathers were mainly in farming.

7. The present occupations most frequently reported by those who had taken one or more years of vocational agriculture courses:

General Labor	17	Food Service	3
Elec., Mech., etc.	8	Sales	2
Ag. Occup.	8	All Others	18
Clerical & Office	5	TOTAL	61

8. Present viewpoint of those graduates who took one or more years of vocational agriculture courses regarding the kind of courses they would have preferred to take (if available) when they were in high school:

	Number
Office	5
Retailing, Sales, etc.	4
Ag. Occupations	4
Industrial	22
Health	1
Other	8
No Response	17

C. Agriculture in the Six-County Area

Agriculture, including forestry and recreation, account for a major portion of the total economy for the area. Much of the land area is in non-farm forests and provides the basic resource to attract many tourists, hunters, and fishermen, in addition to providing raw materials to support a large and expanding wood products industry.

The farm population and number of farms has declined drastically in recent years. The number of farms dropped 27 percent during the five-year period 1954-1959 while the drop for the same period was only 19 percent for the entire state. Many of the farmers have off-farm employment and this "other income" is greater than the agricultural income for more than 50 percent of the farmers, except in Presque Isle County, as shown in Table 6.2.

Relatively few of the farms are in the upper economic classes. About one-fourth are in Class IV and nearly 60 percent are in Classes V and VI, as shown in Table 6.3. The fact that a smaller proportion of the farms in the area are in the Classes I, II, and III than for the entire state, implies a relatively less competitive farming situation.

The value of all farm products sold (exclusive of forest, greenhouse and nursery products) was estimated at more than $10.5 million for the six counties in the year 1960. The value of forest, nursery and greenhouse products sold from farms in 1960 was an additional $400,000, making the total value of all farm products sold about $11 million. Antrim and Presque Isle counties had the largest total value of farm products sold, and Otsego the smallest, as shown in Table 6.4.

Livestock and livestock products constituted about two-thirds of the total value of farm products sold in 1959, with dairy products constituting about one-half of that amount. The number of farms with dairy cows declined rapidly between 1954 and 1959 with the decline continuing, according to local sources.

During the five-year period 1954-1959 the value of all farm products sold increased in all of the six counties except Otsego and Emmet, with an overall increase of 7 percent, or about $671,000.

Horticultural products such as ornamental shrubs, flowers, and vegetables decreased in importance during 1954-1959 in Antrim, Cheboygan, Emmet and Presque Isle counties, and for the six-county area, even though the value increased in Charlevoix and Otsego counties. However, there appears to be a current increase in the size of business for nurseries, greenhouses, and floral shops, especially in the production and sale of ornamental plants for landscaping.

Agricultural Businesses and Services

Interviews were conducted with owners, managers and directors of many of the agricultural businesses and services in the six-county area to determine the number of employees, job titles, percent of business agriculturally

TABLE 6.2

SELECTED FARM STATISTICS: 1959*

County	Total Land Use		Farms				Off-Farm Employment and Income	
	% in Non-Farm Forests	% in Farms	Number	% Change 1954-1959	Gross Sales $2,500 or more Number	Gross Sales $2,500 or more Percent	% Part-time Farmers**	% Other Income that Exceeds Agric. Income
Antrim	51	40	676	-19	312	46	43	53
Charlevoix	57	33	537	-29	222	41	48	66
Cheboygan	74	18	470	-33	155	33	45	62
Emmet	62	31	535	-36	168	31	49	62
Otsego	73	20	288	-18	87	30	41	60
Presque Isle	61	33	648	-21	344	53	34	38
Sub-Total	--	--	3,154	-27	1,288	41	--	--
MICHIGAN	46	40	111,817	-19	59,000	53	42	46

*Source: Michigan Agriculture: County Data and State Trends, Miscellaneous Series Circular E-22 (East Lansing: Michigan State University, April 1962).

**Operators working off their farms 100 days or more per year.

TABLE 6.3

PERCENT OF COMMERCIAL FARMS BY ECONOMIC CLASS: 1959*

County	Commercial Farms (N)	Percent by Economic Class**					
		I	II	III	IV	V	VI
Antrim	347	0.6	6.1	14.4	25.1	43.8	10.1
Charlevoix	252	---	3.9	10.3	24.2	49.6	11.9
Cheboygan	200	1	---	4	37.5	35	22.5
Emmet	218	---	---	16.5	19.2	41.3	27.5
Otsego	102	---	---	9.8	21.5	53.9	14.7
Presque Isle	419	---	4.0	8.3	28.8	40.8	17.9
Sub-Total	1,538	0.3	3.8	10.6	26.5	43.2	16.2
MICHIGAN	65,042	1.6	5.9	19.6	29.8	33.3	9.8

*Source: U. S. Census of Agriculture: 1959, Michigan Counties, Vol. I, Part 13, Table 5.

**Commercial farmers defined as, "In general, for 1959, all farms with a value of sales amounting to $2,500 or more were classified as commercial." The commercial farms were divided into six economic classes based on the total value of all farm products sold.

Class I	$40,000 and over.	Class IV	$5,000 to 9,999.
Class II	20,000 to 49,999.	Class V	2,500 to 4,999.
Class III	10,000 to 19,999.	Class VI	50 to 2,499.

TABLE 6.4

VALUE OF FARM PRODUCTS SOLD BY SOURCE: 1959*

County	All Farm Products Sold	All Crops Sold				All Livestock and Livestock Products
		Vegetables	Fruits & Nuts	Other	Total	
Antrim	$ 2,660,000	$ 115,000	$ 595,000	$ 359,000	$ 1,070,000	$ 1,590,000
Charlevoix	1,813,000	36,000	185,000	147,000	368,000	1,444,000
Cheboygan	1,456,000	5,000	214,000	117,000	336,000	1,120,000
Emmet	1,312,000	33,000	405,000	387,000	451,000	861,000
Otsego	643,000	2,000	5,000	208,000	215,000	427,000
Presque Isle	2,646,000	700	30,000	944,000	974,000	1,671,000
Sub-Total	10,530,000	193,000	1,434,000	2,162,000	3,414,000	7,113,000
MICHIGAN	$622,960,000	$19,943,000	$56,569,000	$212,255,000	$288,767,000	$334,193,000

*Source: U. S. Census of Agriculture, 1959, for Michigan Counties, Table 5.

oriented, and trends for employment.[1] Most of the interviews were conducted by teachers of vocational agriculture and Cooperative Extension Directors in the six counties. The major findings were:

1. Nearly 100 businesses and services were included in the interviews. About 25 other known agricultural businesses were not included because of insufficient time to conduct the interviews.

2. More than 2,500 persons are employed by the agricultural businesses and services interviewed, and they provide annual entry opportunities for more than 400 persons, including part-time, seasonal and/or full-time employees.

3. Only part of the employees need competencies in animal science, plant science, soil science, agricultural economics and/or agricultural engineering, for initial employment. However, many employers reported the need for a higher level of occupational competence by new employees in all skilled and technical level positions.

4. Annual entry opportunities for agricultural occupations are difficult to determine because (1) most of the employers employ only a small number of employees, (2) many of the businesses are family owned and operated, and (3) many of the potential jobs require entrepreneurship on the part of the individual.

5. There is a very limited amount of information now available to high school counselors, teachers, and parents regarding the nature and extent of employment in jobs in northern Michigan requiring competencies in agriculture (including forestry and conservation).

6. Some agricultural job titles for which annual entry opportunities within the six-county area exceed five and/or acute shortages of qualified personnel were reported to include:

   Agricultural Machinery Mechanics
   and Mechanic Helpers
   Tree Shapers
   Loggers
   Park Rangers
   Greenhouse Workers and Laborers

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[1]For a complete report of the procedures used and findings, see "A Survey of Occupations in Agricultural Businesses and Services of Six Northern Michigan Counties" (Michigan State University, September 1965), 31 pp. (Mimeographed.)

Trends in Agriculture

Several trends during the past decade have major implications for the education and services needed in agriculture. Rapidly growing population, technological developments, higher levels of income, and improved transportation and communication systems are but a few of the changes which have been part of the complex social and economic factors affecting agriculture. Increased demands for food, shortages of labor, the price-cost squeeze, and many other factors have been responsible for increased farm size, farm mechanization, and the adoption of improved farm technology.

United States farm production per man-hour increased 110 percent in the 12 year period from 1950 to 1962, while total farm production increased by about 26 percent. Purchased farm production inputs increased by 18 percent and the farm production assets per farm rose from $17,000 in 1950 to $48,000 in 1962. These and other data are highly indicative of the shift in the source of farm inputs from farm labor to various forms of technology such as mechanizations and agricultural chemicals.[1]

The number of employed farm workers in the United States dropped from 7 million in 1950 to 4 million in 1962, or expressed as a proportion of the employed persons, the farm workers represented 13 percent in 1950 but only 6 percent in 1964.[2]

Need for Workers in Agricultural Occupations

Annual replacements for farmers on farms with over $20,000 gross income in MICHIGAN have been estimated at 100 per year and 300 per year for farms with gross incomes of $10,000 and $20,000. In the six-county area included in this study farm consolidation and farmer retirements will result in an estimated need for but four persons to enter farming per year on farms with annual gross incomes of $10,000 or more. However, when one considers the needs of persons who may desire to make a career from farming and OFF-FARM EMPLOYMENT, usually called PART-TIME FARMERS, the total number of annual entrants have been estimated to be sixteen.

The mechanization in agricultural production has resulted in need for farm machinery mechanics and machine operators as well as additional training for persons engaged in selling and servicing farm machinery. Farm operators have need for instruction in selection, operation, repair and overall management

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[1] Handbook of Agricultural Charts, Agricultural Handbook No. 258, U.S. Department of Agriculture, September 1963.

[2] 1965 Manpower Report of the President, U. S. Department of Labor.

of farm machinery. The statewide need for farm machinery mechanics has been estimated at 450 per year.

Positions as salesmen, salesclerks, and other sales people for agricultural businesses in the Top-O-Michigan area and elsewhere in the state offer opportunities for many youth to enter the labor force. Skilled and technical-level workers are in demand in the rapidly expanding horticultural fields of landscaping and floriculture with their related production positions in nurseries and greenhouses. Many management and technician positions are available in the rapidly expanding field of services commonly identified as recreation and conservation. Management of natural resources and the development, management and operation of private and public recreational areas are but two of the occupational fields for which many persons need some (and in some cases, much) competency in the agricultural content areas.

CHAPTER 7

EDUCATION FOR DISTRIBUTION*

It is the purpose of this chapter: (1) to present and describe the present offerings in education for the field of distribution in the Counties of Antrim, Charlevoix, Cheboygan, Emmet, Otsego, and Presque Isle; (2) to focus upon the needs of this six-county area regarding education for distribution; and (3) to formulate a plan of action for implementing a program of distributive education which would be feasible for the area under consideration.

A. The Total Program of Distributive Education

When the terms distributive education or education for distribution are used in this chapter, they denote those courses, groups of courses, or programs of study on the high school or post high school levels that provide the necessary information, skills, and attitudes to adequately prepare the learner for employment in the fields of wholesaling, retailing, and the service industries. A total program of education for distribution will prepare the learner for not only the job entry level but also for career advancement as well.

Distribution plays a most vital role in the economy of this country; over half of the consumer dollar is used to cover the cost of transferring goods from the producer to the ultimate consumer. Michigan is rapidly becoming a center of distribution for the Midwestern portion of the country. With over one-fifth of the national civilian labor force employed in distributive-related occupations, distributive education can no longer be left to evolve on its own. It must become a planned part of the educational framework of every state and local community.

If provision is to be made for effective distributive practices, then society must provide the trained practitioners and specialists at all points in the channel of distribution. Training must be provided for those youths and adults who will assume responsibilities in the fields of retailing, advertising, wholesaling, transporting, storing, and in the allied service industries such as insurance, real estate, banking, feeding and lodging establishments, together with varied other industries that make up the total field of distribution. Within these areas are found the distributive occupations which may be defined as:

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*Written principally by Edward T. Ferguson, Jr., Teacher Educator for Distributive Education, M.S.U.

> ... those followed by proprietors, managers, or employees engaged primarily in marketing or merchandising goods or services. Such occupations may be found in various business establishments, including, without being limited to, retailing, wholesaling, manufacturing, storing, transporting, financing, trade, industrial, or office occupations.[1]

If an educational program in distribution is to be an effective economic and community endeavor, it must provide for the educational needs of both the young and the adult populations of the area to be served; it must serve those who seek employment in the field as well as those who are already employed. It must provide training for those who have been displaced by automation as well as for high-school-age boys and girls who plan to enter the labor market upon graduation.

A total program of education for distribution would then serve as refresher training for those already in the distributive field as well as for those who desire positions of leadership and management. A complete program must, then, include education on all levels — secondary, post high school (community college or vocational-technical school), and adult.

B. Procedures Used in the Study

As described in Chapter 1, several methods were used to compile information that would be pertinent in determining the educational needs pertaining to distributive education in the six-county area. Information was gained through the use of questionnaires, analyses of existing data and reports, personal interviews, group discussions, and observations.

Interviews were conducted by the writer with businessmen-owners, managers, and personnel directors. These personal interviews, along with interviews with representatives of the several chambers of commerce within the study area, were most helpful and revealing in gaining insight into the employment needs and training demands of the six-county study area.

The writer also interviewed high school superintendents, principals, vocational directors, guidance counselors, and vocational education teachers, including administrators and faculty of North Central Michigan College, to determine what was now being done to provide for the vocational/technical training needs in distribution of the six-county area. Combined with these interviews, information was also secured from local boards of education, the Michigan Employment Security Commission, and through an opinionnaire sent to all teachers of business and distributive education in the six-county area.

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[1] Administration of Vocational Education, Vocational Education Bulletin No. 1 (Washington: U. S. Office of Education, 1958), p. 13.

C. Distributive Conditions in the Study Area

TABLE 7.1

EMPLOYMENT IN DISTRIBUTIVE FIRMS, 1960

	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle
Trade (Retail/ Wholesale)	457 (14.3)*	772 (17.9)	960 (24.1)	1,447 (30.0)	479 (19.8)	675 (16.3)
Finance, Insurance, and Real Estate	72 (2.3)*	109 (2.5)	150 (3.8)	124 (2.4)	59 (2.4)	66 (1.6)
Business, Repair, and Personal Services	305 (9.5)*	630 (14.6)	509 (12.8)	590 (11.4)	323 (13.3)	214 (5.2)

*Denotes percentage item is of county total.

Source: U. S. Census of Population, 1960.

TABLE 7.2

BY COUNTY, NUMBERS OF WORKERS IN RETAIL TRADES

Occupational Area		Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle	Six-County Total
Sales Workers								
	Male	90	198	146	240	75	108	857
	Female	74	101	99	171	44	120	609
Service Workers (except private households)								
	Male	85	195	156	188	125	205	954
	Female	147	257	283	447	231	189	1,554
Managers, Officials and Proprietors, except farm								
	Male	288	343	499	509	286	389	2,314
	Female	37	60	53	123	39	37	349

Source: U. S. Census of Population, 1960.

The retail, wholesale, and service industries, according to most businessmen and the several chambers of commerce in the six-county area, are in sound economic condition. There are several leading centers of distributive activity found in the study area, and Charlevoix, Petoskey, Cheboygan, and Gaylord account for the largest portion of sales volume.

A large majority of the distributive businesses in several of the centers of retail activity have undertaken effective store remodeling and have standardized to give an Alpine effect to the entire shopping area. This has brought about the rejuvenation of several downtown shopping districts. Many new business establishments have been opened in the past two years. These conditions, together with an upward trend in the economy of the study area, are factors contributing to the increasingly large number of retail, wholesale, and service personnel needs on the job-entry as well as the career and specialist levels of employment. It is apparent to the writer that a minimum of 300 well-trained distributive employees could readily be absorbed into the fast-growing economy of the six-county study area. Many of the presently employed distributive workers are, according to their employers, in need of upgrading and additional training.

The tourist industry, one of the major single industries in the study area, can no longer be considered seasonal in its employment needs. There is great concern among members of this industry as to sources of adequately trained personnel. One resort alone reports hiring more than 200 people during the height of its summer and winter seasons. The several ski resorts in the study area have contributed immensely to the economic growth of the six counties, and projected figures reveal an even greater boom to the future economy.

TABLE 7.3

MICHIGAN RETAIL SALES BY TYPE OF STORE, 1964
($1,000)

County	Food	Eat & Drink	General Merchandise	Apparel	Furn. & Appliances	Auto	Gas Station
Antrim	$3,363	$ 925	$ 592	$ 102	$ 167	$ 788	$1,213
Charlevoix	5,231	1,455	986	574	564	2,855	1,834
Cheboygan	5,840	3,004	1,600	392	487	3,086	3,489
Emmet	5,960	2,425	3,896	2,459	1,000	4,922	2,388
Otsego	3,080	1,391	866	311	558	1,774	2,157
Presque Isle	3,441	997	323	894	270	3,342	1,102

Source: "Survey of Buying Power," Sales Management Magazine.

It is safe to generalize that the economic future of the six-county area, at least in the field of distribution, is sound and on the upswing. Businessmen are at this time feeling the pinch regarding finding adequately trained personnel in all areas of distribution, with the most pressing shortage being felt in the retail and service industries. The field of distribution represents a major segment of the economy of this six-county area. It thus becomes apparent that the area must begin to provide itself with a well-planned program of education for distribution.

D. The Present Program of Education for Distribution

The writer has found no evidence of any organized program of education for distribution on the high school or post high school levels in the six-county area. The community college at Petoskey does, though, offer a course in business organization that has some relation to distribution but is not primarily a distributive education course.

Although no program of education for distribution is in existence within the study area, results of a survey of the 1963 graduates indicate that 20 percent of the respondents held their first jobs in the field of distribution and that 12 percent were still working in the field of distribution two years after graduation. The survey further revealed that of the students still engaged in the distributive field, 21 percent were earning in excess of $102.50 per week. The same study asked the respondents to indicate what kinds of vocational/technical courses they would have taken had any been available at their high schools. A total of 12 percent (or one out of eight) of the respondents stated that they would have elected courses in distributive education.

At the time of this survey, work experience programs were being offered at Petoskey and Cheboygan high schools. However, no related class work is offered to students engaged in distributive occupations. Two other schools, Pellston and Charlevoix, have plans to initiate similar programs in the coming school year. It should be pointed out that this type of work experience program does not meet vocational/technical standards and provides little or no instruction that is related to on-the-job experiences. It is the opinion of this writer that such programs of "work experience" become a hindrance to the establishment of true cooperative occupational experience programs. While such programs do have a place in the comprehensive high schools, their position should be supplemental to cooperative occupational experience programs and should be primarily for those students who desire extra spending money and who have no intention of preparing for a future career in the particular occupational field. No vocational occupational experience program can be effective without adequate classroom experience that will supplement on-the-job training. Perhaps the most damaging effect that results from

trying to provide such general work experience programs in lieu of a true cooperative program is that of exposing the student to inadequately prepared teachers who have had little or no actual recency of experience in the fields about which they are to provide vocational/technical information. It is truly a rare situation in which a school system can find a teacher competent in two of the vocational/technical fields and a near impossibility to find a teacher competent in all vocational/technical fields. It is not, therefore, sound practice to proceed toward the so-called "diversified programs" of vocational education as the method of providing a vocational/technical education in the comprehensive high school. This type of program can at best provide only an organized work program for the secondary schools of the study area.

Adult education in the field of distribution is also virtually non-existent in the six-county study area, although many businessmen expressed the desire to have such an educational opportunity available to them and to their employees. Courses in management and managerial-related subject matter are needed in the study area, particularly because of the large number of owner-operated retail and service businesses. Also needed are courses for supervisory and sales-oriented courses for employees. An organized program of education for distribution must provide for the needs of a very large segment of the adult population of the six-county area. The responsibility for such courses cannot be delegated to industry; it must be provided by the organized educational institutions of the area.

E. What a Program of Education for Distribution Could Become

The following programs of education for distribution have been carefully prepared to serve as models for several communities similar to the six-county study area. It is the purpose of the writer to present a guide as to what a total program of education for distribution should entail so that the particular study area in question can adapt its local wants and needs to the model, thus producing a workable program for the study area.

The High School Program

The Preparatory Program — The preparatory program gives students an opportunity to learn about careers in marketing and distribution prior to going on the job. Its chief purposes are to assist the students in appraising their individual aptitudes, interests, and abilities in terms of employment in distribution and to develop in the students an appreciation for the importance of the field of distribution and how it functions to serve our American system of free enterprise.

Such a program at the high school level should be one year in length, one period a day, five days a week, carrying one unit of credit. The class is best taught by the project method, with work experience desirable but not mandatory. The student would not participate in a released school time occupational experience program. This course of study should be limited to no more than 25 students.

Units of study for the preparatory course might include: self-analysis as a step toward the world of work, development of personal characteristics for employability, the customer's viewpoint in selling, the importance of distribution in our economy, the kinds of distributive businesses, the kinds of employment in distribution, education for distribution, how distributive businesses serve the customer through advertising and visual merchandising, how products are packaged and tested to serve the customer, how credit serves the customer and the distributor, how mathematics is used in distribution, and securing employment in distribution.

The Cooperative Program — The cooperative program is a program which is a cooperative enterprise using both the facilities of the school and the marketing and merchandising resources of the community, primarily in the retail, wholesale, and service fields. The student attends his school in the morning, participating in three or four regularly scheduled classes. One of these would be a class of instruction in distributive education. In the afternoon the student would receive part-time employment in the business community. Instruction in the classroom situation would be correlated to the students' on-the-job experience by means of regularly scheduled visitations to the work stations by the distributive education coordinator.

One organization for such a program at the high school level would be a course of study at least one year in length offered at the twelfth grade level. The course would be offered five days a week, for one period a day with one unit of credit. The on-the-job experience would range from 20 to 25 hours a week, also carrying one unit of credit.

Units of study might include: employment orientation, self-service selling, product information for selling efficiently, development of goals for self-improvement, blueprint for retail selling, sales supporting activities and customer services, individual product information workshop (non-durable goods), using advertising as a selling aid, good housekeeping in distribution, distribution in a free economy, the functions of marketing, display principles and technique, types of credit, merchandising mathematics, human relations, and sales demonstrations.

Another approach could be the offering of a two-year sequence in distributive education whereby the student at the eleventh grade level would be given the opportunity to participate in the occupational experience phase

of the program of education for distribution. This two-year course of study would also be offered one period a day, five days a week for the two-year span of time. Only students who had completed Distributive Education I would be allowed to take Distributive Education II. The second year would always be cooperative, with the student working from 20 to 25 hours a week.

Another approach concerning time apportionment could be a double period held three days a week for one year. This would prove feasible if shared-time programs in distributive education are undertaken by joining students together from several schools.

Units of study for a two-year course might include: job evaluation related to individual development, advanced selling techniques in specialized areas, marketing research projects, standards and grades and labels, merchandise planning and stock control, advertising layout and copywriting, individual product information workshop (durable goods), visual merchandising (window and interior display), sales presentations to groups, and education for supervision.

Ordinarily no prerequisites are needed for the cooperative program, but a foundation course such as basic business or business mathematics would be beneficial to the student.

The Post-High School Program

The Two-Year College Program — This program, sometimes called the junior college marketing and management program, is designed for those students who desire an education that will enable them to participate effectively in a variety of business activities in marketing and management. Although this program can terminate in an associate's degree, it is primarily designed for transfer to a four-year school of business.

The student enrolled in the junior college marketing and management curriculum would have a strong offering of courses in general education. These would consist of English, physical and social sciences, and the humanities. Along with these courses would be the foundation courses in the business administration curriculum, such as introduction to business, principles of economics, principles of retailing, management processes and principles of accounting.

The Technical School Program or the One-Year Vocational Program — This program is designed for those students who desire a concentrated program of study in the field of distribution at the post-high school level, combined with on-the-job work experience. Often this program is designed for students who desire to achieve employment skills as rapidly as possible.

It could take the form of a program designed to benefit those students who did not have the opportunity on the high school level to receive training in the field of distribution. The work done on such a program would by necessity be of less than college grade with no possibility of transfer either to the two-year management or marketing curriculum or to any other institution of higher learning.

Such a program would have a high concentration of the technical content-type of courses such as sales, marketing, applied accounting, retailing, advertising, and applied economics. These content courses would be complemented by an internship or occupational experience program.

The Two-Year Sub-Professional Program — This mid-management training program is an area of vocational study carried on at the junior college level which prepares those seeking careers in merchandising, marketing, and management. It provides occupational training at the middle-management level (buyers, department managers, managers of small businesses, assistant managers, etc.) in marketing and merchandising and training for technical and specialized sales positions (wholesaling, insurance, real estate, etc.). The classroom instruction is combined with planned on-the-job training in which the student gains the kind of experience necessary to achieve a career goal.

If the student chooses to terminate his education at the end of two years, he would choose, together with many of the professional courses given in the two-year degree program, several technical courses that would prepare him in some depth for a position upon graduation. The courses might be drawn from salesmanship, advertising, and personnel and management practices. Although the program is basically terminal in nature, many of the courses the student takes can be transferred to a junior college or four-year institution.

The Adult Program

The adult program in distributive education is a service being rendered to employees, supervisors, managers, and proprietors. Courses of study are organized in cooperation with consultative and advisory groups from several occupational areas. Instruction is usually undertaken by part-time instructors who come from business, education, government, and the professions. A continuous regular program of study may be established, leading toward a diploma in adult distributive education.

Courses on the managerial level might include merchandising, retail organization and operation, speech, and managerial techniques. On the mid-management level, courses in techniques in buying, human relations,

personnel management and principles of merchandise control could be offered. On the sales level the offerings could include stockkeeping, merchandise information, display and techniques of selling.

The courses on all levels could range from 10 to 20 hours in length. Frequently, courses on the sales level are offered not only at night but also during slack times of the work day and could be conducted in stores with adequate training facilities. Management and mid-management courses are usually offered at night in extended blocks of time; most common are two and a half to three hours for five sessions.

Instructional Staff, Facilities, and Equipment for the Total Program

At the vocational/technical level, a well-trained instructor with a major in business administration and/or marketing with a well-founded understanding of the cooperative method can usually teach the basic courses and undertake the coordination activities that would be required for the post-high school program in distribution. The specialized sections of the curriculum might well necessitate the teaching be done by someone from industry or a person from the related subject area field. The instructor for the post-high school program should possess, at minimum, a master's degree relating to the area he is teaching and should have completed the requirements for vocational certification as stated in the Michigan State Plan for Vocational Certification.

The high school teacher-coordinator of distributive education should have an undergraduate major in the field of marketing or distributive education, together with all the required professional courses that are called for under a Michigan Provisional Teaching Certificate. The high school teacher-coordinator must also have or be in the process of obtaining vocational certification under the Michigan State Plan for Vocational Education. This plan calls for at least two years of practical work experience, with at least one of these years being in an area directly related to what the teacher-coordinator will be teaching.

The preparatory program teacher should also possess the same qualifications as the teacher-coordinator.

Facilities for the high school and post-high school programs in distribution are similar. A laboratory containing furniture and fixtures representative of the retail, wholesale, and service industries must be an integral part of the learning program. Such a laboratory would contain cabinets, showcases, open racks, bins, wrapping counters, display windows, and a cash register, together with other equipment the instructor sees necessary for carrying on training unique to the area served.

Versatility of equipment must be kept in mind; equipment that is portable will enable the instructors to reproduce facsimiles of several different retail, wholesale, and service situations. Versatility of equipment will also relieve the necessity of equiping more than one room in the learning center, but will insure that all areas of distribution can receive appropriate learning situations. The cost of such a laboratory for the high school or post-high levels, including all necessary store furniture, tables, chairs, and window display fixtures, would be approximately $3,500. This laboratory could also be used for a seminar room for adult classes.

CHAPTER 8

HOME ECONOMICS EDUCATION*

The purpose of this chapter is (1) to define the purpose and scope of home economics, (2) to describe the home economics program as it exists in the six-county area of this study, and (3) to present recommendations for home economics in the area encompassed in this study.

A. The Purpose and Scope of Home Economics

Preparation for homemaking and preparation for wage-earning occupations related to home economics are two emphases in home economics education. Preparation for homemaking has been the focus of home economics education since the turn of the century. On the other hand, the emphasis on home economics-related wage-earning occupations is a developing focus for home economics education. Each emphasis will be discussed below with consideration given to the functions of the two related, but different programs.

Home Economics for the Vocation of Homemaking

The aim of home economics education was given direction by a Committee on Philosophy and Objectives of the American Home Economics Association:

> We believe that the clearest new direction for home economics is to help people identify and develop certain fundamental competencies that will be effective in personal and family living regardless of the particular circumstances of the individual or family.
>
> Fundamental to effective living are the competencies to:
>
> > establish values which give meaning to personal, family, and community living; select goals appropriate to these values
> >
> > create a home and community environment conducive to healthy growth and development of all members of the family at all stages of the family cycle.

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*Written principally by Dr. Twyla Shear, Assistant Professor of Home Economics Education, Michigan State University.

achieve good interpersonal relationships within the home and within the community

make and carry out intelligent decisions regarding the use of personal, family, and community resources

establish long-range goals for financial security and work toward their achievement

plan consumption of goods and services — including food, clothing, and housing — in ways that will promote values and goals established by the family

purchase consumer goods and services appropriate to an overall consumption plan and wise use of economic resources

perform the tasks of maintaining a home in such a way that they will contribute effectively to furthering individual and family goals

enrich personal and family life through the arts and humanities and through refreshing and creative use of leisure

take an intelligent part in legislative and other social action programs which directly affect the welfare of individuals and families

develop mutual understanding and appreciation of differing cultures and ways of life, and cooperate with people of other cultures who are striving to raise levels of living.[1]

Instruction in a comprehensive home economics program designed to implement achievement of the above competencies includes the following areas of home and family living:

Clothing and textiles — selection, care, repair, and construction of clothing; consumer purchasing of clothing and textiles.

Food and nutrition — family meal planning, preparation, and service; nutrition needs of the family and individuals at various developmental stages; food buying and storing.

Child development, care and guidance — care of children by providing for physical, social, and emotional needs at various developmental stages.

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[1]Olive Hall and B. Paolucci, Teaching Home Economics (New York: John Wiley and Sons, Inc., 1961), pp. 161-162.

Housing and home furnishings — family housing needs; selection, care and use of home furnishings and equipment.

Health and home care of the sick — maintenance of mental and physical well-being; maintenance of safe, sanitary environment.

Family and social relationships — personal development; responsibilities and rewards of constructive group living in family and community.

Home management and family economics — recognition and effective use of human and material resources to achieve goals; consumer problems in relation to personal and family food, clothing, and shelter.

Art in the home — principles of color, line, and design as they apply to family food, clothing, and shelter.

The casual familiarity of nearly every person with the above listed content areas of home economics, due just to everyday living, often serves as a basis for dismissal of the importance of these areas for formal study. Yet a few minutes of reflection on the role of the homemaker in today's complex society should point up the increasingly cognitive nature of the homemaker's job.

The technological developments that on the surface appear to reduce work or make tasks easier more often than not demand special kinds of know-how that are essential before particular tools or products can be used and/or developed effectively and efficiently. For example, consider what the homemaker needs to know: to select from ready-prepared food products an adequate diet for her family; to evaluate the many pressures of mass communication that deal with everything from the family wash to child rearing; to operate and care for the many expensive mechanical appliances of the household to obtain from them optimum efficient use; to rear children who will become physically and emotionally sound, mature, responsible adults in a complex, rapidly changing environment. Even these few instances should illustrate that the ability to establish and maintain a home is too complex to be left to chance. From a study of 13,000 Texas high school youngsters, sociologist Bernice Moore concluded from the data that:

> Capacities for family living and skills for homemaking have to be studied and learned. This is no less true than that future scientific and technological achievement rests upon an educational base.[1]

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[1]Beulah I. Coon, Home Economics Instruction in the Secondary Schools (Washington: The Center for Applied Research in Education, Inc., 1964), p. 4.

Worthy home membership was listed as early as 1918 as one of seven cardinal principles of secondary education. Subsequent publications which have stressed general goals of education have reaffirmed and further refined the meaning and importance of this goal.[1] Thus, a case is made for provision of opportunity for all youth and adults, in school and out, to study home economics.

Home Economics for Wage Earning Occupations Outside the Home

The passage of the National Vocational Education Act of 1963 enlisted a new dimension in home economics education: home economics related to wage earning. The concern of home economics for wage earning can be justified not only on the strength of the large number of women employed in the labor force who will as a result of their employment need help with their homemaking activities, but many occupations require certain home economics knowledges and skills as a part of job competence.[2]

Among several jobs that require training in home economics are the following service occupation titles:

Child day-care center worker
Management aide in public housing projects
Visiting homemaker
Hotel and motel housekeeping aide
Supervised food service worker.[3]

In addition to the knowledge and skills of home economics that are requisite to certain specific occupations, home economics instruction can provide many opportunities for helping students to become employable in a general sense. Personal appearance, positive attitudes toward work, good personal relations, and ability to follow directions are among qualities needed by everyone in order to obtain, and remain on, a job. Growth in these characteristics should be stressed in a quality home economics program. And not to be overlooked is the contribution of home economics to development of the fundamental tools of reading, writing, and arithmetic through application of these tools in life situations that are a part of home economics content.

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[1] Ibid., pp. 3-4.

[2] Rua Van Horn, "Home Economics Education for Wage Earners," American Vocational Journal, Vol. 39, No. 4 (April 1964), pp. 23-24.

[3] Curriculum guides have been developed for nine service occupations using home economics knowledge and skills. They are available from the U. S. Department of Health, Education and Welfare.

As a part of the development of occupational training programs in home economics, professional home economists have studied carefully the Vocational Education Act of 1963 and the guiding policies of the prior homemaking program in order to define characteristics of each program. The results are as follows:

Essential Characteristics for a Program for Homemaking

1. The scope of the instruction is broad as it provides a sequence of learnings that permit increased depth of understanding of those concepts which contribute to home and family living.

2. The program considers the needs of the students enrolled (secondary, out-of-school youth, and adult) as related to the developmental stages, societal changes, and varying abilities and interests.

3. The program is open to all who are interested in using the knowledge and skills necessary for homemaking and who have a desire for improving family life.

4. The instructor will have met the professional requirements for classroom teachers in the field.

5. The program includes supervised experiences both in and out of class, and experiences in problem solving procedures as related to the decision-making process. It assists the individual in identifying his attitudes and values as they relate to home and family living, contains an effective evaluation system, and incorporates findings of research in the field and related disciplines.

6. Facilities for instruction provide opportunities in the classroom on the community for the student to develop an understanding of the concepts identified for all aspects of home and family living.

Essential Characteristics of a Program of Occupational Training

1. Established evidence of opportunities for employment precedes the organization for occupational training.

2. A course will be repeated only when employment opportunities have been predetermined.

3. The instruction is focused on a specific occupation, and the scope of subject matter used in teaching is defined by a job analysis. The training may be for one or more periods in a school day or for full time for a varying number of weeks or months.

4. The training program will include valid work experience, supervised and evaluated by the instructor and the cooperating employer.

5. Trainees are selected on the basis of predetermined potentials for them to profit by training for a specific occupation.

6. The trainee must be of legal employment age at completion of training.

7. The instructor will have had occupational experience and have sound knowledge of the subject matter to be used in the instructional program.

8. There will be close cooperation between the instructor and the vocational counseling personnel of the school and/or the employment service, in placement and follow-up of trainees.

9. Teaching facilities will be adequate to enable trainees to acquire marketable skills for the occupation.

10. The program may be cooperatively planned and conducted by two or more vocational services, or in cooperation with a community organization or agency.

11. Evaluation of the total program is done in terms of trainee's performance and ability to secure and hold a job.[1]

Health Service Occupations

The health service occupational matrix is made up of a series "of subprofessional practitioners who require specific vocational preparation, either on an institutional base or through the cooperate activities of school and health agencies."[2] Such programs include training of practical nurses, nurses aides, medical records technicians, X-ray technicians, physical therapy aides, medical assistants, dental assistants, orderlies, dietary aides, and laboratory assistants. In practice, the related professional group (such as the Registered Nurse, to the practical nurse) sets standards and prescribes certain requirements to be met before licensing the subprofessional. The professional "parent" is frequently involved in some part of the training program.

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0 [1]Rua Van Horn, "How Can We Provide for Education for Homemaking and for Employment in the Home Economics Program at the Post High School Level." Unpublished paper presented at the National Conference on Contemporary Issues in Home Economics Education, University of Illinois, Urbana, Illinois, May 9, 1965.

X [2]Vocational Education, 64th Yearbook of the National Society for the Study of Education (1964), p. 126.

Training programs for health occupations are offered at the high school or post high school level.

> In most states supplemental programs are also available for employed adults who require refresher courses for up-grading. Programs in practical nursing are usually one year long and are carried out in cooperation with hospitals and other health agencies. Training programs for other occupations, such as medical, dental, and operating technologies, and other types of health assistants, vary in length from a few months to two years.[1]

B. The Present Home Economics Education in the Top-O-Michigan Area

The Day School Program

Data on the high schools represented in this study indicated that for the 1964-65 school year, 19 of the 21 schools had home economics programs. Table 8.1 which shows enrollment figures for boys and girls in those home economics programs includes Boyne Falls as having a home economics program because they employed a home economics teacher, but there was no information on enrollment. Wolverine, which has an extremely small total enrollment in grades 9 through 12 does not have a home economics program.

The enrollment of boys in home economics was virtually non-existent, being limited to the eight boys in the home and family living class at Inland Lakes School and one lone boy at Harbor Springs. Apparently, at least in these two schools, homemaking was available to boys, which is highly desirable.

The percentage of the high school enrollment (girls) in homemaking class ranged widely from a high of 84.6 percent to a low of 7.1 percent with the median at 52.6 percent.

In response to an opinionnaire, 14 of 15 home economics teachers who replied indicated that the primary purpose of home economics education in their schools was "preparation for home and family living through a broad program." In general, high school administrators who were interviewed concurred in this point of view. Support of this purpose was reflected in the departments which were equipped as multi-purpose rooms and which had text and reference materials, though in limited amounts, for teaching a broad homemaking program.

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[1] U. S. Office of Health, Education, and Welfare, Vocational and Technical Education: A Review of Activities in Federally Aided Programs (Washington: U. S. Government Printing Office, 1963).

TABLE 8.1

ENROLLMENTS IN HOME ECONOMICS CLASSES
Grades 9 Through 12

High School	School Enrollment		Home Ec Class Enrollment		Percent Enrolled in Home Ec	
	Boys	Girls	Boys	Girls	Boys	Girls
Central Lake	45	55				
Ellsworth	51	51	0	29	0.0	56.9
Boyne City	191	170	0	94	0.0	55.3
Boyne Falls	24	37				
Charlevoix	175	181	0	75	0.0	41.4
East Jordan	136	117	0	84	0.0	71.8
Cheboygan	272	245	0	150	0.0	61.2
Cheboygan Catholic	142	127	0	9*	0.0	7.1
Inland Lakes	81	87	8	64	9.9	73.6
Harbor Springs	115	127	1	55	0.9	43.3
Littlefield	37	38	0	20	0.0	52.6
Mackinaw City	52	38	0	9	0.0	23.7
Pellston	93	84	0	49	0.0	58.3
Petoskey	285	278	0	78	0.0	28.1
Petoskey St. Francis	133	144	0	48	0.0	33.3
Johannesburg	37	26	0	22	0.0	84.6
Gaylord	172	159				
Gaylord St. Mary	90	73	0	16	0.0	21.9
Vanderbilt	38	32	0	18	0.0	56.3
Onaway	152	158	0	79	0.0	50.0

*Attend homemaking class in Cheboygan High School.

Source: Data collected by study consultant from schools.

Although teachers expressed the broad purpose of home and family living, they reported that the graduates from their schools were most lacking in home management, relationships, and buying skills, and most proficient in skills and knowledge related to clothing and foods.

One-third of the 21 high schools reported that home economics was required in the seventh grade. Also, those same seven school systems required home economics in the eighth grade. Five of the other school systems, for a total of 12, required eighth grades, these schools had 50 percent or more girls enrolled in the high school program with one exception, where fewer than 25 percent of the high school girls were taking homemaking. It is pointed out that in this one case, and only in this instance, the philosophy expressed

by the teacher was emphasis on "development of knowledge and skills in areas of home economics related specialized interests."

The high school homemaking programs in the area of this study should continue their focus on the goal of preparation for effective home and family living and renew efforts to provide a truly broad program that emphasizes those areas needing the most study and reflection: management, relationships, consumer problems, and child care and development.

Fifteen homemaking teachers reported that homemaking classes were not open to boys in their schools. Teachers and administrators should come together on this problem and work toward making home economics instruction available to boys as well as stimulating and encouraging boys to be interested in it. Schools that are too small to have a program with fully qualified teachers should try to arrange for teacher and facilities on a shared-time basis with neighboring schools.

Homemaking teachers should be cognizant of the contribution home economics education can make in the development of certain of the personal attributes which make an individual more employable. Positive attitudes toward work, positive personal relations, good grooming and health habits, and social skills are among several qualities that should be emphasized as effective home and family living goals.

There was no evidence of occupational training programs in home economics in any of the 21 schools in this study. Teachers on the whole did not feel qualified to teach occupational training, but this in no way reflects an unwillingness to become prepared. The list, "Essential Characteristics of a Program of Occupational Training," in a previous chapter serves as criteria for determining feasibility of occupational training. Such criteria should be thought through carefully before any decision is made regarding such programs in individual high schools. Area vocational schools are more likely to meet criteria for occupational training.

The Adult Program

Seven of fifteen homemaking teachers reported adult classes in home economics related content were taught in their communities. None of the courses described by these teachers were occupational training courses, but rather were largely clothing construction for individual personal interest. Homemaking teachers estimated that from 30 to 80 percent of the mothers of their students were employed. The occupations in which these women were employed are factory workers, waitresses, clerk, and cleaning primarily. All of these are occupations which they could enter with little or no special skills, but in which they maybe could advance and improve their

skills, and thus their incomes, with some related occupational training. Study should be given to both the employment needs and home management needs, due to employment, of adult women as a guideline for planning training programs. The Bureau of Labor Statistics predicts that two out of three women will be wage earners and that more than half of these will be married women.[1] Table 8.2 shows the distribution of women in the labor force by age, and a projection for 1970.

TABLE 8.2

AGE OF WOMEN IN THE POPULATION AND IN THE LABOR FORCE, 1962

A. THE GENERAL POPULATION

Age Group	Number	Percent Distribution
14-17	6,138,000	9
18-24	8,617,000	15
25-34	11,300,000	17
35-44	12,399,000	19
45-54	10,648,000	12
55-64	8,201,000	12
65 and over	9,207,000	14

B. THE LABOR FORCE

1962 (years)	Percent in Labor Force	Projection for 1970 (years)	Percent in Labor Force
14-17	4	14-19	28
18-24	17	20-24	45
25-34	17	25-34	37
35-44	23	35-44	45
45-54	22	45-54	55
55-65	13	55-64	43
65 and over	4	65 and over	11

Source: Rua Van Horn, "How Can We Provide for Education for Homemaking and for Employment in the Home Economics Program at the Post High School Level." Unpublished paper presented at the National Conference on Contemporary Issues in Home Economics Education, University of Illinois, Urbana, Illinois, May 9, 1965, p. 6.

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[1] Illinois Teacher of Home Economics, Vol. VIII, No. 1 (Urbana: University of Illinois), p. 9.

Interviews with hospital personnel directors, restaurant owners, hotel and motel managers and other business people indicated that women in the late 20's and older were more desirable as employees because they were more dependable and stable in terms of staying on the job.

The occupations in which large numbers of women in the nation as a whole work do not vary greatly from the occupations in which the women of this area reportedly work.

TABLE 8.3

OCCUPATIONS OF WOMEN IN THE TOP-O-MICHIGAN LABOR FORCE, 1960

Occupation	Percent of Those Employed by County					
	Antrim	Charlevoix	Cheboygan	Emmet	Otsego	Presque Isle
Clerical	18.5	18.2	19.7	6.8	5.3	4.1
Service Workers (exclusive of domestic workers)	16.3	18.5	25.5	24.8	31.1	20.9
Operatives	21.8	21.1	07.0	3.9	19.7	9.5
Professional and Technical	13.1	12.2	13.4	13.8	8.8	17.7
Household Workers	10.2	09.6	10.8	13.2	6.6	5.0

Source: U. S. Bureau of the Census, U. S. Census of Population: 1960, General Social and Economic Characteristics, Michigan, Final Report PC (1)-24C (Washington: U. S. Government Printing Office, 1962).

The evidence seems to point to an increase in women workers. Study ought to be given to the kinds of occupations for which they will be needed and can be trained in the economic interests of the area as well as the personal well being of these individuals.

Instructional Staff, Facilities, and Equipment

Fully qualified homemaking teachers were reported by all but one of the schools in the study. Seventeen of the 22 teachers were qualified for vocational certificates whereas five were not. It appears that the majority of the teachers have had college credit work in the last five years. This judgment is based on date of graduation and subsequent time it would take

to earn the permanent certificate. However, several older teachers with long years of experience, as well as younger ones, should plan for in-service workshops or credit classes to keep, or bring, them up-to-date. Consideration should be given to taking work helpful to teaching in the regular homemaking program, but especially should work be taken to familiarze teachers with philosophy, methods, and curriculum development in home economics related occupational training programs. This is such a new area to home economics that no homemaking teacher should shrug the responsibility to make herself informed at least.

Equipment for the traditional areas of food preparation and clothing construction seemed to be quite adequate in quantity and quality in most of the homemaking departments. Less evident to observation were facilities, equipment, and teaching-learning materials for some of the less tangible aspects of homemaking or for child care or home care of the sick. A January 1965 publication of the U. S. Department of Health, Education and Welfare, "Facilities for Programs which Prepare for Employment in Occupations Utilizing Home Economics Knowledge and Skills," lists criteria for determining equipment needed for occupational training classes. It also suggests minimum essential facilities and equipment for specific programs. Reference to this publication in relation to the departments observed shows that several added features, different from present arrangements of equipment and space, would be necessary for the purpose of occupational training classes.

The Health Occupations

Interviews with hospital personnel elicited the same staccato plea: "We need more nurses." No hospital facility had a full staff of Registered Nurses, Licensed Practical Nurses, or Nurses Aides to fit their needs. Not only were trained persons in these categories in short supply, but their length of tenure on the job was short. An administrator of one large hospital indicated that their participation in the practical nurse training program from another area was not of value to the local hospital because so few of the graduate LPN's stayed on with them.

Trained personnel in other medical technologies were also in demand but not to the extent of nursing personnel. "If a trained technician applies for a job, I hire him even though we may be fully staffed in that position at the time, for I know we will have a vacancy soon," was essentially the remark of one hospital spokesman.

The training of nurses aides can be done in a relatively short period. Such training can be done effectively with senior high school students, out-of-school youth, and adults. As nurses aides are in demand in this six-county

area as well as other areas, steps should be taken to promote interest in this occupation and provide training where interest is developed.

There is considerable evidence, especially with the recent federal legislation on hospital care tied to social security, that there will be a growing demand nationwide for workers in the nursing and other health technologies. With the start of a nursing program, and the nucleus of a strong science program at North Central Michigan College, it seems appropriate to study the feasibility of expanding the program in the health field.

C. Summary of Findings

1. Home economics classes to prepare for homemaking are available to high school girls in the schools in the Top-O-Michigan area in that there are teachers and facilities in the schools. Less evident is the extent to which girls are encouraged to enroll in homemaking through administrative matters such as counseling and scheduling.

2. Home economics classes are not open to boys in the high schools with the exception of two schools.

3. The purpose of the home economics programs as expressed by both teachers and administrators was preparation for home and family living.

4. Implementation of the purpose of preparation for home and family living appeared strongest in the traditional areas of foods and clothing and weakest in the areas of relationships, home management, and consumer buying.

5. There was no evidence of occupational training programs related to home economics in the 21 schools of this study.

6. The adult education program in home economics was very limited. Personal and family clothing construction was the emphasis in the majority of the classes offered. There were apparently no occupational training classes.

7. A large number of women in the Top-O-Michigan were working outside the home with nearly three times as many women working in 1960 as in 1940. Approximately one third of the women are employed in clerical, service, and household worker occupations. (Table 8.3.)

8. For the most part homemaking teachers are fully qualified and 17 of 22 teachers were qualified for vocational homemaking certificates.

9. Equipment and facilities were adequate for teaching clothing and foods, but lacking for teaching other areas of homemaking.

10. Registered nurses, licensed practical nurses, and nurses aides were greatly in demand in the order given. The first listed was in greatest demand and requires the most training.

11. Other occupations related to home economics where there was evidence of need included interior decoration helpers, chefs, salad girls, short order cooks, bakers, housekeepers, and waitresses.

CHAPTER 9

INDUSTRIAL EDUCATION*

The purpose of this chapter is to: (1) describe the purpose and range of the field of industrial education; (2) describe the pattern, form, and specific programs of industrial education in Charlevoix, Cheboygan, Emmet, Otsego, and parts of Antrim and Presque Isle Counties, and (3) present and summarize findings obtained from survey questionnaires, school visits, and interviews with industrial, labor and educational leaders in the study area. Recommendations and the proposed plan of industrial education for the six county area are presented in Chapter 12.

A. The Purpose and Range of Industrial Education

The term "industrial education" as used in this chapter includes the program areas of (1) industrial arts education, (2) trade and industrial education, and (3) technical education. All of these programs are concerned with the industrial phases of work and society. While the emphasis and major purpose of each area is different, they should be considered as complementary, rather than mutually exclusive to each other.

Because the terms of (1) industrial arts, (2) trade and industrial education, and (3) technical education are often misunderstood, the following definitions are presented and used throughout this chapter.

Industrial arts is a study of industry, its materials, processes, products and organization. Through classroom and laboratory experiences with tools and materials, students develop an understanding and appreciation of industry, its development and contributions to our industrial way of life, and the inherent social and technological problems. Emphasis is placed on problem-solving experiences that assist students in solving problems through coordination and integration of other subject areas in the development of the total educational process. Industrial arts programs are operated primarily at the junior and senior high school levels, but with increased emphasis being placed at the elementary school level and adult education programs. While generally conceived as general education (necessary for all individuals), industrial arts at the late high school level can serve as a

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pre-vocational program and for certain individual students meet a vocational need, if structured accordingly.

Trade and industrial education is that aspect of vocational education designed to prepare persons for gainful employment in trades, industrial pursuits, and other closely related occupations. Some trade and industrial education programs prepare individuals for entrance into an industrial occupation which is new to them, while other programs are designed to improve or upgrade the competency of persons already employed in an occupation. These programs are found at both the high school and post-high school levels.

Technical education is that aspect of vocational education designed to prepare technicians in a variety of occupational fields related to industry. The best known type of technicians are those associated with the field of engineering. For this study, the engineering technician as defined by the American Society for Engineering Education was used.

> An engineering technician engages in work that requires some of the knowledge and skills of both the professional engineer and the craftsman. He is required to know basic theories and to apply them in helping to solve complex problems of modern industry. . . . The engineering technician usually specializes in one aspect of engineering. He might, for example, work as a draftsman, a detail designer, a cost-estimator, a production supervisor, a research assistant, a quality control supervisor, a time study man, an expeditor, a technical salesman, or a production planner.[1]

Technician training programs are offered almost always as post-high school programs and usually identified as the 13th and 14th years of education.

B. Essential Characteristics of a Total Program of Industrial Education

Programs of industrial education should be available to serve all age groups. In the elementary grades, industrial arts is used to enrich and support the over-all general education program through an activity-type learning program where construction activities using tools and materials are an integral phase of various units of study.

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[1]Technical Institute Division, American Society for Engineering Education, The Engineering Technician (New York: McGraw-Hill Book Co., 1960), p. 3.

At the junior high school level, industrial arts as a separate but related subject area should be found. A comprehensive program of industrial arts at this level should provide students with exploratory experiences in as many areas as possible. Programs should emphasize application of concepts from other classes, development of the students concept of their own abilities and limitations and provide students with the opportunity to become actively involved in studying, planning, organizing, constructing, experimenting, testing, servicing, and evaluating materials processes, and products of industry. A minimum of one semester, but preferably one year of industrial arts at either the 7th, 8th or 9th grade level should be required of all students, both boys and girls, with additional courses available to all students on an elective basis.

At the high school level, industrial arts courses should be available to all students on an elective basis. Traditionally, the areas of woodworking and mechanical drawing have received the greatest emphasis. Today increased emphasis must be placed on metals-processing and fabrication, electricity-electronics, power mechanics, drafting-design and illustration, graphic arts, material testing, research and experimentation, product servicing, and residential building. At the senior high school level, students should have the opportunity to continue to explore various areas of industrial arts, thus building on their junior high school experiences. Industrial arts programs can contribute to individual vocational needs of certain students by providing concentration in depth in certain areas that will assist a student in preparing to meet an occupational goal.

Along with the industrial arts programs at the 10th, 11th and 12th grades, specific vocational programs in the trade and industrial area should be available to all students who desire such preparation. These programs should commence no earlier than the 11th grade, but should definitely be available to all students in the 12th grade. Occupational preparation should be the primary function of these courses. In some cases, the training program can be very specific and provide skills necessary for entry level positions in the occupation. In other courses, basic skills necessary for groups or clusters of occupations should be emphasized so the student will have a range of occupational possibilities.

A needed area and one often neglected is short-term, specific job preparation for some of the lower level occupations such as sweeper, machine operator, janitor, and gas station attendant. In any event, a wide range of different program offerings that provide preparation for a variety of occupations should be available in any program of trade and industrial education. In smaller high schools where it may be impossible to develop realistic comprehensive programs of trade and industrial education, the development of area vocational schools or shared-time programs between various schools should be considered. In addition, programs of trade and industrial

education at the high school level should provide for supervised practical on-the-job experiences that can be arranged through cooperative education programs.

Where no or very limited vocational industrial education opportunities are available to students at the high school level, these opportunities should be provided at the post-high school, at no cost to the student, in area vocational centers or vocational-technical institutes, operated independently or as part of a community college.

Post-high school programs and courses of vocational technical education should also be available for adults for retraining, promotion and upgrading, and general interest purposes. These may be part time or full time.

A truly quality program of industrial education must assist in providing for the maximum development of each student's talents and abilities to the fullest, regardless of difference in talents and abilities between individual students.

In order to achieve these goals, adequate buildings and equipment are necessary, qualified and well-trained teachers are needed, and there must be effective liaison between the school and the community. Adequate provisions must be made to inform students of employment needs and opportunities, to determine their interests and capabilities with regard to various fields of occupational training, to provide excellent technical and related instruction as well as needed general education, and to insure adequate placement and follow-ups. The absence of any one of these factors can seriously jeopardize the potential success of a total industrial education program.

C. Occupational Trends and Implications for Industrial Education

Occupational needs are constantly changing as new technological developments occur. Some of the more important trends predicted by the U. S. Bureau of Labor Statistics are as follows:

1. Fewer unskilled occupational opportunities will be available but an increasing number of skilled and semi-skilled workers will be needed. However, the needs for semi-skilled workers will not increase as rapidly as some other major occupational groups, but will continue to rank with the clerical workers category as the top two occupational groups with one worker in every six employed in a semi-skilled job.

2. Of the professional-technical occupational group, the needs for technicians will continue to rise in existing and new areas as technological developments and changes are made.

3. The most rapidly growing industrial occupational area is the service worker group, while the electronics industry is one of the more rapidly expanding industries.

4. Construction workers will be needed in increasingly larger numbers with an estimated 400 thousand carpenters needed by 1975. In the manufacturing industries, it is estimated that 200 thousand general machinists will be needed by the same year.

5. The labor force (employed and unemployed) is growing faster than our population growth, but because of the changing nature of occupational needs and trends, workers of the future may have to change occupations three or more times in order to remain employed.

With the increasing need for highly skilled persons and the decreasing lower level job opportunities, it will become exceedingly difficult to prepare individuals at the high school level with entry level skills needed for the available jobs. Furthermore, graduates of high schools, even when properly trained, will find it increasingly difficult to find employment commensurate with their training because employers in manufacturing and industrial pursuits tend to hire at low levels and then promote or upgrade their workers. This suggests that in most cases, high school programs of industrial vocational education should be more general in nature and concentrate on basic skills necessary for groups or clusters of occupations rather than attempt to prepare individuals for a specific single occupation. Pre-vocational programs that lead to post-high school programs in trade and industrial education and in technical education are another example of appropriate high school level programs in industrial education.

In the area of service occupations, which will provide a major source of employment for high school graduates in future years, specific high school programs should be developed that will provide graduates with entry level skills needed for initial employment.

As higher skill and competency will be required in our work force, along with newly emerging industrial occupations, it becomes imperative that broad-range trade and industrial education and technical education programs be developed at the post-high school level for initial entry, retraining and upgrading purposes to serve the needs of high school graduates, individuals currently employed or unemployed, and school dropouts.

With the many changes that are constantly taking place in the industrial world, it becomes imperative that programs of industrial education remain flexible and attuned to changing occupational training needs on the local, state and national scene.

D. The Present Program of Industrial Education in the Top-O-Michigan Area

Procedures and Sources of Information

Questionnaires were completed by the superintendent or high school principal of each participating school providing data regarding course and sequence offerings in industrial education, instructional staff experience and qualifications, enrollments and drop-out statistics. Other sources of information were: the follow-up study of 1963 graduates and drop-outs, the occupational interest questionnaire to 11th graders and their parents, basic demographic data on the area, and an opinionnaire distributed to all teachers of industrial education.

Visitations were made to all of the 21 high schools by one or more of the team of vocational consultants. Interviews were conducted with many owners, managers and personnel directors of major manufacturing, construction and service industries in the geographical area. A total of 30 major industries were visited and interviews conducted with one or more persons in each. A combined total of 3,500 to 3,600 persons were employed by these industries. Other interviews were conducted with Chamber of Commerce presidents, school board members, and the administrative and instructional staff at the North Central Michigan College.

Status of Present Programs of Industrial Education

Although specific comments are made regarding programs at certain schools (for illustrative purposes), the primary purpose of this study was to assess the status of the total program of industrial education in the six-county area, and to plan for the future. No attempt should be made to interpret these findings and comments as a complete evaluation of individual school programs.

Secondary Level

No bona fide total program of vocational education in the area of industrial education, as described in part B of this chapter, was found in any of the various high school districts. The Gaylord Community High School has the necessary space existing in their new building and are planning to offer vocational programs in the areas of auto mechanics, metal machining and fabrication, drafting, and some building trades. Equipment, some of which is on order, and staffing appear to be the only problems to be overcome. The Petoskey school system also plans to provide vocational instruction in the areas of metal machining, electricity-electronics, drafting, and possibly some offering in the building trade area in the new high school,

which is presently under construction. Cheboygan Public Schools has future plans to include some vocational industrial education in their program pending the building of a new high school.

One of the major problems faced by any school district, when attempting to offer vocational education, is finding qualified instructional staff who meet the Michigan certification requirements. Such is the case in this geographical area, where of the 24 teachers of industrial education classes, only seven currently meet vocational certification requirements in the area of trade and industrial education. Vocationally certified teachers were found in the following school districts: two in Charlevoix and one each in Cheboygan, East Jordan, Gaylord, Inland Lakes, and Petoskey.

While significant industrial vocational offerings are generally not available to high school students, it was noted that industrial arts offerings were available to students in 20 of the 21 high schools. In the case of the parochial schools, shared-time programs are operating with the local public schools. However, many of these industrial arts programs were rather narrow in terms of areas of experience offered. All of the programs provided woodworking instruction with primary emphasis given to this area of instruction. Most programs also offered courses in drafting. Only programs at Charlevoix, Cheboygan, East Jordan and Petoskey provided fairly broad-gauge instruction in metals areas. Limited instruction in metals is provided at Boyne City, Gaylord, Johannesburg, and planned for Onaway commencing in the Fall of 1965. Gaylord has the only power mechanics program currently in operation. Electronics is offered only at Petoskey; however, a science teacher at Boyne City High School does an extensive amount of work in the electricity-electronics areas. No graphic arts instruction is available and only very limited experience is provided in any of the construction areas, usually confined to carpentry as a unit of a woodworking course. At no single school was a truly comprehensive industrial arts program found as described in part B of this chapter.

An opinionnaire for teachers of industrial education was sent to 22 teachers with 13 (or 59 percent) returning completed opinionnaire forms. In general, opinionnaire responses and interviews with teachers revealed a genuine concern to expand and broaden the range of experience areas available in programs of industrial education to high school students. The need to expand and offer more areas of instruction was cited by 54 percent of the teachers as one of the most important changes or improvements needed in the present high school industrial education curriculum. Other improvements cited were: the need for replacement or additional tools and equipment by 39 percent, the need for textbooks and instructional materials by 23 percent, the need to schedule special classes for the mentally retarded and slow learners by 16 percent, and the need to reduce class size and class load by 39 percent of the respondents.

Two basic reasons appear to be responsible for the narrow range programs and lack of necessary equipment, tools and instructional materials: (1) continued lack of school board, administrative, and financial support to expand and develop comprehensive programs by providing necessary space, equipment, and supplies; and (2) reluctance on the part of teachers to develop programs in new areas or areas where they feel unqualified or to make their needs known in an effective manner.

The practice of scheduling beginning, advanced, and special education students into the same class of industrial arts and titling many of these courses "Shop I or Shop II" was found to be a common practice in many schools but is one that should be eliminated. If this undesirable practice is followed, a teaching situation often arises where such extreme differences in experience and capabilities of students, make it relatively impossible to provide an effective program for all groups. By using specific course titles that are descriptive of the instructional program, both students and counselors will be better informed how a particular course might meet the needs of a student. Furthermore, if courses are sequential in nature, students without the necessary prerequisites should not be enrolled with students who have had previous experiences or requisites.

Very little evidence of cooperative programs in industrial education at the high school level was found in the study area. By cooperative programs is meant an educational program where the school and various industries cooperatively participate in providing a realistic situation where students can learn and develop the necessary skills for industrial employment. Usually the student attends his regular school for half-day participation in three or four regularly scheduled classes, one of which is related to his industrial employment situation. During the other half day, the student works part time in a selected and participating industry. Instruction in the classroom is correlated and related to the on-the-job experience through regularly scheduled visitations by an industrial education coordinator to the work situation.

From discussions with owners and managers of industrial production and and servicing concerns, it would appear that industry is generally willing to participate in such programs and cooperatively work with the schools in providing supervised work experience opportunities for high school youth.

Table 9.1 provides a summary of responses of high school level industrial arts teachers regarding beliefs as to what industrial arts should do.

TABLE 9.1

BELIEFS OF INDUSTRIAL ARTS TEACHERS ABOUT WHAT A HIGH SCHOOL LEVEL INDUSTRIAL ARTS PROGRAM SHOULD DO

Response Choices	Number	Percent
a. Provide broad experiences in many areas for general education purposes only.	0	0
b. Provide broad experiences in many areas for general education and pre-vocational purposes.	4	25.0
c. Provide broad experiences in many areas with the opportunity to specialize in a specific area at perhaps the 12th grade level.	3	18.7
d. Provide students with specific skills needed for entry into the skilled industrial production and servicing occupations.	2	12.5
e. Provide general education for some students, pre-vocational training for others, and specific job training for still other students.	7	43.7
Totals	16	99.9

Source: Opinionnaire to industrial arts teachers.

The response pattern in Table 9.1 indicates that most of the teachers of industrial arts believe that a high school industrial arts program should provide broad experiences for general education purposes, pre-vocational preparation for some, and the opportunity to specialize or acquire specific job training at the 12th grade level for still other students.

Post-High School Level

At this level, no real programs of trade and industrial education, operated and supported by the various educational institutions, were found in the entire study area. Individual courses in adult education programs have been offered at various times in the past in areas such as: electronics, machine shop, and drafting, but complete programs or sequences of courses that prepare individuals with entry level skills in trade areas are not available.

A few apprentice programs in manufacturing, service, and building trade areas have been operated at various times in the area by various agencies in cooperation with the apprenticeship office of the Vocational Division of

the State Department of Education. A few manpower retraining programs and other limited offerings comprise the remaining opportunities available for post-high school trade and industrial education. In general, opportunity for post-high school trade and industrial education is woefully lacking and the need continues to exist for a comprehensive organized total program of industrial education, at the trade and industrial level, administered by the educational agencies in the area.

In the area of technical training, no bona fide programs of technician training were found in the area of industrial education. Normally one would expect to find such programs offered and administered by the local community college. A program of paper technology is described in the college catalog, but in reality this program along with the engineering curriculum are transfer-type programs geared to four-year institutions instead of two-year technician programs leading to employment. A discussion with the engineering faculty at North Central Michigan College revealed a strong allegiance to "academic" engineering and technical work that can be transferred to four-year institutions. An extreme reluctance and hesitancy was expressed to become involved with terminal courses (employment-bound), programs of two years or less, or non-college credit type of technical offerings. This expressed view of the faculty was not in agreement with views expressed by others in the community regarding the role of a community college.

TABLE 9.2

TYPES OR LEVELS OF INDUSTRIAL EDUCATION THAT SHOULD BE OFFERED IN A POST-HIGH SCHOOL INSTITUTION SERVING THE COUNTY AREA

Response Choices	Must Offer		Could Offer	
	No.	Percent	No.	Percent
a. Intensive 3-9 months programs, full time for high school graduates or drop-outs, giving entry level industrial skills.	5	21.0	6	27.4
b. One- or two-year, full-time programs giving technician training for industry but little general education (not collegiate credit).	8	33.3	3	13.6
c. Two-year associate degree curricula providing education for subprofessional jobs in industry.	2	8.3	3	13.6
d. Adult education, part time to build skills and prepare for advancement those already working.	7	29.1	5	22.7
e. Intensive, full-time retraining programs.	2	8.3	5	22.7
Totals	24	100.0	22	100.0

Source: Opinionnaire sent to industrial teachers.

An analysis of Table 9.2 reveals that teachers of industrial education in the area support the notion that a post-high school institution must offer (1) one- or two-year, full-time, non-college credit programs providing technician training for industry with little general education, (2) adult education, part time to build skills and prepare for advancement those who are already working, and (3) intensive 3-to-9 months programs for high school graduates or dropouts providing entry level skills.

The need for post-high school short or long term training programs in industrial pursuits continues to exist. As reported in the occupational interest study of current 11th graders and presented in Table 9.5, approximately 21 percent of these students have indicated a desire to pursue additional schooling after high school graduation in the areas of skilled trades such as: auto mechanics, carpentry, and electrician; or technician training in areas such as electronics and drafting. Many individuals who could profit by such training are either forced to: (1) do without, (2) leave the local area and seek such specialized training at other two year community colleges or private technical schools, or (3) enter programs at the North Central Michigan College that they are not interested in or unqualified for with an excellent chance of becoming a college dropout or failure statistic.

Needed Areas or Programs of Industrial Education

Several sources of information were used to identify occupational areas where training programs are needed. Interviews with owners or managers of 30 industrial concerns, school administrators and teachers, business and lay persons, and responses to the opinionnaire by teachers of industrial education were several of the sources. Background demographic data about the area and the changes that have taken place were also studied.

In 1960, a total of approximately 24,000 persons were employed in the six-county area. Of these, approximately 16,000 or 66 percent were men and 8,000 or 33 percent were women. In Table 9.3 the distribution of these workers is shown according to the three industry groups which are closely related to the field of industrial education.

In 1960, 29.7 percent of the total persons employed were working in construction, manufacturing, or mining industries and 26.1 percent of total employed were male. Manufacturing of both durable and non-durable goods accounted for 18.9 percent of the total employed. Some of the major subgroups within the manufacturing category are listed below.

Manufacturing Group	Persons Employed, 1960
Furniture	770
Other durable goods	690

Fabricated metal products	686
Machinery except electrical	557
Motor vehicles and equipment	475
Food and kindred products	430
Primary metal industries	329
Non-specified manufacturing industries	324

TABLE 9.3

PERSONS EMPLOYED BY THREE INDUSTRY GROUPS AND PERCENT OF TOTAL EMPLOYED - 1960

	Industry Group				
	Construction	Manufacturing	Mining	Totals 3 Groups	% Total Employed 1960
No. employed female	65	813	0	878	3.6%
No. employed male	1,799	3,719	746	6,264	26.1%
Totals male & female	1,864	4,532	746	7,142	29.7%
% of 24,000 total employed 1960	7.7%	18.9%	3.1%	29.7%	

Source: U. S. Census of Population, 1960.

Not always has this concentration of employees been employed in these types of industries. In 1960, craftsmen, foremen, and kindred workers numbered 3,178, or 13.6 percent of total employed, which was a 90.7 percent increase over the 1940 figures. Operatives and kindred workers accounted for 19.8 percent of the total employed which represented an increase of 103.9 percent from 1940 to 1960. Likewise, service workers, except private household, rose 125.5 percent during the same period and accounted for 10.7 percent of the total employed in 1960. These occupational classifications represent those that appear to be experiencing the greatest expansion and growth in the six county area. All other groups showed a growth of less than 41 percent or have declined up to 71 percent.

From all indications, it would appear that the six-county area has over a period of years, maintained a significant and steady growth of manufacturing, construction, and service industry in line with the trends in Michigan and nationally. The population growth in this study area from 1940 to 1960 showed a net gain of 3,400 persons or a growth rate of 5 percent and corresponded very closely to the 3,000 more persons employed in 1960 than in 1940, with the majority of this growth in manufacturing, construction and service areas. It therefore becomes apparent that many individuals

have been forced to change their type of employment or leave the community. Furthermore, 34 percent of the 549 high school graduates of 1963 who responded to the follow-up study questionnaire were residing currently in a Michigan county not adjacent to the one they lived in when they graduated from high school or were living currently in another state. Twenty percent of those who moved indicated that they did so to either take a job or to seek a job. This and other evidence of mobility away from the area, and evidence of growing and declining occupations, makes it imperative that programs of vocational education not only reflect the local area needs but consider the larger community of the state and nation and their needs. All of these considerations are reflected in the final list of occupational areas where industrial vocational programs are needed (presented in Table 9.5).

In Table 9.4 the responses of teachers of industrial education in the six county area indicate the degree of importance they attach to providing vocational training for certain job classifications in a post-high school institution serving the area.

TABLE 9.4

IMPORTANCE GIVEN TO THE AVAILABILITY OF VOCATIONAL TRAINING FOR CERTAIN JOBS IN AN AREA POST-HIGH SCHOOL INSTITUTION AS SEEN BY AREA TEACHERS OF INDUSTRIAL EDUCATION

	Total Number of Responses			
Types of Jobs	-1 Point not important	+1 Point should be offered when school expands	+2 Points must be offered from the first	Total Points
a. Auto mechanic	0	7	6	19*
b. Small engine repair	0	6	8	22
c. Auto body & collision repair	2	7	4	13
d. Machinery repair	1	8	2	11
e. Appliance repair	1	6	5	15
f. Radio and T.V. repair	2	7	3	11
g. Electronics & instrumentation technician	1	4	5	13
h. Welder & metal fabricator	0	5	8	21
i. Machine operator	0	4	8	20
j. Machinist, tool & die maker	0	6	6	18
k. Architectural draftsman - residential, structural, and detail	0	7	6	19
l. Technical drafting, tool & die design, production illustration	1	6	4	13

TABLE 9.4--Continued

Types of Jobs	Total Number of Responses			Total Points
	-1 Point not important	+1 Point should be offered when school expands	+2 Points must be offered from the first	
m. Commercial artist	1	9	2	12
n. Building & construction trades, electrician, plumber, mason, carpenter	0	4	9	22
o. Engineering & mechanical technician	0	11	1	12
p. Production technician	2	9	1	8
q. Cabinet making & wood-working	0	5	7	19
r. Printing	2	7	1	6

*All points in this column were computed by adding points for each of the three types of responses according to the weighted scale of points for each response.

Source: Opinionnaire to industrial education teachers.

As shown in Table 9.4, teachers of industrial education in the six county area collectively feel that priority should be given to offering from the beginning in any post-high school institution vocational instruction in the following areas:

1. Small engine repair
2. Building and construction trades — electrician, plumber, mason, carpenter
3. Welder and metal fabricator
4. Machine operator
5. Auto mechanic
6. Architectural draftsman — residential, structural and detail
7. Cabinet making and woodworking
8. Machinist, tool and die maker.

A final list of occupational areas where vocational training programs are needed or critically needed in the six county area is given in Table 9.5.

TABLE 9.5

OCCUPATIONAL AREAS WHERE INDUSTRIAL VOCATIONAL PROGRAMS ARE NEEDED

Occupation	Needed	Critically needed
Appliance repair	X	
Auto body repair and painting	X	
Auto mechanic		X
Carpenter	X	
Chemical technician	X	
Draftsman — general		X
Electrician		X
Electronics technician		X
Foreman and supervisor training		X
Heating, air conditioning & refrigeration specialist	X	
Industrial production technician	X	
Machinery repair & general maintenance	X	
Machine operators		X
Machinist — tool and die makers		X
Marine repair and finisher	X	
Mason (brick, block, concrete)	X	
Metal fabricator (welder)		X
Outboard motor & small engine repair	X	
Pattern makers and woodworkers	X	
Plumbing and mechanical		X
Printer	X	
Radio and T.V. repair		X
Service station attendant		X
Structural draftsman	X	
Tool and die designer		X

Source: Data presented previously in this chapter, interviews with industrial and business leaders, and data concerning local, state and national employment and occupational trends.

Very few opportunities were found in the six county area for occupational training in the occupational areas that are listed in Table 9.5. Instructional programs for these areas would vary in level of training and type of institution. Normally some of these programs should be available at the high school level in the regular high school day school program or as part of an adult evening school program. Other offerings would be part of a community college curriculum providing collegiate credit programs of two years or less, as well as non-collegiate credit, short-term programs. Some

programs could be sponsored and administered by other community agencies such as, manufacturers association, builders organization, trade association, etc. The important consideration is that a wider range of programs and offerings in the industrial education area must be available to the youth and adults of the community than is currently available. Some estimates of annual entry opportunities for qualified persons in some industrial occupations are given in Table 9.6.

TABLE 9.6

ESTIMATES OF THE NUMBER OF TRAINED PERSONS THAT COULD BE PLACED IN SELECTED INDUSTRIAL AND TECHNICAL OCCUPATIONS IN THE LOCAL AREA[a]

Occupational Classification	Persons Needed
Auto mechanic (1st class)	35
Carpenter (1st class)	20
Chemical technician	2
Drafting technician	6
Electrician (1st class)	10
Electronics technician	4
Industrial production technician	4
Instrumentation technician	4
Machine operators	20
Machinist tool and die maker	10
Mason	6
Outboard motor and small engine repairman	10
Plumber (1st class)	10
Printer	6
Radio and television repairman (1st class)	10
Service station attendant	50
Tool and die designer	6
Welder (1st class, all position)	10
Total	223[b]

[a]Estimates are based on data acquired from interviews with industrial managers and owners and census data.

[b]While this figure reflects an estimate of the total industrial occupational needs at the present time in the six county area, it does not take into account the generally large number of persons needed in other parts of Michigan and the nation in the same occupation. These figures should not be used as the sole basis for course or program offerings because many individuals currently leaving the community to seek employment and training elsewhere, could obtain training in the local area prior to eventually being employed elsewhere as trained personnel.

Summary of Findings and Data Obtained and Presented in This Chapter

1. The community has recently recognized the need to provide appropriate programs of vocational education for those students who desire it along with the existing high school college preparatory programs.

2. With many high school graduates moving from the area, as reported in the follow-up study of 1963 graduates where 20 percent of the 34 percent who had moved some distance from home indicated they did so to seek or take a job, there appears to be a growing realization and commitment to the importance of providing these youth as well as others with a more appropriate type of education so they can effectively take their place in the world of work.

3. Because industrial arts is the primary form of industrial education offered in any of the area high schools, students interested in specific vocational training in industrial occupation are often denied the opportunity for such education at the high school level.

4. Industrial arts teachers in the area tend to believe that a high school industrial arts program should provide broad experiences for general education purposes, pre-vocational preparation for some and specialization or specific job training at the 12th grade level for still others.

5. In general, the industrial arts programs found in the K - 12 school districts are rather narrow and restricted with major emphasis on woodworking and drafting. Broader programs and offerings were found at Charlevoix, Cheboygan, East Jordan, Gaylord, and Petoskey. However, even these programs cannot be considered completely adequate in providing the broad range of experiences necessary for a quality industrial arts program.

6. Individual industrial arts teachers in the six county area are generally interested and recognize the need to expand their program offerings with 54 percent of the teachers who responded to the opinionnaire indicating the need for program expansion as one of the most important improvements to be made. Teachers revealed a willingness to expand programs, but many times they feel as if they are pushing against the tide with lack of administrative and financial support.

7. The practice of placing beginning and advanced students or slow learners together in the same class in industrial arts is a common practice, but one that should be avoided.

8. With the low density of population and the lack of major concentration in any single school district, it would appear that most of the specific industrial vocational education at the pre-employment level must take place at the post-high school level since no single school has a bona fide program of vocational industrial education. However, post-high school trade and industrial or technical education programs are practically non-existent in the six county area.

9. Approximately 20 percent of the current 11th graders who responded to the occupational interest questionnaire indicated a desire to pursue additional schooling after graduation in the skilled trades or technician training areas, if training could be obtained in their local area.

10. The North Central Michigan College has not developed or offered terminal programs in trade and industrial or technical education areas. The engineering and paper technology programs are transfer programs to four year institutions.

11. The engineering staff at North Central Michigan College is not interested in working with terminal programs of two years or less and short term technical offerings of non-college credit and does not see these types of offerings as a respectable function of the college.

12. In 1960, approximately 30 percent of the working force was employed in the combined areas of construction, manufacturing and mining.

13. Craftsmen, foremen, and kindred workers; operators and kindred workers; and service workers, except private household, are the fastest growing occupational areas in the six county area and show an average gain of better than 100 percent from 1940 to 1960.

14. In the building trades area, some apprentice programs have been operated locally by the local contractors organization with assistance from other agencies, but these programs are generally not very visible.

15. Programs of industrial vocational education appear to be needed in many areas. For example, some are: auto mechanics, small engine repair, machine operators, carpentry, masonry, electrical wiring, plumbing and mechanical, and metal fabrication.

16. There is little evidence of cooperative education programs functioning in the area of industrial education.

17. Programs or courses are needed for foremen and supervisory personnel in the manufacturing, production and construction industries.

18. Greatly expanded program offerings in vocational industrial education should be available at high school and post-high school levels to all students and adults in the community who need or desire such education.

E. Summary of Findings

Virtually no vocational education in the trade and industrial areas is available at the high school level and very little provided at the adult or post-high school level. Furthermore, no technical education or technician training is available at the North Central Michigan College. A commitment must be made by the community and all educational agencies to recognize the deficiency in their educational system and take immediate steps to remedy the situation. Because of the nature of the six county area and the impossibility of any single school district to independently develop and support a broad gauge program in industrial education, it becomes imperative that all agencies cooperatively work together to provide broader education opportunities to all youth and adults in the community.

CHAPTER 10*

EDUCATION FOR OFFICE OCCUPATIONS

The term, business education, is often used to mean office education, but in this study report the term business education is an all-inclusive one meaning education for all business functions including marketing. However, this chapter concentrates on office occupations while another chapter describes distributive occupations education.

This chapter discusses office occupations describing the present program of high school and community college preparation, outlining the needs for office education, and recommending what a total program should be in terms of the contributions of area vocational schools.

A. Procedures Used In This Study

As described in Chapter 1, many sources of information were tapped to gain insight into present programs and future needs. For office education, two staff members made observational visits to all schools, a questionnaire was sent to all business teachers in the six counties, interviews were held with businessmen and school administrators. Data was also obtained from government documents and from reports submitted by each school administrator.

B. A Comparative Model of Office Education

The field of office education may be defined as a program of instruction for people who are, or intend to be, employed in accounting, clerical, stenographic, secretarial, or office management positions. Such people may be employed as rank-and-file workers or may be in supervisory or managerial positions, and therefore, preparation for such positions includes education of a collegiate nature. Office positions may be found in all kinds of enterprises including industry, business, and government. It is important to recognize that many office occupations are highly skilled and call for considerable education even though no supervisory or managerial responsibilities are undertaken; consider, for example, the executive secretary, the data processing programmer, and the legal or medical secretary.

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*Written principally by Dr. Peter Haines with assistance through school observations and visitations by Edward Ferguson.

A comprehensive program of office education should serve both youth and adults: (1) those already employed and those who wish to be, (2) those who need refresher training after being out of the labor market, and (3) those who wish to up-grade themselves to positions of more responsibility and higher remuneration. A total program of office education must include a vocational program in the high school (or post high school), an adult program, and sub-professional curricula of collegiate nature beyond the high school.

A total program in office education provides not only basic skill training for low-level positions, but for higher level positions must also develop many other competencies required in the facilitating functions of the firm including supervisory ability, recording and communications skills of high standard, understandings of office management and systems, and a broad understanding of business administration and economic principles. A sound program of office education also contributes to students with occupational goals in other areas, such as managers of small businesses, by giving them office skills and understandings of office and record-keeping procedures.

In some places, including many schools visited, the term, commercial education, is used to describe office education. However, that term is very old-fashioned and is not suitable to describe a program of education that trains people for office functions.

General Business Education

While the field of business education has two vocational functions — one serving the office occupations and the other serving the distributive occupations — a third function is recognized as a necessary one. This is the role of business education in contributing to the general education of all individuals and to the pre-vocational education of those who will choose vocational office or distributive education.

General business education courses should give persons a basic understanding of our economic system, assisting them in their everyday roles as consumers of goods and business services and as economic citizens. Typically, courses such as General Business in the 9-10 grade and senior courses such as Advanced General Business, Consumer Economics and Economics are useful to fulfill this function. At the community college level a similar function can be served by a course in Personal Finance. The function of general business education also includes providing individuals with personal business skills such as typewriting.

Business education also has a pre-vocational function, that is, to provide

occupational orientation to business, background information about business, background information about business, and basic skills needed in the vocational programs. At the high school level courses in general business and first year typewriting serve this pre-vocational function. At the college level, courses in Introduction to Business, Typewriting, Management, Basic Accounting, and Economics provide for this pre-vocational function.

TABLE 10.1

WHAT BUSINESS TEACHERS BELIEVE THE HIGH SCHOOL BUSINESS CURRICULUM SHOULD DO

Purpose of the Curriculum	% Teachers Choosing
a. Give only basic entry skills for office jobs, leaving advanced training to the post high school	30%
b. Give only clerical training, postponing shorthand until post high school study	0
c. Provide only personal-use business skills and knowledges leaving vocational education to the post high school	0
d. Prepare students for initial entry and first advancement without needing education beyond high school	60%

Source: Opinionnaires to high school teachers.

C. Employment Needs in the Office Area

The total employment in the office occupations in the six-county area is relatively low, being only 9 percent of the total labor force in the Top-O-Michigan area. Proportions of office workers in the counties are about the same with the highest proportion (11 percent) being in Emmet County. This limited employment for office workers is due generally to the small number of manufacturers and other businesses of large scale. A majority of the office employees work for government agencies.

The clerical-secretarial work force in the area has increased according to census data by only 16 percent from 1940 to 1960. However, the increase was actually closer to 50 percent because prior to 1960, male salespeople were counted as clerical workers in the census. This fact also accounts

for the one-third decrease in male clerical workers from 1940 to 1960. On the other hand, the census data reveal that female office employment doubled from 1940 to 1960.

In general, it can be said that the market for office workers in the area is not strong. But, two other factors must be taken into account. First, there is a strong demand for qualified stenographic and secretarial workers in urban areas to which local high school graduates will migrate. Secondly, many female office workers have only a short tenure on the job before leaving the employment market to raise a family. This tenure means more trained workers can be absorbed into a small labor market.

TABLE 10.2

CHANGES IN OFFICE OCCUPATIONS EMPLOYMENT, MALE AND FEMALE, 1940-1960

County	1940	1960	Percent Change
1. Emmet	596	581	-2.52
2. Otsego	136	210	+54.41
3. Presque Isle	220	265	+20.45
4. Charlevoix	294	342	+16.33
5. Cheboygan	334	380	+13.77
6. Antrim	161	248	+54.04

Source: U. S. Census of Population.

Employers report a severe shortage of qualified stenographic and secretarial workers, particularly those with the ability to take responsibility for the operation of a small to medium-sized office. There apparently are few openings for bookkeepers and accountants in the six-county area although in many small offices the clerical workers perform bookkeeping and record-keeping operations. There is, in other areas of the state to which students might migrate, a shortage of office managers and persons who might be described as accounting technicians — those with two years of collegiate preparation in the applied accounting area. Another training need in the area is in providing owners and managers of small businesses with training in office routines and simple record-keeping procedures.

D. The Adequacy of Present Curricula for Office Education

At present almost all education for office occupations is conducted by the high schools although a limited curriculum exists at the community college.

The High School Program

All high schools offer some courses in the area of office education. The typical pattern even in small schools is to offer first year typewriting, second year typewriting, and one year of bookkeeping. Beyond this, two-thirds of the schools offer one year of shorthand. Less than half the schools offer second year shorthand and in these the enrollments are small, generally under ten. The second year typewriting classes are also small, with enrollments generally under 12. Only six schools offer an office practice class that would provide an opportunity to integrate skills into job competency patterns, but many schools use their second year typewriting as a place to teach office machines. Enrollments in bookkeeping are very large considering that few bookkeeping jobs are available in the area.

The schools are serving a personal-use need for typewriting with their first year courses and a large majority of high school graduates have had typewriting. Over half the schools also offer general business, usually in the 9-10 grade thus helping students to acquire consumer skills and understandings.

The facilities, equipment, and instructional materials used for office education courses are in most cases quite adequate to provide vocational competency. For example, typewriting tables are not adjustable in many cases and do not provide useful work space. The typewriters themselves are generally adequate although in a number of cases not well maintained. Housekeeping in the rooms showed need of improvement. There are no shorthand tape laboratories available for building shorthand competencies — this is to be expected in the size schools in the area. If real vocational office education is to occur, office-style laboratories must be added; no school at present — even the latest facility — has an adequate office laboratory equipped with furniture and fixtures arranged to simulate an office. Few schools have any late model office appliances. In general, the facilities are not adequate for vocational office education and in most schools the small enrollments will prohibit development and all-day use of such laboratories.

The interviews found little contact by schools with business such as teachers belonging to local businessmen's groups, talks by businessmen in the classrooms, or cooperative occupational training in the business community. Schools did not generally provide opportunities for youth leadership development through business education clubs.

TABLE 10.3

BUSINESS TEACHERS OPINIONS AS TO HOW WELL THEIR SCHOOLS PREPARE STUDENTS FOR EMPLOYMENT

Level of Preparation That the School Provides	Type Position Prepared For		
	Stenographic	Clerical	Bookkeeping
a. Minimally qualified for entry jobs	10%	20%	80%
b. Well-qualified for entry jobs	40%	80%	20%
c. Has background for advancement	20%	--	--
d. Not qualified or not preparing in this area	30%	--	--

Source: Questionnaire to teachers.

Facilities which are new or adequate in space with at least minimally adequate equipment are found at Charlevoix, Petoskey (under construction), Gaylord, Onaway, and Cheboygan Catholic. Space for program development is available at Johannesburg and Boyne City.

In general, the teaching staff are desirous of preparing students for competency in the office, but they fail to have the necessary facilities and deal with limited enrollments with which to offer advanced courses. By and large, the faculties need, and want, upgrading not only to develop better teaching methods, but to develop an understanding and appreciation of the meaning of vocational office education.

The Adult Program

Schools offer occasionally an adult course in the business field, usually typewriting or bookkeeping. There is no comprehensive program of adult education in the area and practically no courses tailored to the needs of people. However, NCMC in the Fall semester, 1965, will offer an adult course for business managers.

The Post High School Program

There is no place in the area where students can attain post high school training in office education unless they enroll in the community college.

For example, students who did not obtain office courses in high school cannot obtain the equivalent of high school level vocational instruction without going downstate and enrolling in a tuition private business school. Those who had some courses in high school but who want advanced vocational training, such as advanced shorthand, cannot obtain it in the area. There is no doubt that this keeps many young people at low wage rates because they have no opportunity to upgrade their skills and advance to higher positions. It also poses a real problem for older women who want to return to the labor market and need to relearn and refresh office skills that they once possessed.

The Community College Curriculum

North Central Michigan College according to the administration has not in its initial development stressed the development of two-year employment bound curricula in the business area. The program at present consists of two curricula; the stenographic-clerical and the general business.

The general business curriculum is primarily accounting-based and contains no broad business education in the fields of finance, marketing, introduction to business, or management. If it is to be transfer-oriented, it is found to require more accounting than senior colleges would wish and insufficient general education, particularly in psychology, sociology, social sciences, and mathematics than four-year colleges desire.

The stenographic-clerical curriculum is actually an employment-bound curriculum if the courses required indicate the purpose of the program. For transfer purposes, the program lacks stress again on general education. Whether a two year curriculum should stress "clerical" competencies is questionable, but there is no doubt that executive secretarial levels are justified in a community college. Analysis of the curriculum reveals that 15 semester hours are devoted to shorthand and transcription, almost a third more than most experts in this area would feel justifiable. The typewriting and office procedures courses appear desirable, but a course sequence in office management and office systems, including units on data processing orientation, would be a desirable addition. Generally less accounting should be required in the stenographic curriculum with additional effort expended on general education. It is recognized that students from many local high schools come to the college with inadequate office skill standards of achievement, but it is not the responsibility of the college to remedy these deficiencies for credit.

The staff appear well-prepared for their positions. Facilities are very inadequate as everyone recognizes they will be until a new building can be constructed. Library holdings appear after a brief check to be up-to-date and extensive considering the small enrollments.

TABLE 10.4

TYPES OF EDUCATION FOR BUSINESS WHICH BUSINESS TEACHERS THINK SHOULD BE OFFERED IN A POST HIGH SCHOOL INSTITUTION SERVING THEIR COUNTY

Type of Business Program	Proportion Believing		
	Must Offer	Could Offer	Don't Know or No Response
A. Intensive 3-9 months programs for high school graduates or drop-outs giving entry skills	60%	30%	10%
B. One-two year programs, non-collegiate, giving technical training for business	50%	30%	20%
C. Two-year associate degree curricula in sub-professional business areas	30%	60%	20%
D. Part-time adult courses for those already employed	50%	50%	--
E. Intensive, full-time retraining program in business areas	30%	40%	30%

Source: Questionnaire to teachers.

E. Findings Regarding Office Education

1. Facilities in most schools are very limited with only those at Petoskey (under construction), Gaylord, Charlevoix, Onaway, and Cheboygan Catholic adequate in terms of space and equipment. Even in these schools a vocational office practice laboratory that simulates job situations does not exist.

2. Less than half the schools offered advanced shorthand and less than a third offer "office practice." Most schools concentrate on two years of typewriting, one year of shorthand, and one year of bookkeeping.

3. The large enrollments in bookkeeping are questionable since few bookkeeping jobs exist in the area; it may be that many boys enroll in bookkeeping because small schools offer them a limited choice of elective courses.

3a. No schools offer a cooperative office education program.

4. There are no opportunities at the post high school level except in the community college or downstate private business schools for high school graduates to get advanced training or initial training for office occupations.

5. The highest standards of achievement are found generally in the parochial schools.

6. The community college has in its initial development limited its business curriculum to transfer-oriented programs. However, the general business curriculum is over-weighted with accounting according to the standards of four-year colleges. The stenographic curriculum appears to utilize far too much credit for shorthand and transcription and has inadequate general education.

7. Employers report that high school graduates are not well prepared for office positions requiring advanced skills and judgment.

8. In general, opportunities in office occupations are limited in the area, but opportunities downstate are abundant.

8a. Except in Petoskey, Gaylord and Cheboygan the opportunities for placing cooperative office trainees are quite limited.

9. Data processing is not used much in local business and course preparation in this area is not necessary although all office students should undergo an orientation-type unit.

10. School administrators are very much interested in developing shared-time programs that will assist in acquiring more adequate facilities and teaching staff with more comprehensive preparation. In particular, the parochial schools are desirous of shared-time programs.

11. Business teachers generally believe that their students are well-prepared for entry-level jobs and have the skills for advancement without obtaining further training.

F. Summary of Conclusions Regarding Office Education

1. For youth in high school, the opportunities for training that develop entry-level competence are very limited; few are adequately trained for stenographic occupations.

2. For adults, a comprehensive program is lacking and such programs should be offered in several centers in the area.

3. For youth who are out of high school, no non-collegiate instruction is available in office education. What is needed is a program that: (a) teaches advanced skills to those who have had beginning in high school or (b) provides a complete training in clerical or stenographic occupations for those without prior training in high school.

4. Two-year programs of collegiate quality are needed to prepare for positions as accounting technicians, executive secretaries, and office managers.

5. Opportunities for office employment in the six-counties are limited and youth must be prepared at a level that will enable them to compete with the high employment standards that exist in urban labor markets.

6. Most schools in the area have such small enrollments and limited resources that they should not attempt vocational office education, but limit themselves to general and personal-use business courses plus pre-vocational courses.

7. A program of in-service upgrading for teachers is most needed, including not only principles and methods of curriculum and instruction, but also occupational experiences in business.

SECTION III

A MASTER PLAN FOR IMPROVING AND EXPANDING VOCATIONAL-TECHNICAL EDUCATION IN THE TOP-O-MICHIGAN AREA

This section contains two chapters which form the heart of the study and provide a framework within which local groups can think and work as they plan and carry out action programs to improve vocational-technical education. The first chapter (11) summarizes the major findings and conclusions relating to the over-all study; findings for each area of occupational education, such as agriculture, are to be found in prior chapters wherein each researcher has reported in depth on his field. Local teachers, administrators, and study groups will wish to refer to these and study them in detail as they contain many specific suggestions for developing the program in each field.

The second chapter in this section (12) provides over-all recommendations for improving vocational-technical education in the Top-O-Michigan area, spelling out a plan of action and suggesting ways of implementing the recommendations of this study. Chapter 12 also provides recommendations for each field of occupational education.

CHAPTER 11

SUMMARY OF OVER-ALL FINDINGS AND CONCLUSIONS

The research team in analyzing and combining its collective best judgments, reports the following general findings and conclusions.

A. General Findings

1. According to a survey of the 1963 high school graduates:

    a. about four out of ten had left the county where they had lived at graduation,

    b. almost 50 percent of the graduates had gone on to some type of post high school education with about half of these going on to four-year colleges and universities,

    c. a good many graduates reported having to go out of the Top-O-Michigan area to obtain needed occupational education in trade and technical schools or private business schools,

    d. at a date two years after graduation, almost 7 percent of the graduates were unemployed and looking for work,

    e. about 50 percent of the graduates were earning $100 or more per week, but 60 percent of these high wage earners had moved to a county non-adjacent to the one where they lived at graduation,

    f. over half of the graduates reported that either they wished for more training for their job than they had obtained in high school or wished they had had the opportunity to train for another kind of employment.

2. There is at present little or no vocational education offered in the high schools of the area. Facilities for vocational education are generally inadequate. Exceptions exist in the new facilities recently opened in Gaylord and in the building presently under construction in Petoskey; in both situations facilities will be unmatched by other schools in the area.

3. The faculties in vocational areas are generally not well equipped to provide vocational education and upgrading of the staff will be necessary.

4. There is powerful belief among superintendents and principals of the need to expand and improve vocational-technical education. In general, these administrators recognize the limitations that small school size places on the ability to provide suitable education for employment. They are recognizing the need for shared-time programs and other cooperative actions among school districts and in one intermediate district are on written record as to the necessity of providing area vocational study centers.

5. Parents of 11th graders were found to be very favorable to the need to provide more vocational education opportunities in the area, were realistic about the abilities of their children, and supported the notion of extra taxation to support improved vocational-technical education.

6. School administrators and the intermediate district superintendents were most concerned about vocational education and worked closely with the research team to identify needs.

7. Employers who worked with the survey team cited numerous examples of the needs for improved vocational education both by those who need preparation for employment and those who though employed need upgrading. These business leaders pointed out clearly the need for a more productive manpower pool if economic development of the area is to accelerate. The lack of a post high school program to provide semi-professional education and upgrading of small business management was pointed out clearly.

8. The schools of the area offer a very limited program of occupational education for adults, particularly one which would provide continuing education for professional people, for business owners and managers, and for technicians.

9. The programs of occupational education which exist illustrate the need on the part of educational agencies to plan more closely with community agencies in order that local needs be met. Some recent actions, including the study of nursing education needs, are good examples of studies carried out in close cooperation with community groups.

10. The Dean at North Central Michigan College is very favorable to the idea of providing technical education in his institution and is cognizant of the need for vocational education in the Top-O-Michigan area. The Dean further recognizes the limitations of his institution which in its infancy must choose carefully which educational needs must receive priority for development. Therefore, to this point terminal, employment-bound curricula have not been created.

11. The area of the study is coincident with two intermediate school districts, the superintendents of which are convinced of the need to improve vocational education. Each, however, is cognizant of the geographic spread of the area that works against one centralized site for vocational-technical education.

12. In most of the high schools there is a lack of emphasis upon occupational guidance with insufficient trained counselors to assist students and parents in understanding the modern world of work. A survey of graduates showed that they put little faith in the limited guidance provided by their schools. Likewise, there is no visible source of occupational guidance assistance available to adults. The MESC at the time of the study was initiating an attempt to meet such needs.

13. The community college at Petoskey is located physically to the far western boundary of the Top-O-Michigan area. There is evidence that groups in other parts of the study area are reluctant to view the college as the primary focus of vocational-technical education for all districts.

14. Leadership for vocational-technical education is diverse. At the time of the study, one district (Petoskey) had a vocational director and he was part time. One intermediate school district had appointed a vocational consultant on a full-time basis as of July 1, 1965. One other district (Gaylord) while not having a vocational director has a superintendent who had given much time and leadership energy to vocational education resulting in a new addition for that school. (Note: as of September 1965, when this report was being written, a full-time director of vocational education was reported to have been hired by the Petoskey system.)

15. Economic characteristics:

    a. The region shows slow economic growth and wage rates and taxable income are relatively low (almost a third of the households had an annual disposable less than $3,000).

    b. The tourist and recreation income is rising rapidly contributing much to the regions growth.

    c. Unemployment is above the state average.

    d. State equalized valuation in terms of per pupil to be supported in the area is much below the state average.

16. Employment characteristics:

    a. The area is dominated by a business-professional economy

providing goods and services including professional, health, and recreational. Manufacturing is an important source of employment but does not account for over 20 percent of the labor force.

b. In manufacturing a large proportion of the labor force are women operatives, semi-skilled and paid at low rates. However, construction service and repair businesses provides opportunities for craftsmen and other skilled workers.

c. The numbers of farmers and farm managers have declined by 70 percent since 1940, due to farm consolidation and changed land use, while other unskilled labor employment shows a similar decline.

d. Increases of over 100 percent have appeared in service occupations.

e. The number of female office workers has increased by almost 200 percent since 1940 while the number of craftsmen and foremen have almost doubled.

f. The employment of males actually decreased slightly from 1940-60 while employment of females doubled.

17. Some MDTA training programs have been conducted in the area, principally by the Gaylord system, and contacts have been made for additional such programs as well as apprenticeship programs.

18. The NCMC has sufficient acreage on its new site to accommodate easily facilities for a technical institute building including necessary parking.

19. Present law provides for use of both state and federal vocational education funds to reimburse the costs of vocational-technical instruction as well as costs of building and equipping facilities to be used on an area basis. While such reimbursement can by law be as much as 50 percent, statements of the state vocational education staff indicate that a 25 percent reimbursement factor may be a much more reasonable expectation on which local planning can be based.

20. Public Act 246 (1964) of the Michigan General School Laws provides that school districts may operate vocational-technical programs on an area basis with the Intermediate School District serving both as the taxing unit and the contractual unit with local school districts and/or community colleges. Where area schools are operated to provide high school level vocational training, no tuition can be charged students.

21. Public Act 237 (1964) provides that community colleges may serve as area vocational-technical education units to provide both post high school education for employment and vocational education for those still in high school who need training on an area basis. The act further provides that community colleges in providing such education may expend monies for buildings and program operation both within and outside its district and may levy taxes for the purpose of providing vocational-technical education.

B. Major Conclusions

Regarding the Present Availability of Vocational-Technical Education:

1. For youth in high school, there is at present a very limited opportunity for education of the variety and scope necessary for employment competence. Most high schools offer little vocational education that has the depth of content, the adequacy of instructional facilities and materials, or the teacher competency required to develop occupational competency required by the modern world of work. By and large, less than 10 percent of high school youth have access to adequate vocational offerings. For example, in agricultural education present programs are limited to production agriculture and are available in only seven schools, in distributive education there are no schools offering programs for the area of retailing, marketing, or merchandising even though the area has a strong service and distributive economy, in office education there are courses offered in almost every school but are generally limited to first year courses in usually inadequate facilities with insufficient laboratory-type offerings, in industrial education there are limited offerings generally in woods and metals and most laboratories are inadequate, in home economics education there are courses in most schools but the emphasis remains on foods and clothing and no schools offer courses for wage earning home economics occupations.

2. For youth who have graduated or dropped out of high school and who are available for full-time vocational preparatory instruction, there is no post high school vocational instruction available that prepare for occupational entry. Considering the lack of high school vocational programs, this gap at the post high school level is serious if youth in the Top-O-Michigan area are to compete successfully in the labor market with those youth fortunate to be educated in urban areas.

   Study shows that a program of two-year collegiate technical and subprofessional education is badly needed since none is presently available. The programs at NCMC are transfer-oriented as the present policies of the board and administration indicate they should be.

3. For adults employed or self-employed but in need of upgrading or retraining, a comprehensive, coordinated program approach to adult, continuing education does not exist even though most districts and NCMC offer some courses. The staff concludes that what is badly needed are offerings tailored to the needs of owners, managers, and supervisors of small business which form the hub of the area's economy. Also needed are programs of adult education to improve the skills of present employees which will make them more productive and able to justify higher compensation because of improved productivity.

Regarding the Need for Vocational-Technical Education:

1. Follow-up studies show that less than 40 percent of the high school graduates go on to four-year programs. Together with the lack of vocational offerings in the high school, this leads to the conclusions that annually at least 1,000 graduates and drop-outs need some level of vocational preparation.

2. Development of a trained manpower pool is essential if the economy of the area is to rise beyond its present slow rate of growth. Further expansion of the area's service industries and the attraction of manufacturing and processing plants will be impeded unless additional vocational-technical education can be developed.

3. More young people would choose to remain in the area if their skills were such as to enable them to raise their standard of living.

Regarding the Improvement of Vocational-Technical Education:

1. Most schools are under 400 enrollment and thus are far too small to provide adequate vocational programs except at an unusually high cost. Therefore, some form of a vocational school is needed that serves students on an area basis. An area school would provide enrollments sufficient to justify a variety of vocational programs of quality at a reasonable cost.

2. Driving times at prudent school bus speeds are so great as to require that area vocational education be provided in several locations in the six-county area rather than in a central facility.

3. The area's sole community college cannot be the vehicle for a total program of vocational technical education because of its location on the west side of the area, its financial base which is limited to one county, and the perception of citizens in other counties who have a more local point of view.

Regarding the Possible Alternatives for Improved Education:

Several courses of action can be concluded as possible remedies for the problem of improving vocational-technical education in the Top-O-Michigan area. Each is outlined here; the recommended alternative is presented in the next chapter.

1. Create a central, six-county area vocational school that offers a complete vocational-technical program. This plan at first is ideal and was suggested by many people; it has both advantages and disadvantages:

   a. The total enrollment base, grades 9-12 would be 4,700, permitting development of a comprehensive program at a least cost factor.

   b. A large center would have visibility and be seen by all as a center of opportunity for vocational-technical education.

   c. Location in the center of the area (near Indian River) would create for share-time high school programs school bus driving times of over an hour and a half each way.

   d. A rural location provides no center for occupational experiences for students and creates problems in acquiring staff in terms of housing, shopping and religious and social organizations.

   e. A center that must be operated under contract with two intermediate school districts presents legal and political problems.

The research team concludes that a centralized facility for so large an area is undesirable.

2. Develop a post high school vocation school and technical institute at North Central Michigan College in Petoskey. This plan would:

   a. have the advantage of a centralized facility to provide a comprehensive program at least cost,

   b. use an established institution as a developmental base,

   c. use a location which is too far removed from a good many people, is seen by many people as not "their" institution, and creates long driving distances,

   d. presents a problem of garnering financial resources from two intermediate school districts,

   e. leaves the high schools with their present inadequate vocational programs and forces students to postpone vocational training until after high school.

The research team concludes that this alternative is not desirable and is more suitable to an urban area downstate.

3. Create one or more area vocational schools in each intermediate school district. These schools would serve high school pupils on a shared-time basis and out-of-school youth and adults on both a full-time and part-time basis.

   a. This plan allows each intermediate district to proceed at its own pace and provides for more local control.

   b. Good facilities now existent (such as those at Gaylord and under construction at Petoskey) can be fully utilized.

   c. Transportation times are reasonable for shared-time high school programs.

   d. Area schools provide a regard for the loyalties of local citizens and their attitudes for support.

   e. Schools located in larger communities provide for closer contact with business and provide employment opportunities for students in cooperative programs.

   f. When several centers are used for area schools, some have enrollments that are minimal for the development of comprehensive programs.

CHAPTER 12

RECOMMENDATIONS FOR IMPROVING AND EXPANDING VOCATIONAL-TECHNICAL EDUCATION IN THE TOP-O-MICHIGAN AREA

A. Over-All Recommendations

After analyzing all pertinent data collected by various staff members, the research team makes the following major recommendations:

1. The two intermediate school districts should cooperatively, but separately, establish by contract with local districts three area vocational schools.[1] These three centers would utilize some facilities which already exist, but some additional facilities need to be constructed. These area vocational schools would serve: (a) youth in high school on a shared-time basis with their home high school, (b) youth who have dropped out of or graduated from high school and who are not employed and available for full-time schooling, (c) and adults who are employed but who need upgrading or retraining.

   a. In the West Intermediate District, one area school would be operated by the Petoskey District out of its new facility. The Petoskey school, which might be designated as the "Emmet-Charlevoix Area Vocational School," would also use some facilities as branches at East Jordan and Charlevoix by subcontracting. The "Emmet-Charlevoix AVS" would provide for the districts of Petoskey, Petoskey St. Francis, Charlevoix, Boyne Falls, Boyne City, East Jordan, Pellston, Alanson, Harbor Springs, Ellsworth, and Central Lake.[2] These districts would give the E-CAVS an enrollment base of 2,600 in grades 9-12. Anticipated enrollments would be 150-175 full-time students in the post high school curricula and 600-700 in the shared-time high school curricula. (See chapters on each occupational field for details as to curricula to be implemented.)

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[1]The survey staff recommends that local citizens organize a committee to determine if the two intermediate districts should be merged thus creating a vocational-technical authority for the entire area.

[2]The staff recommends that Central Lake consider joining the area vocational school that may be organized at Mancelona in the Traverse intermediate district.

b. In the East Intermediate District the long north-south geographic spread dictates the recommendation of establishing the two area vocational schools, one at the new facility in Gaylord and the other in a new facility to be constructed in Cheboygan.

The Gaylord Area Vocational School would serve the districts of Gaylord, Gaylord St. Marys, Wolverine, Johannesburg, and Vanderbilt. (Note: Although Grayling and Frederick are outside the area included in this study, the staff recognizes their need and urges consideration of inviting these districts to participate in the Gaylord AVS.) The Gaylord AVS would have an enrollment base of 700 in grades 9-12, a small enrollment but workable. Anticipated enrollments would be 90-100 in post high school curricula and 200-225 in the shared-time high school programs.

The Cheboygan Area Vocational School would provide for the districts of Cheboygan, Cheboygan Catholic, Mackinaw City, Inland Lakes, and Onaway. (Note: Although Rogers City was outside the study area, that district would be within easy driving distance of the Cheboygan AVS.) The Cheboygan AVS would have an enrollment base of 1,400 in grades 9-12 and anticipated enrollments would be 100-150 in the post high school curricula and 400-450 in the shared-time high school vocational programs.

c. Each area school would be operated by contract with the local district board accepting a contract with the Intermediate School District. (1) The local board would operate the AVS as a separate school with its own administration (director or principal) even though high school facilities are used. This separateness of administration is necessary because the AVS is a post high school institution that serves high school students also. (2) The AVS administration should establish for each occupational area an advisory committee representing all districts cooperating in the AVS. (3) The intermediate districts would assign their vocational consultant to the AVS as a part-time member of the administration. (4) Sources of funding for the AVS would be operating millage and bond revenues approved by citizens of the intermediate district, state and federal vocational appropriations, and funds from specialized laws such as the MDTA, the Economic Opportunity Act, and the Elementary-Secondary Education Act. By law tuition can not be charged pupils in an area vocational school.

d. Each of the three AVS would provide a set of basic vocational curricula. In the case of the Emmet-Charlevoix AVS, two such "sets" might be offered, one at the Petoskey facility and the other at the East Jordan facility, to reduce travel time for shared-time vocational students. In addition, each AVS might "farm

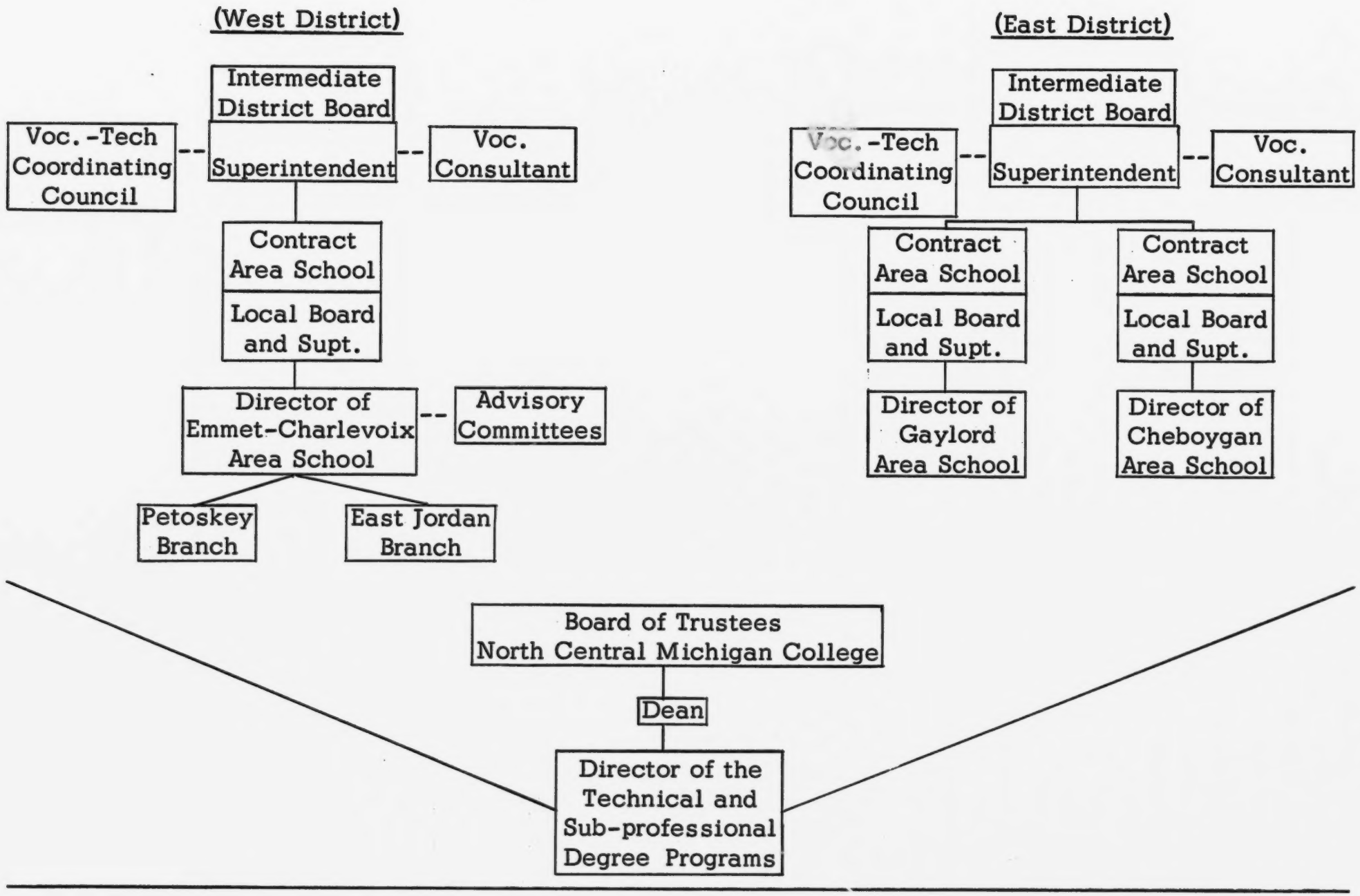

FIGURE 12.1

RECOMMENDED ORGANIZATION PLAN FOR VOCATIONAL-TECHNICAL EDUCATION IN THE TOP-O-MICHIGAN AREA

out" specialized curricula to another school which already possesses a superior laboratory for that speciality. Some adult courses would also be "farmed out" to local district schools to meet specialized local needs.

e. Each intermediate district should form an over-arching Coordinating Council for Vocational-Technical Education which would advise the director of the AVS. The purpose of the Council would be: to review training needs in the area, review curriculum offerings, pull together resources and citizen support, and publicize the efforts in vocational-technical education. Membership on each council would be appointed and consist of three or four district school administrators; four to six representatives from business, industry, agriculture, and labor. The vocational consultant from the intermediate district, the AVS director, and a representative from NCMC would serve in ex-officio roles.

   The Councils from each intermediate district should meet together quarterly to coordinate the vocational-technical efforts of the three AVS and review curricula for gaps or duplication.

f. In order for high school facilities to function as a post high school facility for youth and adults who are out of school and wish to be treated as adults, several physical facilities are needed: a student lounge and study center separate from the high school group, a technical-vocational library, and an occupational counseling center. Likewise, separate administrative and faculty offices are desirable as is a separate entrance.

2. <u>North Central Michigan College should develop degree-level technical and sub-professional curricula through formation of a Division of Technical Education and serve the needs of the entire Top-O-Michigan area</u>.

   a. The needed curricula should be collegiate in nature, supported by sound general education, and be approximately two years in length. Care should be taken to ensure that these curricula are neither compromised by a transfer-orientation nor duplicates of the vocational level programs offered by the area vocational school post high programs.

   b. The technical and sub-professional curricula have employment as their purpose; these programs would develop under the leadership of a Director of Technical Education who reports to the Dean of the College.

   c. Facilities for the technical programs should be located in one building to assist in integration of the various curricula and build interrelationships among the technical staff. (Note: The

staff cautions against the suggestion of some people of sharing facilities with a high school or area vocational school. Experience in other states shows that sharing with high school students creates an unfavorable image among students and citizens and often leads to a deterioration in the quality of instruction.)

3. An alternative recommendation for Technical Education. The researchers do not normally make alternative recommendations, but feel obliged to in this case. NCMC is at present quite small and its financial base is limited to but Emmet County. If the NCMC Board of Trustees should decide that if its resources and the need to develop further the general academic program will combine to prevent immediate development of a comprehensive program of technical education and if tuition for out-of-district students from the Top-O-Michigan is to be high, then the two intermediate districts should consider banding together to create technical curricula in the area vocational schools. Some technical curricula of general interest could be operated at each AVS while some specialized curricula might be offered in only one school since older technical students can commute longer distances or even board near the school.

4. The intermediate districts should create an Occupational Counseling Program for Adults, operating such programs through the AVS. This program should be developed in cooperation with the MESC and local industry personnel officers. Until such times as case loads become heavy, adult counselors could be available on a schedule of "X" days and evenings per month in each AVS.

5. With the establishment of area vocational schools, it is recommended that high school districts of under 300 enrollment concentrate on sound general education that undergirds vocational education and on pre-vocational education, such as industrial arts, thus freeing resources used presently to support limited vocational curricula. Schools of this size cannot expect to operate vocational programs of substance and depth and should utilize the shared-time program with the area vocational school.

6. The East Intermediate District should create a position of vocational consultant and fill the position at the earliest opportunity.

7. Intermediate district superintendents should undertake in concert with local districts a follow-up study of graduates every two years.

8. It is recommended strongly that citizen leaders from the Top-O-Michigan area form immediately what might be known as the "Top-O-Michigan Foundation for Vocational-Technical Education." The purpose

of this foundation would be: to foster economic development through improved manpower training, to pull together resources from business, industry and agriculture to improve vocational-technical education, to undertake activities to raise the occupational aspirations of youth and adults, solicit gifts and grants to support scholarships for worthy students and provide technical libraries and special equipment for area vocational schools and technical programs, and to bestow recognition awards upon outstanding students and faculty.

The Foundation should have a Board of Trustees chosen from the ranks of outstanding local business leaders and of citizens who believe in the worth and need of vocational competence.

9. In order to insure the systematic development of the proposed AVS it is further recommended that the school administrators begin immediately to identify problems associated with shared-time programs such as transportation, class schedules, scheduled extra-curricular activities and others, and to devise possible alternatives as solutions.

B. Recommendations Regarding Education for Agricultural Occupations

Educational programs designed to help youth plan and prepare for careers in agricultural occupations should be conducted by public schools at both the high school and post high school levels. Also, educational programs designed to improve occupational competence of adults, or persons already employed, in or interested in agricultural occupations, should be available through the public schools.

High School Level Programs of Instruction

The instructional programs should reflect the newer and broadened objectives of vocational agriculture, should recognize the varying levels of agricultural occupations, and should reflect adequate utilization of local conditions for effective instruction. Some specific recommendations are:

1. Students interested in agricultural occupations (farming and/or other agricultural occupations) should have an opportunity to enroll in agricultural courses, regardless of home background or experience.

2. A major purpose for vocational agriculture courses at the 9th and 10th grade levels should be to provide educational experiences which assist students to make intelligent career plans in view of their own abilities and opportunities in agriculture.

3. Sufficient flexibility should be provided in the schedule of classes for students to pursue programs meeting their needs without major barriers between occupationally oriented courses and other courses.

4. The 10th grade class in agriculture should be a laboratory-type course with emphasis on development of understandings of basic principles for production of plant and animals. Demonstrations, group projects, and individual projects at the school, within the community, and at the homes of students should be utilized.

5. If other courses are available in which students may learn principles of applied plant and animal science, principles of industrial materials and processes, and principles of community leadership, then the specialized courses for students interested in agricultural careers should be started at the 11th and 12th grade levels.

6. The specialized courses at the 11th and 12th grade levels should be developed around at least four major occupational areas:

   a. Horticulture occupations to include production and marketing of fruit, landscaping, greenhouse and nursery work, and floriculture.

   b. Agricultural machinery and mechanics to include major emphasis on farm power, machinery and equipment appropriate to the farming and forestry of the area.

   c. Farm supply, sales and service occupations with major emphasis on entry level positions in sales and service and on the development of understandings of the functions and organization of agricultural businesses.

   d. Farming and farm management occupations with emphasis on application of theory and practices on a home farm or other farm, either for full-time or part-time farming.

7. The course(s) for farm supply, sales and service occupations should be planned in cooperation with the business department of the school; the agricultural machinery and mechanics courses should be planned in cooperation with the industrial department of the school.

8. A program of supervised experience in both farm and non-farm agricultural occupations should be provided to help students make career plans and to develop competencies needed for employment.

9. An advisory committee should be organized to assist in the development of instructional programs and policies.

Post High School Level Programs

Instruction should be available for persons preparing for initial employment, in agricultural occupations, for up-grading of persons already employed, and for those seeking retraining because of changing employment conditions. Short, intensive courses of from six to ten hours in length, two to four week courses, as well as longer courses should be developed to meet the needs of the local area and regional and state needs. Some specific recommendations are:

1. Programs of instruction for full-time and part-time students should be developed in the areas of
   a. farm machinery operation, repair, and service,
   b. landscaping, nursery work and tree farming operations,
   c. production agriculture: dairy, beef, farm woodlot management, forestry, farm management, and others.

2. Programs of instruction designed to enhance the knowledge and understandings of waitresses, gas station attendants and other serving the visitors in the area of the natural resources, recreational sites, and other attractions in the area should be developed in cooperation with the business department in the school and local business people.

3. There should be planned coordination, communication and cooperation among the institutions and agencies offering educational programs in agriculture (including forestry and conservation), such as Cooperative Extension Service, Soil Conservation Service, State Department of Conservation and others.

Sites for Instruction

It is recommended that the number of schools offering instruction for agricultural occupations be reduced from seven to four and that the programs in the four schools serve students from all the other high schools in the study area. These four centers should offer both high school and post high school programs. Specific recommendations are as follows:

1. Education for agricultural occupations, at the 11th and 12th grade levels and post high school levels should be offered at four locations: Petoskey and East Jordan in the West District and Cheboygan and Gaylord in the East District.

2. Specialized courses should be developed and offered at the 11th and 12th grade levels on a shared-time basis for students from the surrounding areas as shown in Tables 12.1 and 12.2.

TABLE 12.1

PROPOSED INSTRUCTION CENTERS FOR AGRICULTURAL OCCUPATIONS, EMMET-CHARLEVOIX INTERMEDIATE SCHOOL DISTRICT

Centers	Participating Schools	Miles to Center	Projected Ag. Enrollment Grades 11-12[a]
Petoskey	Harbor Springs	9	3-6
	Littlefield	10	1-2
	Pellston	18	3-6
	Petoskey	--	7-14
	Petoskey St. Francis	1	4-8
		Sub-Total	18-36
East Jordan[b]	Boyne City	11	5-10
	Boyne Falls	12	0-1
	Charlevoix	14	5-10
	Central Lake	13	1-2
	Ellsworth	5	1-2
	East Jordan	--	4-8
		Sub-Total	16-33
		TOTAL	44-69

[a]Based on the assumption that the equivalent of 5-10 percent of male students in those grades might enroll. Enrollment should be open to both boys and girls.

[b]The program at East Jordan would be considered a branch operation from Petoskey. This is considered to be a temporary, or short-range, operation with all of the agricultural instruction centered in Petoskey when facilities and transportation make such a change feasible. Special classes might then be conducted at East Jordan, Pellston or some other site, but the instructors would travel instead of the students.

TABLE 12.2

PROPOSED INSTRUCTION CENTERS FOR AGRICULTURAL OCCUPATIONS, OTSEGO-CHEBOYGAN-PRESQUE ISLE INTERMEDIATE SCHOOL DISTRICT

Centers	Participating Schools	Miles to Center	Projected Ag. Enrollment Grades 11-12[a]
Cheboygan	Mackinaw City	16	2-4
	Cheboygan	--	8-16
	Cheboygan Catholic	1	3-6
	Inland Lakes	16	2-4
	Onaway	29	5-10
		Sub-Total	20-40
Gaylord	Gaylord	--	4-8
	Gaylord St. Mary	1	2-4
	Johannesburg	13	1-2
	Vanderbilt	9	1-2
	Wolverine	20	1-2
	(Grayling)[b]	27	8-16
		Sub-Total	17-34
		TOTAL	37-74

[a]Based on the assumption that the equivalent of 5-10 percent of the male students in those grades might enroll. Enrollment should be open to both boys and girls.

[b]Not included in the official study area, but consideration should be given to having the students served by Gaylord for their vocational education needs.

3. Pre-vocational (or some prefer the term, basic vocational) courses in agriculture might be offered at the 9th and 10th grade levels for students within the system or for those nearby. It is <u>not recommended</u> that 9th and 10th grade students from outlying districts be transported on a shared-time basis for such instruction.

Facilities and Equipment

1. Land laboratories should be readily accessible for instruction purposes. Minimum size, for use with landscape horticulture, is 1-1.5 acres.

2. Facilities on the land laboratory should include a multi-purpose building appropriate for housing poultry or livestock as part of feeding demonstrations to help students learn some basic principles of animal growth and nutrition as well as some management practices.

3. A classroom of approximately 800 square feet, shop of approximately 2,400 square feet, and a greenhouse of not less than 10 feet of bench space (15-20 feet preferred) per student should be available. (Note: Specific details regarding recommended facilities and equipment are available from the Agricultural Service, Michigan Department of Education, Lansing, Michigan.) Costs for construction, site and equipment vary considerably but are estimated to average about $16.50 per square foot.

4. New facilities would be needed at Petoskey and Cheboygan, and additional facilities required at East Jordan. Although no greenhouse is available at Gaylord, the present facilities would be adequate for the immediate future.

5. It is recommended that facilities for the agricultural program at Petoskey be provided at the site of the new high school and made an integral part of the vocational facilities. The present facilities will not be adequate or appropriate when the new high school is opened.

6. Cheboygan should provide new classroom, shop and greenhouse facilities as an integral part of the proposed new construction.

7. East Jordan should provide facilities for instruction in agricultural mechanics and improve the greenhouse.

Staff

In general, it is highly desirable to have two or more teachers of agriculture available for instruction in each of the centers. This will allow for some specialization on the part of the teachers. Each of the intermediate school districts should plan to provide for three teachers of agriculture as follows:

West District
- Petoskey — two teachers
- East Jordan — one teacher

East District
- Cheboygan — two teachers
- Gaylord — one teacher.

The staffing should take into consideration the need for providing instruction in horticultural areas, livestock, forestry, conservation, and agricultural mechanics. The staff should be utilized throughout each intermediate school district to provide the instruction needed at the most appropriate site, rather than assuming all instruction will be located at the four named centers.

Agricultural Technician Programs

It is recommended that no technician program be developed in the immediate future in the proposed technical institute at the North Central Michigan College, Petoskey. Instead, students should be encouraged to enroll in the program to be developed at Northwest Michigan College, Traverse City or in the on-going programs at Michigan State University in such areas as: Commercial Floriculture, Nursery and Landscape Management, Elevator and Farm Supply, Farm Equipment Service and Sales, and Soil Technician.

C. Recommendations for Distributive Education in the Six-County Area

A comprehensive distributive education program should play an important role in secondary, post-secondary, and adult education in the counties of the area study. Economic factors controlling the future of the six counties will demand better and more competently trained distributive workers in the next decade. The secondary school districts have an obligation to prepare young men and women in the total field of distribution. Studies bear out the fact that a significant percent of high school graduates enter the labor force as distributive workers. An obligation then exists to train adequately these young people for the world of work.

It is the opinion of this writer, as supported by facts, data, and observations, that a plan for education for distribution can be developed that will provide for such an educational experience throughout the entire six-county study area.

The Secondary School Program

Four educational centers for distributive study should be developed. The city of Charlevoix, because of its location and its retail, wholesale, and service area, is a natural center for distributive study. The high school at Charlevoix is not operating at capacity and could easily provide the space for a cooperative distributive education program enrolling approximately 30 students and for a minimum of two sections of preparatory distributive classes enrolling approximately 50 students. Students should be drawn from the school districts of Boyne City, Central Lake, Boyne Falls, East Jordan, and Ellsworth.

A fully qualified teacher-coordinator of distributive education employed by this intermediate school district could serve these six communities. Several cooperative work stations could be developed in each community, thus enabling students to receive on-the-job training in their home communities while acquiring the related subject matter material in the combined school situation. The writer has surveyed several distributive businesses in each of these communities and it is apparent that there is interest and desire on the part of businessmen to cooperate in a cooperative occupational experience program.

There should also be offered at Charlevoix High School a non-cooperative pre-employment class in distributive education. Students from Ellsworth and Central Lake could, if desired, be transported to Charlevoix for the eleventh grade preparatory class. One section of this course enrolling approximately 20 students should also be offered at Boyne City High School; East Jordan and Boyne Falls could also send students to this center for the non-cooperative class. Boyne City High School, at this time, possesses adequate room space for such a shared-time venture.

One teacher-coordinator of distributive education could easily travel between the two schools, teaching three morning classes and in the afternoon supervising cooperative distributive students who would be placed in the six surrounding communities.

A second center for the study of distribution on the secondary level should be located in the city of Petoskey. This center is possible, though, only if the new Petoskey High School provides adequate space for a distributive education laboratory. Present plans do not call for space devoted to this area of study. The communities of Harbor Springs, Alanson, and Pellston should participate on a shared-time basis with the city of Petoskey in a program of education for distribution. Petoskey has a retail center that can sufficiently and entirely support a cooperative distributive program. It is conceivable, though, that a few cooperative placements could be found in the outlying communities.

Because of the number of high school age students in the grouping (about 1,400 including Petoskey's St. Francis), a sizable cooperative program could be developed among the several schools. At least two sections in preparatory distributive education, enrolling as many as 60 students, could be offered at Petoskey High School, together with a class of a minimum of 35 cooperative distributive students.

This size program would also call for the services of a full-time distributive education teacher-coordinator, adequately prepared in the field of distribution. Due to the large number of service industries also found in this area, high school programs could also be developed in conjunction with the

home economics departments to provide for training in the food sales and service area, as well as in hotel and institutional service and management.

A third center of distributive study should be located in the community of of Gaylord. This community has a most healthy distributive climate and more than adequate facilities for a distributive education laboratory are available at Gaylord High School. The towns of Vanderbilt, Wolverine, Johannesburg, and Indian River are within an area of accessibility to the Gaylord area and should share in a cooperative distributive education program enrolling approximately 35 students and a class in pre-employment education for distribution comprised of at least two sections having a total of 50 students enrolled. Gaylord's St. Mary's High School should also participate in both of these shared-time programs.

This center could also support a full-time teacher-coordinator who, because of the distance involved between communities, may require more travel time, thereby being able to teach a maximum of three classes related to the field of distribution.

The fourth center for study in the field of distribution should be located at Cheboygan because of the large number of distributive businesses within this community. This center proposes the most problems in terms of adequate space at the present time. A distributive education laboratory should be provided for in the plans of the proposed high school located in Cheboygan. Until the new school is completed, space should be provided for within existing facilities for such a laboratory. The communities of Mackinaw City and Onaway should participate with Cheboygan in a cooperative distributive education program which would have an enrollment of approximately 35 students. The high school at Onaway, which has adequate space for distributive facilities, should teach a pre-employment class enrolling approximately 30 students in distributive education and should consider establishing its own cooperative program in distribution in the future. A pre-employment class, enrolling approximately 35 students, should also be taught at Cheboygan High School, drawing students the short distance from Mackinaw City.

Again there are more than sufficient responsibilities to demand a full-time teacher-coordinator in distributive education who would teach one cooperative class and at least two preparatory classes in distribution.

The Post-High School Program

The post-high school program in distributive education should be centralized at North Central Michigan College. The program should at this point develop toward a one-year vocational type program that would make available to a

great backlog of former high school students a vocational/technical education that will enable them to prepare adequately for the world of work. The one-year program would have as its primary goal the teaching of technical subject material that would be of immediate benefit to the student upon graduation. At the present time such a program would enroll approximately 30 students.

A second stage of development should be that of the establishment of a two-year sub-professional program in distribution. This program would have at its root the training of mid-management personnel for the total field of distribution. At this point, consideration should be given to establishing a cooperative program that would place students in responsible supervisory positions in the distributive businesses of the six-county area. This type of program could involve 20 students at the present time.

It is the opinion of the writer that a two-year college transfer program in distribution should not be undertaken in the near future. The facilities of the junior college at Traverse City could fill the needs of the students who desire such a program. The transfer program at Traverse City is already well established with competent personnel and facilities.

The Adult Program

The adult program in distributive education should be administered in two ways. Where county or intermediate school districts have delegated personnel as vocational directors, these educators should administer an adult program in distributive education. Where no such organization exists, the local distributive education coordinators must assume the administrative responsibilities of such a program.

It is most important that the efforts in adult distributive education made by the six counties be coordinated and that all vocational directors and distributive education coordinators be held responsible for a total adult program in distribution. This is of prime importance as an urgent need exists in the counties studied for adult courses to upgrade and retrain adults in the communities. A coordinated effort by the six counties to provide an adult program could be strengthened by the offering of an adult certificate program in distributive education. Courses should be offered at all high schools in the six-county area which show interest and desire to sponsor such programs. The North Central Michigan College should also sponsor such no-credit adult courses in distribution.

D. Recommended Programs in Home Economics

1. The local high schools should continue their programs for the vocation of homemaking where there is sufficient enrollment to employ a fully qualified homemaking teacher on a full-time basis. Full time could include teaching homemaking in the junior high school.

   a. Programs for the vocation of homemaking should be strengthened in the areas of family living, home management, child care and development, and consumer buying.

   b. Homemaking in the junior high school should not be required in both seventh and eighth grades nor for longer than 18 weeks in one grade. The homemaking offerings in junior high school should be broad in scope, exploratory in nature, and include both boys and girls.

   c. Homemaking should be available to boys in the high school program especially at the senior level in home and family living classes for both boys and girls.

   d. Local high school homemaking programs should stress those attributes that make a person more employable since many of these qualities are a part of teaching-learning in home making. These qualities include personal appearance, attitudes toward work, ability to follow instructions, dependability, and the basic tool skills of reading, writing, and arithmetic.

2. Programs for occupational training related to home economics should be centered in the three area schools at Cheboygan, Petoskey, and Gaylord. Personnel in the areas will need to make additional study of occupational needs of students and employment opportunities to determine the occupational programs to provide in the area schools. The area schools should provide programs for full-time students as well as part-time programs for adults in the occupations of determined need.

3. North Central Michigan College in Petoskey should begin the two-year nursing program as planned. Study should be made of other medical technologies with the thought of developing one or two technical programs that would utilize facilities and collegiate courses, such as the physical and biological sciences, that will be required in the nursing program.

E. Recommendations and Conclusions Regarding Industrial Education

Based on the data and findings presented in this study, it is recommended in the area of industrial education:

General

1. That the programs of industrial education, including industrial arts, trade and industrial, and technical education be greatly expanded so that a wider range of programs and specific course offerings will be available at the high school and post-high school levels to all students and adults in the six-county area who need or desire such education.

2. That a greater commitment to support the programs of industrial education must be made by school boards and administrators than was generally evidenced in many of the school districts. This includes financial support for needed equipment, supplies, and instructional materials as well as administrative leadership and support to develop new courses and a total curriculum of industrial education.

Industrial Arts Programs

3. That each individual school district provide at least one year of industrial arts instruction for each boy during the junior high school years of 7th and 8th or 7th, 8th and 9th grades. Emphasis should be placed on providing exploratory experiences in as many areas of instruction as possible. The facility best suited for this type of instruction would be a comprehensive general shop.

4. That each individual high school expand or develop industrial arts programs that provide a wider range of experiences than are currently available at any single school. Experiences (not necessarily courses) should be provided in:

   a. Drafting - mechanical drawing, product design, machine drawing, technical illustration and architectural drawing.

   b. Electricity - basic electricity, house wiring, electronics, radio and T.V. servicing.

   c. Graphic Arts - letterpress, intaglio or gravure printing, screening, binding and photography.

   d. Metal work - machining, foundry, forging and heat treating and sheet and art metals.

   e. Power Mechanics - internal combustion engine, hydraulics, pneumatics, jet and turbine engines, atomic and other power systems, automotive repair.

   f. Woodworking - cabinet making, wood technology and wood processing, pattern making, carpentry and building construction.

On an elective basis as many of these experiences listed above as possible should be available to each student to meet general education, pre-vocational and at times, vocational needs. In some cases, these areas would be included in separate courses but in other situations would be included as a unit or part of a more general course. A suggested sequence of courses or experiences would be:

9th grade - drafting, graphic arts, and woodworking
10th grade - metalworking
11th grade - power mechanics and electricity-electronics
12th grade - elective specialization in area of choice with opportunity for some specific occupational training.

As near as possible, complete programs should be provided at Charlevoix, Cheboygan, Gaylord and Petoskey High Schools. Where other high schools have only a single laboratory or shop facility, it may not be possible in all cases to provide the complete range of experiences suggested. However, even with a single laboratory facility, a broader program of industrial arts could be offered through the development of a broad general shop program than is currently available. Shared-time programs and arrangements should be worked out with other school districts that would also provide for more comprehensive programs of industrial arts.[1]

Trade and Industrial Programs

5. That three area vocational centers be established where programs of trade and industrial education could be developed along with broad experience industrial arts programs. In these centers trade and industrial education programs would provide pre-employment vocational training in specialized areas at the 12th and possibly the 11th grade levels through shared time arrangements between school districts, therefore serving more effectively a broader geographical area than can small schools in individual school districts.

   In addition to high school level programs it is also recommended that these centers serve as post high school study centers providing industrial vocational training programs for adults through an extensive evening school program as well as day-school programs. These centers would provide training programs of short and long duration and at all levels up to but excluding technician training.

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[1]A more detailed discussion and examples of shared time programs is given in recommendation number 5 regarding the trade and industrial programs.

In general, it is recommended that high school and post-high school vocational programs in the area of industrial education be concentrated in the following three centers. However, other schools may also be used where appropriate due to interest, staff and facilities available to develop certain courses and programs. The recommended centers are:

a. Cheboygan Center - (Pending expansion and construction of a new high school.)

(1) Cooperating districts - Mackinaw City, Inland Lakes and Onaway.

(2) Current programs - industrial arts only, drafting, general woodworking, general metalworking.

(3) Vocational programs to be developed: 1) drafting, all areas; 2) metals - machine operators, metal fabricator, machinist, sheet metalworkers; 3) electricity - electronics, radio and T.V. repairmen; 4) building trades - carpentry, plumbing, and heating; 5) power mechanics - auto mechanics, outboard and small engine repair; 6) graphic arts, general; 7) general programs - gas station attendant, sweeper, janitor.

(4) Special features - Onaway, which is developing a new metals program with some power mechanics and electricity, might provide vocational instruction in some metals areas. All other schools should provide industrial arts instruction only but on an expanded basis than currently offered.

b. Gaylord Center - (New high school with existing facilities.)

(1) Cooperating schools: Johannesburg, Vanderbilt and Wolverine should provide industrial arts instruction only.

(2) Current programs - industrial arts only, general shop, woodworking, power mechanics (voc. 65-66), metals (voc. 1965-66), drafting.

(3) Vocational programs to be developed: 1) drafting - residential building; 2) power mechanics - auto mechanics; 3) metals - machinist and machine operators; 4) building trades - carpentry, masonry, plumbing and heating; 5) electricity - electrician, radio and T.V. repairmen; 6) special programs - low level training programs such as gas station attendant, car washer, sweeper, tire changer, etc.

(4) Special features - good existing facilities with three large labs in the process of being equipped, a drafting room and two related instruction classrooms.

c. Petoskey Area Center - this center would differ from the other two that have been described because trade and industrial programs would not be confined to a single school but would be distributed among a number of schools because of existing facilities and staff competencies.

(1) Cooperating schools: Alanson, Boyne City, Boyne Falls, Charlevoix, Central Lake, East Jordan, Ellsworth, Harbor Springs, Pellston, and Petoskey. All of these schools currently provide only industrial arts instruction.

(2) Vocational programs to be developed and schools where programs should be located:

Major sub-center #1: Petoskey (upon completion of new school). 1) Metals - machinist, metal fabricator, machine operator, sheet metal worker; 2) electricity - electronics, T.V. and communication equipment repair; 3) drafting (general mechanical drawing only, more specific program should be located at Charlevoix); 4) power mechanics - marine and small engine repair; 5) graphic arts - printer.

Major sub-center #2: East Jordan (providing facilities can be developed, perhaps utilizing the uncompleted community building)[1] or building a new building. 1) Metals - foundry, could be operated as a cooperative educational program with local ironworks, metal machining; 2) power mechanics - auto mechanics, body and fender repair, gas station attendant; 3) building trades - all building trades.

Charlevoix: 1) metals - machinist, tool and die maker; 2) drafting - tool and die design, technical illustration, architectural drafting (the current drafting room should only be used for drafting and be equipped with new industrial type furniture and equipment).

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[1]For more detail information on a plan for utilization of this building, refer to: Proposal for an Area Vocational School for Antrim, Charlevoix and Emmet Counties. East Jordan, Michigan.

Not all of the programs and suggested courses presented and recommended for the centers of Cheboygan, Gaylord and Petoskey area can be developed and implemented during any one or even several school years. Furthermore, not all the possibilities for programs of industrial education can be included in this report. However, it is strongly recommended that imaginative and creative thinking be employed by all, when developing programs that effectively meet the occupational needs of youth and carry out the implications and purposes of the National Vocation Act of 1963.[1]

6. The area center administrators, directors and/or consultants, local instructional staff members and lay persons representing industry plan cooperatively the specific instructional programs and solicit the assistance of the Michigan Department of Education, Vocational Division, in helping to develop new and experimental programs for this rather low-density population area.

7. That guidance counselors become completely aware of employment needs and occupational training opportunities available in the local community, state and nation and devote as much time proportionately to counseling and guidance activities for non-college bound youth as is spent on the college bound students.

8. That immediate consideration be given to the establishment of part-time cooperative education programs that provide high school students enrolled in trade and industrial courses the opportunity to acquire supervised and coordinated work experience in their trade. General work experience and diversified occupation programs should also be developed at the three area centers.

9. That advisory committees be established for each of the occupational areas at each of the area centers. These committees would help to identify the need for and appropriateness of various courses and programs, the content and experiences to be included and to explore means of developing good relations and facilitating cooperative action between the area center and industry and employers in the area.

Technical Education Programs

10. That all technical education programs in industrial education technician

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[1]For example: Purpose no. (3) to provide "Vocational Education For Persons Who Have Academic, Socio-Economic, Or Other Handicaps That Prevent Them From Succeeding in the Regular Vocational Education Program." Public Law 88-210, December 18, 1963, page 3.

training for the six county area be developed and offered under the auspices of the North Central Michigan College in Petoskey. In general, these programs would place major emphasis on the preparation of technicians in two-year terminal programs and not through programs designed for transfer to four-year institutions.

It is recommended that the following technician training programs be developed in the area of industrial education:

a. Drafting and Design Technology - facilities currently available at the College and some courses currently offered (Graphics 107) would be appropriate if emphasis was shifted. Other courses would have to be developed.

b. Electronics Technology - no facilities currently available other than physics or science labs. Math and physics courses currently offered are basic to this program. Additional specialized electronics courses would have to be developed.

c. Graphics Technology - no facilities currently, but a printing laboratory is planned in building #9. Since current program of Paper Technology is related to field of graphics, consideration should be given to broadening the approach because on paper it resembles a chemical technology program more than a paper technology program.

d. Industrial Production Technology - no facilities currently, very few current courses are appropriate. Graphics 107 and Engineering 217 with supporting math and science are some possibilities. Additional courses needed in manufacturing processes, materials, metallurgy, quality control and technical math.

Since facilities are not available at the NCMC for all of the technical programs described, it might be possible to use some of the facilities to be built at the new Petoskey Senior High School during initial stages of program development. However, it is strongly recommended that the College proceed to develop their own facilities for the technician training program. The type of equipment needed for technician training differs considerably from that required for secondary trade and industrial programs. Furthermore, it is questionable whether the high school facilities will even be adequate for the industrial arts program and for high school and adult level programs in trade and industrial education for the area center programs.

F. Recommendations for Office Education

1. High schools under 200 enrollment should not attempt to maintain at high cost and with inadequate facilities curricula that lead to employment in office occupations. These schools should instead concentrate on general business education for personal-use skills and personal economic education recognizing that such courses will also have prevocational values. In such schools the course offerings should be limited to beginning typewriting, 9th-10th grade general business, and a senior business course emphasizing both economics for everyday life, consumer skills, and an understanding of the American business system.

    a. Schools between 200-350 enrollment might add beginning shorthand if a teacher can be found and sufficient enrollments are possible.

    b. All advanced courses in typewriting, shorthand, office practice, and the beginning course in bookkeeping should be accomplished for smaller high schools in area vocational schools either on a shared-time basis during the senior year or on a post high school basis.

2. Comprehensive vocational programs in office education should be established in area vocational schools at Cheboygan, Gaylord, and Petoskey. The Petoskey area school might wish to use facilities at Charlevoix and Boyne City to serve shared-time as well as post high school students in Charlevoix and Antrim County districts.

    a. Programs for shared-time students should be offered in both the clerical and stenographic areas, using 2-3 hour blocks of time in a simulated office laboratory. This block approach is more appropriate than individual courses to take care of appropriate than individual courses to take care of individual needs and varying standards of achievement with students coming from many schools.

    b. Post high school programs for students who have graduated or dropped out of school should be developed in:

        (1) Stenographic occupations - a nine-month full-time program for those without prior training.

        (2) Clerical occupations - a four-six months full-time program for those without prior training.

        (3) Advanced training - short-term full-time programs for clerical or stenographic levels for students who have

had beginning courses in high school or those workers who need retraining.

(4) Bookkeeping occupations - a nine-month full-time program should be developed if intensive study of the local labor market warrants training personnel in this area.

c. All post high school full-time programs should include a period of supervised occupational experience.

3. North Central Michigan College should establish a dual purpose program in the business area:

a. A Transfer Curriculum - this curriculum should serve all students who expect to transfer to a four-year business curriculum. Half the curriculum should be devoted to general education including: Communications, Humanities, Social Science, Psychology, Sociology, and Mathematics. A core of business courses should include Principles of Accounting, Introduction to Business, and Principles of Economics. Specialized courses in business should be limited since four-year colleges are becoming increasingly reluctant to accept such courses for transfer.

b. Employment-Bound Curricula - these curricula should cover three occupational areas:

(1) Accounting technicians

(2) Executive secretarial

(3) Marketing and distribution.

Care should be taken to ensure that these curricula do not duplicate the vocational programs to be operated in the area vocational schools.

4. The intermediate district superintendents should implement as soon as possible an in-service program of teacher improvement in the business area and arrange for state department assistance for improvement of programs in their district.

5. Business teachers should organize a Top-O-Michigan Business Education Association to exchange ideas, develop contacts with businessmen, and arrange for consultants and other professional improvement meetings.

6. Businessmen in the area need to take a more active interest in the business curriculum of the schools and make their needs known to teachers and administrators.

APPENDICES

APPENDIX A

PERCENT CHANGE IN LABOR FORCE BY OCCUPATION

Occupation in Which Employed	Antrim				Charlevoix				Cheboygan			
	1940	1960	% of 1960 Total Emp.	% Change of Emp.	1940	1960	% of 1960 Total Emp.	% Change of Emp.	1940	1960	% of 1960 Total Emp.	% Change of Emp.
Employed - Male & Female	3,085	3,198	100.00	36.63	3,707	4,320	100.00	16.54	3,596	3,979	100.00	10.65
Professional, technical workers	195	273	8.54	40.00	228	403	9.33	76.75	207	373	9.37	80.19
Farmers and farm managers	1,033	298	9.32	-71.15	1,052	236	5.46	-77.57	1,037	213	5.35	-79.46
Managers, officials, and proprietors, except farm	232	265	8.29	14.22	328	403	9.33	22.87	435	552	13.87	26.90
Clerical and kindred workers	161	248	7.75	54.04	294	342	7.92	16.33	334	380	9.55	13.77
Sales workers	*	164	5.13	-	*	299	6.92	-	*	245	6.16	-
Craftsmen, foremen, and kindred workers	173	432	13.51	149.71	298	636	14.72	113.42	325	528	13.27	62.46
Operatives and kindred workers	192	825	25.80	329.69	416	966	22.36	132.21	436	610	15.33	39.91
Private household workers	105	100	3.13	-4.76	132	151	3.50	14.39	96	137	3.44	42.71
Service workers, except private household	103	232	7.25	125.24	220	452	10.46	105.45	196	439	11.03	123.98
Farm laborers, unpaid family workers	244	132	4.13	-45.90	218	89	2.06	-59.17	179	73	1.83	-59.22
Farm laborers, except unpaid and farm foremen	254	*	-	-	168	*	-	-	182	*	-	-
Laborers, except farm & mine	372	165	5.16	-55.65	314	228	5.28	27.39	240	217	5.45	-9.58
Occupation not reported	21	64	2.00	204.76	39	115	2.66	194.87	29	212	5.33	631.03

*Included in above figure.

APPENDIX A--Continued

Occupation in Which Employed	Emmet 1940	Emmet 1960	Emmet % of 1960 Total Emp.	Emmet % Change of Emp.	Otsego 1940	Otsego 1960	Otsego % of 1960 Total Emp.	Otsego % Change of Emp.	Presque Isle 1940	Presque Isle 1960	Presque Isle % of 1960 Total Emp.	Presque Isle % Change of Emp.
Employed - Male & Female	4,673	5,174	100.00	10.72	1,601	2,420	100.00	51.16	3,691	4,151	100.00	12.46
Professional, technical workers	375	550	10.63	46.67	106	169	6.98	59.43	203	336	8.09	65.52
Farmers and farm managers	861	228	4.41	-73.52	464	150	6.20	-67.67	1,015	408	9.83	-59.80
Managers, officials, and proprietors, except farm	503	632	12.21	25.65	161	325	13.43	101.86	243	426	10.26	75.31
Clerical and kindred workers	596	581	11.23	-2.52	136	210	8.68	54.41	220	265	6.38	20.45
Sales workers	*	411	7.94	-	*	119	4.55	-	*	228	5.49	-
Craftsmen, foremen, and kindred workers	476	666	12.87	39.92	72	307	12.69	326.39	322	609	14.67	89.13
Operatives and kindred workers	528	681	13.16	28.98	123	555	22.93	351.22	562	966	23.27	71.89
Private household workers	214	254	4.91	18.69	40	49	2.02	22.5	127	45	1.08	64.57
Service workers, except private household	331	635	12.27	91.84	112	356	14.71	217.86	150	394	9.49	162.67
Farm laborers, unpaid family workers	206	78	1.51	62.14	199	20	.83	-89.95	448	209	5.04	-53.35
Farm laborers, except unpaid and farm foremen	194	*	-	-	48	*	-	-	143	*	-	-
Laborers, except farm & mine	333	326	6.30	-2.10	108	95	3.93	-12.04	235	199	4.79	-15.32
Occupation not reported	56	132	2.55	135.71	32	65	2.69	103.13	23	66	1.59	186.96

*Included in above figure.

APPENDIX B. 1

INDUSTRY GROUP OF EMPLOYED PERSONS (Antrim County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	2,699	386	2,669	590	2,295	903
Agriculture	1,475	58	1,169	100	453	31
Forestry and Fisheries	4	...	4	...	...	n
Mining	5	...	5	...	...	m
Construction	99	...	280	5	244	8
Manufacturing	472	9	341	43	776	192
Durable						
Furniture	4	...	111	4	104g	x
Primary metal industries	129	2	5	...	33g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	39	6	339g	x
Machinery, except electrical	3	...	19	...	234	12
Electrical machinery equip., and supplies	x	x	1	...	5g	x
Motor vehicles and motor vehicle equip.	9	...	74	13	27g	x
Transportation equip., except motor vehicle	...	...	6	...	12	8
Other durable goods	203b	...	18	6	27	122
Non-Durable						
Food and kindred products	22	1	50	7	93	38
Textile mill products	3	...	...	...	...	...
Apparel and other fabricated textile prod.	...	...	1	...	...	...
Printing, publishing, and allied industries	11	5	12	7	27g	x
Chemicals and allied products	81	...	1	...	4	x
Other non-durable goods	1	...	...	...	m	m
Not specified manufacturing industries	5	1	4	...	5	12
Transportation, Communication, and Utilities						
Railroads and railway express service	31	...	31	...	17g	16
Trucking service and warehousing	24	...	36	3	29g	x
Other transportation	21	...	20	2	22g	x
Telecommunications	4	10	4	20	33g	x
Utilities and sanitary services	22	1	26	3	12g	x
Wholesale Trade	39	...	45	2	31	4
Retail Trade						
Food and dairy prod. stores and milk retail	45	10	64	38	83	29
Eating and drinking places	32	12	37	56	27	56
Other retail trade	152c	24c	186	62	153	74
Finance, Insurance, and Real Estate	14	4	32	10	39	33
Business Services	29e	...	6	1	5g	4
Repair Services	9	...	67	2	51g	n
Personal, Entertainment and Recreation Service						
Private households	6	104	7	50	130g	x
Hotels and lodging places	27	19	43	16	x	x
Other personal services	24	11	31	23	119	145
Entertainment and recreation services	16	...	16	12	4	...
Medical and Other Health Services	92j	98j	15	12	16h	62h
Educational Services						
Government	45k	16k	61	75	84	117
Private	x	x	...	6	4	14
Other Professional and Related Services	x	x	33	13	86i	49
Public Administration	x	x	77	29	65	49
Industry Not Reported	21	10	33	7	26	20

b - Logging, sawmills and planning mills
c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
g - Includes both male and female
h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
j - Includes all other professional services
k - All government
m - Included in below
n - Included in above
x - Not indicated by source

APPENDIX B.2

INDUSTRY GROUP OF EMPLOYED PERSONS (Charlevoix County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	3,092	615	3,176	791	2,928	1,392
Agriculture	1,374	73	879	41	308	40
Forestry and Fisheries	68	1	42	1	39g	n
Mining	3	...	5	...	...	m
Construction	193	...	294	4	311	9
Manufacturing			691	44	889	277
Durable						
Furniture and lumber and wood products	4	3	128	3	168g	x
Primary metal industries	44	1	69	3	138g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	8	2	239g	x
Machinery, except electrical	6	1	11	...	27	9
Electrical machinery equip., and supplies	x	x	...	...	128g	x
Motor vehicles and motor vehicle equip.	12	...	24	...	77g	x
Transportation equip., except motor vehicle	14	...	37	...	28	54
Other durable goods	68b	...	67	...	75	131
Non-Durable						
Food and kindred products	58	32	12	...	59	9
Textile mill products	1	...	1	...	...	...
Apparel and other fabricated textile prod.	...	1	...	...	...	4
Printing, publishing, and allied industries	19	4	19	10	49g	x
Chemicals and allied products	2	...	...	...	...	x
Other non-durable goods	193	...	316	26	m	m
Not specified manufacturing industries	13	...	...	...	140	16
Transportation, Communication, and Utilities					29	
Railroads and railway express service	32	1	31	...	14g	x
Trucking service and warehousing	21	...	28	2	17g	x
Other transportation	68	2	48	2	47g	x
Telecommunications	9	21	17	43	32g	x
Utilities and sanitary services	32	3	84	13	82g	x
Wholesale Trade	42	5	48	5	69	8
Retail Trade						
Food and dairy prod. stores and milk retail	92	30	115	54	103	73
Eating and drinking places	32	42	49	63	44	69
Other retail trade	214	34	244	76	285	121
Finance, Insurance, and Real Estate	36	6	48	26	64	45
Business Services	18	...	11	1	24g	15
Repair Services	41	1	99	4	80g	n
Personal, Entertainment and Recreation Service						
Private households	9	139	34	98	189g	x
Hotels and lodging places	15	30	51	25	x	x
Other personal services	41	23	39	26	251g	285
Entertainment and recreation services	38	3	33	7	62	24
Medical and Other Health Services	104j	118j	23	76	7h	140h
Educational Services						
Government	141k	28k	67	99	90	86
Private	x	x	2	8	...	21
Other Professional and Related Services	x	x	45	16	84i	72
Public Administration	x	x	121	40	140	24
Industry Not Reported	35	14	28	17	26	54

b - Logging, sawmills and planning mills
c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
g - Includes both male and female
h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
j - Includes all other professional services
k - All government
m - Included in below
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x - Not indicated by source

APPENDIX B. 3

INDUSTRY GROUP OF EMPLOYED PERSONS (Cheboygan County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	2,973	623	2,957	805	2,871	1,108
Agriculture	1,341	68	818	28	284	19
Forestry and Fisheries	49	1	27	1	24g	n
Mining	3	1	6	...	8	m
Construction	230	...	349	4	448	21
Manufacturing			335	98	593	70
Durable						
Furniture and lumber and wood products	158	19	83	3	132g	x
Primary metal industries	7	1	6	...	52g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	7	1	52g	x
Machinery, except electrical	14	...	67	35	163	18
Electrical machinery equip., and supplies	x	x	...	...	8g	x
Motor vehicles and motor vehicle equip.	9	...	51	6	23g	x
Transportation equip., except motor vehicle	8	...	15	1	3	5
Other durable goods	27	1	23	15	15	32
Non-Durable						
Food and kindred products	16	...	28	1	37	4
Textile mill products	1	...	2	...	...	...
Apparel and other fabricated textile prod.	4	92	6	30	4	4
Printing, publishing, and allied industries	17	4	26	4	59g	x
Chemicals and allied products	1	...	...	...	...	x
Other non-durable goods	1	1	18	2	m	m
Not Specified Manufacturing Industries	35	1	3	...	50	7
Transportation, Communication, and Utilities						18
Railroads and railway express service	54	...	50	2	46g	x
Trucking service and warehousing	18	...	23	...	39g	x
Other transportation	78	3	109	6	52g	x
Telecommunications	5	10	6	27	44g	x
Utilities and sanitary services	21	3	66	2	48g	x
Wholesale Trade	38	5	67	8	114	...
Retail Trade						
Food and dairy prod. stores and milk retail	102	25	103	50	93	54
Eating and drinking places	53	40	65	84	107	148
Other retail trade	221	48	268	78	311	133
Finance, Insurance, and Real Estate	35	9	40	20	95	55
Business Services	19	1	10	1	13	9
Repair Services	51	2	72	...	56g	n
Personal, Entertainment and Recreation Service						
Private households	8	101	14	53	149g	x
Hotels and lodging places	51	31	144	65	x	x
Other personal services	33	24	39	33	255g	225
Entertainment and recreation services	28	1	25	7	27	13
Medical and Other Health Services	106j	95j	21	68	3h	88h
Educational Services						
Government	98k	26k	44	85	40	115
Private	x	x	5	21	10	21
Other Professional and Related Services	x	x	50	14	50i	51
Public Administration	x	x	135	28	141	32
Industry Not Reported	33	11	57	22	76	36

b - Logging, sawmills and planning mills
c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
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h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
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x - Not indicated by source

APPENDIX B.4

INDUSTRY GROUP OF EMPLOYED PERSONS (Emmet County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	3,664	1,009	3,925	1,462	3,372	1,802
Agriculture	1,225	48	806	38	333	20
Forestry and Fisheries	23	1	23	1	13g	n
Mining	3	...	3	...	...	m
Construction	291	3	415	5	456	12
Manufacturing			844	80	648	33
Durable						
Furniture, and lumber and wood products	55	4	148	10	115g	x
Primary metal industries	4	...	11	...	14g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	24	7	52g	x
Machinery, except electrical	6	1	16	3	18	4
Electrical machinery equip., and supplies	x	x	5	2	12g	x
Motor vehicles and motor vehicle equip.	4	...	76	10	46g	x
Transportation equip., except motor vehicle	7	...	13	3	...	4
Other durable goods	355b	9	266	12	228	8
Non-Durable						
Food and kindred products	60	4	81	7	91	4
Textile mill products	...	...	22	8	...	...
Apparel and other fabricated textile prod.	2	2	3	...	...	...
Printing, publishing, and allied industries	44	8	45	11	46g	x
Chemicals and allied products	1	...	16	...	...	x
Other non-durable goods	92	2	101	2	m	m
Not specified manufacturing industries	3	1	17	5	30	13
Transportation, Communication, and Utilities						98
Railroads and railway express service	63	...	61	...	41g	x
Trucking service and warehousing	47	4	37	2	53g	x
Other transportation	35	1	68	4	41g	x
Telecommunications	25	30	56	54	132g	x
Utilities and sanitary services	57	2	51	4	69g	x
Wholesale Trade	102	3	140	16	170	29
Retail Trade						
Food and dairy prod. stores and milk retail	117	20	120	49	138	93
Eating and drinking places	66	50	69	111	98	162
Other retail trade	254	113	446	244	525	232
Finance, Insurance, and Real Estate	60	39	64	46	82	42
Business Services	27	4	15	3	25g	31
Repair Services	72	4	123	6	36g	n
Personal, Entertainment and Recreation Service						
Private households	25	218	28	164	289g	x
Hotels and lodging places	35	55	80	77	x	x
Other personal services	61	60	67	68	218g	369
Entertainment and recreation services	21	7	41	13	22	7
Medical and Other Health Services	156j	278j	54	213	51h	298h
Educational Services						
Government	110k	22k	64	130	103	118
Private	x	x	7	33	14	51
Other Professional and Related Services	x	x	56	22	227i	111
Public Administration	x	x	142	47	127	56
Industry Not Reported	56	16	45	32	55	55

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c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
g - Includes both male and female
h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
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n - Included in above
x - Not indicated by source

APPENDIX B.5

INDUSTRY GROUP OF EMPLOYED PERSONS (Otsego County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	1,334	267	1,662	456	1,678	742
Agriculture	683	31	483	35	187	16
Forestry and Fisheries	5	...	4	...	4g	n
Mining	3	...	3	...	5g	m
Construction	83	...	145	1	180	4
Manufacturing			311	59	446	133
Durable						
Furniture, and lumber and wood products	...	...	53	...	98g	x
Primary metal industries	3	...	8	...	78g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	2	...	4g	x
Machinery, except electrical	1	...	11	...	12	8
Electrical machinery equip., and supplies	x	x	...	...	...	x
Motor vehicles and motor vehicle equip.	9	...	186	54	294g	x
Transportation equip., except motor vehicle	1	...	1	...	4	117
Other durable goods	37b	...	7	1	13	...
Non-Durable						
Food and kindred products	9	1	26	2	42	...
Textile mill products	...	1	1	...	...	...
Apparel and other fabricated textile prod.	...	...	...	...	...	...
Printing, publishing, and allied industries	7	1	9	2	8g	x
Chemicals and allied products	1	...	4	...	10g	x
Other non-durable goods	...	...	2	...	m	m
Not specified manufacturing industries	1	...	1	...	8	8
Transportation, Communication, and Utilities						16
Railroads and railway express service	18	1	13	1	20g	x
Trucking service and warehousing	9	...	28	...	8g	x
Other transportation	16	...	11	...	5g	x
Telecommunications	3	4	4	8	16g	x
Utilities and sanitary services	6	...	12	1	26g	x
Wholesale Trade	35	1	40	1	50	3
Retail Trade						
Food and dairy prod. stores and milk retail	46	7	46	16	37	21
Eating and drinking places	16	17	39	53	29	88
Other retail trade	116	28	169	45	207	44
Finance, Insurance, and Real Estate	11	7	27	13	31	28
Business Services	8	...	8	1	5	...
Repair Services	24	3	32	2	31g	n
Personal, Entertainment and Recreation Service						
Private households	8	41	4	23	49g	x
Hotels and lodging places	11	11	36	21	x	x
Other personal services	15	12	22	21	223g	149
Entertainment and recreation services	17	6	27	4	15	...
Medical and Other Health Services	75j	77j	43	57	29h	69h
Educational Services						
Government	32h	7k	25	50	44	51
Private	x	x	...	11	...	12
Other Professional and Related Services	x	x	23	6	50i	51
Public Administration	x	x	75	24	123	33
Industry Not Reported	25	11	32	3	23	24

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c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
g - Includes both male and female
h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
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k - All government
m - Included in below
n - Included in above
x - Not indicated by source

APPENDIX B.6

INDUSTRY GROUP OF EMPLOYED PERSONS (Presque Isle County)

	1940		1950		1960	
	Male	Female	Male	Female	Male	Female
Employed	3,092	615	3,176	791	2,928	1,392
Agriculture	1,374	73	879	41	308	40
Forestry and Fisheries	68	1	42	1	39g	n
Mining	3	...	5	...	...	m
Construction	193	...	294	4	311	9
Manufacturing			691	44	889	277
Durable						
Furniture, and lumber and wood products	4	3	128	3	168g	x
Primary metal industries	44	1	69	3	138g	x
Fabricated metal ind. (Incl. not spec. metal)	...	...	8	2	239g	x
Machinery, except electrical	6	1	11	...	27	9
Electrical machinery equip., and supplies	x	x	...	...	128g	x
Motor vehicles and motor vehicle equip.	12	...	24	...	77g	x
Transportation equip., except motor vehicle	14	...	37	...	28	54
Other durable goods	68b	...	67	...	75	131
Non-Durable						
Food and kindred products	58	32	12	...	59	9
Textile mill products	1	...	1	...	...	...
Apparel and other fabricated textile prod.	...	1	...	...	...	4
Printing, publishing, and allied industries	19	4	19	10	49g	x
Chemicals and allied products	2	...	...	...	...	x
Other non-durable goods	193	...	316	26	m	m
Not specified manufacturing industries	13	...	...	...	140	16
Transportation, Communication, and Utilities					29	
Railroads and railway express service	32	1	31	...	14g	x
Trucking service and warehousing	21	...	28	2	17g	x
Other transportation	68	2	48	2	47g	x
Telecommunications	9	21	17	43	32g	x
Utilities and sanitary services	32	3	84	13	82g	x
Wholesale Trade	42	5	48	5	69	8
Retail Trade						
Food and dairy prod. stores and milk retail	92	30	115	54	103	73
Eating and drinking places	32	42	49	63	44	69
Other retail trade	214	34	244	76	285	121
Finance, Insurance, and Real Estate	36	6	48	26	64	45
Business Services	18	...	11	1	24g	15
Repair Services	41	1	99	4	80g	n
Personal, Entertainment and Recreation Service						
Private households	9	139	34	98	189g	x
Hotels and lodging places	15	30	51	25	x	x
Other personal services	41	23	39	26	251g	285
Entertainment and recreation services	38	3	33	7	62	24
Medical and Other Health Services	104j	118j	23	76	7h	140h
Educational Services						
Government	141k	28k	67	99	90	86
Private	x	x	2	8	...	21
Other Professional and Related Services	x	x	45	16	84i	72
Public Administration	x	x	121	40	140	24
Industry Not Reported	35	14	28	17	26	54

b - Logging, sawmills and planning mills
c - Includes motor vehicles and access. retail, and filling stations
e - Includes automobile storage and rental
g - Includes both male and female
h - Hospitals only
i - Includes welfare, religious, and non-profit membership organizations
j - Includes all other professional services
k - All government
m - Included in below
n - Included in above
x - Not indicated by source

APPENDIX C

SELECTED DATA FROM FOLLOW-UP STUDY OF 1963 GRADUATES AND DROPOUTS

	Percent
1. Place of residence at time of graduation:	(N=549)
On a farm	24
Rural non-farm	40
City	34
2. County of residence at time of graduation:	(N=549)
Antrim	7
Charlevoix	25
Cheboygan	21
Emmet	26
Otsego	13
Presque Isle	6
3. Present address:	(N=549)
Same county as at graduation	57
Adjacent county to county at graduation	5
Non-adjacent county, within Michigan	22
Other state, including military service	12
4. Rank in graduating class (scholastic average)	(N=522)
Top quartile	31
Second quartile	26
Third quartile	24
Bottom quartile	20

5. When moved after graduation or leaving school:

	Residence at Graduation			
	Farm (N=129)	Rural Non-Farm (N=221)	City (N=184)	(N=549)
Didn't move	36	35	38	35
Within one month	12	10	9	10
1 - 6 months	31	27	32	29
6 - 12 months	8	10	6	8
One year or more	9	14	9	11

6. Why moved:

	Residence at Graduation			
	Farm (N=129)	Rural Non-Farm (N=221)	City (N=184)	(N=549)
To take a job	14	12	9	11
To seek a job	12	8	7	9
Parents moved	1	4	7	4
Got married	9	17	5	11
Military service	5	10	11	9
Go to school	27	26	33	28
Other reason(s)	1	3	1	2

7. Post high school education:

	(N=549)
None or not reported	39
Community college	18
Four-year college or university	22
Technical, Trade, Military school, etc.	21

8. Percent attending some kind of post high school education according to county of residence at time of graduation:

Antrim	(N=40)	58
Charlevoix	(N=138)	69
Cheboygan	(N=114)	52
Emmet	(N=144)	63
Otsego	(N=69)	65
Presque Isle	(N=32)	54

9. Percent attending some kind of post high school education according to place of residence at time of graduation:

Farm	(N=129)	51
Rural non-farm	(N=221)	58
City	(N=184)	74

10. Course of study for persons enrolled in post high school education programs:

	(N=549)
Four-year programs —	
Education	12
Business	8
Engineering	2
Liberal Arts	9
Other four-year	8
Two-year or less programs —	
Office occupations	4
Health occupations	4
Industrial	1
Other two-year or less	8

11. Number full-time jobs since graduation:	(N=549)
None	24
One	35
Two	23
Three or more	12

12. How long did it take to get your first full-time job:	(N=549)
No full-time job	18
Less than one week	25
1 - 2 weeks	8
2 - 4 weeks	8
1 - 2 months	12
4 - 6 months	3
Longer than 6 months	14

13. Reason for taking so long to get full-time job:	(N=549)
As soon as expected	31
No jobs in community	7
Wasn't interested in jobs available	3
Parents wanted me to stay at home	1
Lacked skills or other qualifications for jobs available	2
Too young	3
Got married	3
Went to college	18
Other reason(s)	5

14. Weekly pay before deductions:	First Job (N=549)	Present Job (N=549)
In military service	6	7
Less than $42.50	18	8
$42.50 - $62.50	27	18
$62.50 - $82.50	14	14
$82.50 - $102.50	4	7
$102.50 - $122.50	2	5
$122.50 - $142.50	1	2
$142.50 or more	1	4

15. Extent of job satisfaction:	First Job (N=549)	Present Job (N=549)
Not at all	6	2
Not very well	7	4
Fairly well	29	22
Very well	30	40

16. Proportion in various occupational groups:

	First Job (N=549)	Present Job (N=549)
Health occupations	2	3
Sales occupations	7	5
Clerical & office occupations	13	15
Electrical, mechanical, trades, etc.	7	7
Food service & preparation occupations	9	4
Agricultural occupations including farming	4	4
Personal service occupations	4	3
General labor	17	15
Miscellaneous	6	6

17. Currently enrolled in school:

	(N=549)
No	56
Yes	33
No response	11

18. Currently enrolled in school and employed:

	(N=182)
No	34
Yes, part time	46
Yes, full time	15

19. Plans for staying in same kind of work as present job:

	(N=549)
Make it a career	10
At present no plans to change	25
Probably a few years	13
Want to change soon	17

20. Interest in taking additional training:

	(N=549)
No for present work	18
Yes for present work	20
No for other work	3
Yes for other work	30

21. Kind of vocational training preferred, if it had been available when in high school:

	(N=549)
Office occupations	26
Retailing for sales occupations	9
Food sales & service occupations	3
Health occupations	9
Off-farm agricultural occupations	1
Industrial occupations	12
Others	6

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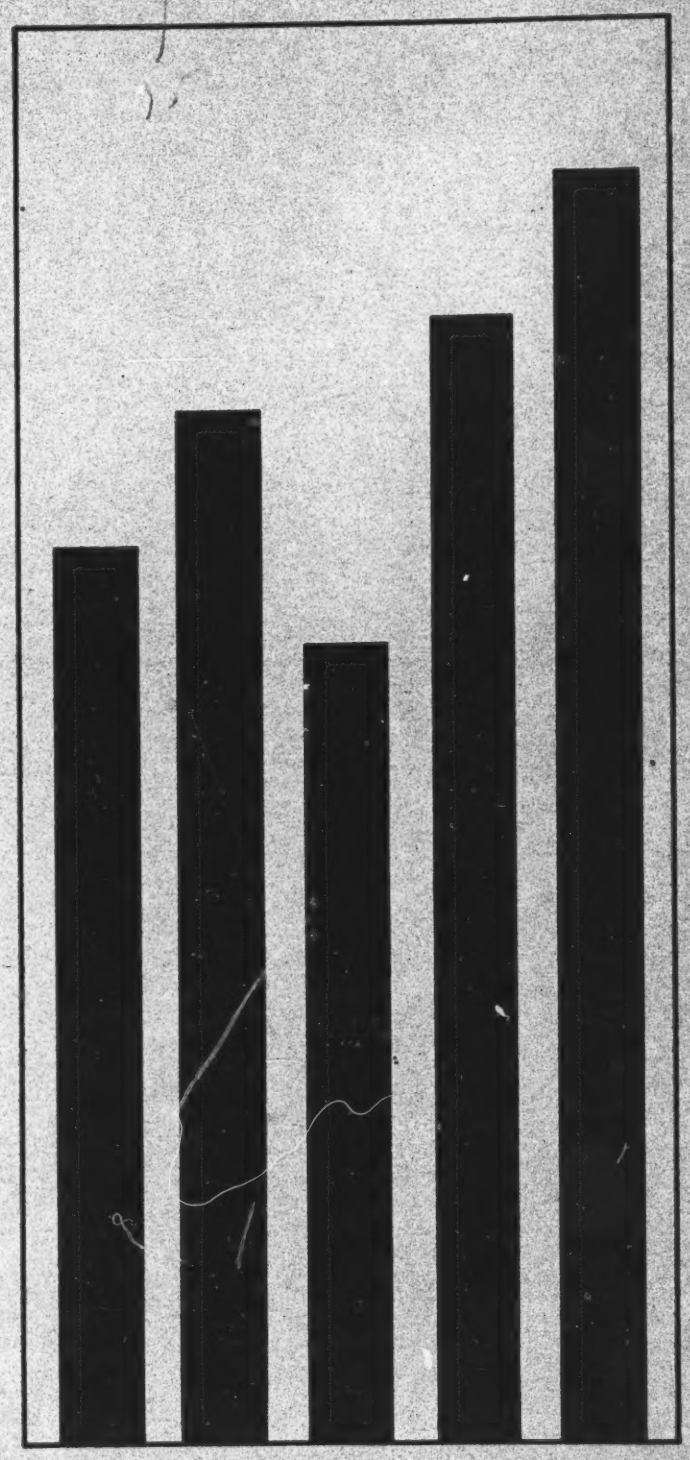

Evaluation of Local Vocational Education Programs

Bureau of Education and Research Services
College of Education
Michigan State University
East Lansing, Michigan

September, 1965

VT 00026

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Evaluation of Local Vocational Education Programs

A Manual for Administrators, Teachers, and Citizens

Harold M. Byram
Professor of Education

BUREAU OF EDUCATIONAL RESEARCH SERVICES
College of Education
Michigan State University
East Lansing, Michigan

JULY 1965

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Overview

This manual is one outcome of the research project, "Development and Demonstration of Procedures for Evaluation of a Comprehensive Program of Vocational Education in the Public Schools," conducted from April 15, 1963 to July, 1965. The project was financed by the Michigan Department of Public Instruction as a part of its program of encouraging and supporting research in vocational education.

The assumption underlying this project was that public schools are seeking more effective ways of determining the effectiveness of their programs for preparing employment-bound youth and adults for a changing occupational complex. The years 1961-1965, starting with the work of The President's Panel of Consultants on Vocational Education and now being implemented under provisions of the Vocational Education Act of 1953 and other public acts, have seen an up-surge of interest in and concern for the evaluation of vocational education--on the part of citizens as well as on the part of school administrators and their staffs. This manual is intended to serve these broad interests and needs.

As presented in this manual, local program evaluation could be a major undertaking involving a number of professional people and citizens. It is possible that, in some schools, it will be desired to conduct an evaluation on a smaller scale, or with less involvement. Chapters 7 and 8 are suggested for use in such cases.

The principles and practices in this manual are based to a large extent on the experiences of, and study by, the staffs of the three Michigan public schools which cooperated in this project. They are Fitzgerald (P.O. Warren), Gaylord,

and Marshall. The instruments and other forms included in the appendix are some of those which were developed or used in these schools.

The cooperation and help of the local project directors, M.C. Prottengeier, and later, Richard Berryman, Fitzgerald; Donald Crandall, Gaylord; and Edward Rose, Marshall; are hereby acknowledged. These men were aided by Joe Teufner, Fitzgerald; Ivan Davis, Gaylord; and John Strough and William Crumrine, Marshall; as well as by teachers committees totaling 22 members, and by citizens' committees totaling 39 individuals.

At various points in the project, assistance was given by Dr. Helen Hollandsworth and Mr. Allen Barron of Michigan State University, and by Mr. Arthur Hansen of the Michigan Department of Public Instruction. The author of the manual, Harold M. Byram, was assisted in the preparation of the manuscript by Arlynn D. Anderson, research assistant, Michigan State University.

H.M.B.

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East Lansing, Michigan

July 1965

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I. PREPARATION FOR EVALUATION OF LOCAL PROGRAMS OF VOCATIONAL EDUCATION

Deciding on What to Include in the Evaluation

The scope of an evaluation of vocational education will depend upon what administrators and teachers want to include. As far as curriculum is concerned, it is suggested that all of the curriculum which has vocational objectives be considered--at both the high school and post-high school levels. Evaluation should not be limited to those subjects reimbursable under the National Vocational Education Acts. On the other hand, there probably are several practical arts courses, usually thought of as a part of general education, such as industrial arts and home economics at the junior high school level, which would not necessarily be included. While home economics, as a field of study, has not aimed primarily at preparation for wage-earning employment, it should be included. Any practical arts program could be included at the discretion of those in charge of the local study.

If the evaluation of the program is to be comprehensive, it should not be narrowed to the formalized courses currently offered in the several fields. For example, even though no instruction in vocational agriculture may be offered in a given school, it should be considered, since there may be a need for such instruction in terms of employment opportunities and/or occupation interests on the part of high school students or adults. Likewise, a school which offers no preparation for industrial or distributive occupations should consider whether needs in these areas are being met.

Since it would be hoped that all subjects in a school curriculum contribute either directly or indirectly to preparing youth

and adults for the world of work, the total school curriculum should be considered. The amount of emphasis which would be placed on each area of the curriculum, however, would depend upon how specifically each area does or could contribute to preparation for employment.

It is highly important that the evaluation include post-high school phases of the program. More specialized vocational education should, and probably will, be given at this level. The demand for adult vocational and technical education, resulting from the changing occupational complex, including the need for re-training, serve to underline the importance of the post-high school levels.

The program of vocational guidance definitely needs to be considered. A guidance program should include provisions for placement of graduates in employment, and for follow-up of these and former students.

Broadening the Approach of Evaluation

Many teachers place a great deal of emphasis on evaluation of their instruction. They generally have tended to focus on evaluation of student achievement. Beyond this, some teachers have also sought to validate the content of the courses they teach by asking for reactions of students and parents to the content of these courses. Going a step further, some teachers have gone about evaluation quite systematically--by identifying objectives, behavioral goals, and outcomes, and then determining the kinds of evidence to collect and interpret.

It has been rather infrequently, however, that teachers have given much more than passing thought to the provisions for vocational education of the school as a whole. The comprehensiveness of the entire program of studies, and the extent to which they combine in ways which prepare youth and adults for the world of work, have not constituted a primary concern of many teachers.

Before a project on the evaluation of vocational education programs is started, it should be made clear to administrators, teachers, and citizens that total effectiveness is to be studied. This effectiveness should be judged in terms of the extent to which all aspects of the school programs help the individual to become employed, satisfied, and successful in the changing world of work.

Deciding on the Basic Approach to Evaluation

An evaluation may be made by the school staff and administrators through committee work. The advantage of this approach is that the persons involved must subsequently implement recommendations for change and bring about the changes or improvements recommended. The difficulty which sometimes occurs, however, is that the people operating the program may be so close to it that they fail to sense some of the important elements to be examined or the significant needs to be explored. Some school people may feel that they lack necessary competence in developing evaluation instruments, or in analyzing and interpreting the data to be collected.

It is not surprising, therefore, to find that some evaluations of vocational education programs have been carried out be employing "outside experts" to come into the school and make the evaluation. The benefits of expertise are obtained, but this approach also has some shortcomings. "Outside experts" may not sense all of the concerns of the school staff and of the people of the community. Moreover, there is no guarantee that the findings and recommendations of such a group of evaluators will be heeded or implemented, especially if those who are to carry them out have not had a part in formulating them.

Some evaluations, conducted by teams of "outside experts," tend to stress ways and means rather than goals and outcomes. This emphasis often results from the development and use of instruments based on "evaluative criteria."[1] These instruments tend to stress the measurement of conformity to pre-determined standards--such as laboratories and shops and their equipment, the qualifications of teachers, the scheduling of classes, and the selection of

---

[1]These formalized instruments may, however, be of value to a school committee on evaluation. Examples and sources are:

a. "Evaluative Criteria for Distributive Education," "Evaluative Criteria for Vocational Agriculture," and "Evaluative Criteria for Industrial Arts Education." All of these publications are available from the American Vocational Association, 1010 Vermont Avenue, Washington, D. C.

b. "A Procedure for Evaluating a Local Program of Trade and Industrial Education." Available from the American Technical Society, Chicago, Illinois.

c. "Evaluative Criteria for Business Departments of Secondary Schools," Monograph #90. South-Western Publishing Company, Cincinnati, Ohio.

d. "Evaluative Criteria for Use in Evaluating Secondary School Programs of Vocational Education," The Cooperative Study of Secondary-School Standards. National Education Association, Washington, D. C.

class personnel. Some programs will be evaluated by the "ways-means" approach--either by intent or otherwise--since accrediting agencies, and state agencies responsible for checking compliance with regulations for reimbursement, may be obliged to use this approach.

Modern philosophy with respect to evaluation, however, gives strong support to the "goals-outcomes" approach. The question suggested is: How well is the school achieving the goals of preparation for the world of work? The school has accepted the goals implied by the question, and it is toward these goals that it is directing its instructional programs of occupational preparation.

One of the principles of evaluation receiving increasing acceptance is that those who are to be affected by an evaluation program and/or who will be responsible for implementing any changes which may result from it should be involved in the process of evaluation. This is to say that those who are to check on the measurement of program outcomes should be those who helped to establish the goals of the program. So, theoretically at least, every school staff member--but particularly those who have responsibilities for specialized occupational preparation--should be involved more or less in the total evaluation project. Pressure of staff assignments and lack of time naturally will result in the assignment of many of the time-consuming aspects to a portion of the staff and administrators rather than to all.

Administrative Directives and Authority in Program Evaluation

The initiation of a project to evaluate the total program of vocational education in a school may come from the superintendent of schools or from the board of education. The school board should be made aware of the need for evaluation and what will be involved. The project should be initiated, not because periodic evaluations are required under the policies of The Vocational Education Act of 1963, but because the board and the school staff want and feel the need for it.

One of the next steps is to appoint an individual as the director of the evaluation. In a small school this person could be a teacher, if time can be provided for him to do this work. It could be the high school principal. However, if the principal is to direct the study, it would be desirable that he be freed from

some of his regular duties, or that a staff member be assigned to him as an assistant on evaluation--with time provided in the staff member's schedule to do this work.

In a few small schools and many medium-sized schools, and in all large schools, the appointment of a local director of vocational education either part time or full time would be justified. Since program evaluation should be one of the functions to be performed by a local director, he might be the logical person to direct an evaluation in many instances. One important point needs to be stressed here, however. The local director is not generally regarded as being a line-staff officer. However, if a line-staff officer is named to be the director of the study, he may have a co-director or assistant to whom might be delegated the authority necessary to provide the leadership required to elicit cooperation on the part of staff. Staff members should be made aware of the responsibilities assigned to the director of the evaluation project and of their own roles as they cooperate with him.

The person who is to direct the evaluation of programs of vocational education should be one who is interested in, and who has understandings about, vocational education; and who has sufficient experiential background and education to justify him in this leadership position. Other individuals who could be considered would include the curriculum coordinator, the director of research, or the assistant principal. In small schools, this role might need to be accepted by the superintendent of schools.

In addition to time available for working with teachers, committees, and employers, and time for study, research, and writing, the director of evaluation should be provided with clerical help, equipment, supplies, and necessary travel funds.

II. THE ROLE OF THE LOCAL DIRECTOR IN PROGRAM EVALUATION

Orientation of Staff

Several activities have been found effective for orientation of staff to an evaluation project. Perhaps the most common is the utilization of regular faculty meetings for two-way communications regarding those parts of the school program contributing most directly to preparation for the world of work. The faculty discussion presents an opportunity for many staff members to increase their understanding of specialized instruction for employment-bound youth.

Faculty meetings have been used to emphasize the point that every staff member may make a contribution to occupational preparation through instruction and guidance. They also could be used to point out the need for development of occupationally-oriented courses which could be beneficial to all groups of non-college bound students.

Some local directors have, in addition to or in place of these general staff meetings, held meetings of all teachers of vocational and practical arts courses. Such meetings may be held during pre-school-opening conferences or during the regular school year.

Consultants have been used in all of these types of meetings--to raise or discuss questions concerning what aspects of occupational preparation ought to be studied. They also have been asked to explain the meaning of, and the varied approaches to, evaluation; and to describe evaluation practices used by other schools. Other effective means of orientation of staff to the project might include a professional newsletter, and/or a school newspaper.

The advent of new teachers into the system after the project has been started should be given attention. Progress reports, departmental reports, flow charts depicting work of committees, and personal conferences may be used effectively. The purpose of these communications is to help each staff member become aware of his or her individual importance to the success of the project, and to develop a professional attitude and competence necessary for effective participation in the project.

Communications in Regard to Program Evaluation

It is essential that all local professional personnel be kept informed of evaluation activities. This group includes the superintendent and the assistant administrators, the coordinators or directors, and the guidance personnel.

Communications also should go to the board of education through the superintendent--to the extent that the board desires such periodic reports. Administrative policy should be followed in making periodic reports to parents and to the general public. If there is an advisory committee for vocational education, or an advisory committee on evaluation of vocational education, regular communications should go to such a committee or committees.

Both individual contacts and group contacts may be used, either through appointment or at informal meetings. Mass media--such as meetings of civic and service groups, the press, and radio--may be used in some instances.

Clarifying Program Objectives

The local director of evaluation may be very helpful in clarifying overall objectives. Many teachers will have stated objectives for each course that they teach. There should also be statements of objectives for each department or curricular area--such as business education, agriculture, or home economics. The evaluation director may assist teachers to state such objectives.

The typical school faculty, however, may not have a written statement of the over-all objectives of vocational education for the school. Early in the evaluation project, the members of the staff should be helped to determine what the hoped-for outcomes of education for over-all vocational effectiveness should be. Unless this

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is done the basis for determining what to measure will be difficult to formulate, or it may be unrealistic.

Identifying and Selecting Areas Needing Study

The central question to be answered by the local director and staff or staff committee is: What do we need to study with respect to vocational-technical education in this school and community? Consultants may be helpful at this point by suggesting questions to be considered. Some typical concerns might be:

> What should this school be trying to do to prepare employment-bound youth for the world of work?
>
> How can we determine if our former students are successful in getting employment and succeeding in it?
>
> What do the changes in occupations and employment mean for this school program?
>
> Is our program successful in meeting the needs of former students and other adults who lose employment or who are seeking other or better work opportunities?
>
> What occupational categories or fields, not represented by existing curricula or departments in the school, should be considered--in view of the changing occupational scene?
>
> How effective is this school in helping youth to take advantage of occupational preparation programs here, and/or in an area vocational school?
>
> To what extent does the present curricular offering reflect the occupational training interests of students?

The director should encourage the school staff to bring up all pertinent questions such as these. The staff committee may then proceed to select from these those that will be studied.

Coordination of Staff Efforts in the Evaluation Process

Effective ways of coordinating staff work include the use of a staff committee on evaluation, and the use of small group meetings. A common practice is to hold a monthly meeting of the vocational department heads. In a larger school such meetings are often alternated with semi-monthly meetings of smaller groups.

The director of the local evaluation project--whether he is officially given this title or not--is in a key position to cooperatively develop purposes and plans for the project. His role encompasses functions described in this section and, in addition, those functions necessary to give leadership to the other activities discussed in this manual.

Local directors have found that keeping records of their own activities helps to clarify for themselves and others their roles in evaluation. These records have included logs of their own activities, minutes of meetings and conferences, and copies of materials produced--including data-gathering instruments, correspondence, and similar materials. Some or all of these records may be of value in helping directors to evaluate their own activities.

III. UTILIZING SERVICES OF CONSULTANTS

Determining the Type of Consultant Service Needed:

As used here, a consultant is a person from outside the school staff who has had experiences and/or education which qualifies him to give advice, information, and/or suggestions regarding professional decisions, plans, or matters which should be studied. Some persons who may qualify as consultants live in the community, or in nearby communities, or work in regional offices of state agencies. Others may be found in state and federal agencies, and in state institutions of higher education.

Consultant service is most appropriately requested after some preliminary work has been done on the problem being dealt with. When some specialized proficiency is recognized to be lacking, or when information is lacking, either or both may be available from or through a consultant. Universities which have programs of vocational teacher education have members on their staffs who have knowledge and experience in vocational education and in research. The consultants on the staff of a state department of public instruction have similar competencies. They also have direct access to certain information regarding programs in schools. The state employment offices of the U. S. Department of Labor have staff members with a background of acquaintance with labor market trends, unemployment information, and some training programs (e.g., Manpower Development and Training). County directors of the cooperative extension service have served as consultants for some educational planning committees. There are many business, industrial, and agricultural associations which have staff members who have access to, and should be able to supply, pertinent occupational information.

Some of the types of persons just named, who are employed to give consultant service, as well as others who are state or county employees, will give a limited amount of consultant service without cost to the local school, or with reimbursement of expenses. It may be necessary in the case of some consultants, however, to contract for such services. Particularly would this be true if a consultant were to be used several times, or over a substantial period of time. Listed below are a few of the specific kinds of help which may be available from consultants:

Meeting with the board of education to discuss evaluation of vocational education,

Assisting in determining the phases or questions which should be studied,

Suggesting possible solutions to problems,

Supplying information necessary for developing or for modifying over-all objectives,

Giving advice on organizing and using a citizens' advisory committee,

Assisting in identifying local resource persons and/or consultants,

Assisting in developing data-gathering instruments such as survey forms, questionnaires, and interview forms,

Providing occupational information of state or national scope,

Adapting instruments to data processing equipment,

Assisting in determining how to analyze, summarize, and interpret data,

Assisting in editing reports,

Assisting the local director in training staff members in evaluation practices, and

Working with other consultants, and thereby serving as a contact with yet another agency of potential assistance.

Laying Plans for Utilization of Consultants

A director of the local evaluation project, or a local administrator, would do well to think rather specifically of the questions to be asked of a consultant. He also should consider the specific type of information, or instruction, or advice, which should be sought. These questions could be in writing, and they should be stated rather specifically if the time of the consultant and of the school staff are to be well utilized.

If a consultant is brought in to give help on the planning of a survey or other type of inquiry, it would be very helpful to have developed a statement of the purposes and the scope of the proposed study. When a consultant is invited to meet with an advisory committee or a staff committee, the members of such a committee should be informed in advance that the consultant will be present, and of the type of help which may be expected from him. This would be unnecessary if the committee, as a body, previously had discussed its need for help and had requested a consultant for this.

When a consultant is asked to deal with, or to react to considerable local data or other information, the relevant documentations should be supplied to him in advance so that he may study them. If there are controversial local issues, they should be made known so that the consultant could decide whether to avoid them, to supply information to aid in settling them, or to take a position with respect to them--depending on the understanding on these matters between the director of the evaluation and the consultant. In addition, proper interpretation of local conditions should be given to the consultant if effective results are to be expected.

Staff and Administrative Cooperation with Consultants

It is important that local school staff members, or others utilizing consultants, schedule and plan their own activities so as to be free from conflicting duties or activities at the time agreed upon for consultant work. It is not always easy to make arrangements to have another person handle the regularly-scheduled activities of staff members. Unforeseen demands may come up unexpectedly. Nevertheless, in fairness to the consultant, and certainly in the interests of accomplishing the purposes of conferences with the consultant, arrangements should be carried through for unhurried consultation, free from distractions.

Notes should be kept of matters which have been discussed. These notes may include recommendations by the consultant, and tentative decisions regarding next steps to be taken. Implementation of decisions reached through consultant service is often dependent upon support from administrators. Thus they should be involved in inviting consultants and in directly working with them--along with the local evaluation director, and staff, and committee(s).

Utilizing Consultants for Interpretation to the Community

The kind of evaluation project envisioned in this manual is one in which the local school staff and citizens carry out the evaluation activities. It is recognized that there may be some evaluations conducted under contract with an institution or organization, utilizing consultants as chief investigators or directors. One value of the evaluation project in which local staff and citizens are involved, however, is that the same persons who take part in conducting the evaluation also are the ones who may have the responsibility for putting recommended changes into effect. They are not bound to follow the suggestions of consultants, but they should consider them and select those which they think should be accepted. If an advisory committee has been used, it should further be utilized for advice or for the implementation of recommendations made by consultants.

IV. COOPERATIVE STAFF ACTIVITIES IN EVALUATION

Selecting and Organizing a Local Committee on Evaluation

The purpose of having a local staff committee on evaluation is to provide for involvement of, and for expression from, those who are connected with all phases of the school program most directly concerned with preparation for the world of work. By using a committee, the responsibility for the action phases of the project can be placed on a small number of persons, some of whom may be given specific amounts of time for work on the project.

It has been demonstrated that it is satisfactory to place on such a committee a representative of the staff from each of the vocational fields. In larger schools, the person designated as the head of such a "field" department (if any) might be put on the committee. In addition, a coordinator of cooperative occupational education and the director of guidance might be on the committee. Other persons who could be considered would be the director of placement, a curriculum coordinator, and the director of adult education--if these persons are not already on the committee because of holding dual positions. Variations in local situations will govern these decisions. In some cases it may be desirable to add a staff member from one or more curricular areas such as mathematics, science, or other course areas which provide some of the basic education for later specialization. Some schools have included a representative from the art department because of the possibility that the nature of such instruction might lead to exploration of design, commercial art, packaging, etc.

The size of the total staff will determine to some extent the size of the working committee on evaluation. Experienced teachers

and those teaching upper level high school, post-high school, and adult courses are more "vocationally" involved and generally are to be preferred. There must, of course, be an interest in the project on the part of the working committee members, and ability to carry out the related activities.

Providing Time for Committe and Individual Work on Evaluation

This procedure is one of the more difficult to carry out. Two provisions are essential: A qualified group of substitute teachers, and provision in the school budget for released time. The latter provision could be tied in with provisions which every school should make for curriculum study and in-service education. Teacher assistants have also been used.

Some schools reimburse committee members who work on Saturdays or during vacation periods. It has not been found satisfactory to use only after-school time for committee activities. Some schools have scheduled the classes of teachers on the committee so that their "conference period" comes at the same hour, and this period is used for committee work. Other schools have written provisions into the teacher's contract about participation in certain types of meetings in lieu of other more extensive, formalized in-service training such as credit workshops or courses by universities.

Planning for Committee Activities in Evaluation

The meetings of the staff committee should be carefully planned to make them most effective. This requires analysis of the whole task--by the director, or jointly by the director and the committee chairman, if the director is not serving as chairman. Some of the time of each meeting may need to be used to plan future activities. The director particularly, but also the committee, must decide what the committee as a whole will do, what may best be done by sub-committees, and what should be done by individuals. Early in the project, the steps in conducting the study may well be listed--with target dates for the completion of each. It may also be possible at this early stage, to determine the specific responsibilities of each staff member and sub-committee, and have these items written into the charted plan.

V. INVOLVEMENT OF CITIZENS

Communications To and From Citizens

A principle underlying the basic framework for evaluation, as proposed in this manual, is that those affected by the program should have a part in the evaluation. Most citizens of a community do evaluate a program of vocational education. Whether this is done willy-nilly or in a systematic manner will depend on the planning that goes into the project, the extent of involvement of citizens, and especially the adequacy of two-way communications.

Communications from citizens may provide information about interests, felt needs, employers' needs, and opinions. This information may be of help in formulating the over-all objectives of vocational education. Communications to citizens should help to increase their understanding of what the school is doing, the objectives of each phase of the program, and the purposes and practices involved in the evaluation project. The avenues for both types of communication should be kept open at all times. These avenues may include radio, newspapers, the school newsletter and other mass media. Another means of communication is through the citizens' advisory committee.

Types of Citizens' Committees for Evaluation

One type of citizens' committee is a permanent one organized to give advice on the total program of vocational education in the school. Evaluation could be one of several functions or interests of such a committee. A variation of this would be a sub-committee on evaluation. In some schools, a citizens' committee may be called a "committee of consultants on vocational education" because the local administration prefers to avoid the word "advisory."

Another type of committe is one organized and utilized for a limited period of time--such as a two-year period covering the work of the evaluation project. Such a committee might be a large one, with sub-committees assigned to certain phases of the project.

Some schools have used a small, quasi-advisory committee for evaluation. The members of such a committee would include both citizens and professional people, including teachers.

A teacher may draw together a small group of citizens for consultation on an informal basis. Where this is done in several departments, representatives of each group could meet together as an advisory committee on vocational education.

How to Choose Members of a Citizens' Committee

Suggested criteria for membership on a citizens' committee for evaluating the total program of vocational education are the following:

Knowledge of a field of work, and/or work experience in the community;

Knowledge of employer requirements and needs for employees, particularly beginning workers--including persons currently working with beginning workers;

Interest in the school and its program--which may have been demonstrated by assistance on a cooperative occupational education program, and/or by helping with field trips, etc.;

Willingness to serve, and with time to give to committee activities;

Confidence on the part of citizens in the person's judgment--which is not always possible to determine in a suburban fringe area, or in a community with a rapidly changing population; and

Ability to communicate information and ideas to the community and to the committee.

The members of the staff committee ordinarily would be asked to suggest names of persons to be considered for nomination to the advisory committee. Persons suggested should not be nominated by organizations or agencies, although the head of an organization may be asked to suggest some one for the committee. No members should be thought of as "representing" an organization or agency. Every member on a committee should regard himself as representing citizens, rather than representing any particular group, organization, or company.

Names of prospective members may be further screened by local administrators. Some informal or unofficial inquiry may be made to ascertain willingness to serve. The nominations, when submitted to the board of education, may include more names than needed for the committee--and the board with the request could be asked to select a given number for the citizens' committee. The board could, of course, add names, if it chose to do so.

What Citizens' Committees Can and Cannot Do

Following are some specific examples of things that have been done by citizens' committees in the area of program evaluation:

Discuss the over-all objectives of vocational education of their local public school;

Give advice on departmental objectives;

Give advice on the occupational scope to be considered for the program;

Help to acquaint the community with occupational opportunities and employment needs;

Help to develop and/or to try out interview forms and conduct interviews with employers;

Help conduct a survey by mail to get evaluations from parents and from other citizens;

Give suggestions on placement of graduates and on the school placement service;

Help teachers to be more comfortable in talking with employers and employees about employment opportunities and needs;

Read and react to data assembled and analyzed regarding outcomes of the local program of vocational education; and

Give advice regarding follow-up studies.

Other advisory contributions of citizens' committees have tended to be of a more specific nature:

Recommend establishing a guidance program;

Suggest adding a course on business machines to the business department;

Advise on equipping a mechanics shop;

Develop suggestions for over-all program policies for consideration by the school administrators and the board;

Assist in identifying potential special teachers for adult vocational courses;

Help to promote new programs or courses--through talks at community meetings, at gatherings of organizations, and in other ways;

Help to promote adult vocational education courses; and

Advise new vocational teachers on occupational training needs in the community.

A citizens' advisory committee cannot administer a school program, nor can it take over functions of the board of education. It should not be expected to make professional decisions which the school staff is qualified to make, nor does it engage in work which the school staff and other public servants are employed to do.

Relations to School Staffs

Since school staffs are employed to teach, the members of citizens' committees naturally would not be expected to perform this function, nor would they advise regarding instructional procedures. They should assist the staff, however, to determine the effectiveness of instruction in terms of preparation for the world of work. This task is one which the staff members cannot do entirely unaided--simply because they are not close enough to the world of work outside the school.

In a true community school, the teachers utilize the resources of the community, including human resources: the people who are engaged in the world of work. The school is looked upon by the citizens as truly their school, and they feel comfortable in working with teachers and administrators. School staff members could be invited to sit in as observers at some of the advisory committee meetings. They could then make reports to the committee, or submit questions which might help in evaluating the total program.

VI. ANALYZING CURRICULAR OFFERINGS AND RESULTS

Identifying Outcomes Anticipated from Courses

An evaluation of a local program of vocational education which gets to the heart, or to the center, of instruction is needed. Instruction for employability may well emphasize curricular analysis, and a comparison of expected or actual outcomes of courses with the competencies required by employers. If the objectives for courses leading to employment have not been formulated, the teachers assigned to teach them may be asked to state them. Among the objectives considered should be those which relate to job performance--that is, to occupational competencies, abilities, or skills. In smaller schools, the formulation of objectives will be the task of individual teachers. In larger schools, the teachers of all sections of a course, or all courses of a series, may jointly state and list the competencies which it is hoped instruction in the courses will develop. Some examples from several fields and possible courses are:

Field	Course	Examples of Competency
Agriculture	Mechanics	Ability to perform maintenance operations on a farm tractor
	Management	Ability to keep general farm accounts
	Horticulture	Ability to grow chrysanthemums
	Animal Husbandry	Ability to plan a ration for growing pigs
Office	Typing II	Ability to set up and type letters using a variety of letter styles and different types of punctuation
	Business Machines	Ability to operate all machines in the room
	Bookkeeping	Ability to make initial entries in a journal

Field	Course	Examples of Competency
Distribution	Merchandising	Ability to present information to sell a product
	Display	Ability to arrange cosmetics attractively in a show case
Service Occupations	Food Service	Ability to set an attractive table Ability to meet people and to serve them
Home Economics	Foods	Ability to plan, prepare and serve attractive, well-balanced meals
	Home Nursing	Ability to make a patient's bed, give a bed bath, and administer medicine as prescribed by a physician
	Interior Decorating	Understanding of qualities to look for in the selection of carpets, draperies, upholstery, etc.
Industrial Education	Drafting	Ability to completely detail components from layout and assembly drawings
	Fluid Power	Ability to maintain and repair hydraulic and pneumatic components
	Machine Shop II	Ability to set up a project using the mass production method

Most statements of objectives naturally will include, in addition to competencies or abilities, certain attitudes, understandings, and appreciations. These factors are important in teaching, and their attainment should be evaluated. Primary attention in the evaluation, however, may be placed on competencies--since employers often do mention qualifications in terms of them.

Setting Standards of Attainment for These Outcomes

When the outcomes of instruction, in terms of specific competencies, have been identified and stated to a reasonably specific degree, a pertinent question to ask is: How well is it hoped that

the individual student will be able to do what we say he should? For example, if the learner should acquire competency to adjust the brakes on an automobile, the question is: How well should we expect him to do this? Should he be able to do the job in a given amount of time? Should he be equally competent on all makes of cars, or on just certain ones? Against what standard shall acceptibility of performance be measured?

Some of the statements of occupational competencies or abilities may need to be broken down into component parts before a specific goal can be stated in such a way that attainment could be readily measured. The degree of attainment might vary according to the local school offering. Following are some specific statements of this type:

Typing I	Ability to type 25 words per minute for five minutes, with three errors or less
Shorthand I	Ability to take dictation at 60 words per minute for three minutes, and transcribe with 95% accuracy
Drafting III	Ability to apply limit dimensioning in terms of tolerance and allowance, based upon judgment and A.S.A. Limit Tables
Soils	Ability to classify a given tract of land on the U.S.D.A. S.C.S. classifications, and to prescribe the general cropping treatment appropriate for it
Wardrobe Care	Ability to identify major natural fabrics and combinations, and to prescribe and apply appropriate techniques of repairing burns, cuts, and tears; ability to dye light and dark colors, and to clean spots and stains originating with foods, oils, drinks, and medicines
Food Service	Ability to prepare a customer's bill accurately

A logical source of standards for specific competencies are the requirements for entry employment. Some of the foregoing statements may be made more specific from studying employment requirements, and by adjusting them to the age or grade level of students to whom they apply. Both employers of full-time graduates, and of part-time students on a cooperative-education basis, are in a position to state, in fairly specific terms, the minimum abilities

they are looking for in employees.[1] These abilities may be modified by teachers in terms of what it is reasonable to expect of the students in question.

Identifying Gaps in Curricular Offerings

A thorough analysis could be made of the school's curricular offerings in terms of job competencies. Comparison with the competencies elicited from employers and prospective employers would reveal any gaps in the school's offerings. Such a comparative study could be made by individual teachers, or by means of a series of departmental meetings.

In addition, it is important to remember that some competencies sought by employers could only be developed through a series of courses cutting across departments or fields of study. Consequently, it is suggested that the comparison of competencies developed with the competencies needed in employment constitutes an activity to be carried out by a total-staff evaluation committee. When this kind of comparison is made, particular attention is drawn to the need for new courses, new units, modifications of experiences, and/or to the need for team teaching by two or more specialized teachers. It may also be discovered that certain competencies may be needed in more than one occupational area, and that students could be placed in one group for this preparation. For example, business mathematics could be offered to students preparing for employment in a business office and to students receiving training in farm elevator operation.

The analysis of competencies needed should not be limited to those occupations in which students have been placed in the past, nor only to those occupations which currently existing courses presumably prepare youth to enter. Occupations in which entry job opportunities exist, and for which the school is not preparing youth, also should be given careful attention. It may well be that a study of new or emerging jobs might justify consideration of new

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[1]Helpful interviewing techniques and an employer-interview form used by one school will be found in Appendices A and B, respectively.

offerings. It is also possible that jobs which heretofore required only a small amount of on-the-job training may have changed in character to the point where additional skills are required--skills which should be possessed by the person before he takes the job, or skills which are not easily developed on the job.

VII. STUDYING NEEDS FOR VOCATIONAL EDUCATION WITH REFERENCE TO EXISTING PROGRAMS

Deciding on Kinds of Needs To Be Studied

Studying needs for vocational education is, in a sense, a validation of the current program. The underlying theory is that there is a positive correlation between occupations for which training is provided in the school on the one hand, and (1) the opportunities for placement of former students and graduates, and/or (2) the in-service, employment training needs of adults.

Since there would be a variety of needs that conceivably might be studied, an early decision should be made as to where the focus is to be. One focus is on the needs for which high school or post-high school training would be appropriate. This study could include an assessment of the potential work stations for a cooperative occupational education program--anticipating that such a program could be started.

Another approach which has been used is to make an inventory of occupations represented by people living in the community or area. This approach conceivably could include the occupations of persons commuting to other cities to work. The commuters coming into the community to work might draw attention to local shortages which make it necessary to "import" workers with certain kinds of competencies.

Follow-up studies of former students show that although, on leaving or graduating from school, many have entered work close to home--probably within commuting distance--some have migrated to different communities. This fact suggests two other kinds of needs which may well be studied. One is the broader occupational interests

of some students which may, in part, account for these migrations. The other is the occupational training needs and the employment possibilities of the region or the state.

Utilizing Data from Agencies and Organizations

The U. S. Department of Labor is an example of a Federal agency having state offices with branches, and with several arms or services from which different kinds of data may be obtained. Examples of such services are the Employment Service, the Bureau of Labor Statistics, and the Bureau of Apprenticeship. Some services of the Department of Commerce and of the Department of Agriculture may also be considered.

Organizations sometimes have occupational data which are otherwise not available. Examples of such organizations are chambers of commerce, and organizations of businesses such as the Farm and Power Equipment Association. Larger businesses or industrial organizations, themselves, likewise may have access to employment information not otherwise generally available.

Utilizing Census and Other Recorded Data

The most recent decennial general censuses and the quinquennial agricultural censuses are of value in gaining an over-all picture of a county or of a state. Two of the shortcomings of these data tend to reduce their value. One is that most communities or school service areas do not coincide with country boundries. The other is that their classification of occupations is too general to be of great value. The classification is oriented to production-management in businesses and industries.

Whatever the shortcomings of periodically recorded data such as the census, there is inherent in them the possibility of showing trends. Following are examples of trends in three counties from 1940 to 1960 noted in analyses presented in the MVEEP report.[1] Clerical, sales, and kindred workers increased in Calhoun and Otsego counties from 8.1% to 10.2% and from 8.5% to 13.6%, respectively. But in the metropolitan fringe county of Macomb, these

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[1]Vocational Education in Michigan. The Final Report of the Michigan Vocational Education Evaluation Project. Office of Research and Publications, College of Education, Michigan State University, 1963. Pp. 160, 167, 171.

workers increased from 12.3% to 22.7%. In the professional, technical, and kindred category, Otsego made no significant increase while Macomb jumped from 5.5% to 11.9%. In Otsego County, with many tourist businesses, the proportion of women in the labor force employed as service workers nearly doubled by increasing from 16.5% to 31%, as contrasted with an increase for all employed in this category in Calhoun County only from 8.1% to 10.2%.

Collecting Data for an Area to Determine Manpower Needs

The evaluation committee may properly build a rather comprehensive list of logical questions about manpower needs. From this list can be selected those which seem important to the committee's objectives, and which appear to be of the type which could be answered through interview or questionnaire. The following list is suggestive only, but it may serve as a beginning for studying occupations other than farming.

1. How many persons are usually employed in each occupation: male, female; part-time, full-time?
2. What are the minimum and maximum ages of persons in each occupation?
3. How many persons have been separated from their employment in each occupation within the past 12 months? (Temporary layoffs are not included.)
4. In what occupations are there current shortages of workers? What are the reasons?
5. In what occupations are there qualified workers who are unemployed? What are the reasons?
6. For what jobs would employers prefer employees to have specific training prior to initial employment?
7. What kinds of vocational training do the several firms think the schools should give?
8. How many new workers have been imported from another community during the past twelve months?
9. How many residents in the community commute to work in another community? What are the jobs at which these persons are employed, and what is the number employed at each job?
10. Where do employers recruit new employees less than twenty-five years of age?

In addition to these questions, others relating to farming may be included. For example:

1. What is the number of full-time, established, farm operators in the community?

2. What is the number of persons employed in another occupation part-time, and in operating a farm part-time?
3. What is the number of young farmers not yet fully established as sole operators of farms? How many are working in partnerships, at home working for wages, for an allowance, or have enterprises of their own?
4. What is the number of persons employed on farms the year round?
5. What are farmers' interests and needs for adult classes in agriculture?

A form used by a Michigan School to make a study of this type may be found in the appendix.[2] Each evaluation committee may wish to develop its own form. A caution to be observed is to avoid collecting data which will not be analyzed, or which are not really needed to answer the questions posed.

Where several communities or schools wish to cooperate in making an area study, the procedures for collecting data could be quite similar to those previously described. Many more people might need to be involved. In addition, more weight would be attached to data available on a regional or national basis.

Analyzing Data to Determine Needs

The amount of analysis given to collected data often will depend upon the questions to be answered. If trends are desired, then one should seek data from which trends may be inferred. Sheer numbers of employees in a certain job may not be as significant as the annual turnover, or the annual rate of expansion, in a certain job.

A study based upon data collected only at one given time might be of limited value in showing trends. Therefore, an analysis which shows employers' future plans and hiring patterns could be helpful. Some of the factors influencing trends include people's habits of buying and their habits of leisure. The length of employability in an occupation is also a factor. Jobs for which employers are seeking employees with certain training, as contrasted with general requirements, or with those of other employers--as expressed in previous years--would be worth analyzing if such information were available.

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[2]See Appendix C.

Evaluating Existing Programs in Terms of Needs: Theoretical and Actual, Current and Projected

We return to the theory underlying this chapter, namely that the existing programs should match the theoretical and actual, the current and projected needs. If the extent of matching is to be determined, it would be necessary first to list possible programs of vocational education with the courses and/or other units named, and then to list the occupations for which these programs provide instruction--for entrance, up-grading, or re-training. These lists would be built upon the data collected from the sources just described. The existing program could be placed parallel to this revised program. The differences between "what should be" and "what is" would become starting points for developing tentative evaluations. Besides the gap among needs and offerings, the existence of other possible gaps could be determined. The lack of offerings for a particular age group, and/or the lack of a variety of programs for girls or women, are examples of areas which might possibly need to be examined. Until the practical realities of the situation were assessed, the identification of gaps or inadequacies would be somewhat theoretical. There would remain, for example, in addition to the obvious matter of financing programs, the assessment of staff competencies, staff requirements, and the facilities available for training.

Evaluation of Staff Competencies and Facilities

Probably highest on the list of staff competencies are occupational experience and occupational skill. The lack of a sufficient number of persons with occupational competency and willingness to teach is at the root of the perennial shortage of qualified vocational teachers. However, it may develop that there are teachers of other subjects on the school staff who also have some job experience and competency, and whose services might be used. The competency of employees in the community must always be considered in determining the future availability of vocational teachers.

Of course every educator would agree that professional competency should be evaluated, and that every teacher should have sufficient preparation in teaching to enable him to be effective. However, competency as a vocational teacher, and competency as an

"academic" teacher are not necessarily the same. The specialized abilities of teachers of employment-bound youth and adult employees should be recognized. Moreover, it should also be admitted by all educators that not all vocational education needs to be given by the public schools. Larger businesses and industries, as well as private and proprietary schools, conduct many effective vocational training programs. The availability of these training resources should be noted. They could reduce the need for certain types of training being offered in the public schools.

Facilities for teaching may exist in the school, or outside of it: on farms, in businesses and industries, and in other places of employment. Thus, the evaluation of training facilities should be comprehensive and, at the same time, oriented to the recognized training need of employees. Employers who are abreast of new facilities and equipment developments in production, processing, distribution, and services, may be asked to assist in evaluating the school's physical facilities for vocational education.

VIII. EVALUATION BY PLACEMENT AND FOLLOW-UP OF FORMER STUDENTS

Utilizing Placement Services in the Evaluation Process

One indication of an effective program of vocational education is the extent to which former students have found, obtained, and succeeded in employment. Several aspects of employment status may need to be studied. For example, aspects such as the available opportunities, job titles and descriptions, requirements for employment, educational background and training for the jobs identified, and salaries or wages. One way which has been used to accomplish this task is to use the services and information which can be made available through a placement program operated by persons directly involved with the guidance and training of these young people.

Some of the services which may be provided by a placement program operated within the school system are:

1. To maintain a record of, and contact with, all known or possible employers;
2. To work with members of advisory committees and with former students currently employed, to provide continuing recognition of the needs of youth and school improvement;
3. To assist in informing students of the job opportunities which are available and of the job qualifications which are needed;
4. To help place the youth, and to use a continuing plan of coordination between employers and employees;
5. To conduct follow-up studies periodically to determine if the school placement service and the courses of instruction are meeting the needs of students and of employers;
6. To assist with studies and surveys to determine job qualifications in demand and to use this information for curriculum planning;

7. To propose and to execute effective measures of improvement when needed;
8. To be constantly alert for the discovery of new methods, materials, and techniques as they occur, and to relay this information to other members of the faculty; and
9. To assist with other research--carried out by both the school and by outside agencies.

Procedures in Organizing and Operating Placement Services

While it is recognized that only a few schools have operated placement services in the past, the value of such programs is generally recognized. The size of the student body, numbers of qualified personnel for its operation, faculty time, school finance, and lack of facilities are all factors which place limits on plans for a placement service. However, it is generally recognized that, in spite of the operational problems which arise, the need for such a service exists and this need should be satisfied as adequately as possible.

Procedures for organizing and operating placement services will naturally vary by school. The procedures followed by Fitzgerald High School, Warren, Michigan have been successful, and could be adapted and used by other schools. The guidelines for operating procedures, suggested and discussed below, are based largely upon this program.

Some of the considerations deserving special attention during the organizational and operation phases of a placement service are: (1) how to provide effective means for aiding students and graduates to appraise their potential employment abilities; (2) how to provide means by which the students and graduates may become aware of job opportunities; and (3) how to provide means of coordinating the needs of students and graduates for employment with the needs of employers. Each community may, by its very nature, have a different view of the objectives of a placement service. But this view should not be myopic because the student employee, the graduate employee and, eventually, the entire placement program will suffer.

One or more planning committees, augmented by representatives from community business and industry, could be used to help start a placement service. These committees would function under the direction of a representative from each of the vocational services

or departments of the school. They could be of great assistance in providing a comprehensive approach to placement. Contacts between the business community and school personnel often provide a wealth of information which could be used in developing a placement service.

After the results of initial follow-up surveys have been tabulated and carefully weighed, administrative approval should be secured before continuing with the next phase of development. Administrative approval and recognition of the findings are both essential. By involving some of the line-staff personnel, especially the principal, it may be discovered that coordination and planning is more readily accomplished. However, complete approval by the entire administration should be secured before continuing with the next phases of development.

After conducting and analyzing preliminary studies, additional staff time for coordinating and planning will be required. Before further planning can continue, it should be understood by the school administrator who has the responsibility for making staff assignments that operating a placement service will require the use of staff time not previously allocated for this function. In most cases, an addition to the operational budget will be required, and revised scheduling of staff time may be necessary. These two factors should not discourage the planning or establishment of a placement service. In Michigan, the salaries and the approved travel expenses of vocational education placement personnel may be reimbursed through Federal and State vocational education funds.

One recommendation which has been made regarding money, time, and personnel for programs of educational research and innovation, is that "School systems should allocate an appropriate proportion of their annual operating budgets--hopefully not less than one per cent--for the support of research and innovation."[1] The same is also true of time allotments. Adequate time should be provided for each staff member to participate in functions necessary for the successful operation of the placement program. Time will be needed to conduct surveys, to plan curricula, to evaluate, and to carry out other activities designed to improve the instructional program.

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[1]National Education Association, Schools for the Sixties: A summary Report of the Book. Washington, National Education Association, 1961, p. 5. (Complete Report from McGraw-Hill, New York, 146 pp.)

The decision as to how time and money are to be allotted will be one that will be made by the board of education and/or the school administrator. However, a reasonable and carefully planned recommendation presented by a planning committee will enhance the chances for acceptance and final approval.

Who will be responsible for the successful operation of the placement program? While such a program will be subject to school policy, it is best that, in the interests of continuity of operation, the responsibility of directing a placement program be delegated to one person. Other staff members involved in the program should serve and function under this person's leadership, and they should be responsible to him. The criteria discussed in an earlier chapter concerning the selection of personnel within the school should be kept in mind when naming the persons who are to be responsible for the management of the placement service.

The coordinators of the cooperative education program, preferably one person selected from each vocational service or department in the school, should work with the persons supervising the placement program. Coordinators must be avilable to trainees during school hours and during on-the-job visitation periods. Individual advice and assistance is provided to coordinate school and job experiences to the best advantage of each student.

Procedure and operation of a placement program will vary from school to school. But in general, many of the main functions and the guidelines for implementation will apply to all schools:[2]

1. GUIDANCE:
   a. Cooperative Education Trainees.--Coordinators are available during school hours and during work station visits. Advice and assistance are provided to coordinate school and job experiences.
   b. Graduating Class.--Provide information and advice to help qualified students apply for positions reported to be available from Civil Service, apprenticeship programs, personnel offices, State Employment Security Commission, military services and other sources.
2. STUDENT RELATIONS:
   a. Cooperative Education Trainees.--High school juniors can make application for cooperative education programs. Successful candidates are placed on jobs during their senior year.

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[2]Kenneth Boogren and J. L. Teufner, "How to Develop a Job Placement Program," Michigan Industrial Education Newsletter, 24:1:3 (October, 1964).

b. Graduating Class.--Applications are made by graduating seniors early in the spring. Information and referrals are made by the placement office.

c. Graduates.--Placement Office applications are kept on file indefinitely. Graduates with open applications will receive first consideration for employer requests.

d. Part-time Employees.--Any student qualified for, and interested in, part-time jobs may register for placement. The registration may be done through a counselor, but placement should be made by a coordinator.

3. EMPLOYER SERVICE:

The placement office should maintain an employer file, listing those employers desiring recommendations for job applications.

4. FOLLOW-UP STUDIES:

Studies are made periodically to determine: (1) the value and effectiveness of on-the-job training: (2) post-high school education and work experience; (3) certain kinds of information which can be obtained through special studies; and (4) evaluation of the vocational education program.

Each school having a placement program will most probably use variations of the foregoing functions, chosen and designed to fit the needs of the community served. In general, the design of the program will be functional. It will deal with the realities of the work situations faced by students, graduates, and other potential employees.

Placement Records and Their Use

As with any school function, forms and records will be necessary. The types and numbers of forms used will vary with the idealogy used in their construction. But three points should be kept in mind during the development and use phases. First, the records are necessary. Because they are necessary, it is recommended that they be as inclusive as possible, but be held to a minimum number. Secondly, the information gathered through the use of these forms must have purpose. Too often, many data are gathered which have little use in accomplishing the purposes for which they were intended. This observation leads to the third point: The forms should be reviewed periodically to see whether they have maximum use. In the face of rapid change, obsolescence resulting from inability to recognize the reality of true working conditions, can only impede the education of work-bound youth in public schools.

Basically, three types of forms are essential for use in a placement program: An application form,[3] an employer record[4] and a referral card.[5] All three are interrelated in their use in placement. Examples of these forms are included in the appendix of this report.

The application form should be designed to provide information about the student which will be pertinent--such as personal history, skills, high school and post-high school education, standardized test scores, and type of work preferred. In addition, this form should be designed with space to record previous employment, and referrals made by the placement office. Three items on the application form should be of particular importance. They should be carefully correlated and interpreted: the type of work preferred, specific courses studied, and ability, interest, and mental maturity test scores.

The second form, the employer record, is one that should be kept for each employer, past, present, or potential. Information about the firm, the type of service desired, the qualifications expected of employees, and the salary should be noted. In addition to this information, space should be provided on the form to record referrals, when they were made, and any short remarks that might strengthen future relations with the firm in question.

The referral card is important because it provides an applicant with a "calling card." On this calling card, there should be a ready source of information about the applicant which normally would not be available to employers of smaller community businesses. If this form is designed so that one section of the card can be detached, filled in by the employer, and mailed back to the placement office, it may provide information as to whether the applicant was hired and why--or why not. These cards, showing reasons for not hiring an applicant, may suggest traits not previously discovered about a particular applicant. For this reason, the referral cards can become one of the more important records of the placement office. The information received also may be used by the guidance services.

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[3]See Appendix D.

[4]See Appendix E.

[5]See Appendix F.

Records should be maintained for graduates as well as for undergraduates. Graduate records[6] will include more nearly complete information on an individual, and some means of keeping them separate is desirable. One suggestion to help solve this problem would be to use different colored paper for the different groups.

All records must be carefully maintained so as to reflect as nearly as possible the interests and abilities of potential employees, the needs of the employers, and correlation of the two. A permanent and current record for each individual that has sought assistance from the placement office should be maintained in order to have an up-to-date file that contains information essential to the operation of the placement service.[7]

Conducting Follow-up Studies of Former Students

One of the more important functions of evaluation is that of determining what vocational experience and training will be required of graduates and of those persons to whom the ill-fated term "drop-out" has been attached. Youth lacking marketable skills are hindered in a world of work where jobs which require little or no skill are decreasing rapidly. If these untrained youth do obtain permanent employment, they are the first to suffer at any sign of economic decline. It is this seeming paradox which emphasizes the increased need for a continuing study and evaluation of the persons concerned.

A suggested starting point in the organization of a placement service is to conduct a series of follow-up studies on several recently-graduated classes.[8] Some of the things such a follow-up study can reveal are:

1. The number of graduates who became employed in jobs for which they were trained;
2. The degree of difficulty or ease of obtaining employment;
3. The names of employers which might be added to a growing list of possible places of employment;

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[6]See Appendix G.

[7]See Appendix H.

[8]See Appendices I and J for suggested forms to use for follow-up studies. The Division of Vocational Education, Michigan Department of Public Instruction, has a publication entitled, "Guidelines for Conducting Follow-up Studies of Vocational-Technical Education Students," which is available to Michigan schools on request.

4. Job titles and job descriptions as perceived by employees;
5. Working conditions encountered;
6. The value of vocational and academic courses in securing a job, and in performing the duties of it; and
7. Specific training and education shown to be needed by future employees.

After the results of these studies have been reviewed, a set of objectives for the placement service should be formulated cooperatively by the principal, counselor(s), the vocational director, the coordinators, and/or other personnel who might be involved in the program in some way.

Frequently, follow-up studies of graduates should be conducted, perhaps one, three, and five years after graduation, to discover needs for retraining and for up-grading. From these same studies, labor movements, population, migration, and employment patterns can be discovered--and vocational needs could be more adequately met.

Emphasis increasingly is being placed on providing education for the high school drop-out, but progress is slow because of the unique nature of each case. Some basic guidelines which may be followed or adapted for use in public schools are:

1. Contact the drop-outs.--This step is essential in the early phases of studying needs. It is felt that if they are approached as former students, regardless of their social and educational positions before leaving school, the degree of response will be higher when information is sought.
2. Conduct placement follow-up surveys.--This process should be initiated as soon as the students discontinue formal education. It should also be conducted annually for an extended period of time in order to ascertain what factors are influential in the success or failure of the individual as an employee. It has been recommended that follow-up studies be conducted for at least four years to discover not only educational needs, but also such things as willingness to work, areas of previous employment, apparent interest, and employment success.[9]
3. Keep placement services current.--At the same time as the follow-up studies on former students are being conducted, it will be necessary--in order for a placement service to function properly--to keep a current list of available sources of employment in occupations for which these persons are qualified.

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[9] Committee of 100: Barry, Branch, Calhoun and Eaton Counties, Michigan, (1961).

One of the more important aspects of follow-up studies is determining how the information received can be best utilized. Uses will vary according to the needs of the school. The purposes for conducting the follow-up study in the first place should be considered--along with any new needs which are discovered while the follow-up study is being conducted. Some suggested and possible uses of follow-up information might be to provide:

1. A source of recent information concerning the needs of business and industry;
2. A guide for changing the high school curriculum;
3. A study of characteristics desired in student employees;
4. An opportunity for guidance and counseling personnel to study traits which may lead to success or failure in the world of work;
5. An insight into employee mobility, and therefore the adequacy of the training program and the placement services;
6. A guide for studying the effectiveness of the program within the business community; and
7. Information regarding additional educational and training needs of employees.

Information regarding the results of follow-up studies must be carefully analyzed and put to the best possible use in order to be of continuing benefit to the student, to the school, and to the business community.

IX. UTILIZING THE LOCAL EVALUATION

Preparing and Disseminating the Report of the Study

It has been intimated in a preceding section that developments and results of various analyses and phases of an evaluative study would be reported from time to time. For example, the objectives of the total program, when stated and approved by all appropriate bodies, may be given wide dissemination to all interested persons. Likewise, a follow-up study of former students, as one phase of an evaluation project, may be reported as soon as completed.

But periodically--meaning every year, or two years, or five years--the results of all phases of the evaluation project should be drawn together into one report.[1] What would go into this report is determined, to a large extent, by the persons for whom it is intended. All teachers and administrators in the school should be interested in it. All members of citizens' advisory committees for the school, as well as members of the board of education, should be informed of the results of the entire study. Heads of some businesses, industries, and associations of these enterprises should be considered to be parts of the audience. In short, everyone who is in a position to help advise concerning the findings, or help to implement them, should be considered as part of the total audience.

Since these people will vary in their background and professional education, care must be taken to present the report so that all can understand it. Use should be made of charts, graphs, diagrams, and other visual aids as means of illustrating such things as trends, statisical information, and other quantitative data.

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[1]See Appendices K and L for suggested methods.

There are several logical ways to organize the report--depending on the nature of the project itself, and on the desires and interests of the people who are making and/or using it. It may be organized by curricula, or by departments. Under either of these alternatives, each department would report on its own "self-evaluation." It may be organized by objectives, outcomes, or goals to be attained, and present evidence (or show lack of evidence) on the attainment of these goals. It may be organized chronologically--in the order of occurrence or completion of different phases of the project.

Implementing Findings in Development of Long-Range Plans

Perhaps the more important results to be expected as use is made of the evaluation are those which are of a long-range nature. Ordinarily, these results would grow out of rather widespread consideration of the evaluation report, and detailed discussion of the long-range implications-applications of the recommendations. Examples of long-range changes are:

1. The planning and development of a new training program to meet an emerging need;
2. Planning for the phasing out of less effective parts of the curriculum or for absorption into other parts;
3. The development of a new institutional unit at the post-high school level, including buildings;
4. The development of long-range cooperative arrangements with other schools whereby their resources are pooled and more fully utilized.

Planning Immediate Changes in the Light of Findings

Some changes may be made while evaluation activities are still in progress--if the need for such changes is brought to light. Changes which can be made readily, should be carried out as soon as possible--if they promise to better the program. A few examples would be:

1. Starting a guidance program;
2. Organizing a placement service for students;
3. Adding a teacher or coordinator where justified--or assigning some of these duties to another staff member;
4. Starting team teaching where appropriate; and
5. Up-dating courses--which should be done frequently anyway.

It is pertinent to state again that evaluation should be a continuous process. Therefore, as changes are made, both immediate and long-range plans should be laid for evaluating additions to the program, new services, or other changes.

Planning for Later Evaluations or Specific Studies

Some of the specific studies made will be repetitive in nature--for example, the study of occupational status of each graduating class one year or two years later. Other examples may be annual departmental evaluations, annual evaluative discussions by an advisory committee, and continuing revision of teacher-made instruments for measuring student achievement.

Beyond these, there may be some approaches suggested in this manual which have not been tried by a school evaluation committee. These approaches may be identified for future trial. Not all possible means of evaluation have been demonstrated by actual use in schools. Imaginative and creative educators will find new and better ways of assessing the effectiveness of programs for developing occupational competence. Since schools utilizing reimbursable funds under the Vocational Education Act of 1963 will be obliged to aid in making evaluations every five years, it is to be expected that, in the future, they will make plans for conducting such evaluations in the future.

1943-65

ANNOTATED REFERENCES

American Vocational Association. Vocational Advisory Committees. Washington, D.C.: Committee on Research and Publications, American Vocational Association, Inc., 1950.

This pamphlet was written in an effort to promote the formation and use of advisory committees in vocational education, and to give a comprehensive explanation of the needs for such committees in sound educational programs. The topics covered include brief subjects, the kinds of committees possible, how advisory committees should operate, methods of working with them, precautions to take with them, committee functions, and how advisory committees can fit into the operating structure of the school system. Some examples of advisory committee work from different parts of the nation are included.

Ely, L.E. "Teacher' Reactions to School Evaluations Using Evaluative Criteria." National Association of Secondary School Principals' Bulletin, 43: 38-43, December 1959.

Reviews reasons for, and methods of, studying the reactions of teachers in public high schools to school evaluation based on the "evaluative criteria" of The Cooperative Study of Secondary School Standards. The article infers the importance of studying teacher reactions and how these reactions might help or hinder a program of evaluation. Purposes, procedures, techniques, and principal reactions of the teachers studied are all listed.

Hall, Theodore O'Connell. The Effectiveness of Secondary School Curricular Offerings in the Occupational Activities of Graduates Who Do Not Attend Accredited Institutions of Higher Learning. Lexington, Kentucky: Department of Education, University of Kentucky, 1943.

A dissertation written about the problem of placement, course offerings, and the employability of students graduating from non-accredited institutions of higher learning. Findings regarding curricular offerings as related to occupational status, how employment positions were secured, employment as related to interests, and other pertinent facts are shown. There are many interesting comparisons and usable ideas.

Harper, Aaron Wesley. Citizens' and Faculty Guide for Planning Your Educational Program. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1960.

A manual designed to be of assistance to citizens, teachers, administrators, and school boards in evaluating and planning educational programs. It is written as an orderly procedure for gathering facts which are important to a school system. There are four major parts, namely: (1) information gathering; (2) goals and objectives, (What is expected of schools?); (3) inventory of existing programs; and (4) summarizing and making recommendations. The guide is particularly designed for use by citizens' committees.

Krebs, Alfred H. "Guiding Principles for Evaluation Under the Vocational Education Act of 1963." Agricultural Education Magazine, 37: 238-239, 253, April 1965.

The principles brought out in this article are applied to agricultural education. They are stated in such a way, however, that implications for other fields can be recognized readily. This article should be helpful to school committees on evaluation which are in the process of setting up guidelines for local evaluations.

Leach, K. W., and Mathews, R. D. "What Are New Developments in the Evaluation of Secondary Schools?" National Association of Secondary School Principals' Bulletin, 43: 226-231, April 1959.

It is pointed out emphatically that there are few really new developments, but that many modifications and new techniques are being applied to previous methods of evaluation. The opinion of the article bears toward the statement, "Schools should be evaluated in terms of their own unique problems." There is some discussion of the common objectives of all evaluation, the philosophy, the criteria, and the techniques of evaluation, as well as of types of evaluation which are more efficient in different types of schools.

Lucio, W. H. "Evaluation of the Educational Program." Review of Educational Research, 29: 165-176, April 1959.

Evaluation is defined as not merely a testing program, or a synonym for measurement, or an administrative device for assessing teachers or instruction. Rather, it is a comprehensive, cooperatively developed, continuous process of study to be defined in terms of functions and purposes. The article is a review of the writing of 84 authors on theory, purposes, and techniques to be employed; and on the production of numerous evaluation instruments and devices.

Mallory, B. "Home Economics Curriculum Study." American Vocational Journal, 38: 34-36, September 1963.

The article is a progress report on a new approach to the study of the high school curriculum in home economics education. It describes how the evaluation process has been carried out in the past and how different agencies have become involved in it. The general steps for broadening education on a large scale are given.

Sumption, Merle Richard. How To Conduct a Citizen-School Survey. New York: Prentice-Hall, Inc., 1952.

Explains the procedure for organizing and conducting a community survey in a wise and efficient manner. It is written as a guide for citizens committes and not to usurp professional prerogatives. It contains sections on how to select a committee and how to study a community.

Thomas, Maurice J. A Guide for Action. Pittsburgh: University of Pittsburgh Press, 1954.

The manual is written as an orientation to evaluation, and is presented in check-list form. It is designed to help citizens to discover the strengths and weaknesses of educational programs, and is unique in that it may be regarded as a modified programmed approach to organizing citizen participation. Major sections deal with personnel, administration, organization and finance, school plant, and maintenance.

Wilborn, L., and Mathews, R. D. "What Are the Effective Ways of Evaluating the Secondary School?" National Association of Secondary School Principals' Bulletin, 41: 19-22, April 1957.

The importance of determining the requirements of a school system is brought out by statistics on enrollments and dropouts of high schools and colleges. The need for providing education for college-bound as well as for work-bound students, for providing courses of instruction which offer variety as well as opportunity, and for providing for continuing evaluation are all discussed. Evaluative criteria are related to problems within school systems.

"A Community Occupational Survey." American Vocational Journal, 25: 13-14, December 1950.

Describes how a community survey was conducted in St. Cloud, Minnesota, to determine the vocational education needs of the community. Given is a list of reasons for making the survey which could be used as guidelines by other communities. General outlines of procedures, planning methods, a summary of data, and applications are also presented.

"Nascent Views on Vocational Education." Michigan Education Journal, 41: 16-17, April 1964.

This article reviews a talk by Dr. Robert Chandler, Dean of the College of Education, Northwestern University. It deals mainly with the education of the whole student, his relation to the world of work, and the responsibility of schools to employment-bound youth. It also includes comments on school dropouts and their problems, and offers suggestions which might be accepted as possible solutions to the problem of providing education and training for dropouts.

Additional References

Anderson, Stuart. An Analysis of Community Occupational Surveys. Menominee, Wisconsin: The Stout Institute, 1949.

Arny, Clara Brown. Evaluation in Home Economics. New York: Appleton-Century-Crofts, Inc., 1953.

Boogren, Kenneth, and Teufner, J. L. "How to Develop a Job Placement Program," Michigan Industrial Education Newsletter, 24: 1-3, 1964.

"Community Surveys," Handbook of Suggested Techniques for Conducting Community Occupational Surveys and Follow-Up Studies. Mississippi State College, August 1953.

Davis, R. H. "Let Alumni Evaluate Your School's Success." Ohio Schools, 42: 25, February 1964.

Furst, Edward J. Constructing Evaluation Instruments. First edition. New York: Longmans, Green, and Company, Inc., 1958.

Hamlin, Herbert M. Citizens' Committees in the Public Schools. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1952.

Shaw, A. B. "Measuring Your School." Overview, 4:11, June 1963.

Smallenberg, C. J. "Sound Evaluation." Educational Leadership, 21: 11-16, October 1963.

Committee of 100. Barry, Branch, Calhoun, and Eaton Counties, Michigan. Tentative Report, 1964.

Vocational Education in Michigan. Final Report of the Michigan Vocational Education Evaluation Project. East Lansing, Michigan: Bureau of Educational Research Services, College of Education, Michigan State University, 1963. Pp. 160, 167, 171.

Vocational Advisory Committees Bulletin. Washington, D.C.: American Vocational Association, 1950.

APPENDIX A

SUGGESTIONS ON INTERVIEWING TECHNIQUES

Approaching the Respondent

The best way to secure information from a respondent is the one that proves to be the easiest to secure all of the information desired. One suggestion that has proven to be valuable is to make the respondent feel at ease. Introduce yourself and ask if you might have a few minutes to explain what you are doing. Explain that the interview is for the benefit of the public school. If the respondent does not have time when you first call, try to make arrangements to call again at a later date.

Usually, when a respondent has been engaged in conversation, some of the answers sought will be given without asking for them. BE FAMILIAR WITH THE CONTENTS OF THE FORM so that if a respondent gives an answer to an item that appears on another page it can be filled in later. In many cases the answers secured will not specifically fit the question asked. It is at this point that the interviewer must use the best judgment in clarifying the answer.

Administering the Instrument

Survey forms should be arranged in check-sheet form for ease and speed in handling. It is important that the interviewer read the instruction pertinent to each item so that responses may be correctly recorded.

If all of the items are not checked in some manner, the data for that particular item will not be as valid as they are for those that have been completely answered. BE SURE THERE IS A RESPONSE FOR EACH ITEM THAT IS TO BE ANSWERED.

Selecting and Identifying Respondents

Whatever method of selection is used, try to get a cross-section, or representative sample. If the respondents are to be a certain group of parents, limit the selection to these persons only, but have a representative sample. If larger samples are desired, combinations of desirable respondents may be used, i.e., parents of students and parents of graduates for "X" number of years. Be sure to establish the list of desired respondents before the survey is begun to avoid an unjustified bias in the final summary.

APPENDIX A.--Continued

From the master list of potential respondents, assign each name a number. After the interview has been completed let this number serve as the only means of identifying the case. If it is necessary, the case numbers may be checked against the names of the master list.

APPENDIX B

HIGH SCHOOL ENTRY JOB DESCRIPTIONS

Date _____

TYPE OF CONCERN _____

MAJOR PRODUCTS _____

1. DEPARTMENT _____

TITLE OF ENTRY JOB _____

JOB DESCRIPTION _____

_____

JOB QUALIFICATIONS _____

_____

2. DEPARTMENT _____

TITLE OF ENTRY JOB _____

JOB DESCRIPTION _____

_____

JOB QUALIFICATIONS _____

_____

NAME OF CONCERN _____

ADDRESS _____ PHONE _____

POSITION OF PERSON PROVIDING INFORMATION _____

_____

(Suggestions for interviewing: The job description should include the duties that an employee has to carry out in order to perform the job identified. Job qualifications should include what preparation is necessary to become employed and should be written in terms of type and level of mathematics, communication, science, etc. is necessary.)

APPENDIX C

INTERVIEW FORM

Occupations and Employment in Business, Industry, Farming, Government, Services, and Professions

Gaylord Community Schools and Service Area

Name of firm_____Address_____

Person supplying information_____Phone_____

Things your new employees should know when you first hire them*	Number of Employees				
	Total	Full Time		Part Time	
		Year Rnd.	Seas.	Year Rnd.	Seas.
Basic Principles or Skills**					
A. Business - Clerical					
1. Typing					
2. Stenography					
3. Bookkeeping					
4. Business machines					
5. Business law					
6. Filing and general clerical					
7. Sales					
a. retail					
b. wholesale					
8. Public relations					
9. Customer service					
B. Agricultural					
1. Crops					
2. Soils					
3. Livestock					
4. Forestry					
5. Conservation					
C. Trade and Industrial					
1. Carpentry					
2. Building construction					
3. Drafting					
4. Machine shop					
5. Sheetmetal work					
6. Motor mechanics					
7. Auto mechanics					

Continued on Next Page

APPENDIX C.--Continued

INTERVIEW FORM--OCCUPATIONS AND EMPLOYMENT

	Total	Number of Employees			
		Full Time		Part Time	
		Year Rnd.	Seas.	Year Rnd.	Seas.
D. Home Economics					
1. Foods					
a. cooking					
b. nutrition					
c. budgeting					
d. serving					
e. handling					
2. Clothing and textiles					
a. design					
b. fabrics					
c. scale					
d. sales					
3. Housekeeping					
a. motels					
b. restaurants					
c. other					
4. Grooming					
E. Scientific or professional					
F. No special background needed					
G. Other--including combinations					
H. Estimated average annual replacements next three years					
I. Estimated average annual new personnel next three years					

J. Should your employees be graduates of high school_____ business or grade school_____, College_____

K. Would adult education courses be useful in keeping your employees up to date in your business?_____

L. Would employer be interested in hiring high school seniors on a part time cooperative occupational training basis?_____
List of jobs: _____

*If employer has written description for jobs, these should be made available. Thank you.

**Circle number of employees necessary to be able to perform skills with confidence.

APPENDIX D

STUDENT PLACEMENT OFFICE APPLICATION

PL 105

Fitzgerald High School, Warren, Michigan

PLEASE PRINT

Date _____

NAME _____ GRADE AND SECTION _____

ADDRESS _____ PHONE _____

BIRTHDAY _____ AGE ____ SOCIAL SECURITY NO. _____ HT _____ WT _____

TRANSPORTATION YES ___ NO ___ TYPE OF WORK PREFERRED _____

SKILLS

BUSINESS OR INDUSTRIAL MACHINE SKILLS

TYPING (SPEED) _____ _____ _____ _____

SHORTHAND (SPEED) ____ _____ _____ _____

HIGH SCHOOL COURSES COMPLETED

PLEASE LIST FINAL GRADES EARNED IN EACH COURSE

BUSINESS	BUSINESS	INDUSTRIAL	SCIENCE AND MATH

PRESENT SCHEDULE

INCLUDE SECOND SEMESTER SCHEDULE

	ROOM	CLASS	TEACHER		ROOM	CLASS	TEACHER
1.				5.			
2.				6.			
3.				7.			
4.				8.			

HAVE YOU HAD ANY PAST EXPERIENCE? (LIST EMPLOYER, ADDRESS, AND TYPE OF WORK.)

_____

_____

DO NOT WRITE BELOW THIS LINE

ATTENDANCE _____ APPEARANCE _____ ATTITUDE _____ SCHOLARSHIP ____

TEST SCORES

	VR	NA	AR	SR	MR	CS & A	LSP	LSEN	VR & NA
DAT									

CMM GRADE _____ IQ _____ GRADE _____ IQ _____

OTHER TESTS _____

REFERRALS: DATE _____ PLACE _____ RESULTS _____

DATE _____ PLACE _____ RESULTS _____

APPENDIX E

PLACEMENT OFFICE EMPLOYER RECORD

Fitzgerald High School, Warren, Michigan

Name of Concern _____ Date _____

Address _____ Phone _____

Person Requesting Service _____ Position _____

Type of Business _____

Type of Service Desired _____

Qualifications Desired _____

Hours per day/week _____ A.M. _____ P.M. _____

Hourly Rate _____ Salary _____

Date of Interview _____

Type of Service Desired _____

Qualifications Desired _____

Hours per day/week _____ A.M. _____ P.M. _____

Hourly Rate _____ Salary _____

Date of Interview _____

Referrals:

Name _____ Grade/Section/Grad _____ Date _____

Remarks _____

Name _____ Grade/Section/Grad _____ Date _____

Remarks _____

Name _____ Grade/Section/Grad _____ Date _____

Remarks _____

Name _____ Grade/Section/Grad _____ Date _____

REMARKS _____

APPENDIX F

PLACEMENT OFFICE REFERRAL FORM

Fitzgerald High School, Warren, Michigan

This introduces _____, Age _____

Address _____, Phone _____

Applying for the job of _____

at _____, _____
Name of Concern Address

Applicant is to see _____, Date _____

Related High School Courses

_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____
_____ _____

Work Experience or Post High School Education

_____

Referred by: _____ Phone 757-7070, Ext 215

PLEASE DETACH

As an aid to our placement services, please fill out this self-addressed form and mail to: Placement Office, Fitzgerald High School
Warren, Michigan

_____ was interviewed

for the job of _____ _____
Name of Concern

The applicant is: (please check one)

_____ Hired _____ Not Hired

Reasons for not hiring the applicant:

_____

_____

Remarks:

_____

_____

_____ _____ _____
Date Signed Title

APPENDIX G

GRADUATE PLACEMENT OFFICE APPLICATION

Fitzgerald High School, Warren, Michigan

PLEASE PRINT DATE _____

NAME _____ MARITAL STATUS M S (CIRCLE ONE)

ADDRESS _____ PHONE _____ YEAR GRADUATED _____

BIRTHDATE _____ AGE _____ LIVED IN WARREN _____ YEARS

LIVED IN MACOMB _____ YEARS

SOCIAL SECURITY NO. _____ HT. ___ WT. ___ TRANSPORTATION YES ___ NO ___

TYPE OF WORK PREFERRED SUMMER _____ FULL-TIME _____ PART-TIME _____

_____

_____ APPRENTICESHIP _____

SKILLS

TYPING (SPEED) _____ _____ _____ _____

SHORTHAND (SPEED) _____ _____ _____ _____

FOREIGN LANGUAGE (TYPE) ___ (SPEAK) ___ (WRITE) ___ CO-OP ___ YR. _____

EDUCATION-HIGH SCHOOL PLEASE LIST FINAL GRADES EARNED IN EACH COURSE

BUSINESS	BUSINESS	INDUSTRIAL	SCIENCE AND MATH

COLLEGE OR TRADE SCHOOL

SCHOOL _____ MAJOR _____ HOURS COMPLETED ____

SCHOOL _____ MAJOR _____ HOURS COMPLETED ____

DO NOT WRITE BELOW THIS LINE LIST PAST WORK EXPERIENCE ON OTHER SIDE.

ATTENDANCE _____ APPEARANCE _____ ATTITUDE _____ SCHOLARSHIP _____

REFERRALS: DATE _____ PLACE _____ RESULTS _____

DATE _____ PLACE _____ RESULTS _____

DATE _____ PLACE _____ RESULTS _____

DATE _____ PLACE _____ RESULTS _____

DATE _____ PLACE _____ RESULTS _____

REMARKS:

POTENTIAL: _____

MESC _____

APPENDIX G--Continued

Include all jobs from which you received earnings

EMPLOYMENT RECORD

Dates From	Dates To	Employer	Address	Supervisor	Position/Duties	Full/Part Time

DIFFERENTIAL APTITUDE TEST

Verbal Reasoning	Numerical Ability	Abstract Reasoning	Space Relations	Mechanical Reasoning	Clerical S & A	Language Spelling	Language Sentences	VR & NA

KUDER PREFERENCE

Outdoor	Mechanical	Computation	Scientific	Persuasive	Artistic	Literary	Musical	Social Service	Clerical

CALIFORNIA MENTAL MATURITY

GRADE_____ IQ_____

_____ IQ_____

OTHER TESTS_____

_____

_____

APPENDIX H

SUGGESTED FORM FOR KEEPING INDIVIDUAL PLACEMENT RECORDS*

Firm: _____ Co-op F.T.: _____

Address: _____

Phone: _____

Nature of Business: _____

_____

_____

Person Contacted	Position

Referrals _____

_____

_____

_____

Hired _____

_____

_____

_____

Salary _____

Skills _____

_____

_____

_____

Approval No.: _____

_____

Special Approval: _____

_____

Typ.	Sig.	Mld.	Ret.

PL - 102

*Submitted by the Fitzgerald High School, Warren, Michigan. The information is recorded on 3" x 5" cards, and is kept in a permanent file in the Placement office.

APPENDIX I

FOLLOW-UP STUDY OF GRADUATES: MARSHALL HIGH SCHOOL

General Information

(This column for office use only)

Instructions: Mark the answers requested to the right of each item. Please do not mark in any of the spaces on the extreme right. Please mark ALL items through 7.7 on page 3.

1. Name_____ Male____ Female_____ _____ (Case No.)

   Maiden Name_____ Phone No._____ _____ (Sex)

   Home Address_____

   At this time are you: employed___ unemployed_____ seeking employment_____ _____

Name and address of employer_____

What is your job?_____ — — — —
(Example: Dairy farming; Salesman, Dupont Company; Drill Press operator, Eaton Manufacturing Co.; Private U. S. Army; Student, University of Michigan. If employed in more than one job list both, e.g., student and waitress).

2. How would you rate the help your high school gave you with the following: (Please check the proper column for each item.)

		None	Little	Some	Much	
1.	Use of spare time	___	___	___	___	___
2.	Care of my health	___	___	___	___	___
3.	Taking part in community and civic affairs	___	___	___	___	___
4.	Preparing for a job	___	___	___	___	___
5.	Getting a job	___	___	___	___	___
6.	Getting along with other people	___	___	___	___	___
7.	Preparing for further education	___	___	___	___	___
8.	Ability to read well	___	___	___	___	___
9.	Usable or practical mathematics skills	___	___	___	___	___
10.	Consumer buying know-how	___	___	___	___	___
11.	Handling my money (Taxes, saving, insurance, etc.)	___	___	___	___	___
12.	Marriage and family life	___	___	___	___	___

Continued on next page

3. If you took any of the following elective subjects please indicate the number of years by circling the correct number.

	1/2	1	2	3	4	
1. Art	____	____	____	____	____	____
2. Homemaking	____	____	____	____	____	____
3. Agriculture	____	____	____	____	____	____
4. Drafting	____	____	____	____	____	____
5. Wood Shop	____	____	____	____	____	____
6. General Shop	____	____	____	____	____	____
7. Metal Shop	____	____	____	____	____	____
8. Typing	____	____	____	____	____	____
9. Bookkeeping	____	____	____	____	____	____
10. Shorthand	____	____	____	____	____	____
11. General Business	____	____	____	____	____	____
12. Office Machines	____	____	____	____	____	____
13. Office Practice	____	____	____	____	____	____
14. Co-op Related	____	____	____	____	____	____
15. Co-op Work	____	____	____	____	____	____

Rate the subjects you took as to the help it has given you in your job.

	None	Little	Some	Much	
1. Art	____	____	____	____	____
2. Homemaking	____	____	____	____	____
3. Agriculture	____	____	____	____	____
4. Drafting	____	____	____	____	____
5. Wood Shop	____	____	____	____	____
6. General Shop	____	____	____	____	____
7. Metal Shop	____	____	____	____	____
8. Typing	____	____	____	____	____
9. Bookkeeping	____	____	____	____	____
10. Shorthand	____	____	____	____	____
11. General Business	____	____	____	____	____
12. Office Machines	____	____	____	____	____
13. Office Practice	____	____	____	____	____
14. Co-op Related	____	____	____	____	____
15. Co-op Work	____	____	____	____	____

4. List education or training beyond high school that you have taken. (Check the appropriate blank) NOTE: Count the current year.

NONE_____ ____

	½yr.	1 yr.	1½ yr.	2 yr.	
1. University or college	____	____	____	____	____
2. Community college	____	____	____	____	____
3. Business School	____	____	____	____	____
4. Trade school	____	____	____	____	____
5. Apprentice training	____	____	____	____	____
6. Military	____	____	____	____	____
7. Others:_____	____	____	____	____	____

Continued on next page

5. When did you select your vocation? (Check one)

(1) Before High School _____ _____
(2) During High School _____
(3) After High School _____
(4) Still Undecided _____

6. Have any specific courses or activities been of special value to you in your job? (If answer is yes, check appropriate blank(s)).

YES _____ _____
NO _____

	None	Little	Some	Much	
1. English	____	_____	____	____	_____
2. Speech	____	_____	____	____	_____
3. Mathematics	____	_____	____	____	_____
4. Science	____	_____	____	____	_____
5. Music	____	_____	____	____	_____
6. Sports	____	_____	____	____	_____
7. Physical Education	____	_____	____	____	_____
8. High School Club	____	_____	____	____	_____
9. Being a class officer	____	_____	____	____	_____
10. Teacher assistant	____	_____	____	____	_____
11. Other _____	____	_____	____	____	_____

7. Rate the following items as to the help you think they would have given you in applying for a job.

	None	Little	Some	Much	
1. Proper dress for a job interview	____	_____	____	____	_____
2. Proper grooming for a job interview	____	_____	____	____	_____
3. Desirable behavior during interview	____	_____	____	____	_____
4. Practice in filling out a job application	____	_____	____	____	_____
5. Practice in writing letters of job application	____	_____	____	____	_____
6. Personal information required in applying for a job.	____	_____	____	____	_____
7. Do you think that the high school could be of help to you in obtaining employment	____	_____	____	____	_____

Continued on next page

SPECIFIC INFORMATION

Instructions: In the following sections mark only those areas in which you were enrolled.

ART

	None	Little	Some	Much	
1. Is your job connected in some way with art?	____	_____	____	____	_____
2. Did your Art class help you in your current position?	____	_____	____	____	_____
3. Would a course in Commercial Art have been a help to you in your current position?	____	_____	____	____	_____
4. Has the appreciation of art and art history aided you in your current position?	____	_____	____	____	_____
5. Do you think that a design class would have helped you in your Industrial Arts program?	____	_____	____	____	_____

6. Answer the following two questions:

   Do you think commercial art should be stressed more than the fine arts? YES____NO____ _____

   Do you think fine arts should be stressed more than the commercial arts? YES____NO____ _____

VOCATIONAL AGRICULTURE

1. Are you engaged in a _____

   1. Non-agriculture occupation? _____
   2. Agriculturally related occupation? _____
   3. Farming situation? _____
   4. Non-agricultural and ag-related occupation? _____
   5. Non-agricultural and farming situation? _____
   6. Ag-related occupation and farming situation? _____

2. Has Vocational Agriculture been of value to you in your present job? _____

   1. Necessary _____
   2. Desirable _____
   3. Not necessary _____

Continued on next page

VOCATIONAL
AGRICULTURE--Continued

3. My vocational Agriculture training would have been of more value to me if it had included (check (✓) those that apply.)

   1. Horticulture _____ _____
   2. Landscaping _____ _____
   3. More agricultural mechanics _____ _____
   4. More agricultural economics _____ _____
   5. More emphasis on crops _____ _____
   6. More emphasis on animal husbandry _____ _____
   7. On the job training _____ _____
   8. Management _____ _____

4. Did your agricultural education in high school prepare you for further education?

   1. Yes, it was adequate _____ _____
   2. No, it was not adequate _____

5. Did the activities in the FFA help prepare you to participate in community activities?

   1. Yes _____ _____
   2. No _____

HOMEMAKING (Check only if you took Homemaking in high school)

1. Have you engaged in any of the following forms of employment since high school graduation?

		YES	NO	
1.	Waitress	____	____	_____
2.	Short-order cook	____	____	_____
3.	Full-time babysitting	____	____	_____
4.	Seamstress	____	____	_____
5.	Alterations work	____	____	_____
6.	Clerk in store	____	____	_____
7.	Hospital worker	____	____	_____
8.	Playground assistant	____	____	_____
9.	Caterer	____	____	_____
10.	Nurse's aide	____	____	_____
11.	Receptionist	____	____	_____
12.	Laundry worker	____	____	_____
13.	Milliner	____	____	_____
14.	Cake decorator	____	____	_____

Continued on next page

2. Check the value of each of the following units of study as to you and your job.

		None	Little	Some	Much	
1.	Housing	____	_____	____	____	_____
2.	Grooming	____	_____	____	____	_____
3.	Clothing Construction	____	_____	____	____	_____
4.	Textiles	____	_____	____	____	_____
5.	Child care	____	_____	____	____	_____
6.	Consumer education	____	_____	____	____	_____
7.	Nutrition	____	_____	____	____	_____
8.	Home nursing	____	_____	____	____	_____
9.	Crafts	____	_____	____	____	_____
10.	Family relationships	____	_____	____	____	_____
11.	Etiquette	____	_____	____	____	_____
12.	Table setting	____	_____	____	____	_____
13.	Food preparation	____	_____	____	____	_____
14.	Money management	____	_____	____	____	_____

3. Have you used any of the following equipment in the performance of your job?

		None	Little	Some	Much	
1.	Blender	____	_____	____	____	_____
2.	Pressure cooker	____	_____	____	____	_____
3.	Electric fry pan	____	_____	____	____	_____
4.	Sewing machines	____	_____	____	____	_____
5.	Steam iron	____	_____	____	____	_____
6.	Pressing hem and sleeve rolls	____	_____	____	____	_____
7.	Rotisserie	____	_____	____	____	_____
8.	Electric knife	____	_____	____	____	_____
9.	Electric can opener	____	_____	____	____	_____
10.	Electric scissors & knife sharpener	____	_____	____	____	_____
11.	Electronic oven	____	_____	____	____	_____
12.	Needle board	____	_____	____	____	_____
13.	Clothes washer	____	_____	____	____	_____
14.	Clothes dryer	____	_____	____	____	_____
15.	Food mixers	____	_____	____	____	_____
16.	Salad chef	____	_____	____	____	_____
17.	Waffle Iron	____	_____	____	____	_____
18.	Chafing dish	____	_____	____	____	_____
19.	Pick glasses	____	_____	____	____	_____
20.	Slide projector	____	_____	____	____	_____
21.	Food grinder	____	_____	____	____	_____
22.	Vacuum cleaner	____	_____	____	____	_____
23.	Other:_____	____	_____	____	____	_____

Continued on next page

4. Were you a member of F.H.A.?

   1. Yes _____
   2. No _____ _____

5. Did the activities in F.H.A. help prepare you to participate in community activities? _____

   1. Yes _____ _____
   2. No _____ _____

INDUSTRIAL ARTS (Check only if you were enrolled)

	None	Little	Some	Much	
1. Does your job require measuring to close tolerance?	___	_____	___	___	_____
2. Are you required to keep a record of the work you have done?	___	_____	___	___	_____
3. Do you work with foreign made products?	___	_____	___	___	_____
4. Is it necessary for you to identify different kinds of material?	___	_____	___	___	_____
5. Is your work of a service or repair nature?	___	_____	___	___	_____
6. Do you use hand tools?	___	_____	___	___	_____
7. Do you use woodworking power tools?	___	_____	___	___	_____
8. Does your job require use of					
a. algebra	___	_____	___	___	_____
b. geometry	___	_____	___	___	_____
c. trigonometry	___	_____	___	___	_____
9. Have you done any painting at home or at work?	___	_____	___	___	_____
10. Do you use blueprints on the job?	___	_____	___	___	_____
11. Have you purchased any lumber or hardware in the last year?	___	_____	___	___	_____
12. Have you repaired any electrical cords, lamps, etc. at home?	___	_____	___	___	_____
13. Do you use a ruler or scale in your work?	___	_____	___	___	_____
14. Are you required to wear safety glasses in your work?	___	_____	___	___	_____
15. Do you use SAE standards in your work?	___	_____	___	___	_____
16. Would specialized training for a particular trade have been of value to you (e.g., carpenter, technician, machinist, etc.)?	___	_____	___	___	_____

Continued on next page

	None	Little	Some	Much	
17. Would a course in design have helped you in industrial arts?	___	___	___	___	___
18. Did you receive safety instruction for the job from your employer?	___	___	___	___	___
19. Do you handle money in your job situation?	___	___	___	___	___
20. Did you receive instruction for your job from your employer prior to being employed?	___	___	___	___	___
21. Would the knowledge of sketching be of benefit to you on your job?	___	___	___	___	___

COMMERCIAL EDUCATION

1. If you took any of the following subjects please rate the subject as to the help it has given you in your personal business affairs or in college?

	None	Little	Some	Much	
1. Bookkeeping (personal records, income taxes, etc.)	___	___	___	___	___
2. General Business (insurance, credit, banking, etc.)	___	___	___	___	___
3. Shorthand (taking notes on lectures, etc.)	___	___	___	___	___
4. Typing (Personal letters college assignments, etc.)	___	___	___	___	___

2. Do you think a course on the Junior-Senior level containing information on handling family financial problems and how our American business system operates would be helpful? ___

None	Little	Some	Much
___	___	___	___

3. Did you take a course in Office Machines in High School?

1. Yes_____
2. No_____ ___

If you did, please check the machines you have operated since graduation.

1. Full keyboard adding machine	_____	_____
2. Rotary calculator	_____	_____
3. Ten-key adding machine or printing calculator	_____	_____
4. Key-driven calculator	_____	_____

Continued on next page

5. Fluid duplicator _____ _____
6. Stencil duplicator _____ _____
7. Dictaphone (Transcribing mach.) _____ _____
8. List any others you have operated _____ _____

4. Check any definite difficulty you have experienced through the lack of a specific skill or qualification such as:

1. Accuracy _____ _____
2. Arithmetic _____ _____
3. Business ethics _____ _____
4. Cooperation _____ _____
5. English or grammar _____ _____
6. Initiative _____ _____
7. Neatness in work _____ _____
8. Penmanship _____ _____
9. Proof-reading _____ _____
10. Punctuality _____ _____
11. Self-evaluation of work _____ _____
12. Speed and skill _____ _____
13. Work habits _____ _____
14. Others: _____ _____ _____

5.* What knowledge and skills, necessary in your work, were not covered in school?

_____

_____

_____

CO-OP TRAINING

If you were a co-op student, please answer the following questions.

1. Are you working in the same job that you had as a co-op student?

1. Yes _____
2. No _____ _____
3. Similar _____

2. Are you working for the same employer that you did as a Co-op student?

1. Yes _____
2. No _____ _____

3. Would you recommend cooperative training to other students?

1. Yes _____
2. No _____ _____

*See next page

Continued on next page

4. As a former co-op student do you think that you had adequate vocational counseling while attending high school?

   1. Yes_____
   2. No_____

   *If answer to number 4 is NO, explain_____

   _____

Comments: Make any further comments you wish to express concerning the high school preparation you received.

---

*NOTE: It is recommended that as much space as possible be provided for remarks or instructions be included to write on the back of the page.

APPENDIX I

PLACEMENT OFFICE FOLLOW-UP STUDY

Fitzgerald High School, Warren, Michigan

Class of_____

In order to maintain our Placement Office records and to aid in our annual Follow-Up study, please provide the following information:

Name_____ Phone_____
(married name)

Address_____City_____ State_____

_____

Place of Employment_____ City_____

Title of Your Job_____Full-Time____Part-Time_____

Description of Your Job_____

Rate of pay. Hourly_____ Weekly_____ Monthly_____

How did you Obtain Your Job_____

Do You Plan Now to Remain on This Job. Yes_____ No_____

If Not, Why Not? _____

What types of Full-Time Jobs Have you Held Prior to Your Present Job.

_____

_____

College_____Location_____

Majors_____Full-Time_____Part-Time_____

Do You Intend to Work For a Degree Yes___ No___Credits to Date_____

_____

Trade or Technical School_____ Location_____

Majors_____ Full-Time_____Part-Time_____

How Long is Your Program. Months____Years____Amount Completed_____

Remarks:

You are welcome to avail yourself of the Placement Office services to help you secure job positions. Phone 757-7070 Ext. 226/269.

T.&I. Coordinator
Joseph Teufner

Office & Retail Coordinator
Donald Keller

APPENDIX K

FORM FOR SUMMARIZING FOLLOW-UP STUDIES*

Fitzgerald High School, Warren, Michigan

SUBJECT: Annual Statistical Report 19__, 19__ (As of Nov. 1, 1963)

Co-op Training Program

1. Number of students participating in Co-op program.
   Office_____ Retail_____ T. & I._____ Total_____
2. Number of students completing Co-op program.
   Office_____ Retail_____ T. & I._____ Total_____
3. Number of Co-op placements.
   Office_____ Retail_____ T. & I._____ Total_____
4. Number of Employers participating in Co-op program.
   Office_____ Retail_____ T. & I._____ Total_____
5. Number of Co-op students who expect to continue full-time.
   Office_____ Retail_____ T. & I._____ Total_____

Graduate Placement Program

1. Number of graduates who made application for services.
   19__:__ 19__:__ 19__:__ Other: _____ Total_____
2. Number of Employer Requests.
   Office_____ Retail_____ Industry_____ Total_____
3. Number of Referrals.
   Office_____ Retail_____ Industry_____ Total_____
4. Number of Placements:
   A. Full-Time
   Office_____ Retail_____ Industry_____ Total_____
   B. Part-Time
   Office_____ Retail_____ Industry_____ Total_____

_____ _____
Office and Retail Coordinator T. & I. Coordinator

*This form is one suggested method for summarizing follow-up studies.

APPENDIX L

EXAMPLE OF SUMMARY OF FOLLOW-UP STUDY OF GRADUATES*

Types of Jobs Held by Graduates One Year After Graduation

Occupation	Class 1962 M	Class 1962 F	Class 1963 M	Class 1963 F
Automotive Mechanic				
Station Attendant	2	0	0	0
Drafting				
Detailer	1	0	4	0
Engineering Clerk	1	0	3	0
Technical Illustrator	1	0	1	0
Designer	0	0	1	0
Printer Operator	0	0	3	0
Layout Man	0	0	1	0
Food Preparation				
Cook	1	1	0	0
Counter Boy	1	0	0	0
Fountain Worker	1	1	0	0
Waitress(er)	0	3	0	3
Kitchen Helper	1	0	0	0
Produce Clerk	1	0	0	0
Utility Clerk	1	0	0	0
Machine Working				
Machine Repair*	1	0	1	0
Tool and Die*	2	0	0	0
Tocl Maker*	1	0	0	0
Watch Maker*	1	0	0	0
Heat Treat Trainee	1	0	0	0
Inspector	1	0	3	0
Machine Operator	4	0	8	1
Set-up Man	1	0	0	0
Tool Grinder	1	0	0	0
Packer	2	0	0	0
Production Worker	5	0	5	0
Metal Model Maker*	0	0	1	0
Polisher	0	0	1	0
Welder	0	0	1	0
Bench Hand	0	0	1	0
Prototype Helper	0	0	1	0
Tool Grinder Helper	0	0	2	0

Occupation	Class 1962 M	Class 1962 F	Class 1963 M	Class 1963 F
Office				
Library Assistant	0	0	1	0
Accountant Learner	1	0	1	0
Office Clerk	1	7	4	13
Shipping Clerk	1	0	0	0
Supply Clerk	1	0	0	0
Bank Teller	0	0	1	0
Bookkeeper	0	3	1	11
Credit Clerk	0	1	0	0
Desk Clerk	0	1	0	0
File Clerk	0	3	0	1
Key Punch Operator	0	1	0	2
Jr. Accountant Clerk	0	1	0	0
Jr. Office Assistant	0	1	0	0
Medical Receptionist	0	3	0	0
Payroll Clerk	0	2	0	1
Receptionist/Typist	0	1	0	0
Recording Clerk	0	1	0	0
Secretary	0	7	0	15
Stenographer	0	3	0	3
Stenographer Learner	0	1	0	1
Student Assistant	0	1	0	0
Telephone Operator	0	1	0	2
Billing Clerk	0	0	0	2
Commercial Auditor	0	0	0	2
Librarian	0	0	0	1
Receiving Clerk	0	0	1	0
Supervisor	0	0	1	0
Personal Service				
Beautician	0	0	0	1
Nurse's Aid	0	0	0	2

Continued on next page

APPENDIX L--Continued

Occupation	Class 1962 M	Class 1962 F	Class 1963 M	Class 1963 F
Sales				
Stock Handler	4	0	0	0
Lumber Clerk	1	0	0	0
Retail Leader	1	0	0	0
Salesman	4	0	3	0
Assistant Manager	0	0	2	0
Cashier	0	5	0	2
Sales	0	1	0	2
Cashier/Clerk	0	0	0	1
Technical				
Electrician*	2	0	1	0
Highway	1	0	1	0
Photographer	1	0	0	0
Hydraulics*	0	0	1	0
Laboratory	0	0	1	0
Woodworking				
Carpenter*	1	0	1	0
Pattern Maker*	1	0	0	0
Construction Worker	4	0	1	0
Wood Model Maker*	0	0	2	0
Cabinet Maker	0	0	1	0
Labor				
Cement Loader	1	0	0	0
Poultry Dresser	1	0	0	0
Truck Driver	1	0	0	0
Custodian	1	0	1	0
Paint Inspector	0	0	1	0
Orderly	0	0	1	0
Painter	0	0	1	0
Production Hand	0	1	0	2
Stencil Maker	0	1	0	0
Toy Packer	0	1	0	0

Occupation	Class 1962 M	Class 1962 F	Class 1963 M	Class 1963 F
Military	16	0	13	0
Student				
College	18	14	39	22
Trade/Technical	2	1	7	10
Housewife	0	11	0	22
Unemployed	2	9	1	4
Cannot Locate	12	3	7	6
Total	108	90	97	118
Grand Total	198		215	

*Submitted by Warren-Fitzgerald High School, Warren, Michigan.

APPENDIX M

PARENTS' EVALUATION OF HOMEMAKING PROGRAM

Gaylord High School, Gaylord, Michigan

1. Rate the study areas by placing an X in the appropriate column:

vv--very valuable v--Valuable nv--not valuable

vv	v	nv		vv	v	nv	
			Nutrition				Household equipment
			Cooking				Clothing selection & care
			Table service				Time & energy management
			Meal planning				Buying & money management
			Entertaining				Getting along with others
			Grooming				Family relationships
			Sewing				Child care
			Cleaning				Careers
			Laundry				

2. Which of these responsibilities does daughter usually help with at home?

_____ Caring for children
_____ Cleaning the house
_____ Cooking
_____ Having fun with family
_____ Planning meals
_____ Sewing or mending
_____ Shopping for food or clothing
_____ Washing and/or ironing clothes
_____ Making her room more attractive
_____ Washing dishes
_____ Other, related to homemaking
_____ NONE of the above

3. Which of the following do you feel can be learned best in homemaking classes?

_____ Clothing construction
_____ Foods and nutrition
_____ Clothing selection & care
_____ Housekeeping
_____ Child care
_____ Family & community relationships
_____ Time & energy management
_____ NONE of the above

4. Is the mother a full-time homemaker? _____ Yes _____ No

If the answer is "no," does she work outside the home?

_____ Part-time _____ Full-time

5. Please make observations and/or suggestions about our homemaking program which you feel would be helpful in future planning: _____

_____

_____

_____

_____

*Suggestions for use.--This form may be sent home with students, mailed, or otherwise delivered to prospective respondents. A parent evaluation of an existing program may identify weaknesses which have been overlooked. It should not be the only evaluation of the program, however.

APPENDIX N

INTERVIEW FORM: EVALUATION OF THE VOCATIONAL AGRICULTURE PROGRAM

Gaylord High School, Gaylord, Michigan

Please rate the items below by checking ( ) in the columns headed: VI--very important, I--important, LI--little or no importance, and N--no opinion. Your check mark should be in the column which most nearly expresses your opinion of the value of the item in question in a high school vocational agriculture course.

I. Rate the following enterprises and subject areas in livestock production according to how important you feel it is that they be included in high school vocational agriculture instruction.

Livestock Production Enterprise	N	LI	I	VI
a. Dairy cattle				
b. Beef cattle				
c. Swine				
d. Sheep				
e. Horses				
f. Other				

Livestock Production Subject Area	N	LI	I	VI
a. Livestock breeds				
b. Livestock selection & improvement				
c. Pedigrees				
d. Feeding				
e. Sanitation and disease control				
f. Buying and marketing				
g. Equipment and facilities				
h. Types of operations				
i. Showing or exhibiting				
j. Other (list and rate)				
k.				

II. Rate the following enterprises and subject areas in crop production according to how important you feel it is to include them in high school vocational agriculture courses of instruction.

Crop Production Enterprise	N	LI	I	VI
a. Hay				
b. Pasture				
c. Small grain				
d. Silages				
e. Potatoes				
f. Vegetable crops				
g. Orchard				
h. Forest				
i. Other (list and rate)				
j.				

Continued on next page

Crop Production Subject Area	N	LI	I	VI
a. Varieties				
b. Seed and/or plant selection				
c. Equipment and facilities				
d. Seedbed preparation				
e. Weed and insect control				
f. Growth habits				
g. Harvesting				
h. Buying and marketing				
i. Storage				
j. Showing or exhibiting				
k. Other (list and rate)				
l.				
m.				

III. Rate the following enterprises and subject areas in poultry production according to how important you feel it is that they be included in high school vocational agriculture courses of instruction.

Poultry Production Enterprise	N	LI	I	VI
a. The laying flock				
b. Broilers				
c. Ducks and geese				
d. Turkeys				
e. Hatchery management				
f. Game birds				
g. Other				
h.				

Poultry Production Subject Area	N	LI	I	VI
a. Breeds				
b. Selection and improvement				
c. Sanitation & Disease control				
d. Feeding				
e. Buying, handling and marketing				
f. Equipment and facilities				
g. Other (list and rate)				
h.				

Continued on next page

IV. Rate the subject areas listed under each of the following enterprises according to how important you feel it is that they be included in farm mechanics instruction in the high school.

Enterprise or Subject Area	N	LI	I	VI
a. Safety:				
b. Identification and use of tools:				
c. Woodworking:				
1. Basic carpentry				
2. Lumber grades				
3. Types of wood fasteners				
4. Small building construction				
d. Welding:				
1. Arc welding				
2. Oxy-acetylene welding				
3. Welding special metals				
4. Metal identification				
e. Painting:				
1. Brush painting				
2. Spray painting				
3. Identification of paint materials				
4. Oils and preservatives				
f. Farm machinery:				
1. Maintenance and repair				
2. Setting and adjustment				
3. Power transmission--belts, chains, and gears				
g. Farm power:				
1. Preventative maintenance				
2. Engine maintenance & tune-up				
3. Engine overhaul				
4. Engine parts and operation				
h. Building skills:				
1. Basic plumbing				
2. Electricity				
3. Block laying				
4. Concrete work				
i. Other skills:				
1. Making working drawings				
2. Figuring bills of materials				
3. Farm mechanics mathematics				
4. Building labor-saving devices				
j. Other--List and Rate:				
1.				
2.				

Continued on next page

V. Rate the subject areas listed under the Farm Management enterprise according to how important you feel it is that they be included in high school agricultural instruction.

Subject area	N	LI	I	VI
a. Decision making				
b. Budgeting				
c. Determining the size of the farm business				
d. Crops and soils program				
e. Livestock program				
f. Expense factors				
g. Farm credit				
h. Insurance				
i. Income tax and self-employment returns				
j. Farm Law				

VI. Rate the following non-farm, related occupational groups according to your opinions toward including some training for them in high school agricultural instruction.

Occupation	N	LI	I	VI
a. Farm machinery sales and service				
b. Feed and small grain industry				
c. Horticulture industry				
d. Fertilizer				
e. Agricultural chemical industry				
f. Meat packing and processing				
g. Livestock commission				
h. Conservation and recreation				
i. Engine service and repair				
j. Farm supply dealer				
k. Agricultural products marketing				
l. Forestry harvesting and marketing				
m. Other (list and rate):				
n.				

VII. How much formal education do you think is necessary to enter farming or ranching? (Check one)

a. Less than high school . . . . . _____
b. High school . . . . . _____
c. High school plus special training . . . . . _____
d. Junior college . . . . . _____
e. Four-year college . . . . . _____

Continued on next page

IV. Rate the subject areas listed under each of the following enterprises according to how important you feel it is that they be included in farm mechanics instruction in the high school.

Enterprise or Subject Area	N	LI	I	VI
a. Safety:				
b. Identification and use of tools:				
c. Woodworking:				
1. Basic carpentry				
2. Lumber grades				
3. Types of wood fasteners				
4. Small building construction				
d. Welding:				
1. Arc welding				
2. Oxy-acetylene welding				
3. Welding special metals				
4. Metal identification				
e. Painting:				
1. Brush painting				
2. Spray painting				
3. Identification of paint materials				
4. Oils and preservatives				
f. Farm machinery:				
1. Maintenance and repair				
2. Setting and adjustment				
3. Power transmission--belts, chains, and gears				
g. Farm power:				
1. Preventative maintenance				
2. Engine maintenance & tune-up				
3. Engine overhaul				
4. Engine parts and operation				
h. Building skills:				
1. Basic plumbing				
2. Electricity				
3. Block laying				
4. Concrete work				
i. Other skills:				
1. Making working drawings				
2. Figuring bills of materials				
3. Farm mechanics mathematics				
4. Building labor-saving devices				
j. Other--List and Rate:				
1.				
2.				

Continued on next page

VIII. How much formal education do you think is necessary to become employed at entry level in a non-farm, related occupation?

a. Less than high school _____
b. High school _____
c. High school plus special training _____
d. Junior college _____
e. Four-year college _____

IX. Rate the following phases of the present vocational agricultural program. E - (excellent), G - (good), A - (average), NI - (needs improvement), D - (don't know enough about the program).

Phase	D	NI	S	G	D	
a. Classroom instruction						
b. Field trips						
c. Supervised farming programs						
d. Future Farmers of America						
e. Farm mechanics						

X. Where do you feel that improvement is needed in the present program?

If no answer, check one answer below.

None_____ Don't know enough about the program_____

XI. What are your recommendations for the program in the future?

If no answer, check one below.

None_____ Don't know enough about the program_____

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Evaluating Vocational Education in the Public Schools

ER 32

Bureau of Educational Research Services
College of Education
Michigan State University
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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EVALUATING VOCATIONAL EDUCATION IN THE PUBLIC SCHOOLS

Final Report on the Project

entitled

Development and Demonstration of Procedures for Evaluation of a Comprehensive Program of Vocational Education in the Public Schools

Harold M. Byram
Project Director

Bureau of Educational Research Services
College of Education
Michigan State University
East Lansing, Michigan

ER-32
October 1965

FOREWORD

This is a report of a research project cooperatively financed by the Michigan State Board of Control for Vocational Education, Department of Public Instruction, as a part of its support of research in vocational education. The study was to some extent an outgrowth of the Michigan Vocational Education Evaluation Project completed in 1962. The work on the study was begun in April, 1963 and was terminated on June 30, except for the tasks of producing and disseminating publications, including the present report.

An advisory committee was utilized in starting the project. Several staff members in vocational education at Michigan State University and the Department of Public Instruction assisted the director and served as consultants on several occasions. Mr. Arlynn D. Anderson was employed as research assistant on the project during the second year.

The purposes of this report are two-fold. First, it is to give an accounting to the Department of Public Instruction of the work done on the project and on the findings of the study that may be of value to that agency in its future activities. The second purpose is to provide information regarding processes and procedures in conducting an evaluation study of this nature, in the hope that it may be helpful to others who may engage in research or evaluation procedures and who may conduct evaluations in the future.

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INTRODUCTION

The Problem

The problem dealt with in this study, stated simply, was: How can public schools develop and use a plan for evaluation of a comprehensive program of vocational education, utilizing their own personnel resources, community resources, and state consultant services? It was hypothesized that an evaluation plan could be developed and demonstrated, and that such a plan might be one which could be adapted by other schools, if it appeared to fit their needs for help in replanning and improving public school programs of vocational education. A correlary, or related problem was the discovery or development of fruitful ways of rendering consultant services in evaluation. It was assumed that evaluations would lead to planning or development of more effective and comprehensive programs of vocational education.

Purposes

The major purposes of this study were:

--to develop a generalized procedure for making an evaluation in a public school system;

--to utilize and further test the recommendations of the MVEEP study[1] in the light of local community conditions; and

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[1]"Vocational Education in Michigan: The Final Report of the Michigan Vocational Evaluation Project," College of Education, Michigan State University, 1963.

--to assist selected public school systems to evaluate and replan their programs of vocational education.

Background of the Study

The setting of the problem is one which is characterized by several changing occupational, socio-economic, and educational conditions, coupled with a concern on the part of public schools to evaluate their programs of vocational education to adapt to these changes. The change of school orientation is from one pretty largely local-community based, to an orientation toward the world of work in larger geographic and demographic areas. Changes in the occupational structure include movement toward the virtual extinction of unskilled labor, an increasing proportion of the labor force in distribution and services compared to production, and increasing demands for technicians.

Administrators of public schools, and the members of school staffs having responsibilities for vocational education have become increasingly interested in the subject of evaluation. This has been brought about in part by some recent studies and related developments. The President's Panel of Consultants on Vocational Education conducted an evaluation of vocational education in the United States.[2] In Michigan an evaluation of public vocational education was conducted and reported in 1963.[3] The Vocational Education Act of 1963 requires periodic national evaluations. Such national evaluations would depend upon

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[2]The President's Panel of Consultants, Education for a Changing World of Work, U.S.D.H.E.W., 1963.

[3]Op. cit.

local and state data and evaluations. School administrators and staffs have become more aware of certain questions being raised by their publics. These questions relate to what the schools are doing to prepare youth and adults for the world of work, and how well this is being done.

Few programs of vocational education have been broader than the more obvious and local needs of the communities in which they are based. Yet follow-up studies of high-school graduates in many cases show heavy migration to other--often larger--communities after limited time spent in a local entry job. Offerings in schools in many areas often have been limited to agriculture and home economics, with scattered offerings of business courses limited to development of specific skills in office work; while vocational industrial education programs have been provided principally in only the larger schools and those in larger cities. Comprehensive offerings cutting across most fields of vocational education have been few, as well as lacking in the variety of courses needed to provide a wide range in depth of training.[4] Educational leaders in the public schools who are aware of the needs of youth and adults and of the changing occupational complex are becoming increasingly interested in improving and/or expanding their programs. They are realizing that program evaluation is necessary to bring about significant improvement.

While teachers in many schools have conducted evaluations of their own instruction in various subject areas, and sometimes in a

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[4]Byram, Harold M., "Factors Associated with the Development of Comprehensive Programs of Vocational Education in Public Schools in Michigan," East Lansing, Michigan, College of Education, Michigan State University, Mimeo, 1958.

whole field, such as industrial education or agricultural education, few schools have taken a searching look at all of their programs in the light of needs. Evaluations conducted in the past, in which consultant help has been utilized, often has emphasized ways and means rather than objectives and outcomes. Professional educators responsible for planning, organizing and operating programs of occupational preparation now, however, are seeking ways of evaluating the total contribution of the school to preparation for the world of work. In other words, they are concerned with the outcomes of these programs. Many also are convinced that provisions for evaluation need to be built into future plans for vocational education in the public schools.

An assumption underlying the present study was that evaluation should be done by those responsible for the program and those affected by it, utilizing assistance of others, where appropriate. Coupled with this is the presumption of the necessity of defining more adequately the role of consultants to those educators who are responsible for conducting program evaluations. Since the need for consultant help in this matter should be apparent, the study was conducted so that the findings might also be useful in the education of future consultants.

Review of Related Studies

A few early research studies focused on local evaluation through follow-up.[5] Most state and national follow-up studies, however, have dealt with graduates from a single field of vocational education.[6] So-called evaluative criteria have been developed for the several fields.[7] These instruments have provided a stimulus to school people to study their programs, field by field. They have not dealt with local staff involvement and school self-study. Rather, they have emphasized the extent to which the ways and means of conducting programs of vocational education meet certain theoretical criteria and standards.

Program evaluation through involvement of those who are close

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[5]An example is: Occupational Adjustments of Vocational School Graduates, AVA Research Bulletin No. 1, June 1940.

[6]Examples are: Staff Paper No. 4, on "Placement of Graduates and Early School Leavers in Day Trade and Industrial Education Programs," 1962, Office of Education, Vocational-Technical Division; Amos B. Rougeau, A Ten-Year Study of Former Students of Vocational Agriculture in Six Reorganized School Districts in Missouri, 1946-1955, Bulletin 70, Columbia, Missouri, University of Missouri, 1958; and Haines, Peter G., and Coleman, Brendan, "How Cooperative Trainees Fare in the Labor Market," ER 16, East Lansing, Michigan, College of Education, Office of Research and Publications, Mimeo 32 pp., 1962.

[7]See: "Evaluative Criteria for Distributive Education," "Evaluative Criteria for Vocational Agriculture," and "Evaluative Criteria for Industrial Arts Education," all available from the American Vocational Association, Washington, D.C.; "A Procedure for Evaluating A Local Program of Trade and Industrial Education," available from American Technical Society, Chicago; "Evaluative Criteria for Business Departments of Secondary Schools: Mimeo. 90 pp., South-Western Publishing Company, Cincinnati; and "Evaluative Criteria" for use in evaluating secondary school programs of vocational education, available from the Cooperative Study of Secondary-School Standards, National Education Association, Washington, D.C.

to the operations has not received as much attention. One of the early investigators to develop procedures on the involvement and self-study basis was Hamlin, who conducted a five-year project in the field of vocational agriculture.[8]

Reference has been made to two recently completed studies dealing with evaluation of vocational education nationally.[9] A national study currently under way should call attention to some aspects of local public school efforts toward meeting the needs of employment-bound youth in certain types of schools.[10] That study cuts across the traditional fields, and attempts to measure outcomes through follow-up, but does not include involvement of staff and citizens in its design.

In summary, the previous studies: (a) have been limited to single fields of vocational education; (b) have focused on ways and means rather than on ends; (c) have not dealt with involvement in the evaluation process; or (d) have not been concerned with the utilization of and the role of the consultant in program evaluation. The present study has dealt with comprehensiveness and outcomes of programs of vocational education; with the efficacy of staff and citizen involvemnt; and incidentally with the role of consultants in evaluation.

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[8]Hamlin, H. M., "Reports of a 5-Year Project in Program Planning and Evaluation in Agricultural Education." (Three mimeographed reports in 1942, 1944 and 1945) Urbana, Illinois, University of Illinois, Agricultural Education Office.

[9]The President's Panel of Consultants, op. cit., and Smith, Harold T., Education and Training for the World of Work, Kalamazoo, Michigan, The Upjohn Company, 1963.

[10]American Institute for Research, The Process and Product of Vocational Education in the United States, 410 Amberson Avenue, Pittsburgh, Pennsylvania.

Organization of the Report

The procedure followed in launching the evaluation projects in the three Michigan schools is described. This study covered a period of approximately 2½ years, and encompassed a variety of activities on the part of the director, the consultants, and the director and staff in the cooperating schools. These on-going activities are described so as to furnish a picture of the involvement of local staffs and citizens. Following this description the identifiable outcomes of the study are given, along with the implications of these outcomes and local evaluation procedures for future local program evaluation.

PROCEDURE

Selection of Cooperating Schools

It was believed that the evaluation project should be conducted in more than one school, because of variations extant among Michigan schools with respect to size, complexity of organization, variety of clientele, and geographic setting. In addition, three criteria were set up for these schools, as follows:

1. The school system offers a broad program of vocational education in a variety of important occupational fields;

2. The administration, faculty, and citizens are interested in conducting an evaluation and in utilizing the services of the institution to make the study; and

3. Adequate local leadership for the project is, or will be made available.

Four schools were considered as roughly representative of variations referred to above. Gaylord is a fairly typical Northern Michigan school in a rural and resort area, with an enrollment in 1963 of 1,155 and 43 teachers employed. Marshall is roughly representative of Central and Southern Michigan communities supported by a balanced economy of agricultural, industrial, and business productivity. The enrollment in Marshall schools totaled 2,750 in 1963, and 125 teachers were employed. The metropolitan area school was represented by Fitz-

gerald, P.O. Warren. This is an area quite similar to many others around cities like Detroit, Grand Rapids, Flint and Lansing, with growing population, and with some of the sociological factors that make up a community not present within the school district or school service area. The school system was the third largest of four that exist within the City of Warren. In 1963 it enrolled 4,714 pupils and employed 220 teachers. A fourth school system also was originally selected that was roughly representative of larger schools (not metropolitan). It enrolled 9,600 pupils and employed 378 teachers. This school was not included in the project, however, because of administrator and staff preoccupation with problems in the reorganization of the program of vocational education in relation to an emerging program in the local community college.

It was believed that the criteria set up for selection of cooperating schools were pretty well fulfilled in each case. In regard to the first, Gaylord had vocational programs for agricultural and office occupations and in home economics. The industrial education program was limited to industrial arts because of a lack of facilities. Marshall maintained programs of agriculture, home economics, office education and cooperative education in diversified occupations. A broad offering of industrial arts included a few advanced, specialized courses, and preparatory work for cooperative occupational education. Fitzgerald had a broad program of industrial courses, a few of which might be classed as vocational, as they were specialized or led directly

into specialized training. In addition, there was a program of vocational education for office occupations and a program of home economics. Cooperative occupational education was conducted in the three fields: office, distributive, and industrial occupations.

A consulting committee was utilized by the project director to determine the schools which would meet the second criterion. All fields of vocational teacher education were represented on this committee, as well as the vocational education office of the Department of Public Instruction. Several schools were nominated and the three mentioned above were selected. They all had a record of manifestation of interest in vocational education evaluation and planning, and in cooperative activity with teacher education institutions. Finally, it was the conviction of the consulting committee that each school being nominated had adequate local leadership available for the project. In the case of Fitzgerald the local director of vocational education was designated as local project director. Marshall did not have such a position and the high school principal was named as local project director. Gaylord created the position of half-time director of vocational education, and designated the staff member appointed to this position as local project director.

As intimated previously, a letter of invitation to participate in the study was sent to four superintendents. As reported, one accepted with reservations, and this school was not included. The three others, just described, accepted and constituted the cooperating schools.

Beliefs and Assumptions Held

This study was based in part on certain beliefs and assumptions held either by the director of the study or by the consulting committee. Following are those of greater importance:

1. Local program evaluation should be done by those most closely identified with the program, as administrator, teacher and student.

2. The process of evaluation should emphasize objectives or goals and outcomes, in addition to, if not instead of ways and means.

3. The decision as to what shall be evaluated should be made by those concerned with the local public school.

4. The local school staff should be free to try whatever activities the local director and staff desire.

5. Consultants should give ideas, raise questions, supply technical information and advise, but should not render judgments regarding the effectiveness of programs unless asked to do so.

6. Citizen involvement is desirable in an adequate evaluation of a local program.

7. Vocational education was defined, for purposes of this study, as broadly designating that portion of education which goes further than general education by dealing in a more specialized.

manner with the development of occupational competency. It is not restricted to those programs which are reimbursable through the National Vocational Education Acts. While this concept includes upgrading and/or retraining of adults the study is almost entirely limited to the secondary school program.

Launching the Project

Work on this study was begun in April of 1963. In the letter of invitation sent to each school the objectives of the project were given, as well as what would be expected of persons in the schools participating in the project.

A one-day conference of representatives of the three schools was held on May 21, 1963. Attendance included two teachers, a D.P.I. representative, three Michigan State University staff members and a graduate assistant. The objectives of the project were explained. It was brought out that no set plan for evaluation had been pre-determined, but that these schools and Michigan State University would work together to plan procedures and activities.

The need for time to be provided in each school for leadership on the project was pointed out. As a result the following decisions were made. At Fitzgerald the director of vocational education would be the project director and would utilize a staff committee of vocational department heads. At Marshall the principal, who was to be the project director named the coordinator of cooperative occupational training as his assistant director. At Gaylord a teacher was freed

of half-time teaching responsibilities, placed in the newly created position of local director of vocational education, and made project director.

Among the steps agreed upon to get the project under way locally were the following:

1. Hold orientation meeting for local staff members most directly concerned with preparation for the world of work.

2. Form working staff committee in each school.

3. Utilize this committee to select, plan, and carry out evaluation activities.

4. Provide opportunity for consultants to become acquainted with each local program before serving in a consultant capacity.

5. Utilize consultants to study unmet needs in vocational education.

6. Organize an advisory committee in each community.

Local Activities in Getting the Project Under Way

A two-day meeting of the staff committee at Gaylord was held. As part of the orientation it was brought out that a new wing would be added to the high school building for vocational education. Another development affecting the program was the beginning of a movement to study the need for an area vocational school. The following activities were listed for immediate implementation, or for further consideration by

the local director, the administration and/or the faculty:

1. Study the role and responsibilities of local director of vocational education.

2. Become familiar with the courses of study extant in the vocational education and practical arts fields of the Gaylord Community Schools.

3. Organize and start a lay advisory committee on vocational education.

4. Study need for, and design a survey of occupational training needs and future placement opportunities - area as well as local.

5. Explore needs for vocational guidance services in relation to vocational courses.

6. Hold meeting of total secondary education faculty for orientation, and for development of a faculty philosophy of vocational education.

7. Hold meetings of teachers most closely identified with specialized aspects of vocational education.

8. Study further the possibilities of development of a program of cooperative occupational training.

In the preliminary meetings at Marshall it was brought out that a study of graduates of business courses was already under way. A need for more nearly adequate description of the total vocational education program for guidance of students and for the school board was brought out. The activities selected for starting the project included the following:

1. Prepare and distribute a brief description of the project to the faculty at the August pre-school conference.

2. Form a working committee of the local project director, his assistant, a staff member from each of the vocational and/or practical arts fields, and from guidance and counseling.

3. Hold a fall faculty discussion on philosophy of preparation for the world of work.

4. Form a local consulting committee on vocational education.

5. Prepare descriptive brochure for students on specialized education for the world of work.

6. Prepare a description of the vocational education and practical arts programs for the board of education.

7. Hold staff committee conferences and work sessions.

The planning of activities at Fitzgerald necessarily took account of those already under way that had a bearing on evaluation. These activities were:

1. An annual occupational follow-up study of former students

2. A listing of jobs in entry occupations as reported by employers

3. Development of a record of placements

4. Annual determination of number and percentage of dropouts from high school

5. Curriculum revision in business education

In addition, it was decided to study the feasibility of organizing and using an advisory committee on vocational education, and to study selected courses to improve basic preparation to increase employability of youth (physics and trigonometry, particularly).

Consultant and Other Services Given by the Project Director

In addition to the structured meeting held to launch the project, three meetings were held in 1963-64 and two in 1964-65. The first year these meetings of local directors and their assistants or associates were held for the purpose of providing for a sharing of ideas and experiences, for reporting progress, and for discussing common concerns. The last two meetings also served these purposes, but were held as well to discuss the outline and content of the manual on evaluation that was then under development.

The project director met with the local director and his assistant and/or administrator in the three schools on 20 different occasions. These meetings served to acquaint the project director with curriculum, instruction, and facilities; to note and record local evaluation activities; to discuss plans for utilizing consultant services; to plan for future local staff committee activities; and to discuss plans for the three "open house" meetings that were held. These meetings were supplemented by nine individual conferences with local directors or teachers, largely on a consultant basis.

On 13 different occasions meetings of local staff evaluation committees were attended, and the director's participation was in the role of consultant. These meetings included ones held jointly with

local advisory committees in two schools and, jointly with open-house meetings in all three schools. One meeting of a local board of education was attended.

It is pertinent at this stage of the report to point out the three roles filled by the project director either at different times or concurrently. The role of project director called for communications with local directors and their assistants, for recording of activities, for coordination of the work of consultants, and for reporting of developments. As consultant on vocational education the director raised questions regarding problems or program aspects to be studied; suggested ways of studying needs; assisted with development of data-gathering instruments; and gave his opinion on proposed changes and developments in local programs as requested. The beliefs and assumptions previously mentioned as being held had a bearing on both these roles.

The director, in his role as director, took a non-directive approach toward local plans for evaluations. This is because the purpose of the project was to discover, develop, and try out promising activities or procedures. There was no set formula to be applied. Since, as has been previously pointed out, the goals-and-outcomes approach was believed to be most promising, and staff and citizen involvement was held to be important, these were encouraged either directly or indirectly by the director in his consultant role.

The third role assumed was that of consultant in vocational agriculture. In this capacity he was consulted by the teachers of agriculture in Marshall during the first year and in Gaylord during the

second year. Because of a change of staff in Marshall the second year, and because the teacher at Gaylord gave priority to his new assignment as local director the consultant activities in this role were limited.

During the 1964-65 year a research assistant was employed on the project. He served as an assistant to the director on numerous occasions and helped to assemble material for, and aided in the writing of the manual. He also gave consultant service which will be described in the next section.

ACTIVITIES INVOLVED IN MAKING THE STUDY

Staff Committee Work

One of the early activities in the project was the organization in each school of a staff committee on evaluation of vocational education. This proved to be a very important and fruitful step. At Gaylord the staff committee initially included the local director as chairman, and all five other teachers of vocational and/or practical arts subjects. The second year the newly appointed counselor and the art teacher were added. In total, 11 staff members and administrators were directly involved in the study in Gaylord.

The Marshall committee included the chairman, the coordinator, the head of business education, the two home economics teachers, a counselor, an industrial teacher, and during the second year, the assistant principal and an art teacher. Other persons involved in the project, plus a committee replacement the second year, brought the total staff involved to 19.

At Fitzgerald the committee consisted of the local director, heads of vocational departments, two coordinators, the director of guidance, a counselor, and the assistant principal, or eight persons. Replacements due to staff changes occurring through the duration of

the project brought this total to twelve. Non-committee members involved in some meetings, but directly with the project brought the total staff involved at Fitzgerald to 25. A grand total of 55 different educators were directly involved in project activities of the three schools, with 29 of these serving on a staff committee. For listing of names in the three schools see Appendix A. In addition to these, many teachers on the project directly cooperated with the local director and/or a department head through general faculty meetings.

The three staff committees directed their attention to development of a philosophy and identification of objectives for the program; to the use of practices initially decided upon and reported in a preceding section of this report; and to selecting and conducting additional activities.

School Open-House Visits

Early in the project all three committees became interested and involved in an open house to see and learn about the vocational education program, first at Fitzgerald, followed by the one at Marshall, and later at Gaylord. The primary purpose of the open houses was to enable committee members to study programs in other schools in order to get ideas for evaluation and improvement. Another purpose was to help the host school to review its program and to obtain ideas for improvement from the visitors. A concomitant of these outcomes was the information gained by many staff members regarding programs in

their own schools. In each case the open house was an all-day affair, with time divided between presentations by staff from the host school and visits to the classrooms, laboratories, and shops to observe instruction and facilities. Following these activities the state project director conducted a discussion to bring out reactions of those present to what they had seen and to report progress of the other two schools on their local evaluation projects.

There were eight in attendance at Fitzgerald, including two consultants and a foreign educator. Six visiting local committee members and four consultants attended the open house at Marshall, and eight committee members attended the open house at Gaylord. The staffs from the host schools for the three open houses brought the total of participating educators to 43. Five persons attended all three open houses and five others participated in two.

Consultant Services

The need for consultant services was explored by local committees and two kinds of service needs were identified. One was for a consultant in each occupational field to work with teachers involved in this field. The purposes of such consultation varied with the school and with the field, but included: identification of problems for study; preparation for study of vocational education needs in the several fields; analysis of objectives and content of courses; and evaluation of facilities and equipment.

Dr. Helen Hollandsworth, home economics education, Michigan State University, served as consultant one day at Marshall, two days at Fitzgerald, and one and one-half days at Gaylord. Mr. Allan Barron, business education, Michigan State University, served two days at each school. In the absence of an available consultant from Michigan State University in industrial education, Mr. Arthur Hansen, Department of Public Instruction, served as consultant one day at Marshall and one and one-half days at Gaylord. It was not possible to obtain a consultant in industrial education to serve at Fitzgerald.

The other type of service requested included assistance in organizing and using citizens' advisory committees for vocational education. This type was provided by the project director. Another request was for help in studying community occupational needs and appraising existing programs in light of these needs. This was also provided by the director, and supplemented by the other consultants. A third type of help related to development and use of instruments. Here the director also served, along with some assistance from the other consultants.

The research assistant gave consultant service not only on development of the instruments, but also on adapting them to machine scoring and tabulation; on conducting interviews; and on summarization, analysis, and interpretation of data. Six days were spent by that consultant at Fitzgerald, and two each at Marshall and Gaylord, in addition to informal contacts on campus with directors, and considerable time on related analytical and other work.

Identification of Objectives

In all three centers the staff committees gave considerable attention to objectives of the program. The objectives of the then existing programs were examined. At Marshall the objectives of each vocational department and the guidance program were presented to their citizens' committee on vocational education, called the "committee of consultants." At all schools the role of the total school program in the preparation of employment-bound youth was discussed, and at Fitzgerald and Marshall the objectives of related courses in mathematics and science were examined.

In both these schools the objectives of post-high school instruction were discussed because of the problems brought up by contacts with former students. Many of these youth who had taken only academic subjects for college preparation, or had taken only a limited number of specialized courses returned to ask the school what could be done to help them get a job, or to get a better job.

At Gaylord, the passage of a building bond issue and start of construction of a new vocational and practical arts wing coincided with the start of the evaluation project. As a result, the immediate attention was focused on planning programs for the utilization of facilities, but in line with needs which had not previously been thoroughly

studied. Thus, the objectives were cast in a philosophical framework and in terms of what a school like this ought to be expected to accomplish. The discussions by subcommittees of the advisory committee on vocational education did, however, place considerable emphasis on what employers hoped the school would do in preparing youth and adults of the community for employment with their companies.

The staff committee at Fitzgerald placed in writing a statement of overall objectives, and carried on detailed study of occupational competencies developed and those needed by employers. A fairly complete list was developed of entry occupations for which the school prepared students, in which students had been placed, and/or for which employers had sought workers. A total of 32 entry jobs were listed. Each vocational department staff concurrently prepared a list of jobs for which their department prepared youth, together with competencies to be developed and minimum performance standards held to. Interviews were conducted with employers to get from them validating information for the entry job list, and either corroborating or new information regarding occupational competencies required.[1]

Use of Advisory Committees

Since none of the three schools had previously used advisory committees on vocational education the director was called on to serve as a consultant on this aspect. The advisory committee at

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[1]For additional details on this analysis of objectives in terms of competencies see Appendix C, and also the manual, Byram, H.M., Evaluation of Vocational Education Programs, Bureau of Educational Research, College of Education, Michigan State University, 1965, including interview forms in the appendix of the manual.

Marshall was the first to be formed. This committee consisted of 29 members.. It was not formally organized with officers, and probably was not intended to become a permanent organization. Fifteen members attended the first meeting. A local administrator presided. Representatives of each department presented objectives and programs, and answered questions. An equal amount of time was used for sub-committees based on occupational fields. The sub-committee members discussed objectives, and the needs of the program with the staff. The committee did not meet again during that year nor the second year, largely because the work of the staff committee on evaluation was not moving rapidly enough, in the judgment of the local director, to warrant further use of the advisory committee. It should be pointed out, however, that an advisory committee on the cooperative occupational education program had been utilized during this time.

At Fitzgerald the staff committee lacked the support of administrative policy favoring use of an advisory committee, although here, again, use had been made of an advisory committee for the cooperative education program. Nevertheless, the staff committee considered and discussed the idea. Near the end of the second year three business and industrial representatives were added to the staff evaluation committee as a quasi-advisory group.

Study of Program Outcomes

At Gaylord no systematic occupational follow-up had been conducted or was attempted. No organized placement program existed prior to installation of the guidance program. Two instruments were developed to obtain evaluations of former students and/or parents of the program in homemaking and the program of vocational agriculture. At the end of the two years of the project the latter survey instrument had not yet been used, but the one on home economics had been.

At Marshall, periodic follow-ups of business education students had been made, the most recent one having been completed near the start of the project. It was decided, however, to follow-up the entire class of 1963. A questionnaire was developed which obtained information on employment and reactions to vocational curricula and instruction. The latter were prepared for each vocational department by staff committee representatives of that department. A 52 per cent return was received on this instrument.

Some of the more important findings of this survey were: the small percentage of graduates who had taken post-high school vocational-technical education; the high value placed on English and Mathematics, as factors in their vocational success; and the relatively low percentage who indicated they had made a decision regarding their

vocation before leaving high school. Recommendations were made for study in depth relative to placement, vocational planning, skills needed for job entry and need for post-high school vocational-technical education. Revisions in the follow-up questionnaire also were suggested, as well as more rigorous structuring of data summaries.

A unique feature of the Marshall evaluation project was the decision to have members of the staff committee write an evaluation of the department with which they were concerned. The departmental representatives were to use the reactions of the consulting committee, and from any other citizens or parents, pupils, and staff, and were free to secure information as they saw fit. Two departments, business and agriculture are represented by completion of this type of written departmental self evaluations. The others had not prepared such statements by the end of the project. Lack of staff time and insufficient objective information appeared to be factors inhibiting this activity.

The other document arose from the requirement made by the local board of education of an annual report on vocational education. This report is to include subjects taught, enrollments with breakdown, accomplishments of program and teachers, accomplishments of clubs, services performed, equipment needed, curriculum changes recommended, research, budget, and implications for the future. The assistant to the local project director, who has since been appointed to the position of director of vocational education beginning January, 1965, prepared an over-all report, and incorporated in it recommendations for the future to take advantage of new funds available under P.A. 88:210.

Reference has previously been made to the Fitzgerald analysis of departmental objectives in terms of competencies to be developed. These statements of competencies were further defined to prepare proficiency statements in terms of minimum standards to be attained. Proficiency lists were developed for the industrial drafting sequence: woodworking, machine shop, fluid power; for office and distributive education; bookkeeping, retailing, shorthand, and office machines; and for home economics.

The annual follow-up of former students made at Fitzgerald provides information on occupational placement. Detailed information has been obtained from some employers regarding the extent to which entry employees actually were found to possess the level of competency indicated in the course proficiency lists. It is planned to gather more of this type of information. An employer rating form has been used which has proven to be an aid in evaluating the training.[2]

Developing Survey Forms and Other Instruments

Study of needs in relation to the current programs of vocational education took different forms in the three schools. Marshall, being located in Calhoun County, had representatives involved in the four-county study of vocational education needs and programs conducted in

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[2]A copy of this form is included in the appendix of the manual, Evaluation of Vocational Education Programs, op. cit.

1963-64. It was, therefore, decided that the findings of this "Committee of One Hundred" would be examined before any more formal local study of needs was done. The form that was developed for survey purposes is the check list used with former students. This form goes beyond the recording of occupational status to the obtaining of alumni reactions to many phases of the high school curriculum. Consultant help was utilized in adapting the questionnaire to machine tabulation, and in modifying it for clarity and simplicity as a mail-in instrument.

The desire at Gaylord for a community survey of needs for vocational education prompted the development of a form for recording data to be obtained from interviews with employers. This form was tried out and used with a few employers.. Its full use was postponed, however, due to the survey being conducted in the intermediate school district and adjoining districts to determine needs for an area vocational-technical education center. Members of the local advisory committee and all consultants participated, along with the local director, in the preparation of this form.

Two other forms were developed at Gaylord. One was made to record reactions to the program of home economics. This form was developed through help of the home economics teacher, and the sub-committee of the local advisory committee. The assistant to the state project director worked with the Gaylord director to prepare an instrument with similar objectives for the vocational agriculture program. This form was developed rather late in the project, so had not yet been used.

The forms prepared and used at Fitzgerald in interviews and occupational follow-up have been referred to in a previous section and are reproduced in the manual on evaluation. Some of these had been worked out prior to the start of the project and were modified by the staff committee as the directions of evaluation project seemed to suggest. Others were developed by the staff committee, with only token assistance from the consultants.

OUTCOMES OF THE STUDY

The outcomes of this study are reported first in terms of the three major objectives set up in the beginning. The over-all accomplishments on the third objective are supplemented by those identified with each school, and include certain program changes. One of the concomitant outcomes was the development of a number of instruments used or to be used on the project. Finally, it appeared logical to submit suggested implications of the study outcomes for future consideration.

Generalizations Regarding Procedures for Conducting an Evaluation in a Public School System

The following generalizations are drawn largely on the basis of the record of practices followed in the schools and the concrete results; as well as the reports of reactions to these practices coming from the schools. They do, however, to a certain extent, rest on the philosophical premises on which the study was based, and reflect a degree of subjectiveness based on contacts and observations by the director of the study.

1. The project has demonstrated the value of involvement of local staff in conducting an evaluation of vocational education in a public school. All staff committees appointed cooperated in

the work of the project. Only one teacher asked to be excused from the committee assignment. The participation of other teachers and citizens has been reported. There was administrative and citizen involvement in all three centers. Following are some of the supporting statements made by local directors at the end of the first year:

"The total faculty is becoming more aware of the need for vocational education for non-college bound students."

"The teachers...began to question...subject offerings, equipment, methods of teaching, percentage of student body enrolled in their departments and the contributions that our vocational departments were making in the...community. It was noticeable how much more interested these teachers became in their teaching assignments."

"Teachers...have placed a high value on meetings of the local evaluation committees."

All procedures developed and/or tried out in the schools were decided on by teacher committees and they had a part in development of all data gathering instruments used in the study. Some of these instruments could be criticised in the light of accepted standards for sophisticated research instruments. They do, however, represent what these committees were able to produce and are evidence of the efficacy of staff involvement.

2. The project has helped to clarify the role of local administrative staff members in conducting an evaluation. The importance of administrative approval and sanction was brought out many times, in addition to the interest and support given by these

persons to the local evaluations. Beyond this, it has helped to reveal the close relationship between administrative involvement and support for program changes suggested by staff committees. There was an indication from some teachers that they would have appreciated some consultation by administrators with them before the decision to conduct an evaluation was made and implemented. It would appear that a project of this sort could profitably promote greater participation by administrators than was promoted in the present study.

3. All indications point to the conclusion that local staffs and their directors would like to have had more direct suggestions or recommendations regarding procedures than they received. The project director's approach was largely non-directive. One reason for this was to provide a climate of freedom conducive to creativeness and initiative. Another reason was that the project director had hoped for an unfolding of a generalized procedure to evolve in the crucible of local public school experience. Consultants to public schools on program evaluation should be prepared to give more direct help than was done in the present study.

4. The requirement that there be designated in each school a director of the local evaluation project appears to have been justified. The role of this local director needs to be studied further. There was no outcome in the study to indicate conclusively that the director of the study should be a local director of vocational education, the principal, or some other school administrator or teacher.

5. Those staff members working on a committee, or otherwise deeply involved should be provided with released time by the local public school. The effectiveness of the work in those instances where this was done has been well demonstrated. Likewise, where implementation of plans was not going forward as well or as rapidly as desired, one strong inhibiting factor was lack of time for individual or group work.

6. The visitation by staff committees of another school system through an open-house arrangement to observe and discuss the vocational education program proved to be of value.

7. Two effective procedures for conducting an occupational follow-up of graduates and other former high school students were demonstrated.

8. There was insufficient evidence to say that the concept of total program evaluation, as distinguished from individual student, course-achievement evaluation, was understood by all teachers in the three schools at the beginning or during the project. The inescapable inference is that teachers and administrators need to develop a philosophy of vocational education, including the concepts of programs and curricula and not just courses with vocational objectives or connotations.

9. The interest and willingness on the part of citizens, including representatives of businesses and industries, to serve on a committee to advise on evaluating and program planning was amply demonstrated. There was no evidence to support misgivings regarding use of citizens' committees encountered many times among school administrators and teachers, generally.

10. The inference was substantiated that the total curriculur program of the school should be considered when appraising the effectiveness of the school in preparation of youth for the world of work. This came from employers on citizens' committees, from teachers not on the staff committees, and from administrators, as well as from those actively involved in the project.

11. A manual was prepared for local public school administrators and staffs to use in conducting local evaluations. It was based on the foregoing generalizations, on others which should be further tested, and on a few suggested practices based on evaluation theory or philosophy.[1]

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[1]Byram, Harold M., "Evaluation of Local Vocational Education Programs - A Manual for Administrators, Teachers, and Citizens." Bureau of Research and Publications, College of Education, Michigan State University, East Lansing, Michigan, 1965.

Recommendations of the MVEEP Report That Were Tested

One of the original objectives of the study was to test those recommendations of the MVEEP report that relate to evaluation of local programs. Five recommendations were identified as being in this category. The result of experience with these is given below.

1. Chapter 11, No. 5, regarding the use of the report of Task Force, No. 1. Report--"Philosophy and Objectives of Vocational Education."

   This report was used by the project director and was found to be helpful in all three schools as a resource for staff discussions on philosophy and objectives for local programs. The sections of the report relating to general objectives, and to specific objectives of programs in each field also were used, but not to the same extent in all schools, and the objectives for some fields were used more than for others.

2. Chapter VII, No. 15, regarding use of advisory committees.

   The use of advisory committees was recommended by the project director and such committees were organized in two of the three schools, with a quasi-advisory committee in the third. These committees were not utilized to such an extent that it could be said that their usefulness in local program evaluation had been fully demonstrated.

3. Chapter VII, No. 23, regarding regularizing of follow-up studies. This recommendation was adopted in two schools. The efficacy of systematic follow-up was demonstrated and the value of certain procedures was proved.

   A subsidiary recommendation to this one (chap. VI, No. 6) is "that information (from follow-up) be used as a part of the appraisal of effectiveness of vocational programs." This was done in one school and started in a second one at the time of termination of the project. Thus, this recommendation has not been thoroughly tested.

4. Chapter VI, No. 7, "that each school and school system study its organizational structure in the light of the character and extent of the vocational education program needed for the community."

   This was partially done in all three schools. In none of the schools could it be said, however, that "the character and extent of the vocational education program needed for the community" had been fully determined. Structural reorganization would be contingent on this needs analysis, so a thoroughgoing reorganization should not have been expected. Two schools did make changes, that might be classed in this category. Both schools created the position of local director of vocational education and one developed a guidance program and assigned job placement to that officer.

Assisting the Three School Systems in Evaluating and Re-planning Activities

The over-all outcomes of the study having been reported first, the task remains of identifying or recounting accomplishments and program developments in each of the three cooperating systems. Some of these might have taken place had there been no evaluation project. It was believed, however, by those involved in the direction of the project as a whole, and by those responsible for the project in each school, that the changes all could be traced either directly or indirectly to the evaluation project.

1. Fitzgerald

   a. Organized an "advisory committee" on vocational education, consisting of the chairmen of business, home economics, industrial, and counseling; the coordinators of cooperative education; three representatives of business, distribution, and industry; and the local directors. Sub-committees were organized for each field.

   b. Held an industrial education workshop for the summer, 1965 to evaluate the total offering in industrial education, and the sequence of courses and course content; and to make plans for two new junior high school shops.

   c. Developed and added an industrial physics course and a trigonometry course as electives for all employment-bound students.

d. Developed a course in business education especially for industrial education students (accomplished its purpose, since most industrial students subsequently elected a regular business course, so new special course later discontinued).

e. Changed the objectives of the industrial education programs for those programs which had been primarily exploratory toward inclusion of vocational objectives.

f. Made placement and follow-up service the focal point for evaluation. Created a half-time position for this, with a half-time secretary. Revised forms for office application and referral.

g. Conducted an interview study to explore need for new vocational education programs, modifications of existing programs, and competencies and other worker qualifications needing to be developed.

h. Portrayed the present and proposed revised vocational education curriculum for total staff discussion and later administrative action.

i. Studied curriculum compared to technical education program at Macomb Community College to determine possible duplications and status of preparatory, or basic courses.

j. Increased staff in cooperative occupational education and in business education.

k. Made and summarized two job follow-ups of students; those graduating in 1962 and in 1963.

l. Cooperated with Macomb County area study of needs for area vocational education program.

2. Gaylord

a. Created and filled the position of half-time director of vocational education for the duration of the project, and continued the position after the project was over.

b. Installed a guidance program and operated it the second academic year of the project.

c. Assigned responsibility for job placement of students to the guidance office, thus removing it from the category of an overload of the high school principal.

d. Organized and used an advisory committee on vocational education. Sub-committees for each department were organized and used. They will be made permanent.

e. Noted an increasing awareness of needs for vocational education on part of school faculty and citizenry.

f. Made and summarized survey of parents of home economics students. Revision of courses is being made in light of findings.

g. Laid ground work for future cooperative occupational education program.

h. Established cordial working relations with the MESC. Planning being done toward MDT course in an off-farm agricultural occupation.

i. Planned facilities and equipment for new vocational education wing in line with needs, as identified in the study and in harmony with consultants' suggestions.

j. Amplified industrial education offering and created new industrial education teaching position.

k. Added a course in business machines.

l. Improved the placement of students in vocational courses.

m. Held several conferences of advisory sub-committees and industrial companies and organizations.

n. Cooperated in area study in Northern Michigan to determine needs for area vocational education program.

3. Marshall

a. Developed brochures for students, counselors, and faculty dealing with business education, metals, and cooperative occupational education.

b. Organized and held meeting of a consulting committee (of citizens) on vocational education.

c. Held faculty and citizen discussions on philosophy and objectives of vocational education.

d. In connection with EBI-Day conference, held meeting for representatives of vocational education departments and representatives from businesses and industries.

e. Produced first annual report of vocational education for the board of education, including an overall evaluation and recommendations for modification and expansion.

f. Apparently improved the status and image of staff members assigned to specialized aspects of occupational education (vocational education).

g. Provided more time in class schedule for elective courses, including vocational education courses, by transferring driver education from the academic year to the summer.

h. Added a new course in home economics for senior girls which will permit those who have had one course or less to take home economics at the academic level, and with the content appropriate to their needs; a new course on building construction; and an electronics laboratory.

i. Explored possibilities of training medical secretaries.

j. Installed a new physics course to help prepare students for middle-manpower positions. Technical aspects will be stressed, rather than theoretical.

k. Created and filled new position of half-time director of vocational education; provided clerical help for that office; and added second coordinator of cooperative occupational education, part-time.

l. Exploring possibilities of a new type mathematics course for employment-bound youth.

m. Studying new type of arrangement for individual projects for advanced students in industrial education.

Instruments Developed

Several types of data-gathering instruments were developed during the course of the project. These included questionnaire, questionnaire check-list, opinionaires, skill rating forms, referral card, placement record, employer report form, interview and schedule. A complete list of the forms developed and placed in the appendix of the manual on evaluation, is included in the appendix of the present report.

Implications of the Outcomes of the Study for Future Education and Research

1. It seems quite clear that there is a need for education of public school personnel in the procedure of evaluation of programs of vocational education that are based on the goals-and-outcomes approach and on involvement of local staffs and citizens. Some of this can and should be given by the local director of the evaluation. Some probably should be given by persons in state leadership positions in vocational education, both directly to teachers and to local directors of evaluation. In the case of the latter, particular attention should be given to training in the processes of involvement.

2. The role of the consultant on evaluation of vocational education should be further studied. If the perception of this role by local staff, by administrators, and by citizens is different from

that held by consultants or potential consultants such a finding might indicate a need for conferences of consultants and/or public school people to harmonize these perceptions. A program for education of state leaders for consultant service might well be in order.

3. The role of director of the local evaluation project should be further studied. The present study has recorded what the director did but no role analysis was made of perceptions by the local director, the teachers, the administration or others.

4. This study has demonstrated that departments of vocational teacher education can provide consultant service. The service provided in the present study met the approval of local staffs. It would appear that teacher education institutions should expand their programs and add staff members, so that the future requests for consultant service in evaluation of vocational education, and specialized consultant service in each field could be met. A university having vocational teacher education programs in all fields should recognize a special responsibility for this, as contrasted with one that is educating teachers in only one or two fields.

5. The process of analyzing competencies developed in vocational courses, and those required by employers, and the cross comparison made in the project conducted at Fitzgerald probably goes beyond what most public schools have done to date. It is recommended that the "Fitzgerald method" be tried out in other schools to determine the extent to which it is adaptable to a variety of community and school situations.

6. The occupational follow-up work done at Fitzgerald and at Marshall represent two somewhat different approaches. These should be studied by school systems to determine the procedure they will use. Since occupational follow-up of graduates of reimbursed vocational education stands a good chance of being virtually required under the new vocational education policies, State and Federal, decisions will have to be made in local public schools as to how such follow-up is to be conducted.

7. It is recommended that the project that has been the basis of the present report be extended to other schools in Michigan. The purposes of this new project would include the following:

   - to further test and improve upon procedures and practices in local program evaluation developed in the present study, especially in improvement of data-gathering instruments;
   - to study the role of the local evaluation director;
   - to study the role of consultants in program evaluation; and
   - to test the hypothesis that advisory committees on vocational education are essential to program evaluation.

When this new project is set up, participating schools should be expected to arrange for administrative participation, for appointment of a local director of evaluation, and for released time for work by the evaluation committee.

This project should be extended to other states, representing varying economies, demographic situations, types of state school systems, and vocational practices of the present Michigan project. The purpose would be to determine their general applicability outside Michigan.

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APPENDIX A

Local School Personnel Involved in the Study

Gaylord

Ivan Davis, Superintendent
Henry Smith, High School Principal
* Gary Belleville, Counselor
* Carl Carlson, Teacher of Industrial Arts
* Donald Crandall, Director of Vocational Education, Teacher of Vocational Agriculture, and local director of the project
* Larry Givens, Teacher of Business Education and Librarian
* Mrs. Helen Madsen, Teacher of Home Economics
* Hugh Raab, Teacher of Industrial Arts
* Jay Soderberg, Teacher of Business Education
* John Stuart, Teacher of Art
Harrison Stevens, Teacher of Power Mechanics

Marshall

Bruce Gray, Superintendent
Henry Cunningham, Assistant Superintendent and Curriculum Coordinator
* Jack Anderson, Teacher of Agriculture, 1963-64
* Floyd Beneker, Teacher of Agriculture, 1964-65
* Stanley Carlyon, Teacher of Industrial Education (woodshop)
* Fred Chaney, Head, Business Education
* William Crumrine, Assistant High School Principal and Guidance
* Ivan Fleser, Counselor
* Mrs. D. Hansen, Teacher of Home Economics
* Miss Cheri Pierce, Teacher of Art, 1964-65
* Edward G. Rose, High School Principal, and local director of the project
* John Strough, Coordinator of Cooperative Training, (Director of Vocational Education, 1965)
* Miss Joyce Wingate, Teacher of Home Economics
Ross Beach, Teacher of Agriculture, 1963-64
Aaron Davis, Teacher of Agriculture, 1964-65
Ray Davis, Teacher of Industrial Arts (drafting)
Gordon Gilchrist, Teacher of Industrial Arts (metal shop)
Paul Rauth, Teacher of Mechanics and Drawing

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*Members of Staff Committee on Evaluation

APPENDIX A (Continued)

Fitzgerald

Earl S. Eidt, Superintendent
Kenneth Kistner, High School Principal, 1963-64, Assistant Superintendent of Schools, 1964-65
* Alex Arnot, Assistant High School Principal, 1964-65
* Richard Berryman, Assistant High School Principal, 1963-64, and Principal and local director of the project, 1964-65
* Kenneth Boogren, Director of Guidance
* Carl East, Counselor
* William Gayde, Teacher of Hydraulics, 1963-64; Coordinator of Cooperative Industrial Education and Director of Placement, 1964-65
* John Gutka, Teacher of Business Education, 1963-64, Coordinator of Cooperative Office Education, 1964-65
* Leon Helminiak, Head, Industrial Education
* Donald Keller, Coordinator of Cooperative Distributive Education
* Bob Little, Head, Business Education
* M. C. Prottengeier, Director of Vocational Education and director of the project, 1963-64
* Mrs. Ruth Robbins, Head, Home Economics Education
* L. J. Teufner, Coordinator of Cooperative Industrial Education and Director of Placement, 1963-64, Director of Vocational Education, 1964-65
Eldrich Afdahl, Teacher of Industrial Education
Dennis Brooks, Teacher of Industrial Education
John Bryant, Teacher of Industrial Education
Mr. Fasciszewski, Teacher of Art
Mrs. Joan Fragner, Teacher of Home Economics
I. Galia, Counselor
Wayne Gilbert, Teacher of Industrial Education
Robert Massell, Teacher of Industrial Education
Ray Matheson, Teacher of Industrial Education
Dale Wideman, Teacher of Industrial Education

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*Members of Staff Committee on Evaluation

APPENDIX B

List of Instruments Developed and/or Used in the Study*

- High School Entry Job Descriptions
- Questionnaire--check-list, Follow-up Study of Graduates of Marshall High School
- Placement Office Application
- Placement Office Employer Record
- Placement Office (Referral Card)
- Employment Record
- A Suggested Form for Keeping Individual Placement Records
- Parents' Evaluation of Homemaking Program
- Interview Form--Occupations and Employment in Business, Industry, Farming, Government, Services, and Professions.
- Interview Form--Evaluation of the Vocational Agriculture Program

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*Copies of these instruments are included in the Appendix of the Manual, Evaluation of Vocational Education Programs, Bureau of Educational Research, College of Education, Michigan State University, 1965.

APPENDIX C

Examples of Statements of Objectives*

1. Objectives of Education for the Public Schools

   - Develop individuals who will be able to see and solve successfully the problems of life and desire to take the steps necessary to do so.

   - Be most concerned with the major problems of living which are: health, ethical character, citizenship, vocational activity, home membership and recreation.

   - Develop in the child ideals of worthy individual and social purposes.

   - Develop powers of self-direction, self-appraisal and self-control.

   - Develop the desire and ability to work cooperatively with others in the solution of social problems.

2. Objectives of Vocational Education for the High School

   - Provide opportunity for students to explore vocational education programs to determine interests and abilities.

   - Provide vocational guidance to aid students in their choice of vocational education programs.

   - Provide opportunity for students to specialize in one or more vocational education programs.

   - Provide opportunity for students to gain basic skills and knowledge needed to qualify for an entry job in a skilled occupational field or to acquire avocational skills.

   - Provide background for students to continue studies in post-high school vocational and technical education programs

   - Provide background for students to progress in their chosen occupational fields and gain economic and job security.

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*Prepared by the Staff Committee on Evaluation of the Fitzgerald School

APPENDIX C (Continued)

3. Objectives of Industrial Education for the High School

- To provide practical experience which will help to develop an interest and an understanding of the place industry, its materials, and processes have in social and economic life.

- To develop a degree of consumers' knowledge which involves the ability to select wisely, care for, and use properly the products of industry.

- To develop an appreciation for functional design, color harmony, organic structure, and good craftsmanship in creative and commercial products.

- To develop wholesome work habits and a feeling of responsibility so that work may progress in a safe, orderly manner with an emphasis on the conservation of time and materials.

- To provide for individual differences in abilities of students and to provide extra experiences for the exceptional child.

- To provide occupational guidance.

- To provide an opportunity for investigation and experimentation through many media.

- To provide an interest in, and foster, wholesome leisure time activities.

- To provide an effective correlation between industrial education and general education subjects.

- To provide an opportunity for students to specialize in an occupational area.

- To provide background for students to continue in post-high school vocational and technical education programs.

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A Follow-Up Study of the Attitudes of Local Administrators Regarding the Financing of Vocational Education in Michigan

RALPH C. WENRICH
ROBERT S. VAN DYKE

Sponsored by:

State Board of Control for Vocational Education
Lansing, Michigan

VT 00028

Administered through:

October 1963

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A FOLLOW-UP STUDY OF THE ATTITUDES OF LOCAL ADMINISTRATORS REGARDING THE FINANCING OF VOCATIONAL EDUCATION IN MICHIGAN

Ralph C. Wenrich
Robert S. Van Dyke

ORA Project 05679

Sponsored by:

STATE BOARD OF CONTROL FOR VOCATIONAL EDUCATION
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OFFICE OF RESEARCH ADMINISTRATION ANN ARBOR

October 1963

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FOREWORD

In the spring of 1961 The University of Michigan did a study of the effect of withdrawal of reimbursement on high school vocational programs; the study was done as a part of the Michigan Vocational Education Evaluation Project. All superintendents, high school principals, and local directors of vocational education in Michigan who were then operating reimbursed vocational programs in their schools were included in the study.

This follow-up study was limited to school administrators in those school districts employing a reimbursed local director of vocational education. The purpose of the study was to see if there had been any significant changes in opinions during the two-year interval. The study is of special interest to the State Board of Control for Vocational Education and should be of help to them in making decisions regarding changes in reimbursement policies and practices in Michigan.

The services of Drs. Ned Flanders and Clemens Johnson, School of Education, were helpful in the design of the project and statistical procedures, respectively. Dr. Morris Axelrod, Survey Research Center, gave consultant service in regard to the survey instrument. Robert Van Dyke, Assistant in Research for the project, through his understanding, industry, and persistence, was able to complete the study.

Ralph C. Wenrich
Project Director

PART I. INTRODUCTION

In July 1962, The University of Michigan did a study[1] in which an attempt was made to determine the probable effect of the withdrawal of reimbursement on the salaries of high school vocational teachers. During the time the study was being done it was suggested that a more intensive follow-up study of selected communities should be undertaken. At that time resources for the suggested study were not available. Early in 1963 a proposal to study opinions and actions of administrators was submitted to and approved by the Michigan State Board of Control for Vocational Education.

This follow-up study is directed at the same problem as was the initial study:

> "The central question to which this study is directed is, are the present uses of state and federal vocational education funds resulting in the most effective promotion and further development of vocational education in the public schools of Michigan? This basic question might be stated in another way: Are vocational education funds being used in such a way as to best meet the needs of youth and adults as well as the needs of business, industry, agriculture, and the home?
>
> "Ever since the passage of the first federal vocational education act in 1917 (the Smith-Hughes Act), some vocational education programs in Michigan have been reimbursed with federal and state monies. The purpose of these funds as stated in that Act, and in subsequent federal vocational education acts, was to promote and to further develop vocational education in the several states and territories. It is entirely possible that our past and present policies and practices relating to the financing of vocational education in Michigan may have had the effect of supporting local ongoing programs rather than promoting new programs designed to meet the needs of our technological age."

In the initial study conducted during 1961, 92% of the superintendents, directors of vocational education, and high school principals responded to a questionnaire which was designed to determine the probable effect of the with-

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[1] Ralph C. Wenrich. A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Operated by Local School Districts. Ann Arbor: The University of Michigan Office of Research Administration, July 1962.

drawal of reimbursement on the salaries of teachers of high school vocational education programs. But there are several reasons for performing a follow-up study. The administrative officials may have responded without giving due consideration to the effect upon local budgets. Then too, circumstances by the spring of 1963 may have changed enough to have changed the opinions of local administrators toward problems dealing with the financing of vocational education. In addition, there was no way of knowing to what extent local administrators had anticipated the reactions of school board members.

This follow-up study is concerned with the opinions of school officials in selected districts regarding possible modification in present patterns of reimbursement for development and implementation of local vocational education programs and services. More specifically, the objectives of the study are to determine:

1. The extent to which local school administrators' current opinions agree or disagree with reported opinions of nearly two years ago.

2. The relationships of stated opinions and probable actions.

The initial study provides background information about: related studies; reimbursement policies and practices in Michigan; reimbursement policies and proctices in other states; the history and development of day-school vocational programs in Michigan compared with their reimbursement rates; and changes in vocational programs and reimbursement rates. The reader of this report may want to become acquainted with the important background information and survey results reported in the earlier study.

PART II. THE SURVEY OF LOCAL SCHOOL ADMINISTRATORS IN SELECTED SCHOOL DISTRICTS

A. INTRODUCTION

The amount of money appropriated each year by the state and federal governments for vocational education varies. Table I shows the amounts of federal and state funds appropriated for vocational education in Michigan since World War II.

TABLE I. FEDERAL AND STATE VOCATIONAL FUNDS AVAILABLE, BY YEAR SINCE 1946-47, SHOWING PERCENT OF INCREASE (OR DECREASE) OVER PREVIOUS YEAR

Year	Federal Funds		State Funds	
	Amount	Percent Increase	Amount	Percent Increase
1946-47	$ 753,813		$ 465,000	
1947-48	903,472	19.9	600,000	29.0
1948-49	903,472	---	849,000	41.5
1949-50	903,472	---	1,152,730	35.8
1950-51	903,472	---	1,150,069	(00.2)
1951-52	859,863	(04.8)	1,183,992	02.9
1952-53	889,109	03.4	1,384,214	16.9
1953-54	889,109	---	1,432,141	03.4
1954-55	1,068,431	20.2	1,457,052	01.7
1955-56	1,181,819	10.6	1,460,844	00.3
1956-57	1,296,987	09.7	1,456,170	(00.3)
1957-58	1,375,675	06.0	1,546,620	06.2
1958-59	1,516,098	10.2	1,550,000	00.2
1959-60	1,709,749	12.2	1,499,642	(03.2)
1960-61	1,856,808	08.6	1,524,359	01.6
1961-62	2,011,446	08.3	1,524,359	--
1962-63	2,104,130	04.4*	1,528,659	00.3

*Does not include MDTA funds allocated to Michigan ($923,700.00). Source: Division of Vocational Education, Department of Public Instruction, State of Michigan, Lansing.

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From 1946-47 to 1962-63 no consistent pattern of appropriations from the two units of government is apparent. Increases or decreases of funds from one unit of government have not resulted in increases or decreases of funds from the other. The total amounts of funds appropriated for vocational education over the eighteen-year period have increased. Although the amounts for any future year could be increased or decreased quite drastically, such action is not expected. Instead, expectations are that in the foreseeable future, appropriations of funds will be at least equal to and probably greater than present amounts. Greater attention must be given to the problem of how to make the most effective use of available vocational education funds.

B. LIMITATIONS OF THE STUDY

This follow-up study was designed to supplement the initial study, which was to determine the probable effect of withdrawal of reimbursement for instruction provided on the high school level, since approximately three-fourths of the funds going to local communities are used to reimburse the salaries of teachers in our high schools.

In 1959-60 and 1962-63 the following amounts were paid to local communities from state and federal funds for instruction in day-school programs in Michigan high schools:

	1959-60	1962-63
Agricultural Education	$ 444,250	$ 476,918
Homemaking Education	420,516	458,140
Trade and Industrial Education	152,975	153,232
Cooperative Training	269,191	340,667
TOTAL	$1,286,932	$1,428,957

Local school districts received for all day-school vocational education services provided in 1959-60 a total of $1,681,607, and for those provided in 1962-63 a total of $2,024,474. These funds were reimbursement for all kinds of vocational education services provided by local school districts, including supervisory and administrative services, travel, etc. The point is that in 1959-60 approximately 77%, and in 1962-63 approximately 71%, of the state and federal funds used to reimburse local schools for agricultural, homemaking, trade and industrial, and cooperative training went for day-school programs in Michigan high schools. Since such a large proportion of our state and federal vocational education funds is used to reimburse the salaries of teachers in Michigan high schools, it was decided that a study should be done to determine what the probable effect would be if such reimbursement were discontinued and the funds used to provide other services, either on the secondary level or for out-of-school youth and adult programs.

The present study has the same limitations as the initial study. As previously stated, the objectives of this follow-up are to determine present agreement or disagreement with past opinions and to investigate the relationship of opinions and probable action.

C. PROCEDURE FOR THE SURVEY

After consultation with The University of Michigan Institute for Social Research it was decided that use of the same questionnaire and procedure used in 1960-61 would determine reliability of the questionnaire and provide a common basis for comparative purposes.

Also, a decision was made not to undertake immediately extensive interviews because of the difficulty in obtaining valid information and difficulty in establishing a reliable interview structure. Furthermore, if the findings of this study are similar to those for the 1960-61 study, there would be no necessity for extensive interviews. Therefore, interview follow-up was limited to selected respondents from whom additional information was desired. Refer to Part D of this section for the procedure of selection of these administrators.

On March 28, 1963, a cover letter and the questionnaire (see the Appendix) were sent to all superintendents, directors of vocational education, and high school principals in Michigan school districts in which reimbursed directors of vocational education were employed during the 1962-63 school year. Identical letters and questionnaires were sent to the superintendent, director of vocational education, and high school principals with reimbursed programs in the Detroit Public Schools.

Two weeks after the first mailing, a second mailing to all non-respondents was completed. After an additional two weeks, telephone contact was made with all remaining non-respondents.

Table II is presented to show for 1960-61 and 1962-63 the number of questionnaires sent and the responses received, by position of respondent. In 1960-61 the response for the present population was 93%; in 1962-63 it was 100%.

D. TREATMENT OF RESPONSES

The information contained in this report was coded, put on punch cards, and submitted to analyses. The first analysis consisted of analyzing all administrators' responses to questions by the various possible combinations of programs operated in the administrators' school districts. The second analysis consisted of analyzing all administrators' responses to questions by each administrative position. This latter analysis was completed for the same population in both the 1960-61 and the 1962-63 studies for purposes of comparison.

TABLE II. NUMBER OF QUESTIONNAIRES SENT AND RESPONSES RECEIVED BY POSITION OF RESPONDENT

Position	For Year	Sent	Received N	Received %
Superintendent	1960-61	30	27	90
	1962-63	29	29	100
Director of Vocational Education	1960-61	25	25	100
	1962-63	26	26	100
Principal	1960-61	60	55	92
	1962-63	65	65	100
Total	1960-61	115	107	93
	1962-63	120	120	100

Personal interviews with selected school administrators were completed in July, 1963. These administrators were selected from school districts in which two or more of them occupying unlike positions indicated that the same programs would be eliminated if reimbursement should be discontinued. The purpose of the interview was to ascertain the reasons for elimination.

PART III. ANALYSES OF PROGRAMS, POSITIONS, SCHOOLS AND DISTRICTS IN THE SURVEY POPULATION

Tables III through VII are descriptive of the population of the current survey. Interpretations are valid only within this population.

The distribution and combinations of operating programs by position are shown in Table III. This table shows that:

1. Six superintendents represent districts with only one operating program.

2. Twenty-eight principals represent schools with only one operating program.

3. Eleven superintendents represent districts with two operating programs.

4. Twenty-four principals represent schools with two operating programs.

5. Eight superintendents represent districts with three operating programs.

6. Nine principals represent schools with three operating programs.

7. Four superintendents represent districts with four operating programs.

8. Four principals represent schools with four operating programs.

Tables IV and V present the distribution of programs by high school enrollment and district membership. Table IV presents the number of schools and programs in schools for each high school enrollment classification. Table V presents the number of districts and programs for each district membership classification.

Additional descriptions of the population of the present study given in Tables VI and VII are compared with the same population in the 1960-61 study. Table VI shows the changes in the number of positions within the population of the two studies, while Table VII shows the changes in reimbursed programs operated by administrators within the sample from 1960-61 to 1962-63.

All comparisons of responses are made for the same positions in both studies except for the variations shown in Table VI.

TABLE III. DISTRIBUTION OF PROGRAMS BY POSITIONS

Respondents Positions	One Program Only					Two Programs							Three Programs					Four Programs
	Agr.	Hmkg.	T&I	Coop.	Total	Agr. Hmkg.	Agr. T&I	Agr. Coop.	Hmkg. T&I	Hmkg. Coop.	T&I Coop.	Total	Agr. Hmkg. T&I	Agr. Hmkg. Coop.	Agr. T&I Coop.	Hmkg. T&I Coop.	Total	Agr., Hmkg., T&I, Coop.
Superintendents	0	1	2	3	6	0	0	1	0	5	5	11	1	0	2	5	8	4
Dir. of Voc. Ed.	0	0	1	2	3	0	0	1	0	5	5	11	1	0	2	5	8	4
Principals	0	1	7	20	28	1	0	1	0	11	11	24	1	0	2	6	9	4

TABLE IV. DISTRIBUTION OF PROGRAMS BY HIGH SCHOOL ENROLLMENT

High School Enrollment	One Program Only				Two Programs						Three Programs				Four Programs	Total Schools	NR
	Agr.	Hmkg.	T&I	Coop.	Agr. Hmkg.	Agr. T&I	Agr. Coop.	Hmkg. T&I	Hmkg. Coop.	T&I Coop.	Agr. Hmkg. T&I	Agr. Hmkg. Coop.	Agr. T&I Coop.	Hmkg. T&I Coop.	Agr., Hmkg., Coop., T&I		
0-499			4		1											5	
500-999		1		1					1						1	4	
1000+		–	2	16	–		1		9	11			2	5	3	49	
Total		1	6	17	1		1		10	11			2	5	4	58	7

TABLE V. DISTRIBUTION OF PROGRAMS BY DISTRICT MEMBERSHIP

District Membership 9/28/62	One Program Only				Two Programs						Three Programs				Four Programs	Total Districts
	Agr.	Hmkg.	T&I	Coop.	Agr. Hmkg.	Agr. T&I	Agr. Coop.	Hmkg. T&I	Hmkg. Coop.	T&I Coop.	Agr. Hmkg. T&I	Agr. Hmkg. Coop.	Agr. T&I Coop.	Hmkg. T&I Coop.	Agr., Hmkg., Coop., T&I	
0-8999		1	2	1			1		1	1	1		1	1	2	12
9-17,999				2					1	1			1	3	2	10
18,000+		–	–	–			–		3	3	–		–	1	–	7
Total		1	2	3			1		5	5	1		2	5	4	29

TABLE VI. CHANGES IN THE NUMBER OF POSITIONS WITHIN THE SAMPLE FROM 1960-1961 TO 1962-63

Positions	Number	
	1960-61	1962-63
Superintendent	30	29*
Dir. of Voc. Ed.	25	26**
Principal	60	65***
Total	115	120

*Due to consolidation.

**Employment of DVE in district which did not have one in 1960-61.

***Due to new programs in 5 schools which did not have programs in 1960-61.

TABLE VII. CHANGES IN THE NUMBER OF REIMBURSED PROGRAMS OPERATED BY ADMINISTRATORS WITHIN THE SAMPLE FROM 1960-61 TO 1962-63

Program	Years		Changes		Net Changes
	1960-61	1962-63	Gain	Loss	
Agriculture	8	9	1		+1
Homemaking	26	24		2	-2
Trade and Industrial	29	31	3	1	+2
Cooperative Training	50	55	6	1	+5
Total	113	119	10	4	+6

PART IV. OPINIONS OF LOCAL SCHOOL ADMINISTRATORS REGARDING PROBABLE EFFECT ON REIMBURSED PROGRAMS SHOULD THE SALARY REIMBURSEMENT BE DISCONTINUED AT THE END OF THREE YEARS

One of the stated objectives of the follow-up study was to determine the extent to which local school administrators' current opinions agree or disagree with reported opinions of nearly two years ago for the same population. More specifically, the study was designed to determine the probable effect on reimbursed programs if withdrawal of salary reimbursement should occur. The questionnaire was designed so that it would also give respondents an opportunity to indicate probable effects if the rate of salary reimbursement were doubled, or if it were to remain the same.

The respondents were then given the opportunity to choose from a list of possible responses in relation to each of the three situations (if salary reimbursement were increased, remained the same, and decreased). The respondents were asked to give their opinions regarding these three possible situations in relation to the programs (agricultural, homemaking, trade and industrial, and cooperative) which were then being operated in their own schools: for example, only administrators who were operating reimbursed vocational agricultural programs were invited to respond to three possible conditions in relation to agricultural education.

The data will be presented on the following pages by fields and years, with some comments intended to help interpret the data and to point out certain highlights.

Tables VIII through XII present administrators' opinions as to what would happen to their programs if reimbursement on salaries were to be eliminated.

Table VIII presents opinions as to what would happen if salary reimbursement were to be eliminated for agricultural programs. This table shows that some minor changes of administrators' opinions have occurred. In both surveys, however, more administrators chose the response that the agricultural programs would be likely to remain unaltered than any other response.

Table IX presents opinions about what would happen if salary reimbursement were to be eliminated for homemaking programs. The pattern of responses is fairly consistent between the two studies. Again, minor shifts in opinion occurred. These shifts are generally within categories of administrators. Most of the respondents indicated that their programs would continue either unaltered or with some modifications. Very few respondents thought their programs would be eliminated.

Table X presents opinions about what would happen if salary reimbursement

were to be eliminated for trade and industrial programs. The responses for "eliminate" were nearly the same as they were two years ago. More respondents indicated "continue unaltered" than any other response. Although the choice "continue unaltered" dropped slightly, the change was not significant for any position or for the total.

Table XI presents opinions about what would happen if salary reimbursement were to be eliminated for the cooperative training programs. Some slight variations of responses by position may be noted, but no pattern of significant change can be discerned. The response that the programs will continue unaltered is greater than any other response. The majority of respondents for both studies indicated that some modification in program would take place. The respondents' opinions for elimination show no change.

Table XII is a summary of Tables VIII through XI. The consistency of responses among all the questions for each program should be noted. Although there are variations among the programs, they are not significant in number or percent. This table allows some general statements to be made. If salary reimbursement were eliminated, we can conclude that few programs would be eliminated. Most programs would continue unaltered or with some modification. These modifications seem to fall into two categories: either the programs would have less quality and serve fewer youth or they would remain the same in quality and serve fewer youth. The number and percent of administrators who indicated "don't know" are insignificant. A higher percent of respondents for the 1962-63 study have expressed opinions than for the earlier study. Apparently homemaking programs would be subject to the least change, while cooperative training would be subject to the most change.

In both studies the respondents indicated that very few programs would be eliminated, regardless of what happened to salary reimbursement. For the current study one principal responded that a trade and industrial program would be eliminated, and another responded that a cooperative training program would be eliminated if salary reimbursement were doubled, remained the same or decreased. For the 1960-61 study, one director responded that an agricultural program, and one principal responded that a cooperative training program would be eliminated even if salary reimbursement were doubled.

A comparison of the two studies leads to similar conclusions. With some reservation, we may assume that during the intervening two-year period the opinions of respondents occupying the three positions has not changed significantly. The only reservation has to do with the turnover of personnel; we are not comparing opinions of the same persons in every instance.

TABLE VIII. OPINIONS OF LOCAL ADMINISTRATORS, BY POSITIONS, AS TO THE EFFECT ON THEIR VOCATIONAL AGRICULTURAL PROGRAMS IF SALARY REIMBURSEMENT WERE REDUCED TO NO AID (PERCENT)

Should the rate of reimbursement at the end of three years be reduced to no aid, the effect would be to:	Years	Superintendents 1960-61, N=8 1962-63, N=8	Dir. of Voc. Ed. 1960-61, N=8 1962-63, N=8	Principals 1960-61, N=8 1962-63, N=9	Totals 1960-61, N=24 1962-63, N=25
Diminish in quality, but serve the same number of youth	1960-61	--	12.5	12.5	8
	1962-63	--	12.5	--	4
Diminish in quality and serve fewer youth	1960-61	25	12.5	--	12.5
	1962-63	--	37.5	--	12
Improve in quality	1960-61	--	--	--	--
	1962-63	--	--	--	--
Continue unaltered	1960-61	37.5	50	37.5	42
	1962-63	50	12.5	56	40
Remain the same in quality, but serve fewer youth	1960-61	12.5	25	12.5	17
	1962-63	37.5	12.5	22	24
Be eliminated entirely	1960-61	12.5	--	25	12.5
	1962-63	12.5	25	22	20
No response	1960-61	12.5	--	12.5	8
	1962-63	--	--	--	--
Total	1960-61	100.0	100.0	100.0	100.0
	1962-63	100.0	100.0	100.0	100.0

TABLE IX. OPINIONS OF LOCAL ADMINISTRATORS, BY POSITIONS, AS TO THE EFFECT ON THEIR VOCATIONAL HOMEMAKING PROGRAMS IF SALARY REIMBURSEMENT WERE REDUCED TO NO AID (PERCENT)

Should the rate of reimbursement at the end of three years be reduced to no aid, the effect would be to:	Years	Superintendents 1960-61, N=18 1962-63, N=16	Dir. of Voc. Ed. 1960-61, N=15 1962-63, N=15	Principals 1960-61, N=26 1962-63, N=24	Totals 1960-61, N=59 1962-63, N=55
Diminish in quality, but serve the same number of youth	1960-61	17	13	15	15
	1962-63	6	--	--	2
Diminish in quality and serve fewer youth	1960-61	5.5	20	4	9
	1962-63	38	28	8	22
Improve in quality	1960-61	--	--	4	2
	1962-63	--	6	4	4
Continue unaltered	1960-61	61	54	61	58
	1962-63	38	60	68	56
Remain the same in quality, but serve fewer youth	1960-61	5.5	13	12	11
	1962-63	12	--	8	7
Be eliminated entirely	1960-61	5.5	--	4	3
	1962-63	6	6	4	5
No response	1960-61	5.5	--	--	2
	1962-63	--	--	8	4
Total	1960-61	100.0	100.0	100.0	100.0
	1962-63	100.0	100.0	100.0	100.0

TABLE X. OPINIONS OF LOCAL ADMINISTRATORS, BY POSITIONS, AS TO THE EFFECT ON THEIR VOCATIONAL TRADE AND INDUSTRIAL PROGRAMS IF SALARY REIMBURSEMENT WERE REDUCED TO NO AID (PERCENT)

Should the rate of reimbursement at the end of three years be reduced to no aid, the effect would be to:	Years	Superintendents 1960-61, N=19 1962-63, N=19	Dir. of Voc. Ed. 1960-61, N=18 1962-63, N=18	Principals 1960-61, N=29 1962-63, N=31	Totals 1960-61, N=66 1962-63, N=68
Diminish in quality, but serve the same number of youth	1960-61	5	--	11	6
	1962-63	--	6	3	3
Diminish in quality and serve fewer youth	1960-61	11	16	3	9
	1962-63	16	33	13	19
Improve in quality	1960-61	--	--	--	--
	1962-63	5	6	3	4
Continue unaltered	1960-61	42	50	45	45
	1962-63	32	33	45	39
Remain the same in quality, but serve fewer youth	1960-61	20	28	3	15
	1962-63	32	16	7	17
Be eliminated entirely	1960-61	11	6	21	14
	1962-63	5	6	23	13
Don't know	1960-61	--	--	--	--
	1962-63	--	--	3	1
No response	1960-61	11	--	17	11
	1962-63	10	--	3	4
Total	1960-61	100	100	100	100
	1962-63	100	100	100	100

TABLE XI. OPINIONS OF LOCAL ADMINISTRATORS, BY POSITIONS, AS TO THE EFFECT ON THEIR COOPERATIVE OCCUPATIONAL TRAINING PROGRAMS IF SALARY REIMBURSEMENT WERE REDUCED TO NO AID (PERCENT)

Should the rate of reimbursement at the end of three years be reduced to no aid, the effect would be to:	Years	Superintendents 1960-61, N=25 1962-63, N=25	Dir. of Voc. Ed. 1960-61, N=25 1962-63, N=24	Principals 1960-61, N=50 1962-63, N=55	Totals 1960-61, N=100 1962-63, N=104
Diminish in quality, but serve the same number of youth	1960-61	8	16	16	9
	1962-63	4	4	2	3
Diminish in quality and serve fewer youth	1960-61	8	8	10	9
	1962-63	20	38	18	23
Improve in quality	1960-61	--	--	--	--
	1962-63	4	4	2	3
Continue unaltered	1960-61	28	20	32	28
	1962-63	24	25	36	31
Remain the same in quality, but serve fewer youth	1960-61	20	32	14	20
	1962-63	20	8	15	14
Be eliminated entirely	1960-61	20	16	18	18
	1962-63	20	17	20	19
Don't know	1960-61	--	--	4	2
	1962-63	--	4	--	1
No response	1960-61	16	8	16	14
	1962-63	8	--	7	6
Total	1960-61	100	100	100	100
	1962-63	100	100	100	100

TABLE XII. SUMMARY OF OPINIONS OF LOCAL ADMINISTRATORS, BY PROGRAMS, AS TO THE EFFECT ON THEIR VOCATIONAL PROGRAMS IF SALARY REIMBURSEMENT WERE REDUCED TO NO AID (PERCENT)

Should the rate of reimbursement at the end of three years be reduced to no aid, the effect would be to:	Years	Agriculture 1960-61, N=24 1962-63, N=25	Homemaking 1960-61, N=59 1962-63, N=55	Trade and Industrial 1960-61, N=66 1962-63, N=68	Cooperative 1960-61, N=100 1962-63, N=104
Diminish in quality, but serve the same number of youth	1960-61	8	15	6	9
	1962-63	4	2	3	3
Diminish in quality and serve fewer youth	1960-61	12.5	9	9	9
	1962-63	12	22	19	23
Improve in quality	1960-61	--	2	--	--
	1962-63	--	4	4	3
Continue unaltered	1960-61	42	58	45	28
	1962-63	40	56	39	31
Remain the same in quality, but serve fewer youth	1960-61	17	11	15	20
	1962-63	24	7	17	14
Be eliminated entirely	1960-61	12.5	3	14	18
	1962-63	20	5	13	19
Don't know	1960-61	--	--	--	2
	1962-63	--	--	1	1
No response	1960-61	8	2	11	14
	1962-63	--	4	4	6
Total	1960-61	100.0	100	100	100
	1962-63	100.0	100	100	100

PART V. OPINIONS OF SCHOOL ADMINISTRATORS REGARDING THE USE OF STATE AND FEDERAL FUNDS IN THE DEVELOPMENT OF HIGH SCHOOL AND POST-HIGH SCHOOL SERVICES AND PROGRAMS

One part of the questionnaire was designed to determine whether administrators felt that vocational education should be emphasized on the high school or post-high school level. This section of the questionnaire was introduced by the following statement:

> "If, in the future, vocational funds were no longer used to support the present high school programs, these funds could be used to stimulate the further development of new programs and services."

Respondents were then asked to indicate where the funds could be best used; that is, should funds for vocational education be used to stimulate the further development of programs and services for (1) high school youth, or (2) out-of-school youth and adults? An attempt was made to force the respondents to make a choice between the two possibilities by asking them to check only one. Regardless of the program they were currently operating, they were given the opportunity to respond to this question for each of the vocational fields.

Table XIII shows the administrators' responses by programs and by positions. Within these classifications some interesting changes have taken place. The percent of non-respondents dropped for each program and position. The percent of non-respondents ranked from highest to lowest was in the following order: agricultural, homemaking, industrial, and business. One explanation for this is that many administrators who were not currently operating a particular program did not make a choice for that program, whereas administrators who were operating a particular program usually made a choice.

In the current study, except for agriculture, a majority of respondents expressed the opinion that funds should be used for programs and services for high school youth; and except for agriculture, this majority was slightly greater than in the previous survey. The choices for high school youth in the various programs were: business, 64%; homemaking and industrial, 56%; and agriculture, 37%. These choices are not significantly different from those choices made in the 1960-61 study.

Although the respondents were requested to select only one of two areas for fund uses, many administrators checked both high school and out-of school youth and adults. The directors of vocational education favored the use of funds for both groups more than did the superintendents or principals.

The two studies reveal no significant shifts of opinions. Perhaps the most that can be said is that there may be more support for using funds for high

school youth. The opinions about using funds for out-of-school youth seem to have remained constant. Some uncertainty exists for trends of opinions for agricultural programs. There seems to be a shift in opinions about fund use in agricultural education to out-of-school youth and adults.

TABLE XIII. RECOMMENDATIONS OF LOCAL ADMINISTRATORS, BY POSITIONS, AS TO THE USE OF VOCATIONAL FUNDS IN THE EVENT THESE FUNDS WERE NO LONGER USED TO SUPPORT PRESENT HIGH SCHOOL PROGRAMS (PERCENT)

Funds should be used to stimulate the further development of services and programs for:	Years	Agriculture				Homemaking				Industrial				Business				Total			
		Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Agr.	Hmkg.	Ind.	Bus.
	1960-61, N=	30	25	60	115	30	25	60	115	30	25	60	115	30	25	60	115	115	115	115	115
	1962-63, N=	29	26	65	120	29	26	65	120	29	26	65	120	29	26	65	120	120	120	120	120
High School youth	1960-61	46	24	36	38	54	44	45	47	50	40	50	48	60	52	53	56	38	47	48	56
	1962-63	48	31	34	37	62	50	55	56	59	69	51	56	56	73	65	64	37	56	56	64
Out-of-school youth and adults	1960-61	27	32	32	30	20	24	29	25	26	32	27	28	20	20	23	22	30	25	28	22
	1962-63	35	31	45	39	21	19	31	26	35	8	32	28	38	4	21	22	39	26	28	22
Both	1960-61	--	20	7	8	3	16	9	9	7	20	8	10	3	20	12	11	8	9	10	11
	1962-63	3	15	--	4	3	23	6	9	3	23	11	12	3	23	9	11	4	9	12	11
No response	1960-61	27	24	25	24	23	16	17	19	17	8	15	14	17	8	12	11	24	19	14	11
	1962-63	14	23	21	20	14	8	8	9	3	--	6	4	3	--	5	3	20	9	4	3
Total	1960-61	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1962-63	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

PART VI. OPINIONS OF SCHOOL ADMINISTRATORS REGARDING THE USE OF STATE AND FEDERAL FUNDS IN THE DEVELOPMENT OF STATE SCHOOLS, AREA SCHOOLS, AND LOCAL SCHOOLS

The questionnaire included several items designed to determine administrators' opinions about the establishment of schools for youth and adults on an area basis.

The respondents were asked to give an answer to the following question:

> "How can we best use state and federal funds for improving programs and services for high school youth who want to prepare for employment?"

The possible answers were: (A) for the State Department of Public Instruction to organize, equip and operate state and/or area vocational schools; (B) for cooperating school districts to organize, equip, and operate area vocational schools; (C) for local school districts to develop more adequate programs and services; (D) any combination of two or all three of the selections.

The administrators were asked to consider each of the possible choices in relation to each field. Their selections by field and position for high school youth are shown in Table XIV.

For each of the four fields the respondents in both studies most often selected C, "Use funds for the local school districts to develop more adequate programs and services." There is a high percent of no response for agriculture and homemaking because many administrators, especially in urban areas, did not make a selection if they did not operate a program in that field. For the 1962-63 study the selection A, B, and C, use of funds for state, area, and local programs and services, received more attention for each field. Selection B, "Use of funds to organize, equip, and operate area vocational schools through cooperating school districts," received less attention in the 1962-63 study. However, the differences between the two studies are not significant; what differences do appear are too small to allow any generalizations about trends.

Administrators were asked a similar question with the same choices of answers for out-of-school youth and adults; the results are shown in Table XV.

The same observations can be made about Table XV that were made about Table XIV for no response, choice B, choice A, B, and C, and differences between the studies.

However, it is interesting to observe the changes of percents for opinions by positions and selections. Although in Tables XIV and XV for choice A, B,

and C, the total percent of administrators increased for each field in the 1962-63 study, there was a lower percent for some of the administrative positions. Examples of this change for choice A, B, and C are the directors' opinions for industrial education in Table XIV and the superintendents' opinions for homemaking and industrial education in Table XV.

TABLE XIV. OPINIONS OF LOCAL SCHOOL ADMINISTRATORS, BY POSITIONS, AS TO THE BEST UTILIZATION OF STATE AND FEDERAL VOCATIONAL FUNDS FOR IMPROVING PROGRAMS AND SERVICES FOR HIGH SCHOOL YOUTH PREPARING FOR EMPLOYMENT (PERCENT)

Opinion Checked	Program	Agricultural				Homemaking				Industrial				Business				Totals			
	Position	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Agr.	Hmkg.	Ind.	Bus.
	Years 1960-61, N=	30	25	60	115	30	25	60	115	30	25	60	115	30	25	60	115	115	115	115	115
	Years 1962-63, N=	29	26	65	120	29	26	65	120	29	26	65	120	29	26	65	120	120	120	120	120
A only	1960-61	7	4	3	4	--	--	5	3	7	4	5	5	3	--	3	3	4	3	5	3
	1962-63	7	--	2	3	3	4	5	4	3	--	9	6	3	4	8	6	3	4	6	6
B only	1960-61	17	24	12	16	10	8	10	9	10	12	12	11	7	16	12	11	16	9	11	11
	1962-63	17	8	6	9	3	4	5	4	14	12	2	7	7	8	3	5	9	4	7	5
C only	1960-61	23	24	20	22	53	56	30	42	37	40	33	36	54	56	40	46	22	42	36	46
	1962-63	32	31	20	25	45	57	41	46	35	42	31	34	45	54	38	43	25	46	34	43
A and B	1960-61	--	4	5	3	--	4	3	3	10	4	8	8	3	--	5	3	3	3	8	3
	1962-63	--	4	2	2	--	--	3	2	--	--	3	2	--	--	3	2	2	2	2	2
A and C	1960-61	--	4	--	1	--	--	2	1	3	4	--	2	3	--	3	3	1	1	2	3
	1962-63	--	4	--	1	--	4	6	4	3	4	3	3	3	4	6	5	1	4	3	5
B and C	1960-61	7	12	5	7	7	4	10	8	7	4	7	6	13	12	5	9	7	8	6	9
	1962-63	3	8	8	6	7	8	6	7	14	15	9	12	14	11	8	10	6	7	12	10
A, B, and C	1960-61	3	8	5	5	3	4	3	3	13	32	20	21	--	16	12	10	5	3	21	10
	1962-63	3	14	6	8	14	8	9	10	24	27	37	32	21	19	28	24	8	10	32	24
No response	1960-61	43	20	50	42	27	24	37	31	13	--	15	11	17	--	20	15	42	31	11	15
	1962-63	38	31	56	46	28	15	25	23	7	--	6	5	7	--	6	5	46	23	5	5
Total	1960-61	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1962-63	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Key:

A. Use funds for the State Department of Public Instruction to organize, equip, and operate state and/or area vocational schools.
B. Use funds to organize, equip, and operate area vocational schools through cooperating school districts
C. Use funds for the local school districts to develop more adequate programs and services.

TABLE XV. OPINIONS OF LOCAL SCHOOL ADMINISTRATORS, BY POSITIONS, AS TO THE BEST UTILIZATION OF STATE AND FEDERAL VOCATIONAL FUNDS FOR IMPROVING PROGRAMS AND SERVICES FOR OUT-OF-SCHOOL YOUTH AND ADULTS PREPARING FOR EMPLOYMENT (PERCENT)

Opinion Checked	Program	Agricultural				Homemaking				Industrial				Business				Totals			
	Position	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Supt.	DVE	Prin.	Total	Agr.	Hmkg.	Ind.	Bus.
	Years 1960-61, N=	30	25	60	115	30	25	60	115	30	25	60	115	30	25	60	115	115	115	115	115
	Years 1962-63, N=	29	26	65	120	29	26	65	120	29	26	65	120	29	26	65	120	120	120	120	120
A	1960-61	10	8	5	7	10	--	1	3	13	4	7	8	17	4	3	7	7	3	8	7
	1962-63	14	4	6	7	7	--	11	7	10	--	11	8	10	--	9	8	7	7	8	8
B	1960-61	20	28	8	16	13	28	7	13	13	24	10	13	10	24	10	13	16	13	13	13
	1962-63	21	8	6	10	10	4	9	8	17	8	8	10	17	4	9	10	10	8	10	10
C	1960-61	17	16	19	17	37	40	32	35	34	32	26	30	40	40	33	36	17	35	30	36
	1962-63	31	27	17	22	49	47	28	37	32	30	27	29	35	46	29	34	22	37	29	34
A and B	1960-61	--	--	3	2	--	--	7	3	7	4	10	8	3	4	8	6	2	3	8	6
	1962-63	--	4	3	3	--	--	--	--	3	--	3	3	--	--	--	1	3	--	3	1
A and C	1960-61	--	--	--	--	--	4	1	2	--	--	--	--	--	4	2	2	--	2	--	2
	1962-63	--	4	2	2	--	4	2	2	--	4	6	4	--	4	2	3	2	2	4	3
B and C	1960-61	3	16	5	7	3	8	7	6	3	12	7	7	10	12	10	10	7	6	7	10
	1962-63	3	8	3	4	7	15	6	8	14	27	2	10	14	19	8	9	4	8	10	9
A, B, and C	1960-61	3	8	5	5	7	4	5	5	20	24	17	19	7	8	12	10	5	5	19	10
	1962-63	3	18	12	12	3	15	23	17	17	27	37	30	17	23	32	27	12	17	30	27
No response	1960-61	47	24	55	46	30	16	40	33	10	--	23	15	13	4	22	16	46	33	15	16
	1962-63	28	27	51	40	24	15	21	21	7	4	6	6	7	4	11	8	40	21	6	8
Total	1960-61	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	1962-63	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Key:

A. Use funds for the State Department of Public Instruction to organize, equip, and operate state and/or area vocational schools.

B. Use funds to organize, equip, and operate area vocational schools through cooperating school districts.

C. Use funds for the local school districts to develop more adequate programs and services.

PART VII. OPINIONS OF SCHOOL ADMINISTRATORS REGARDING MORE EFFECTIVE USES OF STATE AND FEDERAL FUNDS

The last part of the questionnaire was designed to determine more effective ways for the use of funds for development of more adequate vocational programs and services in the local school districts.

The introductory statement was:

> "Here are several ways in which state and federal funds might be used to help local districts develop more adequate programs and services for high school youth."

After this statement a list of purposes for fund expenditure was presented. Respondents were requested to indicate their preference by checking either "agree" or "disagree" for each purpose.

For out-of-school youth and adults a second list of programs and services for fund expenditure was presented. Respondents were requested to follow the same procedure of selection and expression of their preferences.

Table XVI and XVIII present opinions of administrators for both studies for high school youth and out-of-school youth and adults. Tables XVII and XIX rank the items from Tables XVI and XVIII in order of percent of agreement.

In Table XVI the choice for supervisory and consultant services is the only choice for which the total of expressed opinions for "disagree" exceeds that for "agree." However, within the total, the directors' opinions are in agreement, and the superintendents' and principals' opinions are in disagreement for the choice. This situation is true for both studies.

The percent of non-respondents has decreased for the current study. Except for choices a, g, and h the percent of agreement increased while the percent of disagreement decreased or remained the same. For choices a and h the percents of agreement and disagreement increased. Choice g, supervisory and consultant services, was discussed in the preceding paragraph.

A few directors and principals in both studies wrote on the questionnaire that they did not know what their opinions were for various items. Therefore, a "don't know" classification was established to indicate this response apart from "no response" for the questions.

Table XVII shows the respondents' preferences in order of most agreement to least agreement for 1962-63 compared with 1960-61. The first five and last choices are in the same order for both serveys. Choices 6-9 in the current

study were numbered 7, 9, 8, and 10, respectively, in the first study. Choice 10 in the current study was number 6 in the earlier study. Choices 6-8 in the current study have 68% agreement. Their rank, which was established in order of least to most disagreement, was: choice 6, 23%; choice 7, 24%; choice 8, 26%.

In Table XVIII, which presents choices for fund uses for out-of-school youth and adults, the percent of no responses has decreased. The percent of respondents who indicated "don't know" decreased also. In the totals there are no selections for which disagreement exceeds agreement. The directors' responses show the most variance from other administrators' responses for the services which should be supported.

When the two studies are compared, the following should be noted: choices c and e show an increased percent of agreement and decreased and equal percent of disagreement; choices b, d, and f show an increased percent of agreement while they also show an increased percent of disagreement; and choices a and g show a decreased percent of agreement and increased percent of disagreement.

In Table XIX choices are ranked in order of preference as determined by the percent of agreement from most to least for 1962-63 compared with 1960-61. Table XIX shows greater change in the order of preference than is shown in Table XVII for high school youth. The following changes in rank should be noted for the current study: choices 1 and 4 remained unchanged; choices 2 and 3 are reversed; choice 5 was 7; choices 6 and 7 were 5 and 6.

A note of interest for the two studies is that for both high school youth and out-of-school youth and adults, guidance services and development and preparation of instructional materials were ranked in the first three choices in order of agreement, and the percent of agreement is nearly the same.

TABLE XVI. AGREEMENT AND DISAGREEMENT OF LOCAL ADMINISTRATORS, BY POSITIONS, REGARDING WAYS IN WHICH STATE AND FEDERAL FUNDS MIGHT BE USED TO HELP LOCAL SCHOOL DISTRICTS DEVELOP MORE ADEQUATE VOCATIONAL PROGRAMS AND SERVICES FOR HIGH SCHOOL YOUTH (PERCENT)

We should spend more for:	Years	Superintendents 1960-61, N=30 1962-63, N=29					Dir. of Voc. Ed. 1960-61, N=25 1962-63, N=26					Principals 1960-61, N=60 1962-63, N=65					Totals 1960-61, N=115 1962-63, N=120				
		A	D	DK	NR	T	A	D	DK	NR	T	A	D	DK	NR	T	A	D	DK	NR	T
a. Occupational surveys and follow-up studies.	1960-61	50	30	--	20	100	76	24	--	--	100	51	24	--	25	100	57	25	--	18	100
	1962-63	52	34	--	14	100	69	27	--	4	100	55	37	--	8	100	58	34	--	8	100
b. Other-than-classroom activities (farm practice, home visitations, etc.).	1960-61	57	20	--	23	100	68	32	--	--	100	50	25	--	25	100	56	25	--	19	100
	1962-63	69	24	--	7	100	69	23	--	8	100	67	23	2	8	100	68	23	1	8	100
c. Late afternoon, evening, Saturday, and summer programs.	1960-61	67	17	--	16	100	56	36	--	8	100	38	38	2	22	100	50	32	1	17	100
	1962-63	69	24	--	7	100	50	42	4	4	100	60	32	--	8	100	60	32	1	7	100
d. Job training for special groups (potential drop-outs, slow readers, etc.).	1960-61	70	13	--	17	100	84	12	--	4	100	74	8	--	18	100	75	10	--	15	100
	1962-63	90	7	--	3	100	85	15	--	--	100	86	8	--	6	100	87	9	--	4	100
e. In-service training of teachers.	1960-61	67	13	--	20	100	52	36	4	8	100	50	28	2	20	100	55	26	2	17	100
	1962-63	73	24	--	3	100	57	39	4	--	100	71	21	2	6	100	68	26	2	4	100
f. Pilot and experimental programs.	1960-61	74	13	--	13	100	72	28	--	--	100	45	28	2	25	100	58	24	1	17	100
	1962-63	86	11	--	3	100	92	8	--	--	100	67	23	2	8	100	77	17	1	5	100
g. Supervisory and consultant services.	1960-61	33	44	--	23	100	48	40	--	12	100	27	43	2	28	100	33	43	1	23	100
	1962-63	38	52	--	--	100	46	42	4	8	100	28	58	2	12	100	34	53	2	11	100
h. Vocational guidance services for employment-bound youth.	1960-61	70	7	--	23	100	92	4	4	--	100	68	12	--	20	100	74	9	1	16	100
	1962-63	83	14	--	3	100	92	8	--	--	100	80	12	--	8	100	83	12	--	5	100
i. Equipment for shops and laboratories.	1960-61	43	37	--	20	100	68	32	--	--	100	50	29	1	20	100	52	31	1	16	100
	1962-63	72	21	--	7	100	61	31	--	8	100	69	23	--	8	100	68	24	--	8	100
j. Preparation of instructional materials.	1960-61	76	7	--	17	100	88	8	4	--	100	58	25	--	17	100	70	16	1	13	100
	1962-63	79	14	--	7	100	73	27	--	--	100	80	14	--	6	100	78	17	--	5	100
k. Research and evaluation.	1960-61	70	13	--	17	100	68	20	--	12	100	49	26	2	23	100	58	22	1	19	100
	1962-63	72	21	--	7	100	73	23	--	4	100	66	25	--	9	100	69	23	--	8	100

A - Agree
D - Disagree
DK - Don't know
NR - No response
T - Total

TABLE XVII. COMPARISON OF RANK IN ORDER OF PERCENT OF AGREEMENT FOR ITEMS IN TABLE XVI FOR 1962-63 AND 1960-61 (HIGH SCHOOL YOUTH)

Item	1962-63		1960-61	
	Agreement, %	Rank	Agreement, %	Rank
d. Job training for special groups.	87	1	75	1
h. Vocational guidance services for employment-bound youth.	83	2	74	2
j. Preparation of instructional materials.	78	3	70	3
f. Pilot and experimental programs.	77	4	58	4
k. Research and evaluation.	69	5	58	5
b. Other than classroom activities.	68	6	56	7
i. Equipment for shops and laboratories.	68	7	52	9
e. In-service training of teachers.	68	8	55	8
c. Late afternoon, evening, Saturday and summer programs.	60	9	50	10
a. Occupational surveys and follow-up studies.	58	10	57	6
g. Supervisory and consultant services.	34	11	33	11

TABLE XVIII. AGREEMENT AND DISAGREEMENT OF LOCAL ADMINISTRATORS, BY POSITIONS, REGARDING WAYS IN WHICH STATE AND FEDERAL FUNDS MIGHT BE USED TO HELP LOCAL SCHOOL DISTRICTS DEVELOP MORE ADEQUATE VOCATIONAL PROGRAMS AND SERVICES FOR OUT-OF-SCHOOL YOUTH AND ADULTS (PERCENT)

We should spend more for:	Years	Superintendents 1960-61, N=30 1962-63, N=29					Dir. of Voc. Ed. 1960-61, N=25 1962-63, N=26					Principals 1960-61, N=60 1962-63, N=65					Totals 1960-61, N=115 1962-63, N=120				
		A	D	DK	NR	T	A	D	DK	NR	T	A	D	DK	NR	T	A	D	DK	NR	T
a. Studies to determine the needs of out-of-school youth and adults.	1960-61	66	17	--	17	100	72	20	--	8	100	56	22	2	20	100	62	20	1	17	100
	1962-63	52	34	--	14	100	69	27	--	4	100	61	34	--	5	100	61	32	--	7	100
b. Instruction in evening school and adult classes.	1960-61	80	--	--	20	100	76	20	--	4	100	56	19	--	25	100	67	14	--	19	100
	1962-63	83	7	--	10	100	69	27	--	4	100	74	21	--	5	100	75	19	--	6	100
c. Administrative and supervisory services aimed at the development of out-of-school youth and adult programs.	1960-61	53	27	--	20	100	64	28	--	8	100	38	42	2	18	100	48	35	1	16	100
	1962-63	62	31	--	7	100	81	15	--	4	100	66	25	--	9	100	68	24	--	8	100
d. Instruction in full-time technical-terminal education on the community-college level.	1960-61	73	7	--	20	100	68	28	--	4	100	58	20	--	22	100	64	18	--	18	100
	1962-63	79	14	--	7	100	61	35	--	4	100	77	15	--	8	100	74	19	--	7	100
e. Development of instructional materials (for use in specific areas of training).	1960-61	70	10	--	20	100	84	12	4	--	100	57	20	3	20	100	66	16	2	16	100
	1962-63	73	17	--	10	100	73	23	4	--	100	83	12	--	5	100	78	16	1	5	100
f. Vocational guidance services for out-of-school youth and adults.	1960-61	70	7	--	23	100	92	8	--	--	100	65	13	--	22	100	72	10	--	18	100
	1962-63	72	21	--	7	100	88	12	--	--	100	80	15	--	5	100	80	16	--	4	100
g. Evaluation of programs for out-of-school youth and adults.	1960-61	63	10	--	27	100	68	28	--	4	100	54	23	--	23	100	59	21	--	20	100
	1962-63	38	48	--	14	100	65	31	--	4	100	51	40	--	9	100	51	40	--	9	100

A - Agree
D - Disagree
DK - Don't know
NR - No response
T - total

TABLE XIX. COMPARISON OF RANK IN ORDER OF PERCENT OF AGREEMENT FOR ITEMS IN TABLE XVIII FOR 1962-63 AND 1960-61 (OUT-OF-SCHOOL YOUTH AND ADULTS)

Item	1962-63		1960-61	
	Agreement, %	Rank	Agreement, %	Rank
f. Vocational guidance services for out-of-school youth and adults.	80	1	72	1
e. Development of instructional materials.	78	2	66	3
b. Instruction in evening school and adult classes.	75	3	67	2
d. Instruction in full-time technical-terminal education on the community college level.	74	4	64	4
c. Administrative and supervisory services aimed at development of programs.	68	5	48	7
a. Studies to determine the needs of out-of-school youth and adults.	61	6	62	5
g. Evaluation of programs for out-of-school youth and adults.	51	7	59	6

PART VIII. INTERVIEWS WITH SELECTED RESPONDENTS

Personal interviews were held with selected administrators who had indicated that programs would be eliminated if teacher salary reimbursement should be discontinued; the purpose of the interviews was to attempt to discover the rationale which resulted in opinions that programs would be eliminated.

The reasons generally given for elimination were based on financial uncertainties, declining class enrollments, and scheduling problems. The administrators thought that their boards of education would base any decision about program elimination on financial conditions, staff recommendations, and student needs. The administrators thought that the final decision on program elimination would ultimately be determined by the amount of student and community need for any particular program.

The administrators were concerned about the effect of elimination of programs; few of them cared to speculate about the consequences; they assumed a wait-and-see attitude.

Some administrators questioned whether or not present programs were as effective as they might be. They suggested that consideration be given to improvement of vocational programs and services in the following areas: more attention to programs for the slow learner and slow reader; more experimental programs; greater allowances for flexibility within state vocational regulations so that special situations might be eligible for reimbursement; more vocational guidance; more attention to programs for the potential drop-out; programs of greater scope in new and allied fields; more in-service training for teachers at all levels; possible reallocations of funds for special programs and services; and built-in statutory incentives to force increased local financial support.

PART IX. SUMMARY

Certain conditions must be observed in interpreting the data presented in the tables. In making comparisons, one must consider the different bases for percents between and within the studies. The changes in percents of non-respondents must be considered. Only the respondents' positions are identical for the two studies; the persons occupying those positions are not the same in all instances. Therefore, changes of personnel in positions might account for differences in percents of opinions for the positions and totals. Because of these limitations, direct percentage comparisons of differences were avoided in interpreting the tables.

Careful analysis of the returned questionnaires revealed no significant differences of opinions among respondents according to positions, district membership, high school enrollment, operating programs, urban or rural districts, or geographical locations of districts.

With the exception of a few minor deviations, the results of the follow-up study are similar to the results of the 1960-61 study. From this, the conclusions and the recommendations of the 1960-61 study are strengthened.

PART X. RECOMMENDATIONS[1]

The following recommendations are governed by the principle that the purpose of state and federal vocational education funds is to encourage the development, improvement and extension of vocational education programs at all levels. Continuous evaluation of rates and purposes of reimbursement should be made of all vocational programs to accomplish this principle. Evaluation of local needs and support may result in changes for reimbursement rates.

The recommendations made as a result of this study are that:

1. The full rate of reimbursement be applied to the salaries of day-school teachers and coordinators in approved high school vocational programs for a period of five years and support withdrawn (one-third each year) for the sixth, seventh, and eighth years. The withdrawal of support of programs currently operated and which have been supported for five or more years should begin with the school year 1964-65.

2. The following services for youth of high school age be encouraged through higher rates of reimbursement:

   a. New instructional services for schools which have not previously provided vocational instruction in a particular field. Schools might be encouraged to provide new programs and services if the amount of aid from state and federal vocational funds were sufficient to offset some of the added costs in getting a program established. The school district proposing to initiate a new program should be required to justify the need for and feasibility of such a program. Pilot and experimental programs would also be included in this category.

   b. Occupational counseling, placement and follow-up services designed to assist employment-bound youth make the transition from school to job. Career planning, educational planning, job placement and occupational studies would be included in this category of services.

   c. Instructional services which supplement the day-school vocational programs or meet the needs of out-of-school youth. Examples of

[1]It should be noted that the recommendations made here are basically the same as those made as a part of the earlier study:
Ralph C. Wenrich. A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Operated by Local School Districts. Ann Arbor: The University of Michigan Office of Research Administration, July 1962.

such services are: late-afternoon and evening classes for out-of-school youth; Saturday and summer classes for either in-school or out-of-school youth; and other-than-classroom activities, such as extension services and supervised farming practices, during the summer months.

d. Professional growth services for teachers, supervisors, and administrators. Services in this category might include local curriculum workshops, community surveys, studies of the needs of youth and adults for vocational education, preparation of instructional materials, and self-evaluation of local programs.

3. The following services for adults be encouraged by reimbursement incentives:

a. Vocational counseling services for adults who need help in making a more satisfactory occupational adjustment.

b. Professional improvement services which would include pre-service and in-service training of teachers of adult classes, development of more adequate instructional materials for adult classes, and the development of closer cooperative relationships with business, industry, and agriculture.

c. Instructional services for purposes of training persons engaged in agriculture, business, industry, and homemaking.

d. Instructional services for the training of technicians in agriculture, business and industry in post-high school programs in community colleges, technical institutes, technical divisions of colleges and universities, area vocational-technical schools or centers, or similar institutions.

4. The following services, which would benefit <u>both youth</u> of high school age <u>and adults</u>, be encouraged through reimbursement policies:

a. Administrative and supervisory services. Every community school system large enough to operate a comprehensive vocational program needs specialized administrative and supervisory personnel to provide leadership and to give direction to the program and to maintain standards.

b. Services on an area basis. Since many high schools are not large enough to provide a diversified program of specialized training and some which are large enough are not interested in preparing youth for employment, state and federal vocational funds might be used in the development of area vocational programs. This could be accomplished by providing a higher rate of reimbursement for

instructional and other services and by providing reimbursement for a portion of the cost of equipping area schools or centers.

c. Purchase of equipment. Provision should be made for the reimbursement of local school districts for a portion of the cost of new equipment to modernize present facilities and to equip shops and laboratories needed in the development of new programs.

d. Research and evaluation services. These would enable educators at every level to investigate, experiment, improve, and assess ideas and programs in vocational education.

5. A study should be made to determine whether or not reimbursement of the salaries of day-school teachers in the community colleges, technical institutes, and technical divisions of colleges and universities is essential beyond the five-year period of full reimbursement to which high school programs would be limited under recommendation No. 1.

APPENDIX

THE UNIVERSITY OF MICHIGAN
ANN ARBOR
SCHOOL OF EDUCATION

DEPARTMENT OF VOCATIONAL EDUCATION
AND PRACTICAL ARTS

DATE: March 28, 1963

TO: Superintendents of Schools, High School Principals, and Directors of Vocational Education in School Districts with Reimbursed Directors of Vocational Education; Superintendent, Director of Vocational Education, and Principals of High Schools with Reimbursed Programs of Vocational Education in Detroit.

FROM: Ralph C. Wenrich, Chairman
Department of Vocational Education and Practical Arts

SUBJECT: A Follow-up Study of the Opinions of Local School Administrators Regarding the Financing of Vocational Education in Michigan.

Two years ago, The University of Michigan in cooperation with an advisory committee engaged in a study of vocational education in Michigan. A questionnaire was designed to determine the probable effects of changes in reimbursement on high school vocational education programs.

The questionnaire was sent to local school administrators. The response was ninety-two percent. The results were reported in A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Operated by Local School Districts.

Since 1961, the opinions of local school administrators toward problems dealing with the financing of vocational education may have changed. This study is designed to ascertain the current thinking of administrators about some of the possible alternative uses for funds in vocational education.

Assuming that the same amount (or more) of state and federal vocational education funds will be made available in the future, present practices of reimbursement might be continued or modified, if modifications seem desirable. You are requested to assist in this determination by completing the enclosed questionnaire. It is identical to the one used two years ago.

Questionnaires are numbered merely to enable us to follow up those who are tardy with their responses. (This, of course, will not be necessary in your case!) Please be assured that YOUR RESPONSE WILL REMAIN CONFIDENTIAL. Reports and analyses of data will not identify individuals, schools, or school systems. When this study is completed, a copy will be sent to you.

A self-addressed envelope is enclosed for the RETURN OF YOUR QUESTIONNAIRE. Your cooperation in returning this questionnaire as soon as possible will be greatly appreciated.

S P

QUESTIONNAIRE ON YOUR SECONDARY-SCHOOL
REIMBURSED VOCATIONAL PROGRAMS

1. What is your position in the schools?

- ☐ Superintendent of schools
- ☐ Director of vocational education

} Skip to Question 4

- ☐ Principal of high school

2. How many grades are there in your school?

- ☐ 3 grades (10-12)
- ☐ 4 grades (9-12)
- ☐ 6 grades (7-12)
- ☐ Other (please specify) _____

3. What is the total enrollment in your high school?

- ☐ 0-199
- ☐ 200-499
- ☐ 500-999
- ☐ 1000 or more

4. According to our records, reimbursed vocational courses or programs are currently operating in your school(s) in the field(s) checked in the boxes below. Therefore only that part(s) of the questionnaire for the indicated program(s) is included.

- ☐ Agriculture
- ☐ Homemaking
- ☐ Trade and Industrial
- ☐ Cooperative Occupational Training
- ☐ If records above are incorrect, please indicate program(s) to be added or deleted in the space below.

_____

_____

5. Are you currently operating reimbursed vocational AGRICULTURAL courses in your high school(s)?

☐ Yes (Please continue with Question 6) ☐ No (Skip to Page 4)

IF YOU HAVE A REIMBURSED AGRICULTURAL PROGRAM IN YOUR HIGH SCHOOL(S)

Your school district has been (and again will be) reimbursed from state and federal vocational education funds for a portion of the salary and travel paid your vocational agricultural teacher(s).

As you probably know, the rate of reimbursement on agricultural teachers' salaries paid last year was 38%. Now we would like to consider what the effect would be if this rate were increased, remain the same, or decreased.

6. If this rate of reimbursement were to be doubled, what effect would it have on your high school vocational agricultural program?

Our vocational agricultural program would: (Check one)

☐ improve in quality and serve more youth

☐ improve in quality, but serve about the same number of youth

☐ remain about the same in quality, but serve more youth

☐ continue unaltered

☐ be eliminated regardless of reimbursement

6 a. If you checked one of the first two above, in what ways do you think the quality of the agricultural program would be improved?

_____

_____

7. If the rate of reimbursement were to remain the same as at present, what effect would it have on your high school vocational agricultural program?

Our vocational agricultural program would: (Check one)

☐ serve about the same number of youth, but diminish in quality

☐ serve about the same number of youth, but improve in quality

☐ remain about the same in quality, but serve fewer youth

☐ remain about the same in quality, but serve more youth

☐ improve in quality and serve more youth

☐ diminish in quality and serve fewer youth

☐ continue unaltered

☐ be eliminated entirely

CONTINUE ON NEXT PAGE

IF YOU HAVE A REIMBURSED AGRICULTURAL PROGRAM IN YOUR HIGH SCHOOL(S) (continued)

8. If the rate of reimbursement were gradually reduced so that at the end of three years no reimbursement were to be made, what effect would it ultimately have on your high school vocational agricultural program?

Our vocational agricultural program would: (Check one)

- ☐ diminish in quality, but serve about the same number of youth
- ☐ diminish in quality and serve fewer youth
- ☐ improve in quality
- ☐ continue unaltered
- ☐ remain about the same in quality, but serve fewer youth
- ☐ be eliminated entirely

8 a. If you checked one of the first two above, in what ways do you think the quality of the agricultural program would diminish?

_____

_____

IF YOU ARE A HIGH SCHOOL PRINCIPAL

9. In which of the following grades in your school may students elect agricultural courses? (Check one or more)

- ☐ 9th grade
- ☐ 10th grade
- ☐ 11th grade
- ☐ 12th grade

If your high school has only three grades (10-12):

10. Do most of the students who come to your school have the opportunity to elect vocational agriculture in the 9th grade?

- ☐ Yes
- ☐ No
- ☐ Don't know

11. Are you currently operating reimbursed vocational HOMEMAKING courses in your high school(s)?

☐ Yes (Please continue with Question 12) ☐ No (Skip to Page 6)

IF YOU HAVE A REIMBURSED HOMEMAKING PROGRAM IN YOUR HIGH SCHOOL(S)

Your school district has been (and again will be) reimbursed from state and federal vocational education funds for a portion of the salary and travel paid your vocational homemaking teacher(s).

As you probably know, the rate of reimbursement on homemaking teachers' salaries paid last year was 20%. Now we would like to consider what the effect would be if this rate were increased, remain the same, or decreased.

12. If this rate of reimbursement were to be doubled, what effect would it have on your high school vocational homemaking program?

Our vocational homemaking program would: (Check one)

☐ improve in quality and serve more youth

☐ improve in quality, but serve about the same number of youth

☐ remain about the same in quality, but serve more youth

☐ continue unaltered

☐ be eliminated regardless of reimbursement

12 a. If you checked one of the first two above, in what ways do you think the quality of the homemaking program would be improved?

_____

_____

13. If the rate of reimbursement were to remain the same as at present, what effect would it have on your high school vocational homemaking program?

Our vocational homemaking program would: (Check one)

☐ serve about the same number of youth, but diminish in quality

☐ serve about the same number of youth, but improve in quality

☐ remain about the same in quality, but serve fewer youth

☐ remain about the same in quality, but serve more youth

☐ improve in quality and serve more youth

☐ diminish in quality and serve fewer youth

☐ continue unaltered

☐ be eliminated entirely

CONTINUE ON NEXT PAGE

IF YOU HAVE A REIMBURSED HOMEMAKING PROGRAM IN YOUR HIGH SCHOOL(S) (continued)

14. If the rate of reimbursement were gradually reduced so that at the end of three years no reimbursement were to be made, what effect would it ultimately have on your high school vocational homemaking program?

Our vocational homemaking program would: (Check one)

- ☐ diminish in quality, but serve about the same number of youth
- ☐ diminish in quality and serve fewer youth
- ☐ improve in quality
- ☐ continue unaltered
- ☐ remain about the same in quality, but serve fewer youth
- ☐ be eliminated entirely

14 a. If you checked one of the first two above, in what ways do you think the quality of the homemaking program would diminish?

_____

_____

IF YOU ARE A HIGH SCHOOL PRINCIPAL

15. In which of the following grades in your school may students elect homemaking courses? (Check one or more)

- ☐ 9th grade
- ☐ 10th grade
- ☐ 11th grade
- ☐ 12th grade

If your high school has only three grades (10-12):

16. Do most of the students who come to your school have the opportunity to elect vocational homemaking in the 9th grade?

- ☐ Yes
- ☐ No
- ☐ Don't know

17. Are you currently operating reimbursed vocational TRADE AND INDUSTRIAL courses in your high school(s)?

☐ Yes (Please continue with Question 18) ☐ No (Skip to Page 8)

IF YOU HAVE A REIMBURSED TRADE AND INDUSTRIAL PROGRAM IN YOUR HIGH SCHOOL(S)

Your school district has been (and again will be) reimbursed from state and federal vocational education funds for a portion of the salary and travel paid your vocational trade and industrial teacher(s).

As you probably know, the rate of reimbursement on trade and industrial teachers' salaries paid last year was 20%. Now we would like to consider what the effect would be if this rate were increased, remain the same, or decreased.

18. If this rate of reimbursement were to be doubled, what effect would it have on your high school vocational trade and industrial program?

Our vocational trade and industrial program would: (Check one)

☐ improve in quality and serve more youth

☐ improve in quality, but serve about the same number of youth

☐ remain about the same in quality, but serve more youth

☐ continue unaltered

☐ be eliminated regardless of reimbursement

18 a. If you checked one of the first two above, in what ways do you think the quality of the trade and industrial program would be improved?

_____

_____

19. If the rate of reimbursement were to remain the same as at present, what effect would it have on your high school vocational trade and industrial program?

Our vocational trade and industrial program would: (Check one)

☐ serve about the same number of youth, but diminish in quality

☐ serve about the same number of youth, but improve in quality

☐ remain about the same in quality, but serve fewer youth

☐ remain about the same in quality, but serve more youth

☐ improve in quality and serve more youth

☐ diminish in quality and serve fewer youth

☐ continue unaltered

☐ be eliminated entirely

CONTINUE ON NEXT PAGE

IF YOU HAVE A REIMBURSED TRADE AND INDUSTRIAL PROGRAM IN YOUR HIGH SCHOOL(S) (continued)

20. If the rate of reimbursement were gradually reduced so that at the end of three years no reimbursement were to be made, what effect would it ultimately have on your high school vocational trade and industrial program?

Our vocational trade and industrial program would: (Check one)

- ☐ diminish in quality, but serve about the same number of youth
- ☐ diminish in quality and serve fewer youth
- ☐ improve in quality
- ☐ continue unaltered
- ☐ remain about the same in quality, but serve fewer youth
- ☐ be eliminated entirely

20 a. If you checked one of the first two above, in what ways do you think the quality of the trade and industrial program would diminish?

_____

_____

IF YOU ARE A HIGH SCHOOL PRINCIPAL

21. In which of the following grades in your school may students elect trade and industrial courses? (Check one or more)

- ☐ 9th grade
- ☐ 10th grade
- ☐ 11th grade
- ☐ 12th grade

22. Are you currently operating a reimbursed COOPERATIVE OCCUPATIONAL TRAINING program in your high school(s)?

☐ Yes (Please continue with Question 23) ☐ (Skip to Page 10)

IF YOU HAVE A REIMBURSED COOPERATIVE OCCUPATIONAL TRAINING PROGRAM IN YOUR HIGH SCHOOL(S)

Your school district has been (and again will be) reimbursed from state and federal vocational education funds for a portion of the salary and travel paid your cooperative occupational training coordinator(s).

As you probably know, the rate of reimbursement on cooperative occupational training coordinators' salaries paid last year was 27%. Now we would like to consider what the effect would be if this rate were increased, remain the same, or decreased.

23. If this rate of reimbursement were to be doubled, what effect would it have on your high school cooperative occupational training program?

Our cooperative occupational training program would: (Check one)

☐ improve in quality and serve more youth

☐ improve in quality, but serve about the same number of youth

☐ remain about the same in quality, but serve more youth

☐ continue unaltered

☐ be eliminated regardless of reimbursement

23 a. If you checked one of the first two above, in what ways do you think the quality of the cooperative occupational training program would be improved?

_____

_____

24. If the rate of reimbursement were to remain the same as at present, what effect would it have on your high school cooperative occupational training program?

Our cooperative occupational training program would: (Check one)

☐ serve about the same number of youth, but diminish in quality

☐ serve about the same number of youth, but improve in quality

☐ remain about the same in quality, but serve fewer youth

☐ remain about the same in quality, but serve more youth

☐ improve in quality and serve more youth

☐ diminish in quality and serve fewer youth

☐ continue unaltered

☐ be eliminated entirely

CONTINUE ON NEXT PAGE

IF YOU HAVE A REIMBURSED COOPERATIVE OCCUPATIONAL TRAINING PROGRAM IN YOUR HIGH SCHOOL(S) (continued)

25. If the rate of reimbursement were gradually reduced so that at the end of three years no reimbursement were to be made, what effect would it ultimately have on your high school cooperative occupational training program?

Our cooperative occupational training program would: (Check one)

___ diminish in quality, but serve about the same number of youth

___ diminish in quality and serve fewer youth

___ improve in quality

___ continue unaltered

___ remain about the same in quality, but serve fewer youth

___ be eliminated entirely

25 a. If you checked one of the first two above, in what ways do you think the quality of the cooperative occupational training program would diminish?

_____

_____

IF YOU ARE A HIGH SCHOOL PRINCIPAL

26. In which of the following grades in your school may students elect the cooperative occupational training program?

___ 9th grade

___ 10th grade

___ 11th grade

___ 12th grade

EVERYONE SHOULD RESPOND TO ALL OF THE REMAINING QUESTIONS

27. If, in the future, vocational funds were no longer used to support the present high school programs, these funds could be used to stimulate the further development of new vocational programs and services.

27 a. Funds for vocational AGRICULTURAL EDUCATION should be used to stimulate the further development of programs and services for: (Check one)

- ☐ high school youth
- ☐ out-of- school youth and adults

27 b. Funds for vocational HOMEMAKING EDUCATION should be used to stimulate the further development of programs and services for: (Check one)

- ☐ high school youth
- ☐ out-of-school youth and adults

27 c. Funds for vocational INDUSTRIAL EDUCATION should be used to stimulate the further development of programs and services for: (Check one)

- ☐ high school youth
- ☐ out-of-school youth and adults

27 d. Funds for vocational BUSINESS EDUCATION should be used to stimulate the further development of programs and services for: (Check one)

- ☐ high school youth
- ☐ out-of-school youth and adults

28. How can we best use state and federal vocational funds for improving programs and services for high school youth who want to prepare for employment? Consider each item in relation to each field.

	Voc. Agri.	Voc. Hmkg.	Voc. Ind.	Voc. Bus.
28 a. Use funds for the State Department of Public Instruction to organize, equip and operate state and/or area vocational schools (Check as many as apply)	☐	☐	☐	☐
28 b. Use funds to organize, equip and operate area vocational schools through cooperating school districts (Check as many as apply)	☐	☐	☐	☐
28 c. Use funds for the local school districts to develop more adequate programs and services (Check as many as apply)	☐	☐	☐	☐

29. Here are several ways in which state and federal funds might be used to help local school districts develop more adequate vocational programs and services for high school youth. Please check each of the following to indicate that you either agree or disagree.

Agree	Dis-agree	We should:
☐	☐	a. spend more for occupational surveys and follow-up studies
☐	☐	b. spend more for other-than-classroom activities (such as supervised farm practice, home visitations, coordination of cooperative work-study and placement of trainees in employment)
☐	☐	c. spend more for late-afternoon, evening, Saturday and summer programs for high school youth
☐	☐	d. spend more for job training for special groups (such as potential drop-outs, slow readers, slow learners, etc.)
☐	☐	e. spend more for in-service training of teachers
☐	☐	f. spend more for pilot and experimental programs
☐	☐	g. spend more for supervisory and consultant services
☐	☐	h. spend more for vocational guidance services for employment-bound youth
☐	☐	i. spend more for equipment for shops and laboratories
☐	☐	j. spend more for the preparation of instructional materials
☐	☐	k. spend more for research and evaluation

Other (please specify ways) _____

30. How can we best use state and federal vocational funds for improving programs and services for out-of-school youth and adults who want to prepare for employment? Consider each item in relation to each field.

		Voc. Agri.	Voc. Hmkg.	Voc. Ind.	Voc. Bus.
30 a.	Use funds for the State Department of Public Instruction to organize, equip and operate state and/or area vocational schools (Check as many as apply)	☐	☐	☐	☐
30 b.	Use funds to organize, equip and operate area vocational schools through cooperating school districts (Check as many as apply)	☐	☐	☐	☐
30 c.	Use funds for the local school districts to develop more adequate programs and services (Check as many as apply)	☐	☐	☐	☐

31. Here are several ways in which state and federal funds might be used to help local school districts develop more adequate vocational programs and services for out-of-school youth and adults. Please check each of the following to indicate that you either agree or disagree.

Agree	Dis-agree	We should:
☐	☐	a. spend more for studies to determine the needs of out-of-school youth and adults
☐	☐	b. spend more for instruction in evening school and adult classes
☐	☐	c. spend more for administrative and supervisory services aimed at the development of out-of-school youth and adult programs
☐	☐	d. spend more for instruction in full-time technical-terminal education on the community college level
☐	☐	e. spend more for the development of instructional materials (for use in specific areas of training)
☐	☐	f. spend more for vocational guidance services for out-of-school youth and adults
☐	☐	g. spend more for evaluation of programs for out-of-school youth and adults

Other ways (please specify) _____

ED013338

COOPERATIVE SUPERVISED JOB TRAINING

AN INTERIM EVALUATION REPORT

AUGUST 1965

SCHOOLS PARTICIPATING
Drake Vocational Center, Chicago
Maine Township East High School
Maine Township West High School
Robinson High School

State of Illinois
BOARD OF VOCATIONAL EDUCATION
AND REHABILITATION
Vocational and Technical Division
Springfield

VT000030

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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COOPERATIVE SUPERVISED JOB TRAINING PROGRAM

An Interim Evaluation

August 1965

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Drake Vocational Center
Maine Township East High School
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State of Illinois
BOARD OF VOCATIONAL EDUCATION AND REHABILITATION
Vocational and Technical Education Division
Springfield

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Ralph Sides.....Coordinator, Maine Township West

PREFACE

This is an interim report on the second year of a three-year cooperative supervised pilot program. The first year (1963-64) no formal report was made, although evaluation teams did visit the four schools involved. And members of these evaluation teams made individual reports in the form of letters to the three administrative units involved. Since these reports were short and so very general, they have made very little contribution to the manuscript which follows.

The final report on these pilot programs will be made at the end of the 1965-66 scholastic year. All members of the research team should be sensitized to this task and should make every effort to secure data which will make the final report more valid and informative.

R. O. Gallington
Research Director

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CHAPTER I

INTRODUCTION

Background

The Cooperative Supervised Job Training Program was proposed by the Illinois State Board of Vocational Education to explore possible solutions to the problems of: 1) present and potential dropouts, 2) high school graduates who lack occupational skill, and 3) students in the regular high school program who are classified as low academic achievers. Under the structure of this program, local schools were asked to submit plans for pilot programs designed to cope with the problems of the above classes of students.

Basic minimun standards for these programs were established by the State Board in two plans.

> Plan No. 1 was intended for those students who have already dropped out of high school and who are unemployed or who may become employed in dead-end jobs. They lack a high school diploma as well as saleable skills. Prospective students under this plan may range from 16 to 21 years of age.
>
> Plan No. 2 was intended for those low academic achievers who are still in school. They should have previously been identified either as potential dropouts or probable graduates who will lack needed skills upon entry into the labor market.

Three local school proposals for the reimbursable Cooperative Supervised Job Training Program were accepted by the State Board for pilot studies for a period of three years. At the end of each year an evaluation of the local programs was to be conducted by a third party mutually agreed upon by the State and local schools. This report

constitutes the second-year evaluation of the Cooperative Supervised Job Training Program and Pilot Program.

The school districts accepted by the State Board to participate in the reimbursed cooperative pilot programs were as follows:

1. Community Unit School District No. 2, Robinson, Illinois; Mr. Forest H. Shoulders, Superintendent.

2. Maine Township High School District No. 207, Park Ridge, Illinois; Dr. Earle W. Wiltse, Superintendent. (Note: This district has two schools participating in the Cooperative Supervised Job Training Program: Maine Township East High School and Maine Township West High School.)

3. Board of Education, City of Chicago; Mr. Neal Duncan, Assistant Superintendent, Department of Vocational and Practical Arts Education. (Note: Drake Vocational Guidance and Education Center was the only school from this district participating in the pilot study and is the only school in the program working with eighth grade or lower level students.)

The above schools were to participate in the cooperative program under Plan No. 2, as established by the State Board. It is significant to note that the students enrolled in the Robinson program in 1963-64 were largely fifth-year students. The Robinson program was classified under Plan No. 2, however, because these students were not dropouts since all had made the decision at the end of their fourth year to return to school and enroll in the Cooperative Supervised Job Training Program. Maine Township East and Maine Township West high schools allowed any high school level student 16 years of age or older to enroll in the program.

Significance of Study

Students who drop out of school and flood the labor market without saleable skills are creating a great problem in our society. The Cooperative Supervised Job Training Program is a possible solution to

this problem is the State of Illinois. To test the feasibility and value of future cooperative supervised job training programs, pilot studies were to be conducted and evaluated to establish their worth as a solution to the dropout and employment problems in Illinois. An evaluative study as this one will have value only in the fact that it can reveal what has been gained through the Cooperative Supervised Job Training Program and thus give an indication of what might be done in the future.

Since there were no previous guides established for the Cooperative Supervised Job Training Program, the generalizations at the end of this report should help establish guides or goals for future programs. The evaluation and reporting prodedures established herein will also aid in the pattern of evaluation to be made and report writing to be done after the third year of the pilot programs.

Limitations

This subtitle refers to those handicaps under which the data was collected and this report was prepared. Elements limiting the evaluation of the Cooperative Supervised Job Training Programs include many factors, some of which follow:

1. The data provided on the student information sheets was written, in many cases, by the students and many times it was impossible to read the student's handwriting. A majority of the forms were lacking important information necessary to prepare a statistical study.

2. No measure was developed for identifying the "potential dropouts" and "probable graduates who will lack needed skills upon entry into the labor market." It could not be determined whether the students in the Cooperative Supervised Job Training Programs were actually potential dropouts since reliable measures had not been developed for each community involved. Since the potential dropouts and needy students were identified largely by judgments, it could not be stated positively that the program will have helped such students toward graduation.

3. Achievement test results were not available. There have been no standardized tests used to classify students in the Cooperative Superivsed Job Training Program. This fact alone made it impossible to determine objective achievement progress of the students.

4. Only general goals were established. The results of the program could not be compared with the more specific expected outcomes since specific goals were never established. (It should be noted, however, that by constantly observing the change in students, a definite approach to the general goals may be measured. An example of this is observed in the retardation of dropouts among the students as the program progressed from the first year to the second year.)

5. The research team was limited because of time. It was not known that the interim evaluation was to be performed until the latter part of the school year, 1965. An earlier starting date would have allowed the researchers to gain additional information while the cooperative classes were still in session.

6. The interviewers had to prepare hastily for the visitation interviews. And they had to look for strengths and weaknesses of the programs without having previously prepared appropriate check lists. To be most effective with students, the interviewers had to interview without notes or check lists, and without having fully memorized the pattern of questioning. As a result, all schools were not subjected to the same identical examination.

The Methods and Procedures

As no procedure had been established for the evaluation of the Cooperative Supervised Job Training Program Pilot Studies, it was necessary to gather available information and to establish an evaluation system simultaneously. Student information sheets for recording data were used by the coordinators. The sheets, six in all, were provided by the State Board of Vocational Education. It was found, however, that much desirable data was not adequately recorded and a detailed statistical treatment of data was impossible. This lack of data somewhat handicapped the research team in developing a standard procedure for evaluation. Under the conditions imposed by the somewhat inadequate data, a more general evaluation method was devised than had been planned originally.

Visitation

The visits provided ample opportunity for members of the research teams, accompanied by state supervisors, to establish general opinions concerning the programs being conducted in the various schools. A special class assembly was arranged in each school by the evaluating team. This assembly was conducted in the absence of the local coordinator in each case. During this meeting the students were asked questions pertaining to their feelings and opinions regarding the program. At the conclusion of the class assembly, a few individual class members were selected and interviewed privately by a member of the research team. During these interviews additional information was obtained relative to an individual student view of the Cooperative Supervised Job Training Program. Questions asked during the class assembly follow:

1. How many have not worked steady since you entered the program?

2. How many will graduate this June or August?

3. Of those, how many have been in the program only one year? For two years?

4. Who told you about the program? Why are you here? Are you glad you spent a year or more in the program?

5. How many have saved money? How many have bought a car? Are your wages satisfactory?

6. Is school work harder now that you are away a half day? Easier?

7. What are you missing? Gaining?

8. What do your parents think?

9. What do older siblings think? Did they recommend this to you?

10. What do younger siblings think? Do you recommend this to them?

11. How many are doing the kind of work you like?

12. Did you find your own job? Can you choose the work you want? Why? Or why not?

13. Can you change from one job to another? When? Why not? Would you? To what?

14. What is your present job and what do you want eventually?

15. How many returned to finish school because of this program alone? Would you have finished anyway?

16. Does your employer or anyone at work give you a hard time? If so, how? Anyone else?

17. Are teachers here at school sympathetic and encouraging to you?

18. Does anyone run down the program?

19. Do counselors help? How?

20. Can you go to college? What have you been told?

The following questions were asked of individual students during the private interviews.

1. What year are you in school? Age?

2. At which occupation are you now employed? Do you like your work? Enough to make it your vocation?

3. How did you happen to get in the program of Cooperative Supervised Job Training?

4. Have you every thought of dropping out of school? Why?

5. Do you like job training?

6. Does school help your on-the-job work?

7. How does it feel to be earning money while in school? Has it been helpful? How?

8. Do you expect to remain in school until graduation?

9. Are you going to make this occupation your life's work? If not, what occupation might you choose?

10. How many different employers have you had during this school year? Why did you change employers? Did you like all? None? One best? Which?

11. What difficulties or problems have you encountered on the job? What helps to solve them? How could school help more?

12. Do you think you are acquiring any skills or "know how" which will be valuable to you in the future?

13. Do you think related instruction (in school) provides you with sufficient information about the "world of work?" Your role as a citizen in a world of work? What have you learned about employment? Social Security? Unions? Taxes? Voting? Issues?

14. How would you improve the program either in the classroom or on-the-job?

15. What prompted you to enroll in the program of Cooperative Supervised Job Training?

16. Has the program helped you remain in school through increasing your interest in school work? Through your earnings from your part-time job?

Much of the data collected from the class visitations and individual interviews did culminate in a consensus by the visitation teams. This consensus was made possible because of those students who were willing to respond to a "head count" and those who were willing to speak out and make individual comments. If such a consensus is reliable it would necessarily have to be proven again and again by repeated and restated inquiries. By meeting with four different groups and by getting similar reactions from all four groups, the consensus reached seemed to be a logical basis for making certain concluding statements of generalization.

Student Information Sheets

The State Board of Vocational Education provided six information sheets to be completed for each student in the Cooperative Supervised Job Training Program. The following information recorded on each student's set of sheets should have included the following. (See appendices)

1. Personal information on students, including family background?
2. Grade report and date student entered Program.
3. Coordinator's, trainer's, and counselor's appraisals.

4. Coordinator's on-the-job visitation reports.
5. Related instruction covered and instructional materials used.
6. Student's prior work experience.
7. Student's work experience while participating in the Program.
8. Student follow-up record.

It may be noted that the above information was not provided on all of the student records submitted for evaluation and study. Although the data sought by the six information sheets in the students' files would appear to be quite objective in nature, some of the student information sheets seemed to have been partially completed. However, one must assume that those data supplied are accurate whether or not complete.

Some Coordinators' Responsibilities

The major problems facing the coordinators of the Cooperative Supervised Job Training Programs was that of: 1) finding employment suitable for training the students and 2) changing the attitudes of students to make them more employable. It appeared that the coordinators, in most instances, had done an excellent job in finding a solution to both problems. Through classes in related instruction, coordinators have taught many lessons. The ones which follow are typical. They would seem to help the student understand his responsibility to his employer and his need for an occupation.

1. Getting and holding the job.
2. Analyzing wants and needs.
3. Budgeting Income.
4. Importance of saving.
5. Savings programs.
6. Substitutes for money.

7. Credit and the consumer.
8. Installment credit.
9. Planning before shopping.
10. Using advertising intelligently.
11. Improving advertising standards.
12. Owning a business.
13. How to start a business.
14. Income tax problems.
15. Income tax deductions.
16. Accident and health insurance.
17. Life insurance.
18. Property insurance.
19. Teamwork and progress.
20. Self management.
21. Satisfaction with one's work and occupation.
22. "Stick-to-it-iveness."
23. Common sense and earning power.
24. Verbal blunders.
25. Telephone techniques.
26. Shop talk.
27. The public will be served.
28. How to find a job.
29. Office talk.
30. "Stepping up" -- advancement.

On-the-job-visitation by the coordinators helped the employer to become a better trainer. In one case the employer expressed his gratitude for being allowed to be a trainer. He asked that his rating of the

student be viewed in the light of the fact that he (the employer) was new in the "training business." Other employers expressed their thanks to the coordinators and expressed their support of the Cooperative Supervised Job Training Program. The records indicate that in some cases the employers hired the co-op students for full time work after they had graduated from school. Most of the good employer-student relationships seemed due to the excellent work done by the coordinator.

The coordinator seemed to have gained the employers' as well as the students' confidence. This apparently was done without using high pressure tactics. The employer was made to feel that he was cooperating in the public education of youth.

In some cases the coordinators initiated banquets for those students and employers involved in the Cooperative Supervised Job Training Program. This effort seemed to have established rapport among educators, employer-trainers and students.

Coordinators worked with administrators and other teachers to guide instruction that would help the cooperative students feel that they were a part of the school as well as the world of work. Remedial classes in English and other subjects were created in some of the schools to help meet the immediate needs of the co-op students.

Student Comments

The majority of the students enrolled in the Cooperative Supervised Job Training Program expressed their opinions of the program as:

"It helped me grow up,"

"I like my job,"

"I think this is a worth while program,"

"This is not the job I would like to have after I graduate,"

"I learned a lot on this job,"

"It helped me get along with people,"

"The pay is good," and

"The pay is not good."

Occupations

A list of occupations held by Cooperative Supervised Job Training students are as follows*

1. Appliance - service repairman
2. Auto mechanic helper
3. Auto parts clerk helper
4. Beauty operator helper
5. Bench machinist
6. Blue print machine operator
7. Building maintenance and clean up man
8. Busboy
9. Caddy
10. Carpenter apprentice
11. Cashier
12. Child nursery attendent
13. Clerk (store)
14. Clothing alterations
15. Delivery boy
16. Dishwasher
17. Florist helper
18. Gas station attendent

*D.O.T. classifications not shown in records.

19. Grocery bagger
20. Hand compositor (printing)
21. Hospital aide
22. Ice cream and candy cook helper
23. Janitor
24. Kennelman
25. Kitchen helper
26. Laboratory technician helper
27. Library helper
28. Machine operator
29. Meat cutter
30. Office worker
31. Sheet metal worker
32. Shipping and receiving clerk
33. Short order cook
34. Stockboy
35. Truck driver - light
36. Truck loader

CHAPTER II

OBSERVATION OF THE VISITATION TEAMS AND PRESENTATION OF AVAILABLE DATA

Observations

The first step in evaluation of the Cooperative Supervised Job Training Pilot Program was to interview administrators, coordinators, guidance counselors, and students involved with the program. In all cases these interviews were held with the approval of the administrators and the state supervisor.

The school administrators appeared to be giving full support to the program and seemed willing to schedule classes that would be convenient for the students enrolled in the program. Remedial classes were offered in some cases to meet the needs of the students in the Cooperative Supervised Job Training Program. The administrators seemed willing to change related instruction class schedules to facilitate a better schedule.

In some schools it appeared that the coordinator was overloaded with other teaching assignments and work. The work load should be reduced to provide adequate coordination of the Cooperative Supervised Job Training. Under the present schedules or work loads, the coordinators may have found it hard to make the necessary number of on-the-job visitations; or they may have failed to record all visitations made.

When the Cooperative Supervised Job Training classes in each school met with the visiting teams, the meetings were conducted in the

absence of local school authorities, the coordinator and other teachers in the school. The visiting teams established rapport quickly and the students responded readily to the questions asked of them, both in the group conferences and the individual interviews. The following observations were made from the information provided by the students during the evaluation teams' group discussions.

1. For the most part, the students appeared to be very pleased to be participating in the Cooperative Supervised Job Training Program. They felt that the school was doing its best to assist them in making vocational and social adjustments. They seem to be aware that, in many of the cases, it was difficult for the coordinator to find employment for them.

2. All of the students responded positively when asked if they really wanted to graduate from school. This was true in both the high-school classes and the below-grade-nine classes.

3. It was the general opinion of the students that they were lucky to have the Cooperative Supervised Job Training Program in their school. They all seemed willing to participate actively in helping to make this program a success.

4. In some cases, the students felt that the graduation required subjects were secondary to the work experience, while other students felt that the work experience aided them in the successful pursuit of their required subjects.

5. Contrary to the students' prior school records, most felt that they would not have dropped out of school even if the Cooperative Supervised Job Training Program had not been in existance. (It would appear to the visitations teams that many students had been tempered by the Cooperative Supervised Job Training Program and had actually transcended beyond the potential dropout stage.

6. Some of the students complained that they were receiving very little training on the job and were often times assigned menial tasks, indicating poor placement, job requirements not fitting students abilities, interests, etc.

7. While most of the students were thankful for the program, they complained that their English, mathematics, social studies, and science courses were generally for the college-prep students.

8. Without exception, students felt that their individual coordinator was doing a good job and that he had helped them greatly.

9. Some students felt that the administration was hampering their work progress by not allowing them to change jobs during the school year. These students felt that if they could secure jobs on their own, they should be allowed to change.

10. The students often complained that the academic teachers were not aware of the purposes of the Cooperative Supervised Job Training Program. This they felt caused the teachers to assign too much homework or inappropriate homework.

11. The students often expressed the opinion that their rate of pay was no less than it should be. It appeared that no two students were earning the same salary. It was noted that the salary range between schools varied greatly. This was a reality that must be accepted.

12. The students believed generally that the related subjects course being taught helped them in their work experience. None seemed to desire or need more study assignments or different study assignments in the related subjects class.

13. Very few of the students felt that they had missed too much of the school activities such as assemblies, sports, or music. Most felt that the experience they were gaining in working with people and learning about work responsibilities was more valuable than participating in extra curricular activities.

14. The students felt that they were generally accepted by their peers and not descriminated against because they were in the Cooperative Supervised Job Training Program. Even those fifth year students enrolled in the program felt they were never harassed by anyone for being enrolled in the program.

15. Many of the students stated that they would not care to be employed for life in the occupation in which they were receiving training, but hoped that this work experience would help them advance to better positions.

16. Some of the students gave credit to the Cooperative Supervised Job Training Program for helping them grow up and helping them understand the world of work.

17. The majority of the students reported that their coordinator was trying to help them learn methods for saving money and in some cases a member of the class was elected to collect money from each student so that the class might participate in group savings.

18. Almost all of the students who were not eligible for graduation indicated that they would continue in the Cooperative Supervised Job Training Program during the next school year, or until they attained graduation.

19. In some cases the students reported their work as being irregular, while in other cases the students were steadily employed. Generally, the students who were steadily employed seemed happy with the number of hours they worked per week.

20. Students reported a belief that work experience had helped them improve their attitude towards work, personal neatness, attendance, and sense of responsibility.

21. Students in the Cooperative Supervised Job Training Program who have vocational education or past work experience seemed to have performed better on the job. They also seem to have a better idea of what kind of work they want as an occupation for earning a living.

Information Sheets

The second step in evaluation of the Cooperative Supervised Job Training Program was to tabulate data from the individual student record information sheets. These sheets are shown as "Appendices." There seemed to be a wide disparity in the consistency in which the coordinators reported. As a result, certain important data was missing or misunderstood by the research team. The forms may not have been understood by the coordinators.

Table 1, page 18, presents the information recorded on the individual student information sheets. This table tends to give an overall image of the program. It has been designed to introduce the basic common data among schools. Additional tables are included in this report and will provide a further breakdown and interpretation of the statistics presented in Table 1. The column labeled "enrolled" shows the number of students enrolled in Cooperative Supervised Job Training for two scholastic years, 1963-64 and 1964-65. The number of enrollees shown under the 1964-65 column includes continuing students from 1964. In most cases these were sophomore or junior students who were not eligible for graduation the previous year. The total figure includes students who were not eligible for graduation, and this is important because it reflects the

classes of students each coordinator had in his program during each scholastic year.

The column labeled "dropped" is self-explanatory. In no case recorded was a student reinstated in the program after once he had been dropped.

The column labeled "Continuing" denotes the students who enrolled in the program for either a second or third year. The "Total" does not indicate different students, but it represents as well the repetition of students continuing from one school year to the next. For example, a sophomore student initially enrolled in 1964 could be shown as continuing in 1964 and also in 1965.

The column labeled "Reg. Curr." indicates the number of students returning to another regular school curriculum after completing a part of or an entire year in the Cooperative Supervised Job Training Program.

The number of graduates of the program are recorded in the column labeled "Graduated." The number of graduates could never equal the number enrolled unless seniors only were allowed to enroll in the Cooperative Supervised Job Training Program. Such was the case at Robinson. At Drake, also, all students were considered to be equivalent to eighth graders (or "final" year students) and were graduated after one year in the program.

The follow-up reports made by the coordinators provided the data for the columns labeled "Grads. Emp." (graduates employed), "Grads. Adv. Ed." (graduates in advanced education), and "Dropouts Emp." (dropouts employed). The table is footnoted to show where incomplete information was furnished. If complete information had been available, these columns would have given a much clearer picture of the achievement of the various programs.

TABLE 1

An Overview of the Cooperative Job Training Program

	Maine East		Maine West		Robinson		Drake[a]		Total		Total
	1963 --64	1964 --65	1963 --64	1964 --65	1963 --64	1964 --65	1963 --64	1964 --65	1963 --64	1964 --65	
Enrolled	30	32	29	28	15	21	20	35	94	116	210
Dropped	6	4	5	0	3	0	0	4	14	8	22
Continuing	11	9	11	10	0	1	0	10	22	30	52
Reg. Curr.	5	3	3	0	0	0	0	0	8	3	11
Graduated	8	16	10	18	12	20	20	21	50	75	125
Grads. Emp.	5	b	10	b	9	18	8	13	32	31[c]	63[c]
Grads. Adv. Ed.	2	b	0	b	1	1	4	5	7	6[c]	13[c]
Dropouts Emp.	3	3	b	b		0	0	2	3[c]	5[c]	8[c]
Ave. Hrs. Per Wk.	23.4	25.6	22.0	22.7	22.9	26.3	21.	20.9	22.3	23.9	23.1
Ave. Pay Per Hr. ($)	1.48	1.51	1.32	1.30	.92	.95	1.04	1.15	1.19	1.05	1.12
Ave. Sal. Per Wk. ($)	34.63	38.66	29.04	29.51	21.07	24.99	21.84	24.04	26.54	25.10	25.87
Prior Wk. Exp.	10	16	18	17	5	12	1	2	34	47	81
Ave. Ed. Par.	11.5	11.5	10.7	10.4	10.8	10.7	9.2	9.4	10.6	10.5	10.55
Ave. Ed. Sib.	11.5	10.6	9.7	9.1	9.8	8.9	7.9	9.7	10.0	9.6	9.8

[a]The students in the Drake program are working toward an eighth grade diploma.
[b]Data not available.
[c]Not an actual total since some data was not provided on information sheets.

The columns labeled "Ave. Hrs. Per Wk." (average hours worked per week), "Ave. Pay Per Hr." (average pay per hour), "Ave. Sal. Per Wk." (average salary per week), "Ave. Ed. Par." (average educational level of parents), and "Ave. Ed. Sib." (average educational level of siblings) are the actual computed averages for all students in the program according to the data available.

The number of students with prior work experience is recorded in the column labeled "Prior Wk. Exp." This column is shown because students with prior work experience did seem to be more successful in the Cooperative Supervised Job Training Program.

The four following tables (2, 3, 4, 5) lend themselves better to interpretation than Table 1. Hence, the interpretation of data for this section of the report actually begins with Table 2, page 21.

Table 2, gives a total picture of the students enrolled in the Cooperative Supervised Job Training Program. The information gives an overview of the members accounted for in the four schools. The table accounts for the total number of students in the program during the first two years of operation, 1963-64 and 1964-65. Also a comparison of enrollments in the four Cooperative Supervised Job Training Programs is provided by Table 2.

It must be kept in mind that Maine Township East High School and Maine Township West High School enrolled sophomores and juniors in their Cooperative Supervised Job Training Programs. This fact will explain why the number of continuing students was relatively high and the number of graduates was less than 50 per cent of the total enrolled. Robinson and Drake enrolled only students who had few or minor deficiencies to make up before graduation. This accounts for the high percentage of graduates from these two programs. Drake, however, provided for grade school

graduation whereas all of the other schools provided for high school graduation. The percentage of students dropped seemed significantly low in all schools.

Maine Township West High School showed a higher number of dropouts than any of the other schools in the Cooperative Supervised Job Training Program. The data showed that most of these dropouts were junior level students and dropped out of school in the early part of the 1963-64 scholastic year before the Cooperative Supervised Job Training Program was firmly established. The students who dropped out during that year may have done so because the program was new, without an image, and the students may not have had an opportunity to thoroughly investigate its operation. The number of dropouts at Maine Township East High School in 1964-65 school year were also in the sophomore and junior class. A better selection and placement of students in the Cooperative Supervised Job Training Program might have lowered the number of dropouts.

Table 2 shows 59.5 per cent of the students enrolled in the program having graduated. This figure may appear to be low, but may be explained by the fact that 30.1 per cent of the students enrolled in the Program were not eligible for graduation because of grade classification. Moreover, 24.8 per cent of these students were to be continued in the Cooperative Supervised Job Training Program, and 5.3 per cent were to continue their schooling in other curricula.

Robinson High School reports an exceptional high percentage of graduates. This high percentage of graduates exists because of the fact that only students of senior standing were enrolled in this program.

TABLE 2

TOTAL ENROLLMENTS

	MAINE EAST		MAINE WEST		ROBINSON		DRAKE		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total Enrollment	62	100	57	100	36	100	55	100	210	100
Continued	20	32.3	21	36.8	1	2.8	10	18.6	52	24.8
Trans. to Another Curr.	8	12.9	3	5.3	0	0	0	0	11	5.3
Dropped	0	16.1	5	8.8	3	8.3	4	7.3	22	10.4
Graduated	24	38.7	28	49.1	32	88.3	41	74.4	125	59.5

The Drake Vocational Center also reports an exceptionally high percentage of graduates. This is true because of students enrolled in the Drake School were within one year of completion of the requirements for the eighth grade diploma.

Table 2 further defines, to a degree, the achievement or lack of achievement of the Cooperative Supervised Job Training Programs. Although the percentages of graduates appears to be low, it must be understood that not all of the students enrolled in the Cooperative Supervised Job Training Programs were in a grade level that would make them eligible for graduation. A significant number (89.6 per cent) of the students who had been enrolled in the Cooperative Supervised Job Training Programs were either still in school or had achieved graduation.

Table 3, page 23, shows the disposition of the seniors enrolled in the Cooperative Supervised Job Training Programs and presents both scholastic years, 1963-64 and 1964-65. It will be remembered that Robinson had only seniors enrolled in its program. The 1963-64 drop-out rate in the Robinson program was considerably higher than the drop-out rate in the other schools, but for the school year 1964-65 Robinson showed no dropouts. In all cases the dropout rate of the students enrolled in the program was significantly low. Since students enrolled in all programs were identified as potential dropouts or low academic achievers, the expected dropout rate might be higher. The percentage of seniors continuing in the program was low since the majority of the students were able to meet graduation requirements at the end of one scholastic year.

TABLE 3

THE SENIORS OF HIGH SCHOOL PROGRAMS

	MAINE EAST				MAINE WEST				ROBINSON				TOTAL			
	1963 --64		1964 --65		1963 --64		1964 --65		1963 --64		1964 --65		1963 --64		1964 --65	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Enrolled	9	100	17	100	11	100	18	100	15	100	21	100	35	100	56	100
Dropped	1	11.1	1	5.9	--	---	--	---	3	20	--	---	4	11.4	1	1.8
Continuing	0	---	--	---	1	9.1	--	---	--	---	1	4.8	1	2.9	1	1.8
Graduated	8	88.9	16	94.1	10	90.9	18	100	12	80	20	95.2	30	85.7	54	96.4

It is significant to note that 85.7 per cent of the seniors enrolled in the Cooperative Supervised Job Training Program in the 1963-64 scholastic year were graduated. Robinson High School, while reporting 80 per cent of the students as graduating had a lower percentage of graduates than did Maine East High School and Maine West High School. This lower percentage of graduates may stem from the fact that all of the 1963-64 enrollees in the Robinson Program were fifth year students and some just did not have the heart to finish from the outset. Maine West High School is to be commended for the 100 per cent graduation of seniors enrolled in the Cooperative Supervised Job Training Program for the 1964-65 scholastic year. Robinson High School, while reporting the largest percentage of dropouts during the 1963-64 scholastic year reported no dropouts during the 1964-65 scholastic year. It is significant to note that the percentage of graduates for the 1964-65 scholastic year in all schools is considerably higher than the percentage of graduates in the preceding year. These figures might suggest that the Cooperative Supervised Job Training Program is becoming more acceptable as an important facet of the total school curriculum, and further, that the experience gained by administrators and coordinators during the first year of the Cooperative Supervised Job Training Program has helped them more adequately to meet the needs of the students.

Table 4, page 25, shows the data recorded for the sophomore and junior students for both the 1963-64 and 1964-65 scholastic year. Robinson High School is not included in this table since no students in these grade levels were enrolled in the program. Also, Drake School is not included since the students in that program were below or at the eighth grade level.

TABLE 4

THE TWO-YEAR PROGRAMS OF HIGH SCHOOL LEVEL

	MAINE EAST				MAINE WEST				TOTAL			
	1963 --64		1964 --65		1963 --64		1964 --65		1963 --64		1964 --65	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Enrolled	21	100	15	100	18	100	10	100	39	100	25	100
Dropped	5	23.8	3	20	5	27.8	--		10	25.6	3	12
Continuing	11	52.4	9	60	10	55.5	10	100	21	53.9	19	76
Transferred to Another Curriculum	5	23.8	3	20	3	16.7	--		8	20.5	3	12

The percentage of students dropping out is higher for the sophomore and junior level students than for senior level students. It is generally true that the potential dropout tends to defer his dropping out until reaching the age where school attendance is no longer mandatory. The critical age of this dropout period is between the sixteenth and seventeenth birthdays. A large percentage of the sophomore and junior students elected to continue in the Cooperative Supervised Job Training Program for the next year. This trend alone would indicate success in the achievement of the basic purposes of the program. A trend toward even a higher percentage of continuing sophomore and junior students would indicate that the needs of the students were fulfilled. In a few cases students of the sophomore, junior grade level dropped school to accept full time employment. In almost all of these few cases, the students were enticed by their employer-trainers on the assurance that the high school diploma would not improve the job situation. The possibility of such a circumstance existing should be recognized by all coordinators, and an effort on their part should be exerted to overcome it.

A small percentage of the students enrolled in the Cooperative Supervised Job Training Program returned to another traditional school curriculum. In some cases the parents did not want their child enrolled in a "work program" and in other cases the student was not screened carefully before being enrolled and the program did not offer him a challenge.

The data reported on sophomores and juniors enrolled in the Cooperative Supervised Job Training Program could only include Maine Township East High School and Maine Township West High School. In Table 4 it is significant to note that a high percentage of dropouts occurred in this group during the 1963-64 scholastic year. This percentage was reduced

by more than one-half during the scholastic year 1964-65. It is also important to note that the number of students continuing in the program after the 1964-65 school year was considerably higher than the percentage of students that continued after the 1963-64 school year. Maine Township West High School is again to be commended for having 100 per cent of this group of students continuing in the Cooperative Supervised Job Training Program after the 1964-65 scholastic year.

Table 5, page 28, shows the data furnished on the students at the Drake Vocational Center only. This was necessary since the students enrolled in the Drake program for the scholastic year 1963-64 were all graduated. In other words, the 1963-64 year was 100 per cent effective. The 1964-65 data shows a small percentage of students who were dropped by the school. The coordinator and administrator felt that these students were not suited for employment and would have jeopardized the program had they been allowed to continue. It was reported that the maladjusted students, by their on-the-job performance, could have caused the school to lose one or more established training stations. A more careful screening of the students selected to be enrolled in the program and a more effective orientation program might have provided a better record here for 1964-65. The number of continuing students in the table, indicated the number of students who failed to meet the requirements for an eighth grade diploma and who were continuing on into the 1965 summer school program.

TABLE 5

DRAKE VOCATIONAL PROGRAM

	1963-64		1964-65	
	No.	%	No.	%
Enrolled	20	100	35	100
Dropped	--		4	11.4
Continuing	--		10	28.6
Graduated	20	100	21	60

CHAPTER III

GENERALIZATIONS

This is actually an interim report on the second year of a three-year Cooperative Supervised Job Training Program as established by the State Board of Vocational Education. It provided for a cooperative work-study program in several schools with several different goals involved. It was designed to help social and academic handicapped youth. It was to assist in retarding the dropout rate and to assist some youth to attain graduation and some degree of job experience. Students eligible to become enrolled in the program were to be 16 years of age and in school or between 16 and 21 years of age and unemployed or employed in "dead-end" jobs.

The coordinators of the Cooperative Supervised Job Training Program satisfied the certification requirements established for the Diversified Occupations Coordinator. However, the Cooperative Supervised Job Training Program was not to be identified with the Diversified Occupations Program.

The Cooperative Supervised Job Training Program was to be in operation during the 1963-64, 1964-65, and 1965-66 scholastic years. It should be considered a pilot program. At the end of each school year an evaluation was to be made of the various schools involved and their separate programs.

Information was submitted by the coordinators in the schools involved on forms provided by the State Board. In most cases the

information sheets lacked some needed information. This was due in part to the care with which the forms were completed and in part to the inadequacy of the forms. The forms were revised as a result of this interim study and may be more appropriate for the final review of the programs in 1966. All of the data reported in the tables were taken from the information sheets and must be interpreted broadly.

Further information was sought by visitation teams who inquired of school authorities, local coordinators, and students. By an investigation of the coordinators' reports and the visitation teams inquiries, the following basic conclusions were reached.

1. The number of school dropouts occurring among the Cooperative Supervised Job Training students seemed to diminish as the program proceeded into its second year.

2. The programs were beneficial, attaining the broad goals sought.

Impressions Gleaned From Records

Program Operation

1. The programs appeared to be keeping potential dropouts in school until graduation.

2. The follow-up information available indicated that most of the graduates who have been enrolled in the Cooperative Supervised Job Training Program find employment.

3. A number of the Cooperative Supervised Job Training Program students who were not eligible to graduate after the first year remained in the program for the second year.

4. Adequate employment seems to be found for most students in the Cooperative Supervised Job Training Program.

5. Wages earned by the students in the Cooperative Supervised Job Training Program appeared to be fair and adequate.

6. The number of hours worked per week by students in the Cooperative Supervised Job Training Program appeared to be within normal limits.

7. A few of the students returned to the regular or traditional school curriculums after one year in the Cooperative Supervised Job Training Program.

8. Some students were able to go on to higher or advanced education programs.

9. Student interest in the Cooperative Supervised Job Training Program appeared to be very high.

10. The work experiences provided by the Cooperative Supervised Job Training Program appeared to improve student attitudes toward work, personal neatness, attendance, and responsibility.

Improvement Needs

1. Goals or objectives of the program should be more clearly defined in writing and verbal communication.

2. Revision of the data reporting forms is recommended for a more valid evaluation of the program. (This is being accomplished)

3. Closer supervision of the work program should be accomplished and more assistance should be given to on-the-job trainees.

4. More coordination between the guidance counselor and the Cooperative Supervised Job Training Coordinator is suggested.

5. Secretarial help for coordinators is desirous to help with record keeping.

6. A separate folder for each student's records is required and should be established immediately.

7. A rather high percentage of students is returning to the regular school program without reasons being given. A follow-up on these students is needed.

Comments on Students

1. Students perform better on the job if they have had pre-vocational training or industrial arts.

2. Most of the students enrolling in the Cooperative Supervised Job Training Program have had no prior work experience.

3. A number of the students appear unable to hold a job because of attitude, appearance, or inability.

4. Some of the students felt that the job in which they were employed was not a job they would like to continue, but this is not important so long as the co-op students achieve other more worthy objectives.

5. Some students have been dropped from the Cooperative Supervised Job Training Program because they made no effort to comply with set regulations and work standards.

6. No information is available to determine how students were selected to enter the Cooperative Supervised Job Training Program.

7. Much of the missing information required on forms could have been obtained in a one-time visit by coordinator with students and parents.

8. More visits to homes and parents should be made. It appears that many students have been slighted in this aspect of the program.

9. Follow-up information indicates that most graduates of Cooperative Supervised Job Training Programs find fairly acceptable vestibule jobs.

Conflicting Reports

The third step in the evaluation was to compare information obtained through visiting team reports and the coordinator's written reports. From the above data, it will be noted that there is a considerable similarity. This is recognized as a very significant and complimentary finding. Happily, this section then becomes a rather short contribution. However, the following items do point up some conflicting data.

1. Although many students reported to the visitation teams that they had had prior work experience of some kind, the coordinator's records did not support this.

2. According to the reports received from Drake Vocational Center, 100 per cent of the students entering the Cooperative Supervised Job Training Program were graduated. This conflicts with the 1964 visitation reports filed in Springfield. This report states that, "Of 26 enrollees at the start of the year, 20 remained through the entire term."

There may be other inconsistent reports forthcoming as the three-year period is concluded. The research team has felt that this will occur more as a result of inadequate checking and recording rather than anything else. Data provided by students, coordinators, and others who report information to research teams should be checked thoroughly for accuracy during the 1965-66 scholastic year.

APPENDICES

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #1 (Confidential) Date_____

SCHOOL _____ COORDINATOR _____

Student's Name _____ Date of Birth _____ Sex _____ Race _____ Grade _____

Home Address _____ Telephone _____ Birthplace _____
Street No., City or Town City or Town, State, County

General Health (Check one): Poor Good Excellent Physical Defect, if any _____

A. PERSONAL BACKGROUND

Immediate Family Living in the Home (parents, step parents, foster parents, brothers, sisters)

Name and Relationship	Age	Rel.*	Address	Occupation	Grade Completed	Present Employer	Starting Date	Previous Occup.

(OVER)

*Relationship: M=Mother F=Father S=Sister B=Brother SF=Step Father SM=Step Mother GM+GF=Grandparents A=Aunt U=Uncle Etc.

B. PERSONAL BACKGROUND (Cont'd)

Student's Place of Residence		Student's Social Behavior (Record of Deliquency)
Address	Dates From - To	

C. RECORD OF CONFERENCES

Date	Conference Participants (student, coordinator, parents, etc.)	Subject of Conference and Results

D. INDIVIDUAL & SPECIAL RELATED INSTRUCTION GIVEN STUDENT

Topics Covered	Instructional Material Used

Note: Add Extra Continuation Sheets as needed to give complete coverage on the three items on this page. Identify each as "Info. Sheet 1B" or "Info. Sheet 1C," etc.

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #2 (Confidential)

School Record

Student _____

School _____

School Year _____

Grade Record

(Note: Enter by general curricular areas)

SUBJECT	7	8	9	10	11	12	13	14	Synopsis of Teacher's comments re: attitudes, behavior, ability, etc. entered on Cumulative Record.	Date
Math										
English & Grammar										
Social Science										
Science										
Ind. Arts Pract. Arts, Home Ec.										
Business Education										
Physical Education										

Date entered----Draw a heavy vertical line to designate grade level student first entered S.J.T. program.

Student's Extra Curricular Activities -

Standardized Test Results (Most Recent)

	NAME OF TEST	DATE	RANK	NORMS.
ACHIEVEMENT				
INTEREST				
APTITUDE				

Was student ever enrolled in a special academic program-

Nature of program-

(over)

APPRAISAL OF ATTITUDE OF STUDENT UPON COMPLETION OF YEAR

Coordinator's Appraisal

	poor	good	specific observations
1. Social (toward others)	_____	_____	_____
2. Educational (toward school)	_____	_____	_____
3. Self Concept (toward self)	_____	_____	_____
4. Employment (toward job)	_____	_____	_____

Trainer's Appraisal

	poor	good	specific observations
1. Social (toward others)	_____	_____	_____
2. Educational (toward others)	_____	_____	_____
3. Self Concept (toward self)	_____	_____	_____
4. Employment (toward job)	_____	_____	_____

Counselor's Appraisal

	poor	good	specific observations
1. Social (toward others)	_____	_____	_____
2. Educational (toward school)	_____	_____	_____
3. Self Concept (toward self)	_____	_____	_____
4. Employment (toward job)	_____	_____	_____

Standardized Test Results
since starting on program _____

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #3

School _____

Student _____

School Year _____

On-the-Job Visitations by Coordinator

Date of Visit	Person (s) Contacted	Objectives	Results

(over)

On-the-Job Visitations by Coordinator (Cont'd)

Date of Visit	Person (s) Contacted	Objectives	Results

Use additional pages as necessary

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #4

School _____

School Year _____

Related Instruction Summary for Class

General Related Topics Covered	Instructional Material Used - by Occupations

(over)

Related Instruction Summary for Class

General Related Topics Covered	Instructional Material Used - by Occupations

Use additional pages as necessary

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #5 School _____

Student _____ School Year _____

RECORD OF EMPLOYMENT WHILE IN SCHOOL

Prior to Participation in Program					
Name of Establishment Address	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun Date Term.	Hrs. per Week	Rate per Hr.
Trainer's Comment					
Coordinator's Comment					
Student's Comment					

While Participating in Program					
Name of Establishment Address	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun Date Term.	Hrs. per Week	Rate per Hr.
Trainer's Comment					
Coordinator's Comment					
Student's Comment					

Terminated Program: (check one) Returned to Another Curriculum _____ Dropped out of School _____ Date: _____

RECORD OF EMPLOYMENT WHILE IN SCHOOL (Cont'd.)

While Participating in Program (Cont'd.)

Name of Establishment Address	Specific Work Assignment	Name & Title of Trainer	Duration of Employ. Date Begun Date Term.	Hrs. per Week	Rate per Hr.
Trainer's Comment					
Coordinator's Comment					
Student's Comment					
Terminated Program: (check one)	Returned to Another Curriculum _____	Dropped out of School _____	Date _____		

Name of Establishment Address	Specific Work Assignment	Name & Title of Trainer	Duration of Employ. Date Begun Date Term.	Hrs. per Week	Rate per Hr.
Trainer's Comment					
Coordinator's Comment					
Student's Comment					
Terminated Program: (check one)	Returned to Another Curriculum _____	Dropped out of School _____	Date _____		

SUPERVISED JOB TRAINING PROGRAM

Information Sheet #6

School _____

Student _____

Date Graduated _____

PLACEMENT AND FOLLOW-UP RECORD

After Termination from Program

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

REPLACEMENT AND FOLLOW UP RECORD (Cont'd)

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

	Specific Work Assignment	Name & Title of Supervisor	Duration of Employ. Date Begun	Date Term.	Hrs. per Week	Rate per Hr.
Name of Firm						
Address						
Student's Comment						
Supervisor's Comment						

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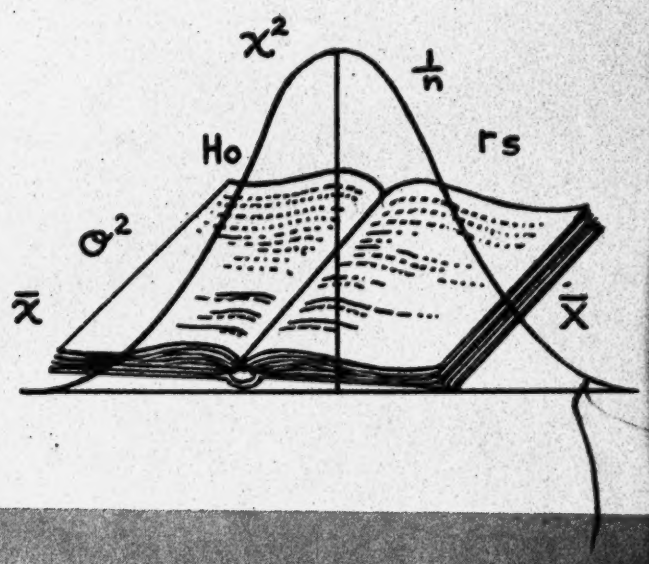
TEACHER ADOPTION OF A NEW CONCEPT OF SUPERVISED PRACTICE IN AGRICULTURE



TEXTON R. MILLER

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Teacher Adoption of a New Concept Of Supervised Practice in Agriculture

Texton R. Miller

Educational Research Series No. 4

October, 1965

A Report of Research
Conducted by the
Department of Agricultural
Education, North Carolina
State University at
Raleigh

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AN ABSTRACT

Adoption-level theory was utilized to measure the progress of teachers of agriculture toward adoption of a new concept of supervised practice. After seventeen months two-thirds of the teachers had reached the "evaluation" stage of adoption with half of these ready to begin the "trial" stage. An additional 17 per cent had reached one of the top two adoption levels. A significant regional difference was observed in the adoption level of the overall concept and the third element, indicating that diffusion of it was less in the mountain region. Of ten variables tested for relationship to adoption-level, only "teaching practices"showed a moderate correlation. Factors of age, experience and overall attitude tended to correlate with adoption level, but not significantly. Tendencies toward negative correlation were noted between adoption level and size of school, student home opportunities for supervised practice and teacher attitude toward vocational education in general. Data was obtained by personal interview of 47 teachers, a random representative sample of 465 teachers of vocational agriculture in North Carolina. Because a majority of teachers were found at the "evaluation" adoption-level stage, it was recommended that further implementation be encouraged by means of group discussions and pilot programs rather than mass media.

Teacher Adoption of A New Concept

Of Supervised Practice in Agriculture

An educational system must adapt continuously to the new needs and demands of society. For the most part educational change has come about slowly. However in such fields as mass communications, drug diffusion, and rural sociology the change process, or diffusion of innovation, has flowed faster. Today the field of education is channeling new and expanded efforts into the study of change and the diffusion process. This is the report of a study which focused on a new concept of "supervised practice" in vocational agriculture. The implementation of this concept was tested within an adoption-level theoretical framework. Basically this is a study of teacher adoption of a new concept.

A major responsibility of the teacher of agriculture is to provide relevant and effective learning experiences for high school students enrolled in agriculture. "Supervised practice" constitutes the approach by which student learning experiences are extended beyond the classroom and school hours to gain additional and more meaningful learning opportunities.

The New Concept. The new concept of supervised practice emphasized a modern definition of agriculture. It stated that students should be encouraged to select their supervised practice activities from the broad field of agriculture rather than be limited to production agriculture only. Second, the new concept asserted a responsibility

for the teacher and school to provide needed supervised practice opportunities at the school. Third, it insisted that every student have the opportunity to gain supervised practice in each major learning area in which he studies. This study was centered upon teacher adoption of these three elements of the new concept.

Purpose

The primary purpose of this study was to determine the relation of selected factors to teacher adoption of a new concept. The study was expected to (1) identify the level of teacher acceptance of the new concept and (2) to determine the extent to which certain personnel and situational factors were associated with teacher adoption. In addition this research was expected to help determine the value of two new instruments which have potential for research in broader fields.

Need

The new concept of supervised practice was officially introduced at the 1963 annual conference of North Carolina teachers of agriculture. Until this study, however, no objective evidence was available concerning the implementation of this concept by the teachers. It is important to teacher education and to state supervision to know the level and degree of acceptance in order to plan more effectively for preservice and in-service programs of education. Of equal importance is the knowledge of factors associated with the adoption of the concept.

Implementation Practices Important

The new concept of supervised practice was presented to the teachers in 1963 as a comprehensive program of teacher-led activities developed in cooperation with the school, students, students' employers, and students' parents. A number of recommended teacher practices and

procedures were included in the bulletin [1] expressing the concept. Thus. a part of this study was the determination of the acceptance by the teachers of these implementation practices, but they are treated in the analysis of data as one of several factors believed to be associated with the adoption of the new concept itself.

Method

This study was conducted through personal interviews by the researcher. A random representative sample of 465 teachers of agriculture was drawn. Using a table of random numbers, a 10 per cent sample was selected from the listing of teachers in the 1964-65 Directory for Agricultural Education. The sample was taken separately for each of the three recognized geographical regions of the state. A total of forty-seven teachers were interviewed and complete data were secured from all teachers.

Factors Studied

From the professional literature and the experience of the researcher and his co-workers, it was determined that the following factors would be tested for their relation to teacher acceptance of the new concept: (1) teacher age, educational level, and years of experience; (2) school size, location, and land laboratory facilities; (3) students' supervised practice opportunities at home; (4) teacher viewpoint of vocational education, vocational agriculture,

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(1) Improving Supervised Practice in Vocational Agriculture, State Department of Public Instruction, Bulletin No. 361, Raleigh, N. C., 1963.

and supervised practice; and (5) teacher acceptance of selected recommended teaching practices related to supervised practice.

Instruments Developed

Special instruments were developed to (1) determine the levels of acceptance of the new concept and the implementation practices, (2) to inventory attitudes of the teachers, and (3) to ascertain students' supervised practice opportunities at home. All instruments were reviewed by three former teachers of agriculture and given trial runs with two employed teachers of agriculture with only very slight modifications being made.*

Measuring the New Concept

Three key aspects of the new concept were expressed in the form of behavorial statements to secure a measure of policy action rather than philosophical acceptance only. The basic questions asked of teachers were: (1) May your students select their supervised practice activities from the broad field of agriculture rather than only from production agriculture? (2) Are your students provided opportunities for supervised practice at the school? (3) Are your students provided opportunities for supervised practice in each major learning area of the curriculum?

Adoption Process Theory

Adoption-process theory was the basis for the design of the two instruments developed for measuring teacher adoption level of the new concept and for assessing the acceptance of selected teaching practices. Recognized authorities contend that adoption of any practice is a process with identifiable stages generally classified as (1) aware-

---

*Copies of instruments may be secured from the author.

ness, (2) interest, (3) evaluation, (4) trial, (5) adoption. This theory is important because researchers as Beal, Bohlen, and others have shown that the effectiveness of various communication media and change-agents varies with the stage of adoption of the practice by the recepient.[1] Knowledge of the level of adoption may assist change-agents in selecting the most appropriate means to encourage adoption of practice.

The above adoption-level stages were incorporated into the following seven-point scale which was used to identify the level of acceptance that teachers had reached for each of the three elements of the new concept.

Explanations of Scale

Score No. "1"	This is new to me; I hadn't heard of it before.
Score No. "2"	I've heard or read of this; but hadn't given it much thought.
Score No. "3"	I am considering this idea; but haven't reached any conclusion on its value.
Score No. "4"	I doubt that this practice would be of much value in my situation.
Score No. "5"	This idea looks promising; but I haven't tried it yet.
Score No. "6"	I am giving this a trial now on a temporary basis.
Score No. "7"	I am using this regularly now.

It will be noted that scores "one" and "two" relate to awareness of the concept element under consideration, score "three" is equivalent to the "interest" stage, and scores "four" and "five" indicate that "evaluation" (either unfavorable or favorable) has been undertaken.

---

(1) North Carolina Regional Publication No.1, Agricultural Extension Service, How Farm People Accept New Ideas, Special Report No. 15, Iowa State College, Ames, Iowa. November 1955.

Score number six locates a teacher in the "trial" stage of adoption, and a mark of "seven" denotes teacher adoption of the practice or policy. The teachers expressed no difficulty in utilizing this scale with its explanatory statements.

The above scale and statements were also used by the teachers to indicate their level of adoption of thirty-four selected teacher practices or procedures which constituted one of the factors studied for its relation to teacher acceptance of the new concept. Teachers were able to utilize this scale without apparent difficulty in interpreting the statements or in applying them to their perceived level of adoption of practice or principle.

Answers Sought

The report of this study is centered on answers to six basic questions listed here and discussed later in more detail:

Question

1. To what extent has this new concept been adopted?
2. Are there differences in adoption of concept according to geographic regions?
3. Are there regional differences in the adoption of any one of the three aspects of the concept?
4. Are there differences in adoption of concept by non-scheduled school time of the teacher?
5. Is the presence or absence of a school land laboratory associated with adoption level of concept?
6. To what extent is there a relationship between level of adoption and each of the following variables: (1) age, (2) level of academic degree, (3) years of experience, (4) size of high school enrollment, (5) teacher rating of students' home opportunities for supervised practice, (6) teacher attitudes, and (7) implementation practices.

PRESENTATION OF DATA

I. Adoption Level of New Concept

Teachers of agriculture in North Carolina have made considerable progress in adopting a new concept. Figure I reveals teacher acceptance of the new supervised practice concept as a whole. This graph is based upon the combined adoption scores for the three concept aspects measured in this study which were stated earlier as (a) a modern definition of agriculture, (b) provision for supervised practice opportunities at the school and (c) provision for supervised practice in each major learning area in which a student studies.

For a small number of teachers (10.6 per cent) the adoption of the concept was indicated as complete and firm. Combining the groups in the top two adoption level stages, some 17 per cent would be rated above the "evaluation" stages. Nearly two-thirds of the teachers can be seen in the "evaluation stages", and about half of these showed favorable views of the concept to the extent of anticipating trial of it.

Although none of the teachers could be considered unaware of the "total concept", about 20 per cent would classify only as high as the "interest" stage.

In view of the fact that only 17 months has passed since official sanction was given to the concept and the assumption that adoption of educational practice is a process of years rather than months, it would

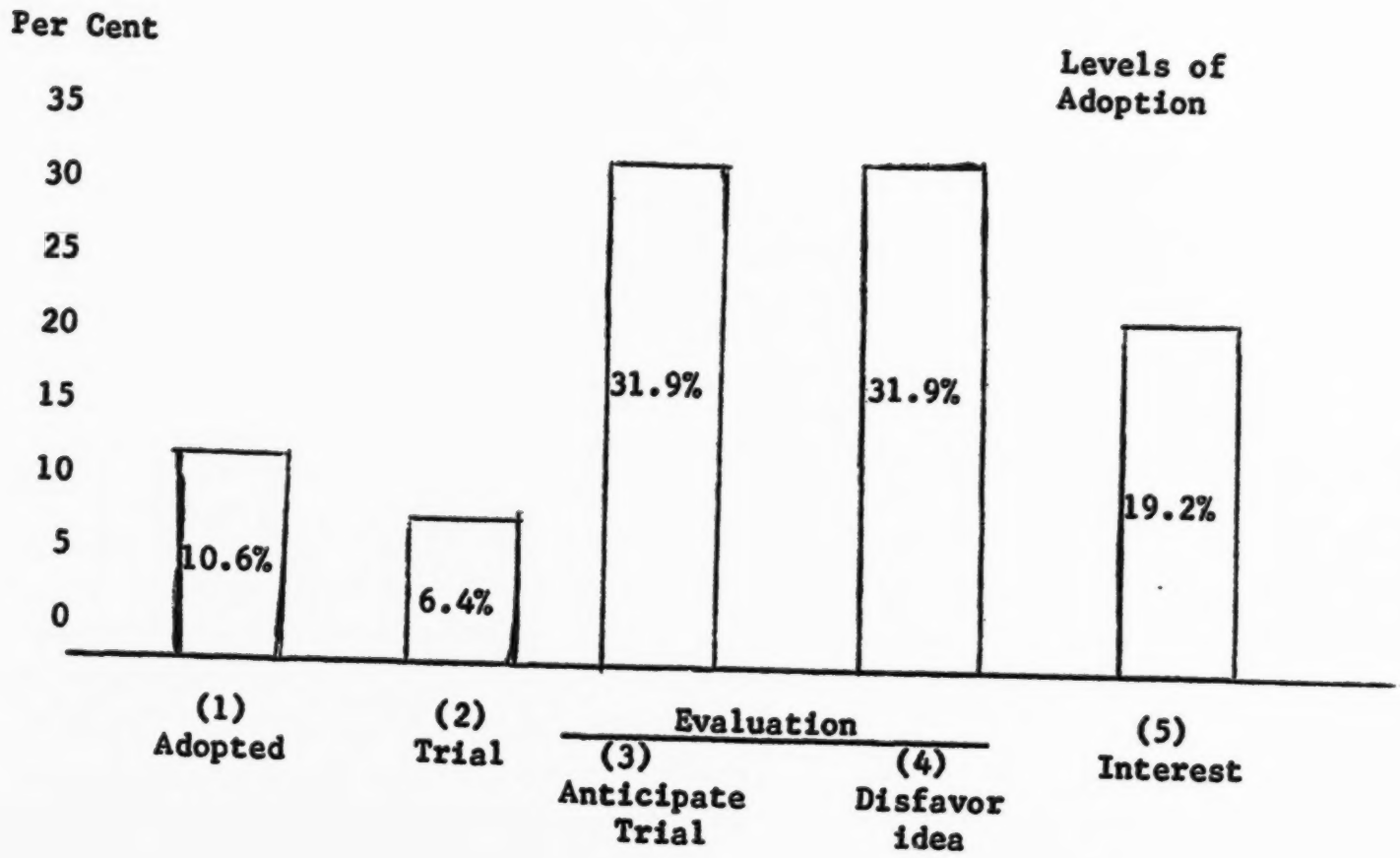

Figure 1. Percentage Distribution of Teachers by adoption levels reached in Acceptance of New concept

appear that teachers have made remarkable progress in adoption to date. However, it seems obvious that there is also a great deal of room for further progress since only 17 per cent have reached as far as the "trial" stage in the adoption of the total concept. Perhaps the most challenging statistic from Figure I is that indicating approximately 32 per cent of the teachers had declared an unfavorable reaction toward the concept. To the extent that these teachers have taken a firm position toward this concept, it will probably be more difficult for change-agents to be effective with them. See Appendix A for frequency distribution of teachers.

Table 1 provides the distribution of teachers by adoption level in each of the three concept aspects included in this study. Teachers are nearly unanimous in their acceptance of "aspect I" which basically involves a broad concept of agriculture as contrasted with only production agriculture (farming). Although this aspect is an essential element of the new concept and so stated in the official publication of the concept, the high adoption level obtained is probably more a reflection of the general trend in all of agriculture to broaden its horizons, rather than an outgrowth of the introduction of the new concept. Nevertheless it could not be presumed prior to this study that teachers had implemented the new definition of agriculture in their approach to supervised practice. More specifically, it was not known whether teachers were permitting their students to select supervised practice activities from the broad field of agriculture rather than from farming only.

Table 1 Adoption of Three Aspects of New Supervised Practice Concept by Levels of Adoption

Adoption Level	Aspect I		Aspect II		Aspect III	
	No.	%	No.	%	No.	%
7	46	97.7	8	17.0	8	17.0
6	0	0	2	4.2	2	4.2
5	1	2.3	14	29.8	7	14.9
4	0	0	7	14.9	2	14.2
3	0	0	7	14.9	6	12.8
2	0	0	9	19.2	8	17.0
1	0	0	0	0.0	14	29.9
Totals	47	100	47	100.0	47	100.0

Aspect 1. Students may select supervised practice programs from the broad field of Agriculture, rather than only from production agriculture (farming).

Aspect 2. Students have opportunities for Supervised Practice at the school (beyond class and shop).

Aspect 3. Students are provided opportunities to gain supervised practice in each major learning area (such as animal science) in which they study.

Aspect II of the concept concerns the policy of providing opportunities at the school, beyond class and shop facilities, for supervised practice by students. The new concept emphasized a responsibility of the school and teacher to provide supervised practice opportunities at the school. Currently the enrollments of students in vo-ag include increasing numbers of students without adequate supervised practice opportunities at home. Assuming these students have a genuine interest in agriculture, it is logical that the school accept a responsibility for providing facilities for some supervised practice at the school.

The measure of the acceptance of aspect II is shown in Table 1. About 21 per cent of the teachers had reached the trial stage, or higher (levels 6 and 7) in the adoption level, but almost an equal proportion (19.2 per cent) had not progressed beyond the "awareness" stage. Nearly 45 per cent of the group (levels 4 and 5) were declared in the "evaluation" stages with two-thirds of them favoring the idea expressed in Aspect II. This would seem to be a favorable sign of the future acceptance of the aspect. However, the data also show that more than one-third of the teachers indicated only an "awareness" or "interest" in the concept (levels 2 and 3) at the time of the study.

Aspect III of the new supervised practice concept supposes that students are provided opportunities to gain supervised practice in each major learning area in which they study. By definition supervised practice consists of "learning experiences" "related to instruction."[2]

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[2] Improving Supervised Practice in Vocational Agriculture, State Department of Public Instruction, Bulletin No. 361, Raleigh, N. C., 1963.

It is assumed that each major learning area is of sufficient scope to necessitate provision of "learning experiences" beyond the normal class and shop facilities, and it is these which are identified as supervised practice.

Again from Table 1, the data show that nearly 60 per cent of the teachers (levels 1, 2, and 3) had not progressed beyond the interest stage for aspect III. Moreover, about 30 per cent of the teachers (by far the largest percentage of respondents in any one level of adoption) indicated they were not even "aware" of this aspect of the concept. The most obvious implication is that teachers were inadequately oriented to this aspect of the new concept. However an item analysis of the teacher-attitude instrument indicates that teachers were "aware" of the above aspect of the concept. On the attitude inventory 70 per cent of the teachers "agreed" or "strongly agreed" with this statement: "Supervised practice opportunities need to be provided for each major learning area in which the student studies."

Respondents	Strongly Agree or Agree	U	Disagree	Total
Number	33	5	9	47
Percentage	70	11	19	100%

Since these viewpoints were recorded prior to teachers answers concerning "provision for supervised practice opportunities in every major learning area", it would seem that teacher perception of "awareness" of the concept is being affected by some unknown factors.

To further support the above supposition, a more detailed study of the data from the attitude inventory item quoted above shows that fifty percent of those respondents indicating "unawareness of the third element of the concept" were in the group indicating agreement

or strong agreement with the attitude inventory concerning the need for the same element.

The inconsistancy of expressed attitude with the indicated adoption level of "unawareness" might imply that a comprehensive supervised practice program (such as would provide student opportunities in each major learning area of the curriculum) is theoretically acceptable to teachers but unrealistic to them at this time. In such a case, effective communication with teachers on this element of the concept will be a complex problem requiring more sophisticated approaches than ordinary mass communications. Techniques such as group discussions and study groups would seem to be in order.

Continuing with Table 1, approximately 30 per cent of the men had reached the decision-making stage concerning aspect III with about half of these teachers favoring the idea of providing opportunities for supervised practice in each major learning area of the curriculum. Also, 17 per cent of the recipients had reached the final stage of adoption, and this is equal to those adopting aspect II.

In summary: (1) Teachers were nearly unanimous in adopting the first proposition that students may select supervised practice activities from non-farm agricultural occupations as well as from farming; (2) More than one-half of the teachers had reached or surpassed the adoption level favoring trials of providing supervised practice opportunities at their school; (3) Nearly a third of the teachers professed ignorance of the concept of arranging supervised practice opportunities for each major learning area, and almost 60 per cent (levels 1, 2, and 3) of the group had not gone beyond the "interest" stage of the adoption level process in regard to this aspect of the new supervised practice concept. These observations suggest that most teachers recognize the new concept although they did not activate it.

II. Regional Differences in Adoption of Overall Supervised Practice Concept

This study was designed to permit analysis of data by geographical regions. The question to be answered is: "Were there regional differences in adoption of the overall new supervised practice concept?"

Table 2 shows the sample divided into "high" and "low" groups, in relation to mean score, and subdivided by regions. These data indicate no significant difference in adoption levels between coastal and piedmont teachers. However, it should be noted that the majority (82 per cent) of the teachers from the mountain region were below the mean score of the study group. The "t" test of significance indicates that the differences obtained in the level of adoption of the overall concept between teachers in the mountain region versus teachers in the coastal plains region was significant beyond the .05 level. These data indicate that the concept was less widely diffused in the mountains than in other areas.

III. Regional Differences in Adoption Level of Single Elements of the Concept

The question to be answered here is: "Were there regional differences in adoption of any one of the three elements of the supervised practice concept?"

Referring back to table 1, it may be noted that because of the concensus accorded aspect I of the concept, there can be no significant differences by region on this element.

In the case of aspect II concerning the provision of supervised practice opportunities at the school, the "t" test was applied and yielded no significant differences in adoption level between regions.

Table 2 Geographical Distribution of Teachers in Two Adoption Level Groups of the New Supervised Practice Concept

Adoption Level	Coast (Region I)		Piedmont (Region II)		Mountains (Region III)		Totals	
	No.	%	No.	%	No.	%	No.	%
High (15-21)[1]	11	58	9	53	2	18*	22	47
Low (10-14)[2]	8	42	8	47	9	82*	25	53
Totals	19	100	17	100	11	100	47	100

Mean = 14.6 *Significant "t" value for Region I and III = 2.08

"t" value for Region II and III = 1.59

"t" value for Region I and II = .50

1. Teachers totaling a score of 15 or more of a possible 21 were classified as high adopters.

2. All teacher scores totaled 10 to 14 of possible 20.

3. Dividing line between two groups arbitrarily set at 15 to provide most nearly balanced groups numerically.

However, on Aspect III concerning provision of supervised practice opportunities for each major learning area, it was determined by the "t" test that teachers of the coastal plains region reached a significantly higher level of adoption than did the teachers in the mountain area. No such significant difference was obtained in comparing the coastal group with the piedmont teachers, nor the piedmont teachers with the mountain teachers.

IV. Adoption of Concept by Non-scheduled School Time

A question considered in this study was whether a relationship existed between teacher adoption level of the new supervised practice concept and the amount of school-day time not scheduled for teaching classes. Many teachers of agriculture teach only four or five classes of high school students and many utilize the remaining one or two class periods for other aspects of the total vocational agriculture program. It may be assumed that some portion of this unscheduled time might be used for development of the supervised practice program.

No significant differences in acceptance level of the new supervised practice concept were found in comparing three subgroups of the teachers based upon 10, 5, or zero hours of non-scheduled school time. This is contrary to what might be expected since supervised practice is a teacher-led activity that naturally requires time beyond the classroom schedule for the development and supervision of student programs. Further exploration seems indicated to determine what use is made of the non-scheduled school time of the teacher of agriculture. An earlier study by J. R. Clary [2] indicated that there was also no clear relationship between "non-scheduled" time of teachers and the

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[2] Clary, J. R., Attitudes of Public School Personnel Toward Adult Education in Agriculture in North Carolina. Problem Option, Master of Ag Ed., 1960, North Carolina State College. 72 p. Raleigh, N. C.

scope of adult education programs developed. A third major responsibility of the teacher, the youth organization, has not been studied to determine whether non-scheduled school time of teachers is associated with its development.

V. Relationship of Adoption of Concept to School Land-Laboratory

The school land-laboratory is an accepted means of providing realistic learning experiences for students of agriculture. Not all schools possess the facilities and land needed in establishing a land-laboratory. The availability of such facilities should encourage the acceptance of the new concept of supervised practice, one element of which specifically refers to the opportunities provided by the school for supervised practice. In contrast to what might have been expected, there was practically no relationship between the level of acceptance of the supervised practice concept and the availability of a school land-laboratory. The "t" test value of .43 revealed no significant difference.

Some insight into the reasons for the lack of relationship indicated above might be gleaned from Table 1 which indicates that only 21 per cent of the teachers have reached the "trial" stage in the adoption of that element of the concept (No. 3) pertaining to the land-laboratory. It would be at the "trial" stage, or above, when the presence or absence of the land laboratory should be most crucial in the adoption of this means of providing supervised practice opportunities.

VI. Relationships of Selected Variables and Level of Adoption of Concept

The following selected factors were conceived to be of sufficient importance to determine whether a relationship existed between any one of them and teacher level of adoption of the new concept:

1. Age of teacher
2. Academic degree held by teacher
3. Years of teaching experience
4. Size of high school student enrollment
5. Opportunities at home for students to develop desirable supervised practice programs
6. Teacher attitude toward programs of vocational education in general
7. Teacher attitude toward the program of vocational agriculture
8. Teacher attitude toward supervised practice
9. Attitude - combined score of factors numbered 6, 7, and 8 above
10. Teacher acceptance of recommended teaching practices for development of student supervised practice programs

For all factors except one, the Person product-moment coefficient of correlation was used to determine relationships of factors to adoption level of supervised practice concept. In the case of the factor of college degree held by teachers, the point biserial correlation was used to assess relationship with adoption.

Since this report is addressed primarily to teachers of agriculture and public school administrators, they may be interested to note here certain limitations and precautions concerning interpretations of coefficients of correlations shown in the following tables:

(1) One of the most important uses of a coefficient of correlation is that of indicating the extent to which values of one variable may be predicted from known values of another variable. Yet an arbitrary ranking of correlations as "high", "moderate" or "low" is open to serious question, since the size of the correlation can scarcely be considered apart from the purpose for which it was computed.

In the case of this study, some of the low correlations (under .400) may be helpful in generalizing about the teachers of North Carolina as a group, but worthless in predictions concerning individual teachers.

(2) The coefficient of correlation cannot be interpreted as a percentage of perfect relationships existing between two variables or as a percentage of accuracy with which one variable may be predicted from another.

(3) The coefficient of correlatinn does not indicate a cause and effect relationship; it merely constitutes a measure of relationship between two variables or factors.[1]

In general it may be stated that of the ten variables studied for relationship to the teachers' acceptance of the new supervised practice concept, only one, that concerning teaching practices, showed a correlation which some statisticians would classify as "moderate correlation".

PERSONNEL FACTORS

The first three factors listed above of age, academic degree and teaching experience are usually included in a study of this type on the general basis that knowledge concerning these will be significant in tayloring educational programs to meet needs of selected groups as well as individual needs. Figure 2 shows the relationship of these factors to teacher adoption level of the new concept. Although the degree of correlation is much too low to be significant it is interesting to note that the direction of correlation is positive between all three variables (increasing age, experience, and professional degree) and the level of adoption of the new concept by the teachers.

One might have expected significant negative correlation between age, and teaching experience and adoption level reached. However, this study is one of teachers with a high educational level and above average incentives and opportunities for continuing education, all of which should promote receptivity to desirable educational change.

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[1] Wert, Neidtand Ahmann, Statistical Methods in Educational and Psychological Research. Appleton-Century-Crafts, Inc., 1954, New York, p. 76, 77.

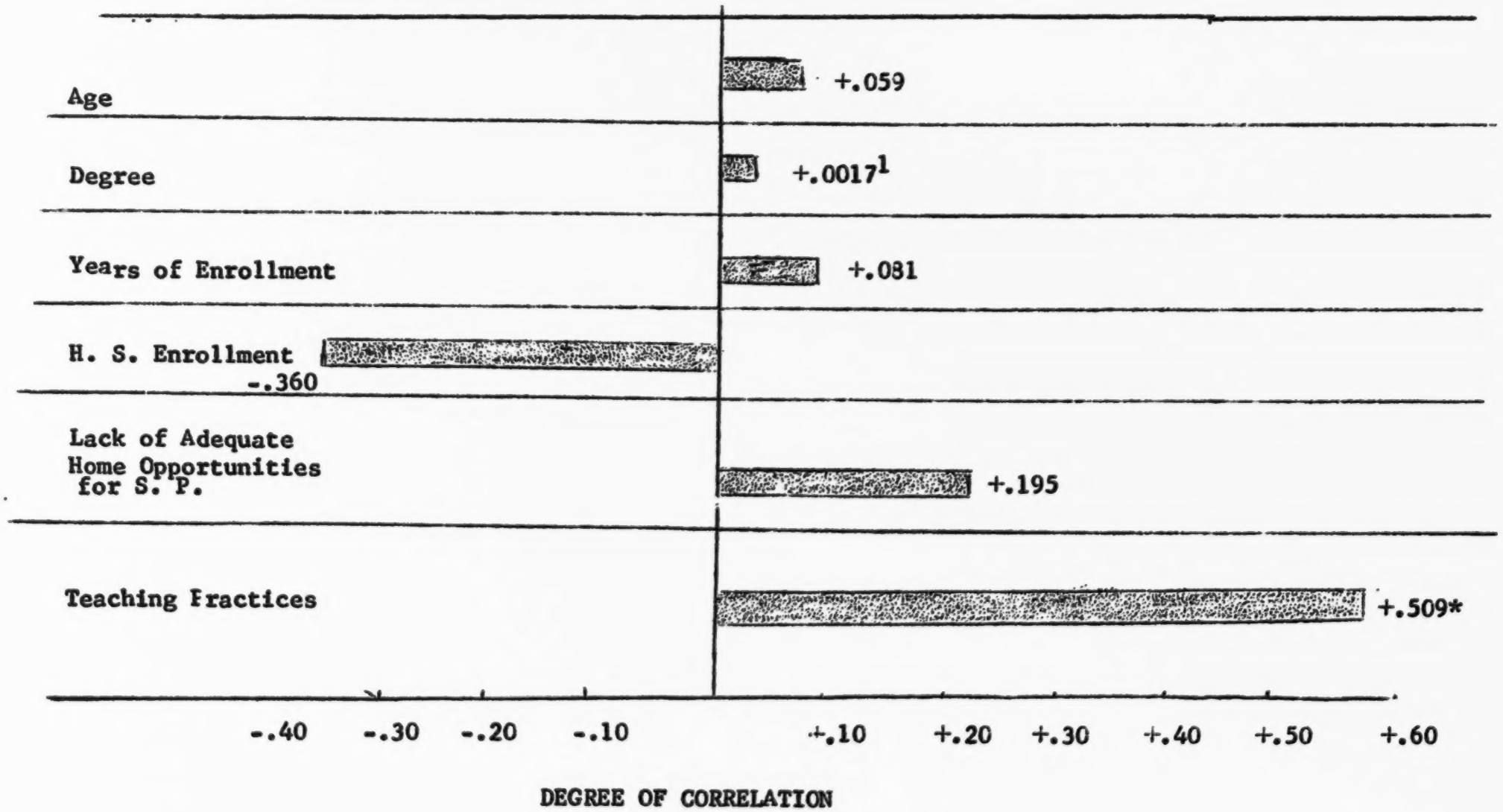

Figure 2 Correlations Between Selected Factors and Teacher Adoption Level of New Concept

(1) (point biseral correlation)

* significant at the 5 per cent level of probability

SIZE OF HIGH SCHOOL AND ADOPTION OF CONCEPT

It is also interesting to note from Figure 2 that teachers in the larger schools tended to show a lower acceptance level of the new concept. The data show a negative correlation between size of high school enrollment and level of teacher adoption of the new concept. One could rationalize that an opposite relationship should exist since the larger schools probably have more students from urban or rural-urban communities than from the rural areas, with greater need for help in gaining supervised practice opportunities. Further, the larger schools should have greater potential for offering supervised practice opportunities at the school--as it is proposed in the new concept. On the other hand, a large school could be overloading its teacher(s) of agriculture with high school students to the extent that an effective effort at developing supervised practice programs is unrealistic to the teacher. Perhaps the larger schools are more academically oriented and this might account for lower emphasis upon supervised practice. Additional study seems warrented on this point of the study since the correlation of .360 is approaching statistical significanee.

HOME OPPORTUNITIES OF STUDENTS

It was hypothesized that a lack of home opportunities of students for obtaining desirable supervised practice opportunities would relate positively with adoption level of the new concept of supervised practice. To determine the kind of home opportunities available to students, the teachers were asked to rate the home situations of

their sophomore students. Sophomores were chosen because of the greater number of enrollees in the ninth and tenth grade classes and because the teacher would probably be better acquainted with the home situations of sophomores. The average student score was computed for each school and correlations with teacher adoption levels of the new concept were determined.

Looking at Figure 2 again, it can be seen that there was a tendency toward correlation of .195 (not significant) between teacher adoption level and the lack of adequate student home opportunities for supervised practice. In other words, those teachers who rated low the home opportunities of their students for supervised practice tended to greater acceptance of the new concept of supervised practice.

TEACHING PRACTICES AS A VARIABLE

It was anticipated that the degree of use of certain teaching procedures would be related to teacher adoption level of the new concept. For this study there were thirty-four teaching practices selected from the North Carolina bulletin on supervised practice.

Figure 2 indicates a positive significant correlation between the teacher total score on teaching practices and teacher adoption level of the new concept. This relationship between practices used and acceptance of concept should encourage the use of this practice list in educational programs. Discussion of these specific practices, as well as the development of others, should be an aid in helping teachers implement the new concept.

TEACHER ATTITUDES

It is generally recognized that attitudes of people are important factors in determining behavior. Ramseyer has expressed this quite definitely in this statement:

> The writers of antiquity remind us "that as a man thinks, so is he." The way a man regards what he knows, the concepts he holds, and his attitudes toward himself and his associates are forceful determinents of his behavior.[1]

A special instrument was developed to gain a measure of the teachers attitude toward supervised practice as a element in the program of vocational agriculture, toward vocational agriculture as an educational program and toward vocational education in general.

The total of thirty-four statements devised were divided nearly equally among the three aspects of the attitude inventory with a balance of positive and negative items included to provide some internal consistancy. The Liker-type scale was adopted to provide a five point classification of responses from "strongly agree" to "strongly disagree."

Table 3 shows the correlations found between teachers' attitudes and the six factors of (1) teacher age, (2) teaching experience, (3) size of high school enrollment, (4) supervised practice opportunities at student homes, (5) teaching practices, and (6) teacher acceptance of the new concept.

None of the correlations shown in Talbe 3 are of sufficient size to establish a relationship between teacher attitude and any of the six factors considered. It is however of interest to note the variation of direction of correlation indicated by the data.

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[1] Ramseyer, John A., et. al., Factors Affecting Educational Administration, (School Community Development Series Monograph No.2, Columbus: The Ohio University Press, 1955), p. 67.

The "combined score" on teacher attitudes is a summation of the scores of the three parts of the attitude inventory. In table 3, this combined attitude score shows a tendency to correlate negatively with each of the three factors of teacher. age, years of teaching, and size of high school enrollment. This is to say that older teachers, more experienced teachers, and teachers in the larger schools tended show the least favorable overall attitude on the inventory items. However the opposite condition existed concerning the other three factors, columns 4, 5, 6, in table 3. Herein the more favorable attitude scores were shown by teachers with students having less desirable home opportunities for supervised practice, by teachers scoring higher in use of recommended teaching practices, and by teachers showing greater acceptance of the new concept.

Further notice of Table 3 shows that the expressed attitude toward supervised practice, per se, (line 1) follows the tendency of the overall attitude score, e.g., to show negative correlation with age, experience, and size of high school; but positive correlation with the other three factors (columns 4, 5,6). Only in the case of "attitude toward Vo. Ag." versus "years of experience" is there any tendency to show a relationship of positive correlation, between teachers attitudes and the factors of age, experience, or size of school.

In column 4 of Table 3, attitude toward Vo. Ag. is paired with supervised practice opportunities of students. The negative correlation figure of -.037, although not significant, suggests that teachers with the stronger positive attitudes toward the Vo Ag program have students with more desirable supervised practice opportunities at home.

Table 3 Correlations Between Teacher Attitudes and Selected Factors

Attitudes of Teachers	(1) Age yrs.	(2) Exp. yrs.	(3) H.S. Enroll.	(4) Poor Home S.P. Opport.	(5) Teaching Practices	(6) Adoption Levels of New Concept
Toward Supervised Practice	-.288	-.244	-.266	+.138	+.098	+.205
Toward Vo Ag	-.107	+.003	-.177	-.037	+.187	+.054
Toward Vo. Ed.	-.219	-.194	-.155	+.319	+.068	-.113
Combined Score on Attitudes	-.224	-.146	-.248	+.186	+.164	+.049

It may also be noted from Table 3, column six, that attitude toward the Vo Ag program is positively correlated with adoption level of the new concept; but the attitude toward vocational education is just the opposite, being negatively correlated with acceptance of the new concept. It would seem that these teachers do not relate the values they hold for vocational agriculture to the parent field of vocational education. It suggests a lack of understanding of vocational education, a logical point in view of the lack of broadly oriented courses offerings in vocational education during past years at the one institution which provided their preservice educational program. There is a possibility that teachers might perceive any vocational education other than vocational agriculture as competition for their students.

Summary - Conslusions - Implementations

The primary purposes of this study were (1) to determine how successful were teachers in adopting a new educational concept, and (2) to discover whether certain selected factors were associated with the adoption process.

The concept selected for level-of-adoption testing was the new supervised practice concept developed in North Carolina and officially presented to teachers of agriculture at their annual conference in August, 1963. This new concept was considered important because (1) it broadened the spectrum of student learning experiences to include non-farm supervised practice activities as well as farming activities; (2) it placed a greater responsibility upon the school for provision of supervised practice opportunities; and (3) it identified supervised practice as a necessary part of each major learning area of vocational agriculture.

Considering the new concept as one entity, two-thirds of the teachers were in the "evaluation" stages of the adoption process, with half of these favoring trial of the concept. Some 17 per cent had reached one of the top two adoption levels. The conclusion is that teachers were making remarkable progress in adopting a new concept since there had been only seventeen months in which to implement an educational process - a type of change usually requiring many years.

By geographical region, there was no significant difference between the adoption levels reached on the overall concept between coastal and piedmont teachers. However the data indicated that the concept was less widely diffused in the mountains than in other areas.

Teachers were nearly unanimous in adopting the first element of the concept which required broadening the definition of supervised practice to include non-farm agricultural activities. For the second concept element, more than half of the teachers had reached or surpassed the point of favoring trials to provide supervised practice opportunities at their schools.

Least progress was made by the teachers in adopting the third aspect of the concept, which called for supervised practice opportunities to be provided in each major learning area of the vocational agriculture curriculum. Nearly a third of the teachers indicated "unawareness" of this aspect of the concept. Particular emphasis will need to be given to this element of the new concept if implementation is to be achieved.

Since teachers have generally reached the "evaluation" stages in adoption level of the concept, efforts to help teachers make further progress should focus upon those communication techniques which emphasize group discussion rather than mass media. Pilot programs which demonstrate the feasibility of the new concept should be identified or established.

This study included a list of ten variables for which coefficients of correlation with adoption of the new concept were computed. Strangly enough, only one factor (teaching practices) showed sufficient correlation (.509) with teacher level of adoption to be considered significant. This factor was composed of 34 items considered by a state committee to be "good" teaching practices in helping students develop a meaningful supervised practice program.

Although the above moderate correlation between teaching practices and adoption level of concept should not be construed as "cause and effect", it would justify attaching a considerable degree of importance to this list of practices. It would seem highly important to provide opportunities for teachers, in groups, to gain an understanding of this list of teaching practices with the aim of developing modifications and additions for individual teachers.

The fact that there was little correlation between nine of the variables studied and the adoption level reached by teachers indicates that these factors have not been serious barriers to the adoption of the concept to date. These variables were: (1) teacher age, (2) academic degree, (3) years of teaching, (4) size of high school enrollment, (5) students' opportunities for supervised practice at home, and (6-9) four measures of teacher attitude toward vocational education.

It is interesting to note the direction of the "tendencies toward correlation" which the data show. Tendencies toward positive corelation were evidenced between teacher adoption level and (1) increasing age, (2) longer teaching experiences, and (3) overall attitude score. Tendencies toward negative correlation occurred between teacher acceptance of the new concept and the factors of (1) larger schools, (2) better home opportunities for students supervised practice, and (3) attitude score relating specifically to vocational education.

This study has shown evidence of remarkable progress by teachers of agriculture in adopting a new concept. It has identified the elements of the new supervised practice concept which need further implementation. It has indicated that a number of factors have not been significant barriers to teacher adoption of the concept. It has indicated the importance of teaching practices in the area of supervised practice as an orientation point for some teacher education programs. Finally, because the teacher level of adoption was generally identified as the evaluation stage of the diffusion process, it suggests that group discussions and pilot programs will be more appropriate than mass media in fostering further implementation of new concept of supervised practice in vocational agriculture.

Appendix A

Frequency Distribution of Combined Scores of Teacher AAdoption Levels on Three Aspects of New Supervised Practice Concept.

Score Value and Title of Concept Level	Range of Combined Scores	F	Per Cent	Cumulative Frequency F	Cumulative Frequency Per Cent
7-Adopted	21	5	10.6	5	10.6
6-In Trial	18-20	3	6.4	8	17.0
5-Evaluation-Favorable	15-17	15	31.9	23	48.9
4-Evaluation-Unfavorable	12-14	15	31.9	38	80.8
3-Interested Stage	10-11	9	19.2	47	100.0
2-Awareness	----	--	----	--	----
1-Unaware	-----	--	----	--	----
Totals		47	100		

X = 14.6 S.D. = 3.1

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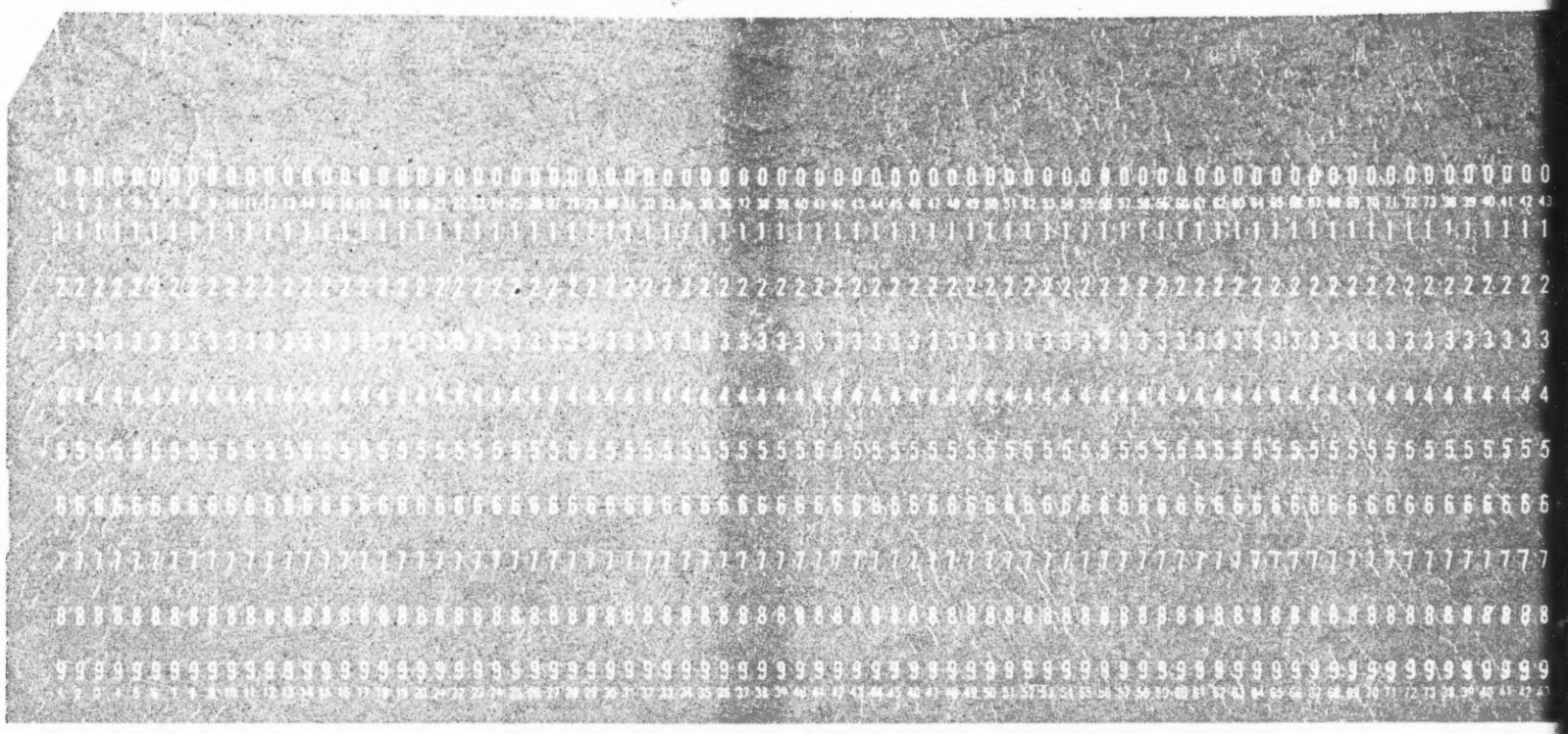
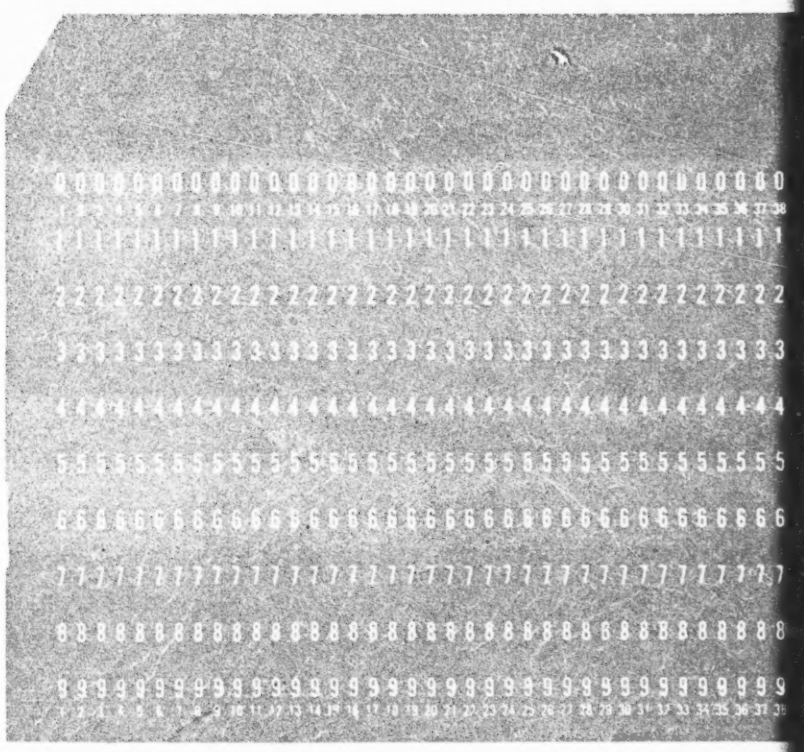
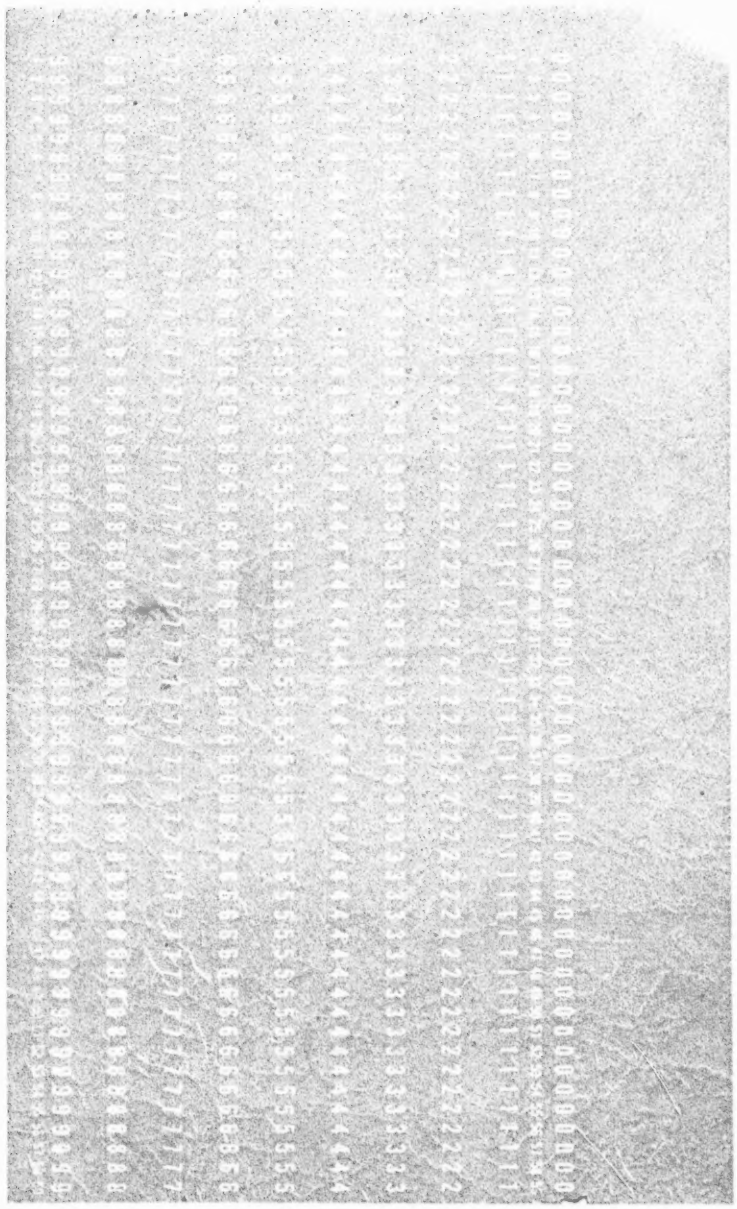


THE AGRICULTURAL STUDENT

ORVILLE E. THOMPSON
SARA F. GORDON





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THE AGRICULTURAL STUDENT

A restudy of students who enrolled as freshmen, fall, 1960, in the College of Agriculture, University of California, Davis

1964

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Department of Agricultural Education
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CHAPTER I

NEED FOR THE STUDY

A matter of common concern is the current low level of interest in the study of agriculture in college. Despite the numerous opportunities for graduates in agriculture and the rapidly increasing enrollments in college in general, enrollment in colleges of agriculture has not grown materially in recent years. The situation prompted a study of freshmen entering the College of Agriculture, University of California, Davis, in 1960. The study, conducted by Charles F. Templeton, Charles Y. Glock, and Gertrude J. Selznick, was completed at the Survey Research Center, University of California, Berkeley, and is known as a study of "The Social Determinants of Commitment to a College of Agriculture."[1] This study was not conceived in comprehensive terms; instead, it was motivated by an interest in seeing what might be learned simply by studying the entering freshmen at a single college of agriculture, the College of Agriculture at the University of California (Davis). A study limited to freshmen students at a single college of agriculture obviously faces more serious restrictions. It cannot test its findings among students who elect to enroll in other schools or who decide not to go to college at all. Nor can it deal with differences in the student bodies of different colleges of agriculture.

"Such a study can, however, deal with one important aspect of the enrollment problem by considering the question of what makes for commitment to a college of agriculture among those who have made the decision to enroll in one. The fact that commitment to a specifically agricultural aspect of Davis is not universal among the students allows us to examine both the factors which lead to agricultural commitment and the bearing which commitment has on future aspirations."[2]

The 1960 study report outlines what was learned about the commitment of students to the agricultural curriculum. The study also provides a picture of family backgrounds, decision to go to college, educational expectations former experience in agriculture, and post-college plans.

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1. Charles F. Templeton, Charles Y. Glock, and Gertrude J. Selznick, The Social Determinants of Commitment to a College of Agriculture, Berkeley, California. University of California, Survey Research Center. 1961.

2. Loc. cit.

Data were obtained by questionnaires administered during registration week to all entering freshmen in the College of Agriculture. Also available were College Entrance Examination Board scores and the first-semester grades of students. The sample included 196 students. Since girls enrolled in home economics differed considerably from the rest of the group, they were excluded from general analysis of the data. Thus, the actual sample of 134 included 29 male and 21 female preveterinary students, and 63 male and 21 females in agriculture.

A student's commitment to attending a college of agriculture was determined by his response to the following question: "When you were thinking about going to college did you seriously consider any kind of school or college division other than a college of agriculture?" Students who answered "no" (43) were considered to be more strongly committed to agriculture than those who answered "yes." Those who answered "no" were called "committed" students whereas the remainder were considered "uncommitted." Data were stratified by commitment, and the following inferences were derived: Students committed to the College of Agriculture tended: (1) to have decided to go an agricultural college while still in junior high school; (2) to have decided to study agriculture before deciding to enroll at Davis; (3) to have chosen Davis because of its reputation as a college of agriculture; and (4) to say they would not have attended college had they been unable to attend an agricultural college. Uncommitted students, on the other hand, are more likely: (1) to have made the decision to go to an agricultural college after completing the ninth grade; (2) to have first decided to enroll at Davis and then decided to enter the College of Agriculture; (3) to say that they are undecided about specific agricultural training; and (4) to say that they would have attended college even if they had been unable to enroll in a college of agriculture.

CHAPTER II

CHARACTERISTICS AND STATUS OF ORIGINAL SAMPLE

The study of "The Social Determinants of Commitment to a College of Agriculture" raised many questions in the minds of administration and staff members of the College of Agriculture. For example, did students "committed" to the study of agriculture perform differently from students called uncommitted? Was there a difference between the two groups in grades, dropout pattern, or change of major? Questions such as these prompted a restudy of this same group (now senior students) in the fall semester of 1963. The restudy was designed to achieve the following objectives:

1. To determine if commitment to a college of agriculture is related to such factors as continuation in agriculture, change of major in college, or scholastic record.
2. To determine the present status of students who entered the College of Agriculture as freshmen in 1960.
3. To compare students still enrolled in the College of Agriculture with those no longer in attendance.
4. To determine if there are student characteristics which are associated with change of major, scholarship, or withdrawal from college.

The questionnaire used in the original study was slightly modified and readministered in the fall semester of 1963 to students from the original study who were still enrolled at Davis. Usable returns were obtained from 102 students (54 males, 48 females), or 85 percent of the 120 still at Davis (64 males, 56 females). The return was 90.3 percent from the 93 students still in agriculture, and 66.6 percent from those who had transferred from agriculture to other colleges or schools. A separate questionnaire was sent to the 72 students (26 males, 46 females) of the original group who had withdrawn from Davis. Usable returns were received from 45 (12 males, 33 females), or 62.5 percent of this group. Thus in all, 147 (76 percent) of the original group participated in the restudy. Instruments used in the restudy were developed in cooperation with Dr. Charles Y. Glock, Director, Survey Research Center, Berkeley. His contribution is sincerely appreciated.

A copy of each of the instruments used appears in the appendix of this report. Selected data are reported in the text.

A. COMMITTED VS. UNCOMMITTED STUDENTS

Of the 196 students who enrolled in agriculture in 1960, three withdrew before the end of their first semester, and one died; thus the restudy sample is 192. Current status of original sample appears in Table I.

TABLE I

PRESENT STATUS OF 196*STUDENTS IN ORIGINAL STUDY IN 1960

Classification	Commitment to Agriculture				Total	
	Committed		Not Committed			
	No.	%	No.	%	No.	%
Male						
At Davis in Agriculture	22	68.8	34	58.6	56	62.2
At Davis non Agriculture	1	3.1	7	12.1	8	8.9
Withdrew	9	28.1	17	29.3	26	28.9
Total	32		58		90	
Female						
At Davis in Agriculture	16	55.2	21	28.8	37	36.2
At Davis non Agriculture	2	6.9	17	23.3	19	18.6
Withdrew	11	37.9	35	47.9	46	45.1
Total	29		73		102	
Total						
At Davis in Agriculture	38	62.3	55	42.0	93	48.4
At Davis non Agriculture	3	4.9	24	18.3	27	14.1
Withdrew	20	32.8	52	39.7	72	37.5
Total	61		131		192	

*The total is only 192 because data were incomplete for three, and one student died.

Note that a much higher proportion of men than women have remained in college. Over 71 percent of the men and 55 percent of the women were still at Davis. The men were less likely to transfer from the College of Agriculture than were the women. In fact, the proporation of women transferring to the College of Letters and Science was double that of the men. Over half of the group originally enrolled in the College of Agriculture had elected another college or school or had withdrawn by the beginning of their senior year. About three in eight of the sample had left the Davis campus before the beginning of their seventh semester. The reasons for this, and a description of this group are presented later.

Commitment to a college of agriculture (described as a relatively strong desire to pursue an agricultural interest) is validated at least partially by the

data in Table I. Note that, of the 32 males identified as committed when freshmen, 69 percent have started their seventh semester in agriculture, and only one male changed to the College of Letters and Science. Of the 58 uncommitted males, 59 percent are still studying in the College of Agriculture at Davis; 12 percent (7) have transferred to the College of Letters and Science. The contrast is even more dramatic for the females. Fifty-five percent of the committed women are still in the College of Agriculture, compared with only 29 percent of the uncommitted group. When the men and women are considered together, commitment is perhaps a good indicator whether a student will change to another college at that campus. Only 5 percent (3) of the committed students changed to the College of Letters and Science at Davis, whereas 18 percent (24) of the uncommitted changed. The proportion of withdrawals was higher for the uncommitted students than for the committed. However, this difference is primarily among the uncommitted women, 50 percent of whom withdrew. Cooperation in the restudy was better for the committed students still on campus, 92. 4 percent of whom completed the forms; the rate for the uncommitted students was 82. 3 percent. The original study observed, and the restudy confirms, that women majoring in home economics differ greatly from women enrolled in the College of Agriculture. The women in home economics, though excluded from the original report, are included in this report where appropriate.

B. ACADEMIC ACHIEVEMENT

A topic of continual interest is the comparison of mental ability and the grades of students in the different schools and colleges of a university. To obtain a basis for comparison, the academic ability and achievement scores of all the 1960 freshmen in the three colleges at Davis were summarized. The findings appear in Table II and III. As shown in Table II, men enrolled in agriculture scored higher in mathematical ability and lower in verbal ability as measured by the Scholastic Aptitude Test than the over-all campus group, but they were lower in both mathematical and verbal ability than men in the Colleges of Engineering and of Letters and Science. Women in agriculture were surpassed only by engineers in mathematical ability, and they scored highest in verbal ability. Home economics majors ranked close to women in letters and science in both mathematical and verbal ability. Men who enrolled in 1960 and who are still in agriculture are about average in mathematical ability but somewhat below average in verbal ability.

TABLE II

GRADES AND COLLEGE APTITUDE SCORES OF STUDENTS WHO ENROLLED IN 1960 AND ARE STILL AT DAVIS FALL 1963*

Classification	Grade Point Average					Aptitude Test Scores				
							Verbal		Math	
	N	High School	N	One Semes.	Six Semes.	N	Mean	S. D	Mean	S. D.
Agriculture										
Male	90	3. 31	95	2. 33	2. 56	64	490	88	545	104
Female	20	3. 54	20	2. 31	2. 56	14	539	95	591	68
Total	110	3. 34	115	2. 33	2. 56	78	499	91	553	100
Home Economics	43	3. 53	44	2. 37	2. 52	29	503	55	512	60
Engineering	48	3. 48	49	2. 61	2. 57	37	516	92	600	68
Letters & Science										
Male	98	3. 38	101	2. 53	2. 60	73	532	78	563	82
Female	167	3. 48	167	2. 42	2. 86	124	526	81	507	85
Total	265	3. 43	268	2. 46	2. 76	197	528	80	527	88
Grand Total										
Male	236	3. 39	245	2. 47	2. 58	174	513	87	564	91
Female	230	3. 49	231	2. 40	2. 77	167	523	79	511	83
Total	466	3. 44	476	2. 44	2. 67	341	519	78	542	86

*Source--Records Registrar's Office and Counseling Center.

High school grades in college-preparatory courses substantiate the generalization that girls earn better grades than boys. As college students, however, boys in agriculture do as well as girls during the first six semesters. At the end of six semesters, however, grade-point averages differ little among all students except girls in letters and science, who surpass the others by about three-tenths of a grade point.

When the grades of students in the restudy are considered, some interesting relationships are noted. As shown in Table III students who remained in agriculture, regardless of commitment, made higher grades than those who transferred or withdrew. The uncommitted students, both men and women, made better grades than the committed students. Students who withdrew from Davis had the lowest grade-point average in each of the table classifications, indicating that low grades are perhaps one of the major reasons for leaving Davis. The mean grade-point average of 2. 53 for men and 2. 54 for women in the restudy group is very close to the grade-point

average of 2.58 for all men (236) who enrolled at the University of California, Davis, in 1960.

TABLE III

COMPARISON OF GRADES AND APTITUDE SCORES OF ORIGINAL SAMPLE AND THE GROUP WHO ARE STILL ENROLLED AT THE UNIVERSITY OF CALIFORNIA, DAVIS

Classification	No.	Grades at Davis	Scholastic Aptitude Test			
			Verbal		Mathematical	
		Average	Mean	S. D. **	Mean*	S. D. **
Males Committed						
In Agriculture--Davis	20	2.48	491.9	101.4	547.5	93.4
At Davis Non Agriculture	1	2.28	529.0		476.0	
Withdrew	9	2.07	478.1	84.3	523.8	113.9
Males Uncommitted						
In Agriculture--Davis	34	2.58	507.6	76.9	563.6	82.5
At Davis Non Agriculture	7	2.48	545.7	28.3	572.4	46.7
Withdrew	17	1.98	482.4	70.4	545.0	93.0
Women Committed						
In Agriculture--Davis	16	2.44	518.2	96.1	506.6	73.3
At Davis Non Agriculture	2	2.26	521.0		467.0	
Withdrew	11	2.12	485.3	70.7	458.4	63.8
Women Uncommitted						
In Agriculture--Davis	21	2.65	524.2	77.7	526.2	81.4
At Davis Non Agriculture	17	2.52	553.2	76.2	544.6	76.8
Withdrew	35	2.38	497.4	60.6	511.0	76.6
Total Male***	62	2.53	507.2	82.1	557.7	82.5
Total Women***	56	2.54	531.3	81.4	524.1	78.2
Total for Committed***	39	2.45	504.3	94.9	524.7	86.1
Total for Uncommitted***	79	2.58	525.2	75.2	550.1	78.9
Total for Agriculture***	91	2.55	509.8	85.8	541.2	84.6
Total for Non Agriculture ***	27	2.48	548.3	62.1	543.5	73.3

* National average for entering college freshmen is 500
** Standard Deviation for entering college freshmen is 100
*** Includes only those still at Davis (64 men and 56 women)

The range in verbal ability for committed male students still enrolled in agriculture is quite broad: a mean of 491.9 and a standard deviation of 101.4. The mean verbal scores for both men and women now in agriculture are lower than the scores for those who transferred to other colleges at Davis; also the mean scores for both verbal and mathematical aptitude of men and women committed to agriculture are considerably lower than scores for the uncommitted students. Men scored lower on verbal and higher on mathematical ability

than did the women. Students who withdrew from Davis had mean verbal scores which were below the national norm of 500. Low verbal ability plus low grades appear to be associated with leaving Davis.

C. ACADEMIC PLANS

The agricultural students changed their academic status considerably since their enrollment as freshmen in 1960. The changes were within the College of Agriculture, between colleges on the campus, and in withdrawals from the institution. By the beginning of their senior year, only 48 of the 191 (25 percent) were still in their original college and major. Twenty-six had transferred from the College of Agriculture to the College of Letters and Science, while the remaining 45 still at Davis had changed their majors in agriculture at least once. Seventy-two had withdrawn from Davis, and, of these, 24 had changed their majors before leaving the campus.

TABLE IV

CHANGES OF STATUS OF STUDENTS IN ORIGINAL STUDY

Major	Original Group	Current Status				
		Original Major	College of Ag. New Majors	Changed College	Withdrew	
					No.	%*
Agriculture						
Males	59	22	14	4	19	32.2
Females	20	4	4	4	8	40.0
Pre-Veterinary						
Males	30	3	17	3	7	23.3
Females	18	1	0	11	6	33.3
Home Economics						
Females	64	18	10	4	32	50.0
Total	191	48	45	26	72	37.7

*Percent of original group.

Analysis of the change in major or college (Table IV) shows that males are more likely to continue in agriculture than are females. For example, of the 20 women who enrolled in agriculture, only 8 (40 percent) are still in agriculture; the others had either changed colleges or withdrawn. Over 60 percent of the men who originally enrolled in agriculture remain in agriculture. Of these, about two-thirds are still in their original majors. An even more dramatic example is that of the 18 women who initially enrolled in

preveterinary medicine: only one continued in this major. Of the 17 no longer majoring in preveterinary medicine, 11 transferred to the College of Letters and Science and the rest withdrew. The home economics major was also low in holding power. One-half of the group who started in this major are no longer at Davis. Only 26 (40 percent) are still in one of the fields of home economics, and two have transferred to other majors in agriculture.

The preveterinary medicine major is generally the most attractive major for entering freshmen in the College of Agriculture. However, of the 48 students who elected this field in 1960, only 4 remained at the begining of their senior year. Nine had entered the School of Veterinary Medicine. None of the 18 women starting in this major were admitted to the veterinary school. Of the eleven men who had changed, 8 elected six different agriculture majors.

D. EDUCATIONAL LEVEL OF PARENTS

Students enrolling in the University of California, Davis, do not come from the average California home. The average income per family of Davis students is over $11,500, almost double the census figure $6,726 given for the average California family income in 1960. The fathers of Davis students tend to hold jobs which are predominantly in the upper-middle and upper socio-economic classification. The educational level of these parents is also above the average for the state.

TABLE V

EDUCATIONAL LEVEL OF FATHERS OF STUDENTS ENROLLED AT DAVIS

Highest Educational Level Attained	Total Study N=195	Restudy Group N=101	Group: Davis Freshmen, 1963 Ag N=216	Group: Davis Freshmen, 1963 Non Ag N=863	California Average*
1. Eighth Grade or less	8.3%	6.9%	3.2%	3.8%	28.3%
2. Some High School	10.9	8.9	5.1	5.9	20.2
3. High School	23.2	25.7	24.1	21.1	28.3
4. Some College	18.7	18.8	21.8	22.7	13.4
5. College Graduate	22.3	21.8	25.0	27.0	
6. Graduate Work	16.6	17.8	20.8	19.5	9.8

*Statistical Abstracts of the United States, 1963.

It can be inferred from the data in Table V that Davis students come from homes where emphasis has been placed upon education. The educational level attained by mothers is omitted from Table V since it is very similar to that of the fathers with one exception--only about one third as many mothers had taken graduate work. In the 1963 freshmen group, almost half of the fathers have four-year college degrees and about one-fifth have done graduate study. In contrast, only one in ten California fathers has a four-year college degree. While over 28 percent of the Californians who are over 25 years of age have only a grade school education, only a small fraction of students enrolling at Davis have parents in this category.[3] There is little difference in parental educational level between students in agriculture and those in other majors.

E. STUDENTS WHO WITHDREW

Students who withdrew were mailed a questionnaire designed to determine their present status and reason for leaving Davis and to obtain an evaluation of their experience at Davis. Usable forms were returned by 61.1 percent (44) of the group. Obtaining current addresses of dropouts is generally a difficult and time-consuming task. This study proved to be no exception. A second questionnaire was sent to those not responding to the initial contact. Former home economics majors gave the best response.

TABLE VI

INFORMATION ON STUDENTS WHO WITHDREW FROM DAVIS

Classification	Original Group No.	No Longer At Davis					
		Total		Returned Questionnaire		Dismissed--Low Scholarship	
		No.	%*	No.	%	N	%**
Agriculture							
Male	59	19	32.2	9	47.3	6	31.6
Female	20	8	40.0	5	62.5	2	25.0
Preveterinary							
Male	30	7	23.3	3	42.8	3	42.8
Female	18	6	33.3	3	50.0	3	50.0
Home Economics	64	32	50.0	24	75.0	5	15.6
Total	191	72	37.7	44	61.1	19	26.4

*Percent of Original Group
**Percent of those no longer at Davis

[3] Statistical Abstracts of the United States, 1963.

Although the percentage of persons who cooperated in completing the questionnaire was higher for committed than for uncommitted students in the on-campus group, the reverse was true for those who had withdrawn. Of the 20 committed students who withdrew, only six (30 percent) returned the follow-up survey form, compared with a 73 percent return for the 52 uncommitted students who had left the campus. A 75 percent response was received from former home economics majors who had left Davis. Overall returns were 70 percent for women, compared to less than 50 percent for men.

Briefly, the characteristics of the students who had withdrawn from Davis are as follows:

1. Slightly less than one-third (29 percent) of the males in the original group and some less than half (45 percent) of the females are no longer enrolled at Davis. Seventy-two (37.7 percent) of the entire group are no longer enrolled at Davis.
2. Students committed to the study of agriculture (33 percent) are less likely to withdraw than uncommitted students (40 percent). The group with the highest withdrawal rate was uncommitted females (48 percent).
3. Students who withdrew had lower grade-point averages. Also, the average score on the verbal and the mathematics sections of the Scholastic Aptitude Test was generally lower for those who withdrew than for those who are still enrolled at Davis.
4. Home economics majors had the highest withdrawal rate (50 percent). Next was agriculture, with 34 percent. The best retention record was made by preveterinary majors, 73 percent of whom are still enrolled at Davis.

The low grade-point average for dropouts suggests that many who left college were actually dismissed because of low grades. This inference is only partially borne out in fact. In the home economics group, only 5 of the 24 who left were dismissed for poor scholarship. Actually, only about one-fourth of all the students who withdrew were dismissed for poor scholarship.

One reason why the actual withdrawal for scholastic reasons appears lower than the usual figure quoted for academic failure is that many of the students were readmitted on probation. In this sample, in fact, 14 were dismissed and readmitted. Five were readmitted more than once.

Once a student has completed several semesters he usually can be

expected to overcome scholastic problems. With this group of students this was not the case. The number of dismissals was greatest at the end of the second semester, when 13 students (6 men, 7 women) failed to achieve the minimum grade-point average. There were three dismissals at the end of the third semester, seven during the fourth semester, three in the fifth semester, and an increase to nine (7 men, 2 women) at the end of the junior year.

There are many and varied reasons why students discontinue their education at a particular institution. Far too often the conclusion is that a student has terminated his higher education when he fails to return to the college he entered as a freshman. Eleven of the students who did not return to Davis stated that their major reason for leaving was that the program they desired was not available at Davis. Another twelve said they felt the program of studies at another institution fitted their needs better. Marriage and children interrupted the plans of ten students. Low grades received, or a fear of low grades, was a contributing factor for fifteen of the withdrawals. Some gave a combination of reasons for leaving Davis.

A look at the current status of this group of 45 gives further evidence that withdrawal from Davis did not mean termination of formal education. Thirty-three of the group had enrolled at other institutions of higher education. Nine had chosen a state college, eight were at other campuses of the University of California, and the remaining sixteen were in private colleges or junior colleges. Ten of those in college were continuing in agriculture, and fifteen had changed to letters and science. Seven of the twelve not in school when they received the survey form in September indicated they planned to re-enroll in college at a later date, so, possibly, 40 of the 45 respondents may eventually earn college degrees.

Less than half of those who left Davis held full-time employment. Six had been employed as laborers, and the remaining 15 had been employed as low white collar workers. One-third of the group was married.

What would have prevented these students from leaving Davis? Answers to this question mirrored the reasons for leaving Davis. Only two mentioned that receiving additional financial support would have enabled them to remain at Davis.

In brief, at least for the 45 of the 72 who responded, termination of school at Davis did not mean the end of higher education. None of these

appeared to be particularly bitter about their experience at Davis. Some were dissatisfied with their academic advisors. How much this contributed to low scholarship or disappointment with their majors is an unanswered question. The students felt that there was nothing the university could do that would have kept them at Davis.

CHAPTER III

THREE YEARS LATER--A COMPARISON OF FINDINGS

The social science researcher and the person using research results are always confronted with the question of the reliability of responses to a survey. Did the respondent interpret the question in the manner intended by the researcher? Did the respondent record his real feelings about the question, or did he give an untrue response for some reason? Pretesting the instrument and having qualified reviewers study each question helps prevent some of these distorting elements.

Another check on the reliability of the instrument used in this study was made possible by the opportunity to readminister many of the same items to the same group three years later. The correlation between the first responses and the restudy responses was very high on certain items. Correlation coefficients between original and restudy scores were as high as .99, with most coefficients above .90. In items calling for factual information which shouldn't change over the three-year period the high correlation shows that the students were consistent in their responses. It is reasonable to infer, then, that the students had interpreted the questions the same on the second occasion as on the first. It is doubtful if many students could recall individual items from the administration, for few of the students even remembered encountering the questionnaire in the original study. This is understandable, since it had been administered during orientation week, when several other tests were given. The high correlations between item responses in the original study and the restudy for questions dealing with feelings and opinions undoubtedly means that students felt the same or nearly the same about these as they had three years previously, indicating relatively stable feelings.

The following data compare the responses of the 102 students in residence at Davis who completed the restudy questionnaire with their responses to the original questionnaire items. The restudy instrument contained most of the items in the original, plus a few new items added to obtain the reactions of students to their experience at Davis.

A. PERSONAL LIFE OF STUDENTS

Does enrollment at a certain school become a family tradition? The data show that this might be happening at Davis. Originally, six students had brothers, and four had sisters, enrolled at this institution. Three years later,

12 had brothers and 9 had sisters in residence. Eleven of the twelve who had brothers here were men enrolled in agriculture. Of the nine with sisters here, four were men. All but one of these nine were enrolled in agriculture. These data suggest that males may be more influential in bringing siblings to this institution than are women.

Freshmen are not expected to give more than a reasonable estimate of the income sources for their college education. Anticipation of possible income from scholarships, part-time work, or summer employment is difficult. Yet the original estimates of the students in the study proved to be quite accurate. Students did, however, tend to overestimate the amount they would receive from their parents and underestimate their income from part-time employment. For example, 42 indicated they didn't expect to work while in college. Actually, by the third year all but 24 had been employed part time. Seven indicated they had made all or nearly all their expenses by working part time, although none originally believed that they could or would earn that much by working. Only nine reported no income from summer jobs. Thus, over 90 percent of this group of seniors in agriculture earned at least part of the money they spent in college. As might be expected, a higher proportion of men than women worked part time or had summer jobs, and more women than men received all or nearly all of their college expense money from their parents. Income from scholarships waspracticallyidentical for the men and women students.

Family income, though not a conclusive measure of socio-economic level of the family, does show some interesting information about the family. Since students reported family income not by actual figures but by indicating income category, precise averages are not available. However, mean income estimates were possible. Interestingly enough, estimated average incomes rose from $9,850 in the original study to $11,600 in the restudy. The increase seems reasonable because of inflation and the passage of time. These figures compare favorably with an estimated mean income of $12,336 for the parents of freshman men enrolling in agriculture at Davis in the fall semester of 1963.[4] The latter figure does not include women in home economics enrolled in the College of Agriculture. Their parents had an average income of $11,379, some less than for the other freshmen in agriculture. The estimated mean income for all students enrolling as freshmen at the University

[4]Unpublished data: Study by Mary C. Regan, University of California, Davis 1963.

of California, Davis, fall semester 1963, was $11,974. All the above-quoted mean incomes are considerably above the state average ($6,726) in the 1960 census. Thus, Davis appears to attract students from the more affluent families.

A look at political affiliations adds more information about the sample. A general trend over the three years has been toward conservatism in political affiliations. The percentage who consider themselves Democrats (21 percent) didn't change, yet the number of Conservative Democrats increased from three to eight percent, with a corresponding decrease in Liberal Democrats. The Republicans, who accounted for 46 percent of the original group, increased to 50 percent of the same group three years later. The conservative group of Republicans increased from 14 to 24 percent of the total. The slight decrease of 5 percent in the independents was offset by the increased number of conservatives. The study of 1963 freshmen in agriculture at Davis shows that 29 percent indicated their parents were Democrats and 49 percent said their parents were Republicans.[5] Since children tend to accept the political affiliations of their parents, there is no great difference in the politics of the restudy sample and the entering freshmen this year. Likewise there was little difference in the political preference of majors in agriculture and the other freshmen at Davis in 1963.

Over half (56 percent) of the voters in California are registered Democrats, compared with 41 percent registered Republicans.[6] Quite obviously, neither the student population in the restudy nor the freshmen group in 1963 are representative of the prevailing political situation in California.

How the students feel about religion adds another dimension to knowledge of them as individuals. These data, while limited to religious preference and frequency of attendance at religious services, do suggest changes in the student's attitude toward religion during a three-year period of college life. Changes in religious preference occurred primarily in the Protestant group, where 70 originally stated a Protestant preference. Three years later 58 of this group professed to be Protestant. Those who no longer, considered themselves Protestants gave no religious preference. The other religious groups remained relatively constant.

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[5] Loc. cit.

[6] Source: Registered Voters, California, 1963; unpublished State report by Secretary of State.

Frequency of church attendance decreased during this period. The students attending church frequently (at least twice a month) decreased from 59 percent of the sample when freshmen to 37 percent as seniors. Corresponding increases were noted in the "infrequent" and "never attend" categories. Whether this is a result of change in interest and beliefs, a product of competition for time, inconvenience of worship facilities, or release from parental domination can only be inferred.

The home situation of the restudy group was normal by California standards, for one in seven came from a home which did not contain both parents. This ratio is comparable to findings by Thompson which show that one in eight high school students comes from an atypical home.[7] Nationally, one in seven families is minus a mother, father, or both.

Marriage among college students is becoming more prevalent. As freshmen, only one of the students was married, and one other was engaged. Three years later, eleven were engaged and nine married. Three of the married students had children. The twenty married or engaged-to-be-married students included ten men and ten women.

B. ACADEMIC INTERESTS

While not all students will have definite vocational goals, most have established rather well defined educational milestones for themselves. Are these goals stable or do they change during the college years? Both stability and change are evidenced in Table VII.

Certainly the original group was vocationally oriented, and the importance of this goal did not diminish during the first years in college. As shown in the restudy, the men placed more importance on preparation for a career then did the women. This goal is obviously not as important to the entering freshmen at Davis in the fall of 1963. The overall percentage of 64.6 for this 1963 freshmen group is the highest for any of the goals but is substantially lower than the 81.5 percent for the 85 freshmen men in agriculture in 1963. Entering women in agriculture rank about midway between the all-student percentage and that of men in agriculture.

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[7] O. E. Thompson, "What Is the High School Student of Today Like?"; Journal of Secondary Education, Vol. 36, No. 4; April, 1961.

TABLE VII

COMPARISON OF EDUCATIONAL GOALS* OF STUDENTS IN ORIGINAL GROUP WITH FRESHMEN ENTERING DAVIS, 1963

Educational Goals	Original Group N=188	Restudy Group			Davis Freshmen 1963*		
		Total N=102	Male N=54	Female N=48	Total N=1092	Ag. Male N=85	Ag. Female N=57
1. Learn techniques for career	76.6%	73.5%	81.5%	64.6%	64.6%	81.2%	71.9%
2. Develop social abilities	25.0	29.4	33.3	25.0	3.6	1.2	1.8
3. Obtain general education	54.3	76.5	72.2	81.3	44.2	40.0	40.3
4. Obtain knowledge and interest in community and world affairs	10.6	9.8	1.9	18.8	13.1	14.1	15.8
5. Develop moral capacities, ethical standards and values	14.9	3.9	3.7	4.2	23.2	21.2	22.8
6. Prepare for a happy marriage	16.5	6.9	7.4	6.3	15.9	10.6	10.5
7. Develop ability to meet different kinds of people	---	---	---	---	34.3	25.9	29.8

*Source - Unpublished data - Study by Dr. Mary C. Regan, Davis, California, University of California.

The single educational goal with the most significant change is general education. Both the original group and current Davis freshmen place only a moderate degree of importance upon obtaining a general education, but as seniors the restudy group rated a general education much higher. This suggests that interest in general education may be related to such things as maturity and experience in higher education. The senior men in agriculture showed a surprisingly low interest in community and world affairs. Likewise, all participants in the restudy group gave less importance to the development of moral capacity, ethical standards, and values. The reduction in importance of preparation for marriage may be accounted for by the eight who married

during the three intervening years. While there is a change in the degree of importance which the students in the study placed upon certain educational goals over a three-year period, several goals remained relatively constant. There is general agreement in educational goals between the 1963 freshmen in agriculture and the total Davis freshmen group, with the exception cited.

TABLE VIII

CHANGE IN IMPORTANCE OF OCCUPATIONAL VALUES DURING COLLEGE

	Percent - Very Important	
	Original Group	Restudy Group
1. Creativity and originality	43.6%	60%
2. Stable and secure future	65.7	57.6
3. Opportunity to help others	51.9	54.0
4. Opportunity to use special talents	79.4	84.0
5. Chance to earn high salary	14.9	24.0
6. Be own boss	39.2	45.0
7. Obtain position of prestige	36.3	30.3
8. Association with friendly people	60.4	56.0

A means used to identify occupational values is to ask a student to rate the importance of certain job characteristics in the selection of a vocation. Students in the original study placed high emphasis upon obtaining a job where they could use special talents, abilities, and aptitudes, and where there was a stable and secure future. The portion who took part in the restudy also ranked these two values as highest in importance. In general there was no dramatic change in the relative importance placed upon occupational values, but the opportunity to be creative and show originality replaced security for second place in importance. Among the seniors the opportunity to use special talents and abilities was first by far, followed by four values ranked equally in importance: opportunity to show creativity, to be secure, to work in a friendly environment, and to help other people.

In most instances the assessment of these values by the restudy group

was about the same for men and women, for agriculture and nonagriculture majors, and for committed and uncommitted students. In certain instances, however, differences did occur. For example, 69 percent of the women (compared to 31 percent of the men) rated opportunity to help others as very important. Conversely, 32 percent more men than women indicated that receiving a high salary was very important. Also, opportunity to be one's own boss was far more important to men than to women, to agriculture majors than to nonagriculture majors, and to committed than to uncommitted students. Desire to be one's own boss could well be a basic characteristic of men who are committed to studying agriculture. The least important occupational value in both studies was the opportunity to earn a great deal of money, though its importance did increase during the three-year period. As the time of employment approaches, high earnings may continue to become more important.

At the time of the original study, 40 students indicated that they had no idea what salary they expected to be earning five years after college graduation. Three years later, only 18 could not give an estimate. Also, the mean of the expected salary five years after college increased substantially.

The Davis student's self image was assessed by asking each student to rate himself on seventeen items covering a wide range of interests and abilities. The items ranged from ability to work with hands to an interest in serious literature. The student rated himself on a seven-point scale ranging from far below average to far above average. The proportions of students who rated themselves above average are recorded in Table IX. Responses are shown for the entire original sample of 192, plus two scores for the 102 who cooperated in the restudy (including their responses as freshmen and their responses three years later, as seniors). A comparison of the percentages in column one with those in column two gives a picture of the ninety who had either withdrawn from Davis or did not cooperate in the restudy. Small differences in students' assessments of their abilities and interests occur. The most obvious is that the restudy group had less interest in making a high income. The original study showed that, in general, the respondents rated themselves well above the average of their peers. Their ratings of themselves when restudied show a general downward trend on all but four items. Possible causes for this might be that the level of their reference group had increased in general interest and abilities or that they had become more realistic about their own abilities. The restudy group's

continued high interest and ability to cope with practical problems and readiness to assume responsibility are perhaps characteristic of students interested in agriculture, an area of work providing opportunities to assume responsibility and solve practical problems. Here again, interest in money doesn't receive a very high priority.

TABLE IX

COMPARISON OF SELF-RATINGS ON CERTAIN INTERESTS AND ABILITIES

Interests and Abilities	Proportion Saying They Were More Able Or Interested than Average College Student		
	Original Group N=192	Restudy Group	
		Original N=102	Restudy N=102
1. Interest in Science	85%	75%	65%
2. Readiness to Assume Responsibility	82	77	75
3. Ability to Cope with Practical Problems	81	82	82
4. Ability to Handle Animals	79	72	59
5. Ability to Organize and Plan	70	70	74
6. Ability to Get Along with People	70	70	66
7. Desire to Help Other People	69	75	69
8. Interest in Politics and World Affairs	63	56	33
9. Interest in Sports	60	51	34
10. Interest in Reading Serious Literature	60	55	35
11. Ability to Cope with Abstract Theories	60	56	39
12. Ability to Work with Hands	55	57	69
13. Interest in Classical Music	54	55	51
14. Concern with Community Problems	44	43	30
15. Interest in Making a High Income	44	32	31
16. Interest in Machinery	43	36	38
17. Interest in Popular Music	40	41	43

C. SOCIAL FACTORS

One of the most commonly used indices of socio-economic level of the family is the occupation of the father. Students were asked to record what their fathers did for a living. Responses were then classified into occupational groups (Table X) and into fields of work (Table XI). These tables also contain the occupational choices of the students, categorized into occupational groupings and fields of work.

TABLE X

COMPARISON OF FATHERS' OCCUPATIONS AND OCCUPATIONAL PLANS OF STUDENTS IN THE RESTUDY GROUP

Occupational Group*	Fathers' Occupations			Student Choice		
	Total N=102	Male N=54	Female N=48	Total N=90	Male N=47	Female N=43
1. Manual: semi & unskilled	6.9%	7.4%	6.4%	0%	0%	0%
2. Manual: skilled	2.0	1.9	2.1	0	0	0
3. Lower white collar	5.9	3.7	8.5	5.6	2.1	9.3
4. Upper white collar	25.5	18.5	34.0	53.3	34.0	74.4
5. Self-employed artisan	3.0	3.7	2.1	0	0	0
6. Self-employed merchant	12.7	11.1	14.9	0	0	0
7. Self-employed farmer	21.6	35.2	6.4	13.3	23.4	2.3
8. Professional: salaried	8.8	3.7	14.9	10.0	14.9	4.7
9. Professional: self-employed	9.8	11.1	8.5	16.7	23.4	9.3
10. Executive	2.9	3.7	2.1	1.1	2.1	0

*Source of Grouping - T. B. Edwards and A. B. Wilson, "A Study of Some Social and Psychological Factors Influencing Educational Achievement," Berkeley, California University of California, 1961.

As shown before by income, home situation, and parental education, the father's occupation also illustrates that Davis students do not have typical California backgrounds. Only about nine percent had fathers who worked in semiskilled and skilled trades, compared with 50 percent of the national labor force in these categories in 1961.[8] Lower white-collar workers

[8] U. S. Department of Labor, 1961.

account for one-fourth of the nation's labor force but only six percent of the restudy sample. Eleven percent of the labor force is professional workers, and 22 percent of the restudy students' fathers were professional. The Davis sample should and does contain a disproportionately large group of farmers: self-employed farmers account for only six percent of the national labor force but make up about 22 percent of the restudy sample. Most of the students whose fathers are farmers are male. Females tended to have fathers who were in the upper white-collar occupational group and the salaried professional group.

The profile of the occupational choices of students is considerably different from that of the fathers. Over half the entire group and two-thirds of the girls plan careers in the upper white-collar positions, which include occupations such as teachers, designers, dieticians, social workers, professional writers, and forest rangers. The second-most-chosen category, self-employed professionals, undoubtedly comprises students aspiring to be veterinarians. Students who chose farming were principally male. Thus, actual farming attracts only about one-fourth of those students who do college work in agriculture.

TABLE XI

COMPARISON OF GENERAL FIELDS OF FATHERS' WORK WITH THOSE SELECTED BY STUDENTS IN THE RESTUDY GROUP

Field of Work	Father's Occupation			Student Selection		
	Total N=101	Male N=54	Female N=47	Total N=90	Male N=47	Female N=43
1. Education	8.9%	7.4%	10.6%	25.6%	6.4%	46.5%
2. Research	1.9	0	4.3	13.3	10.6	16.3
3. Management	29.7	20.4	40.4	26.7	31.9	20.9
4. Production	37.6	53.7	19.1	14.4	25.5	2.3
5. Distribution	9.9	5.6	14.9	1.1	0	2.3
6. Professional	11.9	12.9	10.6	18.9	25.5	11.6

Categorizing specific occupations into fields of work gives further information on fathers' occupations and students' occupational choice. Occupations of the fathers centered in the fields of management and production. Fathers of male students were predominantly in the production aspects of business, while fathers of the females were more likely to be concerned with

management. The management field was chosen frequently by both men and women students. For women, however, the field of education was the most popular. Research ranked high as a chosen field although the fathers were not involved in research. Work in distribution held little appeal for the students, a fact confirmed by college placement officers, who report that college graduates are generally not interested in positions involving selling.

The age of decision to go to college and the time when a student elects a particular college are of concern to individuals in vocational guidance and to those developing career materials for youth. Such information usually is obtained by asking college students to recall when they had made certain decisions. Naturally, this method is open to criticism since the accuracy of recall is questionable. However, data in Table XII tend to show accuracy in recalling when college decisions were made, for responses to the original questionnaire show a high degree of consistency with responses to the restudy questionnaire. It is doubtful if this consistency could have happened by chance alone. The student apparently gave a true response originally. Students undoubtedly did not remember their original responses, for, as stated previously, few remembered even seeing the survey form in 1960.

TABLE XII

COMPARISON OF TIME WHEN STUDENT FIRST GAVE SERIOUS THOUGHT ABOUT GOING TO COLLEGE AND WHEN DECISION TO ENROLL AT DAVIS WAS ACTUALLY MADE

Time of Decision	Decided to go College		Decided to Come to Davis			
	Original Group	Restudy Group	Original Group	Re-study Group	Davis Freshmen, 1963*	
					Ag only	All others
	N=99	N=102	N=102	N=102	N=141	N=875
1. Always Planned to go to College	79.8%	81.4%	---	---	---	---
2. In Junior High School	11.1	4.9	19.6%	13.7%	30.5%	6.5%
3. During Freshmen Year in High School	4.0	6.9	12.7	11.8	7.8	3.3
4. During Sophomore year in High School	4.0	2.9	6.9	3.9	8.5	4.6
5. During Junior Year in High School	0.0	1.9	21.6	24.5	18.4	16.2
6. During Senior Year in High School	1.0	0.0	32.4	36.3	25.5	60.3
7. After Graduation from High School	0.0	1.9	6.9	9.8	9.2	8.9

*Unpublished data - Study by Mary C. Regan - Davis, California, University of California, 1963.

The decision of whether or not to go to college is undoubtedly made quite early in life, for over three-fourths of this group said they had always planned to go to college. The choice of college, however, is made a number of years later. One-fourth to one-third of the study group had decided upon Davis during the junior high school years. The next-most-common time of decision was during or following the senior year in high school. The study of the 1963 Davis freshmen dramatically illustrates the difference in time of decision to come to Davis. Only 9.8 percent of the 875 nonagriculture students had decided upon Davis during the junior high school years, compared with 38.3 percent for those in agriculture. Most of the nonagriculture majors (69.2 percent) said they decided on Davis after the junior year in high school, whereas only one-third of the majors in agriculture had not made their decision by this time. Girls enrolled in agriculture other than home economics in the fall of 1963 made the decision to come to Davis even earlier than did the entire group in agriculture. Over 45 percent of these 57 girls indicated that they had decided upon coming to Davis while in junior high school. Thirty-one of these girls were majors in preveterinary medicine. Since Davis is the only place in California where this program of study is available, choice of this field may have prompted the early decision.

In addition to a formal education, a conspicuous offering of college is the opportunity for students to participate in recreational, social, and cultural activities.

TABLE XIII

CHANGE IN INTERESTS IN THE NON-FORMAL EDUCATIONAL ASPECTS OF COLLEGE LIFE

Interests and Opportunities	Original Group N=102	Restudy Group N=102
1. An Interest in College Athletics	12.7%	22.5%
2. Chance to be On My Own Away From Home	57.8	54.9
3. Participate in College Social Life	28.4	50.0
4. Opportunity to decide what I Want From Life Before Marriage	44.1	65.7
5. Participate in Extra-Curricular Activities	23.5	35.3
6. Chance to Meet Prospective Husband or Wife	24.5	39.2
7. Chance to Enjoy Life Before Settling Down	17.6	30.4

important to the nonagriculture group. For the student interested in agriculture, the greatest drawing power of Davis is the curriculum offered. Students in agriculture are undoubtedly more occupationally oriented than students in the other colleges. That Davis is a campus of the University of California looms most important to the nonagriculture student. The long history of research at the College of Agriculture and its national reputation are recognized by students. The colleges of Letters and Science and Engineering are relatively new and have not had an opportunity to develop a broadly recognized reputation.

Another major difference between students who elect agriculture and those who enroll in the College of Letters and Science at Davis is the perception that students in agriculture have of the difference between agriculture students and those in the College of Letters and Science. Table XV compares these differences as students perceived them in 1960 and in 1963. What they expected these differences would be were surprisingly similar to what they actually found in three years of college experience. Interestingly enough, the agriculture students recognized themselves to be more task-centered than other students when enrolling, and confirmed this in the retest. Lack of interest in classical music and literature by agriculture students proved even stronger than they had anticipated. The 21 in the original study who said interest in music and literature was more true of agriculture students than for the others had all changed their minds three years later. The agriculture student in general didn't prove to be quite as liberal or tolerant as anticipated. The students in agriculture obviously think students in letters and science are more interested than they are in getting high grades, hearing classical music, reading good literature, studying national and world affairs, and having a good time in college. It would be of real interest to know how the students in the College of Letters and Science would compare themselves with students in agriculture in these characteristics.

D. FUTURE PLANS

Graduation was undoubtedly prominent in the plans of the seniors in the restudy group. Table XVI shows how the seniors' confidence in graduation compared with that of the 1963 entering freshmen in agriculture.

TABLE XV

COMPARISON OF RATINGS PLACED UPON CERTAIN PERSONAL CHARACTERISTICS OF THE STUDENTS ENROLLED IN THE COLLEGE OF AGRICULTURE AND THE COLLEGE OF LETTERS AND SCIENCE

Personal Characteristics	More True of Students Enrolled In							
	College of Agriculture		College of Letters & Science		No Difference		Can't Say	
	Original N=102	Restudy N=102	Original N=102	Restudy N=102	Original N 102	Restudy N=102	Original N=102	Restudy N=102
1. Know What They Want in Life	57%	66%	1%	1%	19%	21%	23%	13%
2. Friendly and Helpful	39	42	1	3	51	52	9	3
3. Tolerant to People of Different Heritage	33	26	6	12	38	41	22	21
4. Interest in Classical Music and Literature	21	--	40	64	24	25	15	10
5. Willingness to Accept New & Unusual Ideas	19	9	9	20	55	53	17	18
6. Seriously Concerned With State & World Affairs	7	2	29	39	50	45	14	14
7. Interest in High Grades	3	4	42	28	39	56	16	12
8. Interest in Good Time in College	3	3	18	25	55	64	23	7
9. Interest in Making Much Money	1	5	31	34	33	43	34	20

TABLE XVI

LIKELIHOOD OF GRADUATION FROM COLLEGE

Likelihood of Graduation	Study Group			Davis Freshmen, 1963		
	Total	Original	Restudy	Agriculture	Home Econ	All Others
	N=195	N=101	N=100	N=138	N=74	N=868
Extremely Likely	56.4%	60.4%	86.0%	25.4%	29.7%	32.8%
Quite Likely	31.3	30.7	10.1	55.1	51.4	40.9
Fairly Likely	11.3	7.9	4.0	17.4	12.2	20.4
Not Likely	---	1.0	---	2.2	6.8	5.9

The percentage of the original study group (n=195) who felt it was extremely likely they would graduate differs from the proportion of the 1963 entering freshmen who felt the same. It remains unanswered why there is such a drop in the proportion who feel graduation is extremely likely.

The importance of college graduation is being emphasized much more in our society today than ever before. Certainly, the number of students who feel that graduation is extremely important is larger than those who feel it is extremely likely they will graduate (see Tables XVI and XVII).

TABLE XVII

IMPORTANCE OF GRADUATION FROM COLLEGE

Degree of Importance	Study Group		Davis Freshmen, 1963		
	Original	Restudy	Agriculture	Home Econ.	All Others
	N=102	N=99	N=141	N=75	N=873
Extremely Important	72.5%	78.8%	70.9%	42.7%	64.1%
Quite Important	17.6	13.1	25.5	39.9	28.1
Fairly Important	9.8	8.1	2.1	14.7	6.3
Not Important	0.0	0.0	1.4	2.7	1.5

The degree of importance differs among students in different majors. Home economics majors in the 1963 freshmen study did not think graduation was nearly as important as did agriculture majors and nonagriculture majors. Twenty-five percent of the home economics majors were either going steady or were engaged, which may be one of the reasons they thought graduation was not particularly important.

The continuation of education beyond the baccalaureate degree is becoming more common and more necessary. In the restudy group, about one-third definitely plan to do graduate work and another one-fourth feel they probably will do graduate study. Another one-fourth are quite sure they will not attempt graduate school. Again, only minor differences occur between students' plans as entering freshmen and as seniors. The group that was quite definite about graduate school plans tended to be men enrolled in and committed to the study of agriculture.

Of the 51 students who had decided where they wished to enroll in graduate school, 29 chose Davis. The group planning to stay at Davis includes about two-thirds of the men and one-third of the women who plan for advanced study. These students are enrolled in agriculture and home economics.

The study of 1963 freshmen at Davis shows that aspirations for graduate work have increased over 1960, when about 51 percent of the freshmen in agriculture planned for graduate work. This percentage increased in 1963 to about 64 percent for all in agriculture, with over 80 percent and 53 percent, respectively, for men in agriculture and for home economics majors. When the home economics group was excluded, there was little difference between men and women in agriculture in graduate-school intentions.

CHAPTER IV

EVALUATION OF EXPERIENCE AT DAVIS

A. STUDENTS STILL AT DAVIS

Student evaluation of a learning experience in which they are actively involved has recognized weaknesses. An evaluation several years after graduation would certainly be preferable, but this is seldom practical or possible. Although some student comments and criticisms of a system must be discounted, they cannot be completely ignored. These comments should be evaluated and , if found valid, should prompt investigation. In this study, students were to comment specifically on the worthwhileness of their courses, quality of instruction, general theoretical-practical emphasis of their courses, rapport with advisors, campus social life, and administration-student relations.

Students, in general, felt their courses to be very worthwhile for the most part. Of the 91 responding to the item, 71 were satisfied whereas the remainder were concerned with the actual value of some of their courses. Reaction to specific courses was not solicited, nor was this information volunteered.

Students were not as complimentary about instructors as they were about courses. A number of quite strong comments were made about instructors in general, without identification of individuals. Sixty-one (two-thirds) of those responding felt that Davis instructors were generally good; the remaining one-third were quite critical. Some commented that Davis instructors were better researchers than teachers; some condemned the use of teaching assistants. Some criticized instructors in the College of Letter and Science and some limited their criticism to instructors in agriculture. Although these are merely opinions, the expressed dissatisfaction with instructors should not be ignored and is sufficient evidence to justify administrative concern.

A comment often heard at Davis that courses are too theoretical to be of practical value is only partially borne out by this study. Over half (52 of the 95 respondents) indicated that they felt the balance between theoretical and practical was about right. One-third said their courses were, in general, too theoretical. A few qualified their statements by saying that some courses were too theoretical while other courses were too practical. Surprisingly

enough, three believed most of their courses were too practical.

Faculty advisors are the connecting link between the student and his university and as such are very important in the academic affairs of students. The study shows obvious differences among faculty members as advisors. Quite a number (50 percent) of the students responding indicated that their advisors were excellent. Another 20 percent rated their advisors as only fair. The remaining 30 percent considered their advisors as being less than satisfactory; their comments were, for example, "I couldn't communicate with my advisor," "he was seldom available," and "my advisor wasn't familiar with the requirements in my major."

Both campus social life and administration-student relations received general praise by the senior students in agriculture. A frequent comment was that social activities were available in abundance. Many also remarked that they believed that administration-student relations were far better here than in most institutions.

B. STUDENTS NO LONGER AT DAVIS

The students in the original study group who were no longer at Davis number 72. Some addresses were difficult to obtain, but 45 responses were eventually received. One student was deceased, others were in the military forces, and some had apparently moved without leaving forwarding addresses. Although the return was below expectations, the summaries do support some inferences.

In rating courses, 10 of the 45 respondents questioned the worthwhileness of some of the courses they took, almost exactly the same response given by the portion of the sample still at Davis. Sixty percent rated the instruction as good, compared with a 61 percent favorable reaction from the Davis group. The proportion of the withdrawals group who said the balance between theoretical and practical was about right was 48 percent, compared with 57 percent for those still at Davis. Assessment of rapport between advisors and students was likewise quite similar for the two groups. Each group indicated that about half of their advisors were excellent. About 30 percent of each group rated their advisors as poor, unfriendly and uncommunicative, and often unavailable. This group also had high praise for the social life and the student-administration relations at Davis. This study fails to demonstrate that the worthwhileness of courses, quality of instruction, or course emphasis contributes to leaving Davis. Rapport with advisors is on

a more personal basis. Consequently, the influence of the advisor upon withdrawal can only be inferred.

CHAPTER V

SUMMARY

The findings which follow are drawn from four studies. The original study of freshmen in agriculture in 1960 serves as a base. Restudy of those from the original group who were still at Davis in the fall of 1963 constitutes the second study. A survey of the students in the original study who were no longer at Davis in the fall of 1963 is the third study. A study by Regan of all freshmen enrolled at Davis in the fall semester of 1963 constitutes the fourth study referred to in this publication. Consequently these findings are limited to the above-mentioned groups.

1. Students committed to the study of agriculture were different from uncommitted students in the following ways:
   a. Both committed men and committed women were more likely to remain in agriculture than were the uncommitted.
   b. Committed students were less likely to transfer to the College of Letters and Science at Davis; about five percent of the committed and 18 percent of the uncommitted students transferred colleges.
   c. Withdrawals from Davis were more frequent among the uncommitted students and were proportionately higher for women.
   d. The proportion of usable questionnaires was higher for committed students than for uncommitted students.
   e. Of the 120 students still at Davis, the uncommitted had a higher verbal and mathematical ability than committed students.
   f. In the restudy group, committed students made lower grades than did uncommitted students.
2. Entering freshmen enrolling in agriculture in 1960 were lower than the national average and lower than the other freshmen in verbal ability as measured by the Scholastic Aptitude Test, and they were higher than the total group and the national norm in mathematical ability as measured by the same test.
3. Grades earned by men in agriculture and women in home economics during their first three years at Davis compared very favorably with grades earned by men in the Colleges of Engineering and Letters and Science, but they were lower than grades earned by women in letters and science.
4. The restudy group of agriculture students made a better grade-point

average than did nonagriculture majors still at Davis. However, the nonagriculture group surpassed the agriculture group in both verbal and mathematical ability.

5. Men and women in agriculture at Davis are very similar in academic achievement.

6. Withdrawals from Davis were related to ability as measured by the Scholastic Aptitude Test and to achievement as measured by grade-point average. Students who left this campus tended to have low grades and to be below the average in verbal and mathematical ability.

7. There was much mobility among majors and between colleges in this group. Only one-fourth of the original group was still in the college and the major in which they initially enrolled. The group with the least change in major was men in agriculture.

8. The students with the highest withdrawal rate were women in home economics, with 50 percent leaving.

9. Girls originally in the preveterinary major had the highest change-of-college ratio. Of eighteen in the original group, only one remained in agriculture; eleven transferred to letters and science, and six withdrew.

10. Students who were initially majors in preveterinary medicine had a lower withdrawal rate than students in agriculture or home economics.

11. The educational level of fathers of students in the study group was very similar to that of the fathers of all freshmen at Davis in 1963. Little or no difference was noted in the educational level of parents of majors in agriculture and of those in other majors.

12. Students in the study group of 1960 and those in the 1963 freshmen class came from home backgrounds atypical to California. Their family income was higher, their fathers had occupations with higher-than-average status, and their fathers were better educated than the state average. Likewise, they came predominately from families with Republican political background although the state had more registered Democrats than Republicans.

13. Withdrawal rate for the study group was below the usual figure of fifty percent often quoted for the University. Actually, only 37 percent were gone by the beginning of their senior year. Several of those who had withdrawn indicated that they intended to re-enroll at Davis.

14. Dismissal from Davis for poor scholarship was not the primary reason for withdrawal, for only one-fourth of those who left were actually dismissed. Ten percent of the original sample were dismissed because of poor scholarship.

15. Withdrawal from Davis didn't necessarily mean that a student in this study terminated his program in higher education. Thirty-three of the 45 of those who had withdrawn had enrolled in college elsewhere, and another seven planned to re-enroll in college later.

16. The most common reasons given for leaving Davis were: desired program unavailable, better preparation for major elsewhere, low grades, and/or marriage.

17. None of those who had left seemed bitter about their experience at Davis. Some, however, were dissatisfied with their academic advisors.

18. Religious preference changed, and frequency of church attendance decreased during the college years. The number who considered themselves Protestants decreased, with a corresponding increase in those professing no religious preference.

19. Students in agriculture were very vocationally oriented as freshmen, and their interest didn't decline during college. The goal of obtaining a general education was of only minor importance to freshmen, but became the most important goal for seniors.

20. The most important characteristic of an occupation to both freshmen and seniors was the opportunity to use special talents. For seniors the next-most-important feature was the opportunity to be creative and original.

21. The students aspired to occupations which were higher in the economic status than those of their parents. The interest of women centered on the upper white-collar occupations, whereas men tended more toward self-employed farmers and professional occupations.

22. Students planning to study agriculture tended to decide to enter Davis earlier in their academic lives than did nonagriculture majors. Agriculture students chose Davis because of its reputation in agriculture; others came to Davis because it is a campus of the University of California.

23. Student interest in the nonformal educational aspects of college life increased between the freshmen and senior years. Opportunity to decide what one wanted from life received the highest rating by the restudy group.

24. In general, students felt the courses at Davis were good. About one-third criticized the instructional staff; advisors were considered unsatisfactory by a like number. Those still at Davis and those no longer enrolled showed practically no difference in evaluation of courses, instructors, and advisors.

25. Students were well satisfied with the social life and the administration-student relations at Davis.

CHAPTER VI

CONCLUSIONS

The findings support the following conclusions:

1. The student in agriculture (or in fact almost any major) at Davis is not an average California high school graduate with average parents. In the first place, entrance requirements select the student from the top one-eighth of the high school graduation classes. This alone could contribute to the fact that this student is likely to be a Protestant, have Republican political affiliations, to come from a family with an average annual income of over $12,000, to have a father who works on a job in the middle or upper economic level of employment, and to have parents who themselves have graduated from college.

2. The entering student interested in agriculture to the point of being committed to this field makes a desirable student. He is not likely to change from the College of Agriculture to another college, nor is he as likely to withdraw from college as the uncommitted student.

3. Students interested in agriculture are vocationally oriented, and consequently tend to select their vocation early in life--often before entering high school. These students choose to come to Davis because of the course offerings and the reputation of the College of Agriculture.

4. Specific interests in agriculture are subject to change during college. While these students are vocationally oriented they often have defined their interests only as to broad fields of agriculture, home economics, or preveterinary medicine. Many will change their major within agriculture or home economics during the college years.

5. Low scholarship is not necessarily the major cause for withdrawal from Davis. For every student leaving because of low scholarship dismissal, three departed for other reasons.

6. The aspects of a vocation which make it appealing to college-age students aren't necessarily economic in nature. Such factors as high salary and other economic rewards are outweighed by such things as the challenge the vocation offers, how it can help make a

contribution to society, and how much interest the student has in the vocation.

7. Students are generally satisfied with their educational experience at Davis. They praised the social climate and the close student-administration relationship.

8. Students are concerned about a lack of good teaching and lack of rapport with advisors. One in three criticized these two aspects of their experiences at Davis.

CHAPTER VII

RECOMMENDATIONS

1. Materials and activities to interest students in careers in agriculture should be designed for two groups--those who are already interested in agriculture, and those in urban areas who know little about agriculture. Emphasis should be concentrated on the first group.

2. Special materials and activities to interest students in careers in agriculture should be developed to meet the needs and interest of upper grade and junior high school students.

3. When describing and illustrating vocations, the opportunities that agricultural pursuits provide for people to help others, to be creative, and to have a challenging and interesting career should be stressed.

4. Vocational guidance materials should identify and describe specific vocations in agriculture.

5. Efforts should be continued to have on the teaching staff only those professors who like to teach and who are effective teachers. Efforts should also be continued to up-grade student advisors.

6. The study of personal characteristics and interests of entering freshmen in agriculture should be continued for another year at least. A restudy of students in their senior year should be conducted periodically for purposes of measuring change.

7. Next year (fall, 1964) the study of personal characteristics and interests of students should include entering transfer students in agriculture from junior colleges and four-year colleges.

APPENDIX A

QUESTIONNAIRE GIVEN TO STUDENTS
STILL ON DAVIS CAMPUS, FALL, 1963

AG. MAJORS

UNIVERSITY OF CALIFORNIA, DAVIS
COLLEGE OF AGRICULTURE
Office of the Dean

RESTUDY OF STUDENTS WHO ENROLLED IN
THE COLLEGE OF AGRICULTURE
FALL SEMESTER, 1960

This questionnaire is being given to all Davis students who enrolled as freshmen in the College of Agriculture, Fall Semester, 1960. As a freshman you completed a similar questionnaire about your high school background. Since then some of you have transferred from the College of Agriculture to the College of Letters and Science and to the School of Veterinary Medicine. At this time we are interested in your college activities, your opinions of Davis, and your future plans.

The information which you provide will be treated in strict confidence and will be made available to the College of Agriculture only in statistical summaries; it will not be a part of your college record.

Please answer each of the questions fully. In most cases your answer requires no more than an X in the appropriate place. This is not a test. The only correct answers are those which express your own opinions, ideas, and beliefs.

Thank you very much for your time and cooperation.

9/3/63

1. Thinking of your three best friends while in high school, how many are going to college?

None	_____0	(8)
One	_____1	
Two	_____2	
All three . .	_____3	

2. In Column A below, please indicate approximately when you first seriously thought about going to college.
In Column B please indicate approximately when you definitely decided to go to college.

	A		B	
Have always planned to go to college .	_____0	(9)	_____0	(10)
In junior high school.	_____1		_____1	
During freshman year in high school .	_____2		_____2	
During sophomore year in high school	_____3		_____3	
During junior year in high school. . .	_____4		_____4	
During senior year in high school. . .	_____5		_____5	
After graduation from high school . .	_____6		_____6	

3. College students have different ideas about the main purposes of a college education. Some of their ideas are listed below. As you read this list, consider what educational goals are most important to you. Rank the two goals most important to you by writing a "1" next to the most important goal and a "2" next to the second most important.

Provide training and develop techniques directly applicable to your career	_____0	(11-12)
Develop your ability to get along with different kinds of people.	_____1	
Provide a basic general education and appreciation of ideas	_____2	
Develop your knowledge and interest in community and world problems	_____3	
Help develop your moral capacities, ethical standards, and values.	_____4	
Prepare you for a happy marriage and family life.	_____5	

4. Besides the formal education offered, other aspects of college may be important. Which of the following, if any, are important to you? (Check as many as apply.)

An interest in college athletics	_____0	(13)
A chance to live away from home and be on my own for a while	_____1	(14)
An opportunity to take part in college social life.	_____2	(15)
A chance to decide what I want out of life before taking a job or getting married	_____3	(16)
A chance to participate in college extra-curricular activities.	_____4	(17)
An opportunity to meet someone who would make a good husband or wife	_____5	(18)
A chance to enjoy life before settling down	_____6	(19)

5. Barring unforeseen accidents, how likely do you think it is that you will graduate from college?

Extremely likely.	_____0	(20)
Quite likely.	_____1	
Fairly likely.	_____2	
Not likely	_____3	

6. How important is it to you to graduate from college?

Extremely important	_____0	(21)
Quite important	_____1	
Fairly important.	_____2	
Not important	_____3	

7. Generally, how does your father feel about your going to college? Your mother? (Check one.)

	Father		Mother	
Strongly favors	_____0	(22)	_____0	(23)
Mildly favors	_____1		_____1	
Neither favors nor opposes	_____2		_____2	
Mildly opposes	_____3		_____3	
Strongly opposes.	_____4		_____4	
Deceased.	_____5		_____5	

8. Have any of your brothers gone to college?

Yes, to Davis.	_____0	(24)
Yes, to some other campus of the University of California.	_____1	
Yes, to some other college or university	_____2	
No.	_____3	

9. Have any of your sisters gone to college?

Yes, to Davis.	_____0	(25)
Yes, to some other campus of the University of California.	_____1	
Yes, to some other college or university	_____2	
No.	_____3	

10. Students in the College of Agriculture may differ in various ways from those who are in the College of Letters and Science. For each of the statements below, please indicate whether you think it is more true of students in the College of Agriculture or more true of those in the College of Letters and Science.

	More true of students enrolled in:				
	College of Agriculture	College of L & S	No difference	Can't say	
Know what they want to do in life.	_____0	_____1	_____2	_____3	(26)
Interested in competing for high grades . . .	_____0	_____1	_____2	_____3	(27)
Interested in classical music and good literature	_____0	_____1	_____2	_____3	(28)
Friendly and helpful to other people	_____0	_____1	_____2	_____3	(29)
Willing to accept new and unusual ideas	_____0	_____1	_____2	_____3	(30)
Interested in making a lot of money.	_____0	_____1	_____2	_____3	(31)
Tolerant of people who come from a different background.	_____0	_____1	_____2	_____3	(32)
Seriously concerned about the state of the nation and of world	_____0	_____1	_____2	_____3	(33)
Interested in having a good time at college. . . .	_____0	_____1	_____2	_____3	(34)

11. Did any of the following persons specifically recommend that you attend a college of agriculture?

Father	____0	(35)
Mother.	____1	(36)
Older brothers or sisters. . . .	____2	(37)
Other relatives	____3	(38)
High school teachers	____4	(39)
High school counselors	____5	(40)
Friends your own age	____6	(41)
Other_____ . . .	____7	(42)
None of these	____8	(43)

12. Thinking of your three best friends in college, how many of them are in the College of Agriculture?

None	____0	(44)
One.	____1	
Two	____2	
Three	____3	

13. Approximately when did you decide to come to Davis?

In or before junior high school	____0	(45)
During my freshman year in high school	____1	
During my sophomore year in high school . . .	____2	
During my junior year in high school.	____3	
During my senior year in high school.	____4	
After graduation from high school	____5	

14. Here are some reasons why students attend a particular college. Please indicate how important each of the following reasons is to you, personally, in attending Davis.

	Very Impt	Some Impt	Not Impt	
Low tuition.	____0	____1	____2	(46)
Academic reputation of the college	____0	____1	____2	
Family tradition.	____0	____1	____2	
Size of the college.	____0	____1	____2	
Low living expenses.	____0	____1	____2	
Have friends at Davis	____0	____1	____2	
Chance to get away from home . .	____0	____1	____2	
The subjects offered.	____0	____1	____2	
Close to home	____0	____1	____2	

15. In terms of its general reputation as a college, would you say that Davis is better, about the same, or not as good as the following colleges in California? (Please answer for each one.)

	Davis is better	About same	Other College is better	Can't say	
Stanford	____0	____1	____2	____3	(55)
University of California, Berkeley	____0	____1	____2	____3	(56)
San Jose State College. .	____0	____1	____2	____3	(57)
Fresno State College. . .	____0	____1	____2	____3	(58)
Chico State College . . .	____0	____1	____2	____3	(59)
Sacramento State College	____0	____1	____2	____3	(60)
California State Polytechnic College.	____0	____1	____2	____3	(61)

16. Have you joined a social fraternity?

Yes. . . . . ____0 (47)
No . . . . . ____1

17. Where did you live during the first semester? Where have you lived the longest period of time in college? (Circle one in each column.)

	First semester		Longest while in college	
In a dormitory.	____0	(62)	____0	(63)
In a fraternity	____1		____1	
In a room off campus . . .	____2		____2	
In a private house or apartment	____3		____3	
At home	____4		____4	
Other_____. .	____5		____5	

18. With whom have you lived the longest period of time while attending Davis?

With other students . . . . ____0 (64)
With wife or husband . . . ____1
With parents. . . . . ____2
With other relatives. . . . ____3
Alone. . . . . ____4
Other_____. . . ____5

19. Which, if any, of the following events have you worked on while at Davis? (Check as many as apply.)

Picnic Day	____0	(65)
Preview Day	____1	(66)
Cal Aggie Homecoming-Pajamarino Rally	____2	(67)
Little International Livestock Show	____3	(68)
Future Farmers of America Judging Day	____4	(69)
Spring Sing	____5	(70)
El Rodeo--Cal Aggie	____6	(71)
ASUCD offices, committees	____7	(72)

20. About how much does each of the following sources contribute to the costs of your education, including living expenses?

	All or Nearly all	More than Half	About Half	Less than Half	None	
Scholarship	____0	____1	____2	____3	____4	(73)
Savings	____0	____1	____2	____3	____4	(74)
Part-time work while at college	____0	____1	____2	____3	____4	(75)
Parents	____0	____1	____2	____3	____4	(76)
Summer Jobs	____0	____1	____2	____3	____4	(77)
Other_____	____0	____1	____2	____3	____4	(78)

21. Do you plan to do graduate work after you have your Bachelor's degree?

Definitely yes	____0	(9)
Probably yes	____1	
Probably no	____2	
Definitely no	____3	
Have no idea as yet	____4	

IF YES: Where? _____ (10)
Field? _____ (11-12)

22. About how much time have you spent living or working on a farm?

None	____0	(13)
Less than a month	____1	
One to three months	____2	
Four to eleven months	____3	
One to five years	____4	
Six to ten years	____5	
Eleven years or more	____6	

23. How much have you thought about the kind of work you would like to do after you graduate from college?

A great deal . . . . . ____0 (14)
A fair amount . . . . . ____1
Only a little . . . . . ____2
Not at all. . . . . ____3

24. Listed below are a number of different jobs. Please indicate for each whether a person would be better off in it with a degree from a college of agriculture or with a degree from some other type of school or college division.

	Agriculture	Other	No Idea	
Food technologist	____0	____1	____2	(15)
Designer of farm machinery .	____0	____1	____2	(16)
Broker on a grain exchange. .	____0	____1	____2	(17)
Landscape architect.	____0	____1	____2	(18)
Pesticide manufacturer	____0	____1	____2	(19)
Dietician.	____0	____1	____2	(20)
Agricultural editor	____0	____1	____2	(21)
Irrigation engineer	____0	____1	____2	(22)
Meteorologist	____0	____1	____2	(23)
Agricultural chemist	____0	____1	____2	(24)

25. Which of the following statements comes closest to your opinion about the number of jobs that are available to graduates of an agricultural college?

There are many more jobs than graduates to fill them. . . . ____0 (2
There are somewhat more jobs than graduates to fill them . ____1
The number of jobs and graduates is about equal. . . . . ____2
There are fewer jobs than graduates to fill them. . . . . ____3

26. Approximately what proportion of the students who graduate from the College of Agriculture at Davis would you say operate or work on farms or ranches?

Less than 10% . . . . . ____0 (26)
10-19%. . . . . ____1
20-29%. . . . . ____2
30-39%. . . . . ____3
40-49%. . . . . ____4
50% or more . . . . . ____5

27. Below are some of the things about a job that may make it more or less attractive. For each, will you please indicate how important it is to you personally?

	Very Impt.	Of Some Impt.	Of Little Impt.	
Permit me to be creative and original	____0	____1	____2	(27)
Enable me to look forward to a stable and secure future	____0	____1	____2	(28)
Give me an opportunity to be helpful to others	____0	____1	____2	(29)
Provide me with an opportunity to use my special abilities and aptitudes	____0	____1	____2	(30)
Provide me with a chance to earn a good deal of money	____0	____1	____2	(31)
Give me a chance to be my own boss	____0	____1	____2	(32)
Enable me to gain a respected position in the community	____0	____1	____2	(33)
Give me an opportunity to work with friendly people.	____0	____1	____2	(34)

28. Do you think you would like to own your own farm or ranch?

Yes. . . . . ____0 (35)
No . . . . . ____1
Don't know. . . ____2

29. Realistically, do you think you ever will own your own farm or ranch?

Yes, own alone. . . . . ____0 (36)
Yes, own in partnership. . . . ____1
No . . . . . ____2
Don't know. . . . . ____3

30. Do you expect to inherit a farm or a ranch?

Yes, definitely expect to. . . . ____0 (37)
Some possibility of it . . . . . ____1
No, definitely won't . . . . . ____2

31. As far as you know, what sort of work do you think you will be doing after completing your education? Please be as specific as possible.

_____(38-39)

_____

_____

32. Realistically, what do you expect your annual income will be five years after you finish your formal education?

Less than $3,000 . . . . . ____0 (40)
$3,000--4,999 . . . . . ____1
$5,000--7,499 . . . . . ____2
$7,500--9,999 . . . . . ____3
$10,000--14,999 . . . . . ____4
Have no idea at all . . . . . ____5

33. In what kind of organization or situation would you like to work after you finish your education?

On a farm or ranch. . . . . ____0 (41)
In business . . . . . ____1
In education. . . . . ____2
In government . . . . . ____3
In industry . . . . . ____4
As a homemaker . . . . . ____5
Other_____ . . . ____6

34. In what type of community would you like to live?

A large city (100,000 population or more). . . . . ____0 (42)
A small city (25,000-100,000 population) . . . . . ____1
A medium-sized town (5,000--25,000 population). ____2
A small town (under 5,000 population). . . . . ____3
Farm or ranch . . . . . ____4

35. What is the name of your town or city?

_____(43)

36. What is your father's occupation? Be specific and detailed, indicating both what he does and the type of situation in which he works. (If retired or deceased, please indicate what his occupation was most of his life.)

_____ (44-45)

_____

37. Does (did) he work for himself or for someone else?

For himself. . . . . ____0 (46)
In partnership . . . . . ____1
For someone else . . . . . ____2

38. Are both your parents living?

Yes . . . . . ____0 (47)
No. . . . . ____1

IF YES: Are your parents divorced or separated?
Yes . . . . . ____0 (48)
No. . . . . ____1

44. It is a matter of general knowledge that people differ in their interests and capacities. Everyone has his strong and weak points. The questions that follow are designed to enable you to make rough comparisons between your own interests and abilities and those of other people. Please indicate for each of the following how you think you stand in comparison with the other students in your college class. Please answer by placing after each phrase the number which represents one of the following standings.

1. Very far below average
2. Considerably below average
3. Somewhat below average
4. About average
5. Somewhat above average
6. Considerably above average
7. Very far above average

	Number	
Interest in politics and world affairs	____	(56)
Ability to work with your hands	____	(57)
Concern with community problems	____	(58)
Interest in sports	____	(59)
Ability to organize and plan	____	(60)
Interest in machinery	____	(61)
Interest in popular music	____	(62)
Interest in classical music	____	(63)
Ability to cope with practical problems	____	(64)
Ability to cope with abstract theories.	____	(65)
Readiness to assume responsibility.	____	(66)
Interest in reading serious literature	____	(67)
Ability to get along with other people	____	(68)
Desire to help other people	____	(69)
Interest in making high income	____	(70)
Ability to handle animals	____	(71)
Interest in science.	____	(72)

45. What is your religious preference? (Voluntary)

Protestant _____	____0	(73)
Roman Catholic	____1	
Jewish	____2	
Other _____	____3	
None	____4	

46. Thinking specifically of the education received at Davis, would you please comment on each of the following items relative to your experiences while enrolled in the College of Agriculture.

Worthwhileness of courses.

Quality of instruction at Davis.

Emphasis in courses--too theoretical, too practical, about right?

Rapport with your advisor.

Campus social life.

Administration-student relations.

47. If you have changed your major in the field of agriculture since enrolling in 1960, please give your major reasons for this change.

48. Listed below are some of the reasons students give for changing majors in the College of Agriculture. If you changed your major, please indicate how important each of these reasons was to you when making your decision

	Very Impt.	Fairly Impt.	Not Considered	
I found that I was not interested in the field of my original choice	____0	____1	____2	(9)
Some of the courses in the major were not to my liking	____0	____1	____2	(10)
Several of my friends encouraged me to change to my new major.	____0	____1	____2	(11)
I completed the pre-requisites for my present major	____0	____1	____2	(12)
More employment opportunities are open to graduates of my new major.	____0	____1	____2	(13)
More challenge to me in my new major .	____0	____1	____2	(14)

49. Listed below are some of the ways students decide to enroll in a college of agriculture such as Davis. Please read each one over carefully before checking the one which best describes your own decision.

I wanted to go into some specific occupation and came to a college of agriculture to get the training for it. . . . . ____0 (15)

I wanted to work in some area related to agriculture, although I didn't know exactly what, and felt a college of agriculture would provide the appropriate general training . . . . . ____1

I wasn't sure I wanted to work in agriculture or a related area, but I wanted to go to college and selected a college of agriculture because I was interested in what they taught . . . . . ____2

I wanted to go to college and felt a college of agriculture was a good place to start, even though I wasn't sure where my real interest lay . . . . . ____3

50. If for some reason you had not been able to enter the College of Agriculture, do you think you would have gone to college anyway?

Definitely would have gone to college. . . . ____0 (16)
Probably would have gone to college . . . . ____1
Probably would not have gone to college . . ____2
Definitely would not have gone to college. . ____3

51. Did you first decide to go to an agricultural college and then apply to Davis, or did you first decide to go to Davis and then select the College of Agriculture within it?

First decided to go to an agricultural college and then chose Davis . . . . . ____0 (17)
First chose Davis as a college and then decided to enter its College of Agriculture . . . . . ____1

52. Have you participated in the Farm Practice Program here at Davis?

Yes, on-campus classes . . . . ____0 (18)
Yes, summer job placement . . ____1
No . . . . . ____2

53. In order to be a successful farmer today, how important would you say it is to get college training in agriculture?

Very important . . . . . ____0 (19)
Quite important . . . . . ____1
Somewhat important. . . . . ____2
Not important . . . . . ____3
Can't say. . . . . ____4

NON-AG MAJORS

47. Please explain why you transferred from the College of Agriculture to another college or school on campus.

48. Listed below are some of the reasons students give for transferring from the College of Agriculture to another college. Please indicate how important each of the items was to you in making your decision.

	Very Impt.	Fairly Impt.	Not Considered	
I found I was not interested in the courses in the College of Agriculture	____0	____1	____2	(9)
The curriculum in agriculture wasn't particularly academically stimulating .	____0	____1	____2	(10)
The instructors in my courses in agriculture were not interested in teaching	____0	____1	____2	(11)
My program in agriculture was too practical	____0	____1	____2	(12)
My program in agriculture was too theoretical.	____0	____1	____2	(13)
I had a misconception about the college work in agriculture	____0	____1	____2	(14)
Many of my friends were not in agriculture	____0	____1	____2	(15)
I found I wanted a liberal arts type of education.	____0	____1	____2	(16)

APPENDIX B

QUESTIONNAIRE GIVEN TO STUDENTS
NO LONGER AT DAVIS

University of California Davis Dean of the College of Agriculture

RESTUDY OF STUDENTS WHO ENROLLED IN
THE COLLEGE OF AGRICULTURE
FALL SEMESTER--1960

Name_____ Address_____

Marital Status: Single_____ Married_____ Other_____

1. Since leaving Davis have you attended any other college or professional school? Yes_____ No_____

IF YES, please give the name of the school(s), date(s) attended, and major.

School	Date	Major

IF NO, what are your future educational plans?

_____1. Undecided regarding future plans to attend college.
_____2. Do not plan to attend college again.
_____3. Plan to enroll in college at_____ in_____.
(name of college) (date)

2. Since leaving Davis have you held full time employment? Yes____No____

IF YES, please give the name(s) of your employer(s), date(s) of employment, and tell what kind of work was involved.

Employer	Date	Kind of Work

3. Please indicate why you decided to withdraw from college at Davis.

9/3/63

4. The following reasons are often given by students for leaving college. Please indicate which of these were major or minor reasons for your leaving Davis.

Major Reason	Minor Reason	
_____	_____	1. Completed preprofessional requirements.
_____	_____	2. Desired program of study not available at Davis.
_____	_____	3. Program of study at other institution better fit my needs.
_____	_____	4. Full time employment.
_____	_____	5. Marriage.
_____	_____	6. Illness (self or in family).
_____	_____	7. Financial problems (self or family).
_____	_____	8. Military service.
_____	_____	9. Lost interest in college.
_____	_____	10. Studies too difficult.
_____	_____	11. Low grades.
_____	_____	12. Family moved to another area.
_____	_____	13. Dissatisfied with _____.
_____	_____	14. Other _____.

5. Whatever your reason for leaving Davis, what change(s) in circumstances might have persuaded you to stay?

6. Thinking specifically of the education received at Davis, please comment on each of the following items relative to your experiences while a student at the University.

Worthwhileness of courses.

Quality of instruction at Davis.

Emphasis in courses too theoretical--too practical--about right?

Rapport with your advisor?

Campus social life.

Administration--student relations.

ED013338

THE ENTERING STUDENT

COLLEGE OF AGRICULTURE

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Research Monograph #1

VT 000 035

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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THE ENTERING STUDENT

College of Agriculture

A study of the backgrounds, motivations, and goals of entering students in the College of Agriculture at Davis in 1963 and 1964.

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Department of Agricultural Education
University of California, Davis

December, 1965

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INTRODUCTION

The Entering Student - College of Agriculture

The agricultural student is immersed in change; his environment is expanding rapidly with the physical growth of the University and the growing diversity among his classmates. How does he fare in the transitions of the mid-sixties as Davis, along with the smaller campuses, absorbs the major increase in the numbers of University students? How does he compare with his fellow students campus-wide? Are his backgrounds, goals, motivations, and values distinct from those of students in other colleges and majors?

To answer these and other questions--to identify the agricultural student in terms of background and present attitudes and personality factors--freshman students entering Davis in all fields were tested in the fall of 1963 and 1964. In addition, their academic performance in college has been followed.

Biographical, attitude, and personality inventories were administered to all entering freshmen. The biographical inventory gathered certain information on the student's background, with a special section assessing his attitudes and aspirations. The Omnibus Personality Inventory (O.P.I.)[1] measures intellectual and motivational personality attributes directly relevant to the college population. College grade-point averages provided an indication of the student's academic aptitude and achievement.

For convenience, the students in the College of Agriculture (Ag) were grouped according to the major subdivisions of the college; preveterinary medicine (prevet), the agricultural sciences (ag sci), and home economics (home ec). Comparisons are made with the colleges of Letters and Science (L&S) and Engineering (Eng). Unless otherwise specified, the results reported are based primarily on the students entering in the fall of 1964.

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[1] Paul Heist et al., Center for the Study of Higher Education, University of California, Berkeley.

CHAPTER I

The Student, His Background, and His Goals

Most Davis students come from an urban background. Three out of four have graduated from large high schools and live in cities with populations of over 10,000. Of Ag students, only those in ag sci tend to come from the rural areas, with about one out of two from small high schools. Students in prevet and home ec, in contrast, come from larger cities.

All Davis students tend to come from stable home environments; nearly all lived with both parents. For a majority of them, college was the first major venture away from home.

Over two-thirds of the mothers of all prevet and ag sci women worked outside their homes for pay. This proportion differs from that for ag sci men and L&S students of both sexes: only about half of their mothers worked outside the home. Almost without exception the mothers were employed in white-collar positions: secretarial, clerical, business, and teaching.

The average family income for all freshmen was over $12,250. The parents of L&S students, however, had incomes one to two thousand dollars higher than those of the parents of Ag and Eng students, whose mean incomes were about equal. The educational level of the parents was also high.

Ag sci women come from homes in which over two-thirds of the fathers and one-half of the mothers had college degrees. In contrast, only 40 percent of the fathers of home ec women had a college degree. Nearly half the fathers and over one-third of the mothers of other Davis freshmen were college graduates, and almost half of the fathers with degrees had done graduate work. More than two-thirds of the fathers had at least some college experience. The state average of adult males with college degrees, in contrast, is only 9 percent.

Most fathers of Davis students were employed in one of three major occupational categories: white-collar, merchant, or professional. Practically none were in the manual, semi-skilled or skilled, or artisan groups. A few (6.5 percent) were farmers. These tended to be fathers

of ag sci freshmen. Prevet students, coming from urban areas, had few parents involved in agricultural occupations.

Fathers of ag sci freshman men tended to work for themselves. Since they come primarily from an agricultural rural environment, it may be assumed that, in the main, they own their own farms or businesses. In contrast, less than 30 percent of the fathers of prevet students and of home ec and ag sci women were self-employed, as was also true of other students at Davis.

Politics. Students in general tended to come from homes which were predominantly Republican--about 45 percent of the fathers Republican and 32 percent Democrat. Family political background did not seem related to the college which students chose to enter.

The students themselves, however, differed in political orientation when grouped by college and major. Students tended to view themselves as "independent" on most political matters. In general, only one-fourth considered themselves Democrats, and another one-fourth considered themselves Republicans. The other half declared themselves "independent," apparently not yet having their allegiances and preferring "to consider each issue and each campaign on its own merits."

In general, Ag men were more conservative in their political beliefs than L&S men. Differences between ag sci and prevet students were only small. Home ec students lacked the political commitment of other Ag students, choosing the middle of the road as a basic position.

Two-thirds of the students indicated that if they had been able to vote for president, they would have supported Johnson. Goldwater supporters were predominantly men, with the highest proportion--45 percent--being prevet.

Religion. Davis students tend to come from protestant backgrounds, primarily Methodist, Presbyterian, or Episcopalian. Less than 20 percent come from homes in which the father is Roman Catholic. This division remains essentially the same among students.

In religious beliefs, the students tend to follow the family patterns, with more than three out of five having protestant affiliation. Home ec students seem to find religion an important source of satisfaction; 70 percent attend church at least several times a month. Prevet men are the least dedicated to religious practices, with 55 percent attending only several times a year or never.

Decision. The age at which the decision to enroll at Davis was

made related to the choice of major. While only 36 percent of all freshmen said they decided on Davis before the senior year in high school, 48 percent of prevet men and 60 percent of prevet women had decided on Davis in or before junior high school. For the most part, ag sci and home ec majors made their decisions by the sophomore or junior year.

The student's reasons for selecting Davis were related to his choice of college or major. A desire to prepare for a specific occupation was given as a reason by over 90 percent of prevet majors, by 70 percent in home ec, by 59 percent in ag sci, but by less than 35 percent in L&S. The last group tended to base its decision more on general training objectives and the desire to use Davis as a place to start college without a strong dedication to a curriculum or the institution.

Low tuition was not a particularly important reason to Ag students, but was of some concern to L&S and Eng students, because of alternative universities which have higher tuition rates. Neither family tradition nor friends appear to be strong incentives to enroll at Davis. However, the smallness of the campus is especially appealing to those in L&S, Eng, and home ec. The main attraction to the University for students in all majors, especially in Ag, is the reputation of the University and the subjects offered.

Goals. The educational goals that freshmen desired to achieve during college tended to agree with their reasons for attending Davis. Most Ag students give high priority to the goal of learning techniques that will be needed in a career. This was also true for Eng students. L&S was the only group that placed much emphasis upon general education as a primary goal in college, and even within this group the men placed twice as much emphasis upon careers as upon general education. That emphasis was reversed for the women. The second-most important educational goal for Ag students was to learn how to get along with people. The goal of preparation for happy marriage and family life was listed in first place by only 7 percent of the entire group of freshmen. Ag sci and home ec women gave this the highest rating, but it was rated first by less than 20 percent. Generally, freshmen do not feel that preparation for marriage is a function of college education.

The strength of the student's dedication to enter a particular college or major varied among the groups. The groups most dedicated were prevets and women in L&S. Those who had been the most indecisive about which major and college to attend were Ag and Eng students. The reason is perhaps the availability of these majors in the state college and junior college systems, where career orientation receives greater stress.

More men than women placed personal importance upon graduation from college except in prevet, where 80 percent of the women stated that graduation was extremely important. By contrast, 30 percent of the women in ag sci rated graduation as extremely important. These figures compare with 80 percent of prevet and ag sci men, and 50 percent in home ec.

Few Ag students planned to transfer, although many in L&S indicated that they were considering a move to other institutions.

Graduate work was anticipated by three-fourths of the Davis freshmen. Except in prevet, the proportion of students planning graduate work was considerably lower in Ag than the all-campus average.

CHAPTER II

The Student and His Motivations

From data gathered through an attitude questionnaire and the O.P.I., it can be concluded that the Ag student not only comes from an environment different from that of L&S and Eng students, but is different in personality characteristics and in his views of himself.

Freshmen entering at Davis regarded themselves as more mature, more academic, and more altruistic than their high school classmates, and at the same time more ready for and capable of assuming responsibility. They felt themselves more keenly interested in science and scientific activities and better able to cope with problems of a practical nature. Humanitarian values were also important.

Differences were apparent even between the various majors within colleges, but, generally speaking, Ag students regarded themselves as strongest on practical and scientific orientation and helping their fellow men. Few rated themselves as having interests above average in literature, music, politics, or world affairs.

Student self-comparisons with their high school peers were highly indicative of the larger personality traits measured by the O.P.I. In addition, self-ratings and personality scores were related to certain predispositions for choice of major in college.

The O.P.I. focuses on measurement of the intellectual, liberal, and social-emotional aspects of personality (the specific scales are defined in Appendix V).

On the basis of self-rating and O.P.I. scores, majors in home ec, prevet, and ag sci described themselves as follows:

Home Economics. The home ec student stands below the "average" entering student at Davis in intellectual orientation toward learning. Her motivation for education could be described as involving some interest in academic matters and achievement, but these would be primarily a means toward some vocational or practical end.

In comparison with all other entering Davis freshmen on specific scales measuring intellectual orientation, the mean for home ec students on Theoretical Orientation stands at the 25th percentile. On the

Complexity scale the group mean is at the 36th percentile. In Estheticism (see Appendix IV, Figure I), however, home ec students are at the 54th percentile.

A measure of liberal orientation (Autonomy) reveals that, on the average, home ec students are somewhat more dependent upon authority, less open-minded, and more structured than other Davis students; their mean score falls at the 27th percentile. Their Religious Liberalism (slightly above the 27th percentile) also was below the Davis norm. A major source of satisfaction and guidance in their life experience is probably their commitment to religious beliefs and ideals.

Women entering home ec tend to be somewhat less impulsive and imaginative than their counterparts, with a mean score on Impulse Expression at approximately the 31st percentile, but they tend to be somewhat more socially extroverted than the "average" Davis student.

Major motivational orientations of home ec students clustered on Practical Outlook and Altruism, above the 60th percentile. These women tend to view the world in concrete terms. Their interests lie primarily in practical and applied activities. Ideas are evaluated almost solely in terms of utility. They do have a concern for the welfare and feelings of others, however, and are warm and trusting in interpersonal relations.

When home ec students were asked how they compared with their high school peers, over half felt that they were superior to their high school counterparts in their desire to help other people and their ability to get along with others. Almost 60 percent felt that they were above average in readiness to assume responsibility. They were generally above average in their ability to work with their hands, to cope with practical problems, and to organize and plan, again emphasizing their practical orientation.

Less than one-tenth of the home ec students felt superior to their high school peers in scientific interests, even though over three-fourths of the prevet students and over one-half of the ag sci students felt they were above average in their interest in science.

Of students entering home ec in 1963, about one-half remained after three semesters. In intellectual and liberal orientation, these persisting students had personality patterns almost identical with those of entering home ec students (Appendix IV, Figure II). Significant differences occurred in the social-emotional adjustment patterns. Students remaining in home ec

were at the 65th percentile on Social Introversion.

Mean scores on Interest in Ideas were lower for students who transferred from home ec to I&S than for those who stayed (below the 16th percentile), and were more esthetically oriented (at the 80th percentile). These transfers were also more socially extroverted than entering home ec students.

These data indicate the possibility that students who enter home ec because of their interest in and desire to work with people might not see the application of the curriculum to their vocational orientation. Thus, one possible cause for attrition is that their attitudes and motivational patterns do not mesh with the scientific orientation of home ec.

Preveterinary Medicine. Freshmen entering prevet also differ from the "average" entering freshmen at Davis and, further, prevet women differ somewhat from prevet men in intellectual disposition. Prevet women have mean scores above average on all scales that measure intellectual orientation. Scores on Theoretical Orientation and on Complexity are at the 66th and 69th percentile and indicate that prevet women approach education from an experimental standpoint (Appendix IV, Figure III). These women are average in liberal and social-emotional orientation except for Social Introversion, on which they measure at the 62nd percentile.

As freshmen, prevet men were above average on the scale measuring scientific interests but below average on other scales measuring intellectual orientation. Mean scores stood at the 69th percentile on Practical Outlook and at the 66th on Impulse Expression, indicating a more pragmatic and applied orientation toward education than that of prevet women. Prevet students rated themselves above their high school peers in interest in science and in ability to handle animals. Prevet women generally appreciated classical music and serious literature, unlike prevet men.

The prevet women who withdrew from the University tended to be low on Liberal Orientation (at the 30th percentile). Other personality dimensions tended to be similar to the general pattern for women entering prevet (Appendix IV, Figure IV).

Prevet women who changed their major were higher than entering prevet women on the Autonomy and the Interest in Ideas scales, with mean scores at the 70th percentile. Also, these women were less interested in social interaction with others and felt a degree of social alienation.

Prevet men who withdrew from the University tended to have a non-intellectual orientation toward learning. In fact, for these students the

mean score on Interest in Ideas was a standard deviation below (16th percentile) that for all entering prevet men, and was at the 12th percentile in comparison with all entering freshmen. The men who changed majors tended to be less committed to scientific activities than those who remained (Appendix IV, Figure V).

Agricultural Sciences. Men and women entering ag sci as freshmen were similar to each other in intellectual orientation, with scores falling near the average for all entering freshmen. The men, however, were less interested in the world of ideas and art and literature than the women, and less dependent. Both the men and women were near the mean on Theoretical Orientation.

The women who withdrew from ag sci had mean scores at the 85th percentile on Complexity and at the 94th percentile on Social Alienation and the 90th percentile on Social Introversion. Those who changed majors were somewhat more interested in the world of ideas than those who did not, were more independent, and tended to adjust well to their social environment. Men who withdrew from ag sci tended to be less committed to an intellectual orientation to learning than those who remained.

Among entering ag sci students the men felt themselves above the average of their high school peers in interest in science, machinery, sports, and popular music, as well as in the ability to cope with both practical problems and abstract theory. Few, however, felt above average in their readiness to assume responsibility and their ability to organize and plan.

The women entering ag sci felt themselves above average in interest in science and in the ability to handle animals. Few of the women felt themselves more capable than their high school peers in the ability to work with their hands or cope with practical problems. They also indicated little interest in popular music and had little concern for community problems.

CHAPTER III

The Student and His Environment

Entering freshmen have certain preconceived notions about what the students in the various colleges within the University are like. These preconceived images probably affect the reasons why a student does or does not enter a certain college or major. To determine the college stereotypes which students have, they were asked to indicate whether certain attributes were more true of students in Ag, Eng, and L&S.

As described by all entering freshmen, the colleges were separated into three distinct environments.

Ag students were described as friendly and helpful to others and somewhat tolerant of people from different backgrounds. These students were seen as vocationally oriented, but not interested in making a high income. Further, Ag students were not seen as competitors for high grades.

Eng students were typed as materialistic and vocational, interested in making a lot of money and sure of what they wanted to do in life. They were not seen as altruistic or social in their orientation to college.

L&S students were seen in the environment of having a good time in college. They were also seen as competitors for high grades, interested in classical music and literature, concerned about the nation and the world, and willing to accept new and unusual ideas.

In all cases, students actually enrolling in these colleges concurred with the general images of their colleges.

Students entering Ag varied some among themselves in how they saw their environment. While only 3 percent of all students saw Ag students as competitors for high grades, 21 percent of the prevet students felt this was a part of the environment. A willingness to accept new and unusual ideas was felt to be more descriptive of Ag than of the other colleges by 25 percent of the prevet and home ec students and 15 percent of other Ag students, while only 7 percent of all freshmen felt this to be a unique attribute of Ag. Also, well over 70 percent of the home ec, prevet, and ag sci students, as compared to 50 percent of all students, felt that Ag students were more friendly and helpful than were students in

the other colleges. Being tolerant of people from other backgrounds was thought descriptive by 60 percent of the home ec students, as compared to 35 percent of all freshmen. Eighteen percent of the home ec majors also felt that Ag students were more concerned than students in other colleges about the state of the nation and world, as compared to 5 percent of all freshmen and only 4 percent of the men in ag sci.

Personal Problems. For some students, college is their first real experience away from home. Decisions relative to personal, social, and intellectual life become more complex as the student enters the college environment. Most students indicated that they would seek advice first from their parents. Friends at college were the second source of assistance, with less than 5 percent choosing the Dean's office or the Counseling Service. Faculty was also considered a source of help by 5 percent of the students, while 8 percent would turn first to their minister.

Although men are less prone to seek advice from parents than are women students, they still tend to feel that parents are a prime source of advice. The prevet male seems to have a closer rapport with his faculty adviser than do other students, for over twice as many prevet students as other students would consider faculty as a prime source of advice for personal problems.

CHAPTER IV

The Student and His Occupational Values

To ascertain the degree of importance of future areas of life, students were asked to rank in order of importance things or activities which would give them the most satisfaction. Family relationships were considered first in importance by the entering students, and career or occupation second in importance. Students felt that leisure time and recreational activities were the third-most satisfying activities that would be facing them in the future.

Strong commitment to careers tends to be related to the professions. Prevet and Eng students felt their work would give them the most satisfaction in life. Family relationships were considered most important by ag sci students, but career was a close second for ag sci men. Home ec majors also saw family relationships as the most satisfying activity in life.

L&S men were split about evenly on whether they felt family relationships or career would give them the most satisfaction, but L&S women were more family-oriented than career-oriented.

In general, except for prevet women, entering freshman women do see family relationships as giving them more satisfaction than a career. Men, though career-oriented, also tend to value family relationships as highly important.

When students say that they expect their careers to provide a major source of satisfaction in their lives, just what kinds of satisfactions do they have in mind? The Davis students feel that values which permit self-expression and altruism are among the most valuable to attain. Almost all students felt it was important to have a job that was interesting, one in which they could express their talents, skills, and abilities, and one in which they could be of service. Freshmen also felt that it was important to have a job in which they could work more or less on their own.

Self-expression and contribution to others were more important goals than status or money. An opportunity to be boss or leader or to make a name for themselves was <u>not</u> an important vocational goal. On the other hand, a job where they could be looked on highly by their fellow men <u>was</u> considered important.

Prevet men differed in that they felt that the opportunity to be boss was an important aspect of the job.

Job security and high pay were of much more importance to individuals going into the professions than to most students. For example, 74 percent of the prevet students and 71 percent of the Eng students felt that job security was an important factor, and money was also important to them.

In general, women were more interested than were men in obtaining a job that would be helpful to others, but home ec and prevet women felt more strongly than other women that this value was important.

SUMMARY AND IMPLICATIONS

The Ag student is unlike his peers in other colleges. His appreciation of science is limited primarily to its application in solving immediate problems. He is pragmatic in his approach to life and thinks in practical, rather than abstract, terms. He prefers to operate in situations which have definite structure and is frustrated when concrete answers are not readily visible. He leans to conservativism in politics and in his general orientation. His life is dominated by generally accepted ideas; he made his decision to enroll in agriculture at Davis earlier than did entering students in other colleges, and he views college as preparation for a vocation.

Differences were also found among the majors within agriculture. The prevet student is more committed to his major, to graduation, and to graduate school than is the ag sci student. The home ec student is less interested in science, more altruistic, more dependent upon others for guidance, and is more conservative than her fellow Ag students.

Like his peers in other colleges, however, the Ag student comes from an upper middle-class home, in which the parents are of protestant faith, Republican, and probably have a college education.

Recognition of diversity among Ag students by faculty and administrators is essential if students are to be served adequately by the rapidly expanding Davis campus. An understanding of the pragmatic, practical, utilitarian motivations of students in agriculture can provide innovations in curriculum development such as those suggested below:

1. Theories and principles should be presented to students not only in terms of abstraction, but with examples structured in such a way that the student can grasp the significance in terms of application. Presentation of subject matter might well go beyond the straight lecture method to include demonstrations and visual aids, giving concrete examples which capture the student's imagination and, through understanding, inspire him toward independent thought.
2. Ag students (home ec and ag sci in particular) could profit by an early association with a course or courses having a direct tie to their vocational interests, strengthening the bond between

the educational goals of the University and the vocational goals of the students.

3. Innovations in curriculum development should be explored to meet the interests and intellectual disposition of the home ec students. The strong altruistic drives of some of these students, combined with their practical outlook, would seem to indicate a need for a curriculum based on behavioral sciences which would parallel a curriculum based on physical and biological sciences.
4. Careful counseling of students at the time of initial decision, during junior and senior high school, might lower the high rate of Ag student drop-out and transfer in college. Concerted efforts should be made to "educate" high school advisors about the programs in agriculture and the nature of the student who enters agriculture at the University.
5. The College of Agriculture faculty advisors should understand and be concerned about his advisees' intellectual motivations. Time should be set aside for consulting and guiding students, particularly during the early part of their college careers. An "open door" policy should be encouraged and special follow-up conferences with advisees should be established when necessary.
6. Curriculums within the College of Agriculture should be designed to lead students toward independence in thought, innovations, and ideas. The traditional four-year undergraduate curriculum should be restructured to make it more liberal, at the same time maintaining emphasis in the sciences. This would entail planned flexibility, necessary for creative thinking.

APPENDIX I

Student Traffic and Performance

The class entering in 1963 included 132 women and 86 men in the College of Agriculture. By the end of the third semester (fall, 1964) the original group of 218 had decreased to 135--a loss of over one-third. About one-fourth had withdrawn, while one in seven had transferred to Letters and Science (Table I). Girls in preveterinary medicine had the poorest persistence record. Of the 32 preveterinary majors in this group, only 12 survived the first three semesters. One-half of those who left entered Letters and Science, and the other half withdrew. Another major with heavy loss was general home economics, which decreased from 50 to 30 during three semesters (Table II).

Little difference in grade-point average was found between men and women who completed three semesters in the College of Agriculture (2.38 and 2.34, respectively). However, the 31 students who transferred to Letters and Science had a higher grade-point average (2.61 for women, 2.52 for men). Those who withdrew after one and two semesters had averages of 2.03 and below (Table II).

Agriculture freshmen in 1964 totaled 284 (125 men, 159 women) (Table III). The largest major by far was preveterinary medicine, with 128 students (67 men and 61 women). General home economics attracted 50. No other major had more than 12 new students. Women in preveterinary medicine doubled in number, while men in preforestry went from none to 12. Increases took place in no other major.

Here again, the mean grade-point average for men and women was almost identical (2.16 for men, 2.14 for women), but it was considerably lower than the overall average of 2.33 for all freshmen (2.32 for men, 2.34 for women), fall semester, and lower than the grade-point averages of 2.23 and 2.26 for the 1963 freshman men and women during their first semester. In comparison, the 1964 Letters and Science freshmen had an average of 2.38; Engineering students had 2.33.

The first semester took a toll of 30 of the 1964 freshmen in Agriculture (Table IV). Fourteen students (5 male, 9 female) transferred to Letters and Science, while 16 (3 male, 13 female) did not register for the spring semester. Of those leaving Agriculture, 15 (3 male, 12 female) were preveterinary majors and 4 were home economics majors.

While there was an outflow of students, there also was an in-movement of 21 freshmen (6 male, 15 female) from Letters and Science at the end of the first semester (Table V). Nine elected preveterinary medicine, 7 chose home economics, and the remainder chose other majors. Thus, the net loss for the fall semester was 9 students. Those who transferred into Agriculture had a grade-point average of 2.44, considerably above the overall grade-point average of 2.14 for freshmen in Agriculture and the overall grade-point average of all freshmen. Most of those moving from Letters and Science had been undeclared majors.

The reason for withdrawal is not given. However, about half of those who did not register for the spring semester had grade-point averages below 2.00. Low scholarship was obviously an important factor.

APPENDIX II

The College of Agriculture Transfer Student

In the fall semester of 1964, 121 students (47 females, 74 males) entered the College of Agriculture after completing two years of college elsewhere. Of this group, about 60 percent transferred from junior college and the rest were from four-year colleges, mostly in California. The most popular major was preveterinary medicine, selected by 28 men. Seven men chose animal husbandry, 6 agricultural production, and 6 agricultural economics, with the remaining 27 men divided among 12 majors. Transfer women selected home economics primarily: 20 a general major, 6 dietetics, 5 design, and the other 16 divided among 7 majors.

Transfer students earned slightly higher grades (2.26 for females, 2.28 for males) than did entering freshmen. However, their grade-point average was considerably lower than the average of 2.48 for all undergraduates, fall semester.

Mobility of the transfer students included 8 withdrawing from Davis, 3 transferring to the College of Letters and Science, and 5 changing their majors within the College of Agriculture.

About one-half of the male transfers and nearly three-fourths of the female transfers had been eligible for admission to the University upon graduation from high school. Ten percent of each group didn't know whether they had been qualified for entry from high school. The primary reason for ineligibility was scholarship. Only 15 transfers had subject deficiencies as high school graduates.

Those eligible for the University gave three major reasons for enrolling elsewhere: finances; desire to go to a particular school other than the University; a realization that they were not ready for University work when they entered college.

These students obviously looked forward to transferring to the University, for most had decided upon enrollment at Davis while in high school. Furthermore, two-thirds said they would have transferred to Davis from their previous colleges even if that school had had the program they desired. These students elected Davis over other schools because of the courses in their fields of interest, and many came to prepare for Veterinary School.

APPENDIX III

Tables

TABLE I. 1963 Agriculture freshmen--status at end of three semesters.

Students	Total N	Withdrew N	Withdrew %	Transfer to L&S N	Transfer to L&S %	Remaining in Ag N	Remaining in Ag %
Women	132	34	25.7	27	20.5	71	53.8
Home economics	76	22	28.9	10	13.1	44	57.9
Other	56	12	21.4	17	30.4	27	48.2
Men	86	17	19.8	5	5.8	64	74.4
All Ag freshmen	218	51	23.4	32	14.7	135	61.9

TABLE II. 1963 Agriculture freshmen--grades and status after three semesters.

Status and Major	Male N	Male GPA	Female N	Female GPA
Still at Davis				
Preveterinary medicine	31	2.41	12	2.49
Agricultural business management	9	2.19		
Agricultural production	4	2.35		
Animal husbandry	4	1.96	6	2.33
General home economics			30	2.24
Other home economics majors			14	2.32
Food science			5	2.62
Other Agriculture majors	16	2.54	4	2.42
Total	64	2.38	71	2.34
Transferred to Letters & Science	5	2.52	26	2.61
Withdrew at end of two semesters	10	2.03	18	2.02
Withdrew at end of one semester	4	1.25	12	1.71

TABLE III. 1964 Agriculture freshmen--grades by major, first semester.

Major	Male N	Male GPA	Female N	Female GPA
Preveterinary medicine	67	1.94	61	2.09
Preforestry	12	2.15		
Agricultural business management	7	2.34		
Food science	6	2.60		
Agricultural economics	4	2.21		
General home economics			50	2.22
Animal husbandry			12	2.09
Dietetics			10	2.34
Foods			12	1.96
Other Agriculture majors	29	2.34	14	2.29
All Agriculture students	125	2.12	159	2.16

TABLE IV. Status changes of 1964 Agriculture freshmen, beginning of spring semester, 1965.

Status and Major	Male N	Male GPA	Female N	Female GPA
Did not register, spring, 1965				
Range management	1	2.00		
Preveterinary medicine	2	2.69	7	1.64
General home economics			3	2.06
Animal husbandry			1	0.56
Foods			1	2.44
Food science			1	1.38
Total	3	2.47	13	1.67
Changed major within Agriculture	5	2.53	5	2.93
Transferred to Letters & Science	5	2.52	9	2.35

TABLE V. 1964 freshmen transferring from College of Letters & Science to College of Agriculture during first semester.

Majors	Male N	Male GPA	Female N	Female GPA
From Letters & Science to:				
Preveterinary medicine	5	2.16	4	2.27
Animal physiology	1	2.79	1	3.00
General home economics			7	2.55
Food Science			3	2.62
Total	6	2.26	15	2.52

APPENDIX IV

Personality Profiles

FIGURE I

1963 AND 1964 GENERAL HOME ECONOMICS FRESHMEN
ATTITUDE INVENTORY SCORES

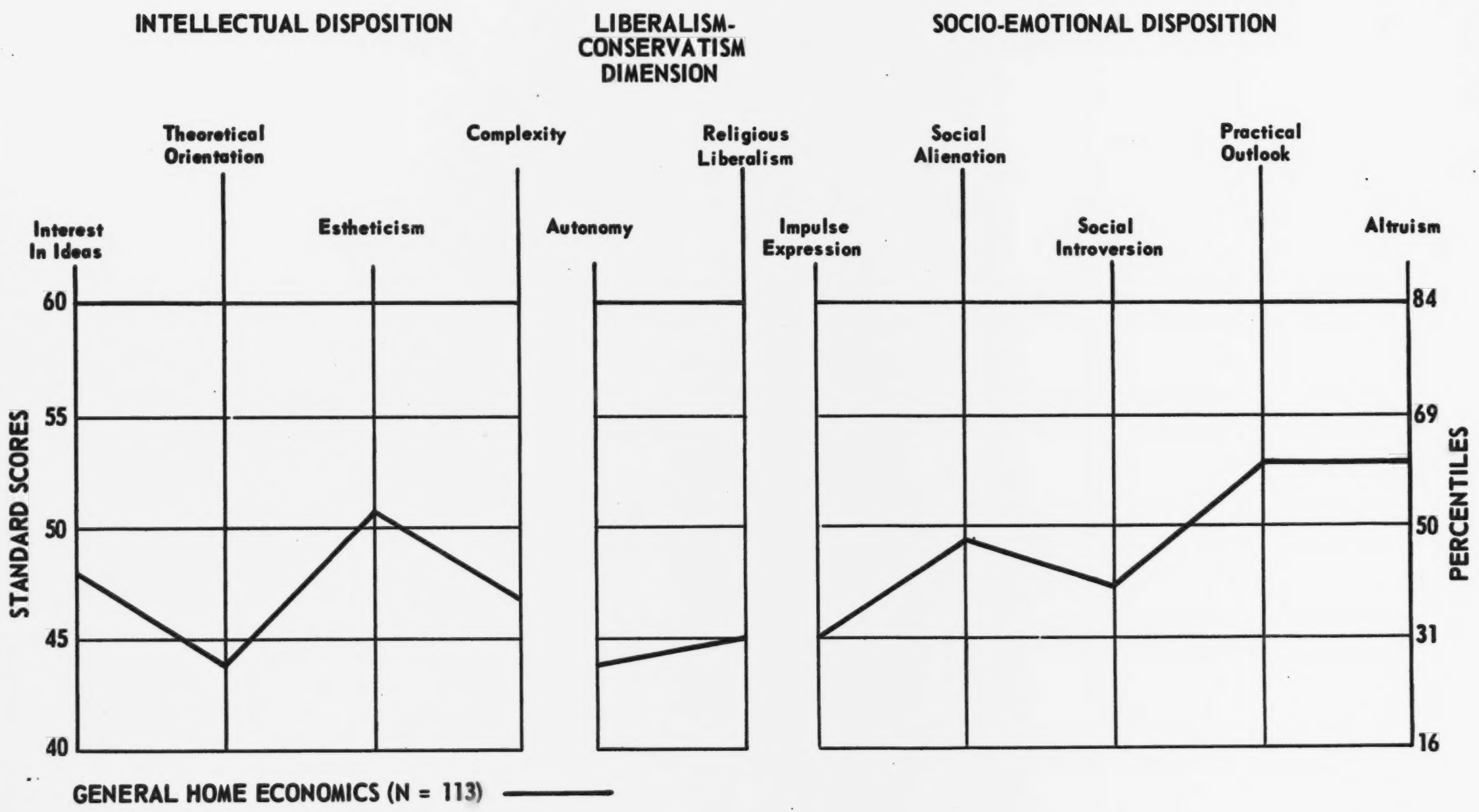


FIGURE II

1963 GENERAL HOME ECONOMICS FRESHMEN – ACADEMIC STATUS
ATTITUDE INVENTORY SCORES

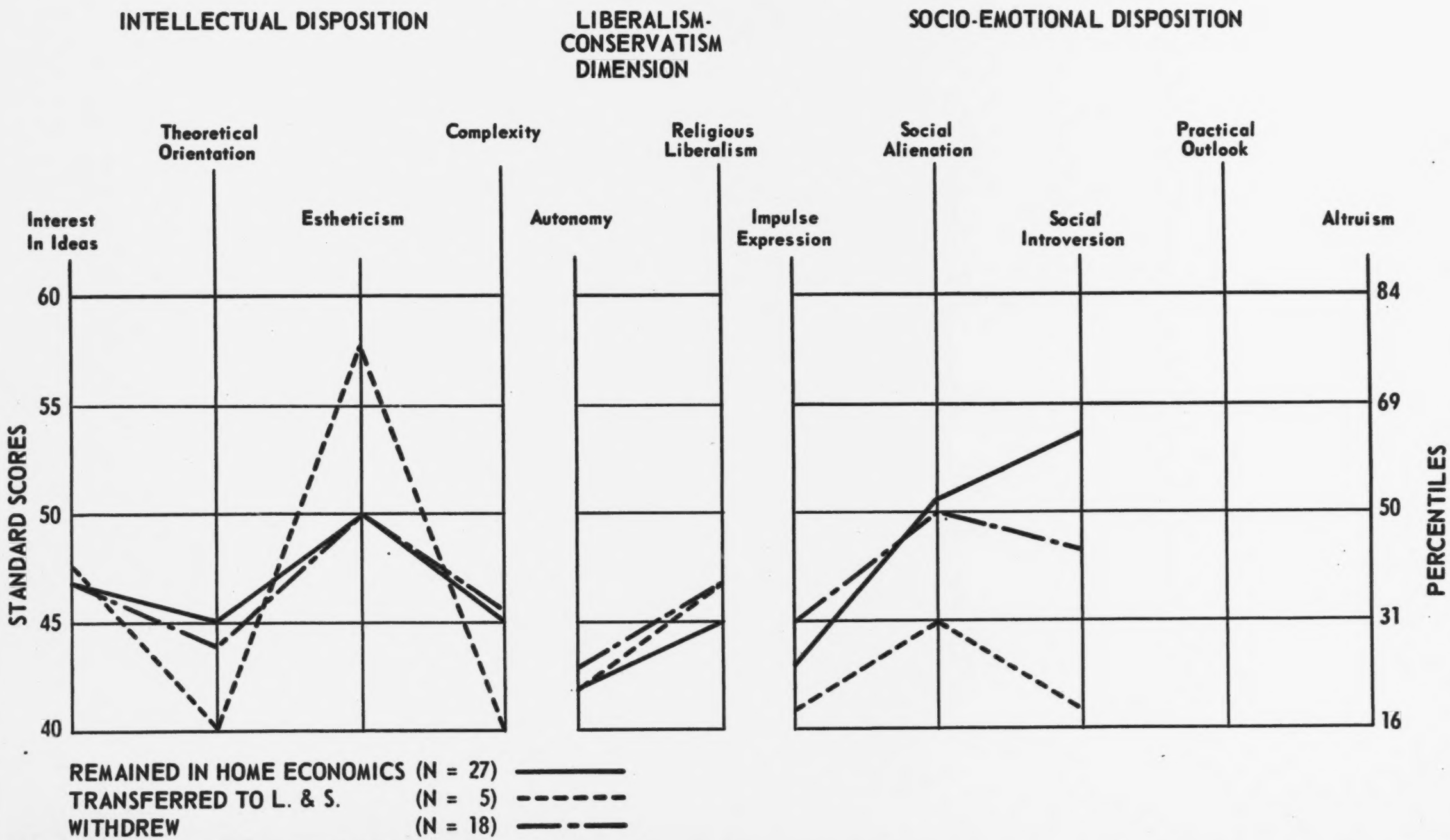


FIGURE III

1963 AND 1964 PREVETERINARY MEDICINE MALES AND FEMALES
ATTITUDE INVENTORY SCORES

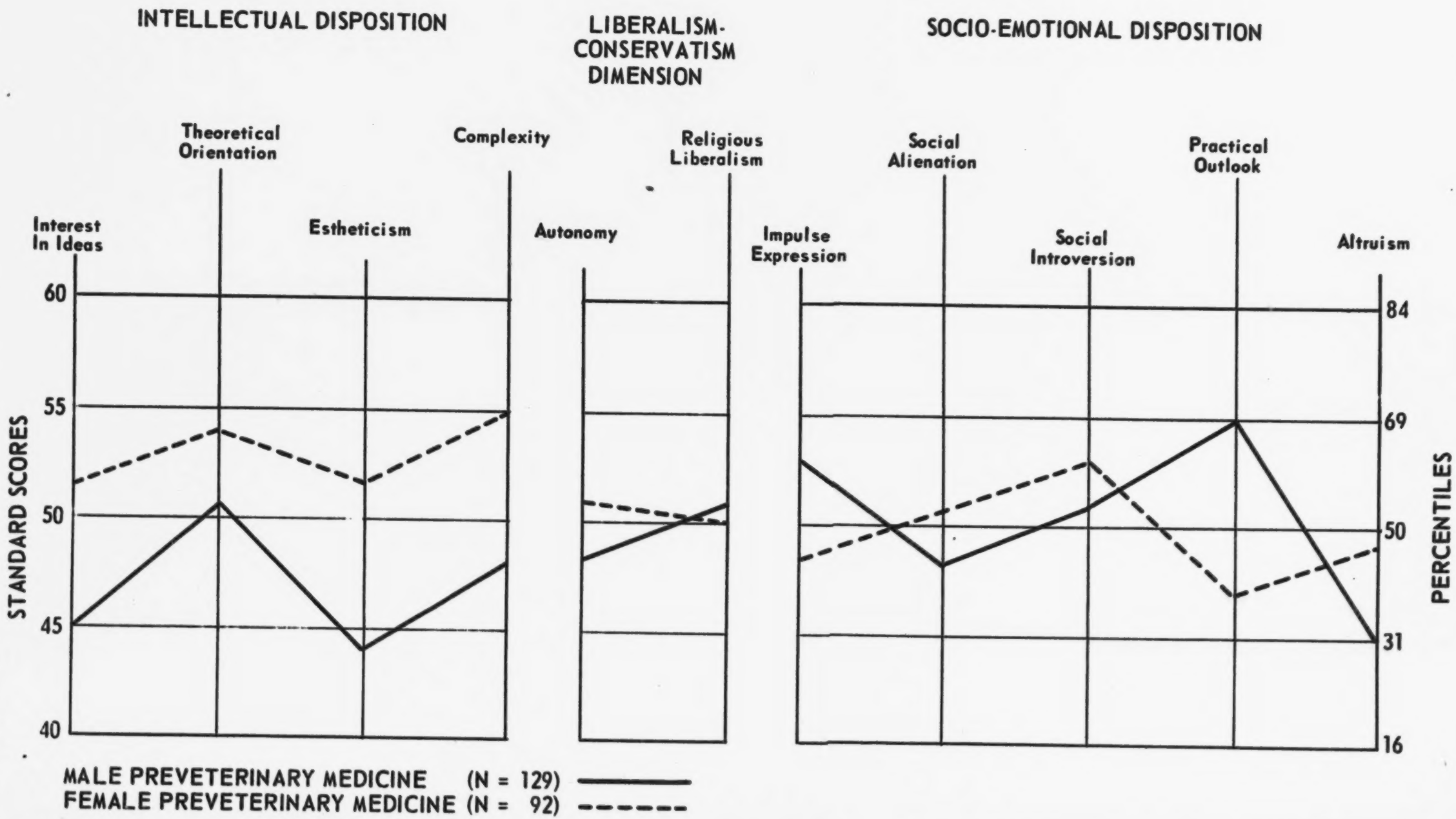


FIGURE IV

1963 PREVETERINARY MEDICINE FEMALES – ACADEMIC STATUS
ATTITUDE INVENTORY SCORES

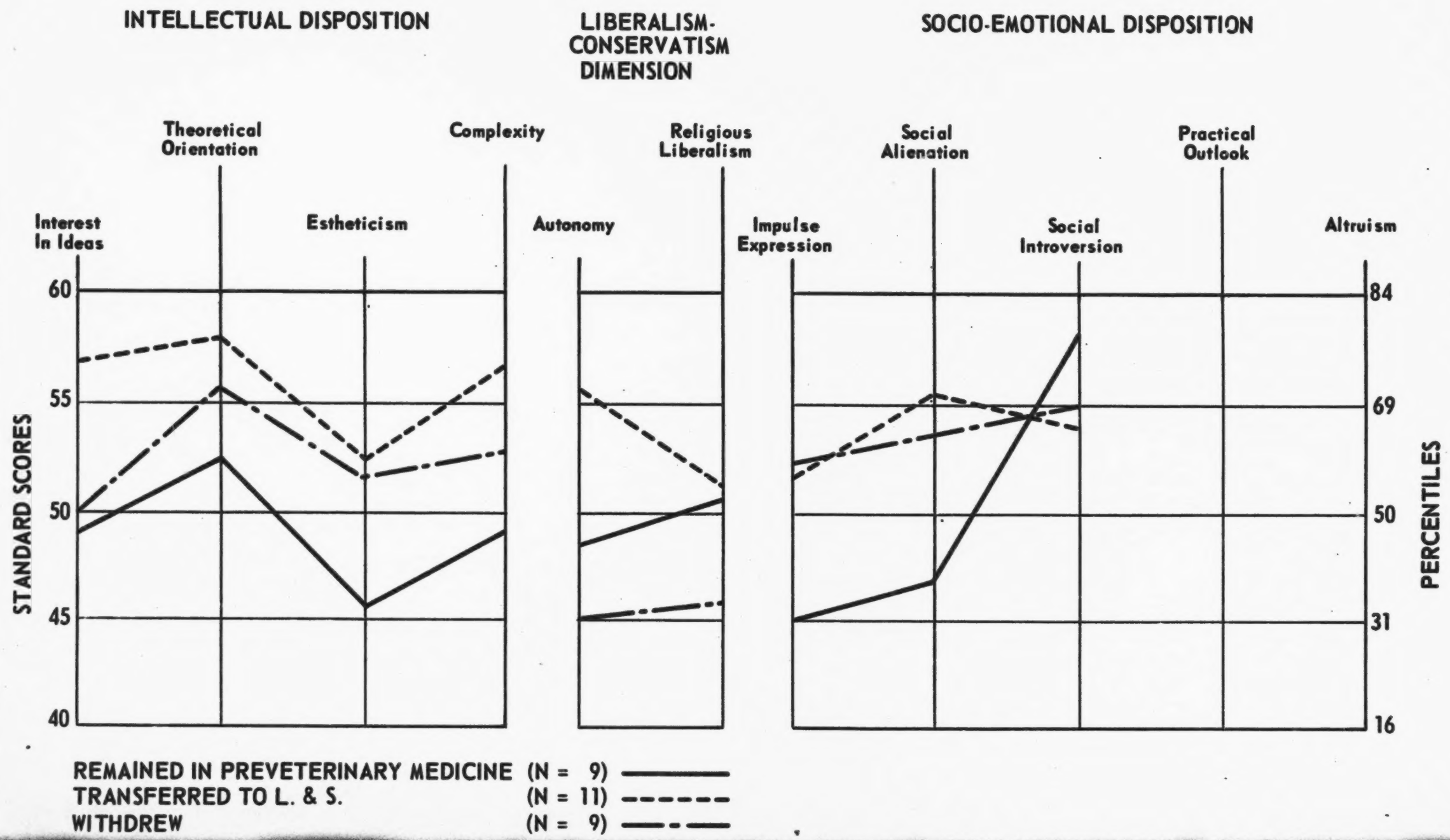
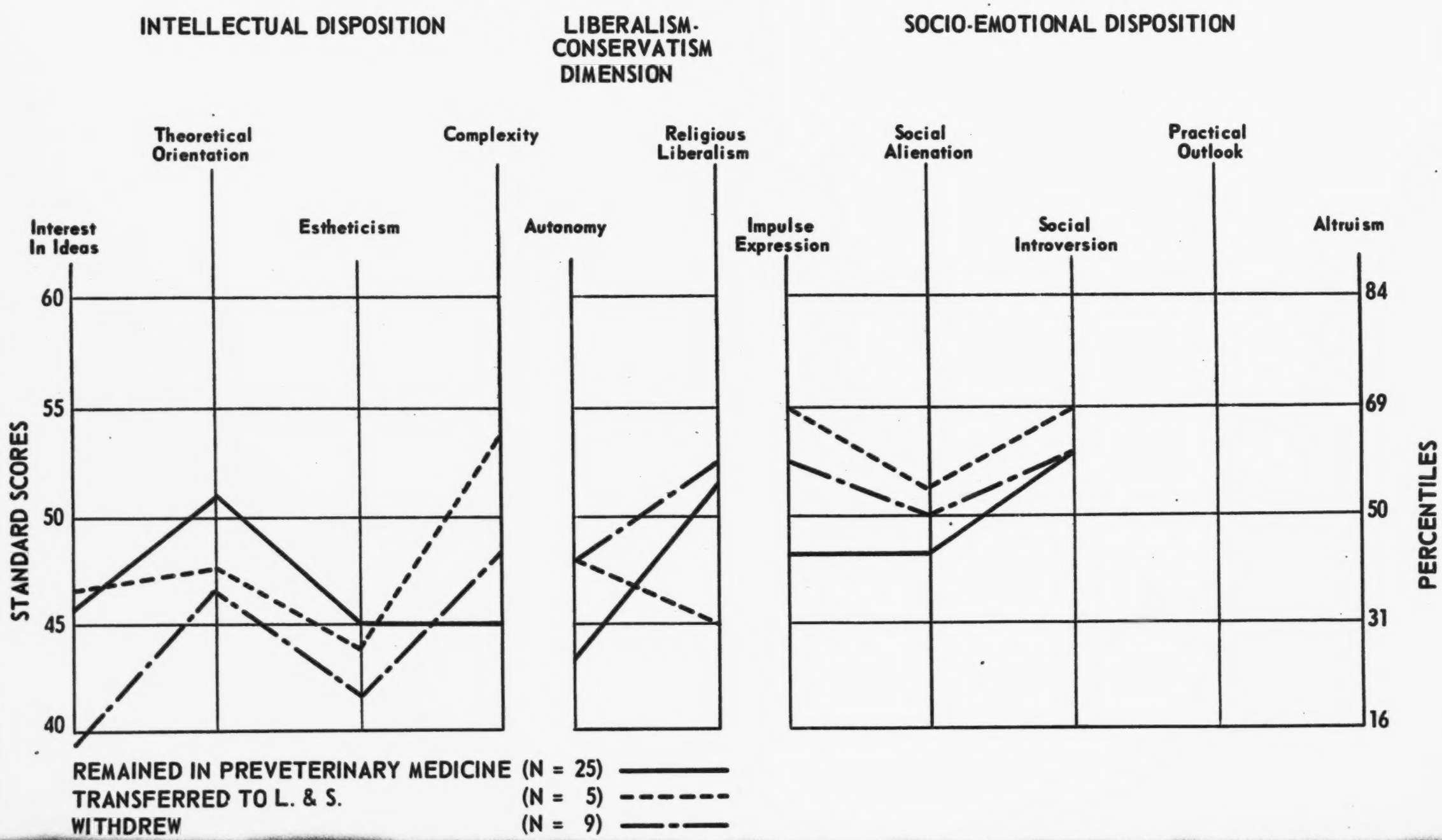


FIGURE V

1963 PREVETERINARY MEDICINE MALES – ACADEMIC STATUS
ATTITUDE INVENTORY SCORES



APPENDIX V

Description of Scales

Omnibus Personality Inventory Form D

I. Intellectual Orientation

Interest in Ideas: High scorers possess a strong liking for reflective thought, particularly of an abstract nature, and express interest in a variety of areas such as literature, art, music, and philosophy.

Theoretical Orientation: High scorers possess a strong interest in science and scientific activities, including a preference for using the scientific method in thinking. They are generally logical, rational, and critical in their approach to problems.

Estheticism: High scorers have diverse interests in artistic matters and activities, including literature and dramatics.

Complexity: High scorers show an experimental orientation rather than a fixed way of organizing and viewing phenomena; they are tolerant of ambiguities and enjoy diversity and novel situations and ideas, as opposed to those who perceive and react primarily to the simple and obvious.

II. Liberal Orientation

Autonomy: High scorers are tolerant of viewpoints other than their own, and are nonjudgmental, realistic, and intellectually liberal. They are nonauthoritarian in their thinking, have a need for independence, and oppose infringements on the rights of individuals.

Religious Orientation: High scorers are skeptical of religious beliefs and practices and tend to reject most of them, especially those that are orthodox or fundamentalistic. Low scorers are generally

politically conservative and somewhat rejecting of other viewpoints.

III. Social-Emotional Adjustment

Social Introversion: High scorers tend to withdraw from social contacts and responsibilities.

Impulse Expression: High scorers possess a general readiness to express impulses and seek gratification either in conscious thought or in overt action. They have an active imagination and their thinking is often dominated by feelings and fantasies.

Social Alienation: High scorers possess attitudes and behaviors that characterize socially alienated and highly anxious persons.

Altruism: High scorers are warm and trusting in their relations with others. They have a strong concern for the welfare and feelings of people they meet or hear about.

Practical Outlook: High scorers are interested in practical, applied activities. The criterion used most often to evaluate ideas and things is one of immediate utility. High scorers also tend to value material possessions and concrete accomplishments.

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A STUDY OF THE PERFORMANCE OF LIMITED STATUS STUDENTS COMPARED TO REGULAR GRADUATE STUDENTS IN AGRICULTURE

E. M. Juergenson, Associate Professor
Department of Agricultural Education
University of California, Davis
March, 1966

VT000036

A Study of the Performance of Limited Status Students Compared to Regular Graduate Students in Agriculture

The preparation of superior teachers involves a variety of factors, few of which are definite, most of which are illusive. This makes it particularly difficult, in many cases, to ferret out those characteristics which should be sought in selecting teacher candidates. A trait that seems an asset in terms of one person's total personality may have little relevance in another. Understandably then, a teacher's future performance is often unpredictable, thus giving rise to two closely related questions: Is teaching a science or an art? Who (or at least what characteristics) makes a good teacher? In answer to the first question, there are probably elements of both art and science in the performance of a good teacher. The second question, however, is less easy to answer--who and what become indistinct and hazy. Equally nebulous, for the same reasons, is a just and accurate evaluation of teacher performance itself; yet in the face of little objective criteria for evaluation the process continues, upon occasion with questionable accuracy, at all levels in the profession.

Most will agree that preparing teachers is a long, continuous process, but one in which critical plateaus of effort and achievement may be encountered. One such plateau is the student-teaching experience, whereas the acquiring of the many technical skills needed may be a long, uninterrupted continuum.

While there are many criteria for selecting desirable teacher candidates, there are no established criteria that everyone would agree to; therefore, it is important not to overlook any aspects in the background or performance of possible new teachers. Some evidence, such as grade point average, is objective and easily measured. The assumption is generally made that a high grade point average is a desirable criterion to use in selecting candidates. While this may be true generally, experience indicates that grade point is not always infallible, and that many other items contribute to and are related to the successful performance of a teacher.

A comprehensive study to determine the relationship between teaching, in terms of total performance and performance in nine functions of teaching agriculture, and undergraduate academic achievement in toto and in each of twelve disciplines was completed in 1965 at the University of Maryland.[1] Findings of this study show only minor relationship between undergraduate academic achievement and teaching performance, even though the relationship was examined for a number of disciplines as well as for total undergraduate academic achievement.

There is a need to refine the relationship between grade point average and teacher performance. There is also need to clarify what other traits, such as drive, cooperativeness, willingness to work, etc., are most significant and applicable to success in teaching. Finally, what is the inter-relationship between grade point averages and indications of teacher potential and eventual teacher performance?

An opportunity to gain insight into these problems evolved with the initiation of the limited status program at the University of California at Davis. This program, started in 1958, allows certain students, whose grade point averages are not high enough to enter the University as regular graduate students, to enroll for post graduate work. In order to obtain the standard credential to teach agriculture in California, a minimum of one year of graduate work is required. In the Department of Agricultural Education, undergraduates must obtain at least a 2.5 (4 point system) grade point average in all upper division courses in order to be admitted to Graduate School. Those with a lower grade point average may be permitted to enter in limited status to work for a credential, provided there is additional evidence of teacher potential, as determined by a jury who, from their experience, subjectively evaluate the candidate's future performance.

[1] V. R. Cardozier, "Undergraduate Academic Achievement and Teaching Performance," Misc. Publication No. 559, September, 1965, Maryland Agricultural Experiment Station, University of Maryland, College Park, Maryland.

The number of persons admitted under this program is small. Nevertheless, it presented an opportunity to test the hypotheses regarding these kinds of candidates.

A theoretical salary scale[1] was the instrument used to measure on-the-job teacher performance.

Hypotheses to be Tested

1. There is no difference between the performance of teachers in limited status and regular students.
2. There is no correlation between the performance of teachers and their grade point averages in undergraduate or post graduate work.
3. There is no difference between grade point averages of limited status students and regular graduate students during the post graduate year.
4. There is no difference between regional supervisors and administrators in their performance rating of graduate or limited status students.

Summary of Findings

The Study indicates that limited status students perform, when teaching, as effectively as those students admitted in regular graduate standing.

For limited status students there is no relationship between their performance as teachers and their undergraduate grade point average. There is still no relationship between their performance and over-all grades or on-campus grades received during their post graduate year; however, the relationship is much closer than during their undergraduate years.

For regular graduate students a significant relationship exists between their performance as teachers and their grades, both for on-campus grades and

[1] Edwin L. Rumpf, "A Basis for the Selection of Vocational Industrial Education Teachers for Employment in Pennsylvania," Thesis, Ed.D., 1954, Pennsylvania State College.

over-all grade point average. On-campus grades are from courses taught mainly outside the Agricultural Education Department, primarily technical courses, and over-all grades include these, plus their grades received during the student teaching period.

While their performance as teachers in the field was almost identical, considerable difference still exists in all grades received between the two groups. Limited status students continued to lag behind regular graduate students in post graduate work, as measured by grades both for on-campus courses and over-all grade point averages. The difference was statistically significant.

Performance was measured by the regional supervisor in agricultural education and the administrator in the local high school under whom the teacher was working. The evaluation instrument used was the theoretical salary scale previously validated for this group to measure success in teaching vocational agriculture. Administrators and regional supervisors agreed on their evaluations; their performance ratings for individual teachers were not significantly different.

Procedure

Since 1958 the Department of Agricultural Education has prepared 122 new teachers of agriculture who have since entered teaching. This does not include those enrolled last year (1964-65) or the current student teachers (1965-66). Only one or two persons per year complete the program and do not enter teaching; often none of them seek other employment. Most of this group enter the teacher preparation year via the regular route--Graduate School--so the number completing the program in limited status is small. All candidates were included in the study, but comparisons were made on unequal groups, as there were 20 in the limited status group and 49 in graduate school during the years studied.

The accuracy of evaluation is at best a difficult item to measure, particularly in the social sciences. However, agriculture teacher performance

had been previously validated in a study at Pennsylvania State University.[1] In this study an instrument called a theoretical salary scale proved effective and valid for measuring success in teaching. While the single most effective evaluator was the administrator, the teacher trainer and regional supervisor's evaluations correlated with the administrator's in evaluating teachers. In this research, administrator and regional supervisor evaluations of teacher performance were used. Here again the ratings made by these two groups correlated at the 5 percent level of significance, as indicated in Table I. (A copy of the rating instrument is included in the appendix.) In this rating scale, evaluators are asked to indicate what salary a teacher should be paid in terms of his effectiveness as a teacher in the school and community in which he is teaching.

Table I

Relationship Between Performance Ratings
by Regional Supervisor and Administrator

Comparison	N	r	Level of Significance 5%
Limited Status Students	21	.72	.433
Regular Graduate Students	49	.52	.281
Combined Group	70	.56	.235

The actual range of figures is based on current salaries in the year during which the study was done. As the evaluations made by the administrator and regional supervisor correlated, the comparison between limited status and regular graduate students was made by averaging ratings made by the two evaluators.

[1]Elwood M. Juergenson, "The Relationship Between Success in Teaching Vocational Agriculture and Ability to Make Sound Judgments as Measured by Selected Instruments," Dissertation, Ph.D., 1958, Pennsylvania State University.

The most important finding of the study is indicated in Table II. A comparison of performance ratings indicates that limited status students and graduate students perform equally well, as measured by the t test. The 5 percent level of signifi ance was selected as the confidence limit for all calculations.

Table II

Comparison of Performance Rating Between Limited Status and Regular Students

Student	Performance Rating	t Test	Level of Significance 5%
Limited Status	10,107.14	.4545	2.000
Regular Graduate	10,293.36		

Only a slight difference, 10,107.14 compared to 10,293.36, was noted for limited status versus graduate students. These figures represent a mean of the average of all ratings, but a comparison of individual ratings used in the t test showed no significant difference.

Table III indicates the relationship between performance ratings and grade point averages for both groups. The two groups performed differently in this category, as the performance of limited status students showed no relationship to grades, whereas for graduate students, both for on-campus and over-all grades, a relationship was indicated between this factor and performance.

Table III

Relationship Between Performance Ratings and Grade Point Average for Limited Status Students and Regular Students

Comparison	N	Value of r	Level of Significance 5%
Limited Status			
Performance and Undergraduate Grade-Point Average	15	.0478	.514
Performance and Over-All Grade-Point Average	21	.423	.433
Performance and On-Campus Grade-Point Average	20	.321	.444
Regular Graduate			
Performance and Over-All Grade-Point Average	49	.449	.281
Performance and On-Campus Grade-Point Average	49	.355	.281

Table IV shows the actual grade-point averages of the two groups of students and includes the undergraduate grade-point averages for limited status students.

Table IV

Comparison of Grade Point Averages of Limited Status and Regular Graduate Students in Agriculture

(Based on 4 point scale)

Semester Grade	Limited Status	Regular Graduate
Undergraduate G.P.A.	2.28	2.54
Over-All G.P.A. (U.C.D.)	3.12	3.29
On-Campus G.P.A. (U.C.D.)	2.81	3.14
Performance Rating	10,107.14	10,293.36

No accurate undergraduate figures were available for graduate students except that in all cases it was above 2.5, and often considerably higher than this.

There was a significant difference between the two groups, both for on-campus and over-all post graduate grades, as indicated in Tables V and VI.

Table V

Comparison of On-Campus Post Graduate Grade-Point Average Between Limited Status and Regular Graduate Students

Student	Grade-Point Average	t Test	Level of Significance 5%
Limited Status	2.81	2.94	2.000
Regular	3.14		

Table VI

Comparison of Over-All Post Graduate Grade-Point Averages Between Limited Status and Regular Graduate Students

Student	Grade-Point Average	t Test	Level of Significance 5%
Limited Status	3.12	2.36	2.000
Regular	3.29		

In terms of grades, all students tended to maintain the same grade-point average, even though other measures of achievement may show different results. However, it should be noted that limited status students selected as potential teachers raised their average grade point to within .17 of the regular students when over-all grade-point average was considered, even though they started considerably below the 2.5 minimum which is necessary to enter Graduate School.

Recommendations

Admittedly, the specific characteristics of good teachers are intangible, yet when persons with grades lower than those normally accepted as necessary for graduate work are selected as teacher candidates, they perform well provided they are chosen on the nebulous basis of having teacher potential. This indicates that identification and evaluation of these characteristics would be of use to teacher education programs and to those individuals who wish to evaluate themselves.

While undergraduate grades are important, there is evidence that they are not the only predictive criteria for effective teachers at the secondary level. However, the trend in grades may be desirable to watch as an early indicator of the success of the subjective evaluations; those with low grades who later proved to be good teachers raised their grade-point average. In fact, during post graduate work all candidates improved their grades, even in highly competitive on-campus technical courses, thus indicating a continuing upward trend.

Students with grades not high enough to enter Graduate School should understand that admission to post graduate programs under limited status is not automatic. In each case, additional evidence of dedication, drive, and past performance in working effectively with young people and student organizations was required and evaluated before these persons were admitted to the teacher education program. The study indicates, however, that when this is done well and the evidence is favorable, effective teachers can be developed from this group of candidates.

Appendix

Name_____

This scale is a device designed to measure the effectiveness of a teacher of vocational agriculture.

Indicate by a check mark opposite the appropriate figure your evaluation of what the teacher of vocational agriculture named above should be paid. Consider his present effectiveness as a teacher in your school and his contribution as a member of your community in arriving at an evaluation.

Salary Range	Over-all Rating
$14,000	
$13,500	
$13,000	
$12,500	
$12,000	
$11,500	
$11,000	
$10,500	
$10,000	
$ 9,500*	
$ 9,000	
$ 8,500	
$ 8,000	
$ 7,500	
$ 7,000	
$ 6,500	
$ 6,000	

Instructions for Rating

Assume that $9,500 per year is an average salary for a teacher doing a fair teaching job and that the salary range is from $6,000 (low) to $14,000 (high). These are current 1964-65 statewide figures.

Disregard the teacher's present salary.

Do not reward for years of service nor attempt to predict future performance.

Check opposite the salary which, in your opinion, should be paid to the above teacher in terms of his present effectiveness.

*Average salary of all teachers of agriculture in California, 1964-65.

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Educational Research Series, Number 22
January 1965

Vocational Competencies Needed for Employment In the Feed Industry

ER 22

Bureau of Educational Research Services
College of Education
Michigan State University
East Lansing, Michigan

00037

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Educational Research Series
Number 22

VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE FEED INDUSTRY

A Report of Research Supported by the Michigan State
All-University Research Fund, 1963-64

Raymond M. Clark
Professor of Education

Bureau of Educational Research Services
College of Education
Michigan State University
East Lansing, Michigan

January 1965

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B. Instructional Programs to Develop Competencies Needed by Workers in the Feed Industry. 91

VOCATIONAL COMPETENCIES NEEDED FOR EMPLOYMENT IN THE FEED INDUSTRY*

Problem

Adequate vocational training for non-farm agricultural occupations is not now being provided in Michigan. Very few of the schools in small cities and rural areas offer vocational programs other than agriculture and homemaking. The agricultural programs which are offered are geared primarily to training for farming.

Our experience with a pilot program conducted at Pigeon, Michigan, in 1962-64, indicated a serious lack of materials for providing an integrated instructional program specifically for training prospective workers for non-farm industries and businesses. There are materials available for teaching in areas such as insurance, trade, and office practice. There are other materials related to instruction for farming. But we have found none that are organized to provide students with materials specifically related to non-farm agricultural occupations.

In addition, studies have indicated that the job classifications and duties of employees in similar businesses vary considerably. In one establishment, a "parts man" is called upon to do repair work on

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*Doctoral candidates in vocational education assisted with many aspects of this study. Mr. Harlan Hegler did nuch of the preliminary work of analyzing the industry and identifying its functions and related competencies. Mr. William Householder coordinated and prepared materials for the interviews, and completed part of the tabulations. Mr. James Albracht did some of the interviews. Mr. John Thompson helped to complete the tabulations. Mr. Allen Baron checked the office and distributive competencies.

farm machinery. In other situations, he is asked to sell items to farmers or to demonstrate machinery on farms. The experiences with the pilot project--and others--indicate that we need to study many of the non-farm agricultural businesses and industries to determine the functions to be performed, and the knowledge, understandings, skills, and abilities needed by workers to perform these functions. This material could then be used to help teachers and school administrators develop instructional materials for the training programs they would organize.

Specific objectives of such training programs would include the following:

1. To determine the functions of workers at different levels in non-farm agricultural businesses and industries;
2. To identify the functions that require knowledge, understandings, or abilities in agriculture for satisfactory performance; and
3. To develop instructional materials for training programs designed to train for these occupations.

The foregoing statement of purpose is essentially the same as that of the application for an All-University research grant for the year 1963-64. This grant was to help finance a pilot program which would establish a pattern for research to help achieve the objectives stated above. This document is a report on that project. It will (1) review the accomplishments to date, (2) report the findings, and (3) suggest some next steps which might be taken.

Literature

Earlier reports dealing with training for non-farm agricultural occupations have been reviewed in the literature in some detail.* These re-

*See: Raymond M. Clark, "The Need for Training for Non-Farm Agricultural Occupations." East Lansing, Michigan: College of Education, Michigan State University, 1959, mimeographed. This content also appears in a seminar report: New Dimensions in Agricultural Education. Urbana, Illinois: College of Education, University of Illinois, 1960.

views will not be repeated here. Currently, however, a number of related studies are under way. They have not been reviewed in the literature, but verbal reports were presented at a recent Conference on Agricultural Occupations held at the National Center for Research in Agricultural Education, the Ohio State University, January 1964. At present, these reports are being summarized at the National Center for the next issue of Research in Agricultural Education.

According to the Conference reports, the information being collected will not identify the content needed to prepare workers for satisfactory on-the-job performance in these enterprises. At the same time, studies by Sutherland and Thompson in California, by Tom in New York, and by Clark in Michigan, indicate that the tasks performed by workers in similar enterprises vary considerably. Further, our earlier studies indicate that many workers in non-farm agricultural occupations need competencies which cut across traditional vocational services. That is, they need in their training programs elements concerned with distributive occupations, office practice, trade, and agriculture.

With these facts in mind, the project to be discussed herein was designed to identify such occupational competencies by: (1) analyzing the functions performed in the industry; (2) determining the competencies which are needed by workers at some level of the industry, and which contribute to effective performance of the functions in question; (3) breaking down these competencies into understandings, abilities, and skills which can be used by educators in developing appropriate training programs; and, for such purposes, (4) grouping the understandings, abilities, and skills under suitable instructional units. These procedures are described in the sections which follow.

Design

First, a number of the most common and most important non-farm agricultural businesses and industries were listed. Among these were the ones listed below:

- Feed industry
- Farm machinery industry
- Farm equipment industry
- Nursery industry
- Greenhouse industry
- Farm credit business
- Farm chemical industry, subdivided as follows:
  - Pesticides
  - Herbicides
  - Insecticides
  - Fungicides
  - Antibiotics

From this list we chose the feed industry for our pilot study. We then planned the following steps:

1. Identify the functions performed in the entire industry.
2. Validate the functions by means of a jury of individuals who are well acquainted with the feed industry.
3. List the competencies required for performance of the functions.
4. Secure validation of these competencies by personal interviews with a jury of men who are engaged in the feed industry, and who are recognized as leaders of the industry within the State.
5. After validation of these competencies, make a detailed analysis of each competency item which was rated as important or essential by the jury of industry people. The detailed analysis is to be made in terms of understandings, skills, and abilities required for satisfactory performance in the industry.
6. Submit this analysis to a group of educators for validation.
7. Group the understandings, skills, and abilities into suitable instructional units.

8. Report the findings to persons engaged in educational activities for use in organizing training programs to meet the needs of workers in the feed industry.
9. An additional step may be taken when the analysis of additional industries has been completed, namely, the clustering of items applicable to more than one industry or to more than one function.

At present, the latter step is not possible since the pilot project did not involve a wide enough range of industries.

Procedure

Determining the Functions

The first step in determining the competencies needed for employment in the feed industry consisted of preparing a list of the functions which are performed somewhere in the total industry. The following nine functions were identified:

1. Processing
2. Sales
3. Service
4. Office practices
5. Public relations
6. Purchasing
7. Transportation
8. Research
9. Maintenance

For the most part, the concept "function" was fairly easy to apply. However, as we interviewed some individuals, we found it necessary to remind them not to think of their own specific jobs nor of their own particular businesses, but rather to think of the industry as a whole.

After the list of functions was completed, it was checked with staff members from Cooperative Extension and from Short Courses at Michigan State University. These people are closely associated with representatives of the feed industry, and are perhaps better able to identify the functions which are performed than are individuals employed in a single segment of the industry.

Determining the Competencies

For each function identified, the competencies which were believed to be necessary for its performance were listed. Thus, for each function, we asked ourselves, "What competencies are necessary for the performance of this particular function somewhere in the total industry?" When the list of competencies was completed to our satisfaction, we submitted it to individuals in the following positions:

1. Extension Specialist, Animal Husbandry, Michigan State University;
2. Extension Specialist, Poultry Husbandry, Michigan State University;
3. Extension Specialist, Dairy Husbandry, Michigan State University
4. Professor, Farm Elevator, Manager Training Program, Michigan State University; and
5. Two representatives of the feed industry at the State level in Michigan.

These individuals were asked to modify and to add to, or to subtract from, our list of competencies. On the basis of their recommendations, the original list of competencies was revised and duplicated.

The next step was to select representatives of the feed industry to serve as a jury: to validate our list of competencies, and to rate their importance to the total industry. Again we called on the individuals listed above, and asked them to help identify people in the feed industry to be interviewed.

Contacts with the industry representatives and arrangements for the interviews were made by telephone. Mr. William Householder and the author did the interviewing. In preparation, each of us practised on a number of individuals--including teachers of agriculture, and faculty members of the College of Agriculture and of Agricultural Education in the College of Education. Our particular objective was to develop uniform procedures in interviewing, and thus to reduce the variations and biases which stem from this source.

In every interview situation, we were welcomed enthusiastically. It is evident that the feed industry people are anxious

for help in training workers for their industry. We conducted a total of fifteen interviews. Included in this number were individuals who represented, at the State level, more than 75 per cent of the total livestock feed industry in Michigan.

One unique aspect of our interviews was that we placed each competency item on a small card. These cards were color coded according to the function they represented. When we asked the interviewees to rate the competencies on a four-point scale, they placed the cards in appropriate sections of a partitioned box. Following the interview, the interviewers could record the responses to each item in a very short time. We found that, for each interview, it took approximately 35 minutes to rank the 189 items. This is much less time than would be required if the items had been in the form of a check list on large sheets of paper.

The competency items which were rated 3 or 4 on a four-point scale are listed in Tables 1-9 of Appendix A. Items rated 1 or 2 are not considered in these tables--nor elsewhere in this report. In general, Tables 1-9 summarize teacher's responses regarding the adequacy of the listed understandings, skills, and abilities to develop the competencies indicated.

Identifying the Instructional Content

Following the validation of the functions and of the competencies required for their performance, the skills, understandings, and abilities needed to develop each of the competencies were identified. Since the representatives of the feed industry had rated the competencies on a four-point scale--4 being the highest rating, and 1 the lowest rating--we arbitrarily confined the development of understandings, abilities, and skills to the competencies rating 3 or 4.

The lists of understandings, skills, and abilities were developed by the author and a group of graduate students in Agricultural Education. These lists were then checked by teachers of Vocational Agriculture in Michigan. The teachers were asked,

"When the items listed under the competency are taught, will the students be able to perform in the industry at some level in terms of the competency?" Tables 1-9 of Appendix A indicate the number of teachers who were asked to respond, and the total numbers of positive and of negative responses for each section of the lists of understandings, skills, and abilities.

In each case, the teacher was contacted personally--by the author, or by one of the graduate students working on the project. The lists of understandings, skills, and abilities were first reviewed with the teacher. Then the teacher was asked to check the lists and to return them to us. One hundred per cent of the lists were returned.

In listing the understandings, skills, and abilities, an attempt was made to include all aspects of vocational and general education specifically needed to develop the competencies in question. For example, the understandings, skills, and abilities which are listed will generally require a sound base in communication and in the sciences--as well as training in the maintenance of farm machinery, an understanding of principles of nutrition, and some mastery of many other related fields. It is evident that the training of competent workers for the non-farm agricultural occupations cannot be confined to any one of the traditional areas of vocational eeucation. It is also evident that a well-rounded training program must make available instructional facilities from all of the traditional areas of vocational education as well as from the areas of general education.

Development of Training Programs

The understandings, skills, and abilities which were submitted to the vocational agriculture teachers were re-grouped into a number of instructional experiences and activities. In appropriate work-experience situations, these experiences and activities may be designed for either the high school or the post-high school levels. The reader will recognize that the subject matter to be developed

under the various unit titles is to be adjusted to the levels of the students. In some cases, the content will also be related to the area of the country in which the program is operated.

The choice of unit titles for the experiences and activities is largely an arbitrary one. It may vary among teachers, and among school systems. In some cases, our unit titles incorporate areas of subject matter which are quite broad. In other cases, the unit titles may imply a type of school organization which is not practical for any given situation. Whatever the conditions, the choice of alternative titles and/or subject matter should prove to be equally satisfactory for developing training programs in some areas. Moreover, it is expected that teachers and curriculum specialists will make necessary modifications. At the same time, it is hoped that they will retain the essentials of the content outlined in this report.

The suggested units, together with the lists of understandings, skills, and abilities falling under them, may be used for developing courses of study for present or prospective workers in the feed industry. For example, a teacher of agriculture might teach a unit (or a course) on livestock nutrition to a class of high school seniors. If the students have had no previous work in nutrition, the teacher will need to start with the most elementary aspects of this subject. This introductory work will probably include the role of proteins, carbohydrates, fats, and minerals in the nutrition of livestock; the characteristics of common grains and forages in terms of their nutritional contributions to animals; and the importance of adequate nutrition for economical livestock production.

On the other hand, a teacher of a thirteenth or fourteenth grade in an area vocational school would likely gear his instruction to a higher level. Usually, his students will have had some elementary instruction in nutrition, along with the necessary chemistry and bacteriology to support more advanced work.

In the same way, students in a high school might be given some basic instruction in office practices, salesmanship, and communication--all of which enable them to contribute to the performance of related functions in industry. Similarly, post-high school students might be trained to contribute to the performance of the function or functions in question through more advanced courses in appropriate subject matter areas.

It is obvious that well-trained personnel, working at any level, will contribute to the performance of the functions of the industry. As suggested and illustrated above, teachers will need to consider the background and the previous training of their students. For this reason, no attempt has been made to indicate what materials should be taught at either the high school or the post-high school levels. Thus, a class of post-high school students with no background of vocational education in high school, might be given training normally provided in the high school. On the other hand, baccalaureate courses in any of the fields listed may be obtained at some colleges or universities. The general indication is that the teacher will be able to prepare students to perform a share of the functions of the industry at the level for which they can qualify themselves.

Further examination of the lists of understandings, abilities, and skills required in the feed industry indicates that, in many cases, similar subject matter is required for the performance of a number of different functions. No doubt, similar analyses of other non-agricultural industries will indicate that, in many instances, the same subject matter will be required for the performance of functions in several non-farm agricultural businesses. This suggests that, in general and as noted above, classes might be organized which will help to prepare workers for jobs at several different points of the business or industry in question. For example, the feed salesman, the feed serviceman, and the trucker who delivers feed to farms, all need to understand and be able to apply some of the principles of livestock sanitation as they perform

their respective tasks. In general, such clustering of subject matter will help teachers to develop training programs to meet the great variety of needs which are identified in studies such as this one.

An examination of the related experiences and activities summarized in Tables 10-18 of Appendix B, also reveals that prospective workers need training in the installation, maintenance, and operation of equipment. It is fairly certain that these people would not need training in agriculture. However, they would need considerable training in one or more aspects of work related to the machinery and equipment phases of the business or industry.

We have had described to us electronically-controlled machine capable of mixing feed according to certain specifications, but with the ingredients adjusted to daily price influctuations. To operate such a machine requires technicians able to wire it according to the variables involved, to run it, to make adjustments and, perhaps, to repair it.

Work Experience: A Part of Training

An essential part of any vocational training program is some kind of related work experience. In the past, work experience programs have taken several forms--including supervised farming programs on students' home farms, cooperative work experience in business or industry under which students work for a specified number of hours per week and, in areas such as machine shop or auto mechanics, the school work shop. No doubt, training for non-farm agricultural business or industry will follow one or more of the traditional patterns--with, perhaps, some modification as to details of organization and operation.

It seems likely that greater use will be made of land laboratories to provide work experience for non-farm students. Greenhouses will be used to provide appropriate experiences for some students. Greater use will be made of school shops and laboratories to provide needed experiences in shop and office practice. In

addition, a wide variety of plans for providing cooperative work-experience activities will be developed. These will take into consideration the seasonal nature of some kinds of experiences, the varieties of training needed for some programs--and the consequent need for varieties of work experiences--and the variations in hours of work to be required per day or per month. In all cases, adequate supervision and coordination of this part of the training program will be required.

As teachers and administrators use material in this report to develop their courses and programs, we shall be interested in their experiences, reactions, and appraisals. In the rapidly changing era in which we are living, the need for training makes it imperative that we develop, as rapidly as possible, adequate training programs, effectively administered, and based on sound educational philosophy.

Summary

There is no question as to the need for training present and prospective workers for non-farm agricultural business and industry. The need has been amply demonstrated by many studies conducted throughout the United States. There is also sufficient evidence of a need for trained workers for non-agricultural business and industry to justify appropriate training for these occupations. The approach used in this study to determine "what to teach" is: (1) to determine what functions are performed by the industry as a whole; (2) to determine what competencies are required to perform these functions; (3) to identify the understandings, skills, and abilities which are needed for adequate performance; and (4) to organize these understandings, abilities, and skills into instructional units with subject matter geared to the level of the individuals or groups to be taught.

Experts associated with the feed industry in Michigan assisted in developing lists of the functions and the competencies of their industry. These lists were validated by a jury representing a large proportion of the Michigan feed industry. The identified activities were then broken down into lists of understandings, skills, and abilities. These lists were submitted to vocational agriculture teachers for their consideration and acceptance. Following acceptance by the teachers, the understandings, skills, and abilities were clustered into instructional experiences and activities. These clusters are presented in Tables 10-18 of Appendix B. Tables 1-9 of Appendix A list the functions, competencies, and understandings, skills, and abilities associated with the feed industry.

Conclusions

The major general conclusions which follow from this study are:

1. An analysis of a total industry in terms of the functions performed, the competencies needed to perform these functions, and the understandings, abilities, and skills underlying the competencies needed for adequate performance of the functions is a productive approach for identifying subject matter or content useful for training present and prospective workers for non-farm agricultural businesses and industries.

2. Based on the data secured in this study, training programs can be developed to prepare workers for employment in the feed industry. The level at which the training is to be geared will be determined by the background, the experience, and the previous training of individuals in the program. Understandings, skills, and abilities which are identified and listed in this study can be adjusted to meet the needs of different educational levels of students--from those with no previous training or experience, to the post-baccalaureate.

3. The competencies and their underlying understandings, abilities, and skills, and the related instructional experiences and activities listed in Tables 10-18 of Appendix B provide a basis for developing training programs which prepare workers for the feed industry.

Appendix A

FUNCTIONS, COMPETENCIES, AND THE UNDERSTANDINGS, SKILLS, AND ABILITIES ASSOCIATED WITH THE FEED INDUSTRY

Tables 1-9 indicate:

1. Ratings by representatives of the feed industry of competencies under each function.
2. Response of teachers regarding adequacy of understandings, skills, and abilities for development of the competencies.

NOTE: In the following tables, function is indicated in the title of each table. Competencies are indicated as major headings in the outline as A, B, C, etc. Understandings, skills, and abilities are identified by arabic numerals as 1, 2, 3. Sub-headings suggest content included in the understanding, skill, or ability category.

Table 1

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE PROCESSING FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Understands and interprets MDA and USDA requirements concerning feed processing	3.83		
1. Develops an understanding of MDA and USDA feed laws			
a. State inspection service			
b. System of dating and tagging			
c. Ingredients			
d. Digestible protein			
e. Crude protein			
f. Carbohydrates			
g. Fats			
h. Additives			
i. Mineral			
j. Concentrates			
k. State specifications			
2. Develops an understanding of USDA specifications			
3. Is aware of the various types of feeds and their purposes			
a. Understands the changes in feed requirements of growing animals reflected in types of feed			
1) Fine and coarse feeds			
2) Growing and fattening feeds			
3) Nursing feeds			
4) Laxitive feeds			
5) Production feeds			
6) Special nutritional feeds			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
4. Has ability to blend animal feeds a. Consistent and accurate b. According to purpose c. Calculate ingredients d. Performs operations necessary to grind, roll, pellet, wafer and crimp			
Will Items 1-4 adequately develop the competency suggested in Item A?		12	0
B. Develops an alertness to new opportunities for the business	3.83		
Keeps in personal touch with research being conducted in the area of feeds and feeding	3.58		
1. Keeps and uses an up-to-date library a. Professional journals b. Farm magazines c. Special newsletters d. Trade journals e. Research reports of experiment stations f. Experiment station bulletins and USDA bulletins			
2. Systematically checks with the non-written sources of information a. Professional meetings b. In-service training sessions c. Farming meetings			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
d. Adult class (vo-ag and extension) e. Company meetings f. Special subject meetings			
3. Know the activities of similar businesses			
4. Secure information from customers about: a. Services now being rendered b. Additional services desired			
5. Sets and follows a systematic plan for visiting the following: a. State research farms b. State research substations c. Field days-commercial and educational d. Commercial companies			
Will Items 1-5 adequately develop the competency suggested in Item B?		12	0
C. Records what is received, location of its storage, quality and condition, and keeps a running inventory	3.66		
Determines the acceptability of storage conditions	3.58		
Determines when feed is "Safe" to store or feed	3.41		
Receives and stores grain and feed ingredients	3.33		

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
1. Receives ingredients			
a. Checks for quality and conformity to the requirements			
1) Undesirable and foreign materials			
2) Weight			
3) Moisture			
4) Mineral			
5) Uniformity			
6) Color			
7) Damage			
b. Determines "store ability"			
2. Stores ingredients and feed			
a. Store only with like quality and product			
b. Check storage bins and other possible contaminations			
c. Aware of the proper storage conditions for the ingredients and the product			
d. Is aware of appearance and conditions of "bad-spoiled" products and ingredients			
e. Stores in a location convenient for the blending (manufacturing) and shipping processes			
1) Distance from point of use			
2) Method of receiving and shipping			
3) Method of transportation to the blending process			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
4) Sequence 5) Amount used f. Knows storage characteristics of ingredients and products g. Follows a systematic process of inspecting storage bins for: 1) Capacity 2) Safety 3) Condition of stored ingredients or products 4) Moisture 5) Rodents 6) Age of stored ingredients or products 7) Stored grain tests			
3. Follow a systematic plan of caring for stored feed a. Inspects b. Move (turns feed and ingredients) c. Provides ventilation and aeration where needed			
4. Follow a systematic plan for using feeds a. Maintain adequate records b. Use older ingredients and products first			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
5. Maintain adequate inventory records a. Receives ingredients 1) Quantity, quality, condition 2) Date received 3) Location b. Store ingredients and products 1) Quantity, quality, condition 2) Amount total and in each bin of each ingredient 3) Date put in storage 4) Source			
Will Items 1-5 develop the competency suggested in Item C?		12	0
D. Plans programs for handling materials at lowest cost	3.66		
1. Has plant design to handle products efficiently considering: a. Labor b. Transportation of ingredients c. Output of machinery d. Availability of machinery e. Shipping and receiving methods			
2. Keeps record so that the following may be calculated a. Cost per package of each type of feed			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Labor efficiency c. Return per package 3. Is alert to new techniques-machines reported in trade journals 4. Is aware of the method of materials handling			
Will Items 1-4 develop the competency suggested in Item D?		12	0
E. Develops efficient processing techniques and trouble shoots problems encountered 1. Is able to determine: a. Cost of production per unit b. Efficiency c. Labor requirements 2. Is familiar with the various methods of efficiency in handling the materials within the plant a. Gravity feed b. Machine requirements c. Soft materials d. Hard materials 3. Can combine the above items 1 and 2 into an efficient system 4. Is familiar with the process from raw material to finished product	3.66		

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Item N=12	
		Yes	No
a. Is familiar with the operation of all machines b. Is familiar with each step in the process c. Is familiar with all jobs in the process 5. Maintains a record and files of: a. normal troubles b. equipment history c. maintenance schedules d. operational and maintenance manuals			
Will Items 1-5 develop the competencies suggested in Item E?		12	0
F. Understands and interprets feed formulas and procedure for mixing them 1. Develops an understanding of the types of feed formulas used by the company a. Fine and coarse feeds b. Growing and fattening feeds c. Nursing feeds d. Laxitive feeds e. Production feeds f. Special nutritional feeds 2. Knows the ingredient of each feed blended by the company	3.41		

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Item N=12	
		Yes	No
a. Ingredients (quantity and quality) b. Sequence of the process c. Analysis of each feed			
Will Items 1-2 develop the competency suggested in Item F?		11	1
G. Keeps storage equipment in proper repair 1. Is familiar with the storage equipment 2. Maintains files of: a. Operational manuals b. Maintenance manuals 3. Follows the recommended maintenance procedures 4. Keeps record of: a. Normal mishaps or breakdowns b. Maintenance and repairs performed; date and nature of the work performed c. Equipment history			
Will Items 1-4 adequately develop the competency suggested in Item G?		12	0
H. Records and reports daily consumption of feed ingredients, amounts of feed processed, kinds of packaging and disposal or storage	3.41		

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Item N=12	
		Yes	No
1. Maintains daily records of a. Input of feed ingredients b. Output of processed feed c. Disposition			
Will the above Items develop the competency suggested in Item H?		10	2
I. Keeps abreast of the activities of the business	3.33		
1. Attends appropriate meetings of company personnel			
2. Is acquainted with company personnel			
3. Reads all company reports			
4. Is familiar with company projection plans			
5. Has periodic conferences with other department heads a. Is aware of their problems b. Is aware of the relationship between departments			
Will Items 1-5 develop the competency suggested in Item I?		12	0

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
J. Adjusts mill machinery to meet processing specifications	3.33		
1. Is familiar with the specifications of each type of feed processed or blended			
2. Is able to adjust the mill machinery to meet the processing specifications a. Grinding b. Mixing c. Blending d. Rolling e. Pelleting f. Crimping g. Packaging			
Will Items 1-2 develop the competency suggested in Item J?		12	0
K. Performs mill operations, such as grinding, mixing, and packaging	3.33		
1. Knows the mill operations performed a. Grinding b. Mixing c. Blending d. Rolling e. Pelleting f. Crimping g. Packaging			
2. Has ability to perform each operation a. Is familiar with each operation as a process			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Is familiar with the equipment of each operation c. Has experience in each operation			
Will Items 1-2 develop the competency suggested in Item K?		12	0
L. Keeps processing and mixing equipment in proper repair 1. Is familiar with the processing and mixing equipment 2. Maintains files of operational and maintenance manuals 3. Follows recommended maintenance procedures 4. Keeps records of: a. Normal mishaps and breakdowns b. Maintenance and repairs performed, date and other pertinent equipment history	3.25		
Will Items 1-4 adequately develop the competency suggested in Item L?		11	1
M. Sacks, packages and labels according to specifications 1. Know the packaging and labeling specifications a. Type of tag or label required	3.25		

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Date, code, and other needed information			
2. Has ability to perform operations of: a. Sacking b. Packaging c. Labeling			
Will Items 1-2 develop the competency suggested in Item M?		11	1
N. Plans and schedules processing operations	3.25		
1. Understands and interprets the needs and forms of the sales department			
2. Knows output capacities of the various machines of the plant			
3. Knows the production requirements of each item a. Labor b. Time c. Materials			
4. Calculates the ingredients required for each feed operation			
5. Is familiar with each production process so that a. Efficient use of machine is planned			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Repetition of operations are reduced c. Unnecessary mill adjustments are reduced d. Alterations in the processes are reduced e. Continuous operation is possible			
Will Items 1-5 develop the competency suggested in Item N?		12	0
O. Samples and tests feed stuffs for conformity to desired specifications	3.00		
1. Sets up a system for quality control a. Provides for a sample and test of ingredients b. Provides for the sampling and testing of products			
2. Is familiar with the desired specifications			
Will Items 1-2 develop the competency suggested in Item O?		11	1
P. Cleans and fumigates storage facilities			
1. Sets up and follows systematic plan for cleaning and fumigating storage facilities a. Use of safe products			

Table 1--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Knows how often to be accomplished c. Knows storage "habits" of product			
Will Item 1 develop the competency suggested in Item P?		12	0
Q. Reads and interprets trade journals 1. Has access to trade journals 2. Reads the trade journals 3. Seeks clarification of appropriate points not fully understood 4. Plans for testing and implementation of sound ideas and practices 5. Keeps up-to-date on new machinery			
Will Items 1-5 adequately develop the competency suggested in Item Q?		12	0

Table 2

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE SALES FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Assists farmers in planning programs and trouble shoots his feeding problems	3.91		
1. Is familiar with the nutritional requirements of all types of growing animals			
2. Is familiar with the various systems of handling feed on the farm			
3. Is familiar with the various methods of feeding animals			
4. Is able to recognize feeding problems			
5. Is able to systematically analyze the feeding situation to determine its efficiency, management factors and the like			
6. Is familiar with the management trends of the feed business			
Will Items 1-6 develop the competency suggested in Item A?		12	0
B. Assists local dealers in promoting use of specific feeds by local producers	3.58		

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
1. Is familiar with the types of animals and feeds normally used in the local dealers area			
2. Is familiar with the feeding problems normally encountered by the local dealer			
3. Is familiar with all the feeds of the business			
4. Acquaints the local dealer with all new feeds of the business			
5. Encourages the local dealer to acquaint their customers with the use of specific feeds for specific jobs			
Will Items 1-5 develop the competency suggested in Item B?		12	0
C. Sells direct to producer	3.50		
Sells directly to farmers on the farm	3.25		
1. Becomes acquainted with the producers in the business area and with their needs and problems			
2. Visits the producers of the business area on a systematic follow-up basis to work with them on feeding programs and special problems related to their operation			

Table 2-- Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Becomes familiar with the needs and problems of the producer in the business area 4. Encourages producers to place orders for feed and other products			
Will Items 1-4 develop the competency suggested in Item C?		11	1
D. Assists producers with individual problems by reviewing the specific situation 1. Encourages the producers to keep appropriate records 2. Encourages the producer to analyze his farm business 3. Review the farm business records with the producer to help him discover problems and make decisions leading to a solution of the problems	3.25		
Will Items 1-3 develop the competency suggested in Item D?		11	1
E. Follows up on results obtained by customers and reports these to the management of the business 1. Visits each producer on a systematic basis	3.50		

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
2. Follows up the visits and checks for progress on previously identified problems 3. Files follow up reports with management			
Will Items 1-3 develop the competency suggested in Item E?		11	1
F. Sells directly to customers across the counter in an informative manner without misrepresentation	3.50		
1. Is neat in personal appearance			
2. Knows the products that he sells			
3. Knows and follows the techniques of good customer-sales relationships			
4. Is familiar with the normal problems encountered by the customers, especially with new products			
5. Answers inquiries as objectively as possible			
6. Knows and follows good salesmanship practice			
Will Items 1-6 develop the competency suggested in Item F?		12	0

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
G. Solicits local dealers to sell company products 1. Acquaints the local dealer with all of the products sold by the company 2. Encourages the local dealer to stock those items that are likely to sell 3. Develops techniques with the local dealer for promoting new products	3.50		
Will Items 1-3 develop the competency suggested in Item G?		11	1
H. Recognizes abnormal and detrimental practices and animal health conditions 1. Understands the relationship of farm sanitation to feed efficiency and animal health 2. Understands the effect of management-feed-health results 3. Is able to identify major disease symptoms	3.50		
Will Items 1-3 develop the competency suggested in Item H?		12	0

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
I. Assists local dealers in promotional campaigns, and feed and grain clinics for livestock feeders	3.50		
1. Is familiar with the products of the company			
2. Is familiar with promotional techniques			
3. Performs an inventory to determine items that spend too much time on the shelf			
4. Can design a promotional campaign for new products			
5. Is acquainted with the livestock feeders of the area			
6. Is familiar with the special problems of the livestock feeders of the area			
7. Can design a teaching program to use in feed and grain clinics			
8. Can organize a feed and grain clinic			
Will Items 1-8 develop the competency suggested in Item I?		12	0

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
J. Develops reputable company rapport with dealers through honest representation of products	3.41		
1. Knows the products of the business			
2. Knows and follows good techniques in company dealer-relationships			
3. Is objective as possible in representation of products			
4. Keeps in constant touch with the local dealer and understands his problems			
Will Items 1-4 develop the competency suggested in Item J?		12	0
K. Helps farmers to arrange credit and accepts responsibility for the collection of accounts receivable	3.33		
1. Is familiar with the sources of credit available to farmers			
2. Can develop and analyze a net worth statement			
3. Understands and is able to evaluate the limiting factors associated with the extension of credit such as:			

Table 2--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
a. Ability to pay b. Management ability c. Personal traits d. Family characteristics			
4. Understands company and local dealer credit policies and practices			
5. Is able to analyze the credit risk of the customer			
6. Establishes a procedure for collecting accounts receivable in line with company credit policy			
Will Items 1-6 develop the competency suggested in Item K?		12	0
L. Evaluates and disseminates other tried and tested program techniques and efficiency ideas	3.16		
1. Makes constant use of written and non-written sources of information			
2. Keeps a file of new techniques, programs and ideas			
3. Utilizes these new techniques and ideas when helping local dealers and farmers in developing alternatives to their present operation			
Will Items 1-3 develop the competency suggested in Item L?		12	0

Table 3

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE SERVICE FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Recommends feeds and rations to be used in specific farm situation	3.91		
1. Understands animal nutrition including a. Principles of nutrition b. Functions of feed ingredients c. Elements found in animal feeds d. Growth patterns and changing nutritional requirements of farm animals			
2. Is familiar with feed ingredients common to the area			
3. Understands the relationship of kinds of feeds to management practices a. Effect of management practices to feed efficiency b. Relationship of cost factors c. Relationship of farm sanitation			
4. Ability to adjust feed purchases to feed supplies on farm a. Roughage and pasture of the farm			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Grains produced on the farm c. Mineral deficiencies common to area			
5. Is familiar with the producers and factors associated with formation of rations a. Commercial feeds b. Farm formulated feeds c. Most efficient combination of available feed ingredients			
6. Ability to prepare and submit appropriate reports a. Recommendations to farmers b. Mileage reports c. Follow-up of commitments d. Drafting an itinerary e. Expense accounts			
7. Has a working vocabulary of common terms such as: a. Roughage b. Pasture c. Concentrate d. Supplement e. Mineral f. Protein g. Carbohydrate h. Vitamin i. Water j. Additive k. Ration			
Will Items 1-7 develop the competency suggested in Item A?		12	0

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
B. Works with local dealers on problems concerning extension of credit to customers	3.75		
1. Familiar with the sources of credit available to farmers a. Local banks b. Local dealers c. Production Credit Association d. FHA e. Other			
2. Can make up and analyze a net worth statement			
3. Understands and is able to evaluate the limiting factors associated with the extension of credit such as: a. Ability to pay b. Management ability c. Personal traits d. Family characteristics e. Personal character			
4. Becomes familiar with company credit policy and practice			
5. Is able to analyze credit risk of customers			
Will Items 1-5 develop the competency suggested in Item B?		11	1

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
C. Keeps abreast of developing trends, new developments and new farm technology	3.66		
1. Is familiar with sources of information related to the feed industry and associated fields			
a. Professional journals			
b. Farm magazines			
c. Special newsletters			
d. Trade journals			
e. Research reports of experiment stations			
f. Experiment stations and United States Department of Agriculture bulletins			
2. Makes use of the non-written sources of information			
a. Professional meetings			
b. In-service training sessions			
c. Farm meetings			
d. Adult classes (vo-ag and extension)			
e. Company meetings			
f. State and national conventions			
g. Special subject meetings			
3. Understands the relationship and dependence of the feed industry on the total operation of farmers			
Will Items 1-3 develop the competency suggested in Item C?		11	1

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
D. Promotes the use of company products by encouraging their use by farmers	3.58		
1. Is familiar with the line of company products			
a. Knows their costs			
b. Recognizes their advantages			
c. Understands their limitations			
d. Is familiar with recommendations of the company and the manufacturer			
2. Is able to show customers the merits of the company products			
a. Shows and interprets research data regarding feeding of livestock and poultry			
1) Uses industry conducted research data			
2) Uses experiment station research data			
3. Is familiar with accepted practices in regard to new customers			
4. Is familiar with the location of customers			
5. Is alert for new customers			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
6. Is alert to new products			
Will Items 1-6 develop the competency suggested in Item D?		11	1
E. Exhibits alertness and sensitivity to situations in which a service can be rendered	3.58		
1. Becomes familiar with the problems of the customer a. Helps farmers consider all alternatives b. Helps farmers select the best alternatives c. Helps local dealers with techniques of assisting their customers in reaching desirable decisions			
2. Knows the community served by the local dealer a. Location of all customers b. Key personnel in the community c. Organizations in the community			
3. Becomes aware of the growth patterns of the community a. New industries b. New people c. Alteration of existing patterns			
4. Is alert to new company products			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
5. Is alert to and promotes new uses of company products a. Watch for ideas as to how these products are used on the farm b. Talks with customers in feed stores c. Spreads the word of ideas gathered to others who may be interested			
Will Items 1-5 develop the competency suggested in Item E?		12	0
F. Speaks at farmers' meetings on problems of nutrition and feeding	3.58		
1. Offers services for adult meetings held in the area a. Vo-ag b. Cooperative Extension Service c. Other			
2. Becomes acquainted with the personnel a. People who attend b. People who conduct the meetings			
3. Is aware of the feeding and nutritional problems common to the area a. Local peculiar problems			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
b. Normal problems of the livestock and poultry industry			
Will Items 1-3 develop the competency suggested in Item F?		11	1
G. Promote farm automation and encourages farmers to adapt new techniques to their farms	3.50		
1. Is familiar with methods of improving the efficiency of the feed industry			
a. Is able to conduct time-motion studies where needed			
b. Understands methods of handling feeds			
c. Understands methods of housing animals			
d. Understands proper methods of management of livestock and poultry			
e. Understands accepted methods of management of livestock and poultry			
2. Keeps up to date on new developments in agriculture particularly in the livestock and poultry business			
a. Professional journals			
b. Farm magazines			
c. Special newsletters			
d. Trade journals			
e. Research reports of experiment stations			
f. State and USDA bulletins			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Attends conventions, exhibits and meetings related to the feed industry to secure new ideas			
4. Is aware of the adoption process followed by farmers in accepting new ideas and techniques a. Awareness b. Interests c. Evaluation d. Trial e. Adoption or rejection			
5. Is aware of the sources of information for farmers a. Mass media b. Government agencies c. Friends and neighbors d. Salesmen e. Teachers of Vocational Agriculture			
Will Items 1-5 develop the competency suggested in Item G?		12	0
H. Works with local dealers in the promotion and sales of the feeds in his organization	3.41		
1. Knows the products of the company			
2. Is familiar with proper feed handling methods to be employed by a successful local dealer			
3. Is familiar with the feeds needed in the local area			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
4. Knows acceptable promotional methods a. Visits to farm or local dealers b. Exhibits c. Displays d. Handouts e. Advertising f. Billboards g. Demonstrations h. Field trials			
5. Knows and practices acceptable sales techniques			
Will Items 1-5 develop the competency suggested by Item H?		11	1
I. Assists producers in solving feeding and related problems	3.41		
1. Is familiar with the feeding problems of the customer and of others in the area			
2. Knows the feeding problems generally associated with local livestock and poultry enterprises			
3. Knows the resource persons that are available to help solve special problems related to livestock and poultry enterprises			
4. Understands the relationship of sound management practices to the results secured from feeds			

Table 3--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
a. Efficiency b. Housing c. Sanitation d. Health of animals			
5. Is able to identify disease symptoms a. Internal parasites b. External parasites c. Viruses d. Skin disorders e. Infections f. Others			
Will Items 1-5 develop the competency suggested in Item I?		11	1
J. Keeps local dealers informed regarding problems most frequently encountered on farms	3.08		
1. Is alert to identifying problems as he visits the farm			
2. Has ability to prepare and submit appropriate reports a. Recommendations to the customer b. Report of other areas which were not discussed with the customer			
3. Performs periodic evaluations of the types of problems encountered			
Will Items 1-3 develop the competency suggested in Item J?		11	1

Table 4

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE OFFICE FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Provides records and data required by his supervisor and in an acceptable form	3.83		
Provides information to his supervisor about the organization, its products and services	3.00		
1. Sets up a filing system			
a. Follow an established form			
b. File all receipts, letters, documents, specifications and orders			
2. Familiarizes himself with the filing system used			
3. Keeps up to date on the organization patterns and possible changes			
4. Is familiar with all of the products and services of the company			
5. Is familiar with the business forms of the company			
6. Periodically and systematically reviews the company's progress			
7. Evaluates the progress in terms of prior expectations			

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
8. Investigates new areas for services and products			
9. Provides reports			
10. Has periodic conferences with his supervisor			
Will Items 1-10 develop the competency suggested in Item A?		12	0
B. Maintains a cooperative spirit and sense of loyalty among colleagues	3.66		
1. Has ability to get along with his fellow workers			
a. Speaks to fellow workers			
b. Sees that contact is made with each fellow worker following a definite schedule			
c. Shows an interest in their problems			
2. Is loyal to fellow workers			
a. Supports fellow workers in times of crisis if support is justifiable			
b. Does not talk about or gossip about fellow workers			
c. Distinguishes rumor from fact			
d. Does not spread rumors			
Will Items 1-2 develop the competency suggested in Item B?		12	0

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
C. Establishes approved systems of collecting accounts receivable 1. Familiarizes himself with bookkeeping procedures used by the company 2. Follow the systematic system for accounts a. Recording after sales b. Send statements on a regular basis c. Follow up delinquent accounts d. Have a policy for those accounts that remain outstanding	3.66		
Will Items 1-2 develop the competency suggested in Item C?		12	0
D. Makes periodic summarization of the business for purposes of analysis 1. Is familiar with the business forms, procedures and policies of the company 2. Makes a periodic systematic summary of the business 3. Analyzes the business for trends, weaknesses and strengths	3.58		
Will Items 1-3 develop the competency suggested in Item D?		12	0

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
E. Works with employees in maintaining morale	3.50		
1. Maintaining effective working conditions a. Physical conditions b. Social conditions			
2. Set up to receive and follow up an employee's suggestions			
3. Be alert to rumors			
4. Have a fair promotion and reward system			
5. Have an equitable system of benefits			
Will Items 1-5 develop the competency suggested in Item E?		12	0
F. Performs administrative duties in line with established and accepted organizational policies	3.41		
G. Determines policy concerning wages, hours, and benefits	3.41		
1. Develops a fair and equitable policy for wages a. Beginning b. Advances c. Over-time			
Will Item 1 develop the competencies suggested in Items F and G?		10	0

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
H. Evaluates and commends worker performance 1. Follow a systematic plan for evaluation of work performance a. Fair b. Frequency c. In all work situations of the employee d. Confers with workers frequently	3.33		
Will Item 1 develop the competency suggested in Item H?		11	1
I. Establishes and uses approved systems of cost accounting 1. Is familiar with the systems of cost accounting 2. Can evaluate the systems and select the one best suited to the business 3. Can keep the required records, reports and data of the cost accounting system	3.33		
Will Items 1-3 develop the competency suggested in Item I?		12	0
J. Recommends changes in procedure which increase organizational efficiency 1. Makes organizational charts	3.25		

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
2. Projects organizational charts in light of trends and forecasts			
3. Studies organizational set up for efficiency			
4. Suggests changes that would improve service for efficiency			
Will Items 1-4 develop the competency suggested in Item J?		12	0
K. Clearly instructs employee as to what work is expected of him	3.25		
1. Becomes familiar with all jobs of the company			
2. Instructs the employee as to the why and how of the job			
3. Follow up to see that employee is growing into the expected job performance			
Will Items 1-3 develop the competency suggested in Item K?		12	0
L. Supervises personnel and coordinates their work within departments	3.25		
1. Knows each employee			
2. Is familiar with work of each employee			

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Is able to conduct supervision openly, fairly, and systematically			
4. Is familiar with the work of each department			
5. Is able to organize the work of each department and each worker in the department so that the workers and departments compliment each other			
Will Items 1-5 develop the competency suggested in Item L?		12	0
M. Delegate authority to employee to the extent he can satisfactorily work expected of him	3.25		
Delegate authority to workers in best interest of total operation	3.08		
1. Know work load and job description of each employee in his regular job			
2. Delegate the responsibility and authority necessary for the job			
3. Do not delegate more responsibility and authority than is needed to do the job			
Will Items 1-3 develop the competency suggested in Item M?		12	0

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
N. Keeps employees informed concerning general policies related to operation 1. Has an established general policy for the business 2. Permits the policy to be known to employees 3. Discusses any policy misunderstandings with employees 4. Makes known any changes in general policy	3.25		
Will Items 1-4 develop the competency suggested in Item N?		12	0
O. Helps to maintain complete and accurate record files 1. Becomes familiar with all company records 2. Becomes familiar with the filing system of the company 3. Insures that a file copy of each transaction is completed 4. Insures that a copy of each transaction is filed	3.16		
Will Items 1-4 develop the competency suggested in Item O?		12	0

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
P. Maintains line of communication within the company organization 1. Insures that employees have contacts with their supervisors	3.16		
Will Item 1 develop the competency suggested in Item P?		11	1
Q. Works with employees on the promotion of sales 1. Is familiar with each of the products 2. Is familiar with the sales outlets-customers of the business 3. Is familiar with promotional techniques a. Displays b. Advertisements c. Samples d. Salesmen 4. Keeps records of sales for each employee doing sales work 5. Diagnoses sales problems of some employees 6. Sets up sales personnel training program for the business	3.16		

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
7. Sets up sales program for a special service product of the business			
Will Items 1-7 develop the competency suggested in Item Q?		12	0
R. Cooperates with the employees to increase job efficiency	3.16		
1. Is familiar with the job description of the employee			
2. Can perform an efficiency study of the job			
3. Asks employee for suggestions and improvements in terms of efficiency of business			
4. Works with employees to implement desired changes			
Will Items 1-4 develop the competency suggested in Item R?		12	0
S. Hears and processes grievances of workers	3.16		
1. Insures that all workers have an opportunity to be heard			
2. Sees to it that all grievances are acted upon			

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Reports all grievances to appropriate persons			
4. Insures that persons reporting grievances be informed as to the action being taken			
Will Items 1-4 develop the competency suggested in Item S?		12	0
T. Applies modern principles and concepts of accounting	3.08		
1. Is familiar with the accounting systems of the business			
2. Studies newer concepts and methods of accounting			
3. Suggests appropriate concepts of accounting for implementation into the business			
Will Items 1-3 develop the competency suggested in Item T?		12	0
U. Interviews and hires new personnel, orients new workers and makes them feel a part of the organization	3.00		
1. Keeps track of personnel needs of business			
2. Is familiar with the requirements that prospective employees should have for the job in the business			

Table 4--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Is familiar with the sources of new personnel			
4. Conducts an interview with prospective personnel			
5. Evaluates the prospective personnel in light of job requirements			
6. Is familiar with the job description of new personnel			
7. Provides for a period of systematic orientation to the business for all new personnel			
8. Insures that the new personnel meet all of their fellow workers, supervisors and office personnel			
9. Provides for a systematic follow-up and personal contacts with new personnel			
Will Items 1-9 develop the competency suggested in Item U?		12	0

Table 5

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE RELATIONS FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Visits local dealers and assists them in solving their management problems as well as those involving customer relations	3.50		
1. Keeps aware of the problems of the business			
2. Knows how to work with people			
3. Is familiar with good human relations practices			
4. Can analyze the management problem			
5. Can analyze the customer relations problem			
6. Is familiar with methods of improving customer relations			
Will Items 1-6 develop the competency suggested in Item A?		12	0
B. Prepares and delivers talks related to the feed industry at dealer associations and at farmer and farm youth meetings	3.41		
1. Has an understanding of the entire feed industry			
2. Keeps aware of the changing problems in the business			

Table 5--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Has the ability to prepare talks a. Outline-purpose of talk b. Review materials c. Organize the materials			
4. Is familiar with aids and methods of conveying the talk to groups using such items as visual, models and other aids			
5. Is familiar with some techniques of delivery			
6. Offers services to groups in the business area			
7. Is aware of the differences existing between interests and age groups and is able to consider these in planning a talk			
Will Items 1-7 develop the competency suggested in Item B?		10	2
C. Plans tours of interest to dealers and farmers	3.33		
1. Keeps up to date on the events and activities being conducted			
2. Is aware of the interests of the dealers and farmers			

Table 5--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Has an understanding of how to plan a tour a. Contacts persons having the activities b. Contacts farmers, agricultural education leaders and farm organization personnel c. Arranges for transportation			
Will Items 1-3 develop the competency suggested in Item C?		10	2
D. Visits livestock producers to determine their understanding of relationship between the livestock industry and the feed industry	3.16		
1. Knows the names, addresses and location of the major livestock producers in the business area			
2. Is acquainted with the operation-management strengths-weaknesses of the producer			
3. Plans and periodically conducts a systematic visit to each producer in the business			
4. Keeps a record of each visit			
5. Identifies problems of producers			

Table 5--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
6. Works with producers in solving their problems			
Will Items 1-6 develop the competency suggested in Item D?		11	1
E. Initiates, plans and conducts educational seminars and farmer conferences and clinics	3.08		
1. Has an understanding of the entire feed industry			
2. Keeps aware of the trends and changing problems in the business			
3. Establishes the idea of seminar with the appropriate groups			
4. Can prepare a seminar-conference paper a. Outline-purpose b. Review of materials c. Organization of materials for presentation			
5. Is familiar with aids, materials and methods that help in presentation			
6. Is familiar with group discussion techniques			
Will Items 1-6 develop the competency suggested in Item E?		12	0

Table 5--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
F. Prepares materials suitable for in-service training and professional up-grading of personnel	3.08		
1. Is familiar with the problems and trends of the business			
2. Is acquainted with all of the jobs of the business			
3. Is acquainted with problems encountered by most employees as they progress on the job and with the company			
4. Reviews journals, magazines and conference reports for ideas			
5. Can organize material geared for a learning situation (rather than a telling situation)			
6. Has the ability to write material to be used in a learning situation			
Will Items 1-6 develop the competency suggested in Item F?		11	1
G. Meets and cooperates with related agricultural agencies in developing solutions to the problems of farmers	3.00		
1. Becomes acquainted with the agricultural agencies and their personnel			

Table 5--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
2. Offers services to the agricultural agencies			
3. Meets the agricultural agencies personnel on a periodic basis to discuss common problems			
4. Knows the functions of each agency			
Will Items 1-4 develop the competency suggested in Item G?		11	1

Table 6

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE PURCHASE FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Determines purchase price based on market reports, grade and transportation differential	3.91		
1. Develops an understanding of market reports			
a. How many reports and the groups from which they came			
b. How often issued			
c. Types of reports issued			
d. Has an understanding of the format			
e. Has an understanding of the terms used			
2. Develops an understanding of the factors involved and adjusting the market report to business use			
a. Grade or quality of material used in the company			
b. Knows the weekly, seasonal, changing requirements of the company			
c. Is familiar with the quality of each material used by the company			
d. Is familiar with the normal sales			
e. Anticipates special needs of the company			

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Develops a working knowledge of the sources of products a. Is familiar with the salesmen who call on the company representatives b. Is familiar with the other companies c. Is familiar with alternative sources of information			
4. Develops an understanding of how to determine the purchase price a. Quantity needed b. Expected sales price of product c. Possible substitute of equal quality d. Possible bulk, company or other discounts e. Shipping and freight costs f. Market outlook			
Will Items 1-4 develop the competency suggested in Item A?		11	1
B. Purchases ingredients for mixed feeds from suppliers 1. Has a working knowledge of who the suppliers are 2. Can determine the purchase price	3.66		

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Knows the company requirements in terms of quality, quantity, and possible substitutions			
4. Can interpret the records and forms used for ordering			
Will Items 1-4 develop the competency suggested in Item B?		11	1
C. Directs mixing of grain in local elevator to meet specifications of the buyer	3.66		
1. Is familiar with the requirements of the buyer a. Type of feed desired b. Type of milling process desired c. Quality of feed desired			
2. Is familiar with the mixing process a. Knows the ingredients b. Knows the sequence of mixing c. Knows the operation and adjustment of the machinery			
3. Has the ability to operate and supervise the mixing process			
Will Items 1-3 develop the competency suggested in Item C?		12	0

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
D. Records volume purchased, condition, grade, price, source, transportation, freight, and insurance	3.50		
Arranges for receipt of grain and feedstuffs, including storage facilities, recording quantity of materials condition, cost and how handled	3.41		
1. Keeps accurate record of purchase a. Amount purchased b. Quality c. Source d. Cost e. Transportation method f. Freight costs g. Insurance			
2. Arranges and makes provision for appropriate receipt of items a. Amount received b. Quality c. Cost d. Source e. Method of receiving f. Condition upon receipt			
3. Keeps accurate record of the distribution of grain and feedstuffs and of the products			
Will Items 1-3 develop the competency suggested in Item D?		11	1

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
D. Buys specified kinds, quality and grades of grain	3.41		
Bargains with seller to buy at best possible price	3.33		
1. Is familiar with the sources of grain, feedstuffs and products			
2. Is familiar with the type and quality of grain to be purchased			
3. Is familiar with the normal classification of grain a. Type b. Grade			
4. Can determine and compare prices of possible purchase of grain from different sources a. Comparison of most grain per unit b. Discounts c. Transportation and insurance costs			
5. Can engage in a bargaining process a. Has ability to perceive emotions of people b. Has ability to "size up" situations and make correct decisions c. Has ability to bargain with "facts" not "passion"			

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
d. Determines and considers alternatives before making decisions			
Will Items 1-5 develop the competency suggested in Item E?		12	0
F. Arranges for deliveries and modes of transportation	3.41		
1. Is familiar with costs of deliveries a. Method b. Distance			
2. Is familiar with the methods used by the company for deliveries a. Company truck b. Rail express c. Mail d. Air freight e. Motor freight			
3. Can fill out the appropriate delivery forms a. Name, address, phone, destination b. To whom bill c. Quantity to ship d. Method of shipment e. Quality-type f. Special delivery instructions g. Size of unit			
4. Is familiar with the company delivery schedule			
Will Items 1-4 develop the competency suggested in Item F?		12	0

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
G. Determines prices to offer for grain and feedstuffs based on knowledge of outlook and future trends 1. Knows the factors on which the offering prices is based a. Use to be made of grain and feedstuffs b. Quality c. Possible quantity discount d. Who pays shipping cost e. Supply conditions f. Number of sources from which the grain or feedstuffs are available g. Changing market conditions - outlook 2. Can determine the price considering the above factors	3.33		
Will Items 1-2 develop the competency suggested in Item G?		12	0
H. Studies market prices by watching grain futures 1. Understands "grain futures" 2. Keeps a record of market changes 3. Studies these for trends	3.25		
Will Items 1-3 develop the competency suggested in Item H?		12	0

Table 6--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
I. Makes effective use of telephone and telegraph to complete transactions 1. Has good telephone manner 2. Keeps a file of appropriate telephone numbers 3. Keeps a complete and accurate record of telephone and telegraph commitments	3.16		
Will Items 1-3 develop the competency suggested in Item I?		11	1

Table 7

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE TRANSPORTATION FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Recommends procedures for reducing costs and increasing efficiency	3.50		
1. Is familiar with the transportation methods used by the business			
2. Keeps efficient records of the cost of the transportation used by the business			
3. Examines the records for out-of-line costs			
4. Compares the needs with other similar businesses			
5. Reads and gathers information about the transportation methods			
6. Recommends changes when advisable			
Will Items 1-6 develop the competency suggested in Item A?		12	0
B. Manages maintenance of trucks and other equipment concerned with distribution	3.00		
Plans efficient system for keeping records on the use and maintenance of vehicles	3.41		

Table 7--Continued

Competencies	Mean Rating of Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
1. Sets up and follows a systematic maintenance schedule for all vehicles and equipment			
2. Keeps on file the maintenance manuals for vehicles and equipment			
3. Keeps a maintenance history of all vehicles and equipment			
4. Maintains a daily and annual dispatch record for each vehicle			
5. Maintains operational records for all equipment			
Will Items 1-5 develop the competency suggested in Item B?		12	0
C. Determines efficiency of handling sacks, bags, boxes of feed or loose grain	3.33		
1. Keeps a record of sales and includes quantity of each item sold noting size and type of containers			
2. Examines the records for cost of handling, time and labor involved			
3. Adjusts transportation system and employees to obtain efficiency			
Will Items 1-3 develop the competency suggested in Item C?		11	1

Table 7--Continued

Competencies	Mean Rating of Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
D. Keeps mileage record and log of deliveries 1. Maintains a dispatch record for each vehicle	3.25		
Will Item 1 develop the competency suggested in Item D?		11	1
E. Knows limitations of stacking sacks and other forms of packages 1. Is familiar with each form of packaging used in the business and its handling limitations 2. Conducts trial handling systems with the employees on delivery trucks and in the warehouse 3. Establishes a handling system for all products used in the business	3.16		
Will Items 1-3 develop the competency suggested in Item E?		11	1
F. Drives vehicles with full understanding of their operations maintenance of safe driving procedures	3.16		
Promotes campaigns for safe driving and use of equipment	3.00		
1. Is acquainted with the operators and maintenance manuals of all vehicles and equipment			

Table 7--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
2. Is familiar with the driving characteristics of each vehicle			
3. Insures that each driver has a valid operator's license			
4. Is familiar with the operational procedures for all equipment			
5. Attends safety meetings for all new company drivers where the driving policies of the business are explained			
6. Keeps constant safety checks on all drivers and equipment operators			
7. Promotes safety through posters, signs, and a system of awards			
Will Items 1-7 develop the competency suggested in Item F?		11	1
G. Determines transportation costs on fleet of vehicles and on each individual unit	3.16		
1. Maintains a daily dispatch record for each vehicle			
2. Maintains a transportation record for the business			

Table 7--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Calculates the cost of operating the fleet and individual vehicles			
Will Items 1-3 develop the competency suggested in Item G?		12	0
H. Plans and routes most economical transportation	3.08		
Routes delivery and service trucks to retail stores, farms and dealers	3.00		
1. Keeps a record of sales that include quantity of each item sold noting size and type of container			
2. Examines records to determine the transportation needs of the business			
3. Is familiar with the service areas (territory) of the business			
4. Plans a vehicle dispatch system to provide for economical deliveries and customer conveniences			
Will Items 1-4 develop the competency suggested in Item H?		12	0

Table 8

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE RESEARCH FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
A. Establishes the physical set-up for research and plans daily and periodic routines of work	3.27		
1. Establishes the objectives of research for the business			
2. Plans and determines the physical and personal needs to carry out the research			
3. Plans each experiment in line with the objective			
4. Is familiar with the method of conducting feed industry research			
5. Secures the needed supplies and personnel			
6. Schedules the work for the employees in line with their abilities			
Will Items 1-6 develop the competency suggested in Item A?		11	1
B. Rejects the use of spoiled or damaged feed in mixing rations for research purposes	3.18		
1. Establishes a criteria for evaluating all incoming feeds to be used in research			

Table 8--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
2. Insures that all feed is carefully inspected before being considered for use in research			
3. Rejects all feeds that do not meet the criteria			
Will Items 1-3 develop the competency suggested in Item B?		11	1
C. Formulates the rations including use of Micro feeds and antibiotics	3.18		
1. Understands animal nutrition including a. Principles of nutrition b. Functions of feed ingredients c. Elements found in animal feeds d. Growth patterns and changing nutritional requirements of farm animals			
2. Understands common feed terms a. Concentrate b. Supplement c. Mineral d. Protein e. Carbohydrate f. Vitamin g. Additive h. Nutrient i. Microfeeds			
3. Can formulate rations for various animals			

Table 8--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
4. Insures that the formulated rations meet the criteria for which they are formulated			
5. Insures that the mixing and grinding machines are not contaminated			
6. Insures that the microfeeds are mixed thoroughly and pre-mixed			
7. Provides a system of transportation of the ingredients to permit non-contamination			
8. Insures that accurate weights and measures are obtained			
9. Insures that pre-mixed and major ingredients are thoroughly compounded			
10. Has sample of feed analyzed to compare against control charts			
11. Develops an identification code for all research rations to permit identification, purpose, date mixed, and the like			
Will Items 1-11 develop the competency suggested in Item C?		11	1

Table 8--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
D. Coordinates and cooperates in the development of new food products	3.18		
E. Specifies what data should be recorded and plans a procedure for recording it	3.09		
1. Identifies the data needed to complete the objectives			
2. Plans for collecting the data a. Type b. When and how often c. Done by whom			
3. Trains employees in collecting the data a. Accuracy according to directions b. Proper completion of the forms			
Will Items 1-3 develop the competency suggested in Items D and E?		12	0
F. Recommends and determines need for research	3.09		
1. Keeps abreast of the problems of the industry and ofthe business			
2. Keeps abreast of the trends of the industry and of the business			

Table 8--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Spots areas needing research through constant analysis of the business records and an awareness of the trends and problems			
4. Is familiar with the methods of research that may be employed by the company			
5. Is able to plan and institute research projects			
6. Is familiar with the procedures and business policies of the research program			
7. Plans and determines the physical, personnel and financial needs to carry out the research			
Will Items 1-7 develop the competency suggested in Item F?		12	0
G. Performs many basic skills as testing for moisture, TDN, ash and the nutrients	3.00		
1. Is familiar with the basic skills such as testing for moisture, TDN, ash, and the nutrients that are used in the business			
2. Is familiar with alternative methods of performing the same basic skills			

Table 8--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=12	
		Yes	No
3. Has the ability to perform the basic skills in the manner used in the business			
Will Items 1-3 develop the competency suggested in Item G?		11	1

Table 9

COMPETENCIES, UNDERSTANDINGS, ABILITIES AND SKILLS NECESSARY TO PERFORM THE MAINTENANCE FUNCTION

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=11	
		Yes	No
A. Understands function of each operating machine 1. Reads the operational manual for each machine 2. Reads the maintenance manual for each machine 3. Is able to operate each machine according to directions in the manual	3.75		
Will Items 1-3 develop the competency suggested in Item A?		11	0
B. Understands relationship between machines in the total operation 1. Relates the function of each machine to the total function of the business	3.75		
Will Item 1 develop the competency suggested in Item B?		10	1
C. Understands distribution systems for moving or conveying grains and feeds 1. Is familiar with the principles of each system used in the business for conveying grains and feeds	3.58		

Table 9--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=11	
		Yes	No
2. Is able to work with and adjust and regulate each part of the system			
Will Items 1-2 develop the competency suggested in Item C?		11	0
D. Reads and understands the manual of installation and operation instructions	3.50		
1. Maintains a file of the operation and installation manuals			
2. Reads these manuals			
3. Works with each of the machines			
Will Items 1-3 develop the competency suggested in Item D?		11	0
E. Understands and respects safety features and employes safety coding through the use of colors, signs, and warning devices	3.25		
1. Understands the importance of employee safety			
2. Knows the importance of each feature of the company			
3. Employes the safety color codes in appropriate places			
4. Has a safety campaign to stress constantly its importance			

Table 9--Continued

Competencies	Mean Rating by Representatives of Industry	Response of Teachers Regarding Items N=11	
		Yes	No
5. Displays signs and posters in appropriate places			
Will Items 1-5 develop the competency suggested in Item E?		11	0
F. Keeps the physical equipment inventory records of instruction and maintains an orderly tool and material room and office	3.16		
1. Maintains a file of the following: a. Physical equipment inventory b. Operational manuals for each machine c. Instructional manuals for each machine d. Maintenance logs for each machine			
2. Promotes neatness in tool and equipment storage			
3. Promotes neatness in office procedures			
Will Items 1-3 develop the competency suggested in Item F?		11	0

Appendix B

INSTRUCTIONAL PROGRAMS TO DEVELOP COMPETENCIES NEEDED BY WORKERS IN THE FEED INDUSTRY

Tables 10-18 present:

1. Competencies identified as important for effective job performance by workers in the feed industry.
2. Outlines of instructional units -- experiences, materials, and activities -- which may be used to develop the identified job competencies.

NOTE: In the following tables, function is indicated in the title of each table. Competencies are indicated as major headings in the outline as A, B, C, etc. Experiences and activities to develop the competencies in question are in the column at the right of each table.

Table 10

INSTRUCTIONAL EXPERIENCES AND ACTIVITIES TO DEVELOP COMPETENCIES IN AGRICULTURAL LEADERSHIP

Competencies to be Developed	Experiences and Activities
A. Keeps abreast of the activities of the business 1. Attends appropriate meetings of company personnel 2. Is acquainted with company personnel 3. Reads all company reports 4. Is familiar with company projection plans 5. Has periodic conferences with department heads a. Is aware of their problems b. Is aware of relationships among departments	Experience in similar activities may be provided through: 1. Role playing in communication units 2. FFA committee activities 3. Reports given in animal science units
B. Reads and interprets trade journals 1. Has access to trade journals 2. Reads trade journals 3. Seeks clarification of appropriate points not fully understood 4. Plans for testing and implementing sound ideas and practices 5. Keeps up to date on new machinery	Experience can be provided through use of: 1. Readings 2. Reports 3. Interpretations of materials from the industry for use in animal science, farm management, and other units
C. Evaluate and disseminates other tried and tested programs, techniques, and efficiency ideas 1. Makes constant use of written and non-written sources of information	See: Communication Units A, B, and D Animal Science Units

Table 10--Continued

Competencies to be Developed	Experiences and Activities
2. Keeps a file of new techniques, programs, and ideas	
3. Utilizes these new techniques and ideas when helping local dealers and farmers in developing alternatives to their present operations	
D. Keeps abreast of developing trends, new developments, and new farm technology	Experience may be provided through use of these materials when studying animal science units and farm management units
1. Is familiar with sources of information related to the feed industry and associated fields a. Professional journals b. Farm magazines c. Special newsletters d. Trade journals e. Research reports of experiment stations f. Experiment station and United States Department of Agriculture bulletins	
2. Makes use of non-written sources of information a. Professional meetings b. In-service training sessions c. Farm meetings d. Adult classes, Vo-Ag and Extension e. Company meethings f. State and national conventions g. Special subject meetings	
E. Promotes farm automation and encourages farmers to adapt new techniques to their farms	Animal Science Unit A; and Farm Management, Units A and C
1. Is familiar with methods of improving the efficiency in the feed industry	

Table 10--Continued

Competencies to be Developed	Experiences and Activities
a. Is able to conduct time-motion studies where needed b. Understands methods of handling feeds c. Understands methods of housing animals d. Understands proper methods of sanitation for livestock and poultry e. Understands accepted methods of management of livestock and poultry	
2. Promotes farm automation and encourages farmers to adopt new techniques to their farms	Communication, Unit A; FFA Activities; and A. Adoption of Ideas B. Sources of Information
3. Attends conventions, exhibits, and meetings related to the feed industry to secure new ideas	
4. Is aware of the adoption process followed by farmers in accepting new ideas and techniques a. Awareness b. Interests c. Evaluation d. Trial e. Adoption or rejection	
F. Works with employees in maintaining morale	Employer-Employee Relations
1. Maintains effective working conditions a. Physical conditions b. Social conditions	
2. Sets up to receive and follow up an employee's suggestion	
3. Is alert to rumors	

Table 10--Continued

Competencies to be Developed	Experiences and Activities
4. Has a fair promotion and reward system	
5. Has an equitable system of benefits	
G. Clearly instructs employees about the work expected of them	Supervision of Employees
1. Becomes familiar with all jobs of the company	
2. Instructs the employee as to the why and how of the job	
3. Follows up to see that employee is growing into the expected job performance	
H. Supervises personnel and coordinates their work within departments	
1. Knows each employee	
2. Is familiar with work of each employee	
3. Is able to conduct supervision openly, fairly, and systematically	
4. Is familiar with the work of each department	
5. Is able to organize the work of each department and of each worker in the department so that the workers and departments compliment each other	
I. Visits local dealers and assists them in solving their management problems, as well as those involving customer relations	

Table 10--Continued

Competencies to be Developed	Experiences and Activities
1. Keeps aware of the problems of the business	
2. Knows how to work with people	
3. Is familiar with good human relations practices	
4. Can analyze the management problems	
5. Can analyze the customer relations problem	
6. Is familiar with methods of improving customer relations	
J. Prepares materials suitable for in-service training and professional upgrading of personnel	See: Communication, Units A, B, C, and D
1. Is familiar with the problems and trends of the business	
2. Is acquainted with all of the jobs of the business	
3. Is acquainted with problems encountered by most employees as they progress on the job and with the company	
4. Reviews journals, magazines, and conference reports for ideas	
5. Can organize material geared to a learning situation--rather than a tilling situation	
6. Has the ability to write material to be used in learning situations	

Table 11

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: ANIMAL SCIENCE

Competencies to be Developed	Experiences and Activities
A. Animal Health and Sanitation 1. Recognizes undesirable and detrimental practices in animal health conditions a. Understands the relation of farm sanitation to feed efficiency and animal health b. Understands the effect of management practices, feeding, and health on results of the feeding enterprise c. Is able to identify major disease symptoms in the livestock herd or flock	A. Maintaining Animal Health 1. Management 2. Housing 3. Sanitation, and disease control 4. Feeding
B. Animal Nutrition: Understands and interprets MDA and USDA requirements concerning feed processing 1. Develops an understanding of MDA feed laws a. State inspection service b. System of dating and tagging c. Ingredients d. Digestable protein e. Crude protein f. Carbohydrates g. Fats h. Additives i. Mineral j. Concentrates k. State specifications 2. Develops an understanding of USDA specifications	B. State and Federal Regulations Regarding Livestock Feeds
C. Has a working vocabulary of common terms such as:	

Table 11--Continued

Competencies to be Developed	Experiences and Activities
1. Roughages	
2. Pasture	
3. Concentrate	
4. Supplement	
5. Mineral	
6. Protein	
7. Carbohydrate	
8. Vitamin	
9. Water	
10. Additive	
11. Ration	
D. Is aware of the various types of feeds and their purposes and understands the changing feed requirements of growing animals reflected in types of feed	C. Feed Requirements of Each Class of: 1. Growing Animals 2. Fattening Animals 3. Breeding Stock
1. Fine and ccarse feeds	
2. Growing and fattening feeds	
3. Nursing feeds	
4. Laxative feeds	
5. Production feeds	
6. Special nutritional feeds	
E. Is able to blend feeds	D. Planning Conditioning Rations for Livestock and Poultry:
1. Consistent and accurate	

Table 11--Continued

Competencies to be Developed	Experiences and Activities
2. According to purpose of the feed 3. Calculate ingredients 4. Performs functions necessary to grind, roll, pellet, wafer, and crimp	1. For All Purposes 2. For All Classes and Ages of Livestock
F. Understands and interprets feed formulas and procedure for mixing them	
1. Develops an understanding of the types of feed formulas used by the company a. Fine and coarse feeds b. Growing and fattening feeds c. Nursing rations d. Laxative feeds e. Production feeds f. Special nutritional feeds	
2. Knows the ingredients of each feed blended by the company a. Ingredients (quantity and quality) b. Sequence of the process c. Analysis of each feed	
G. Adjusts mill machinery to meet processing specifications	See: Unit C, above
1. Is familiar with the specifications of each type of feed processed or blended	
2. Is able to adjust mill machinery to meet processing specifications a. Grinding b. Mixing c. Blending d. Rolling e. Pelleting f. Crimping g. Packaging	

Table 11--Continued

Competencies to be Developed	Experiences and Activities
H. Calculates the ingredients required for each feed operation	
I. Is familiar with the procedures and factors associated with formulation of rations	
J. Assists farmer in planning programs and trouble shoots thin feeding problems	E. Planning a Feeding Program for the Livestock Enterprises of the Community
1. Is familiar with the nutritional requirements of all types of growing animals	
2. Is familiar with the various methods of feeding animals	
3. Is able to recognize feeding problems	
K. Recommends feeds and rations to be used in specific farm situations	
1. Understands animal nutrition including: a. Principles of nutrition b. Functions of feed ingredients c. Elements found in animal feeds d. Growth patterns and changing nutritional requirements of farm animals	
2. Is familiar with feed ingredients common to the area	See: Unit D, above
3. Ability to adjust feed purchases to feed supplies on the farm a. Roughage and pasture on the farm b. Grains produced on the farm c. Mineral deficiencies common to the area	

Table 12

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: COMMUNICATION

Competencies to be Developed	Experiences and Activities
A. Promotes the use of company products by encouraging their use by farmers 1. Is familiar with the line of company products a. Knows their costs b. Recognizes their advantages c. Understands their limitations d. Is familiar with recommendations of the company and of the manufacturer 2. Is able to show customers data regarding feeding of livestock and poultry a. Shows and interprets research data b. Uses experiment station research data 3. Knows the resource persons who are available to help solve special problems related to livestock and poultry enterprises	In addition to content provided in Units such as, Animal Science Units A, B, C, and D; and Farm Management, Unit A include: A. Units in English Composition or Communication involving: 1. Writing articles based on research 2. Speaking to groups 3. Discussion (conversation) with one or two persons 4. Use of resource persons
B. Visits livestock producers to determine their understanding of relationship between livestock industry and the feed industry 1. Knows livestock producers in the territory 2. Is acquainted with operator-management, strengths-weaknesses of producers	B. Writing Reports

Table 12--Continued

Competencies to be Developed	Experiences and Activities
3. Plans and conducts a systematic visit to each producer in the business	
4. Keeps a record of each visit	
5. Identifies problems of producers	
6. Works with producers in solving their problems	
C. Attends meetings sponsored by the Cooperative Extension Service and by teachers of vocational agriculture	C. Participating in Conference and Discussion Groups
1. Is acquainted with extension and vo-ag personnel	
2. Is familiar with those farmers who attend, knowing especially the customers of local dealers	
3. Helps plan for and participates in such meetings	
D. Assists in the promotion, distribution, and use of publications, bulletins, and movies of the industry	D. Using Instructional Aids in Speaking and Discussion Groups
1. Maintains a file and library of industry resources materials a. Publications b. Bulletins c. Slides d. Movies e. Other instructional materials	
2. Maintains a file of items on loan	
3. Maintains a file regarding dates and places where resources may be used	

Table 12--Continued

Competencies to be Developed	Experiences and Activities
a. Meetings of the Cooperative Extension Service b. Vocational agriculture meetings c. High school classes d. Special meetings of businessmen and farmers e. 4-H Club meetings f. Meetings of farmer's organizations	
E. Talks at farmers' meetings on matters of interest	See: Unit A, above
1. Keeps up to date on trends and developments a. Reads journals b. Confers with important people in the fields c. Visits research farms and experimental plots	
2. Can organize materials for presentation a. Review materials b. Make appropriate outline of materials	
3. Is familiar with methods of presentation a. Audio-visual b. Lecture	
4. Is familiar with some techniques of delivery a. Eye contact b. Enunciation c. Pronunciation d. Posture	See: Unit A, above
F. Assists local dealers in promotional campaigns and feed and grain clinics for livestock farmers	See: Units A and D, above

Table 12--Continued

Competencies to be Developed	Experiences and Activities
1. Is acquainted with the livestock feeders of the area	
2. Is familiar with the livestock feeders of the area	
3. Can design a teaching program to use in feed and grain clinics	
4. Can organize a feed and grain clinic	
G. Encourages education concerning the economics of the grain production enterprises and government subsidies and storage	See: Animal Science, Unit B; Farm Management, Units D and E; and Communication, Units B and C
1. Works with personnel in education a. Youth workers (4-H, FFA, Scouts, others) b. Organized adult groups	
2. Is familiar with the educational agencies of the community	
3. Is familiar with the economics of grain production a. Costs b. Area products c. Disposition	See: Farm Management, Unit D
4. Is familiar with the government subsidies and storage a. Is familiar with the laws, specifications, and requirements of government subsidies and storage and keeps abreast of the changes b. Keeps a file on the laws, specifications and storage regulations	See: Animal Science, Unit B; and Crop Science, Unit A

Table 12--Continued

Competencies to be Developed	Experiences and Activities
H. Recommends names of agricultural firms and businesses having personnel available for consultation with customers who have problems 1. Keeps an up to date file of available resource persons a. Name b. Special area c. Phone d. Address 2. Is familiar with appropriate policies and procedures for using resource persons a. Contact private firms b. Extension procedures c. Policy of firms regarding assignment of personnel	E. Identifying and Recording Lists of Resource Persons F. Planning with Resource Persons for their Participation in Meetings
I. Prepare records of problems observed in the area and suggest procedures for solving them 1. Have a form for recording appropriate data as visits are made a. Activity b. Conditions encountered c. Scope of the problem d. Practices and recommendations e. Plans for a follow-up 2. Uses library for research material from which to make recommendations a. Extension and experiment station publications b. Specialty newsletters c. Special references for area d. State and USDA publications e. Farm magazines f. Trade and professional journals	See: Unit B, above

Table 12--Continued

Competencies to be Developed	Experiences and Activities
J. Prepares reports of activities, including purposes of each activity, procedures used, and evaluation of results	See: Unit B, above
1. Ability to plan and submit plan of activities a. Dates and purposes of activities b. Methods of performing activities c. Involvement of appropriate personnel	
2. Ability to prepare and submit reports of each activity a. Recommendations b. Purposes c. Persons involved d. Accomplishments e. Follow-up and other commitments f. Expense accounts	
3. Ability to prepare and submit periodic reports, including reports of activities and evaluation reports	
K. Develop reputable rapport with dealers through accurate representation of products	See: Communication, Units A, B, and C
1. Knows the products of the business	
2. Knows and follows good techniques in company-dealer relationships	
3. Is objective in representation of products	
4. Keeps in constand touch with the local dealer and understands his problems	

Table 13

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: CROP SCIENCE

Competencies to be Developed	Experiences and Activities
A. Records letters received, location of its storage, quality and condition, and keeps a running inventory; determines the acceptability of storage conditions; determines when feed is "safe" to store or feed; and receives and stores feed and grain ingredients 1. Receives ingredients a. Checks for quality and conformity to the requirements 1) Undesirable and foreign materials 2) Weight 3) Moisture 4) Minerals 5) Uniformity 6) Color 7) Damage b. Determines storability 2. Stores ingredients and feed a. Stores only with like quality and product b. Checks storage bins for safety, capacity, freedom from rodents and other possible contamination c. Is aware of the proper storage conditions for the ingredients and the product d. Is aware of appearance and conditions of "badly spoiled" products and ingredients e. Stores in a location convenient for the blending (manufacturing) and shipping processes	A. Grain storage and grain testing for: 1. Moisture 2. Foreign materials 3. Other characteristics

Table 13--Continued

Competencies to be Developed	Experiences and Activities
1) Distance from point of use 2) Methods of receiving and shipping 3) Method of transportation to the blending process 4) Sequence 5) Amount used f. Knows storage characteristics of ingredients and products g. Follows a systematic process of inspecting storage bins for: 1) Capacity 2) Safety 3) Condition of stored ingredients or products 4) Moisture 5) Rodents 6) Age of stored ingredients or products 7) Stored grain tests	
3. Follows systematic plan for caring for stored feed a. Inspects b. Moves (turns feed and ingredients) c. Provides ventilation and aeration where needed	
4. Follows a systematic plan for using feeds a. Maintains adequate records b. Uses older ingredients and products first	
B. Makes field and bin inspections on farms	B. Grading Grain
1. Knows the state specifications and requirements	
2. Sets up a systematic program for inspection of fields and bins	

Table 13--Continued

Competencies to be Developed	Experiences and Activities
3. Keeps a file on the statistics of the fields and bins a. Location b. Type c. Size or quality d. Previous history of problems at this location e. Record of each visit, problems encountered and accomplishments	
C. Buys grain from several sources with the intent of mixing to meet grade specifications	See: Unit B, above; and Animal Science, Unit D
1. Is familiar with specifications of products blended, manufactured, and sold a. Percent ingredients in product b. Quality of raw materials used	
2. Can determine ration mixing and blending of the raw materials to get desired specifications in finished product a. Quality of raw materials b. Quantity of raw materials c. Quality of product d. Quantity of finished product	

Table 14

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: DISTRIBUTION

Competencies to be Developed	Experiences and Activities
A. Assists local dealers in promoting use of specific feeds by local producers	See: Animal Science, Units C and E; and Farm Management, Unit A
1. Is familiar with the types of animals and feeds normally used in the local area	
2. Is familiar with the feeding problems normally encountered by the local dealer	
3. Is familiar with all the feeds of the business	
4. Acquaints the local dealer with all new feeds of the business	
5. Encourages the local dealers to acquaint their customers with the use of specific feeds for specific jobs	
B. Determines purchase price based on market reports, grade and transportation differential	See: Farm Management, Units D and E; and Crop Science, Unit A
1. Develops an understanding of the market reports a. How many reports and the groups from which they came b. How often issued c. Types of reports issued d. Has an understanding of the format e. Has an understanding of the terms used	
2. Develops an understanding of the factors involved and adjusting the market report to business use	

Table 14--Continued

Competencies to be Developed	Experiences and Activities
a. Grade or quality of material used in the company b. Knows the weekly, seasonal, changing requirements of the company c. Is familiar with the quality of each material used by the company d. Is familiar with the normal sales e. Anticipates special needs of the company	
3. Develops a working knowledge of the sources of products a. Is familiar with the salesmen who call on the company representatives b. Is familiar with the other companies c. Is familiar with alternative sources of feed supplies	
4. Develops an understanding of how to determine the purchase price a. Quantity needed b. Expected sales price of the product c. Possible substitutes of equal quality d. Possible bulk, company, or other discounts e. Shipping and freight costs f. Market outlook	
C. Purchases ingredients for mixed feeds from suppliers	See: Farm Management, Units D and E; and Crop Science, Units A and B
1. Has a working knowledge of who the suppliers are	
2. Can determine the purchase price	

Table 14--Continued

Competencies to be Developed	Experiences and Activities
3. Knows the company requirements in terms of quality, quantity, and possible substitutes	
4. Can interpret the records and forms used for ordering	
D. Records volume purchased, condition, grade, price, source, transportation, freight, and insurance; and arranges for receipt of grain and feedstuffs, including storage facilities, recording quantity of materials, condition, cost, and how handled	A. Record Keeping
1. Keeps accurate record of purchase a. Amount purchased b. Quality c. Source d. Cost e. Transportation method f. Freight costs g. Insurance	
2. Arranges and makes provision for appropriate receipt of items a. Amount received b. Quality c. Cost d. Source e. Method of receiving f. Condition upon receipt	
3. Keeps accurate record of the distribution of grain and feedstuffs and of the products	
E. Buys specific kinds, quality and grades of grain; bargains with seller to buy at best possible price	See: Crop Science, Units A and B; Animal Science, Units B, C, D, and E; and Farm Management, Units D and E
1. Is familiar with the sources of grain, feedstuffs, and products	

Table 14--Continued

Competencies to be Developed	Experiences and Activities
2. Is familiar with the type, quality of grain to be purchased	
3. Is familiar with the normal classification of grain a. Type b. Grade	
4. Can determine and compare prices of possible purchases of grain from different sources a. Comparison of cost per unit b. Discounts c. Transportation and insurance costs	
F. Arranges for deliveries and modes of transportation	See: Trade and Industry, Units J and K
1. Is familiar with costs of deliveries a. Method b. Distance	
2. Is familiar with the methods used by the company for deliveries a. Company truck b. Rail express c. Mail d. Air freight e. Motor freight	
3. Can fill out the appropriate delivery forms a. Name, address, phone, destination b. To whom to bill c. Quantity to ship d. Method of shipment e. Quality-type f. Special delivery instructions g. Size of unit	

Table 14--Continued

Competencies to be Developed	Experiences and Activities
4. Is familiar with the company delivery schedule	
G. Determine prices to offer for grain and feedstuffs based on knowledge of outlook and future trends	See: Farm Management, Units B, D, and E; and Crop Science, Unit B
1. Knows the factors on which the offering price is based a. Use to be made of grain and feedstuffs b. Quality c. Possible quantity discount d. Who pays shipping costs e. Supply conditions f. Number of sources from which the grain or feedstuffs are available g. Changing market conditions--outlook	
2. Can determine the price considering the above factors	
H. Studies market prices by watching grain futures	See: Farm Management, Units D and E
1. Understands "grain futures"	
2. Keeps a record of market changes	
3. Studies these for trends	
I. Makes effective use of telephone and telegraph to complete transactions	B. Using Telephone and Telegraph
1. Has good telephone manner	
2. Keeps a file of appropriate telephone numbers	
3. Keeps a complete and accurate record of telephone and telegraph commitments	

Table 14--Continued

Competencies to be Developed	Experiences and Activities
J. Recommends procedures for reducing costs and increasing efficiency	See: Trade and Industry, Units J and K, above
1. Is familiar with the transportation methods used by the business	
2. Keeps efficient records of the cost of transportation used by the business	
3. Examines the records for out-of-line costs	
4. Compares the needs with other similar businesses	
5. Reads and gathers information about the transportation methods	
6. Recommends changes when advisable	
K. Determines efficiency of handling sacks, bags, boxes of feed or loose grain	See: Trade and Industry, Units J and K, above
1. Keeps a record of sales and includes quantity of each item sold, noting size and type of containers	
2. Examines the records for cost of handling, time and labor involved	
3. Adjusts transportation system and employees to obtain efficiency	
L. Keeps mileage record and log of deliveries	See: Trade and Industry, Units, L and M, above
1. Maintains a dispatch record for each vehicle	

Table 15

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES IN THE FEED INDUSTRY: FARM MANAGEMENT, CREDIT, AND AGRICULTURAL ECONOMICS

Competencies to be Developed	Experiences and Activities
A. Assists farmers in planning programs and trouble shoots feed problems	A. Livestock Management Practices
1. Is familiar with the system of handling feed on the farms	
2. Is able to systematically analyze the feeding situation to determine its efficiency in relation to management factors	
3. Is familiar with management practices in the feed industry	
B. Sells direct to farmers on the farm	B. Management Principles for Non-Farm Agricultural Business
1. Visits the producers of the business area on a systematic follow-up basis to work with them on feeding programs and special problems related to their area	
2. Is familiar with needs and problems of the producers in the business territory	
3. Reports results obtained to manager of the business	
C. Assists producers with individual problems by reviewing the specific situation	C. Analyzing the Farm Business
1. Encourages producers to keep appropriate records	
2. Encourages producers to analyze farm business	

Table 15--Continued

Competencies to be Developed	Experiences and Activities
3. Reviews the farm business record with the producer to help discover and solve problems	
D. Prepares budget analysis to show benefits of using certain feeds in specific farm situations	D. Farm Prices
1. Is able to recognize alternatives	
2. Is able to accurately prepare the analysis, recognizing important factors	
E. Prepares farm plans for producers	E. Budgeting Alternatives
1. Has ability to make a farm business analysis, including the following: a. Enterprise analysis b. Animal units c. Crop units d. Labor income e. P.M.W.U. f. Labor needs g. Machinery requirements	
2. Has ability to prepare a farm inventory	
3. Maintains a file of up to date plans and procedures	
F. Sells direct to customers in an informative manner	F. Planning the Farm Business
1. Is familiar with the products he sells	See: Animal Science, Units B, C, D, and E
2. Is familiar with problems customers may have with the product and is able to help avoid these problems	

Table 15--Continued

Competencies to be Developed	Experiences and Activities
G. Works with local dealers on problems of credit for farmers 1. Is familiar with sources of credit available to farmers a. Local banks b. Local dealers c. P.C.A. d. F.H.A. e. Other 2. Can make up and analyze a net worth statement 3. Understands and is able to evaluate the limiting factors associated with the extension of credit a. Ability to pay b. Management ability c. Personal traits d. Family characteristics e. Personal character 4. Works with local dealers to help them with their credit rating with the company a. Is familiar with factors associated with the extension of credit to dealers 1) Assets 2) Liabilities 3) Character rating of the operator b. Analyzes credit risk of dealers	G. Securing and Using Credit
H. Exhibits alertness and sensitivity to situations in which a service can be rendered 1. Helps farmers consider all alternatives	See: Units C, D, and E, above. Also include experience in conference techniques as part of F.F.A. program

Table 15--Continued

Competencies to be Developed	Experiences and Activities
2. Helps farmers select best alternatives	
3. Helps local dealers with techniques of assisting their customers and reaching desirable decisions	
I. Assists producers in solving feeding and related problems	See: Animal Science, Unit A
1. Is familiar with the feeding problems of the customer and of others in the area	
2. Knows the feeding problems generally associated with local livestoc and poultry enterprises	
3. Understands the relationship of sound management practices to the results secured from feeds a. Efficiency b. Housing c. Sanitation d. Health of animals	
4. Is able to identify disease and parasite symptoms a. Internal parasites b. External parasites c. Viruses d. Skin disorders e. Infections f. Others	

Table 16

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: OFFICE PRACTICES

Competencies to be Developed	Experiences and Activities
A. Develops an alterness to new opportunities for the business	
1. Keeps in personal touch with the research being conducted in the area of feeds and feeding	
2. Knows the activities of similar businesses	
B. Develops and improves upon the materials accounting system when the opportunity to increase efficiency becomes apparent	A. Cost Accounting Procedures
1. Maintains records of: a. Labor efficiencies b. Cost per unit c. Plan efficiency d. Cost of each department e. Cost of each process	
2. Compares these with other companies of like operation	
3. Considers all alternatives	
4. Is aware of other types of materials and accounting systems	
C. Understands techniques of processing feed through data processing and prepares computer programs for processing	B. Data Processing Procedures
1. Becomes familiar with data processing procedures a. Magnetic tapes b. Punches cards c. Programming d. Coding	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
2. Is familiar with the machines involved a. Key punch b. Verifier c. Duplicators d. Accounter e. Sorter f. Various types of computers	
D. Sells direct to producer and farmers on the farm	See: Farm Management, Units A, C, and E
1. Becomes acquainted with the producers in the business area and with their needs and problems	
2. Encourages producers to place orders for feed and other products	
E. Sells directly to customers across the counter in an informative manner, without misrepresentation	C. Salesmanship
1. Is neat in personal appearance	
2. Knows and follows the techniques of good customer sales relationship	
3. Answers inquiries as objectively as possible	
4. Knows and follows good salesmanship practices	
F. Solicits local dealers to sell company products	See: Unit C, above
1. Acquaints the local dealer with all of the products sold by the company	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
2. Encourages the local dealer to stock with items that are likely to sell	
3. Develops techniques with the local dealer for promoting new products	
G. Assists local dealers and promotional campaigns and feed and grain clinics for livestock feeders	See: Communication, Units, A, B, and C
1. Is familiar with the company products	
2. Is familiar with promotional techniques	
3. Performs an inventory to determine items that spend too much time on the shelf	
4. Can design a promotional campaign for new products	
H. Helps farmers arrange credit and accepts responsibility for the collection of "Accounts Receivable"	See: Farm Management, Unit G
1. Establishes a procedure for collecting "Accounts Receivable" in line with company credit policy	
I. Promotes the use of company products by encouraging their use by farmers	See: Farm Management, Units A, C, and E
1. Is familiar with accepted practices in regard to new customers	
2. Is familiar with the location of customers	
3. Is alert for new customers	
4. Is alert to new products	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
J. Works with local dealers in the promotion and sales of the feeds in his organization	
1. Knows the products of the company	
2. Is familiar with proper feed handling methods to be employed by a successful local dealer	
3. Is familiar with the feeds needed in the local area	
4. Knows and is able to use acceptable promotional methods a. Visits to the farm or local dealers b. Exhibits c. Displays d. Handouts e. Advertising f. Billboards g. Demonstrations h. Field trips	
5. Knows and practices acceptable sales techniques	
K. Keeps local dealers informed regarding problems most frequently encountered on farms	See: Communication, Units B, C, D, and E; and Unit C, above
1. Is alert to identifying problems as he visits the farm	
2. Has ability to prepare and submit appropriate reports a. Recommendations to the customer b. Report of other areas which were not discussed with the customer	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
3. Performs periodic evaluations on the types of problems encountered	See: Farm Management, Units A, C, and F
L. Provides records and data required by his supervisor in an acceptable form; and provides information to his supervisor about the organization, its products, and services	D. Record Keeping and Filing Systems
1. Sets up a filing system a. Follows an established form b. File all reports, letters, documents, specifications, and orders	
2. Familiarizes himself with the filing system used	
3. Keeps up to date on the organization patterns and possible changes	
4. Is familiar with all the products and services of the company	
5. Is familiar with the business forms of the company	
6. Periodically and systematically reviews the company's progress	
7. Evaluates the progress in terms of prior expectations	
8. Investigates new areas for services and products	
9. Provides reports	
10. Has periodic conferences with his supervisor	
M. Makes periodic summarizations of the business for purposes of analysis	E. Preparing a Periodic Summary of the Business

Table 16--Continued

Competencies to be Developed	Experiences and Activities
1. Is familiar with the business forms, procedures, and the policies of the company	
2. Makes a periodic systematic summary of the business	
3. Analyzes the business for trends, weaknesses, and strengths	
N. Performs administrative duties in line with established and accepted organizational patterns; and determines policy concerning wages, hours, and benefits	See: Agricultural Leadership, Unit C
1. Develops a fair and equitable policy for wages a. Beginning b. Advances c. Overtime	
O. Evaluates and commends worker performance	See: Agricultural Leadership, Unit C
1. Follows a systematic plan for evaluation of work performance a. Fair b. Frequency c. In all work situations of the employee d. Confers with workers frequently	
P. Establishes and uses approved systems of cost accounting	See: Unit A, above; Distribution, Unit A; Communication, Unit B; and Trade Industry, Units C and G
1. Is familiar with the systems of cost accounting	
2. Can evaluate the systems and select the ones best suited to the business	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
3. Can keep the required records, reports and data of the cost accounting system	
Q. Recommends changes in procedure which will increase organizational efficiency	F. Efficiency Factors
1. Makes organizational charts	
2. Projects organizational charts in light of trends and forecasts	
3. Studies organizational setup for efficiency	
4. Suggests changes that would improve service for efficiency	
R. Delegate authority to employee to the extent he can satisfactorily pursue work expected of him; and delegates authority to workers in best interest of total operation	See: Agricultural Leadership, Units C and D
1. Know work load and job description of each employee in his regular job	
2. Delegates the responsibility and authority necessary for the job	
3. Do not delegate more responsibility and authority than is needed to do the job	
S. Keeps employees informed concerning general policies related to operation	See: Agricultural Leadership, Units C and D
1. Has an established general policy for the business	
2. Permits the policy to be known to employees	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
3. Discusses any policy misunderstanding with employees	
4. Makes known any changes in general policy	
T. Helps to maintain complete and accurate record files	See: Unit A, above; Distribution, Unit A; Communication, Unit B; and Trade Industry, Units C and G
1. Becomes familiar with all company records	
2. Becomes familiar with the filing system of the company	
3. Insures that a file copy of each transaction is completed	
4. Insures that a copy of each transaction is filed	
U. Maintains line of communication within the company organization	See: Agricultural Leadership, Unit D
1. Insures that employees have contacts with their supervisors	
V. Works with employees on the promotion of sales	
1. Is familiar with each of the products	
2. Is familiar with the sales outlets--customers of the business	
3. Is familiar with promotional techniques a. Displays b. Advertisements c. Samples d. Salesmen	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
4. Keeps records of sales for each employee	See: Communication Units
5. Diagnosis sales problems of employees	
6. Sets up sales personnel training program for the business	
7. Sets up sales program for a special service product of the business	
W. Cooperates with the employee to increase job efficiency	See: Unit F, above
1. Is familiar with the job description of the employee	
2. Can perform an efficiency of the job	
3. Asks employee for suggestions and improvements in terms of efficiency of the business	
4. Works with employees to implement desired changes	
X. Hears and processes grievances of workers	See: Agricultural Leadership, Units C and D
1. Insures that all workers have an opportunity to be heard	
2. Sees to it that all grievances are acted upon	
3. Reports all grievances to appropriate persons	
4. Insures that persons reporting grievances be informed as to the action to be taken	

Table 16--Continued

Competencies to be Developed	Experiences and Activities
Y. Applies modern principles and concepts of accounting	See: Units A, B, and D, above
1. Is familiar with the accounting systems of the business	
2. Studies newer concepts and methods of accounting	
3. Suggests appropriate concepts of accounting for implementation into the business	
Z. Interviews and hires new personnel, orients new workers, and makes them feel a part of the organization	See: Agricultural Leadership, Units C and D
1. Keeps track of personnel needs of the business	
2. Is familiar with the requirements that prospective employees need for the job in the business	
3. Is familiar with the sources of new personnel	
4. Conducts an interview with prospective personnel	
5. Evaluates the prospective personnel in light of job requirements	

Table 17

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES
IN THE FEED INDUSTRY: RESEARCH AND SCIENCE

Competencies to be Developed	Experiences and Activities
A. Develops an alertness to new opportunities for the business, and keeps in touch with research being conducted in the area of feeds and feeding	See: Communication, Units A, B, C, and D
1. Keeps and uses an up to date library a. Professional journals b. Farm magazines c. Special newsletters d. Trade journals e. Research reports of experiment stations f. Experiment station bulletins and USDA bulletins	A. Research Techniques B. Evaluating Sources of Information and Quality of Research Data
2. Systematically checks with the non-written sources of information a. Professional meetings b. In-service training sessions c. Farm meetings d. Adult classes e. Company meetings f. Special subject matter meetings	C. Applying Appropriate Research Findings to New Situations
3. Secures information from customers about: a. Services now being rendered b. Additional services desired	
4. Sets and follows a systematic plan for visiting the following: a. State research farms b. State research sub-stations c. Field days, commercial and educational d. Commercial companies	

Table 17--Continued

Competencies to be Developed	Experiences and Activities
B. Establishes the physical setup for research and plans daily and periodic routines of work	See: Unit A, above D. Research Objectives
1. Establishes the objectives of research for the business	
2. Plans and determines the physical and personal needs to carry out the research	
3. Plans each experiment in line with the objective	
4. Is familiar with the methods of conducting feed industry research	
5. Secures the needed supplies and personnel	
6. Schedules the work for the employees in line with their abilities	
C. Rejects the use of spoiled or damaged feed in mixing rations for research purposes	See: Crop Science, Units A and B
1. Establishes criteria for evaluating all incoming feeds to be used in research	
2. Insures that all feed is carefully inspected before being considered for use in research	
3. Rejects all feeds that do not meet the criteria	
D. Formulates the rations, including use of micro feeds and antibiotics	See: Animal Science, Units A, B, C, D, and E
1. Understands animal nutrition, including:	

Table 17--Continued

Competencies to be Developed	Experiences and Activities
a. Principles of nutrition b. Functions of feed ingredients c. Elements found in animal feeds d. Growth patterns and changing nutritional requirements of farm animals	See also, units in chemistry dealing with analysis and weigning See: Trade and Industry, Units C, D, and E
2. Understands common feed terms a. Concentrates b. Supplements c. Protein d. Carbohydrates e. Vitamins f. Additives g. Nutrients h. Nicro feeds	
3. Can formulate rations for various animals	
4. Insures that the formulated rations meet the criteria for which they are formulated	
5. Insures that the mixing and grinding machines are not contaminated	
6. Insures that the micro feeds are mixed throughly and pre-mixed	
7. Provides a system of transportation of the ingredients to permit non-contamination	
8. Insures that accurate weights and measures are obtained	
9. Insures that pre-mixed and major ingredients are thoroughly compounded	
10. Has sample of feed analyzed to compare against control charts	

Table 17--Continued

Competencies to be Developed	Experiences and Activities
11. Develops an identification code for all research rations to permit identification, purpose, date, mixed, and the like	
E. Coordinates and cooperates in the development of new feed products	See: Unit A, above
F. Specifies what data should be recorded and plans a procedure for recording it	See: Ofice Practices, Unit D
1. Identifies the data needed to complete the objectives	
2. Plans for collecting the data a. Type b. When and how often c. Done by whom	
3. Trains employees in collecting the data a. Accuracy according to directions b. Proper completion of the forms	
G. Recommends and determines need for research	See: Unit B, above
1. Keeps abreast of the problems of the industry and of the business	
2. Keeps abreast of the trends of the industry and of the business	
3. Spots areas needing research through constant analysis of the business records and an awareness of the trends and problems	
4. Is familiar with the methods of research that may be employed by the company	

Table 17--Continued

Competencies to be Developed	Experiences and Activities
5. Is able to plan and insititute research projects	
6. Is familiar with the procedures and business policies of the research program	
7. Plans and determines the physical, personnel, and financial needs to carry out the research	
H. Performs many basic skills as testing for moisture, TDN, ash, and the nutrients	See: Unit A, above; and Chemistry Units on Analysis
1. Is familiar with the basic skills, such as testing for moisture, TDN, as, and the nutrients that are used in the business	
2. Is familiar with alternative methods of performing the basic skills	
3. Has the ability to perform the basic skills in the manner used in the business	

Table 18

UNITS OF INSTRUCTION TO DEVELOP COMPETENCIES IN THE FEED INDUSTRY: TRADE AND INDUSTRY

Competencies to be Developed	Experiences and Activities
A. Plans and schedules processing operations 1. Understands and interprets needs and informs the sales department 2. Knows output capacities of the various machines and of the plant 3. Knows the production requirements of each item 4. Is familiar with each production process so that: a. Efficient use of machines is planned b. Repetition of operations is reduced c. Unnecessary mill adjustments are reduced d. Alterations in the processes are reduced e. Continuous operation is possible	A. Planning and Scheduling Work Processes
B. Keeps storage equipment in proper repair 1. Is familiar with the storage equipment 2. Maintains files of: a. Operational manuals b. Maintenance manuals 3. Follows the recommended maintenance procedures 4. Keeps a record of:	B. Using Manuals for Becoming: 1. Acquainted with Machines and Equipment 2. Maintenance of Machines and Equipment 3. Repair of Machines and Equipment

Table 18--Continued

Competencies to be Developed	Experiences and Activities
a. Normal mishaps or breakdowns b. Maintenance and repairs performed, date and nature of the work performed c. Equipment history	
C. Records and reports daily consumption of feed ingredients, amounts of feed processed, kinds of packaging, and disposal or storage 1. Maintains daily record of: a. Inputs of feed ingredients b. Output of processed feed c. Disposition of feed	C. Record keeping on: 1. Production 2. Machine Operation 3. Machine Maintenance and Repair
D. Performs mill operations, such as grinding, mixing, and packaging 1. Knows the mill operations performed a. Grinding b. Mixing c. Blending d. Rolling e. Pelleting f. Crimping g. Packaging 2. Has ability to perform each operation a. Is familiar with each operation as a process b. Is familiar with the equipment of each operation c. Has experience in each operation	D. Machine Operation in the Feed Mill
E. Keeps processing and mixing equipment in proper repair 1. Is familiar with the processing and mixing equipment	E. Machinery Maintenance and Repair

Table 18--Continued

Competencies to be Developed	Experiences and Activities
2. Maintains files of operational and maintenance manuals	
3. Follows recommended maintenance procedures	
4. Keeps a record of: a. Normal mishaps and breakdowns b. Maintenance and repairs performed, date, and other pertinent equipment history	
F. Sacks, packages, and labels according to specifications	
1. Knows the packaging and labeling specifications a. Type of tag or label required b. Date, code, and other needed information	
2. Has ability to perform operations of: a. Sacking b. Packaging c. Labeling	
G. Packaging and labeling specifications and standards; and recommends machine changes and requisitions parts and materials	F. Efficiency in Relation to Machines
1. Keeps records of new machinery a. Trade journals b. Visits	
2. Recommends changes when needed a. Outdated by newer machines and processes b. Inefficient c. Cost of operation out of line d. Breakdown repairs too costly	

Table 18--Continued

Competencies to be Developed	Experiences and Activities
3. Maintains files of: a. Cost of machinery repair b. Parts manual c. Sources of parts and machinery d. Forms for the requisition of parts	
H. Plans efficient system for keeping records on the use and maintenance of vehicles; and manages maintenance of trucks and other equipment concerned with distribution	G. Record Keeping for Vehicle Maintenance and Repair
1. Sets up and follows a systematic maintenance schedule for all vehicles and equipment	
2. Keeps on file the maintenance manuals for the vehicles and equipment	
3. Keeps a maintenance history of all vehicles and equipment	
4. Maintains a daily and annual dispatch record for each vehicle	
5. Maintains operational records for all equipment	
I. Drives vehicles with full understanding of their operations, maintenance and of safe-driving procedures; and promotes campaigns for safe-driving and use of equipment	H. Driver Training
1. Is acquainted with the operators and maintenance manuals of all vehicles and equipment	
2. Is familiar with the driving characteristics of each vehicle	

Table 18--Continued

Competencies to be Developed	Experiences and Activities
3. Insures that each driver has a valid operator's license	
4. Is familiar with the operational procedures for all equipment	
5. Attends safety meetings for all new company drivers where the driving policies of the business are explained	
6. Keeps constant safety checks on all drivers and equipment operators	
7. Promotes safety through posters, signs, and a system of awards	
J. Knows limitation of stacking sacks and other forms of packages	I. Efficient Handling of Packages
1. Is familiar with each form of packaging used in the business and its handling limitations	
2. Conducts trial handling systems with the employees on delivery trucks and in the warehouse	
3. Establishes a handling system for all products used in the business	
K. Determines transportation costs on fleet of vehicles and on each individual unit	J. Record Keeping of Transportation Costs
1. Maintains daily dispatch record for each vehicle	
2. Maintains transportation record for the business	

Table 18--Continued

Competencies to be Developed	Experiences and Activities
3. Calculates the cost of operating the fleet and of operating individual vehicles	
L. Plans and routes most economical transportation; and routes delivery and service trucks to retail stores, farms, and dealers	K. Delivery Procedures
1. Keeps a record of sales that includes quantity of each item sold, noting size and type of container	
2. Examines records to determine the transportation needs of the business	
3. Is familiar with the service areas (territory) of the business	
4. Plans a vehicle dispatch system to provide for economical deliveries and customer convenience	
M. Understands function of each operating machine	See: Unit D, above
1. Reads the operational manual for each machine	
2. Reads the maintenance manual of each machine	
3. Is able to operate each machine according to directions in the manual	
N. Understands relationship between machines and the total operation	See: Unit G, above
1. Relates the function of each machine to the total functions of the business	

Table 18--Continued

Competencies to be Developed	Experiences and Activities
O. Understands distribution systems for moving or conveying grains and feeds	See: Units A, D, and G, above
1. Is familiar with the principles of each system used in the business for conveying grains and feeds	
2. Is able to work with and adjust and regulate each part of the system	
P. Reads and understands the manual of installation and operation instructions	See: Unit B, above
1. Maintains a file of the operation and installation manuals	
2. Reads these manuals	
3. Works with each of the machines	
Q. Understands and respects safety features and employs safety coding through use of colors, signs, and warning devices	L. Safety in the Plant
1. Understands the importance of employee safety	
2. Knows the importance of each safety feature of the company	
3. Employs the safety color codes in appropriate places	
4. Has a safety campaign to constantly stress its importance	
5. Displays signs and posters in appropriate places	

Table 18--Continued

Competencies to be Developed	Experiences and Activities
R. Keeps a physical equipment inventory, records of instruction, and maintains an orderly tool and material room and office 1. Maintains a file of the following: a. Physical equipment inventory b. Operational manuals for each machine c. Instructional manuals for each machine d. Maintenance logs for each machine 2. Promotes neatness in tool and equipment storage 3. Promotes neatness in office procedures	See: Units B and E, above

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ED013338

A Survey of Non-Farm Agricultural Occupations in Monroe County, Michigan

by

F. Paul Nevel

and

John L. Malcomnson

February, 1965

A report on the first phase of a comprehensive study of agricultural occupations in Monroe County Michigan; submitted to Dr. Raymond Clark Professor, College of Education Michigan State University.

VT000038

A SURVEY OF NON-FARM AGRICULTURAL OCCUPATIONS IN MONROE COUNTY MICHIGAN

The Need For This Study

Developments in technology and automation have caused tremendous changes to take place within our agricultural industry. Significant among these changes is the decrease in the number of persons needed in the production phase of agriculture, accompanied by an increase in the number of persons needed in the off-farm agricultural occupations.

It is generally agreed that there are many opportunities for persons in the non-farm agricultural occupations but no specific data has been collected in Monroe County on the number of jobs at various levels. This is partly due to the fact that most of the agricultural service and business job aspects of the agricultural industry have evolved fairly recently. There is some evidence that a number are evolving at the present time.

If our young people are to receive adequate counseling, and the educational needs of all our people are to be met, it becomes imperative that immediate and continuing identification be made of those businesses which embrace jobs requiring some competency in agriculture. With carefully validated information concerning the number of employment opportunities in these occupations and the competency levels required for specific job titles, future needs for educational programs in agriculture may be more accurately projected than is now possible.

Such information is much needed in planning more adequate vocational training for non-farm agricultural occupations in the high schools of the county. It is also much needed by the Cooperative Extension Service for planning improvements and expansion of the extension education programs. A further need of significant importance is that of establishing a guide for post high school technical agricultural programs of less than college degree level in our community college.

Purpose of This Study

The original proposal for this study indicated that the following six objectives were to be reached through completion of two phases of this survey. The objectives were stated as follows:

1. To identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available.

2. To determine present and anticipated numbers of employees in these occupations.

3. To estimate the annual entry opportunities in these occupations.

4. To determine competencies needed for entry and satisfactory performance in these occupations.

5. To determine other characteristics of these occupations such as salary, minimum age for entry, union restrictions, labor laws, required experience, and formal education.

6. To determine continuing education needs of those employed in these occupations.

This is a report of the first part of the study of non-farm agricultural occupations. The specific objectives of this phase of the study were:

1. To locate and indentify businesses which employ persons who may need some competencies in one or more of the primary areas of plant science, animal science, soil science, agricultural economics and/or agricultural mechanization.

2. To determine the number of persons by job titles who are employed in these businesses.

3. To identify some of the major functions of these businesses. (Functions in this study are understood to mean those kinds of activities performed for the customer and those kinds of activities so closely related to customer services as to be in fact essential for their performance.)

Plan of Study

Identification of Participants

The survey form and procedures for collecting data were designed through a cooperative effort of all teachers of vocational agriculture in the Monroe County area and F. Paul Nevel, Monroe County Extension Agent for Agriculture.

The extension agent assumed the major responsibility for coordinating the study under the direction of Dr. Raymond Clark, Professor, College of Education, Michigan State University.

Teachers participating in this study and the school areas which they surveyed were:

John L. Malcomson - Airport Community Schools

Gordon Struble - Bedford Public Schools
Mason Public Schools

V. Lee Flegel - Dundee Community Schools
Summerfield Township Schools

Joseph Moody - Ida Public Schools

Ira Jump - Milan Community Schools

Lewis J. Bassett - Monroe Public Schools

Warren Ahrendt - Whiteford Agricultural Schools

Plan of Action

After construction of the survey form was completed, the participants agreed to share the responsibility for covering the county area. Each teacher of vocational agriculture agreed to survey his own school service area. Two of the teachers agreed to survey adjoining school areas where there were no teachers of vocational agriculture. The extension agent took the responsibility for surveying those businesses and professions rendering county-wide services and shared the responsibility for summarizing the information with John Malcomson, teacher of vocational agriculture.

It was further agreed at subsequent meetings of the participating parties, that the survey form should be delivered in person to each business or firm to be surveyed. It was planned to complete an interview with the person in each business, firm or profession, having the highest degree of over-all administrative responsibility at the local (county) branch level. The actual interview in each case would be preceded by a letter of introduction and a one page brief explanation of the survey, the need for it, and the objectives which were in mind. It was understood by everyone that the survey form could be left with appropriate instructions and could be completed at a later appointed time, should the time of the visit be inconvenient for the person being interviewed.

All participants in this study were agreed that personal contact by the teacher or agent (or some one working under his direction) was a very important factor, especially in determining present job titles and anticipating future job titles. Personal contact, by the teacher or agent, as a professional person, with responsibilities of agricultural leadership within the community, was considered highly desirable in establishing the rapport needed for the successful completion of the follow-up study of job competencies in phase two of this study.

It was believed important, by the person coordinating the study, that the reliability of the survey information would be improved if the introductory letter and background information furnished each person to be interviewed, were the same for use in all parts of the county. It was further felt that an interview guide would also improve interview procedures and hence improve reliability of results.

The interview form, the interview guide, the letter of introduction and the background informational sheet, may all be found in the appendix.

Data

It was intended that this survey cover all businesses in the county, which employ, or were suspected of employing, persons who may need some competencies in one or more of the primary areas of plant science, animal science, soil science, agricultural economics and/or agricultural mechanization. The technique of sampling was not employed. All known businesses fitting this description were surveyed. A total of one hundred-two individual businesses were surveyed and personal interviews were completed in all of these.

Table 1 indicates there were sixteen different types of businesses identified in the county which had twenty-five percent or more of their business oriented toward providing products or services for agriculture.

This table indicates also that a total of seven hundred fifty-six persons were employed in these businesses; three hundred ten on a part-time basis and four hundred forty-six on a full-time basis.

TABLE NO. 1 SUMMARY OF EMPLOYMENT DATA BY TYPE OF BUSINESS

Type of Business	Percent of Business Ag. Oriented	Number of People Employed			Number of Businesses Interviewed
		Part-time	Full-time	Total	
Farm Equipment	80%	9	60	69	12
Farm Elevator	95%	33	139	172	18
Nursery	91%	123	29	152	7
Greenhouses	85%	37	35	72	10
Farm Supply	25%	6	33	39	4
Fertilizer Companies	100%	5	10	15	3
Dairy Processing	94%	12	18	30	1
Insurance	40%	1	12	13	4
Poultry Hatchery	97%	7	3	10	3
Livestock Sales	100%	28	3	31	2
Food Processing	58%	5	13	18	3
Petroleum Sales	64%	2	22	24	5
Recreation	93%	6	8	14	3
Professional Services	74%	17	56	73	23
Sugar Beet Companies	100%	16	2	18	2
Accountants	50%	3	3	6	2
Total	-	310	446	756	102

Table 2 indicates the various functions of the businesses surveyed. The functions of the business was interpreted in this study to mean those kinds of activities performed for the customer and also those kinds of activities so closely related to the customer services, as to be in fact essential for their performance.

TABLE NO. 2:

FUNCTIONS REPORTED BY AGRI-BUSINESSES IN MONROE COUNTY

Business Function	Number Reporting
Manufacturing	14
Purchasing	31
Service	77
Constructing	3
Retailing	62
Warehousing	27
Processing	24
Wholesaling	35
Contracting	3
Producing	25

Since one of the objectives of this survey was to identify the job titles of present workers, a complete listing of these job titles, by type of business, appears in the appendix.

Summary and Conclusions

1. A large number of individual businesses in Monroe County are oriented toward the supply of goods and services for agriculture. While over one hundred such individual businesses were identified, this does not mean that all such businesses in the county were surveyed, since some were undoubtedly overlooked.

2. From the job titles and job descriptions, it appears many of the workers employed in the businesses surveyed may be dependent upon knowledge, understanding, and/or skill in the areas of plant science, animal science, soil science, agricultural economics and/or agricultural mechanization.

3. There were a sufficient number of businesses reporting service, retailing, wholesaling, purchasing, processing, and warehousing, as major business functions, to suggest that some training programs in these areas may be needed.

4. There is sufficient evidence from the data obtained through this survey to suggest that much importance should be placed upon further study of occupations to determine such things as:

    a. Annual entry opportunities in these occupations

    b. Competencies needed for entry and satisfactory performance

    c. Continuing education needs

5. Based only on the evidence furnished by this first phase of the comprehensive study which was outlined in the original proposal, it would appear that increased attention should be given to the following:

    a. Enrolling students in courses of vocational agriculture who are interested in the businesses which are oriented toward providing goods and services for agriculture.

    b. Developing cooperative work training programs with agri-business industries for students of vocational agriculture.

    c. Developing programs of continuing education for persons employed in the agri-business industries.

6. The personal contacts with agri-business revealed that these businesses are experiencing difficulty in obtaining and retaining qualified workers. If this situation is to be corrected, more information concerning job opportunities in the agri-business occupations must be provided to students parents, counselors, youth leaders and others, who work with rural youth. There are also strong implications for the development of educational programs, both on the high school and post high school level. It is very evident that these industries cannot afford to pay wages, for untrained persons, which are competitive with other types of industry in the area.

APPENDIX

Appendix 1: The Interview Form

_____ Interviewer Date_____

FORM 1: SURVEY OF AGRICULTURAL OCCUPATIONS IN MONROE COUNTY

I. Name of Business or Firm_____

_____

II. Address_____

III. Names of Persons Contacted_____Tele._____

_____Tele._____

IV. Position in the Business of Person Interviewed

1. Owner _____ 2. Owner-manager _____
3. Manager-hired _____ 4. Personnel director _____
5. Sales manager _____ 6. Office manager _____
7. Other (specify)_____

V. Functions of the Business

1. _____Manufacturing
2. _____Purchasing
3. _____Service
4. _____Constructing
5. _____Retailing
6. _____Warehouse
7. _____Processing
8. _____Wholesaling
9. _____Contractor
10. _____Production
11. _____Other
(Specify)_____

VI. Products, Services or Functions of the Business

_____

_____

_____

_____

_____

VII. Type of Business

_____Percentage of business agricultural oriented

_____Percentage of business non-agricultural

VIII. _____ Total number of workers. (Owners and employees)

_____ (a) Part Time

_____ (b) Full Time

IX.

Job Titles (Description of Work)	No.	Job Titles (Description of Work)	No.

*Anticipated Future Job Titles

Appendix 2: The Interview Guide

INTERVIEW GUIDE FOR PHASE 1

1. Select the persons, business or firm, whom you plan to contact for interviewing within a two week period. Send letter of introduction.

2. Interview the person who has the highest degree of over-all administrative responsibility at the local (county) level.

3. You will in most cases be well known to those you interview. If there is any doubt as to your identity or your official responsibility be sure to make this known at the onset.

4. Preface your interview with a brief review of the purpose of the survey, "to identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available."

5. Record the official name of the business or firm. Where a firm has no official name other than the name of the owner or operator, - record the name of the owner or operator.

6. Record the complete address; number, road or street, and post office.

7. A copy of the interview may be given to the person being interviewed so that he may anticipate the questions, while you are recording answers, and thereby reducing the time required for the interview.

8. Obtain the best estimates possible for question 7.

9. Most of the agricultural jobs have no official job titles. In this case write down the description of the work done.

10. Make a direct inquiry about anticipated job titles, but don't make up or suggest job titles for the approval of the person interviewed.

11. When the interview is finished, it would be helpful if you would pave the way to the follow up study to be done at a later date, when we will attempt to determine competencies needed for entry and satisfactory performance in these occupations.

Appendix 3: Letter of Introduction

AN OPEN LETTER OF INTRODUCTION AND EXPLANATION TO ALL MONROE COUNTY PERSONS AND FIRMS ENGAGED IN ONE OR MORE TYPES OF AGRICULTURAL BUSINESS

The teachers of vocational agriculture in the Monroe County area, in cooperation with the Monroe County cooperative extension service, are conducting a survey which we believe is of great importance to everyone employed in the various segments of our agricultural economy.

This survey will be an effort to identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available, within our county. It is hoped that we can also determine present and anticipated numbers of employees in these occupations, as well as some of the competencies needed for satisfactory performance, in these occupations.

Some time within the next few days a call will be made at your place of business to arrange a brief interview. Since you are a key person with respect to the information needed in this survey, we hope you will be able to give a few minutes of your time to this worthy effort.

For your further information, we are enclosing some background information relating to this survey and its purpose.

Very truly yours,

Appendix 4: Background Information Sent With Letter of Introduction

FOR YOUR INFORMATION

The following background information is presented here so that you may more fully understand why this survey is being made and what use will be made of the resulting data.

The Need For This Study

Developments in technology and automation have caused tremendous changes to take place within our agricultural industry. Significant among these chang is the decrease in the number of persons needed in the production phase of agriculture, accompanied by an increase in the number of persons needed in the off-farm agricultural occupations.

It is generally agreed that there are many opportunities for persons in the non-farm agricultural occupations but no specific data has been collected in Monroe County on the number of jobs at various levels. This is partly due to the fact that most of the agricultural service and business job aspects of the agricultural industry have evolved fairly recently. There is some evidenc that a number are evolving at the present time.

If our young people are to receive adequate counseling, and the education needs of all our own people are to be met, it becomes imperative that immediat and continuing identification be made of those businesses which embrace jobs requiring some competency in agriculture. With carefully validated informatio concerning the number of employment opportunities in these occupations and the competency levels required for specific job titles, future needs for education programs in agriculture may be more accurately projected than is now possible.

Such information is much needed in planning more adequate vocational trai ing for off-farm agricultural occupations, in the high schools of the county. It is also much needed by the Cooperative Extension Service for planning improvements and expansion of the extension education programs. A further need of significant importance is that of establishing a guide for post high school technical agricultural programs of less than college degree level in our community college.

Objectives

1. To identify present and emerging agricultural occupations, for which vocational and technical agricultural education should be available.

2. To determine present and anticipated numbers of employees in these occupations.

3. To estimate the annual entry opportunities in these occupations.

4. To determine competencies needed for entry and satisfactory performance in these occupations.

5. To determine other characteristics of these occupations such as salary, minimum age for entry, union restrictions, labor laws, required experience, and formal education.

6. To determine continuing education needs of those employed in these occupations.

Appendix 5: No. of Persons Reporting Various Job Titles in Monroe County Agri-business

Elevator - Feed & Grain:

Job Title	Number of Workers Reported
Manager of business or firm	18
Bookkeeper	16
Elevator superintendent	10
Elevator operator	5
Clerk	10
Mill foreman	4
Mill worker	16
Truck drivers	26
Maintenance man	5
Field service man	3
Laborers (General)	19
Truck dumper	2
Dehydrator operator	2
Salesman	6
Buyer	2
Feed superintendent	1
Grain superintendent	1
Seed cleaning superintendent	1
Weighmaster	3
Grain dump operator	1
Night watchman	1
District distributor	1
Warehouse man	1
Feed man	5
Office manager	2
Inspector	1
Switchman	1
Engine operator	1
Dump tripper	1
Truck side worker	1
Truck man	4

Farm Equipment:

General manager	12
*Parts manager	7
Service manager	3
*Mechanic & service man	20
*Salesman	7
Set up and delivery	3
All purpose man	3
Shop man	2
Maintenance man	3
Bookkeeper	9

*Shortage of qualified workers indicated by persons interviewed

Job Title	Number of Workers Reported
Fertilizer Companies:	
Manager	5
Warehouse manager	1
Salesmen	2
Blenders	2
Truck drivers	2
Bookkeeper	1
General laborer	2
Dairy:	
Own manager	1
Store manager	2
Plant manager	2
Production manager	1
Field man	1
Production assistant	1
Ice cream maker	2
Bottle washer	1
Truck drivers	2
Office clerks	2
Stock boy	2
Clerks	14
Greenhouse:	
Manager	10
Assistant manager	4
Sales and service	16
Designer	6
Greenhouse assistant	4
Delivery man	4
General labor	28
Farm Supply Stores: (Lumber - chemicals, automotive, general)	
Manager	9
Salesman	9
General service (tire)	9
General repairman	1
Brake man	2
Bookkeeper	3
Yardman	5
Truck driver (delivery)	2

Job Title	Number of Workers Reported
Petroleum Sales:	
Manager	5
Assistant manager	1
Driver salesman	8
Retail sales & public relations	5
Service	2
Mechanic	1
Bookkeeper	2
Insurance:	
Agency manager	1
Owner manager - agent	2
Insurance salesman	7
Secretary	5
Livestock Sales:	
Owner-manager	2
Order buyer	1
Auctioneer	2
Livestock trucker	1
Weighmaster	1
Yardman	1
Drovers	17
Office help	5
Hatchery & Poultry Sales:	
Owner-manager	4
Hatchery - helper	1
Poultry technician	2
Poultry buyer	1
Poultry salesman	1
Poultry dresser	1
Poultry packer	1
Food Processors:	
Manager	1
Butcher	2
Butcher apprentice	2
Food packager	6
Sales clerk	1
Bookkeeper	1
Co-owner - manager	2
Laborer	4

Job Title	Number of Workers Reported
Recreation:	
Owner - manager and club keeper	2
Club-house manager	1
Club-house maintenance man	1
Cashier of pro-shop	1
Greens-keeper	3
Mower and turf man	7
Starter	2
Stable manager	1
Stable attendant	1
General helper	1
Nursery Business:	
Company manager	9
Field Superintendent	3
Field salesman	3
Clerks	6
Field worker	47
Supervisor of landscape plantings	1
Lot salesman	2
Plant propagator	1
General foreman	1
Tree foreman	1
Spray foreman	1
General nursery worker	54
Assistant treasurer	1
Bookkeeper	1
Crew leader	1
Nursery manager	2
Sugar Beet Company:	
Field representative	2
Bookkeeper	2
Dump operator	2
Weighmaster	2
Repairman	2
Accountants:	
Owner-manager	1
Farm tax accountant	2
Office manager	1
Accountant	2

PROFESSIONAL SERVICES

Job Titles	Number of Workers Reported
Banks:	
Administrative assistant	1
Assistant cashier	3
Vice President and cashier	1
Branch manager	4
Bookkeeper	6
Clerk	4
Teller	10
Cooperative Extension Service:	
County Extension Director	1
County Extension Agent for Agriculture	1
County Extension Agent in 4-H Club Work	1
District Marketing Agent	1
District Farm Management Agent	1
Vocatinnal Education in Agriculture:	
Teachers of Vocational Agriculture	8
Soil Conservation District:	
Work Unit Conservationist	1
Soil Conservationist	1
Conservation Aid	1
U.S.D.A.:	
ASC County Office Manager	1
ASC County Office Clerks	9
ASC County Field Man	3
Veterinary Services:	
Doctor of Veterinary Medicine	6
Clinic Attendant	4
Production Credit Association:	
Branch Manager	1
Clerk	1

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A STUDY OF THE EFFECT OF SELECTED CHARACTERISTICS IN FARM MECHANICS RETRAINING SCHOOLS UNDER THE AREA REDEVELOPMENT ACT IN OKLAHOMA

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A STUDY OF THE EFFECT OF SELECTED CHARACTERISTICS IN FARM MECHANICS RETRAINING SCHOOLS UNDER THE AREA REDEVELOPMENT ACT IN OKLAHOMA

by Everett D. Edington and Robert H. Kuntz

The Area Redevelopment Act[1] of 1961 (Public Law 87-27, May 1, 1961) was passed by Congress to help certain areas of the country, which were suffering from substantial and persistent unemployment, to plan and finance their economic redevelopment. Part of this Act provided funds for the training of unemployed and underemployed residents of these areas. During the Spring of 1962, six Farm Mechanics training schools were held in Oklahoma under the Area Redevelopment Act, and ten Farm Mechanics training schools were completed under this Act in Oklahoma during the spring of 1963. There were 255 men who received training in these 16 schools.

Need for the Study

Since the Manpower Development and Training Act (Public Law 87-415, March 15, 1962, as amended by Public Law 88-214, December 13, 1963) continues with 100 per cent reimbursement until June 30, 1965, other training schools similar to the ones being studied are being held and planned in Oklahoma. Although some observations and studies of the training schools have already been made, it should be realized that the more thoroughly the schools and trainees are studied and analyzed, the chances will be greatly increased for other training schools in the future to be more successful.

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[1]Hereafter referred to as ARA

It is hoped that this study will be an aid in the selection of future trainees for Farm Mechanics retraining schools.

Purpose of the Study

The problem for which this study was designed was to determine whether there was any correlation between the test scores and selected characteristics used in selection of the trainees and their success in gaining employment in training related occupations.

In this study of Farm Mechanics training programs in Oklahoma, an attempt was made to determine whether there was any relationship among the differences of aptitude test scores and certain characteristics of the enrollees who: 1. received training and are now employed in a training related occupation; 2. dropped out and are now employed, but not in training related occupations; 3. completed the training and are now employed, but not in training related occupations; 4. dropped out and are now unemployed; 5. completed the training and are now unemployed.

How the Study Was Conducted

Subjects included in this study were trainees enrolled in Farm Mechanics retraining programs held in local Vocational Agriculture departments and supervised locally by the Vocational Agriculture Instructor under the directive of the State Supervisor, Division of Area Redevelopment Act Training, Oklahoma State Board for Vocational Education, under the provisions of the Area Redevelopment Act (Public Law 87-415, March 15, 1962). Trainees for these programs were screened and selected by the local office personnel of the Oklahoma Employment

Security Commission. Federal funds were supplied through the U. S. Department of Health, Education and Welfare to pay for the training.

Each of the courses held during the spring of 1962 had a duration of 16 weeks and trainees attended classes 20 hours per week. The courses which were completed during the spring of 1963 also had a duration of 16 weeks, but the trainees attended classes 28 hours per week. During the course of the programs, each trainee received an amount of money equivalent to the maximum amount available to him as umemployment compensation, which was approximately $27 per week. In addition, each was permitted to earn as much as $13.50 per week in outside, part-time employment. If he earned more than $13.50, the surplus would be deducted from his $27 compensation.

Definition of Terms

A variety of aptitude test scores and personal characteristic traits of the trainees were considered in this study.

The Oklahoma Employment Security Commission gave all the enrollees the General Aptitude Test Battery, Form B-1002 (GATB), which was developed for use in the occupational counseling program of the United States Employment Service and includes measures for nine different aptitudes. For purposes of this study all nine of the aptitudes were used. In addition, the intelligence, spatial aptitude, and finger dexterity aptitudes were considered collectively because those are the three that the Employment Security Commission considered in selecting enrollees. The following are the definitions of the nine aptitudes measured by the GATB, B-1002:

a. Intelligence--General learning ability. The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments. Closely related to doing well in school.

b. Verbal Aptitude--The ability to understand the meaning of words and to use them effectively. The ability to comprehend language, to understand meanings of whole sentences and paragraphs.

c. Numerical Aptitude--The ability to perform arithmetic operations quickly and accurately.

d. Spatial Aptitude--The ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

e. Form Perception--The ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

f. Clerical Perception--The ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy, to proof-read words and numbers and to avoid perceptual

errors in arithmetic computation.

g. Motor Co-ordination--The ability to co-ordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and swiftly.

h. Finger Dexterity--The ability to move the fingers and manipulate small objects with the fingers, rapidly or accurately.

i. Manual Dexterity--The ability to move the hands easily and skillfully. Ability to work with the hands in placing and turning motions.[2]

At the end of each training course completed in 1963, the State Board for Vocational Education required each local instructor to complete an "Individual Trainee Termination of Training" form on each trainee.[3] On this form, each instructor was required to rate each trainee according to eight different personal traits. The traits are: industry and energy, relations with others, emotional stability, leadership, appearance, ability to learn, dependability, and punctuality.

In order to determine what each enrollee was doing at the time of this study, each training center was visited sometime between August 1, 1963, and November 1, 1963. Each of the enrollees who could be located were asked their employment status, what kind of work, if employed,

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[2]United States Employment Service, Guide to the Use of the General Aptitude Test Battery, B-1002 (Oklahoma State Employment Service, Oklahoma City) p. 1.

[3]U. S. Government Printing Office: 1963 of--670541, "Individual Trainee Termination of Training," DL/DHEW-MT-102, Budget Bureau No. 44-R1204, Expires September 30, 1963.

their last regular salary before training, and their salary now. The local Vocational Agriculture Instructor was also used as a resource person in determining the employment status of enrollees. Questionnaires were mailed to the remaining enrollees asking for this information. Information was obtained from 84 per cent of the trainees.

The Individual Trainees Termination of Training form used in 1963 was not available in 1962. In lieu of this form, the local instructors of these schools were contacted and asked to rate the enrollees in order to have a complete set of data.

Other information obtained from the Individual Trainee Termination of Training form was: 1. the amount of training that each enrollee received; 2. if he dropped out and the reason for dropping out. For the six courses which did not have this form, the information was acquired from the local supervisor.

Characteristics of Trainees in the Farm Mechanics ARA Program

Findings presented in this section of the report are based upon an examination of the relationship between a variety of independent variables and trainee success in obtaining a training related job. Independent variables included in this phase of the study include the nine aptitudes measured by the General Aptitude Test Battery, B-1002, the sum of the three aptitudes which the Oklahoma Employment Security Commission considered in selecting trainees, and age. The nine individual aptitudes are: intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, and manual dexterity. The three aptitudes considered together were intelligence, spatial aptitude,

and finger dexterity.

The number of persons enrolling in the ARA Farm Mechanics training programs can be found in Table I. The original enrollment of each school which was completed in 1962 was 14, and 15 for each school which was completed in 1963. The reason why some of the schools have a larger number of persons enrolling than the original number is because those enrollees who dropped out during the first two weeks are replaced. It may also be noted in Table I that three of the centers, Holdenville, Panama, and Stilwell, each held two training schools.

Table II includes results indicating relationships between success or lack of success in obtaining training related employment and ten different independent variables (intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, manual dexterity) and the sum of these three aptitudes: intelligence, spatial aptitude and finger dexterity. These are the measures that the Employment Security Commission considered in selecting trainees. It may be observed in Table II that only two of the independent variables (spatial aptitude and the sum of the three--intelligence, spatial aptitude, and finger dexterity) are significantly different at the five per cent level.

The fourth group of enrollees (those dropouts who are unemployed) had too small a number of persons in it to statistically analyze. In analyzing the spatial aptitude scores, those persons who are employed in training related occupations do show significantly higher scores than those who are less successful in obtaining employment in training related jobs. The sum of the three scores (intelligence, spatial aptitude, and finger dexterity) is very similar to the scores on spatial

aptitude, in that those who received training and have a training related job had the highest scores.

TABLE I

THE NUMBER OF PERSONS ENROLLING IN TRAINING PROGRAMS, BY CENTER LOCATION, AND YEAR TRAINING COMPLETED

Center	Number of Persons Enrolling 1962	1963
Boswell		15
Broken Bow		15
Chickasha		15
Holdenville	20	18
Quapaw	17	
Panama	17	17
Poteau	14	
Sallisaw		15
Soper		15
Stigler		15
Stilwell	14	15
Tahlequah	16	
Tuttle		17
Total	98	157

TABLE II

THE GENERAL APTITUDE TEST BATTERY SCORES OF EACH GROUP OF ENROLLEES

	Employed, Training Related n=135	Dropout, Employed, Non-training Related n=23	Employed, Non-training Related n=28	Completed Training, Unemployed n=19	Average n=215	F-Value
Intelligence	95.79	91.30	89.14	91 ~~19~~.74	94.03	1.768
Verbal Aptitude	91.70	91.09	87.54	87.42	90.67	.705
Numerical Aptitude	90.00	85.74	89.75	88.58	89.24	.508
Spatial Aptitude	99.40	94.39	90.82	93.79	97.55	2.277*
Form Perception	90.46	90.13	88.79	96.05	91.02	.791
Clerical Perception	91.70	90.91	93.54	90.37	92.04	.719
Motor Co-ordination	93.56	87.35	91.04	93.79	92.68	.784
Finger Dexterity	95.97	94.35	90.29	90.32	94.61	1.122
Sum of Intelligence, Spatial Aptitude, & Finger Dexterity	291.16	280.04	270.25	275.84	286.19	2.623*
Manual Dexterity	97.31	91.74	94.57	96.89	96.58	.775

*Significant at 5 per cent level

The other eight independent variables (intelligence, verbal aptitude, numerical aptitude, form perception, clerical perception, motor co-ordination, finger dexterity, and manual dexterity) as measured by the GATB test, showed no significant difference for the different groups of enrollees. An interesting fact which may be determined from Table II is that 61 per cent of the enrollees contacted are employed in training related jobs and 26 per cent more of the men are otherwise employed.

Results indicating relationships between success in obtaining employment in training related occupations and age are included in Table III. It may be noted that the trainees who were successful in finding a training related job average slightly older than those who were not successful, but the difference in age is not enough to be a determining factor in the success of the individual. The trainees in all five groups ranged from 17 to 18 years of age to 62 years of age. Consequently, the age of the enrollee was of little or no value in selecting trainees.

TABLE III

AGES OF EACH GROUP OF ENROLLEES

	Employed, Training Related	Dropout, Employed, Non-related	Completed Training Employed, Non-related	Dropout, Un-employed	Completed Training, Un-employed	Total Average	F-Value
Average Age	31.5	28.2	28.9	27.0	28.9	30.4	.811
No. in Each Group	135	23	28	10	19	215	

In order to further determine other benefits which the trainees might have received from the training, other than a salable skill, each enrollee who was employed was asked what his present salary was and what his last regular salary was before the training.

The percentages of each group who had an increase and no increase is in Table IV. It should be mentioned here that at the time of enrollment all of these trainees were either unemployed or underemployed, which may be called part-time employment.

In each of the three groups of enrollees who were employed, the majority had obtained employment with an increase in salary over their last regualr salary. If the three employed groups are considered collectively, it will be noted that 71 per cent of the enrollees who got any kind of job received a raise over their last regular salary before receiving the training.

TABLE IV

SALARY AFTER TRAINING AS COMPARED TO LAST REGULAR SALRY BEFORE TRAINING

Groups	Increase in Salary	No Increase in Salary	Total Per cent	Total No. in Each Group
Employed, Training Related	60	40	100	125
Dropouts, Employed, Non-training Related	70	30	100	20
Completed Training, Employed, Non-training Related	84	16	100	25
All Who Were Employed	65	35	100	170

In Table V is found the percentages of enrollees who were married, single, divorced or widowed at the time of enrollment in each group of enrollees being studied, and the total number located in each group of trainees. The indication seems to be that the majority of men who are unemployed are either single or divorced.

TABLE V

MARITAL STATUS OF EACH GROUP OF ENROLLEES

Groups	Married	Single	Divorced	Widower	Total Per cent	Total Number in Group
Employed, Training Related	67	26	6	1	100	125
Dropouts, Employed, Non-training Related	61	35	4		100	23
Completed Training, Employed, Non-training Related	53	36	11		100	28
Dropouts, Unemployed	45	33	22		100	9
Completed Training, Unemployed	26	69	5		100	19

The data in Table VI indicate that nearly all of the enrollees were school dropouts. It would seem that those trainees who are now employed in training related occupations, even though they had fewer years of education, realized the need for learning a salable skill. The number of years of education ranged from four years to 15 years. It should be noted that none of the unemployed enrollees had any education beyond high school.

TABLE VI

AVERAGE YEARS OF EDUCATION OF EACH GROUP OF ENROLLEES

Groups	Average Years of Education	No..in Each Group
Employed, Training Related	9	135
Dropouts, Employed, Non-training Related	10	23
Completed Training Employed, Non-training Related	10	28
Dropouts, Unemployed	10.5	10
Completed Training Unemployed	10.5	19

Instructor Ratings Given to Trainees

The ratings given by the local course instructors on the following personal traits of the trainees are found in Tables VII through XIV: (1) industry, energy (2) relations with others (3) emotional stability (4) leadership (5) appearance (6) ability to learn (7) dependability (8) punctuality. The ratings are given in percentages and the total number in each group is also shown.

TABLE VII

INDUSTRY AND ENERGY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Usually Indifferent	Sometimes Lazy	Average in Industriousness	Hardworker, Willing To Do More Than Assigned	Exceptionally Diligent, Eager To do More Than Assigned	Total %	Total No.
Employed, Training Related	1	9	43	35	12	100	130
Dropouts, Employed, Non-training Related	12	19	38	19	12	100	16
Completed Training Employed, Non-training Related		21	36	36	7	100	28
Dropouts, Unemployed		22	67	11		100	9
Completed Training, Unemployed	10	21	48	21		100	19

Industry and energy (which is willingness and desire to work at school duties) is shown in Table VII. There is very little difference in the ratings of the five groups except that not one of the men in the two unemployed groups was rated as being exceptionally diligent and eager to do more than was assigned.

TABLE VIII

RELATIONS WITH OTHERS RATINGS OF EACH GROUP OF ENROLLEES

Groups	Surly, Troublesome, Indifferent	Sometimes Difficult to Work With	Usually Tactful and Obliging, Self-control	Always Congenial Cooperative	Highly Cooperative, Inspires Cooperation	Total %	Total No.
Employed, Training Related	1	10	28	49	12	100	130
Dropouts, Employed, Non-training Related	6	25	50	13	6	100	16
Completed Training, Employed, Non-training Related		10	36	50	4	100	28
Dropouts, Unemployed		22	33	45		100	9
Completed Training, Unemployed	5	32	37	26		100	19

The ratings in Table VIII are concerned with relations with others. Relations with others is interpreted as being helpful and cooperative with associates and superiors in manner and act. Again, there seems to be no difference in the ratings of the majority of men in each group, except that no men among the unemployed groups are rated the highest--highly cooperative.

TABLE IX

EMOTIONAL STABILITY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Loses His Head Easily	Apathetic, Unrespon-sive	Usually Well Controlled	Balance of Respon-siveness and Control	Notable and Unusual Control of Emotions	Total %	Total No.
Employed Training Related	1	3	41	44	11	100	130
Dropouts, Employed, Non-training Related	13	6	62	13	6	100	16
Completed Training Employed, Non-training Related	4		61	28	7	100	28
Dropouts, Unemployed		22	56	22		100	9
Completed Training, Unemployed	16		68	11	5	100	19

The ratings on emotional stability or ability to control emotions are found in Table IX. Judging from this table, it seems that only a small percentage of all five groups had emotional problems. There is not enough difference among the groups to consider this a factor between success and failure.

TABLE X

LEADERSHIP RATINGS OF EACH GROUP OF ENROLLEES

Groups	Unable to Lead	Not Usually a Leader	Sometimes Displays Leader-ship	Leads Well Under Most Circum-stances	Displays Marked Ability To Make Things Go	Total %	Total No.
Employed, Training Related	3	25	36	23	13	100	130
Dropouts, Employed, Non-training Related	13	44	31	6	6	100	16
Completed Training, Employed, Non-training Related	7	43	32	11	7	100	28
Dropouts, Unemployed	11	33	56			100	9
Completed Training, Unemployed	16	37	37	5	5	100	19

The ratings on leadership are found in Table X. Leadership is defined as the ability to get others to cooperate. The groups of trainees who are now employed in training related occupations show a difference in leadership ability. Thirty-six per cent of this group are rated in the two upper classifications, while the group that completed the training and is now employed but not in training related occupations is only one-half of that figure.

TABLE XI

APPEARANCE RATINGS OF EACH GROUP OF ENROLLEES

Groups	Untidy, Carelessly Dressed	Clean but Careless of Appearance & Grooming	Average in Grooming and Dress	Neat Dress, Well Groomed	Outstanding in Taste and Care	Total %	Total No.
Employed, Training Related	2	8	52	35	3	100	130
Dropouts, Employed, Non-training Related		6	69	19	6	100	16
Completed Training, Employed, Non-training related		32	50	14	4	100	28
Dropouts, Unemployed		44	56			100	9
Completed Training Unemployed		26	42	32		100	19

Such factors as cleanliness of clothing and person, including care of hair, teeth and fingernails, are included in the appearance ratings in Table XI. The one group that seems to be different is those dropouts who are unemployed. The majority of them have a lower rating than the other four groups of trainees.

TABLE XII

ABILITY TO LEARN RATINGS OF EACH GROUP OF ENROLLEES

Groups	Unable to Learn	Learns Slowly	Average Rate of Adaptation	Above Average in Capacity	Outstanding in Mental Ability and Alertness	Total %	Total No.
Employed, Training Related		8	54	33	5	100	130
Dropouts, Employed, Non-training Related	6	19	50	19	6	100	16
Completed Training, Employed, Non-training Related		32	50	14	4	100	28
Dropouts, Unemployed		22	67	11		100	9
Completed Training, Unemployed	32	47	16	5		100	19

In rating the trainees on ability to learn in Table XII, the following was considered: (1 ease in learning new methods, (2 adapting to new situations and tasks. The difference between groups seems to be greater for this one personal trait than any of the other seven. The majority of the trainees who are employed in training related jobs are rated as average or above average. The dropouts who are employed, but not in training related jobs are rated similar. The other three groups seem to be lower in ability to learn, especially those that completed the training and are unemployed, of which the majority are rated in the two lowest classifications, unable to learn and learns slowly.

TABLE XIII

DEPENDABILITY RATINGS OF EACH GROUP OF ENROLLEES

Groups	Needs Constant Watching	Sometimes Un-reliable	Responsible But Needs Direc-tions	Very Dependable, Needs No Discipline	Thoroughly Depend-able Trust-worthy	Total %	Total No.
Employed, Training Related	2	8	38	41	11	100	130
Dropouts, Employed, Non-training Related	12	25	38	19	6	100	16
Completed Training, Employed, Non-training Related	4	4	53	32	7	100	28
Dropouts, Unemployed	11	11	67	11		100	9
Completed Training, Unemployed	21	10	53	16		100	19

The dependability ratings are contained in Table XIII. This is a rating of whether the trainee faithfully carries out assignments and bears his full share of responsibility. There is very little or no difference between the five groups in the dependability ratings. However, it should be noted that no one in the two unemployed groups was given the highest rating of thoroughly dependable and trustworthy.

Summary and Conclusions

During the years 1962 and 1963 sixteen farm mechanics retraining schools were held in 13 centers in Oklahoma under the Area Redevelopment

Act of 1961 for 255 unemployed or underemployed men. The oklahoma Employment Security Commission had the responsibility of selecting trainees for these courses. The State Board for Vocational Education had the responsibility for developing the course of instruction and providing facilities and instruction.

The purpose of this study was to determine the success of the training and an evaluation of the selection methods used.

All applicants for these courses were required to take the General Aptitude Test Battery and be interviewed personally by a representative of the local employment office. The representative from the local employment office considered three of the nine aptitudes tested by the GATB test in selecting trainees plus any intangible information he might have learned from the personal interview. The three aptitudes considered were general intelligence, spatial aptitude, and finger dexterity.

The trainees were divided into five groups: (1 those who received training and are employed in training related occupations, (2 dropouts who are now employed but not in training related occupations, (3 those who completed the training and are now employed but not in training related occupations, (4 dropouts who are now unemployed, (5 those who completed training but are now unemployed.

According to the analysis made in this study, the only single aptitude score from the GATB tests which indicate success for the trainees is the spatial aptitude score. However, the combination of the three scores which the employment office representative considered in selecting the trainees are also good indicators of success in this field. These are general intelligence, spatial aptitude, and finger dexterity.

Eighty-seven per cent of the enrollees contacted are now employed at some job while 61 per cent are employed in training related occupations. That placement record alone indicates that the selection and instruction of trainees was successful. A majority of the trainees who got a job after taking the training got a pay raise over their last regular salary before training.

The majority of the employed men are married while the majority of the unemployed men are single. This is an indication that the married men made better use of the training than the unmarried. Another important consideration is that nearly all of these trainees were high school dropouts and as a result were unemployed. The training was beneficial to them in gaining employment.

There is only one personal trait among the eight different personal traits as rated by the local instructor which seems to be indicative of the success of the trainees in acquiring employment. That one trait is ability to learn. Two other ratings which appear somewhat indicative but not as much as ability to learn are leadership and appearance.

With the criteria used, the task of selecting trainees for these training courses in Farm Mechanics was performed adequately. Since the best single independent variable to be considered in selecting trainees was spatial aptitude, it should be given more weight in selecting future trainees.

This study was not especially designed to evaluate the quality of instruction in the training schools; but, because of the percentage of placement in training related jobs, it may be concluded that the instruction was adequate.

Programs of this type are beneficial in reducing unemployment and further study should be made to determine other occupations where skilled personnel are needed.

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Educational Needs of Beginning Dairy Farm Operators in New York, 1963

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Study Design

Dairying, New York's largest single farming enterprise, is becoming a more complex business with each passing year. Farms are growing larger in size, the dairyman is becoming more efficient as a producer, the production per given unit is steadily rising, and the amount of investment and operating capital is continually increasing. Furthermore, agricultural technology is advancing rapidly, as is also the degree of specialization in farming. It is anticipated that the number of farmers needed annually will decrease, while at the same time the nation's requirement for food and fiber will increase.

In these times of dynamic changes, it is in society's best interest, as well as their own, that the farmers who enter the dairy business have more knowledge and skill than ever before. One way to help them get established is to provide educational programs that are directly related to farming activities and that are therefore based on a careful analysis of the educational needs of beginning farmers. The results could have implications for various agencies, such as the Extension Service, the State Education Department, the Soil Conservation Service, and other organizations interested in sponsoring such programs.

Thus, the primary aim of this study was to determine the educational needs in dairy farm operation and management of beginning farm operators in New York.

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Specific Objectives of the Study

The investigators established the following specific objectives with respect to beginning dairy farm operators:

- To determine their personal characteristics.
- To ascertain their level of achievement with respect to selected farm business factors.
- To determine their level of participation in educational activities and farm organizations.
- To determine the establishment pattern they used in attaining their present status in farming.
- To determine those agricultural procedures that should be modified.
- To determine the extent to which they adopted selected approved practices.
- To identify those problems with which they wanted assistance.
- To determine the relative importance of their problems.

Previous Studies

Some typical examples of the kind of work that has been done on the subject of how young men become established in farming are listed in the references (1, 2, 3, 4, 8). Most of these studies have emphasized the financial aspects of the process of establishment.

Although few studies in recent years have dealt specifically with the *educational needs* of beginning farmers, several have shed some light on this subject. The majority were limited in scope to needs of beginning farmers located in given school districts, and most of them state educational needs in broad, general terms (6, 9, 10, 11, 12). The report by Lester (6) illustrates this point. He states that "a majority of the young farmers expressed need for technical assistance in various areas of agriculture including farm management, credit, marketing farm products, farm mechanics and record keeping." Apparently, no effort was made to further identify the educational needs within these broad technical areas.

In regard to educational needs, at least the studies by Lechner (5) and by Neisler (7) definitely pinpointed the particular problems in which additional instruction was needed. Lechner identified a number of clearly defined "very important" farm mechanics skills which should be included in an educational program for young farmers, while Neisler found that young farmers wanted instruction in the following clearly identifiable jobs: "(1) fertilizing corn, (2) selecting the varieties of corn, (3) fertilizing cotton, (4) selecting the varieties of cotton, . . . (20) planning a new barn." Personius (13) tested and evaluated a method for determining the instructional needs of a local group of young farmers. In the course of this

study, he identified the educational needs that pertain to individuals. Such a degree of specificity is essential to the planning of effective educational programs for beginning farmers.

In summary, the review of literature showed that most studies concerning beginning farmers have dealt with the economic aspects of their becoming established. The few that have centered on their educational needs have primarily been limited to the boundaries of school districts and have tended to state their findings in broad, general terms inadequate for purposes of planning educational programs.

Definition of a Beginning Dairy Farm Operator

For the purpose of this study, a beginning dairy farm operator is one who is responsible for, and takes part in, the major decisions made in conducting a dairy farm business; he is responsible for, or performs himself, the labor necessary to operate the farm; his status is that of owner, partner, or renter of a farm; he has been farming at least 1, but not more than 7 years[1], he is not more than 39 years old[1]; and he spends most of his time in farming activities.

Study Population

Since the number and names of beginning dairy farm operators were not available from any single agency, identification of the population and selection of the sample involved key informants and the following steps. First, agricultural teachers, county agents, and key bankers in the state were requested to submit a list of all the young men in their respective areas who met the definition of a beginning dairy farm operator given above. Also, these key informants were requested to classify the herd of each beginning dairy farmer into one of 3 sizes. A total of 2260 names was submitted.

Sampling Procedure

The stratified random cluster method was used to draw a sample. The population was located within 1 of the 13 agricultural regions of New York State (fig. 1). The beginning dairy farmers within each of the regions were stratified into 3 groups, according to the number of cows they milked, using these intervals: 0–25, 26–50, and 51 or more cows per herd, and the proportion falling in each group was calculated for each region. Clusters were selected from each region so that the sample represented 10 percent of the beginning dairy farmers in each region.

[1] These limits represent the first quartile of the dairy farm operators in New York as derived from 1959 Census figures.

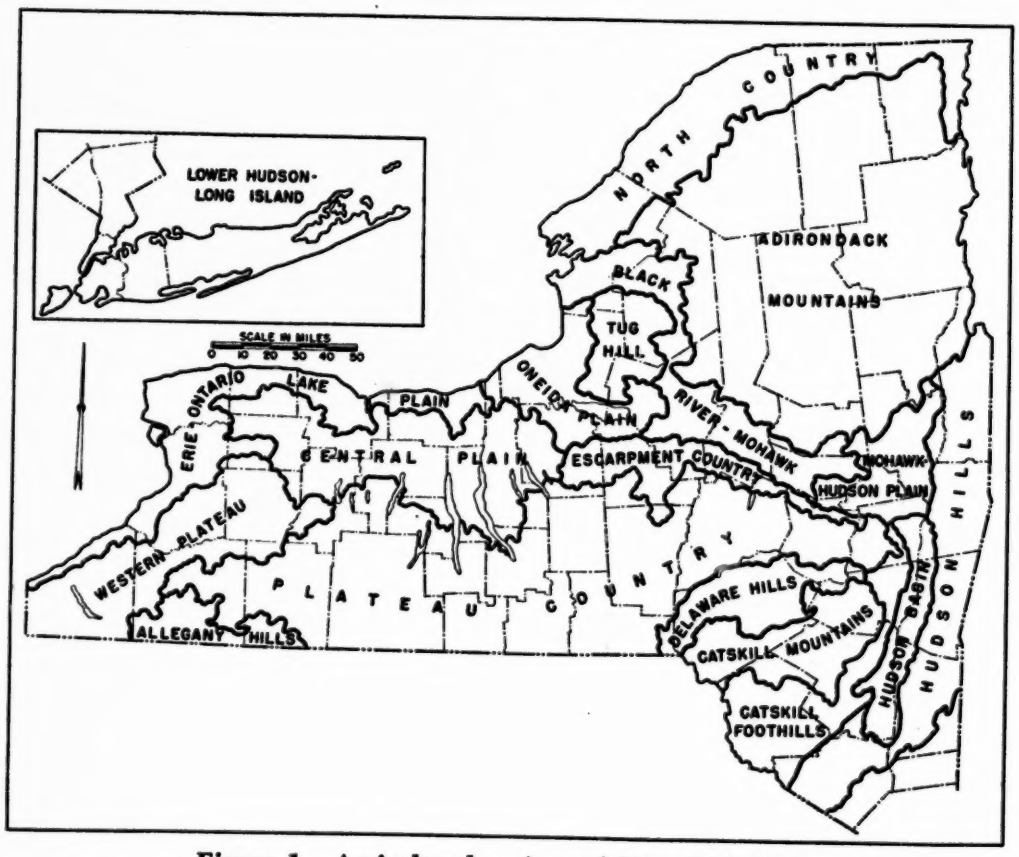

Figure 1. **Agricultural regions of New York State.**

Designing the Survey Instrument

The survey form was developed on the basis of previous research and a study of the agricultural literature. In this development the investigators were ably assisted by staff members in the College of Agriculture. In the survey instrument every attempt was made to provide for the solicitation of information needed to achieve the first 7 of the 8 previously listed specific objectives of the study. In designing the survey instrument, the researchers worked closely with members of the Departments of Animal Husbandry, Agricultural Engineering, Agricultural Economics, and Agronomy on technical matters. In addition, the survey form was reviewed by members of the Departments of Rural Education and Rural Sociology and by members of the Agricultural Extension Service. Finally, it was field tested and revised.

In addition, a mailed form was sent to the school administrators for the purpose of ascertaining the scholastic rank in his class of each beginning farmer in the study.

Collection of Data

A group of 7 interviewers composed of graduate students and staff members, all of whom had been former teachers of agriculture, was selected and instructed on interview techniques. The data were collected in the summer of 1963. Appointments for interviews with individual farmers were arranged through the cooperation of teachers of agriculture, agricultural agents, or bankers. Each week the survey forms filled out were checked for completeness, consistency, and accuracy, so as to maintain a high level of validity.

Out of 240 beginning dairy farmers who were interviewed, 223 provided usable data, and thus were included in the study (fig. 2). The principals of the high schools which the 223 beginning farmers attended were mailed a form requesting the rank in class of each of these former students.

Analysis of Data

The survey form was pre-coded to facilitate putting the data on machine cards. A book was prepared for use in coding, tabulating, and

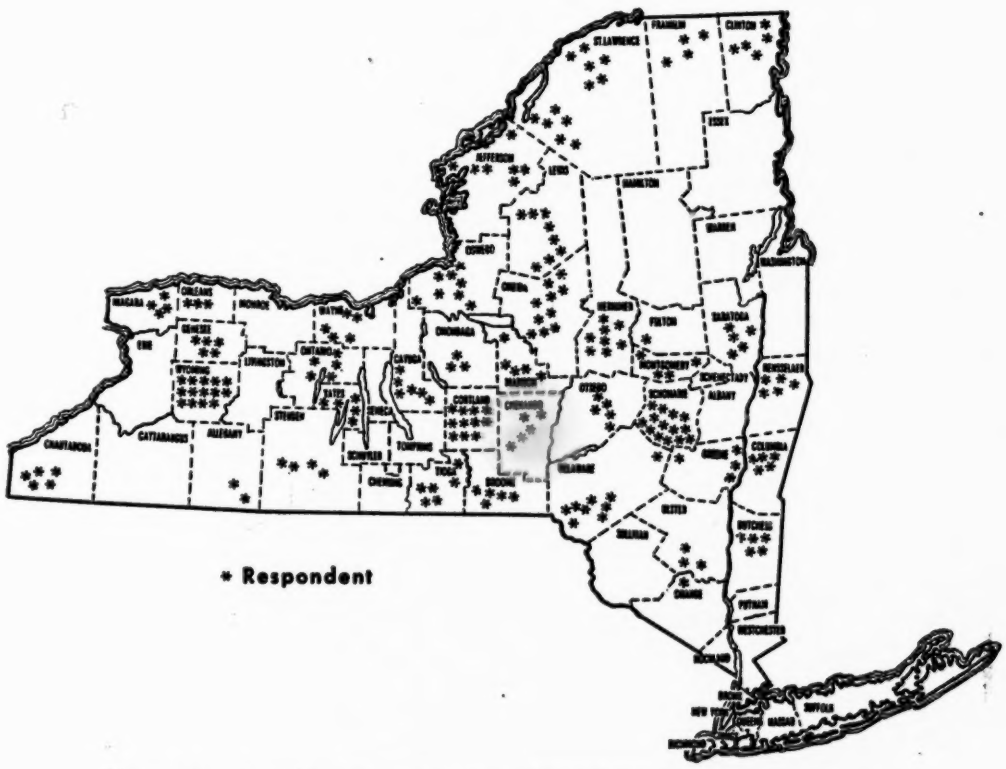

Figure 2. **Location of respondents interviewed in New York State.**

analyzing the data. The data were punched on machine cards, forming a master deck, which was subsequently replicated for use as work decks. The descriptive data were tabulated and processed by a 101 computer.

Findings

This chapter provides a description of the beginning farm operators in terms of selected individual characteristics and also gives detailed information on those phases of the farming operation that seem to indicate educational needs. Therefore, in the following sections descriptive data on beginning farmers will be presented that relate to: their personal characteristics; their level of farming achievement with respect to selected farm business factors; their participation in educational activities and farm organizations; the various status classifications through which they have passed; the agricultural procedures they have used, the approved practices they have adopted, their expressed educational needs, and their most important problems. These data should provide an important basis for determining the educational needs of beginning dairy farmers in New York.

Personal Characteristics of Beginning Dairy Farmers

Beginning dairy farmers had a mean age of 26.3, with a range of 17 to 39 and a standard deviation of 4.9. The frequency distribution of their ages is presented in table 1. Table 2 shows that more than half of the sample were owners of their farm businesses, while less than half were partners and only a very few were renters. Eighty percent of the beginning dairy farm operators were married and had an average of 2 children per family.

The respondents had completed an average of 12.4 years of schooling, a figure nearly identical with the average for their wives, namely, 12.5 years. Using graduation from high school as a benchmark, it was determined that only 13 percent did

Table 1. **Chronological age distribution of 223 beginning dairy farmers**

Age	Total	
	Number	Percent
17 – 18	3	1
19 – 21	24	11
22 – 24	47	21
25 – 27	55	25
28 – 30	41	18
31 – 33	29	13
34 – 36	16	7
37 – 39	8	4
Totals	223	100

Table 2. **Farming status of 223 beginning dairy farmers**

Status	Number	Percent
Owner	125	56
Partner	92	41
Tenant	6	3
Totals	223	100

not attain this level of education, while the remaining 87 percent did. Furthermore, as can be seen from table 3, nearly 25 percent of the individuals completed 1 or more years of college. In contrast, the findings of this study showed that 68 percent of the fathers of beginning dairy farm operators had *not* completed high school, while only 11 percent had gone beyond high school. Compared with their fathers, beginning farmers had an average of 2.4 years more schooling.

While they were in high school, 74 percent of the beginning farmers had taken a year or more of vocational agriculture. Four years were completed by 50 percent, 3 years by 13 percent, and 1 or 2 years by 11 percent of the men. Only one-fourth of the group had not studied vocational agriculture in high school. Appropriately enough, those respondents who had attended college for a year or more had pursued a general agriculture or a general dairy curriculum.

With respect to their achievement, it can be reported that the sample had a mean percentile scholastic class rank of 46, with a range from 4 to 99, and a standard deviation of 26.

Table 4 gives the years of membership in a 4-H club. Two-thirds of the beginning farmers had been members for a period of time ranging from 1 to 11 or more years. Half of the respondents had been members for 3 or more years, while two-fifths had held membership for 5 years or more. Only one-third of the group had never been members of a 4-H club.

Table 3. **Years of school completed by 223 beginning dairy farmers**

Years completed	Number	Percent
9 or less	10	4
10	10	5
11	8	4
12	140	63
13	14	6
14	29	13
15 or more	12	5
Totals	223	100

Table 4. **Years of 4-H club membership of 223 beginning farmers**

Duration	Number	Percent
0 years	73	33
1 – 2 years	36	16
3 – 4 years	26	12
5 – 6 years	23	10
7 – 8 years	18	8
9 – 10 years	23	10
11 or more years	24	11
Totals	223	100

Level of Farming Achievement with Respect to Selected Farm Business Factors

Realizing that one indication of a beginning dairy farm operator's needs for further training might be his level of farming achievement, the investigators decided to analyze the farm businesses of these respondents in terms of selected farm business factors, namely, size of business, production, and labor efficiency. For example, it was felt that if

beginning farmers operated at a low level of efficiency in comparison with other commercial farmers of New York, a program of instruction in ways and means of increasing farm efficiency might be in order. On the other hand, if beginning dairy farm operators showed that their farms were considerably smaller than most, attention should perhaps be focused on ways and means of increasing the size of business. With these thoughts in mind, data were collected on the factors listed.

One of the most common indices of achievement in farming is the size of the business. The 4 separate factors that provide an indication of size are: work units per farm, man equivalent per farm, cows per farm, and pounds of milk sold per farm. Table 5 shows that in 1962, the average beginning dairyman in New York State had 523 work units, the equivalent of 1.8 full-time workers (including himself), and 43 cows that produced 435,100 pounds of milk. When compared with the achievements of commercial farmers in New York, as reported in the 1964 Farm Business Chart issued by the Department of Agricultural Economics, New York State College of Agriculture, the respondents were unquestionably superior to the average commercial dairyman. Table 5 shows that beginning farmers ranked in the 7th, 6th, 8th, and 8th decile, respectively, for the 4 factors measured. In this report, the higher the decile rating, the higher the level of achievement. Thus, when it was shown that beginning farmers ranked 7th in "work units per farm" it means that they had enough work units that their mean number, 523, was large enough to be classified in the 7th highest decile, of commercial dairymen with respect to this factor.

Regarding production, expressed as pounds of milk sold per cow,

Table 5. **Farm business factors for 223 beginning dairy farm operators, New York, 1962**

Farm business factor	Mean	Standard deviation	Decile ranking
Size of business*			
Work units per farm	523	215	7th†
Man equivalent per farm	1.8	0.7	6th
Cows per farm	43	22.4	8th
Pounds of milk sold per farm	435,100	282,000	8th
Production‡			
Pounds milk sold per cow	10,119	4,225	8th
Labor efficiency‡			
Work units per man	291	103	7th
Cows per man	24	8	8th
Pounds of milk sold per man	241,722	100,800	7th

* Means for these computed as follows: For each of the 4 factors, data collected from 223 farms, totalled, and divided by 223.

† This rating to be interpreted as follows: 223 beginning dairy farm operators had enough work units per farm that their mean number, 523, was large enough to be classified in the 7th highest decile of commercial dairymen in New York with respect to this factor.

‡ These means mathematically derived through use of the means for factors relating to size of business found in upper part of table.

beginning dairymen could be credited with selling 10,119 pounds of milk per cow, a level of achievement that ranked them in the 8th decile of commercial dairymen. Furthermore, with respect to the 3 labor efficiency factors selected for study, beginning dairymen had 291 work units per man, 24 cows per man, and 241,722 pounds of milk sold per man, an achievement level that ranked them in the 7th, 8th, and 9th decile, respectively, for the 3 factors mentioned.

Notwithstanding the achievements of the group of respondents *as a whole,* it might be interesting to see the variations in achievement found among the individuals in the study for certain farm business factors. For example, the frequency distribution of total work units for beginning farmers, shown in table 6, is spread over a wide range from less than 200 to more than 1000. One tenth had fewer than 300 total work units per farm. Three-fifths of the group were divided rather evenly among the intervals, from 300 to 1000. Smaller percentages were found again in the remaining intervals.

Table 6. **Total work units per farm for 223 beginning dairy farmers**

Work units	Total	
	Number	Percent
200 or less	4	2
201 – 300	20	9
301 – 400	44	20
401 – 500	48	22
501 – 600	45	20
601 – 700	18	8
701 – 800	11	5
801 – 900	12	5
901 – 1000	7	3
1001 or more	13	6
Totals	223	100

Table 7 shows that 50 percent of the sample had a man equivalent of 1.0–1.9, while 36 percent had 2.0–2.9. Twelve percent of the farmers were involved in farm businesses with a man equivalent of 3.0 or more. The extreme range in the sample may be noted from the low of 0.5 to the high of 5.5 man equivalent.

Table 7. **Man equivalent for farm business of 223 beginning dairy farmers**

Man equivalent	Total	
	Number	Percent
0.5 – 0.9	5	2
1.0 – 1.9	111	50
2.0 – 2.9	81	36
3.0 – 3.9	20	9
4.0 – 4.9	4	2
5.0 – 5.5	2	1
Totals	223	100

Relatively speaking, perhaps greater variation was found in the number of cows per farm. Thirty percent of the sample were in the largest modal group, that is, they had from 30–39 cows. On the other hand, 8 percent had 19 cows or less while 7 percent had 70 cows or over. Three percent had 90 cows or more (table 8.)

Everyone works for high productivity. How did the farmers in this study do? A frequency distribution of the average pounds of milk sold per cow is shown in table 9. Although as many as 19 percent of the sample had an average of more than 13,000 pounds, or more than the average of the highest 10 percent of the commercial dairymen of New York, it is important for persons

Table 8. **Size of herds by farming status for 223 beginning dairy farmers**

Number of cows per herd	Percentage by status			Total	
	Owner	Partner	Tenant	Number	Percent
19 or less	6	2	–	18	8
20 – 29	12	6	1	43	19
30 – 39	21	8	1	67	30
40 – 49	11	8	–	43	19
50 – 59	3	6	1	21	10
60 – 69	2	5	–	14	7
70 – 79	–	2	–	5	2
80 – 89	–	2	–	5	2
90 – 99	–	1	–	2	1
100 and over	1	1	–	5	2
Totals	56	41	3	223	100

desiring to establish educational programs for beginning farmers to observe that 16 percent of them sold less than 8000 pounds of milk per cow.

Table 9. **Average pounds of milk sold per cow for herds of 223 beginning dairy farmers**

Herd average (lb milk/cow)	Total	
	Number	Percent
5,999 or less	11	5
6,000 – 6,999	9	4
7,000 – 7,999	16	7
8,000 – 8,999	18	8
9,000 – 9,999	32	14
10,000 – 10,999	38	17
11,000 – 11,999	37	17
12,000 – 12,999	20	9
13,000 – 13,999	24	11
14,000 – 14,999	10	4
15,000 – 15,999	6	3
16,000 and over	2	1
Totals	223	100

Labor efficiency was higher for the beginning farmers than for farmers as a whole in New York, as was pointed out earlier. A frequency distribution of work units per man is presented in table 10. Less than half of the farmers had 200–299 and less than one-fifth had more than 400 or less than 199.

Table 10. **Distribution of work units per man for 223 beginning dairy farmers**

Units per man	Total	
	Number	Percent
100 – 199	26	12
200 – 299	89	40
300 – 399	70	31
400 – 499	27	12
500 – 599	8	4
600 – 699	3	1
Totals	223	100

The number of cows per man gives some insight into the efficiency of a farm business. Although 84 percent of the farmers had less than 31 cows per man, 16 percent were at a very high level of efficiency, with 31 or more cows per man (table 11). This level of efficiency ranks the 16 percent who achieved

Table 11. **Cows per man for beginning farmers**

Cows per man	Total	
	Number	Percent
0 – 10	6	3
11 – 20	70	31
21 – 30	111	50
31 – 40	29	13
41 – 50	5	2
51 or more	2	1
Totals	223	100

it in the highest decile of New York commercial dairymen.

For the sample under study, the average farm income (receipts minus expenses) was $5000, with a range from $1600, to more than $12,000. Those with incomes below $6000 fell into 3 approximately equal-sized groups; the remaining 30 percent had a farm income of $6000 or more (table 12).

Table 12. **Farm income for 223 beginning dairy farmers**

Farm income (dollars)	Total	
	Number	Percent
0 – 1,999	48	21
2,000 – 3,999	58	26
4,000 – 5,999	51	23
6,000 – 7,999	24	11
8,000 – 9,999	17	8
10,000 – 11,999	8	4
12,000 and over	17	7
Totals	223	100

Participation in Educational Activities and in Farm Organizations

More than 20 different farm publications were read by beginning farmers, whose average was 6 magazines, with a range of 3 to 20 and a standard deviation of 3.4. The magazines most frequently mentioned are the 5 in the first group listed in table 13, with a range of readers from 87 to 67 percent of the whole group. The survey instrument itself included only the first 8 of the publications found in table 13. The remaining ones were volunteered by the respondents. Also, the interviewers were instructed to record data only for magazines that were read "regularly".

Table 13. **Farm publications read by 223 beginning dairy farmers**

Publication	Total	
	Number	Percent
Farm Journal	195	87
American Agriculturist	171	77
Hoard's Dairyman	160	72
N.Y.A.B.C. Co-operator	155	70
Successful Farming	149	67
G.L.F. News	119	53
Breed publications	93	42
Rural New Yorker	92	41
Better Farming	39	18
Farm Quarterly	31	14
Dairymen's League News	14	6
Extension News	10	5
Curtiss Herd Builder	6	3
Doane's Digest	6	3
Farm Bureau	6	3
Milk Producers' News	4	2
National Future Farmer	4	2
National Livestock Producer	4	2
Crops and Soils	3	1
Miscellaneous publications	12	5

In the normal course of conducting a farm business, an operator usually seeks counsel from a number of different sources. In this study, it was learned that feed dealers, agricultural extension agents, fertilizer dealers, seed dealers, the Soil Conservation Service, and commercial banks were listed by 50 to 76 percent of the beginning farmers as a source of farming or technical assistance at least once during the year covered by the study (table 14). Though not indicated in the table, the farmers received assistance on an average of 12.4 times a year, with a range of 0 to 33 and a standard deviation of 7.1. On the basis of the range and standard deviation, it can be concluded that

Table 14. **Number of times various sources provided farming or technical assistance to 223 beginning dairy farm operators***

Source	Frequency distribution by percent				Total 1 or more
	1 – 2	3 – 4	5 – 6	7 or more	
Feed dealers	30	20	11	15	76
Agricultural extension agents	31	18	11	10	70
Fertilizer dealers	46	13	3	2	64
Seed dealers	47	8	3	2	60
Soil Conservation Service	38	13	6	1	58
Commercial banks	30	11	5	4	50
Agricultural teachers	16	7	6	10	39
Farm Cooperative associations	18	6	5	5	34
Farm and Home Administration	5	1	1	2	9

* Table to be read as follows: 30% of respondents listed feed dealers as providing farming or technical assistance once or twice; 20% listed feed dealers as providing assistance 3 to 4 times; etc. 76% of all respondents received assistance from feed dealers 1 or more times.

16 percent of the population studied received assistance either not at all or up to 5.3 times, while a like percentage received help 19.5 or more times.

Membership in farm organizations is given in table 15. A large number of the beginning farmers were members of the Extension Service. The survey revealed that more than two-thirds held membership in a farmer cooperative. Milk marketing agencies and the Soil Conservation Service ranked next. Slightly more than half of the farmers were members of the Farm Bureau. A higher percentage of the farmers were officers in the Farm Bureau and milk marketing agencies than in other organizations.

In addition to being requested to indicate the farm organizations of which they were members, the respondents in this study were also asked to indicate the percentage of meetings of these organizations they attended. Attendance percentages are shown in table 16. Taken as a group, more of the beginning farmers attended meetings of the Extension Service than of any other agency or organization. The attendance pattern for both milk marketing agencies and farm cooperatives

Table 15. **Membership in farm organizations**

Organization	Member		Officer	
	Number	Percent	Number	Percent
Extension Service	191	86	5	2
Farm cooperatives	154	69	13	6
Milk marketing agencies	150	67	16	7
Soil Conservation Service	150	67	6	3
Farm Bureau	115	52	17	8
Young Farmer classes	80	36	–	–
Grange	48	22	6	3
Youth organizations	24	11	8	4
Farmers Union	—	—	–	–

Table 16. **Percentage of attendance at farm organization or agency meetings by 223 beginning dairy farmers***

Organization	Percentage of attendance					Total attending 25% or more
	0	25%	50%	75%	100%	
Extension Service	25	34	19	11	11	75
Milk marketing agency	38	25	11	6	20	62
Farm cooperatives	38	21	11	10	20	62
Soil Conservation Service	50	29	10	4	7	50
Farm Bureau	53	20	9	8	10	47
Young Farmers	65	6	5	5	19	35
Grange	83	10	2	1	4	17

* Table to be read as follows: 25% of respondents attended no Extension Service meetings, 34% attended 25% of meetings, 19% attended 50% of meetings, while 11% each attended 75% and 100% of all Extension Service meetings.

was similar with regard to the Farm Bureau and the Soil Conservation Service.

The above findings were not unexpected, as one could have predicted a high positive correlation between the number of beginning farmers belonging to an organization and the number attending its meetings. However, whereas table 16 focused attention on the percentage of attendance at farm organization or agency meetings by *all* 223 beginning farmers, table 17 shows what percentage of the members attended meetings of organizations to which they belonged. It was determined that the attendance ratio for members of the Young Farmer groups at the 25 percent level was 97 percent, or the highest of the groups studied. Milk marketing agencies came next, followed in descending order by farm cooperatives, the Farm Bureau, the Extension Service, the Grange, and the Soil Conservation Service. Note that the highest rate of attendance at 100 percent of the meetings was again recorded by members of the Young Farmer classes, and that the next closest rate was 23 percent lower, for members of milk marketing agencies.

The beginning farmers were asked when they watched television pro-

Table 17. **Percentage of beginning dairy farm operators attending meetings of organizations of which they were members**

Organization	Percentage of members attending			
	25% or more meetings	50% or more meetings	75% or more meetings	100% of meetings
Extension Service	88	48	26	13
Farm cooperatives	90	54	38	29
Milk marketing association	93	61	45	30
Soil Conservation Service	75	31	17	11
Farm Bureau	91	52	35	19
Young Farmer Classes	96	80	66	52
Grange	79	33	23	19

Table 18. **Time of day 223 beginning dairy farmers watched television programs about agriculture**

	Time of day					
	Morning		Afternoon		Evening	
	Number	Percent	Number	Percent	Number	Percent
Watched T.V.	10	5	45	21	10	5
Did not watch T.V.	213	95	178	79	213	95
Totals	223	100	223	100	223	100

grams about agriculture. A large majority of the beginning farmers, ranging from 79–95 percent, reported that they never watched such programs. At best, only one-fifth indicated that they watched such programs in either the morning, afternoon, or evening. Nearly one-third of the farmers reported that agricultural programs were not available for viewing.

The radio was used by a far greater number of farmers than was television for programs about agriculture (table 19). More than twice as many listened in the morning as in the evening, and the afternoon programs had the fewest listeners, with only half as many as in the evening. Though not shown in table 18, slightly more than one-fourth of the sample listened to radios at milking time.

From a list of 15 educational activities through which one may obtain information on operating a

Table 20. **Educational activities selected for getting information on farming by 223 beginning dairy farmers**

Activities	Number	Percent*
Going on tours	146	66
Observing demonstrations	138	62
Instruction on the farm	128	57
Reading farm magazines	126	57
Reading farm bulletins	108	48
Small group instruction	101	45
Listening to talks	93	42
Practice in doing jobs	92	41
Observing movies and slides	50	22
Reading newsletters	34	15
Listening to radio	31	14
Panel discussions	24	11
Watching television	18	8
Large group discussions	16	7
Reading newspapers	10	5

* Percentage of sample selecting activity as 1 of 5.

Table 19. **Time of day 223 beginning dairy farmers listened to radio programs about agriculture**

	Time of day					
	Morning		Afternoon		Evening	
	Number	Percent	Number	Percent	Number	Percent
Listened to radio	148	67	42	19	66	30
Did not listen to radio	75	33	181	81	157	70
Totals	223	100	223	100	223	100

farm, the beginning farmers were asked to select the 5 that they considered to be of most value to them. Table 20 shows that the range of participation in these activities was from 66 to 5 percent of the respondents. The first 4 of those tabulated were engaged in by more than half of the group (57%), the last 3 by 8 percent or less.

Establishment Patterns Used by Beginning Dairy Farmers in Attaining Their Present Status

Another of the specific objectives of this study was to ascertain the establishment patterns of beginning farmers, 56 percent of whom were owners, 41 percent partners, and 3 percent classified as tenants. As expected, they used several ways to attain their present status. The most common of the 8 principal ones, followed by 39 percent of the respondents, was to work for agricultural wages; 22 percent became owners in this way, 16 percent partners, and 1 percent tenants. Another significantly large group (29%) attained present status directly, that is, immediately upon completing their education or military service. The third most common pattern (12%) was to be engaged in both agricultural and nonagricultural work. Surprisingly, only a meager proportion (5%) of beginning farmers relied only on nonagricultural wages to make a start in farming.

Using the figures in table 21, it can be determined that 62 percent of the respondents worked for wages before establishing themselves in farming, and mostly in agricultural occupations. Table 22 shows the kinds of agricultural occupations held by the 22 percent of the beginning farmers who worked for agricultural wages before becoming owners. The most important of these was that of farm laborer on the home farm. Furthermore, 47 of

Table 21. **Establishment patterns used by 223 beginning dairy farm operators in attaining present status**

Pattern	Present status						Total	
	Owners		Partners		Tenants			
	No.	%	No.	%	No.	%	No.	%
From agricultural wages to present status	48	22	36	16	3	1	87	39
Directly to present status	23	10	43	19	0	0	66	29
From both agricultural and nonagricultural wages to present status	19	8	8	4	0	0	27	12
From nonagricultural wages to present status	6	3	5	2	0	0	11	5
From partner to owner	8	4	NA	NA	NA	NA	8	4
From tenant to owner	3	1	NA	NA	NA	NA	3	1
From agricultural and nonagricultural wages to partner to owner	9	4	NA	NA	NA	NA	9	4
From agricultural wages to tenant to owner	4	2	NA	NA	NA	NA	4	2
Miscellaneous	5	2	0	0	3	1	8	4
Totals	125	56	92	41	6	3	223	100

Table 22. **Agricultural occupations held by 48 beginning dairy farmers whose establishment pattern was from agricultural wages to owner**

Occupation	Total	
	Number	Percent
Farm laborer at home	26	12
Farm laborer away from home	6	3
Farm laborer at home, to hired manager, to off-farm agricultural occupations*	6	3
Farm laborer simultaneously away from and at home	3	1
Other	7	3
Farm laborer at home to farm machinery dealer		
Milk truck driver and farm laborer away from home		
Farm laborer away from home to miller		
Miller to mechanic		
Farm laborer at home, to hired manager, to produce clerk, to produce manager		
Hired manager to farm laborer away from home		
Silo construction to farm laborer at home		
Totals	48	22

* Milk truck driver, cheese maker, milk processor, and agricultural construction

the 48 farmers under discussion had been farm laborers at one time or another, attesting to the commonality of working in this capacity as a prelude to becoming established in farming. Also to be noted is the fact that 12 of the 48 farmers had worked in off-farm agricultural occupations sometime before attaining present status. Though the data are not shown, the researchers report that findings on the kinds of agricultural occupations held by beginning dairy farmers, irrespective of establishment patterns, were essentially similar to those reported in table 22.

Agricultural Procedures Needing Modification

One phase of the study was to determine which procedures followed or information known by beginning dairy farmers should be modified, in the opinion of the experts. Information on the procedures selected for study were elicited through open-ended questions. Only the procedures or information known by the farmer that should be changed are discussed below under 3 headings: dairy husbandry, crop production, and farm management.

Dairy husbandry

A consistent recommendation as to how soon after calving a cow should be bred is 60 to 80 days, to provide sufficient time for her to recover from the ordeal and to regain her strength. This practice was observed by three-fourths of the farmers, while one-fourth waited more than 80 days (table 23). This latter period is justified if the farmer holds off the breeding date so that his cows will freshen in the fall.

Table 23. **Time between calving and breeding**

Time	Total	
	Number	Percent
Under 60 days	5	2
Between 60 and 80 days	157	71
More than 80 days	58	26
So cows will freshen in fall	3	1
Totals	223	100

However, only 1 percent suggested this possibility.

Thirteen diseases of dairy cows were reported by one or more of the beginning farmers as being common in the area in which they were doing business (table 24). Mastitis, as expected, was reported most frequently—nearly 40 percent more often than the next on the list, hoof rot, 46 percent more often than milk fever, and 56 percent more often than leptospirosis. About 20 percent of the farmers thought that cystic ovaries, scours, and hardware disease were common in their areas.

It was found that even though mastitis was the most common dairy disease, there was some laxity in its prevention. For example, 60 percent always milked their cows in the same order. Only 4 percent milked first calf heifers first, while only 13 percent milked cows with mastitis last. Neither was isolation of purchased cows well observed. Fortunately, however, 24 percent of the farmers belonged to or planned to enter a mastitis control program.

Crop production

The responses by beginning farmers on how they decided the amount of fertilizer to apply on corn are given in table 25. The 3 most common and reliable sources were used singly or in combination by about one-fourth of the group, the next 2 were used by a small percentage, with the total range being from 26 to 4 percent. Five percent used no fertilizer at all.

The desired pH for soil to produce crops was known by 79 percent of the farmers, but only 41 percent knew their soil type. However, farmers were apparently aware of the

Table 24. **Most common local dairy cattle diseases, as listed by 223 beginning dairy farmers**

Disease	Total farmers reporting	
	Number	Percent
Mastitis	194	87
Hoof rot	111	50
Milk fever	92	41
Leptospirosis	69	31
Cystic ovaries	50	22
Scours	49	22
Hardware disease	46	21
Ketosis	36	16
Breeding problems	20	9
Pink eye	16	7
Acetonemia	13	6
Pneumonia	9	4
Shipping fever	4	2

Table 25. **Sources of information relied upon by 223 beginning dairy farmers for fertilizing corn**

Source	Total	
	Number	Percent
Soil test results	58	26
Personal experiences	57	26
Personal experience, soil test results, and recommendations of specialists	44	20
Recommendations of specialists	42	19
Relatives and/or other	10	4
News media	—	—
None applied	12	5
Totals	223	100

Table 26. **Plant population per acre for silage corn as reported by 223 beginning dairy farmers**

Number of plants per acre	Total	
	Number	Percent
More than 20,000	85	38
16,000 to 20,000	58	26
Less than 16,000	5	2
Did not know	62	28
No corn grown	13	6
Totals	223	100

physical characteristics of their soil, that is, whether it was gravelly, sandy, silt, or loam.

The plant population per acre for silage corn reported by farmers is shown in table 26. Although the New York State College of Agriculture recommends 16,000 to 20,000 plants per acre, only 26 percent of the farmers reported this number, whereas 38 percent had planted more than the advised maximum. As many as 25 percent did not know their plant population.

One of the significant findings with respect to farmers' knowledge of common farm practices had to do with plant diseases and insects. When asked to name common plant diseases and insects on their crops, most of the farmers did not name any disease; less than one-fifth named 1 and about one-seventeenth named 2 (table 27). Whereas the interviewers consistently saw evidence of diseases and insects on the farms, as many as half of the farmers thought they had none and two-thirds reported only 1.

Farm management

Farm records are often considered one of the most important assets in the operation, organization, and management of a good farm business. Practically all of the farmers used their records for income tax purposes, and half of them or more used their records to analyze specific

Table 27. **Number of plant diseases and insects named by 223 beginning dairy farmers**

Number of:	Number	Percent
Plant diseases named		
0	168	75
1	40	18
2	12	6
3	3	1
Insects named		
0	113	50
1	78	35
2	23	10
3	8	4
4	1	1

Table 28. **Use made of farm records by 223 beginning dairy farmers**

Use of records	Total	
	Number	Percent
Compute income tax return	214	96
Analyze a specific enterprise	120	54
Improve farming practices	111	50
Select and sell dairy animals	9	5
Do not use written records	8	4

Table 29. **Types of milk production records kept by 223 beginning dairy farmers**

Type of record	Total	
	Number	Percent
DHIA	78	35
Owner-sampler	64	29
Kept own records	31	14
No records kept	50	22
Totals	223	100

enterprises and to improve farming practices. Little use was made of records to select and sell dairy animals (table 28).

Since these men were dairy farmers, milk production records were important in their business. Four-fifths of them used either DHIA or owner-sampler records or kept their own (table 29). Interviewers reported that the latter were often inadequate and inaccurate. In reality it appeared that 64 percent of the sample had adequate milk production records while 36 percent had inadequate or no records.

Adoption of Approved Practices

Another phase of this study was to identify the extent to which *selected approved practices* had been adopted by beginning dairy farmers. In so doing, approved practices not used by farmers would be simultaneously identified, and these latter practices would provide an indication of educational needs. The list of approved practices was developed for 4 major aspects of farming: dairy husbandry, crops production, farm mechanics, and farm management. These practices were developed by the investigators and approved by 2 specialists in each of the aspects. Furthermore, these practices were considered essential in the operation of any dairy farm.

Approved practices in dairy husbandry

Eleven practices in dairy husbandry were selected for study. The mean number of these practices that had been adopted by the farmers was 6.9, with a range of 1 to 10 and a standard deviation of 1.7. Thus, 68 percent of the farmers used between 5.2 and 8.6 dairy husbandry practices.

The selected practices were ranked on the basis of the number using each and listed in descending order in table 30. The percentage

Table 30. **Selected approved dairy practices as used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent*
Feed colostrum to calves	221	99
Use breeding and calving records	215	96
Use artificial insemination	192	86
Breed heifers according to size	169	76
Provide mineral mixture free choice	158	71
Have veterinarian examine cows for pregnancy	138	62
Provide special grain mixture for calves	128	57
Use bulk tank	120	54
Use calving pen	94	44
Use antibiotics in feeding calves	63	28
Isolate purchased cows temporarily	27	12

* Percent for each practice.

gap between the practice of feeding colostrum to newborn calves, which headed the list, and that of isolating purchased cows temporarily, which was the least used, was 87 percent, or a difference of 194 farmers. The first 8 practices were each used by more than half of the respondents, and 11 percent indicated that they intended to adopt practice number 6. The last 3 approved practices were not commonly adopted by the farmers.

Approved practices in crop production.

It was assumed that these practices would be applicable on most farms, although there could be exceptions depending upon the conditions on the farm and the objectives of the farmer. For example, contour strip cropping would not apply to level cropland. Unfortunately, the present study did not go into sufficient detail to establish grounds for exceptions. However, from a total of 14 practices studied, farmers reported using an average of 9.0, with a range of 0 to 13 and a standard deviation of 2.5.

The approved crop practices and percentage of farmers using them are listed in table 31. More farmers used treated, hybrid corn and certified oat seed than any of the other 14 practices. The application of chemicals to control weeds was reported by 79 percent of the sample. Nearly all of the large percentage of farmers who used chemical weed control, limited it to the corn crop. Those who cooperated in the Soil Conservation Program usually installed tile for soil drainage or added lime to the soil. More than one-fourth of the farmers did not practice rotation of crops, and more than one-third did not use a fertilizer program for the whole farm.

Although band seeding has been recommended in New York State, only 30 percent of the farmers reported its use and many of them had no idea what it was or how it was done. Several respondents stated that they did not have the equipment to put this practice to use,

Table 31. **Selected approved crop production practices used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent
Use treated, hybrid corn and certified oat seed	202	91
Use lime to maintain soil pH	196	88
Use hay crusher	185	83
Use soil testing program	184	83
Use chemicals to control weeds	177	79
Cooperate in SCS program	172	77
Use planned crop rotation system	163	73
Use planned grazing system	118	66
Use fertilizer program for whole farm	143	64
Harvest silage corn in hard dent stage	135	61
Clip permanent pastures	112	50
Top dress pastures with commercial fertilizer	109	49
Use band seeding	66	30
Use contour strip cropping	42	19

Table 32. **Selected approved farm mechanics practices used by 223 beginning dairy farmers**

Approved practices	Total	
	Number	Percent
Keep all machinery and equipment serviced	219	98
Keep safety shields over moving machinery parts	201	90
Prepare machinery for use during slack periods	193	86
Store machinery under cover	188	84
Use mechanical ventilators in barns	148	66
Keep and maintain home farm shop	116	52

and others indicated that the equipment required was too expensive.

Many of the farmers considered their land too level for strip cropping. This may account for its being the least used of the crop production practices.

Approved practices in farm mechanics

Only 6 practices were listed in the survey form. Being few in number and of a general nature, they gave a limited overview of a few areas of farm mechanics. Of these 6, the farmers used an average of 4.8, with a range of 1 to 6 and a standard deviation of 1.5. The percentage of farmers making use of these practices was high, with even the least popular being engaged in by more than half the respondents.

Approved practices in farm management

It was assumed that the 9 practices selected for study were applicable to all dairymen. Of these, the beginning farmers used an average of 6.3, with a range of 0 to 8 and a standard deviation of 2.1.

The percentage of farmers using these practices was high, although 13 percent of the 223 farmers did not report keeping cash account records, nor did 21 percent analyze and study their farm records each year. The practice most used (by 89% of the farmers), which is admittedly of a non-specific nature, was that of keeping informed on farm prices and outlook. But even

Table 33. **Selected approved farm management practices used by 223 beginning dairy farmers**

Approved practice	Total	
	Number	Percent
Keep informed on farming prices and farming outlook	199	89
Keep cash account records	193	87
Analyze and study farm records each year	177	79
Prepare and use financial statement	168	75
Have map of home farm	164	74
Use dairy production records	144	65
Use soil map in analyzing farm business	132	59
Use herd health records	116	52
Use program to improve herd health	106	48

the least common of the management practices were reported by approximately half of the beginning farmers.

Problems With Which Beginning Farmers Wanted Assistance

A list of 50 common problems was presented to beginning farmers who were asked to indicate whether they felt a need for help in working out a solution to each of the problems. It is significant to note that even though they may have had a problem, if they believed they could solve it without assistance, it was not considered to be a problem.

The findings are presented in terms of problems in dairy husbandry, crop production, farm mechanics, and farm management, and in descending order of frequency as reported by the farmers.

Dairy husbandry problems

Eleven problems in dairy husbandry were identified with which beginning farmers felt a need for help. For the sample there was an average of 4.7, with a standard deviation of 2.0.

The problem most frequently checked by beginning farmers was how to increase milk production (table 34), which probably indicates that they want help in deciding which of many practices to emphasize. However, it can be readily seen that a solution to several of the problems in table 34 would result in increased milk production. More than half the respondents indicated a need for help on the first 4 practices, and less than a quarter were interested in the last 6 problems.

Farm mechanics problems

The farmers report a total of 10 different problems in farm mechanics with which they would like assistance in solving. There was an average of 4.4 problems per farmer, with a standard deviation of 2.3.

The use of electricity on the farm was the most frequently mentioned problem (73%). Constructing and repairing farm buildings and providing facilities for housing and milking were the next most fre-

Table 34. **Dairy husbandry problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Increase milk production	187	84
Maintain herd health	180	81
Select feed ration	152	68
Select bulls for increased milk production	142	64
Decide amount of grain and forage for each cow	95	43
Feed calves from birth to 6 months	51	23
Manage and care for young stock	50	22
Select replacement stock	49	22
Decide size of herd	48	22
Feed dairy heifers	42	19
Decide which animals to cull	40	18

Table 35. **Farm mechanics problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Electrification of farm	162	73
Construct and repair farm buildings	148	66
Provide facilities needed for housing and milking	131	59
Determine size of power machinery and equipment	102	46
Set up farm shop	98	44
Adjust, maintain, and repair farm machinery and equipment	90	40
Decide type of powered machinery and equipment	90	40
Get most efficient use from machinery and equipment	81	36
Use farm machinery and equipment safely	42	19
Prepare machinery for winter storage	42	19

quent. Between 40 and 46 percent of the sample stated that they needed help in selecting the type, kind, and size of machinery and equipment and in the operation and repair.

Crop production problems

In this category beginning farmers named a total of 13 problems, with a mean of 7.5 problems per farmer and a standard deviation of 2.9. Table 36 lists 13 problems with which beginning farmers indicated a need for help. All but 8 percent of the sample wanted help with increasing soil productivity. Almost 75 percent of the farmers wanted advice for the next 4 items listed, and for 7 of the remaining 8, nearly 50 percent felt the need of assistance. But less than one-fifth were uncertain about when to harvest their crops.

Farm management problems

The farmers reported a total of 17 farm management problems in solving which they would like assistance (table 37). There was an average of 9.3 problems per farmer, with a standard deviation of 3.4. The largest group of farmers were concerned with knowing how to handle legal problems, but combined, the 2 forms of governmental

Table 36. **Crop production problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Increase soil productivity	205	92
Select kind of fertilizer	176	79
Select best yielding seed variety	169	76
Control weeds	163	73
Control diseases and insects	162	73
Decide how to get most from available forage	122	55
Increase yield of pastures	117	53
Get complete stand of crops	109	49
Determine yield from forage or grain crop	106	48
Prevent soil erosion	103	46
Arrange fields for most efficient use	102	46
Avoid winter kill of forages	95	43
Determine when to harvest	37	17

Table 37. **Farm management problems with which 223 beginning dairy farmers indicated a need for help**

Problems	Number	Percent
Know laws and other legal aspects affecting farm business	196	88
Interpret governmental programs	183	82
Know services available through government	180	81
Decide how to increase efficiency of operation	172	77
Decide type and amount of insurance	153	69
Work out income tax and Social Security records	152	68
Form agreements for renting or buying additional land	148	67
Plan credit needs	147	66
Analyze farm business	140	63
Market farm products	129	58
Plan retirement program	120	54
Keep business records	106	48
Prepare farm budget	99	44
Keep records on breeding, calving, production	45	20
Hire and manage farm labor	40	18
Take inventory	33	15
Deal with other miscellaneous farming problems	21	9

assistance created the largest number of problems. Although the level of efficiency attained by beginning farmers is high, more than three-fourths of them expressed a need for further assistance with this aspect of their operations. Approximately two-thirds of the farmers were concerned with 5 of the 7 problem areas that are involved with the financial side of farm management. The other 2, business records and budget, were somewhat less of a problem.

Relative importance of the expressed needs

After the beginning farmers had checked through the list of 50 problems, indicating those with which they needed assistance, they were asked, "Which of these problems do you feel are the *most important* to reach the goals you have set?" This question was an attempt to ascertain which were deemed most important by the group as a whole. A list of these are presented in table 38 in a rank order on the basis of the most frequent to the least frequent. It should be mentioned that some of these problems really involved 2 or more problems. As an example, the problem, finding ways to increase milk production, really could be divided into a number of component problems. Yet, this is probably the way many beginning farmers see, recognize, and state their most important problems.

Ten of the first 20 most commonly mentioned important problems were in farm management; 5 were in crop production, 3 in farm mechanics, and 2 in dairy husbandry. Of all those listed, the 5 most important were: increasing milk production, planning credit needs, marketing farm products, increasing soil productivity, and increasing the efficiency of the farm operation.

Table 38. **Rank of problems considered most important by 223 beginning dairy farm operators**

Problem rank	Problem
1	Increasing milk production
2	Planning credit needs
3	Marketing farm products
3	Increasing soil productivity
5	Increasing efficiency of farm operation
6	Analyzing farm business
7	Interpreting governmental programs
8	Knowing laws and other legal aspects of farm business
8	Constructing and repairing farm buildings
10	Keeping farm business records
10	Controlling plant diseases and insects
12	Maintaining herd health
13	Providing facilities for milking and housing herd
14	Selecting seed varieties
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23	Recognizing governmental services available
25	Selecting feed rations
26	Controlling weeds
27	Selecting bulls
27	Hiring and managing farm labor
27	Determining amount to feed each cow
27	Determing size of machinery or equipment to buy
31	Getting a complete stand of crops planted
31	Adjusting, maintaining, and repairing farm equipment
31	Arranging fields for most efficient use
31	Feeding dairy calves from birth to six months
35	Selecting type of machinery and equipment to purchase
35	Preparing farm budget
35	Managing forages to avoid winter killing
38	Keeping records on breeding, calving, and production
38	Planning a retirement program
40	Deciding on size of herd to maintain
41	Preventing soil erosion
42	Selecting replacement stock
43	Determining amount a crop will yield
43	Preparing machinery for winter storage
43	Feeding dairy heifer 6 months and older
46	Determining when to harvest crops
46	Deciding which animals to cull
48	Managing and caring for young stock
49	Using farm machinery and equipment safely
50	Taking farm inventory

Summary

Dairying is by far the most important farming enterprise in New York State. In these times of rapid technological change, while it is becoming a more complex business, fewer and fewer dairy men are being called upon to feed proportionately increasing populations. To become established in the business of dairy farming, beginning operators require more knowledge and skill than ever before. It is in New York's best interest that beginning farmers acquire the knowledge and skill needed to become established in farming as efficiently as possible. One approach is to provide them with soundly based educational programs. Thus, the primary aim of this study was to identify those educational needs in dairy farm operation and management of beginning farm operators in New York.

To achieve this aim, the specific objectives for the study were to obtain information on beginning dairy farmers in the areas of personal characteristics, level of farming achievement, participation in educational activities and farm organizations, establishment patterns used in attaining their present status in farming, commonly used agricultural procedures, adoption of approved practices, and expressed educational needs and their relative importance.

Key informants submitted the names of 2260 beginning dairy farmers—defined in this study as those who were not more than 39 years of age, who had been farming for at least 1 year but not more than 7, and who were operating dairy farms as owners, partners, or renters at the time of the study. These farm operators were listed according to their agricultural regions in the state, and a random sample of slightly more than 10 percent was drawn from each of the 13 regions. Usable data were collected from 223 beginning farmers by the interview technique.

Personal characteristics

Beginning dairy farmers had a mean age of 26.3. Eighty percent of them were married and had an average of 2 children per family. They had completed an average of 12.4 years of schooling, with only 13 percent of the group not having attained high school graduation. On the other hand, one-fourth of the sample completed 1 or more years of college. While they were in high school, 74 percent of the beginning farmers had taken 1 or more years of vocational agriculture. Two-thirds of them had been 4-H members for 1 to 11 or more years. With respect to their scholastic achievement (as shown by rank in class), beginning farmers had a mean percentile scholastic class rank of 46.

Level of farming achievement

One of the most common indices of achievement in farming is the size of business. Four separate factors provide an indication of size, namely: work units per farm, man equivalent per farm, cows per farm, and pounds of milk sold per farm. In New York, the average beginning

dairy farm operator had 523 work units, 1.8 man equivalent, and 43 cows that produced 435,100 pounds of milk in 1962. For the 4 factors mentioned, in comparison with the achievements of commercial farmers in New York as reported in the 1964 Farm Business Chart issued by the Department of Agricultural Economics, New York State College of Agriculture, the respondents in this study ranked in the 7th, 6th, 8th, and 8th decile respectively, or better than the average farmers in the normative population.

Regarding production, expressed as pounds of milk sold per cow, beginning dairymen sold 10,119 pounds of milk per cow, a level of achievement which ranked them in the 8th decile of commercial dairymen. Furthermore, with respect to the 3 labor efficiency factors selected for study, beginning dairymen had 291 work units per man, 24 cows per man, and 241,722 pounds of milk sold per man, an achievement level that ranked them in the 7th, 8th, and 9th deciles, respectively.

Notwithstanding the notable achievement of these dairymen who had been operating farms from 1 to 7 years, it should be mentioned that great variations existed among the respondents. For example, whereas 39 percent of the sample had from 30–39 cows, 8 percent had 19 cows or fewer, while 7 percent had 70 cows or more.

For the sample under study, the average farm income (receipts minus expenses) was $5000 with a range of $1600 to more than $12,000.

Participation in educational activities and in farm organizations

More than 20 different farm publications were read by beginning farmers whose average was 6 magazines. Those most frequently read and the percentage of respondents reading each were: *Farm Journal,* 87 percent; *American Agriculturalist,* 77 percent; *Hoard's Dairyman,* 72 percent; *N.Y.A.B.C. Cooperator,* 70 percent; and *Successful Farming,* 67 percent.

In this study, feed dealers, agricultural extension agents, fertilizer dealers, seed dealers, the Soil Conservation Service, and commercial banks were listed by 76, 70, 64, 60, 58, and 50 percent of the 223 beginning farmers, respectively, as a source of farming or technical assistance 1 or more times during the year covered by the study. These farmers received assistance on an average of 12.4 times in the year.

The Extension Service was the organization to which the largest number (86%) of beginning farmers belonged. About two-thirds of the sample were members of farm cooperatives, milk marketing agencies, and the Soil Conservation Service, while 52 percent, 36 percent, and 22 percent, respectively, were members of the Farm Bureau, the Young Farmer organization, and the Grange. As expected, the largest number of beginning farmers attended meetings held by the Extension Service, farm cooperatives, and milk marketing agencies. However, the Young Farmer classes, to which only 36 percent of the beginning farmers belonged, had the highest percentage of attendance, with 53

percent of its members attending 100 percent of the meetings.

Few beginning farmers watched agricultural programs on television, with afternoon programs being watched by 21 percent of the respondents. On the other hand, 67 percent of the farmers reported listening to radio programs in the morning and 25 percent at milking time.

From a list of 15 activities through which one may obtain information on operating a farm, beginning farmers selected the following 5 in descending order of importance: going on tours (66 percent), observing demonstrations (62 percent), receiving on-farm instruction (57 percent), reading farm magazines (57 percent), and reading farm bulletins (48 percent).

Establishment patterns used to attain present status

At the time of the study, 56 percent of the sample were owners, 41 percent were partners, and 3 percent were tenants. As expected, they had followed several patterns in attaining their present status. The most common, followed by 39 percent, was to work for *agricultural* wages. Another large group, 29 percent, attained their present status directly, that is, immediately upon completion of their schooling or military service. The third most common pattern was to work in *both* agricultural and nonagricultural pursuits, a pattern followed by 12 percent of those studied. Only 4 percent worked *only* for nonagricultural wages before attaining their present status. By far the most important agricultural occupation before ownership or partnership was that of farm laborer on the home farm.

Agricultural information or procedures that should be modified

In the field of dairy husbandry, 26 percent of the farmers allowed a lapse of more than 80 days after calving before having cows bred. Incidence of dairy diseases was reported as follows: mastitis was the most prevalent, being reported by 87 percent of the respondents. Hoof rot was mentioned by 50 percent, milk fever by 41 percent, and leptospirosis by 31 percent. About one-fifth of the farmers thought that cystic ovaries, sours, and hardware diseases were common in their areas. Sixty percent of the beginning farmers always milked their cows in the same order. Only 4 percent milked their first calf heifers first, while only 13 percent milked cows with mastitis last.

With respect to crop production practices, 26 percent of the farmers determined the amount of fertilizer to apply on corn on the basis of soil test results, an equal percent did so on the basis of personal experiences, 19 percent on the recommendations of specialists, while 20 percent depended upon all 3 sources. Although the New York State College of Agriculture recommended a silage corn population of 16,000–20,000, it was found that 38 percent of the farmers planted more than 20,000 plants per acre, 26 percent planted at the recommended rate, while 28 percent did not know their rate of planting. With regard to plant

diseases and insects, 75 percent of the farmers did not name any disease, while 50 percent thought they had no insects, in spite of the fact that interviewers consistently saw evidence of diseases and insects on the farms of many who reported having none.

Fifty-four and 50 percent, respectively, of the sample used their records to analyze specific enterprises and to improve their farming practices. Little use was made of the records to select and to sell dairy animals. Thirty-five percent used DHIA records, 29 percent used owner–sampler records, 14 percent kept their own milk production records, while 22 percent had no records at all.

Use of approved practices

Another phase of this study was to identify the extent to which selected approved practices had been adopted by beginning farmers, and in so doing, those not being used would be readily discerned. These latter practices would provide an indication of educational needs of the respondents.

Of the 11 approved dairy practices submitted to the persons included in this survey, the following were *not* practiced by one-third or more of them: examining cows for pregnancy (38 percent), providing a special grain mixture for calves (43 percent), using a bulk tank (46 percent), using a calving pen (56 percent), using antibiotics in feeding calves (72 percent), and isolating purchased cows temporarily (88 percent).

A third or more of beginning farmers did *not* use 7 of the 14 approved crop production practices, namely, a planned crop rotation system (34 percent), a fertilizer program for the whole farm (36 percent), harvest of silage corn in the hard dent stage (39 percent), clipping permanent pastures (50 percent), top dressing pastures with commercial fertilizer (51 percent), band seeding (70 percent), and contour strip cropping (81 percent).

Only 6 practices were listed in the field of farm mechanics. Of these, 2 were *not* adopted by one-third or more of the sample. These were: mechanical ventilators in barns (34 percent) and home farm shops (52 percent).

Nine approved farm management practices were studied with these findings: 35 percent did *not* use dairy production records; 41 percent did *not* use a soil map in analyzing their farm businesses; 48 percent did *not* use herd health records; and 52 percent did *not* use a program to improve herd health.

Expressed or felt needs of beginning farmers

A list of 50 common problems in 4 areas of farm operation was presented to beginning farmers who were asked to indicate whether they felt a need for help in working out a solution to each problem listed. Of 11 dairy husbandry problems studied, the most important, together with the percentage of respondents selecting each, were: finding ways to increase milk production, (84 percent), maintaining herd health (81 percent), selecting feed rations (68 percent), selecting bulls

that will increase milk production (64 percent), and determining grain and forage rations for each cow (43 percent).

In the area of farm mechanics, 73, 66, and 59 percent of the sample, respectively, indicated a need for help with the 3 most important problems cited, namely, farm electrification, constructing and repairing farm buildings, and providing needed facilities.

With respect to crop production problems, 13 were listed for study. Increasing soil productivity was at the top of the list, being reported by 92 percent of the sample. About 75 percent of the sample reported these 4: selecting fertilizers, selecting seed varieties, controlling weeds, and controlling disease and insects.

Of the 16 farm management problems treated in this study, the 4 identified most frequently and the percentage of the sample selecting each were: knowing laws and other legal aspects relating to the farm (88 percent), interpreting governmental programs (82 percent), knowing the available governmental services (81 percent), and increasing efficiency of operation (77 percent).

When beginning farmers were asked to identify, among the 50 problems listed, which ones were the *most important,* 10 of the first 20 most commonly mentioned important problems were in farm management. Five of the problems were in crop production, 3 in farm mechanics, and 2 were in dairy husbandry. Of all the problems listed, the 5 most important were: increasing milk production, planning credit needs, marketing farm products, increasing soil productivity, and increasing the efficiency of the farm operation.

Conclusions

1. For the most part, beginning dairy farm operators are a well-educated group, having completed an average of 12.4 years of schooling with one-fourth of the group having completed 1 or more years of college. The stereotype that farmers are not educated may be rejected with confidence insofar as beginning dairy farm operators in New York are concerned.
2. Beginning dairy farmers rank higher than the average commercial dairyman in New York as far as size of business, production, and labor efficiency are concerned. It may therefore be concluded that beginning dairy farmers do not generally make up that portion of commercial dairymen who have reached only the lower levels of achievement in these elements of the dairy business.
3. Although the beginning farmers were progressively becoming established in a dairy business, several of them needed to increase the size of business and income to attain a satisfactory level of living.

4. Beginning dairy farmers are well read with respect to farm publications. They seek advice from not few but many sources in the conduct of their business and they belong to a number of farm organizations, the most popular being the Extension Service. Of the agencies to which beginning farmers look for educational and technical assistance, the Young Farmer classes have been uniquely successful in maintaining high attendance among its members.
5. With respect to learning activities of a formal nature, beginning farmers seem to prefer those that involve a high degree of learner participation, such as tours, demonstrations, small group instruction and, individual on-farm instruction.
6. While many beginning farmers have attained their present status of owner, partner, or tenant directly without going through some other category, most of them have first worked as farm laborers, usually on the home farm. Thus, these beginning farmers have spent practically their entire work life in farming.
7. The beginning dairy farmers indicated a large number of problems or practices with which they would like assistance in working out a solution. With the help of an educator in agriculture and through a systematic analysis of the farm business, they can identify their problems.
8. Farm management was the single most important area of educational need of beginning dairy farm operators. They were seeking assistance in improving cost control and farm efficiency.
9. On the basis of the findings in this study with respect to their level of achievement in farming, the agricultural procedures they commonly used, the number of approved practices they did *not* adopt, and the number of problems they identified, it is concluded that there is a great need for educational programs in agriculture for beginning dairy farm operators in New York.
10. Although a number of needs common to a large majority of the respondents were identified, there still exists a wide variation in the specific needs of individual farmers.
11. It is concluded that the subject matter content for a sound educational program for beginning farmers in New York may be based on the findings of this investigation and would include a treatment of: (1) a modified form of those agricultural procedures commonly used by beginning farmers, (2) those problems identified by most respondents, (3) those problems rated as most important, and (4) those approved practices that most respondents did not adopt.
12. On the basis of the findings reported earlier, the researchers conclude that the following are the problems for which begin-

ning dairy farmers, as a group, most need educational help:

Dairy Husbandry

Isolating purchased cows temporarily
Using antibiotics in feeding calves
Using a calving pen
Using a bulk tank
Finding ways to increase milk production

Maintaining herd health
Selecting feed rations
Selecting bulls that will increase milk production

Crop Production

Using contour strip cropping
Using band seeding
Top dressing pastures with commercial fertilizer
Clipping permanent pastures
Increasing soil productivity
Selecting the proper fertilizer
Selecting the best yielding seed variety
Controlling weeds
Controlling diseases and insects
Increasing pasture yields

Farm Mechanics

Using electrical power on the farm
Constructing and repairing farm buildings
Providing facilities for housing and milking
Determining size of power machinery and equipment

Farm Management

Improving herd health
Knowing laws and other legal aspects that affect farm business
Interpreting governmental programs
Knowing the available government services
Deciding how to increase efficiency of operation

Deciding on type and amount of insurance
Keeping records and reporting income tax and Social Security
Planning agreements for renting or buying additional land
Planning credit needs
Analyzing the farm business
Marketing farm products

Implications

1. The level of instruction provided to beginning dairy farmers must reflect their educational achievement and intellectual ability. There should be increasing efforts to continue to raise the academic level of all instructional programs designed for beginning dairy farm operators. They are capable of learning the finer points needed to become successful farmers.
2. The emphasis in education for these farmers should be on assisting them both to maintain and to raise their achievement

level. Furthermore, inasmuch as the level for this group is above average, they should continue to develop their capacity to meet the competitive economic demands of the future.

3. Educational program planners should investigate ways and means whereby the efforts of interested farm organizations may be coordinated to the educational benefit of beginning farmers. Moreover, the techniques traditionally used in Young Farmer programs, such as small group meetings, systematic instruction, individual on-farm instruction, and others, may be of benefit to other educational agencies.
4. Since beginning farmers as a group have spent most of their work life in farming, program builders may assume that they have a fairly high level of experience, therefore the subject matter topics should be selected accordingly. Furthermore, in identifying future beginning farm operators, greater emphasis should be placed on considering young men working on home farms.
5. To determine the content to be included and the learning activities to be used in an educational program for any given group of beginning dairy farmers, the problems of the group should be systematically solicited. Special consideration should be given to those learning activities, usually involving a high degree of learner participation, that beginning farmers themselves are able to identify.
6. Efforts by agricultural agencies, governmental or private, to assist beginning dairy farmers to become more firmly established in their businesses should be continued. The kind of effort most likely to achieve this end is the furtherance of educational programs designed especially for this group who have fairly similar needs. Educational institutions have a real opportunity in this regard and should expand their services to larger numbers of beginning farmers.
7. Since this study revealed a wide variation in the educational needs of the group, care should be taken to provide instruction in areas that are meaningful to individuals not only on a group basis but also on an individual or small group basis, so as to include problems of concern to a limited number. This can be done either by providing individual on-farm instruction or by the newer technique of programmed instruction.

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A STUDY OF

OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK STATE

by

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A Cooperative Research Project of

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Rural Education Department
New York State College of Agriculture
Cornell University
Ithaca, New York

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A STUDY OF OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK STATE

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A STUDY OF OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK STATE

Harold R. Cushman, Virgil E. Christensen and Garry R. Bice

INTRODUCTION

Importance of the Study

The traditional purpose of vocational education in agriculture has been ... "To meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm ... " 1/ In recent years, a number of trends have taken place in agriculture and rural life which have had significant implications for persons charged with responsibility for teaching, administering or preparing teachers for vocational agriculture programs. Some of these trends are:

1. A change from generalized to more highly specialized types of agriculture.

2. A shift of less productive land out of farming and into forestry and outdoor recreation uses.

3. The transfer of many processing, manufacturing and marketing functions, formerly performed by the farmer on the farm, to specialized businesses at off-farm locations.

4. The rapid mechanization of agriculture and the growth of a large sales and service industry in farm machinery and equipment.

5. A profound increase in service occupations meeting the specialized needs of farmers for feed, seed, fertilizer, spray, artificial breeding, record keeping, etc.

6. The growth of residential and suburban areas with an ensuing demand for the products and services of ornamental horticulture, floriculture and landscaping.

As a result of such trends, the 88th Congress specified in the Vocational Education Act of 1963 that ... "any amounts allotted ... for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupations involve work of the farm ..." 2/ The passage of this act and the

1/ Administration of Vocational Education, Vocational Education Bulletin No. 1, General Series No. 1, U. S. Department of Health, Education and Welfare, (Washington: Government Printing Office, 1958), p. 27.

2/ Committee on Labor and Public Welfare, United States Senate, Selected Education Acts of 1963, (Washington, D. C.: U. S. Government Printing Office, 1963), pp. 75-76.

appropriation of funds to implement its provisions have created a critical need for detailed information concerning the nature and extent of off-farm agricultural occupations in New York as a basis for:

1. Determining content for training and re-training programs which will prepare youth and adults for employment in such occupations - and upgrade the performance of persons already employed;

2. Formulating and trying out such training programs in various organizational and administrative settings;

3. Determining the sort of physical plant which will be most conducive to efficient learning;

4. Guiding students in exploring career opportunities in such occupations;

5. Guiding students in evaluating their own capabilities against the requirements of off-farm agricultural occupations;

6. Planning programs for the preparation of teachers for the new programs;

7. Allocating funds from the Vocational Education Act of 1963 to support needed training programs, and

8. Developing programs of administration and supervision for the emerging programs.

From the pursuit of such concerns as the above must come many of the guidelines for vocational agriculture in a new era; one in which preparation for the broad spectrum of agricultural occupations will have replaced preparation for farming as the guiding purpose.

Previous Work Contributing to this Study

In a 1961 study of 17 occupations related to farming in the Syracuse economic area, Tom 3/, Hill and Greene found 152 annual entry opportunities. Employers expressed a preference for employees with a high school education, training in vocational agriculture and farm experience.

Early in 1963 a committee of the Joint Staff of Supervisors and Teacher Trainers in Agricultural Education consisting of Dr. Joe P. Bail, Agricultural Education Division, Cornell University and Mr. Everett Lattimer, Bureau of Agricultural Education, State Education Department,

3/ Frederick K. T. Tom, Charles W. Hill and Kingsley L. Greene, Employment Opportunities in Certain Occupations Related to Farming in the Syracuse, New York Economic Area, (Ithaca: Cornell University, 1961), 27 pp.

assumed leadership for developing a procedure and survey forms for studying the broad complex of off-farm agricultural occupations and cooperating with Dr. Duane Nielsen, Specialist in Teacher Education and Research, Agricultural Education Branch, U. S. Office of Education in his efforts to encourage and coordinate research efforts in this area of concern.

With several states planning extensive studies of employment opportunities and needed competencies in off-farm agricultural occupations during the spring of 1963 it became apparent that several benefits would accrue from a conference jointly sponsored by the National Center for Advanced Study and Research in Agricultural Education and the Agricultural Education Branch of the U. S. Office of Education to further develop and coordinate studies in this vital area. Accordingly plans were developed early in the spring of 1963 for a three-day Research Coordination Conference to be held on the campus of the Ohio State University, May 27, 28 and 29. The broad purposes of this meeting were:

"1. To maximize the possibilities for coordinating and achieving commonality in the agricultural occupations studies being conducted by the several states without violating the integrity of individual state studies;

2. To provide other states with resulting materials and encourage comparable studies;

3. To provide opportunity for individual states to benefit from the experience of others in further developing and refining their proposals." 4/

Participants attended from 14 states. Bail and Lattimer represented New York.

At the 53rd Annual Professional Conference held at Harpur College, June 25-28, 1963, Bail and Lattimer presented a proposed procedure and survey forms for conducting local studies to determine employment opportunities in off-farm agricultural occupations.

Price 5/ in a field test of the proposed procedure in the Wayland Central School district during the fall of 1963 discovered 53 companies employing a total of 248 persons in occupations requiring agricultural competencies. The distribution of these persons by level of employment was 72 semi-skilled, 63 skilled, 51 proprietors and managers, 29 clerical and sales, 17 supervisors and foremen, 10 technical, 4 professional and 2 unclassified. The functions performed by the 248 persons classified as follows: 88 sales, 76 services, 50 processing, 32 manufacturing and two marketing. Several suggestions were made for persons conducting such studies in the future:

4/ Report of Research Coordination Conference on Agricultural Occupations, (Columbus: The Ohio State University, 1963), 92 pp.

5/ John E. Price. (Preliminary data for Master's essay, Cornell University, Ithaca, 1963).

1. Many businesses and services of a non-agricultural nature employ workers needing agricultural competencies. Such businesses and services must be included in the study population for off-farm agricultural occupations studies if the results are to be complete.

2. The yellow pages of the telephone directory, knowledgeable local businessmen and the members of the local agricultural advisory board are reliable sources for identifying the businesses and services in a given area who employ persons needing agricultural competencies.

3. Terms such as agricultural competencies, job titles, level of employment and main function of business are not a part of the businessman's vocabulary. Such terms must be defined and illustrated in a consistent manner during interviews if survey results are to be reliable.

4. The same agricultural competencies are usually useful for entry, needed on the job and a factor in advancement. Efforts to have employers differentiate competencies on such bases proved costly in time and, in general, unrewarding.

5. The original list of agricultural competencies based on an analysis of farming should be expanded by adding competencies drawn from analyses of ornamental horticulture; agricultural machinery sales and service; forestry; conservation and outdoor recreation, and agricultural business.

6. A standardized system is needed for classifying job titles in off-farm agricultural occupations.

7. Special training for interviewers and an interviewers manual will be essential for standardizing interviewing procedures in studies where more than one interviewer is involved.

8. The data from such studies is complex and detailed. Machine processing will be essential to efficient use of time in summarizing results.

9. The public relations implications of such studies should be recognized by teachers interviewing employers within their school district.

The Problem

This study was a cooperative effort to identify and to obtain first-hand information concerning the off-farm agricultural occupations in the school districts offering instruction in agriculture in the State of New York and in two school districts within the Adirondack area. The Agricultural Education Division of the Rural Education Department at Cornell University; the Bureau of Agricultural Education, State Education Department, and Boards of Cooperative Educational Services in representative school districts worked together to this end. The main questions to which answers were sought were:

1. What are the off-farm agricultural occupations?

2. What proportion of time is devoted to use of agricultural competencies in off-farm agricultural occupations?

3. How many persons are employed in such occupations?

4. At what levels of employment are such occupations found?

5. What is the outlook for employment opportunities in these jobs?

6. What agricultural competencies are needed by workers in off-farm agricultural occupations?

7. What are the educational requirements for such occupations?

Assumptions

The following assumptions were made in planning and carrying out this study:

1. That type of farming area, school enrollment and tax base of school district could logically constitute the primary factors to be considered in selecting a representative sample of school districts offering instruction in agriculture.

2. That even a limited sampling of two school districts in the Adirondack area might provide reasonably valid and useful occupational information; particularly as it applied to the forestry and soil conservation and wildlife and recreation occupational families.

3. That identification of school district boundaries, use of the yellow pages classification guide and the yellow pages of area telephone books, personal contacts with local persons judged to be knowledgeable concerning businesses or services in their school district and review by the local Agricultural Advisory Board would result in identification of the "population" of businesses and services having proprietors and/or employees needing agricultural competencies in a local school district.

4. That comparable interview procedures would be followed by teachers of agriculture who had been instructed in the use of the interviewer's manual and interview schedules.

5. That the job titles of all off-farm agricultural occupations would be found in the Dictionary of Occupational Titles 6/; usually under headings other than agriculture.

6/ Dictionary of Occupational Titles, Definition of Titles, Volume I, (Washington: Government Printing Office, 1949).

6. That off-farm agricultural occupations would occur at all levels of employment.

7. That reliable information concerning off-farm agricultural occupations could be obtained from employers.

Scope and Limitations of the Study

The recognized study limitations were:

1. A "population" consisting of those school districts in New York offering instruction in agriculture during the school year 1963-64;

2. A stratified-random sample of the population composed of 16 of the 260 school districts in the population;

3. A sampling of but two selected school districts out of several located in the Adirondack area;

4. All information was obtained from employers; no employees were interviewed.

Operational Definitions

The following definitions were employed in this study:

1. An agricultural occupation is one in which the workers need competencies in one or more of the primary areas of plant science, animal science, agricultural business and agricultural mechanization.

2. Competency - ability.

3. Main function of business or service - the specific operation performed and the main contribution made to society by the business or service.

   (a) Retail Sales - The selling of goods or property for money, usually directly to the consumer or his agent.
   (b) Service - The installation, maintenance or repair of an article, applicance, machine, convenience, or other property or things; also the performance of specialized tasks essential to production.
   (c) Manufacturing or Processing - The production of goods by hand, by special methods or by industrial art or processes; to work into useful form.
   (d) Education - The teaching, instruction or training of an individual in either formal or informal settings.
   (e) Wholesaling - The purchase and/or sale of goods in large bulk or quantity, often to a buyer who plans to resell at retail.
   (f) Specialized Agricultural Production - The growing of plants and animals at off-farm locations.
   (g) Recreation - Refreshment of body and mind, but generally both; diversion; amusement; any pleasurable exercise.

4. Levels of employment 7/.

(a) Professional -
(1) Professional jobs usually require a high degree of mental activity by the worker and are concerned with theoretical or practical aspects of complex fields of human endeavor. A minimum of a college degree or experience of such character and scope to provide equivalent background is required.
(2) Examples: 4-H Club Agent, veterinarian, forester.

(b) Managerial -
(1) Managerial jobs are involved with responsibility for policy-making, planning, supervising, coordinating, or guiding the work activity of others, usually through intermediate supervisors.
(2) Examples: Manager of agricultural sales and service business, manager of milk processing plant, greenhouse manager.

[NOTE: Foremen that have limited responsibility for policy-making and management are not included. They are classified with the skilled occupations.]

(c) Technical -
(1) This group of occupations requires somewhat similar education and/or experience to the professional occupations. These fields of work, however, are less demanding with respect to background or the need for initiative or judgement than those fields which are considered as "professional."
(2) Examples: Artificial inseminator, dairy herd improvement supervisor, laboratory technician.

(d) Clerical -
(1) This group of occupations includes jobs dealing with the preparation, transcribing, transferring, systematizing, or preserving of written communications and records in offices, shops, etc.
(2) Examples: Bookkeeper, camp clerk, rural bank teller.

(e) Sales -
(1) Included in this group are occupations concerned with the sale of commodities, investments, real estate and occupations closely related to sales work.
(2) Examples: Salesman, rural insurance representative, auctioneer.

(f) Service -
(1) Included in this group are occupations concerned with the welfare and personal needs of people on a non-professional basis.
(2) Examples: Guide, dude ranch riding instructor.

7/ Ibid., adapted from Volume II, Occupational Outlook Handbook.

(g) Skilled -

(1) This group includes craft and manual jobs and the workers must have a thorough knowledge of the processes involved in their work. They exercise considerable independent judgement and often need a high degree of manual dexterity. In some instances they are responsible for valuable equipment or products. Workers in skilled occupations usually become qualified by serving apprenticeships or completing extensive training programs.

(2) Examples: Poultry sexer, cheese maker, lumber grader.

(h) Semi-skilled -

(1) This group of manual jobs is characterized by one, or a combination of the following requirements: The worker must exercise manipulative ability of a high order, but it is limited to a fairly well-defined work routine. Major reliance is not so much upon the worker's judgement and dexterity but upon vigilance and alertness. Any exercise of independent judgement to meet variables in the work situation is not based on a wide knowledge of the job field and the nature and extent of the judgements are limited either by application over a relatively narrow task situation or by having important decisions made by others.

(2) New employees in semi-skilled jobs are required only to be physically able to perform the work. At the beginning they are not expected to be highly proficient but after a short training period they must work at a standard, fast and steady pace.

(3) Truck drivers are the largest single group of semi-skilled workers. Many semi-skilled employees work as helpers or assistants to skilled workers. They often repeat the same motions or the same jobs throughout the day. In general, semi-skilled workers work with their hands.

(4) Other examples: Log scaler, meat cutter, heavy equipment operator.

(i) Unskilled -

(1) This group includes manual occupations that involve the performance of simple duties that may be learned within a short time period and that require little or no independent judgement.

(2) Frequently, these jobs involve handling or moving objects or materials, e.g., loading or unloading, digging, shoveling, hauling, hoisting, wrapping and mixing. Some of these unskilled jobs require heavy physical work.

(3) Examples: Golf course laborer, nursery laborer, custodian, pulp cutter.

5. No operational definition of a full-time or part-time employee was established. This differentiation was left to the judgement of the persons interviewed.

Procedures Used

1. Selection of the study population.

The 260 school districts in New York State offering instruction in agriculture during the school year 1963-64 were selected as the study population. It was assumed that school districts representative of this group would be willing to cooperate in the study by making available the services of their teachers of agriculture to collect local data. The main disadvantage of this choice of population was that it would not allow generalization of the results to the state as a whole. The geographical distribution of the school districts included in the population is shown in Figure 1.

2. Sampling procedures.

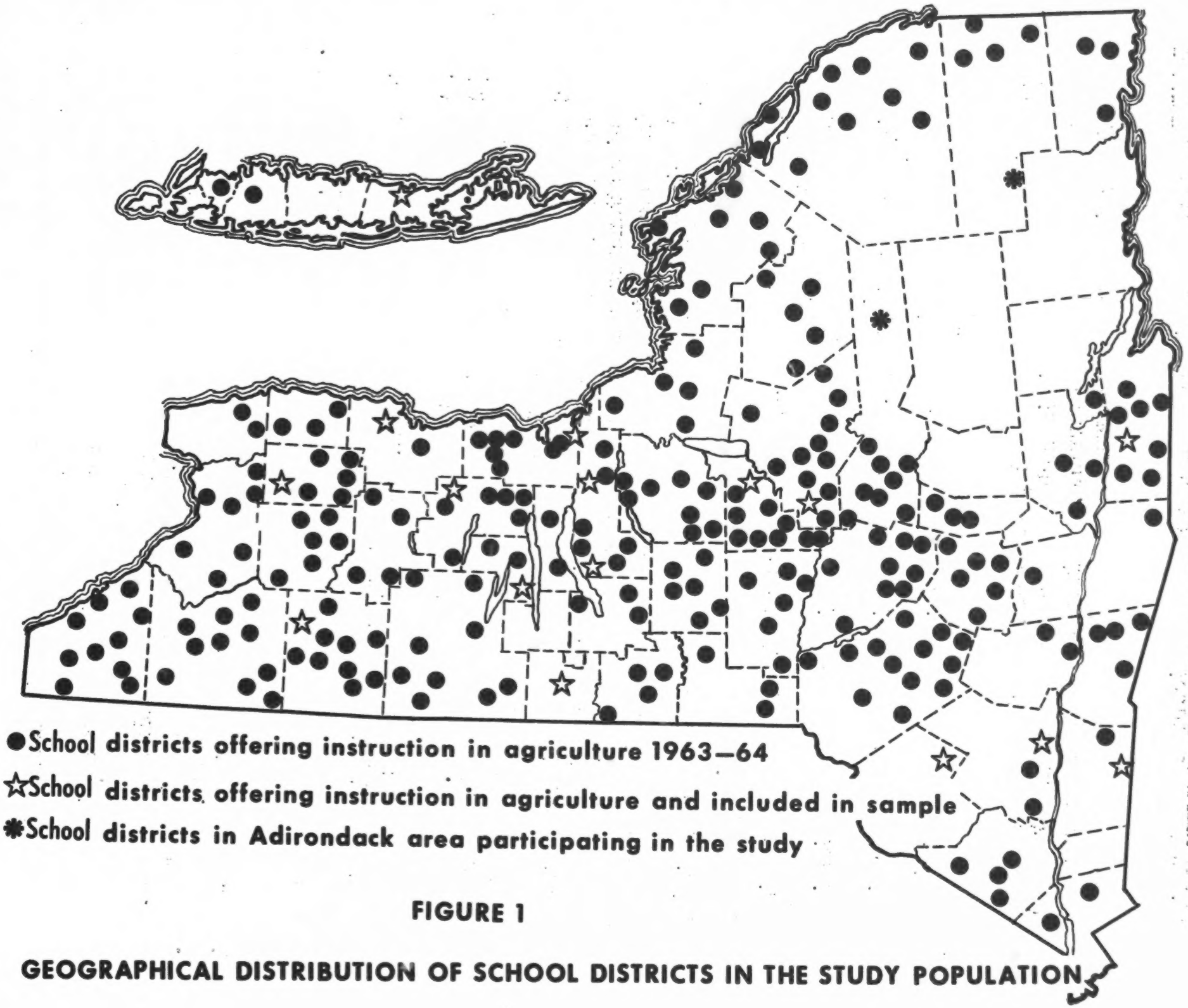
A stratified-random sample of school districts offering instruction in agriculture was selected using the following procedures:

(a) Each of the 260 school districts was assigned a number.
(b) The 260 school districts were then sorted according to the types of farming area 8/ in which they were located; dairy, general farming, poultry, vegetables and fruit.
(c) The median for "K-12 school population" and the median for "full value of taxable real property per resident child in weighted average daily attendance" were obtained from the State Education Department for the school districts offering agricultural instruction in each type of farming area.
(d) The school districts in each type of farming area were placed in one of four categories:

(1) Above median in "K-12 school population" and above median in "full value . . ."
(2) Above median in "K-12 school population" and below median in "full value . . ."
(3) Below median in "K-12 school population" and above median in "full value . . ."
(4) Below median in "K-12 school population" and below median in "full value . . ."

(e) Using a random numbers table, one school district was selected at random from those within each of the four categories (in [d] above) for each of the types of farming. A first alternative and a second alternative were also drawn.

8/ Feuer, Lowe, Hartwig and Peech, New York Agriculture At A Glance, (Ithaca: New York State College of Agriculture, 1963), 16 pp.



●School districts offering instruction in agriculture 1963—64

☆School districts offering instruction in agriculture and included in sample

✱School districts in Adirondack area participating in the study

FIGURE 1

GEOGRAPHICAL DISTRIBUTION OF SCHOOL DISTRICTS IN THE STUDY POPULATION

(f) The school administrators of the selected school districts (or in some cases the administrator of the Board of Cooperative Educational Services) were contacted by the Bureau of Agricultural Education to obtain permission for the teacher of agriculture to devote 20 working days to participation in the study. The administrators of alternate schools were contacted where circumstances made this procedure necessary. Following this procedure, cooperation was obtained from 16 school districts.

(g) A sample of two districts was selected in the Adirondack area on the basis that the districts were somewhat representative of the major conservation activities including forest management, wildlife management and outdoor recreation. A member of the faculty of each of the two school districts was employed to conduct interviews.

3. Development of interview schedules and interviewers manual.

The proposed procedure and survey forms developed by Bail and Lattimer were revised using: Price's 9/experience with these materials in his census of the Wayland Central School District; lists of agricultural competencies developed by committees of the "Joint Staff of Supervisors and Teacher Trainers in Agricultural Education" from analyses of ornamental horticulture, agricultural machinery sales and service, forestry, conservation, outdoor recreation and agricultural business; recommendations previously made by various committees at the Research Coordination Conference held on the campus of Ohio State University, May 27, 28, and 29, 1963, and the coding recommendations of the Cornell Computing Center.

Following critical review of the tentative interview schedules and interviewer's manual by several members of the Division of Agricultural Education at Cornell University and the Bureau of Agricultural Education, State Education Department, an extensive field test was conducted at Red Creek Central School District. Experience gained in the try-out under field conditions, additional critical review by professional colleagues and experience gained in coding the results of the field test at Red Creek were all employed in the final revision of the interview schedules, Appendix A, and the interviewer's manual. 10/

4. Training of interviewers.

A four-hour orientation meeting was held by the project staff with participating teachers on Tuesday, June 30, 1964, during the Annual Professional Conference at Farmingdale Agricultural and Technical Institute. The following agenda was followed:

9/ Price, op. cit.

10/ Interviewers Reference Manual - A Study of Off-Farm Agricultural Occupations in New York State, Mimeograph, (Ithaca: Cornell University, 1964), 23 pp.

(a) Plans for the Study (60 minutes)
(b) Instructions for Using the Yellow Pages Classification Guide (30 minutes)
(c) Instructions for Completing the Interview Schedules (60 minutes)
(d) Guides for Interviewing (30 minutes)
(e) Practice in Completing the Interview Schedules (60 minutes)

Each teacher was instructed to:

(a) Plot the boundaries of the school district on a large scale map.
(b) Compile a list of businesses and services within the school district that might have employees needing agricultural competencies using: the "yellow pages classification guide" and the yellow pages of the telephone books for the area, personal contacts with a minimum of three knowledgeable persons and the assistance of the agricultural advisory board.
(c) Arrange and conduct interviews with the owner-operator, manager, personnel director or other representatives of each business or service on the list compiled. Interviewers not in attendance at the Farmingdale meeting were instructed individually by the Coordinator of Field Interviewers.

5. Collection of data.

A majority of the interviews were completed during July and August; the remainder were carried out in September and October, 1964. The Coordinator of Field Interviewers visited each interviewer during July and made additional visits to lend assistance as requested in August.

A noteworthy aspect of this study was that the decision as to whether or not a given business or service had employees needing agricultural competencies was left, by the interviewers, to the judgement of the employer.

6. Number and function of businesses studied.

A total of 541 businesses or services were studied in the sample drawn from the 260 school districts, offering instruction in agriculture during the school year 1963-64. TABLE I. Of these 155 (29 per cent) were located in dairy farming areas, 77 (14 per cent) were located in fruit farming areas, 176 (33 per cent) were in poultry farming areas, 61 (11 per cent) were in vegetable farming areas and the remaining 72 (13 per cent) were in general farming areas.

The distribution of the 541 businesses or services by main functions was as follows: service 40 per cent, retail sales 35 per cent, manufacturing eight per cent, wholesaling six per cent, specialized agricultural production (other than farming) four per cent, recreation four per cent and education three per cent.

TABLE I

NUMBER AND MAIN FUNCTION OF BUSINESSES OR SERVICES STUDIED

Type of farming area	Number of school districts	Number of businesses or services by function							
		Retail sales	Service	Manufacturing & processing	Education	Wholesaling	Specialized agricultural production *	Recreation	Totals
Dairy	4	55	67	11	8	4	7	3	155
Fruit	3	32	33	6	-	3	-	3	77
Poultry	3	60	67	15	7	9	9	9	176
Vegetable	3	16	22	6	2	9	4	2	61
General	3	25	29	6	2	6	1	3	72
Sub-total	16	188	218	44	19	31	21	20	541
Per cent of 541	-	35	40	8	3	6	4	4	100
Adirondack areas	2	10	21	-	5	-	3	14	53
Per cent of 53	-	19	40	-	9	-	6	26	100

* Other than farming

An additional 53 businesses or services were studied in two school districts in the Adirondacks.

7. Treatment of data.

The facilities and equipment of the Cornell Computing Center were used throughout the several stages of data processing. As completed interview schedules were received from the field, the data were coded and punched on I. B. M. cards following the format shown in APPENDIX B. The 083 Sorter, 101 Electronic Statistical Computer and the 407 Tabulator were utilized at appropriate stages in processing the data.

The steps employed in compiling several of the tables are described in APPENDIX C.

FINDINGS

A. OFF-FARM AGRICULTURAL OCCUPATIONS IN THE 260 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE DURING 1963-64

Job Titles of Off-Farm Agricultural Occupations and Proportion of Time Typical Workers Spend on Use of Agricultural Competencies

A total of 213 differenct job titles of off-farm agricultural occupations were found in the 16 school districts surveyed. All except eight of the job titles were subsequently located in the Dictionary of Occupational Titles. 11/ The 213 job titles are listed below by occupational family; in the order by which they were coded for data processing. In each case the job title is preceded by the appropriate D. O. T. Code Number (if located) and followed by the proportion of time which employers reported that a typical worker in this job title spent on tasks requiring agricultural competencies.

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
	AGRICULTURAL MACHINERY SALES AND SERVICE	
0 - 72.71	Manager	98
0 - 72.71	Assistant Manager	97
1 - 86.16	Salesman	67
0 - 91.80	Fieldman	100
1 - 01.02	Bookkeeper	76
1 - 70.10	Sales Clerk	100
7 - 36.250	Truck Driver	94
0 - 87.10	Custodian	70
0 - 97.67	Parts Manager	91
0 - 97.67	Parts Helper	95
5 - 92.711	Foreman	74
3 - 35.10	Mechanic	80
3 - 35.10	Mechanic's Helper	96
0 - 97.45	Branch Manager	100
5 - 83.641	Serviceman	100
4 - 85.040	Combination Welder	60
4 - 75.010	Machinist	36
5 - 92.711	Shop Foreman	100

11/ Dictionary of Occupational Titles, Definition of Titles, loc. cit.

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
	AGRICULTURAL SUPPLIES AND EQUIPMENT	
0 - 72.71	Manager	86
0 - 72.71	Assistant Manager	74
1 - 86.16	Salesman	62
0 - 91.80	Fieldman	90
1 - 01.02	Bookkeeper	78
1 - 70.10	Sales Clerk	49
7 - 36.250	Truck Driver	52
5 - 83.641	Serviceman	80
4 - 07.100	Miller	64
6 - 07.400	Roll Tender (grinder man)	33
9 - 59.02	Yardman (building materials)	68
5 - 25.110	Carpenter	96
9 - 88.40	Stockboy (general helper)	15
0 - 97.61	Sales Manager	100
5 - 91.031	Foreman	85
5 - 83.621	Maintenance Man	97
0 - 97.51	Manager, Production	60
5 - 23.910	Operating Engineer	76
9 - 32.01	Laborer	100
5 - 25.150	Finish Carpenter	100
5 - 91.031	Warehouse Foreman (grain and feed mill)	68
9 - 88.40	Warehouse Man	54
0 - 74.13	Department Manager (buyer assistant)	60
3 - 35.10	Mechanic	100
6 - 78.145	Screw Machine Operator	75
4 - 33.914	Millman Woodwork	84
4 - 97.010	Electrician	100
4 - 85.040	Combination Welder	100
5 - 23.910	Heavy Equipment Operator	100
5 - 24.010	Bricklayer	20
5 - 30.210	Plumber	97
0 - 97.67	Parts Manager	90
	DAIRY MANUFACTURING AND PROCESSING	
0 - 72.71	Manager	89
0 - 72.71	Assistant Manager	68
1 - 86.16	Salesman	100
1 - 48.24	Fieldman	95
1 - 01.02	Bookkeeper	100
7 - 36.250	Truck Driver	62
0 - 87.10	Custodian	50

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
0 - 50.46	Laboratory Technician	95
4 - 06.010	Ice Cream Maker	80
4 - 06.410	Cheese Maker	100
4 - 06.570	Pasteurizer	50
8 - 06.51	Milk Plant Laborer	74
5 - 91.001	Foreman	100
0 - 01.20	Accountant (general)	100
5 - 83.611	Maintenance Man	95
6 - 06.560	Milk Inspector	100
6 - 06.510	Condenserman	70
3 - 35.10	Mechanic	80
	LIVESTOCK MARKETING AND PROCESSING	
0 - 72.71	Manager	92
1 - 86.16	Salesman	84
1 - 01.02	Bookkeeper	73
1 - 70.10	Sales Clerk	50
7 - 36.250	Truck Driver	20
0 - 91.80	Buyer	40
0 - 91.80	Dealer	25
1 - 51.10	Auctioneer	93
4 - 09.205	Butcher	80
5 - 58.100	Meat Cutter	83
9 - 88.40	Warehouseman	75
0 - 97.01	President	66
9 - 88.40	Stock Tender	50
	OTHER LIVESTOCK INDUSTRY	
0 - 72.71	Manager	100
1 - 01.02	Bookkeeper	60
0 - 34.10	Veterinarian	77
0 - 34.10	Veterinarian's Assistant	100
0 - 50.46	Laboratory Technician	100
5 - 86.515	Laboratory Chief	100
3 - 07.70	Beekeeper	100
5 - 91.001	Foreman	90
9 - 88.40	Stock Tender	100
	POULTRY INDUSTRY	
0 - 72.71	Manager	100
7 - 36.250	Truck Driver	40
3 - 08.10	Debeaker	100
3 - 48.03	Sexer	60
3 - 41.10	Incubator Specialist	80

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
	CROPS MARKETING AND PROCESSING	
0 - 72.71	Manager	78
0 - 72.71	Assistant Manager	100
1 - 86.16	Salesman	100
1 - 48.27	Fieldman	93
1 - 01.02	Bookkeeper	87
7 - 36.250	Truck Driver	83
8 - 04.10	Packer	83
3 - 16.20	Harvest Hand	100
6 - 04.570	Grader	40
0 - 97.51	Superintendent (factory)	80
5 - 91.021	Warehouse Foreman	90
3 - 35.10	Mechanic	85
9 - 88.01	Truck Loader	50
5 - 91.021	Foreman	95
3 - 37.20	Group Leader (crew boss)	100
	FORESTRY AND SOIL CONSERVATION	
0 - 68.26	Fire Warden	100
5 - 91.401	Lumberman	88
0 - 35.03	Soil Conservation Technician	90
0 - 35.01	Agronomist	90
5 - 91.401	Hook Tender (logger)	50
5 - 97.901	Foreman	100
	WILDLIFE AND RECREATION	
3 - 96.10	Guide	100
0 - 35.12	Wildlife Specialist	100
0 - 94.94	Fish and Game Warden	65
(Not found in D. O. T.)	Park Attendant	70
7 - 61.110	Park Caretaker	75
0 - 27.08	Youth Camp Director	100
(Not found in D. O. T.)	Camp Operator	90
9 - 61.11	Camp Grounds Caretaker	100
3 - 40.03	Golf Course Greens Keeper	85
3 - 40.07	Golf Course Laborer	42
(Not found in D. O. T.)	Live Bait Dealer	50
(Not found in D. O. T.)	Boat Sales Business Manager	75
1 - 86.43	Boat Salesman	94
0 - 88.24	Marine Engine Mechanic	70
(Not found in D. O. T.)	Dude Ranch Manager	80
0 - 57.45	Dude Ranch Riding Instructor	100
0 - 98.54	Manager	80

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
5 - 83.621	Maintenance Man	100
0 - 27.08	Camp Director	63
0 - 27.40	Camp Counselor	100
2 - 61.11	Lifeguard	100
5 - 23.910	Heavy Equipment Operator	60
5 - 99.030	Foreman (government service)	85
2 - 05.01	Camp Cook	50
9 - 61.11	Park Laborer	50
3 - 40.04	Groundskeeper	85
	ORNAMENTAL HORTICULTURE	
3 - 38.20	Manager	88
3 - 38.20	Assistant Manager	100
1 - 86.16	Salesman	75
1 - 01.02	Bookkeeper	75
1 - 36.250	Sales Clerk	90
3 - 39.10	Truck Driver	70
3 - 38.20	Nurseryman	70
3 - 38.10	Flower Raiser	97
3 - 39.30	Nursery Laborer	100
3 - 40.04	Gardener	80
3 - 40.04	Lawn Keeper	80
3 - 40.12	Tree Sprayer	50
3 - 40.13	Pruner	20
0 - 35.05	Arborist	50
3 - 40.06	Landscape Gardener	75
0 - 03.20	Landscape Architect	65
5 - 97.901	Landscape Foreman	95
9 - 61.11	Park Laborer	100
3 - 38.20	Greenhouse Florist	50
3 - 39.10	Greehouse Laborer	42
	FARM SERVICE	
3 - 48.94	Artifician Inseminator	82
(Not found in D. O. T.)	Crop Sprayer	100
0 - 50.45	Dairy Herd Improvement Supervisor	98
0 - 72.71	Manager	95
4 - 85.040	Combination Welder	82
7 - 36.250	Truck Driver	75
1 - 01.02	Bookkeeper	60

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
	AGRICULTURAL SERVICE	
0 - 12.20	County Agricultural Agent	100
0 - 12.20	County 4-H Club Agent	100
0 - 31.01	Teacher of Agriculture	82
0 - 06.71	Agricultural Journalist	93
(Not found in D. O. T.)	Agricultural Representative for Power Company	90
1 - 57.10	Rural Insurance Representative	51
1 - 48.52	Rural Real Estate Representative	64
1 - 48.52	Appraiser	73
(Not found in D. O. T.)	General Repairman	80
5 - 81.510	Auto Body Man	91
3 - 35.10	Mechanic	57
0 - 44.26	Advertising Layout Man	100
1 - 05.01	General Office Clerk	100
1 - 48.25	Credit Checker	52
0 - 87.10	Custodian	97
5 - 23.910	Heavy Equipment Operator	82
8 - 94.34	Laborer	64
5 - 30.210	Plumber	97
0 - 72.71	Manager	76
0 - 97.02	Vice-President	97
0 - 97.12	Office Manager	53
0 - 85.10	Credit Manager	83
0 - 01.20	General Accountant	15
5 - 83.611	Maintenance Man	73
5 - 99.030	Foreman	59
7 - 96.100	Plumber Apprentice	100
5 - 27.010	Painter	92
5 - 25.110	Carpenter	89
1 - 51.10	Auctioneer	84
7 - 36.250	Truck Driver	80
1 - 01.02	Bookkeeper	100
0 - 12.30	Home Demonstration Agent	100
5 - 99.050	Utilities and Maintenace Foreman	100
1 - 01.52	Cashier (bank)	92
4 - 97.010	Electrician	100
3 - 07.10	Horse Breeder	100
0 - 95.18	Inspector (government service)	58
6 - 06.560	Milk Inspector	80
5 - 75.232	Water Well Driller	67
0 - 97.51	Plant Superintendent	100
1 - 70.10	Sales Clerk	25
1 - 37.12	Stenographer	50
9 - 32.61	Whitewasher	75
0 - 64.10	Surveyor	80

Proportion of Time Devoted to Use of Agricultural Competencies in Twelve Families of Off-Farm Agricultural Occupations

Based on employers' estimates, workers in the 213 off-farm agricultural occupations spent an average of 83 per cent of their work time on tasks requiring agricultural competencies. TABLE II. However, the proportion of time thus spent varied from 15 per cent for some job titles to 100 per cent for others.

Projected Number of Persons Employed During 1964 in Off-Farm Agricultural Occupations in 260 New York School Districts Offering Instruction in Agriculture in 1963-64

It was estimated the 28,685 persons were employed full-time in off-farm agricultural occupations in the 260 New York school districts offering instruction in agriculture during 1963-64. TABLE III. Of this number 8,967 (31 per cent) were employed in 32 job titles in Agricultural Supplies and Equipment, 7,876 (27 per cent) were in 44 job titles in Agricultural Service and 4,879 (17 per cent) were in 18 job titles in Agricultural Machinery Sales and Service.

It was further estimated that an additional 16,841 persons were employed part-time. Of this number 10,769 (64 per cent) were found in 15 job titles in Crops Marketing and Processing, 2,725 (16 per cent) were in 44 job titles in Agricultural Services and 1,085 (six per cent) were employed in 26 job titles in Wildlife and Recreation.

On a per school district basis, it was estimated that there were 110 full-time and 65 part-time workers in off-farm agricultural occupations in a typical New York school district offering agricultural instruction in 1963-64.

Classification of Workers in Off-Farm Agricultural Occupations by Levels of Employment

Employers classified their full-time workers in off-farm agricultural occupations by level of employment as follows: semi-skilled 28 per cent, skilled 27 per cent, managerial 15 per cent, sales 13 per cent, clerical four per cent, professional four per cent, unskilled four per cent, technical four per cent, and service one per cent. TABLE IV.

Part-time workers were classified by employers as follows: semi-skilled 76 per cent, sales nine per cent, skilled four per cent, unskilled four per cent, clerical two per cent, managerial two per cent, professional one per cent, technical one per cent and service one per cent. TABLE V. Of the 1161 part-time workers classified as semi-skilled, 1025 (88 per cent) were employed in Crops Marketing and Processing. It was also noted that 119 (88 per cent) of the 136 part-time workers classified in sales were employed in Agricultural Service.

TABLE II

PROPORTION OF TIME DEVOTED TO USE OF AGRICULTURAL COMPETENCIES BY FULL-TIME WORKERS IN TWELVE FAMILIES OF OFF-FARM AGRICULTURAL OCCUPATIONS

Occupational Families	Number of different job titles	Range 1/ (in per cent)	Mean 2/ (in per cent)
1. Agricultural Machinery Sales and Service	18	36-100	82
2. Agricultural Supplies and Equipment	32	15-100	83
3. Dairy Manufacturing and Processing	18	50-100	78
4. Livestock Marketing and Processing	13	20-100	81
5. Other Livestock Industry	9	60-100	77
6. Poultry Industry	5	40-100	93
7. Crops Marketing and Processing	15	40-100	82
8. Forestry and Soil Conservation	6	50-100	88
9. Wildlife and Recreation	26	42-100	96
10. Ornamental Horticulture	20	20-100	80
11. Farm Service	7	60-100	86
12. Agricultural Service	44	15-100	83
TOTAL	213	-	-
Mean for all workers	-	-	83

1/ Between job titles in each occupational family.
2/ Weighted by number of workers in each job title.

TABLE III

PROJECTED NUMBER OF PERSONS EMPLOYED DURING 1964 IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Occupational Families	Number of different job titles represented	Persons employed during 1964					
		Full-time			Part-time		
		Actual 16 districts	Projected 260 districts		Actual 16 districts	Projected 260 districts	
			Number	Per cent		Number	Per cent
1. Agricultural Machinery Sales and Service	18	316	4,879	17	30	425	3
2. Agricultural Supplies and Equipment	32	764	8,967	31	45	594	4
3. Dairy Manufacturing and Processing	18	178	1,581	6	2	19	-
4. Livestock Marketing and Processing	13	96	1,282	5	14	345	2
5. Other Livestock Industry	9	28	852	3	2	48	-
6. Poultry Industry	5	3	10	-	5	17	-
7. Crops Marketing and Processing	15	176	990	3	1,052	10,769	64
8. Forestry and Soil Conservation	6	11	179	1	18	101	1
9. Wildlife and Recreation	26	62	517	2	83	1,085	6
10. Ornamental Horticulture	20	131	871	3	82	700	4
11. Farm Service	7	31	681	2	2	13	-
12. Agricultural Service	44	514	7,876	27	196	2,725	16
Totals	213	2,310	28,685	100	1,531	16,841	100
Per school district	-	-	110	-	-	65	-

TABLE IV

CLASSIFICATION OF FULL-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS BY LEVELS OF EMPLOYMENT

Occupational families	Number of workers classified									Totals
	Professional	Managerial	Technical	Clerical	Sales	Service	Skilled	Semi-skilled	Unskilled	
1. Agricultural Machinery Sales and Service	-	74	-	22	45	2	156	11	6	316
2. Agricultural Supplies and Equipment	-	113	14	26	79	14	169	321	28	764
3. Dairy Manufacturing and Processing	-	24	14	5	5	-	82	48	-	178
4. Livestock Marketing and Processing	-	12	-	2	17	-	33	32	-	96
5. Other Livestock Industry	12	3	1	-	-	-	5	7	-	28
6. Poultry Industry	-	3	-	-	-	-	-	-	-	3
7. Crops Marketing and Processing	1	22	18	6	-	-	-	105	24	176
8. Forestry and Soil Conservation	3	5	-	-	-	-	3	-	-	11
9. Wildlife and Recreation	13	16	-	-	-	-	7	22	4	62
10. Ornamental Horticulture	-	33	10	2	-	-	10	76	-	131
11. Farm Service	-	2	11	1	-	-	16	1	-	31
12. Agricultural Service	60	50	14	33	163	-	139	34	21	514
Totals	89	357	82	97	309	16	620	657	83	2,310
Per cent	4	15	4	4	13	1	27	28	4	100

TABLE V

CLASSIFICATION OF PART-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS BY LEVELS OF EMPLOYMENT

Occupational families	Number of workers classified									Totals
	Professional	Managerial	Technical	Clerical	Sales	Service	Skilled	Semi-skilled	Unskilled	
1. Agricultural Machinery Sales and Service	-	1	-	3	3	1	6	-	6	30
2. Agricultural Supplies and Equipment	-	3	-	5	7	-	15	13	2	45
3. Dairy Manufacturing and Processing	-	-	-	-	1	-	1	-	-	2
4. Livestock Marketing and Processing	-	1	-	5	2	-	1	5	-	14
5. Other Livestock Industry	-	1	-	1	-	-	-	-	-	2
6. Poultry Industry	-	-	-	-	-	-	-	5	-	5
7. Crops Marketing and Processing	-	7	4	6	-	-	9	1025	1	1,052
8. Forestry and Soil Conservation	-	3	-	-	-	15	-	-	-	18
9. Wildlife and Recreation	-	8	11	-	4	3	14	18	25	83
10. Ornamental Horticulture	-	6	-	-	-	-	5	59	12	82
11. Farm Service	-	-	-	-	-	1	-	1	-	2
12. Agricultural Service	5	1	3	9	119	-	6	35	18	196
Totals	5	31	18	29	136	20	67	1161	64	1,531
Per cent	1	2	1	2	9	1	4	76	4	100

Projected Number of Persons Employers Predict Will Be Employed in 1969 in Off-Farm Agricultural Occupations in 260 New York School Districts Offering Instruction in Agriculture During 1963-64

Based on employers' predictions it was estimated that 34,152 full-time workers will be employed in off-farm agricultural occupations by 1969; compared to 28,685 in 1964. TABLE VI. Of the 34,152 full-time workers it was estimated that 10,289 (30 per cent) would be employed in 32 job titles in Agricultural Supplies and Equipment, 9,630 (28 per cent) would be in 44 job titles in Agricultural Service and 6,181 (18 per cent) would be in 18 Agricultural Machinery Sales and Service job titles.

It was further estimated that an additional 18,950 persons would be employed part-time. Of this number 12,784 (67 per cent), it was estimated, would be in 15 job titles in Crops Marketing and Processing, 2,759 (15 per cent) would be in 44 job titles in Agricultural Service and 1,083 (six per cent) would be in 26 job titles in Wildlife and Recreation.

On a per school district basis it was estimated that by 1969 there would be 131 full-time and 73 part-time workers in off-farm agricultural occupations in a typical New York school district which offered instruction in agriculture during 1963-64.

The estimated increase of 5,467 in full-time workers represented a 19 per cent growth rate over the five-year period. The study further showed that the most rapid rate of growth for full-time workers would take place in Crops Marketing and Processing, 32 per cent; Wildlife and Recreation, 28 per cent, and Agricultural Machinery Sales and Service, 27 per cent.

The estimated increase of 2,109 in part-time workers represented a 13 per cent growth rate over the five-year period. The rapid growth rates predicted in Crops Marketing and Processing, 19 per cent, and Agricultural Machinery Sales and Service, 17 per cent were also noteworthy.

Employment Opportunities Outlook in Off-Farm Agricultural Occupations in the 260 New York School Districts Offering Instruction in Agriculture During the School Year 1963-64

It was estimated that during the five-year period 1964-69, a total of 24,033 employment opportunities would be available in the off-farm agricultural occupations in the 260 school districts included in the study. TABLE VII. Of this number 14,085 would be in full-time jobs and 9,948 would be in part-time employment. An individual school district might therefore anticipate 92 employment opportunities over the five-year period; 54 full-time and 38 part-time. On a per school district, per year basis the study showed an average of 19 employment opportunities; 11 in full-time and eight in part-time jobs. It should be emphasized that these estimateds did not include those who would enter farming or those who would find employment in off-farm agricultural occupations in urban or other areas outside of the 260 school districts.

TABLE VI

PROJECTED NUMBER OF PERSONS EMPLOYERS PREDICT WILL BE EMPLOYED IN 1969 IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE DURING 1963-64

Occupational families	Number of different job titles represented	Predicted employment 1969							
		Full-time				Part-time			
		Actual 16 districts	Projected 260 districts		Per cent increase over 1964	Actual 16 districts	Projected 260 districts		Per cent increase over 1964
			Number	Per cent			Number	Per cent	
1. Agricultural Machinery and Sales	18	448	6,181	18	27	30	497	3	17
2. Agricultural Supplies and Equipment	32	836	10,289	30	15	46	524	3	-12
3. Dairy Manufacturing and Processing	18	189	1,692	5	7	2	19	-	-
4. Livestock Marketing and Processing	13	110	1,363	4	6	12	380	2	10
5. Other Livestock Industry	9	30	942	3	11	2	48	-	-
6. Poultry Industry	5	3	10	-	-	6	20	-	18
7. Crops Marketing and Processing	15	238	1,305	4	32	1,248	12,784	67	19
8. Forestry and Soil Conservation	6	11	179	1	-	3	52	-	-50
9. Wildlife and Recreation	26	83	660	2	28	96	1,083	6	-
10. Ornamental Horticulture	20	163	1,049	3	20	94	751	4	7
11. Farm Service	7	43	852	2	25	8	33	-	153
12. Agricultural Service	44	652	9,630	28	22	218	2,759	15	1
Totals	213	2,806	34,152	100	-	1,765	18,950	100	-
Per school district	-	-	131	-	19	-	73	-	13

TABLE VII

EMPLOYMENT OPPORTUNITIES OUTLOOK IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 260 NEW YORK SCHOOL DISTRICTS OFFERING AGRICULTURAL INSTRUCTION, 1963-64

Occupational families	Employment opportunities by years									
	1965		1966		1967		1968		1969	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
1. Agricultural Machinery Sales and Service	533	65	547	66	560	68	574	69	588	71
2. Agricultural Supplies and Equipment	754	60	768	59	782	57	796	54	810	53
3. Dairy Manufacturing and Processing	151	1	152	1	154	1	156	1	158	1
4. Livestock Marketing and Processing	78	43	79	44	80	45	81	45	82	46
5. Other Livestock Industry	59	3	60	3	61	3	61	3	62	3
6. Poultry Industry	1	3	1	3	1	3	1	3	1	3
7. Crops Marketing and Processing	145	962	150	982	155	1002	160	1022	165	1042
8. Forestry and Soil Conservation	7	11	7	9	7	7	7	4	7	2
9. Wildlife and Recreation	60	246	62	246	64	246	65	245	67	245
10. Ornamental Horticulture	89	158	91	160	93	162	95	164	98	166
11. Farm Service	69	6	70	6	71	6	73	7	75	7
12. Agricultural Service	754	389	771	390	788	391	806	392	823	393
Totals	2700	1947	2758	1969	2816	1991	2875	2009	2936	2032
Per school district	10.4	7.5	10.6	7.6	10.8	7.7	11.1	7.7	11.3	7.8

Employment opportunities were highest for full-time workers in the areas of Agricultural Service, Agricultural Supplies and Equipment and Agricultural Machinery Sales and Service. Opportunities for part-time workers were highest in Crops Marketing and Processing, which accounted for more than one-half of such opportunities, Wildlife and Recreation, Agricultural Service and Ornamental Horticulture.

Agricultural Competencies Needed by Workers in Off-Farm Agricultural Occupations

The agricultural competencies cited by employers as most frequently needed by their workers are listed below for each occupational family. They are listed in rank order beginning with the one needed by the highest proportion of full-time workers in each occupational family. Only the top quartile of the rankings are listed below. Complete lists may be found in APPENDIX D.

AGRICULTURAL MACHINERY SALES AND SERVICE

1. Display, explain and demonstrate items for sale.
2. Order repair parts and new equipment.
3. Understand and use credit.
4. Make job estimates.
5. Sell machinery, equipment, materials, products or supplies.
6. Keep, summarize and analyze records.
7. Arc or oxy-acetylene welding abilities.
8. Operate, maintain and adjust gasoline engines.
9. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
10. Knowledge of fuels and lubricants.
11. Operate, maintain and adjust diesel engines.

AGRICULTURAL SUPPLIES AND EQUIPMENT

1. Operate, maintain and adjust gasoline engines.
2. Operate, maintain and adjust diesel engines.
3. Install and use materials handling equipment.
4. Understand and use credit.
5. Knowledge of blueprints, space requirements and building materials for agricultural structures.
6. Woodworking and metal working skills.
7. Sell machinery, equipment, materials, products or supplies.
8. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
9. Investigate and adjust customer complaints.
10. Arc or oxy-acetylene welding abilities.
11. Make job estimates.
12. Display, explain and demonstrate items for sale.
13. Order repair parts and new equipment.
14. Keep, summarize and analyze records.
15. Handle inventories, stock control, warehousing reports, payrolls and accounts.

16. Knowledge of fuels and lubricants.
17. Call on prospective customers.
18. Purchase goods to sell.
19. Plan and arrange for advertising and promotion.
20. Understand agriculture in our economy.

DAIRY MANUFACTURING AND PROCESSING

1. Keep, summarize and analyze records.
2. Sanitation and disease control practices.
3. Produce high quality products.
4. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
5. Ability to test animal products.
6. Knowledge of grades and standards.
7. Knowledge of blueprints, space requirement and building materials for agricultural structures.
8. Handle inventories, stock control, warehousing reports, payrolls, accounts.
9. Understand agriculture in our economy.
10. Hire, train and supervise workers.
11. Order repair parts and new equipment.
12. Evaluate the total operation and make decisions.

LIVESTOCK MARKETING AND PROCESSING

1. Knowledge of markets and marketing practices.
2. Knowledge of grades and standards.
3. Sanitation and disease control practices.
4. Pasteurize milk.
5. Hire, train and supervise workers.
6. Understand agriculture in our economy.
7. Display, explain and demonstrate items for sale.
8. Investigate and adjust customer complaints.
9. Comply with local, state and federal government trade and licensing regulations.
10. Plan and arrange for advertising and promotion.
11. Call on prospective customers.
12. Make job estimates.
13. Ability to test animal products.

OTHER LIVESTOCK INDUSTRY

1. Sanitation and disease control practices.
2. Ability to test animal products.
3. Produce high quality products.
4. Knowledge of grades and standards.
5. Keep production, breeding and financial records.
6. Knowledge of markets and marketing practices.
7. Housing and handling.
8. Feeding requirements and practices.

9. Use records to improve feeding, breeding and other practices.
10. Knowledge of breeding principles and practices.
11. Evaluate the total operation and make decisions.
12. Hire, train and supervise workers.
13. Purchase goods to sell.
14. Keep, summarize and analyze records.
15. Comply with local, state and federal government trade and licensing regulations.
16. Understand agriculture in our economy.

POULTRY INDUSTRY

(Insufficient number of employers interviewed to be significant.)

CROPS MARKETING AND PROCESSING

1. Process, grade or package.
2. Shipping or storing.
3. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
4. Comply with local, state and federal government trade and licensing regulations.
5. Understand and use credit.
6. Understand agriculture in our economy.
7. Use legal instruments: wills, deeds, contracts, mortgages, notes.
8. Keep, summarize and analyze records.
9. Select seed, cuttings, bulbs or stock plants.
10. Sell machinery, equipment, materials, products or supplies.
11. Call on prospective customers.
12. Investigage and adjust customer complaints.
13. Evaluate the total operations and make decisions.

FORESTRY AND SOIL CONSERVATION

1. Identify trees of economic importance.
2. Fell, trim, skid and haul logs and pulp.
3. Operate chain saws and other power equipment.
4. Saw, grade, store and haul lumber.
5. Lay out, build and open woods roads.
6. Select, repair and maintain chain saws.
7. Handle inventories, stock control, warehousing reports, payrolls, accounts.
8. Hire, train and supervise workers.
9. Keep, summarize and analyze records.
10. Evaluate the total operation and make decisions.
11. Understand agriculture in our economy.
12. Identify and control common insects and diseases.
13. Arc or oxy-acetylene welding abilities.
14. Operate, maintain and adjust gasoline engines.
15. Operate, maintain and adjust tractors, trucks, agricultural machinery.
16. Farm carpentry.

17. Planning for efficient use of buildings and equipment.
18. Knowledge of paint and painting.

WILDLIFE AND RECREATION

1. Know insurance and safety regulations.
2. Operate turf equipment such as mower, turf, fertilizer spreaders and irrigation equipment.
3. Operate, maintain and adjust gasoline engines.
4. Locate and design drives, walks, fences.
5. Establish lawns.
6. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
7. Arrange, organize and manage an agricultural shop facility.
8. Manage camp grounds and trailer camps.
9. Knowledge of paint and painting.
10. Correct physical defects of sites being landscaped.
11. Provide for insurance.
12. Control birds and animals injurious to plants.
13. Control insects, diseases and weeds.
14. Prepare seed beds.
15. Plant seeds, bulbs, trees or shrubs.
16. Keep essential records.
17. Know public health laws.
18. Select and buy farm machinery or garden tools, equipment and machinery.
19. Farm carpentry.
20. Concrete, masonry and tile skills.
21. Knowledge of fuels and lubricants.
22. Keep, summarize and analyze records.
23. Use fire fighting tools and equipment.
24. Woodworking or metal working tool skills.
25. Knowledge of characteristics and appropriate use of landscaping materials.
26. Handle inventories, stock control, warehousing reports, payrolls, accounts.
27. Prepare tax returns.
28. Operate chain saws and other power equipment.
29. Know game laws.

ORNAMENTAL HORTICULTURE

1. Prepare seed beds.
2. Plant seeds, bulbs, trees or shrubs.
3. Perform proper tillage practices.
4. Operate, maintain and adjust gasoline engines.
5. Control insects, diseases and weeds.
6. Operate, maintain and adjust garden machines and equipment.
7. Maintain trees and shrubs.
8. Maintain lawns.
9. Manage nursery, planting, transplanting, pruning, shaping and trimming.
10. Correct physical defects of sites being landscaped.

11. Knowledge of paint and painting.
12. Make lime or fertilizer recommendations.
13. Choose proper planting sites.
14. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
15. Locate and design drives, walks and fences.
16. Provide seasonal protection to ornamental plants.
17. Decide what to grow.
18. Select varieties.
19. Select seed, cuttings, bulbs or stock plants.
20. Mix soil composites.
21. Knowledge of characteristics and appropriate use of landscaping materials.
22. Select, buy, adjust or maintain lawn and garden sprinkler and irrigation equipment.

FARM SERVICE

1. Investigate and adjust customer complaints.
2. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
3. Keep, summarize and analyze records.
4. Woodworking or metal working tool skills.
5. Arc or oxy-acetylene welding abilities.
6. Operate, maintain and adjust gasoline engines.
7. Call on prospective customers.
8. Understand and use credit.
9. Understand agriculture in our economy.
10. Knowledge of blueprints, space requirements, and building materials for agricultural structures.
11. Operate, maintain and adjust garden machines and equipment.
12. Knowledge of paint and painting.

AGRICULTURAL SERVICE

1. Keep, summarize and analyze records.
2. Evaluate the total operation and make decisions.
3. Understand and use credit.
4. Provide for insurance.
5. Investigate and adjust customer complaints.
6. Comply with local, state and federal government trade and licensing regulations.
7. Call on prospective customers.
8. Display, explain and demonstrate items for sale.
9. Use legal instruments: wills, deeds, contracts, mortgages, notes.
10. Understand agriculture in our economy.
11. Handle inventories, stock control, warehousing reports, payrolls, accounts.
12. Plan and arrange for advertising and promotion.
13. Prepare tax returns.
14. Arc or oxy-acetylene welding abilities.

15. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
16. Knowledge of fuels and lubricants.
17. Operate, maintain and adjust gasoline engines.
18. Woodworking or metal working tool skills.
19. Make job estimates.
20. Knowledge of paint and painting.
21. Hire, train and supervise workers.
22. Order repair parts and new equipment.
23. Control insects, diseases and weeds.
24. Make lime or fertilizer recommendations.
25. Choose proper planting sites.
26. Know insurance and safety regulations.
27. Recommend soil management practices.
28. Provide seasonal protection to ornamental plants.
29. Prepare seed beds.
30. Perform proper tillage practices.
31. Select varieties.

Areas of Agricultural Competency Most Needed by Workers in Eleven Occupational Families

Five areas of agricultural competency (namely plant science; forestry, soil conservation and outdoor recreation; agricultural business; agricultural mechanics, and animal science) were weighted by annual employment opportunities per school district as follows:

1. A separate count was made of the number of competencies needed in the area of plant science by 20 per cent or more of the workers in each occupational family, i.e. Agricultural Machinery Sales and Service, Agricultural Supplies and Equipment, etc. (Poultry Industry was not included because of smallness of sample).

2. A similar count was made for the areas of forestry, soil conservation and outdoor recreation; agricultural business; agricultural mechanics, and animal science.

3. The results were entered in each instance in TABLE VIII under the "No. Comp." headings.

4. The cells containing numbers were shaded to separate them categorically from other cells.

5. The annual (full-time and part-time) employment opportunities per school district per occupational family (in 1969) were entered in the shaded cells under the heading "An. Emp. Op. /School."

6. The total annual employment opportunities per school district in which workers needed each area of competency was determined by addition and entered under "Total Annual Employment Opportunities Per School Needing Each Area of Competency."

TABLE VIII

AREAS OF AGRICULTURAL COMPETENCY MOST NEEDED BY WORKERS IN ELEVEN OCCUPATIONAL FAMILIES - WEIGHTED BY ANNUAL EMPLOYMENT OPPORTUNITIES

Occupational Families → / Areas of Competency ↓	Ag. Mach. S. & S.	Ag. Sup. & Equip.	Dairy M. & P.	Lvstr. M. & P.	Other L. Ind.	Crops M. & P.	For. & S. C.	Wildlife & Rec.	Orn. Hort.	Ag. Service	Farm Service	Total annual employment opportunities per school needing each area of competency
	No.** comp. / An. emp. op/sch***	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	No. comp. / An. emp. op/sch	
Plant Science						3 / 5	14 / -*	8 / 1	30 / 1	10 / 5		12
Forestry, Soil Conservation & Outdoor Recreatipn							29 / -*	17 / 1		2 / 5		6
Agricultural Business	18 / 3	14 / 3	1 / 1	9 / -*	12 / -*	10 / 5	19 / -*	10 / 1	17 / 1	17 / 5	13 / -*	19
Agricultural Mechanics	8 / 3	8 / 3	2 / 1			2 / 5	12 / -*	12 / 1	11 / 1	6 / 5	8 / -*	19
Animal Science			4 / 1	7 / -*	12 / -*						5 / -*	1

*Less than one employment opportunity per school district
**No. comp. = Number of competencies each of which is needed by 20 per cent or more of the workers in this occupational family
***An. emp. op/sch = Annual employment opportunities per school district in this occupational family

Of the 19 annual employment opportunities per school district all were in occupational families where agricultural business competencies were needed, all were in occupational families where agricultural mechanics competencies were needed and 12 were in occupational families where workers needed competencies in plant science. The equivalent of six employment opportunities fell in occupational families needing competencies in forestry, soil conservation and outdoor recreation. One employment opportunity was in occupational families where animal science competencies were needed.

Minimum Education Required for Full-Time Workers in Off-Farm Agricultural Occupations

Employers reported that high school graduation was required for the majority (57 per cent) of full-time workers in off-farm agricultural occupations. TABLE IX. Seventeen per cent were reported to need less than high school education. A similar proportion (18 per cent) were reported to need various levels of education beyond high school.

The 18 per cent of workers in job titles requiring more than a high school education were distributed as follows: post-high school technical education (not a degree), ten per cent; associate or junior college degree, one per cent; some college education (not a degree), three per cent; baccalaureate degree, three per cent, and doctors degree, one per cent.

Employers indicated that level of education was not important for eight per cent of the workers.

B. OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Job Titles of Off-Farm Agricultural Occupations and Proportion of Time Typical Workers Spend on Use of Agricultural Competencies

A total of 76 different job titles of off-farm agricultural occupations were found in the two school districts surveyed in the Adirondack area. All except seven of the job titles were located in the Dictionary of Occupational Titles. 12/ The 76 job titles are listed below by occupational family; in the order by which they were coded for data processing. In each case the job title is preceded by the D. O. T. Code Number (if located) and followed by the proportion of time which employers reported that a typical worker in this job title spent on tasks requiring agricultural competencies.

12/ Ibid.

TABLE IX

MINIMUM EDUCATION REQUIRED FOR FULL-TIME OFF-FARM AGRICULTURAL OCCUPATIONS

Occupational families	Per cent of workers in occupational families where the minimum requirement is									
	Not important	Less than high school graduation	High school graduation	Post-high school technical education (not a degree)	Associate or junior college degree	Some college education (not a degree)	Baccalaureate degree	Master's degree	Doctor's degree	Total
1. Agricultural Machinery Sales and Service	2	1	82	15	-	-	-	-	-	100
2. Agricultural Supplies and Equipment	5	38	54	2	-	-	1	-	-	100
3. Dairy Manufacturing and Processing	-	8	65	27	-	-	-	-	-	100
4. Livestock Marketing and Processing	3	28	65	-	4	-	-	-	-	100
5. Other Livestock Industry	-	25	7	21	4	4	-	-	39	100
6. Poultry Industry	-	-	33	67	-	-	-	-	-	100
7. Crops Marketing and Processing	59	-	27	13	-	-	1	-	-	100
8. Forestry and Soil Conservation	-	-	27	55	-	18	-	-	-	100
9. Wildlife and Recreation	-	10	47	27	2	14	-	-	-	100
10. Ornamental Horticulture	2	11	62	-	-	1	24	-	-	100
11. Farm Service	-	7	29	64	-	-	-	-	-	100
12. Agricultural Service	5	5	59	9	5	13	4	-	-	100
Per cent of all workers	8	17	57	10	1	3	3	-	1	100

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
	AGRICULTURAL SUPPLIES AND EQUIPMENT	
0 - 72.71	* Manager	100
9 - 32.01	* Laborer	100
	DAIRY MANUFACTURING AND PROCESSING	
6 - 06.560	* Milk Inspector	75
	FORESTRY AND SOIL CONSERVATION	
0 - 35.07	Forester	100
0 - 35.07	Forest Ranger	90
0 - 35.03	Conservationist	100
0 - 68.23	* Fire Warden	78
8 - 30.10	Bush Cutter	75
3 - 40.16	Tree Trimming Foreman	85
3 - 40.18	Tree Trimming Groundman	75
5 - 97.901	* Foreman (agriculture and horticulture service)	100
7 - 89.121	Exterminator	100
9 - 61.11	Park Laborer	100
0 - 64.10	Forest Surveyor	100
9 - 54.20	Laborer	95
3 - 40.04	Grounds Keeper	87
	ORNAMENTAL HORTICULTURE	
3 - 38.20	* Manager	100
3 - 38.10	* Flower Raiser	100
3 - 39.10	* Greenhouse Laborer	100
	WILDLIFE AND RECREATION	
0 - 68.06	Fish Hatchery Foreman	100
0 - 35.12	* Wildlife Specialist	100
0 - 94.94	* Fish and Game Warden	50
7 - 61.110	* Park Caretaker	100
0 - 27.08	* Youth Camp Director	50
(Not found in D. O. T.)	* Camp Operator	90
9 - 61.11	* Camp Grounds Caretaker	50

* Found also in one or more of the school districts offering instruction in agriculture during 1963-64.

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
(Not found in D. O. T.)	Ski Slope Maintenance Man	50
(Not found in D. O. T.)	Ski Slope Equipment Operator	50
3 - 40.03	* Golf Course Greens Keeper	50
3 - 40.07	* Golf Course Laborer	50
0 - 88.24	* Marine Engine Mechanic	100
(Not found in D. O. T.)	Ski Slope Manager	90
(Not found in D. O. T.)	Assistant Camp Operator	50
0 - 97.12	Office Manager	90
1 - 05.01	Office Clerk	57
0 - 98.54	Store Manager	90
1 - 01.53	Store Cashier	90
0 - 98.54	* Manager (recreation establishment)	72
(Not found in D. O. T.)	Ski Shop Manager	75
(Not found in D. O. T.)	Assistant Manager	90
2 - 40.51	Recreation Facility Attendant	25
5 - 83.21	* Maintenance Man	93
0 - 27.08	* Camp Director	90
0 - 27.40	* Camp Counselor	69
2 - 61.11	* Lifeguard	90
2 - 40.26	Boat-Ride Operator	90
0 - 35.07	Forest Ranger	100
5 - 23.910	* Heavy Equipment Operator	100
0 - 35.07	Forester	100
1 - 37.12	Stenographer	91
0 - 35.22	Aquatic Biologist	100
9 - 61.11	Park Laborer	80
3 - 97.30	Wildlife Trapper	100
5 - 99.030	* Foreman (government service)	100
0 - 11.10	President, Educational Institution	80
0 - 11.50	College Professor	90
5 - 49.104	Lock Tender	50
1 - 33.01	Secretary	50
0 - 98.57	Municipal Recreation Executive	100
9 - 61.11	Laborer, Municipal Service	50
7 - 49.101	Motorboat Operator	100
0 - 66.41	Sanitary Technician	30
	AGRICULTURAL SERVICE	
0 - 06.71	* Agricultural Journalist	50
1 - 57.10	* Rural Insurance Representative	50
0 - 44.26	* Advertising Layout Man	60
1 - 36.02	Advertising Clerk	50
1 - 05.01	* General Office Clerk	50
0 - 74.21	Merchandise Manager (gift shop)	50
0 - 87.10	* Custodian	100

D. O. T. Number	Job Titles by Occupational Families	Per Cent of Time Workers Use Agricultural Competencies
5 - 30.210	* Plumber	50
0 - 72.71	* Manager	100
5 - 83.611	* Maintenance Man	100
4 - 35.720	Upholsterer	100
5 - 99.050	* Utilities and Maintenace Foreman	90
2 - 84.10	Janitor	100
0 - 16.01	Sanitary Engineer	50

Proportion of Time Devoted to Use of Agricultural Competencies in Various Families of Off-Farm Agricultural Occupations

According to employers' estimates, workers in the 76 off-farm agricultural occupations spent an average of 88 per cent of their work time on tasks requiring agricultural competencies. TABLE X. However, the proportion of time thus spent varied from 25 per cent for some job titles to 100 per cent for others.

Number of Persons Employed During 1964 in Off-Farm Agricultural Occupations in Two School Districts in the Adirondack Area

A total of 218 full-time workers in off-farm agricultural occupations were reported by employers interviewed in the two school districts in the Adirondack area. TABLE XI. One hundred and thirteen (52 per cent) were in 43 job titles in Wildlife and Recreation, 41 (19 per cent) were in 13 job titles in Forestry and Soil Conservation, 36 (17 per cent) were in 14 job titles in Agricultural Service and 24 (11 per cent) were in two job titles in Agricultural Supplies and Equipment.

An additional 165 part-time workers in off-farm agricultural occupations were reported by employers interviewed in the two school districts. The vast majority of part-time workers, 148 (90 per cent) were in 43 job titles in Wildlife and Recreation.

On a per school district basis there were 109 full-time and 83 part-time workers in off-farm agricultural occupations in the two school districts studied in the Adirondack area.

Classification of Workers by Levels of Employment

Employers interviewed in the two school districts of the Adirondack area classified their full-time workers in off-farm agricultural occupations by level of employment as follows: semi-skilled 34 per cent; professional and managerial, 17 per cent each; unskilled eight per cent; technical, clerical, service and skilled, six per cent each and sales less than one per cent. TABLE XII.

TABLE X

PROPORTION OF TIME DEVOTED TO USE OF AGRICULTURAL COMPETENCIES BY FULL-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Occupational families	Number of different job titles	Range[1] (in per cent)	Mean[2] (in per cent)
1. Agricultural Machinery Sales and Service	-	-	-
2. Agricultural Supplies and Equipment	2	100	100
3. Dairy Manufacturing and Processing	1	75	75
4. Livestock Marketing and Processing	-	-	-
5. Other Livestock Industry	-	-	-
6. Poultry Industry	-	-	-
7. Crops Marketing and Processing	-	-	-
8. Forestry and Soil Conservation	12	75-100	92
9. Wildlife and Recreation	30	25-100	87
10. Ornamental Horticulture	3	100	100
11. Farm Service	-	-	-
12. Agricultural Service	14	50-100	85
Totals	62	-	-
Mean for all workers	-	-	88

[1]Between job titles in each occupational family
[2]Weighted by number of workers in each job title

TABLE XI

NUMBER OF PERSONS EMPLOYED IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Occupational families	Number of different job titles represented	Persons employed during 1964			
		Full-time		Part-time	
		Number	Per cent	Number	Per cent
1. Agricultural Machinery Sales and Service	-	-	-	-	-
2. Agricultural Supplies and Equipment	2	24	11	1	-
3. Dairy Manufacturing and Processing	1	1	-	-	-
4. Livestock Marketing and Processing	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-
8. Forestry and Soil Conservation	13	41	19	12	7
9. Wildlife and Recreation	43	113	52	148	90
10. Ornamental Horticulture	3	3	1	3	2
11. Farm Service	-	-	-	-	-
12. Agricultural Service	14	36	17	1	1
Totals	76	218	100	165	100
Per school district	-	109	-	83	-

TABLE XII

CLASSIFICATION OF FULL-TIME WORKERS BY LEVELS OF EMPLOYMENT IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Occupational families	Number of workers classified									
	Professional	Managerial	Technical	Clerical	Sales	Service	Skilled	Semi-skilled	Unskilled	Totals
1. Agricultural Machinery Sales and Service	-	-	-	-	-	-	-	-	-	-
2. Agricultural Supplies and Equipment	-	6	-	-	-	-	-	18	-	24
3. Dairy Manufacturing and Processing	1	-	-	-	-	-	-	-	-	1
4. Livestock Marketing and Processing	-	-	-	-	-	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-	-	-	-	-	-
8. Forestry and Soil Conservation	10	4	11	-	-	-	2	14	-	41
9. Wildlife and Recreation	22	23	2	9	-	13	6	23	15	113
10. Ornamental Horticulture	1	1	-	-	-	-	-	1	-	3
11. Farm Service	-	-	-	-	-	-	-	-	-	-
12. Agricultural Service	3	4	-	3	1	-	4	18	3	36
Totals	37	38	13	12	1	13	12	74	18	218
Per cent	17	17	6	6	-	6	6	34	8	100

Part-time workers were classified by employers as follows: unskilled 30 per cent, service 24 per cent, semi-skilled 18 per cent, skilled nine per cent, clerical seven per cent, technical six per cent, managerial five per cent, and sales one per cent. TABLE XIII.

Number of Persons Employers Predict Will Be Employed in 1969 in Off-Farm Agricultural Occupations in Two School Districts in the Adirondack Area

Employers in the two school districts predicted that they would employ 287 full-time workers in off-farm agricultural occupations by 1969; compared to 218 in 1964. TABLE XIV. Of the 287 full-time workers it was predicted that 146 (51 per cent) would be in 43 job titles in Wildlife and Recreation, 65 (23 per cent) would be in 13 job titles in Forestry and Soil Conservation, 48 (17 per cent) would be in 14 job titles in Agricultural Service and 24 (eight per cent) would be in two job titles in Agricultural Supplies and Equipment.

Employers further predicted that they would employ 211 part-time workers in off-farm agricultural occupations by 1969; compared to 165 in 1964. Of the 211 it was predicted that 185 (88 per cent) would be in 43 job titles in Wildlife and Recreation and 20 (ten per cent) would be in 13 job titles in Forestry and Soil Conservation.

On a per school district basis, it appeared that there would be an average of 144 persons employed full-time and 106 persons employed part-time in off-farm agricultural occupations in 1969 in the two school districts studied in the Adirondack area.

The predicted increase of 69 full-time workers represented a 32 per cent growth rate over the five-year period. The study also indicated that the most rapid rate of growth for full-time workers would take place in Forestry and Soil Conservation (59 per cent), Agricultural Service (33 per cent) and Wildlife and Recreation (29 per cent).

The predicted increase of 46 part-time workers represented a 28 per cent growth rate over the five-year period. The study also revealed that the most rapid rate of growth for part-time workers would take place in Forestry and Conservation (67 per cent).

Employment Opportunities Outlook in Off-Farm Agricultural Occupations in Two School Districts in the Adirondack Area, 1964-69

It was estimated that during the five-year period 1964-69, a total of 314 employment opportunities would be available in the off-farm agricultural occupations in the two school districts. TABLE XV. Of this number, 148 would be in full-time jobs and 166 would be in part-time employment. An individual school district might anticipate 157 employment opportunities over the five-year period; 74 full-time and 83 part-time. On a per school district, per year basis, the study showed an average of 31 employment opportunities; 15 in full-time and 16 in part-time jobs. It should be emphasized that this estimate did not include those who would enter farming or those who would find employment in off-farm agricultural occupations outside of the two school districts.

TABLE XIII

CLASSIFICATION OF PART-TIME WORKERS BY LEVELS OF EMPLOYMENT IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Occupational families	Number of workers classified									Totals
	Professional	Managerial	Technical	Clerical	Sales	Service	Skilled	Semi-skilled	Unskilled	
1. Agricultural Machinery Sales and Service	-	-	-	-	-	-	-	-	-	-
2. Agricultural Supplies and Equipment	-	1	-	-	-	-	-	-	-	1
3. Dairy Manufacturing and Processing	-	-	-	-	-	-	-	-	-	-
4. Livestock Marketing and Processing	-	-	-	-	-	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-	-	-	-	-	-
8. Forestry and Soil Conservation	-	-	-	-	-	-	2	1	9	12
9. Wildlife and Recreation	-	7	10	10	2	40	13	25	41	148
10. Ornamental Horticulture	-	-	-	-	-	-	-	3	-	3
11. Farm Service	-	-	-	-	-	-	-	-	-	-
12. Agricultural Service	-	-	-	1	-	-	-	-	-	1
Totals	-	8	10	11	2	40	15	29	50	165
Per cent	-	5	6	7	1	24	9	18	30	100

TABLE XIV

NUMBER OF PERSONS EMPLOYERS PREDICT WILL BE EMPLOYED IN 1969 IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Occupational families	Number of different job titles represented	Predicted employment 1969					
		Full-time			Part-time		
		Number	Per cent	Per cent increase over 1964	Number	Per cent	Per cent increase over 1964
1. Agricultural Machinery Sales and Service	-	-	-	-	-	-	-
2. Agricultural Supplies and Equipment	2	24	8	-	1	-	-
3. Dairy Manufacturing and Processing	1	1	-	-	-	-	-
4. Livestock Marketing and Processing	-	-	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-	-	-
8. Forestry and Soil Conservation	13	65	23	59	20	10	67
9. Wildlife and Recreation	43	146	51	29	185	88	25
10. Ornamental Horticulture	3	3	1	-	3	1	-
11. Farm Service	-	-	-	-	-	-	-
12. Agricultural Service	14	48	17	33	2	1	50
Totals	76	287	100	-	211	100	-
Per school district	-	144	-	32	106	-	28

TABLE XV

EMPLOYMENT OPPORTUNITIES OUTLOOK IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1965-69

Occupational families	Employment opportunities by years									
	1965		1966		1967		1968		1969	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
1. Agricultural Machinery Sales and Service	-		-		-		-		-	
2. Agricultural Supplies and Equipment	1	*	1	*	1	*	1	*	1	*
3. Dairy Manufacturing and Processing	*	-	*	-	*	-	*	-	*	-
4. Livestock Marketing and Processing	-	-	-	-	-	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-	-	-	-	-	-
8. Forestry and Soil Conservation	8	4	8	4	8	4	8	4	9	5
9. Wildlife and Recreation	15	25	15	26	16	27	16	28	17	29
10. Ornamental Horticulture	*	1	*	1	*	1	*	1	*	1
11. Farm Service	-	-	-	-	-	-	-	-	-	-
12. Agricultural Service	4	1	4	1	5	1	5	1	5	1
Totals	28	31	28	32	30	33	30	34	32	36
Per school district	14	15.5	14	16	15	16.5	15	17	16	18

* Less than one

Employment opportunities for full-time workers were highest in Wildlife and Recreation, Forestry and Soil Conservation and Agricultural Service. Opportunities for part-time workers were greatest in Wildlife and Recreation, and Forestry and Soil Conservation.

Agricultural Competencies Needed by Workers in Off-Farm Agricultural Occupations in Two School Districts in the Adirondack Area

The agricultural competencies cited by employers as most frequently needed by their workers are listed below for each occupational family. They are listed in rank order beginning with the one needed by the highest proportion of full-time workers in each occupational family. Only the top quartile of the rankings are listed. Complete lists may be found in APPENDIX E.

In the cases of Agricultural Supplies and Equipment and Dairy Manufacturing and Processing, it was impossible to follow this procedure because all of the needed competencies received equal ranking; therefore, all are listed with no inherent order.

AGRICULTURAL SUPPLIES AND EQUIPMENT

1. Use fire fighting tools and equipment.
2. Operate chain saws and other power equipment.
3. Maintain fire fighting tools and equipment.
4. Select, repair and maintain chain saws.
5. Keep essential records.
6. Know insurance and safety regulations.
7. Plan and arrange for advertising and promotion.
8. Handle inventories, stock control, warehousing reports, payroll, accounts.
9. Sell machinery, equipment, materials, products or supplies.
10. Make job estimates.
11. Purchase goods to sell.
12. Hire, train and supervise workers.
13. Call on prospective customers.
14. Investigate and adjust customer complaints.
15. Display, explain and demonstrate items for sale.
16. Order repair parts and new equipment.
17. Use legal instruments: wills, deeds, contracts, mortgages, notes.
18. Keep, summarize, and analyze records.
19. Evaluate the total operation and make decisions.
20. Understand and use credit.
21. Comply with local, state and federal government trade and licensing regulations.
22. Provide for insurance.
23. Prepare tax returns.
24. Understand agriculture in our economy.
25. Select and buy farm machinery or garden tools, equipment, and machinery.
26. Select, buy, adjust or maintain lawn and garden sprinkler and irrigation equipment.

27. Operate, maintain and adjust gasoline engines.
28. Knowledge of blueprints, space requirements and building materials for agricultural structures.
29. Arrange, organize, and manage an agricultural shop facility.
30. Knowledge of fuels and lubricants.
31. Planning for efficient use of buildings and equipment.
32. Install and use materials handling equipment.
33. Knowledge of paint and painting.

DAIRY MANUFACTURING AND PROCESSING

1. Manage streams and ponds.
2. Keep essential records.
3. Know public health laws.
4. Know insurance and safety regulations.
5. Manage camp grounds and trailer camps.
6. Hire, train and supervise workers.
7. Use legal instruments: wills, deeds, contracts, mortgages, notes.
8. Keep, summarize and analyze records.
9. Evaluate the total operation and make decisions.
10. Understand agriculture in our economy.
11. Plan, install and adjust water or sewage systems.
12. Knowledge of blueprints, space requirements and building materials for agricultural structures.
13. Concrete, masonry, and tile skills.
14. Planning for efficient use of buildings and equipment.
15. Install and use materials handling equipment.
16. Knowledge of paint and painting.
17. Housing and handling.
18. Feeding requirements and practices.
19. Sanitation and disease control practices.
20. Produce high quality products.
21. Knowledge of grades and standards.
22. Ability to test animal products.
23. Knowledge of markets and marketing practices.

FORESTRY AND SOIL CONSERVATION

1. Keep essential records.
2. Make job estimates.
3. Identify trees of economic importance.
4. Use fire fighting tools and equipment.
5. Operate chain saws and other power equipment.
6. Maintain fire fighting tools and equipment.
7. Detect and report forest fires.
8. Hire, train and supervise workers.
9. Operate, maintain and adjust diesel engines.
10. Read a topographical map.
11. Fell, trim, skid and haul logs and pulp.
12. Knowledge of fuels and lubricants.
13. Know insurance and safety regulations.

14. Understand agriculture in our economy.
15. Organize a fire crew.
16. Lay out, build and open woods roads.
17. Select, repair and maintain chain saws.
18. Knowledge of paint and painting.
19. Maintain trees and shrubs.
20. Scale and grade saw logs.
21. Handle inventories, stock control, warehousing, reports, payrolls, accounts.
22. Keep, summarize and analyze records.
23. Know public health laws.
24. Repair and maintain tree planting equipment.
25. Identify and control common insects and diseases.
26. Determine land use capabilities.
27. Order repair parts and new equipment.
28. Evaluate the total operation and make decisions.

WILDLIFE AND RECREATION

1. Knowledge of paint and painting.
2. Knowledge of fuels and lubricants.
3. Operate, maintain and adjust gasoline engines.
4. Farm carpentry.
5. Operate, maintain and adjust garden machines and equipment.
6. Plan, install and adjust water or sewage systems.
7. Use fire fighting tools and equipment.
8. Operate boats and motors.
9. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
10. Concrete, masonry and tile skills.
11. Operate chain saws and other power equipment.
12. Maintain and keep fire fighting tools and equipment.
13. Maintain and repair boats and motors.
14. Woodworking or metal working tool skills.
15. Keep essential records.
16. Fell, trim, skid and haul logs and pulp.
17. Know insurance and safety regulations.
18. Order repair parts and new equipment.
19. Keep, summarize and analyze records.
20. Plan, install, repair and maintain electrical systems.
21. Detect and report forest fires.
22. Planning for efficient use of buildings and equipment.
23. Handle inventories, stock control, warehousing reports, payrolls, accounts.
24. Know public health laws.
25. Comply with local, state and federal government trade and licensing regulations.
26. Know game laws.
27. Evaluate the total operation and make decisions.
28. Identify trees of economic importance.
29. Understand agriculture in our economy.
30. Arc or oxy-acetylene welding abilities.

ORNAMENTAL HORTICULTURE

1. Mix soil composites.
2. Sterilize soil.
3. Prepare seed beds.
4. Select and use appropriate plant propagation methods.
5. Determine proper rooting medium.
6. Plant seeds, bulbs, trees or shrubs.
7. Perform proper tillage practices.
8. Design and make flower arrangements, corsages, floral pieces and Christmas decorations.
9. Maintain lawns.
10. Maintain trees and shrubs.
11. Provide seasonal protection for ornamental plants.
12. Harvest crops or plants.
13. Process, grade or package.
14. Shipping or storing.
15. Maintain and repair turf equipment such as mowers, fertilizer spreaders, and irrigation equipment.
16. Operate turf equipment such as mowers, fertilizer spreaders and irrigation equipment.
17. Sell machinery, equipment, materials, products or supplies.
18. Purchase goods to sell.
19. Display, explain and demonstrate items for sale.
20. Woodworking or metal working skills.
21. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.
22. Operate, maintain and adjust gasoline engines.
23. Operate, maintain and adjust garden machines and equipment.
24. Construct and maintain greehouses, headhouses, pathhouses, or toolsheds.
25. Knowledge of paint and painting.

AGRICULTURAL SERVICE

1. Know insurance and safety regulations.
2. Knowledge of paint and painting.
3. Operate, maintain and adjust gasoline engines.
4. Knowledge of fuels and lubricants.
5. Use fire fighting tools and equipment.
6. Operate turf equipment such as mowers, fertilizer spreaders and irrigation equipment.
7. Sanitation and disease control practices.
8. Operate chain saws and other power equipment.
9. Maintain fire fighting tools and equipment.
10. Maintain and repair turf equipment such as mowers, fertilizer spreaders, irrigation equipment.
11. Operate, maintain and adjust garden machines and equipment.
12. Maintain lawns.
13. Maintain trees and shrubs.
14. Know public health laws.
15. Organize a fire crew.

16. Control soil erosion.
17. Shipping and storing.
18. Read a topographical map.
19. Keep, summarize and analyze records.
20. Woodworking or metal working tool skills.
21. Keep essential records.
22. Maintain and repair boat coverings.
23. Make job estimates.
24. Use legal instruments: wills, deeds, contracts, mortgages, notes.
25. Evaluate the total operation and make decisions.
26. Plan, install and adjust water or sewage systems.
27. Knowledge of blueprints, space requirements and building materials for agricultural structures.
28. Farm carpentry.

Areas of Agricultural Competency Most Needed by Workers in Various Occupational Families

The five areas of agricultural competency - plant science; forestry, soil conservation and outdoor recreation; agricultural business; agricultural mechanics, and animal science - were weighted by annual employment opportunities per school district, using the procedure described on page 73, and the results were entered in TABLE XVI.

All of the 33 annual employment opportunities per school district were in occupational families where forestry, soil conservation and outdoor recreation; agricultural business, and agricultural mechanics competencies were needed. Ten annual employment opportunities per school district were in occupational families where plant science competencies were needed. Three annual employment opportunities fell in occupational families needing competencies in animal science.

Minimum Education Required for Off-Farm Agricultural Occupations in Two School Districts in the Adirondack Area

Employers reported that high school graduation was required for 37 per cent and that less than high school education was required for 11 per cent of the full-time workers in off-farm agricultural occupations in the two school districts. TABLE XVII. They also reported that post-high school technical education (not a degree) was required for 29 per cent of the workers, baccalaureate degree for 11 per cent, associate or junior college degree for five per cent, masters degree for five per cent and some college education (not a degree) for two per cent of the workers.

TABLE XVI

AREAS OF AGRICULTURAL COMPETENCY MOST NEEDED BY WORKERS IN SIX OCCUPATIONAL FAMILIES IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA - WEIGHTED BY ANNUAL EMPLOYMENT OPPORTUNITIES PER SCHOOL DISTRICT, 1969

Areas of competency	Ag. Sup. & Equip.		Dairy M. & P.		Forestry & Soil Conservation		Wildlife and Recreation		Orn. Hort.		Agric. Service		Total annual employment opportunities per school needing each area of competency
	No.** comp.	An. emp. op/sch***	No. comp.	An. emp. op/sch	No. comp.	An. emp. op/sch	No. comp.	An. emp. op/sch	No. comp.	An. emp. op/sch	No. comp.	An. emp. op/sch	
Plant Science					12	7			30	*	3	3	10
Forestry, Soil Conservation & Outdoor Rec.	6	1	5	*	28	7	25	22	10	*	14	3	33
Agricultural Business	18	1	5	*	12	7	12	22	17	*	12	3	33
Agricultural Mechanics	9	1	6	*	11	7	13	22	15	*	15	3	33
Animal Science			7	*							1	3	3

* Less than one

** No. comp. = Number of competencies each of which is needed by 20 per cent or more of the workers in this occupational family.

*** An. emp. op/sch = Annual employment opportunities per school district in this occupational family.

TABLE XVII

MIMIMUM EDUCATION REQUIRED FOR FULL-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA, 1964

Occupational families	Per cent of workers in occupational families where the minimum requirement is									
	Less than high school graduation	High school graduation	Post-high school tech. ed. (no deg.)	Assoc. or jr. coll. degree	Some college ed. (no deg.)	Baccalaureate degree	Master's degree	Doctor's degree	Not important	Total
1. Agricultural Machinery Sales and Service	-	-	-	-	-	-	-	-	-	-
2. Agricultural Supplies and Equipment	-	-	100	-	-	-	-	-	-	100
3. Dairy Manufacturing and Processing	-	-	-	-	-	100	-	-	-	100
4. Livestock Marketing and Processing	-	-	-	-	-	-	-	-	-	-
5. Other Livestock Industry	-	-	-	-	-	-	-	-	-	-
6. Poultry Industry	-	-	-	-	-	-	-	-	-	-
7. Crops Marketing and Processing	-	-	-	-	-	-	-	-	-	-
8. Forestry and Soil Conservation	2	42	37	12	-	7	-	-	-	100
9. Wildlife and Recreation	18	42	12	4	1	13	10	-	-	100
10. Ornamental Horticulture	-	34	-	-	33	33	-	-	-	100
11. Farm Service	-	-	-	-	-	-	-	-	-	-
12. Agricultural Service	8	44	31	-	6	11	-	-	-	100
Per cent of all workers	11	37	29	5	2	11	5	-	-	100

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER STUDY

The following conclusions, implications and recommendations for further study were made and interpreted within the framework of the basic assumptions underlying the study and with due recognition given to the previously stated limitations.

A. CONCLUSIONS

Concerning School Districts Offering Instruction in Agriculture

1. Off-farm agricultural occupations are found in businesses or services with diverse functions. Although concentrated most heavily in service and retail sales, they are also found in manufacturing or processing, wholesaling, recreation, specialized agricultural production (other than farming) and education.

2. The job titles of most off-farm agricultural occupations can be found in the Dictionary of Occupational Titles. 13/ However, they are usually classified under headings other than agriculture.

3. There is a vast array of separate and distinct job titles in which workers use agricultural competencies. Two hundred and thirteen were identified in this phase of the study (plus 43 additional titles in the Adirondack area). The proportion of time devoted to the use of such competencies on the job varies widely with job titles. However, on the average, workers in off-farm agricultural occupations use agricultural competencies a high proportion of the time (in this study 83 per cent). The average for workers in the various occupational families vary but little in this regard.

4. The number of persons employed in off-farm agricultural occupations is substantial. It was estimated that 28,685 full-time workers and 16,841 part-time workers were thus employed in the 260 school districts offering agricultural instruction during the school year 1963-64. On a per school district basis it was estimated that there were 110 full-time and 65 part-time persons so employed.

5. Although full-time workers in off-farm agricultural occupations are found at all levels of employment, they are most frequently found in semi-skilled, skilled and managerial positions. Part-time workers are most likely to be found in semi-skilled positions.

6. The number of persons employed in off-farm agricultural occupations is increasing. Employers' estimates indicate a growth rate of 19 per cent for full-time workers between 1964 and 1969, and a growth rate of 13 per cent in part-time workers during the same period.

13/ Ibid.

7. The employment opportunities outlook in off-farm agricultural occupations is favorable. It is estimated that 14,085 full-time and 9,948 part-time employment opportunities will be available in such occupations during the five-year period 1964-69 in the 260 school districts studied. In view of the fact that no large urban areas were included in the study and that approximately one-third of the school districts in the State offer instruction in agriculture, it is entirely possible that several times the 4,807 employment opportunities found in this study will be available each year for the foreseeable future in New York State.

8. When the areas of agricultural competency most needed by workers in the several occupational families are weighted by the annual employment opportunities per school district, it appears that training programs should emphasize the development of competencies in:

   (a) Agricultural business and agricultural mechanics for prospective workers in all occupational families.
   (b) Plant science for prospective workers in Crops Marketing and Processing, Forestry and Soil Conservation, Wildlife and Recreation, Ornamental Horticulture and Agricultural Service occupations.
   (c) Animal science for prospective workers in Dairy Manufacturing and Processing, Livestock Marketing and Processing, Other Livestock Industry and Farm Service occupations.
   (d) Forestry, Conservation and Outdoor Recreation for prospective workers in these fields.

9. A high school education is sufficient for full-time workers in the vast majority of off-farm agricultural occupations but advanced training is a definite requirement in some job titles. Employer reports indicate that only 17 per cent of such workers need more than a high school education. However, job titles such as county agricultural agent, teacher of agriculture and veterinarian require advanced training for entrance.

Concerning School Districts in the Adirondack Area

1. Off-farm agricultural occupations are found most frequently in businesses or services whose main functions are service, recreation or retail sales. However, they are also found occasionally in businesses or services whose main functions are education and specialized agricultural production (other than farming).

2. The job titles of most off-farm agricultural occupations can be found in the Dictionary of Occupational Titles. 14/ However, they are usually classified under headings other than agriculture.

14/ Ibid.

3. There is a vast array of job titles in which workers use agricultural competencies. Seventy-six such job titles were located in the two school districts studied in the Adirondack area. The proportion of time devoted to the use of such competencies varies widely with job titles. However, on the average, workers in off-farm agricultural occupations use agricultural competencies a high proportion of the time (in this study 88 per cent).

4. The number of persons employed in off-farm agricultural occupations is substantial. An average of 109 full-time and 83 part-time persons were so employed in the two school districts studied in the Adirondack area.

5. Full-time workers in off-farm agricultural occupations are found at all levels of employment but most frequently in semi-skilled, managerial and professional positions. Part-time workers are most likely to be found in unskilled, service and semi-skilled jobs.

6. Employment in off-farm agricultural occupations is increasing. Employers estimates indicate a growth rate of 32 per cent for full-time workers between 1964 and 1969, and a growth rate of 28 per cent for part-time workers during the same period.

7. The outlook for employment opportunities in off-farm agricultural occupations is favorable. It is estimated that there will be 314 (148 full-time and 166 part-time) employment opportunities in such occupations during the five-year period 1964-69 in the two school districts studied. An average of 31 annual employment opportunities (15 in full-time and 16 in part-time jobs) are indicated per school district; not counting employment opportunities outside of the school district.

8. Training programs for off-farm agricultural occupations in the Adirondack area should emphasize development of the agricultural competencies needed in three occupational families: Wildlife and Recreation, Forestry and Soil Conservation and Agricultural Service. The higheset priorities in such training programs should be placed on the development of appropriate competencies in the areas of agricultural mechanics; agricultural business, and forestry, conservation and outdoor recreation.

9. A high school education is sufficient for approximately one-half of the workers in full-time off-farm agricultural occupations in the Adirondack area. Employer reports indicate that varying degrees of advanced training are required for the remaining positions.

B. IMPLICATIONS

1. High school agriculture programs in New York State must be vastly expanded if the demand for workers in the off-farm agricultural occupations is to be filled with agriculturally trained individuals. Existing high school agriculture programs in the State are graduating approximately 1,558 young men (1964). Of this number, approximately 431 enter farming immediately, 420 continue their education full-time in colleges or other schools, and 220 enter the armed forces. Approximately 487 are available to compete for the estimated 2,817 annual employment opportunities in off-farm agricultural occupations in their own school districts; not to mention employment opportunities in school districts not offering instruction in agriculture or those in large urban centers. The Vocational Education Act of 1963 clearly states that "any amounts allotted ... for agriculture (instruction) may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects whether or not such occupations involve work of the farm ..." 15/

2. The employment opportunities outlook in off-farm agricultural occupations provides justification for the inclusion of the agricultural program in the developing area vocational schools. For example, an area vocational school established in a non-metropolitan area of New York State, serving eight school districts, could anticipate approximately 152 annual employment opportunities (88 full-time and 64 part-time) for which graduates in off-farm agricultural occupations could compete within the area served, and a somewhat larger number in the Adirondack area.

3. The expanded agriculture program in area vocational schools in non-metropolitan areas should include training in agricultural business, agricultural mechanics and plant science; in addition to preparation for farming where needed. In the Adirondack area training programs should emphasize the needs of workers in Wildlife and Recreation, Forestry and Agricultural Service occupations.

4. The agriculture course of study in school districts presently offering instruction in agriculture should be expanded to provide greater opportunity for preparation for off-farm agricultural occupations.

5. Training programs for off-farm agricultural occupations should embrace the areas of agricultural competency most needed by workers in those families and groups of families of occupations in which the largest proportion of employment opportunities are found in the geographical area in which the school plans to place its graduates. The findings of this study suggest that the agricultural competencies needed by workers in the several job titles of closely related families of occupations are sufficiently similar to provide a logical core for instructional programs.

15/ Committee on Labor and Public Welfare, United States Senate, loc. cit.

6. The State Education Department should develop suggested courses of study in Agricultural Business; Agricultural Mechanics; Plant Science; Forestry, Conservation and Outdoor Recreation which are based on the agricultural competencies needed by workers in off-farm agricultural occupations. This material should then be made readily available for the guidance of school administrators, guidance counselors and other persons charged with responsibility for planning educational programs.

7. It is apparent that many school districts adjoining or near those presently offering instruction in agriculture are very likely to have employment opportunities in off-farm agricultural occupations which would justify offering agricultural instruction either on their own or as a program of a Board of Cooperative Educational Service.

8. Certification requirements and pre-service training programs for teachers of agriculture presently based on the needs of students preparing for farming should be revised in view of the competencies needed by workers in off-farm agricultural occupations.

9. In-service training programs for employed teachers will be needed to assist them in acquiring the essential competencies needed for implementing training programs in off-farm agricultural occupations.

C. RECOMMENDATIONS FOR FURTHER STUDY

Some of the urgently needed research in the area of off-farm agricultural occupations includes:

1. A study utilizing a sample selected in such a way that the researchers could make projections beyond the school districts offering instruction in agriculture.

2. A concentrated study of off-farm agricultural occupations in the urban areas of New York State.

3. Pilot programs to try out and refine training programs in agricultural business; agricultural mechanics; plant science, and forestry, conservation and rural recreation for persons in off-farm agricultural occupations.

4. A study of work experience programs appropriate for persons in off-farm agricultural occupations.

5. The development of appropriate tests to determine aptitutde for and interest in various fields of off-farm agricultural occupations.

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APPENDIX A

EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK STATE

Date of Interview _____

Interviewer _____

FORM A

Business or Service Information

Instruction:	Complete a FORM A for each business or service employing one or more persons (including proprietor) who need agricultural competencies.

I. Name of Business or Service _____

Address _____

II. Name of Person Interviewed _____

III. Telephone Number of Person Interviewed (Area Code) _____ (No.) _____

(Extension) _____

DO NOT WRITE IN THIS SECTION	
School District Code Number	

IV. Business or Service Identification Number [ ][ ][ ]

V. Main Function(s) of Business or Service. (Indicate by placing a 1 on the line preceding main function and a 2 on the line preceding secondary function, if any.

_____1. Retail Sales
_____2. Service
_____3. Manufacturing or Processing
_____4. Education
_____5. Wholesaling
_____6. Specialized Agricultural Production
_____7. Recreation
_____8. Other (list) _____

Use This Area For Matching Sections I and II of FORM B

EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK STATE

FORM B

SECTION I

Instruction: Complete a separate copy of this form for each and every different job title in which agricultural competencies are needed at each business or service establishment.

DO NOT WRITE IN THIS SECTION

School District Code Number ____

I. Business or Service Identification Number [ ][ ][ ]
(Must always agree with FORM A for this business or service - NEVER LEAVE BLANK)

II. Occupational Family and Job Title

A. Occupational Family _____

B. Job Title _____
(Use back of this page to describe this job)

DO NOT WRITE IN THIS SECTION

Job Title Code Number [ ][ ][ ][ ]

C. Level of Employment of this Job Title. Check (√) one.

____1. Professional	____4. Clerical	____7. Skilled
____2. Managerial	____5. Sales	____8. Semi-skilled
____3. Technical	____6. Service	____9. Unskilled

III. Outlook for Employment in This Job Title

Employment Status	Number of Employees This Year	Number of Employees Expected Five Years from Now	Number of Years an Employee Usually Stays in this Job Title
Full-time	____1.	____2.	____3.
Part-time	____4.	____5.	____6.

DESCRIPTION OF JOB TITLE

List of Duties of Employee - What He Does	To What Does He Do This?	Where Is This Duty Performed?
1.		
2.		
3.		

Instruction: Circle the number above preceding the duty to which he devotes the most time.

EXAMPLE

List of Duties of Employee - What He Does	To What Does He Do This?	Where Is This Duty Performed?
1. Sells supplies	Picnic foods	At campsite
2. Cleans up	Camp grounds	Outside
3. Answers inquiries	Campers	Outside

Use This Area For Matching SECTIONS I And II of FORM B

FORM B

SECTION II

Instructions:
1. Complete a separate SECTION II for each and every different job title in each occupational family the first time it is encountered.
2. Do not complete a second SECTION II for the same job title in the same occupational family.
3. When you have completed SECTION II staple it to the completed FORM B, SECTION I for this job title in this business or service.

I. Agricultural Competencies Needed in this Job Title.

Directions: 1. Circle the number preceding each of the following competencies needed by a typical employee holding this job title in this business or service.
2. Write in additional competencies needed in appropriate blank spaces and circle the numbers preceding your additions.

Plant Science

(27) 1. Sample soil for complete test.
2. Perform ph or nutrient tests.
3. Make lime or fertilizer recommendations.
4. Recommend soil management practices.
5. Decide what to grow.
6. Choose proper planting sites.
7. Mix soil composites.
8. Sterilize soil.
9. Select varieties.
10. Select seed, cuttings, bulbs or stock plants.

(28) 11. Prepare seed bed.
12. Select and use appropriate plant propagation methods.
13. Determine proper rooting medium.
14. Plant seeds, bulbs, trees or shrubs.
15. Perform proper tillage practices.
16. Control birds and animals injurious to plants.
17. Control insects, diseases and weeds.
18. Manage greenhouse, provide proper environment, forcing and shading.
19. Manage nursery, planting, transplanting, pruning, shaping and trimming.
20. Design and make flower arrangements, corsages, floral pieces and Christmas decorations.

(29) 21. Knowledge of characteristics and appropriate use of landscaping materials.
22. Design landscaping plans to effectively use trees, shrubs, lawn, foundation plantings, vines and ground covers, annual and perennial flowers.
23. Correct physical defects of sites being landscaped.
24. Locate and design drives, walks, fences.
25. Establish lawns.
26. Maintain lawns.
27. Maintain trees and shrubs.
28. Provide seasonal protection to ornamental plants.
29. Harvest crops or plants.
30. Process, grade or package.

(30) 31. Shipping or storing.
32.
33.
34.
35.
36.
37.
38.
39.
40.

Forestry, Conservation and Rural Recreation

(33) 41. Identify trees of economic importance.
42. Reforest an area.
43. Manage reforested area.
44. Manage Christmas tree plantations.
45. Select and mark trees for cutting.
46. Estimate volume and tree stands.
47. Identify and control common insects and diseases.
48. Construct and maintain fire lanes.
49. Use fire fighting tools and equipment.
50. Detect and report forest fires.

(34) 51. Organize a fire crew.
52. Read a topographical map.
53. Scale and grade saw logs.
54. Fell, trim, skid and haul logs and pulp.
55. Operate chain saws and other power equipment.
56. Cut, bail, load, grade and haul Christmas trees.
57. Saw, grade, store and haul lumber.
58. Tap trees and operate maple syrup production equipment.
59. Control soil erosion.
60. Determine land use capabilities.

(35) 61. Repair and maintain tree planting equipment.
62. Maintain fire fighting tools and equipment.
63. Lay out, build and open woods roads.
64. Select, repair and maintain chain saws.
65. Maintain and repair turf equipment such as mowers, fertilizer spreaders and irrigation equipment.
66. Maintain and repair ski tows and lifts.
67. Maintain and repair boats and motors.
68. Identify economically important wildlife species.
69. Trap and control nuisance wildlife.
70. Provide habitat for bird and animal life.

(36) 71. Stock streams and ponds.
72. Manage wildlife in confinement.
73. Know game laws.
74. Manage streams and ponds.
75. Keep essential records.
76. Know public health laws.
77. Know insurance and safety regulations.
78. Manage camp grounds and trailer camps.
79. Care for riding horses.
80. Know fishing and hunting skills.

(37) 81. Operate turf equipment such as mower, fertilizer spreaders and irrigation equipment.
82. Manage ski tow slopes and trails.
83. Layout and maintain hiking trails.
84. Operate boats and motors.
85.
86.
87.
88.
89.
90.

Agricultural Business Management

(40) 91. Plan and arrange for advertising and promotion.
92. Handle inventories, stock control, warehousing reports, payrolls, accounts.
93. Sell machinery, equipment, materials, products or supplies.
94. Solicit subscribers to various types of agricultural service.
95. Make job estimates.
96. Purchase goods to sell.
97. Supervise installation of equipment.
98. Hire, train and supervise workers.
99. Call on prospective customers.
100. Investigate and adjust customer complaints.

(41) 101. Display, explain and demonstrate items for sale.
102. Order repair parts and new equipment.
103. Use legal instruments: wills, deeds, contracts, mortgages, notes.
104. Keep, summarize and analyze records.
105. Evaluate the total operation and make decisions.
106. Understand and use credit.
107. Comply with local, state and federal government trade and licensing regulations.
108. Provide for insurance.
109. Prepare tax returns.
110. Understand agriculture in our economy.

(42) 111.
112.
113.
114.
115.
116.
117.
118.
119.
120.

Agricultural Mechanics

(44) 121. Select and buy farm machinery or garden tools, equipment and machinery.
122. Select, buy, adjust or maintain lawn and garden sprinkler and irrigation equipment.
123. Woodworking or metal working tool skills.
124. Arc or oxy-acetylene welding abilities.
125. Operate, maintain and adjust gasoline engines.
126. Operate, maintain and adjust diesel engines.
127. Plan, install and adjust water or sewage systems.
128. Knowledge of blueprints, space requirements and building materials for agricultural structures.
129. Plan, install, repair and maintain electrical systems.
130. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.

(45) 131. Operate, maintain and adjust garden machines and equipment.
132. Arrange, organize and manage an agricultural shop facility.
133. Farm carpentry.
134. Concrete, masonry and tile skills.
135. Knowledge of fuels and lubricants.
136. Planning for efficient use of buildings and equipment.
137. Install and use materials handling equipment.
138. Construct and maintain greenhouses, headhouses, pathhouses, or toolsheds.
139. Knowledge of paint and painting.
140.

(46) 141.
142.
143.
144.
145.
146.
147.
148.
149.
150.

Animal Science

(48) 151. Select and secure quality stock.
152. Housing and handling.
153. Feeding requirements and practices.
154. Knowledge of breeding principles and practices.
155. Sanitation and disease control practices.
156. Keep production, breeding and financial records.
157. Use records to improve feeding, breeding and other practices.
158. Produce high quality products.
159. Knowledge of grades and standards.
160. Ability to test animal products.

(49) 161. Knowledge of markets and marketing practices.
162. Cut meat.
163.
164.
165.
166.
167.
168.
169.
170.

II. Proportion of Time a Typical Worker with this Job Title Spends on Tasks Requiring the Agricultural Competencies Circled Above.

Directions: Record to nearest whole number.

_____ Per Cent

III. Essential Characteristics of Employees Holding this Job Title.

A. Minimum Educational Level (check (√) one only)

_____1. Not important.
_____2. Less than high school graduation.
_____3. High school graduation.
_____4. Post-high school technical education. (not a degree)
_____5. Associate or junior college degree.
_____6. Some college education (not a degree).
_____7. Baccalaureate degree.
_____8. Master's degree.
_____9. Doctor's degree.

B. Residential and Experience Background (check (√) one only)

_____1. Farm
_____2. Rural, non-farm
_____3. Urban
_____4. Not important

C. Leadership and Personality Qualities (check only those which are essential to successful performance on this job title).

_____1. Ability to accept and carry out responsibility.
_____2. Ability to meet people graciously and discuss problems effectively.
_____3. Ability in public speaking.
_____4. Ability to conduct a meeting.

C. Continued

_____5. Attitude of loyalty to employer.

_____6. Have initiative and favorable attitude towards work.

_____7. Ability to give a demonstration.

_____8. Acceptable personal grooming and appearance.

_____9. Ability to get along well with people.

IV. Hours and Wages Common to this Job Title in this Business or Service (WHOLE NUMBERS ONLY).

Employment Status	Average Hours Paid Per Week	Average Weeks Paid Per Year	Wages Per Week Beginning	Wages Per Week Highest
Full-time	_____1.	_____2.	_____3.	_____4.
Part-time	_____5.	_____6.	_____7.	_____8.

V. How are persons employed in this job title usually given advancement in this business or service? Check (√) only one answer.)

_____1. Salary increases only.

_____2. More responsibility within this job title only.

_____3. Both 1 and 2.

_____4. Promotion to another job title.

_____5. Not given advancement.

_____6. Proprietor, does not apply.

REMINDER: Staple to FORM B, SECTION I completed for this job title in this business or service. Your marks at the top of the pages will aid you in matching these forms.

APPENDIX B

I. B. M. DATA CARD CODING FORMAT

Column No.	
1-2	School district code no.
3-5	Business identification no.
6-7	Primary function of business
8-9	Secondary function of business
10-13	Job title code no.
14	Level of employment
15-16	No. full-time employees this year
17-18	No. full-time employees expected in five years
19-20	No. years full-time employee stays in this job title
21-22	No. part-time employees this year
23-24	No. part-time employees expected in five years
25-26	No. years part-time employee stays in this job title
27-32	Plant science competencies
33-39	Forestry, conservation and outdoor recreation competencies
40-43	Agricultural business management competencies
44-47	Agricultural mechanics competencies
48-50	Animal science competencies
51-53	Per cent of time spent doing these competencies
54	Minimum education needed
55	Residential and experience background
56	Leadership and personality qualities
57-59	Full-time average hours paid per week
60-61	Full-time average weeks paid per year
62-64	Full-time wages paid per week (beginning)
65-67	Full-time wages paid per week (highest)
68-70	Part-time average hours paid per week
71-72	Part-time average weeks paid per year
73-75	Part-time wages paid per week (beginning)
76-78	Part-time wages paid per week (highest)
79	Way employee is usually given advancement
80	

APPENDIX C

PREPARATION OF TABLES

TABLE II

PROPORTION OF TIME DEVOTED TO USE OF AGRICULTURAL COMPETENCIES IN TWELVE FAMILIES OF OFF-FARM AGRICULTURAL OCCUPATIONS

1. Mean "proportion of time . . ." was computed for each job title.

2. Mean of job title means was computed for each occupational family using the number of workers in each job title as weights.

TABLE III

PROJECTED NUMBER OF PERSONS EMPLOYED DURING 1964 IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

1. Projected 260 districts = (actual number/job title/type of farming X projection factor for type of farming)

2. Projection factor $= \dfrac{\text{Number of school districts offering agriculture in a given type of farming area}}{\text{Number of school districts in sample from the same type of farming area}}$

Example: $\dfrac{\text{180 school districts in dairy area}}{4} = 45$

TABLE IV

CLASSIFICATION OF FULL-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS BY LEVELS OF EMPLOYMENT

1. Modal level of employment was determined for each job title.

2. Number of workers in each job title was plugged into TABLE II at modal level of employment.

TABLE V

CLASSIFICATION OF PART-TIME WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS BY LEVELS OF EMPLOYMENT

Same procedure as TABLE IV

TABLE VI

PROJECTED NUMBER OF PERSONS EMPLOYERS PREDICT WILL BE EMPLOYED IN 1969 IN OFF-FARM AGRICULTURAL OCCUPATIONS IN NEW YORK SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE DURING 1963-64

1. Projected 260 districts = Number of workers predicted by employers in each job title by type of farming X projection factor for type of farming.

2. Projection factor = $\frac{\text{Number of school districts offering agriculture in a given type of farming}}{\text{Number of school districts in sample from the same type of farming area}}$

TABLE VII

(See next page)

TABLE IX

MINIMUM EDUCATION REQUIRED FOR OFF-FARM AGRICULTURAL OCCUPATIONS

1. The mode for each job title was determined.

2. The number of workers in each job title was plugged into TABLE IX.

3. Numbers were converted to proportion.

TABLE VII

EMPLOYMENT OPPORTUNITIES OUTLOOK IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 260 SCHOOL DISTRICTS OFFERING AGRICULTURAL INSTRUCTION, 1963-64

Agricultural Machinery Sales and Service	No. of Positions		C	D	E	Turnover by years					Employment opportunities by years				
	A	B				F	G	H	I	J					
	Actual	Predicted	Annual growth	Mean years	Turnover rate	1965	1966	1967	1968	1969	1965	1966	1967	1968	1969
Job Titles	1964	1969	(B-A) ÷ 5	on job	1 ÷ D	(A+C)E	(A+2C)E	(A+3C)E	(A+4C)E	(A+5C)E	C+F	C+G	C+H	C+I	C+J
0101	40	60	4	10	.10	4.4	4.8	5.2	5.6	6.0	8.4	8.8	9.2	9.6	10
0102															
0103															
0104															
0105															
0106															
0107															
0108															
0109															
0110															
0111															
0112															
0113															
0114															
0115															
0116															
0117															
0118															
Totals	4879	6181	---	---	---	272	286	300	314	328	533	547	560	574	588

APPENDIX D

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS

1. Frequency of subscription to each competency by employers was tabulated by job titles.

2. Those competencies subscribed to by fewer than 50 per cent of employers were regarded as not needed by employees in a given job title.

3. In the case of these competencies subscribed to by 50 per cent or more of employers, the number of workers in each job title were plugged into TABLE VII.

4. Number was converted to proportion.

APPENDIX D

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1) *	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science												
1. Sample soil for complete test.		2.4			7.1		8.0	18.1	3.2	40.5		22.4
2. Perform ph or nutrient tests.		2.4			7.1		8.5	18.1		35.1		22.4
3. Make lime or fertilizer recommendations.		2.7			7.1		8.5	27.3	3.2	54.2		23.3
4. Recommend soil management practices.		2.6			7.1		8.5	27.3	3.2	38.9		23.2
5. Decide what to grow.		2.6			7.1		8.5	27.3	6.5	51.1		2.3
6. Choose proper planting sites.		2.4			7.1		10.2		6.5	54.2		23.3
7. Mix soil composites.		2.4			7.1					48.9		1.6
8. Sterilize soil.		2.4			7.1			18.1		26.7		.4
9. Select varieties.		2.6			7.1		8.5	18.1	16.1	51.1		22.8
10. Select seed, cuttings, bulbs or stock plants.		2.6			7.1		22.7	27.3	17.7	51.1		23.2
11. Prepare seed beds.		.4			7.1		2.3	27.3	43.5	86.3		23.2
12. Select and use appropriate plant propagation methods.		.4			7.1		8.0	27.3	8.1	40.5		1.9
13. Determine proper rooting medium.		.4						18.1	6.5	40.5		1.2
14. Plant seeds, bulbs, trees or shrubs.		.5					4.0	27.3	43.5	86.3		2.9
15. Perform proper tillage practices.		.4		3.1	7.1		8.5	27.3	45.2	86.3		23.0
16. Control birds and animals injurious to plants.		2.5							9.7	43.5		1.9

* Key to occupational families: (1) Agr. Machinery Sales & Service, (2) Agr. Supplies & Equipment, (3) Dairy Manufacturing & Processing, (4) Livestock Marketing & Processing, (5) Other Livestock Industry, (6) Poultry Industry, (7) Crops Marketing & Processing, (8) Forestry & Soil Conserv., (9) Wildlife & Recreation, (10) Ornamental Horticulture, (11) Farm Service and (12) Agricultural Service

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science (cont'd)												
17. Control insects, diseases and weeds.		2.5			7.1		10.2	27.3	45.2	73.3	16.1	24.1
18. Manage greenhouse, provide proper environment, forcing and shading.								18.1		37.4		
19. Manage nursery, planting, transplanting, pruning, shaping and trimming.		.1						27.3	1.6	63.4		2.1
20. Design and make flower arrangements, corsages, floral pieces and Christmas decorations.										27.5		1.6
21. Knowledge of characteristics and appropriate use of landscaping materials.		.1							38.7	48.9		2.3
22. Design landscaping plans to effectively use trees, shrubs, lawn, foundation plantings, vines and ground covers, annual and perennial flowers.									9.7	38.2		2.3
23. Correct physical defects of sites being landscaped.									48.4	55.0		1.8
24. Locate and design drives, walks, fences.					7.1			27.2	58.1	51.9		1.5
25. Establish lawns.	.3	.5			7.1				58.1	39.7		2.1
26. Maintain lawns.	.9	.5			7.1				12.9	64.1		2.1

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science (cont'd)												
27. Maintain trees and shrubs.		.5			7.1			27.2	8.1	66.4		3.5
28. Provide seasonal protection to ornamental plants.		.1								51.9		2.1
29. Harvest crops or plants.		.4		3.1	7.1		10.2	27.2	1.6	43.5		2.9
30. Process, grade or package.		.9		2.1			63.1	27.2		39.7		2.3
31. Shipping or storing.		.9		5.2	7.1		47.7	18.2		16.0		2.3
32. Marketing grains.					7.1		1.7	9.1				
33. Knowledge of grains and standards.												
34. Identify and control acquatic plants.												
35. Knowledge of soil textures.												
36. Mix herbicides and insecticides.												
37. Control plants injurious to animals.												
Forestry, Conservation and Outdoor Recreation												
41. Identify trees of economic importance.								100	9.7			2.7
42. Reforest an area.								27.3	3.2			1.9
43. Manage reforested area.								27.3	9.7	3.1		2.1
44. Manage Christmas tree plantations.												2.1
45. Select and mark trees for cutting.								46.5	3.2			1.6
46. Estimate volume and tree stands.								45.5	8.1			2.1
47. Identify and control common insects and diseases.		.4						54.5	11.3	5.3		2.9
48. Construct and maintain fire lanes.								27.3	6.5			1.2

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
49. Use fire fighting tools and equipment.								27.3	40.3			1.8
50. Detect and report forest fires.									19.4			1.2
51. Organize a fire crew.								27.3	14.5			
52. Read a topographical map									21.0	7.6		2.7
53. Scale and grade saw logs.								45.5	8.1			1.2
54. Fell, trim, skid and haul logs and pulp.								72.7	1.6	4.6		1.2
55. Operate chain saws and other power equipment.		.1						72.7	35.5	4.6		6.0
56. Cut, bail, load, grade and haul Christmas trees.												.4
57. Saw, grade, store and haul lumber.								72.7				1.2
58. Tap trees and operate maple syrup production equipment.												1.2
59. Control soil erosion.								18.2	4.8	9.2		2.5
60. Determine land use capabilities.									1.6	10.7		2.1
61. Repair and maintain tree planting equipment.								27.3	1.6			1.2
62. Maintain fire fighting tools and equipment.								27.3	8.1			
63. Lay out, build and open woods roads.								72.7	9.7			
64. Select, repair and maintain chain saws.	.3							72.7	24.2	4.6		1.2
65. Maintain and repair turf equipment such as mowers, fertilizer spreaders and irrigation equipment.	.3							27.3	27.4	6.1		1.8

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
66. Maintain and repair ski tows and lifts.												.4
67. Maintain and repair boats and motors.	.3							27.3	32.3			.4
68. Identify economically important wildlife species.								27.3	12.9			1.9
69. Trap and control nuisance wildlife.								27.3	12.9	4.6		1.6
70. Provide habitat for bird and animal life.								27.3	16.1	1.5		1.9
71. Stock streams and ponds.								27.3	22.6			1.6
72. Manage wildlife in confinement.								27.3	19.4			1.2
73. Know game laws.								27.3	35.5			2.9
74. Manage streams and ponds.								27.3	32.3			1.9
75. Keep essential records.	.3							27.3	43.5	3.1		2.9
76. Know public health laws.								27.3	43.5	1.5		22.8
77. Know insurance and safety regulations.								27.3	77.4	7.6		23.3
78. Manage camp grounds and trailer camps.									51.6			1.6
79. Care for riding horses.									21.0			1.6
80. Know fishing and hunting skills.									27.4			
81. Operate turf equipment such as mower, fertilizer spreaders and irrigation equipment.	.3	.1							62.9	14.5		4.1
82. Manage ski tow slopes and trails.									3.2			1.2
83. Layout and maintain hiking trails.					10.7				16.[illegible]			1.4

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
84. Operate boats and motors.	.9	1.4			10.7				27.4			4.5
85. Maintain riding trails.												
86. Give riding instruction.												
87. Organize group games.												
88. Organize entertainment.												
89. Know and perform life-guard duties.		1.9										
90. Determine water use capabilities.												
1. Maintain and repair boat coverings.												
2. Layout and maintain bridle paths.												
Agricultural Business Management												
91. Plan and arrange for advertising and promotion.	29.1	24.1	12.9	30.2	17.9		15.3	45.5	25.8	26.0	25.8	37.2
92. Handle inventories, stock control, warehousing reports, payrolls, accounts.	28.5	28.7	17.4	21.9	17.9	33.3	20.5	63.6	38.7	26.7	12.9	40.9
93. Sell machinery, equipment, materials, products or supplies.	77.8	38.0	13.5	16.7	28.6		21.0	45.5	14.5	29.0		8.9
94. Solicit subscribers to various types of agricultural service.	28.5	15.1								2.3	38.7	19.8
95. Make job estimates.	78.8	30.9		25.0			4.0	45.5	9.7	37.4	16.1	31.3
96. Purchase goods to sell.	40.2	25.8	13.5	13.5	57.1		15.3	45.5	19.4	34.4	6.5	21.8
97. Supervise installation of equipment.	29.4	23.0	14.0	12.5	10.7	33.3	19.3	45.5	14.5		6.5	14.6

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Business Management (cont'd)												
98. Hire, train and supervise workers.	17.1	18.6	16.9	46.9	67.9		19.3	63.6	33.9	40.5	9.7	26.3
99. Call on prospective customers.	29.1	26.0	10.1	27.1	10.7		21.0	45.5	12.9	33.6	54.8	58.6
100. Investigate and adjust customer complaints.	32.6	36.1	10.7	31.3	14.3		21.0	45.5	32.3	37.4	61.3	63.6
101. Display, explain and demonstrate items for sale.	100	30.8	16.3	33.3	10.7		14.8	45.5	22.6	30.5	29.0	54.9
102. Order repair parts and new equipment.	83.9	29.6	16.9	14.6	28.6		16.5	45.5	41.9	32.8	35.5	24.9
103. Use legal instruments: wills, deeds, contracts, mortgages, notes.	35.4	17.8	10.7	15.6	42.8		23.9	45.5	4.6	33.6	6.5	54.5
104. Keep, summarize and analyze records.	65.5	29.2	55.6	15.6	57.1		23.9	63.6	17.6	28.2	58.1	69.8
105. Evaluate the total operation and make decisions.	14.9	17.0	16.9	12.5	67.9		21.0	63.6	29.0	26.7	29.0	66.3
106. Understand and use credit.	80.4	42.8	16.3	15.6	53.6		24.4	45.5	12.9	28.2	45.2	66.3
107. Comply with local, state and federal government trade and licensing regulations.	35.8	20.3	15.7	31.3	57.1		26.1	45.5	32.3	16.0	38.7	63.4
108. Provide for insurance.	21.8	15.8	10.1	14.6	53.6		18.8	45.5	46.8	25.2	32.3	64.6
109. Prepare tax returns.	21.8	14.5	10.7	14.6	53.6		18.2	45.5	38.7	34.4	32.3	35.4
110. Understand agriculture in our economy.	29.4	23.6	17.4	34.4	57.1		24.4	63.6	3.2	26.0	45.2	52.7
111. Conduct surveys.												
112. Organize and work with committees.												
113. Public speaking engagements.												

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Business Management (cont'd)												
114. Make appraisals.												
115. Know principals of delivering to customers.												
116. Knowledge of marketing.) crops												
117. Knowledge of grades and standards.) crops												
Agricultural Mechanics												
121. Select and buy farm machinery or garden tools, equipment and machinery.	13.6	2.1	.6	5.2	7.1			45.5	43.5	37.4	22.6	6.0
122. Select, buy, adjust or maintain lawn and garden sprinkler and irrigation equipment.		12.7			7.1			9.1	32.3	48.9	6.5	2.1
123. Woodworking or metal working tool skills.	51.3	39.3	3.4	8.3	7.1				40.3	31.3	58.1	32.5
124. Arc or oxy-acetylene welding abilities.	65.5	33.6	2.2	5.2			14.8	54.5	11.3	3.8	58.1	33.9
125. Operate, maintain and adjust gasoline engines.	63.6	64.3	2.2	8.3	7.1		20.5	54.5	62.9	74.0	58.1	32.8
126. Operate, maintain and adjust diesel engines.	56.3	43.8	2.2				14.8	45.5	1.6			12.1
127. Plan, install and adjust water or sewage systems.	.3	2.7	3.4				14.8		22.6	18.3	16.1	8.8
128. Knowledge of blueprints, space requirement and building materials for agricultural structures.		39.7	23.0		7.1		18.2	45.5	11.3	27.5	41.9	18.3
129. Plan, install, repair and maintain electrical systems.	4.1	17.7	9.6				13.1	45.5	11.3	13.7		15.4

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Mechanics (cont'd)												
130. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.	62.0	37.3	30.9	5.2	7.1		29.0	54.5	54.8	54.2	61.3	33.7
131. Operate, maintain and adjust garden machines and equipment.	45.3	14.1		3.1			12.5		53.2	73.3	41.9	10.3
132. Arrange, organize and manage an agricultural shop facility.	16.1				7.1				1.6		6.5	1.6
133. Farm carpentry.		6.8	2.2	8.3	7.1		13.1	54.5	43.5	31.3		5.8
134. Concrete, masonry and tile skills.		10.2	3.4		7.1		13.1		43.5	18.3		10.9
135. Knowledge of fuels and lubricants.	61.7	26.8	7.3	5.2	7.1		17.0	45.5	43.5	42.0	9.7	32.9
136. Planning for efficient use of buildings and equipment.	1.3	7.2	15.7		7.1		15.9	54.5	25.8	3.1	6.5	14.4
137. Install and use materials handling equipment.	16.1	43.3	5.1	3.1	17.9		15.9	45.5	6.5	10.7		5.6
138. Construct and maintain greenhouses, headhouses, pathhouses, or toolsheds.	.3			5.2					17.7	26.0		3.7
139. Knowledge of paint and painting.	45.9	11.6			7.1		14.8	54.5	48.4	55.0	41.9	30.2
140. Knowledge of hydraulic systems.			14.0						9.7			1.2
141. Use a transit, etc.												
142. Knowledge of refrigeration.												
143. Knowledge of types of metals.												
144. Use micrometers.												

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Mechanics (cont'd)												
145. Set up and operate metal working machines.		.1										
146. Blacksmith skills (farrier).												
147. Know how to load and unload machinery (from vehicles).												
Animal Science												
151. Select and secure quality stock.		.4		13.5	46.4				1.6	5.3	35.5	4.9
152. Housing and handling.		.4	1.7	20.8	85.7				9.7	5.3	16.1	4.5
153. Feeding requirements and practices.		1.3	1.7	20.8	85.7				9.7	1.5	12.9	4.5
154. Knowledge of breeding principles and practices.		.5		12.5	82.1				3.2	5.3	35.5	4.3
155. Sanitation and disease control practices.		.4	53.9	50.0	100	33.3			3.2	6.9	38.7	4.7
156. Keep production, breeding and financial records.		.5	1.7	12.5	92.9				3.2	5.3	35.5	9.7
157. Use records to improve feeding, breeding and other practices.		.8	10.1	12.5	85.7				3.2		35.5	4.5
158. Produce high quality products.		.8	34.8	12.5	96.4	33.3			3.2		12.9	3.7
159. Knowledge of grades and standards.		.8	25.2	63.5	96.4					6.9	12.9	4.5
160. Ability to test animal products.		.4	25.8	25.0	100						12.9	3.7
161. Knowledge of markets and marketing practices.		4.3	10.1	79.2	92.9		5.7		4.8		12.9	11.7
162. Cut meat.				47.9	35.7				3.2			1.9

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN 16 SCHOOL DISTRICTS OFFERING INSTRUCTION IN AGRICULTURE, 1963-64

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Animal Science (cont'd)												
163. Pasteurize milk.				3.1								
164. Make cheese.				3.1								
165. Make ice cream.												
166. Transferring livestock (legal).												.2
167. Interpreting records (classification).												.2
168. Operate bottling machines.												
169. Ability to grade and candle eggs.												.4
170. Operate debeaking equipment.												
·1. Shoe horses.												
·2. Clip horses.												

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1) *	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science												
1. Sample soil for complete test.								17.1	.9	66.7		2.8
2. Perform ph or nutrient tests.									.9	66.7		2.8
3. Make lime or fertilizer recommendations.								7.3	.9	66.7		2.8
4. Recommend soil management practices.								4.9	9.7	66.7		2.8
5. Decide what to grow.								12.2	10.6	33.3		2.8
6. Choose proper planting sites.								36.6	.9	33.3		2.8
7. Mix soil composites.								17.1		100		2.8
8. Sterilize soil.								17.1		100		2.8
9. Select varieties.								22.0	.9	66.7		2.8
10. Select seed, cuttings, bulbs or stock plants.								17.1		66.7		2.8
11. Prepare seed beds.								17.1	1.8	100		2.8
12. Select and use appropriate plant propagation methods.									9.7	100		2.8
13. Determine proper rooting medium.								4.9		100		2.8
14. Plant seeds, bulbs, trees or shrubs.								36.6	.9	100		2.8
15. Perform proper tillage practices.									2.7	100		2.8

* Key to occupational families: (1) Agr. Machinery Sales & Service, (2) Agr. Supplies and Equipment, (3) Dairy Manufacturing & Processing, (4) Livestock Marketing & Processing, (5) Other Livestock Industry, (6) Poultry Industry, (7) Crops Marketing & Processing, (8) Forestry & Soil Conserv., (9) Wildlife & Recreation, (10) Ornamental Horticulture, (11) Farm Service and (12) Agricultural Service.

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science (cont'd)												
16. Control birds and animals injurious to plants.								19.5	.9			5.6
17. Control insects, diseases and weeds.								36.6	5.3	66.7		8.4
18. Manage greenhouse, provide proper environment, forcing and shading.								17.1		66.7		
19. Manage nursery, planting, transplanting, pruning, shaping and trimming.								41.5		66.7		
20. Design and make flower arrangements, corsages, floral pieces and Christmas decorations.										100		
21. Knowledge of characteristics and appropriate use of landscaping materials.								22.0	11.5	66.7		5.6
22. Design landscaping plans to effectively use trees, shrubs, lawn, foundation plantings, vines and ground covers, annual and perennial flowers.								22.0		66.7		2.8
23. Correct physical defects of sites being landscaped.								22.0	11.5	33.3		2.8
24. Locate and design drives, walks, fences.								17.1	.9	33.3		2.8
25. Establish lawns.								22.0	1.8	33.3		2.8
26. Maintain lawns.								22.0	1.8	100		52.8
27. Maintain trees and shrubs.								51.2	2.7	100		52.8
28. Provide seasonal protection to ornamental plants.								26.8		100		2.8
29. Harvest crops or plants.								19.5		100		
30. Process, grade or package.										100		

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Plant Science (cont'd)												
31. Shipping or storing.										100		36.1
32. Marketing grains.												
33. Knowledge of grains and standards.												
34. Identify and control acquatic plants.												
35. Knowledge of soil textures.												
36. Mix herbicides and insecticides.												
37. Control plants injurious to animals.												
Forestry, Conservation and Outdoor Recreation												
41. Indentify trees of economic importance.								80.5	32.7	33.3		19.4
42. Reforest an area.								24.4	15.9			
43. Manage reforested area.								41.5	22.1			2.8
44. Manage Christmas tree plantations.								26.8	9.7			2.8
45. Select and mark trees for cutting.								11.5	18.6			2.8
46. Estimate volume and tree stands.								31.7	9.7			2.8
47. Identify and control common insects and diseases.								43.9	17.7	66.7		5.6
48. Construct and maintain fire lanes.								34.1	20.4			2.8
49. Use fire fighting tools and equipment.								80.5	61.9			63.9
50. Detect and report forest fires.								70.7	37.2			22.2
51. Organize a fire crew.								63.4	29.2			38.9

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
52. Read a topographical map.								68.3	28.3	33.3		36.1
53. Scale and grade saw logs.								48.8	14.2			5.6
54. Fell, trim, skid and haul logs and pulp.								68.3	45.1			2.8
55. Operate chain saws and other power equipment.		25						78.0	53.1	66.7		55.6
56. Cut, bail, load, grade and haul Christmas trees.								19.5	8.8			2.8
57. Saw, grade, store and haul lumber.								19.5	14.2			19.4
58. Tap trees and operate maple syrup production equipment.									14.2			2.8
59. Control soil erosion.								26.8	24.8	33.3		38.9
60. Determine land use capabilities.								43.9	21.9	66.7		5.6
61. Repair and maintain tree planting equipment.								46.3	10.6			2.8
62. Maintain fire fighting tools and equipment.		25						73.2	48.7			55.6
63. Lay out, build and open woods roads.								58.5	23.9			2.8
64. Select, repair and maintain chain saws.		25						58.5	26.5			22.2
65. Maintain and repair turf equipment such as mowers, fertilizer spreaders and irrigation equipment.								22.0	6.2	100		55.6
66. Maintain and repair ski tows and lifts.									8.0			5.6
67. Maintain and repair boats and motors.								19.5	51.3			2.8

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
68. Identify economically important wildlife species.								17.1	25.7			2.8
69. Trap and control nuisance wildlife.								7.3	29.2			2.8
70. Provide habitat for bird and animal life.								17.1	20.4			2.8
71. Stock streams and ponds.								7.3	13.3			
72. Manage wildlife in confinement.								7.3	13.3			
73. Know game laws.								39.0	33.6			5.6
74. Manage streams and ponds.			100					7.3	17.7			5.6
75. Keep essential records.		25	100					90.2	47.8	33.3		33.3
76. Know public health laws.			100					46.3	35.4			52.8
77. Know insurance and safety regulations.		25	100					65.9	44.2	33.3		75.0
78. Manage camp grounds and trailer camps.			100					19.5	25.7			5.6
79. Care for riding horses.									4.4			
80. Know fishing and hunting skills.								29.3	23.0			2.8
81. Operate turf equipment such as mower, fertilizer spreaders and irrigation equipment.								24.4	12.4	100		58.3
82. Manage ski tow slopes and trails.									1.8			5.6
83. Layout and maintain hiking trails.								9.8	13.3			2.8
84. Operate boats and motors.								39.0	60.2			8.4
85. Maintain riding trails.												
86. Give riding instruction.									3.5			
87. Organize group games.									3.5			
88. Organize entertainment.												

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Forestry, Conservation and Outdoor Recreation (cont'd)												
89. Know and perform lifeguard duties.												
90. Determine water use capabilities.									1.8			
1. Maintain and repair boat coverings.												33.3
2. Layout and maintain bridle paths.												
Agricultural Business Management												
91. Plan and arrange for advertising and promotion.		25						4.9	20.4	66.7		27.8
92. Handle inventories, stock control, warehousing reports, payrolls, accounts.		25						48.8	36.3	33.3		27.8
93. Sell machinery, equipment, materials, products or supplies.		25						4.9	4.4	100		14.0
94. Solicit subscribers to various types of agricultural service.								4.9				2.8
95. Make job estimates.		25						87.8	18.6			33.3
96. Purchase goods to sell.		25						4.9	14.2	100		14.0
97. Supervise installation of equipment.								24.4	22.1	33.3		11.2
98. Hire, train and supervise workers.		25	100					70.7	31.0	33.3		25.0
99. Call on prospective customers.		25						19.5	22.2	66.7		5.3

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Business Management												
100. Investigate and adjust customer complaints.		25						36.6	30.1	66.7		27.8
101. Display, explain and demonstrate items for sale.		25						12.2	14.2	100		19.4
102. Order repair parts and new equipment.		25						43.9	42.5	66.7		16.6
103. Use legal instruments: wills, deeds, contracts, mortgages, notes.		25	100					26.8	21.2	33.3		30.6
104. Keep, summarize and analyze records.		25	100					48.8	41.6	33.3		36.1
105. Evaluate the total operation and make decisions.		25	100					43.9	32.7	66.7		30.6
106. Understand and use credit.		25						26.8	18.6	66.7		27.8
107. Comply with local, state and federal government trade and licensing regulations.		25						41.5	34.5	66.7		22.2
108. Provide for insurance.		25						4.9	14.2	33.3		22.2
109. Prepare tax returns.		25						4.9	4.4	33.3		22.2
110. Understand agriculture in our economy.		25	100					65.9	31.9			13.9
111. Conduct surveys.												2.8
112. Organize and work with committees.												2.8
113. Public speaking engagements.												2.8
114. Make appraisals.												
115. Know principals of delivering to customers.												
116. Knowledge of marketing.) crops												
117. Knowledge of grades and standards.) crops												

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Mechanics												
121. Select and buy farm machinery or garden tools, equipment and machinery.		25						22.0	15.0	66.7		2.8
122. Select, buy, adjust or maintain lawn and garden sprinkler and irrigation equipment.		25						17.1	10.6	66.7		19.4
123. Woodworking or metal working tool skills.								22.0	48.7	100		36.1
124. Arc or oxy-acetylene welding abilities.								24.4	31.9			25
125. Operate, maintain and adjust gasoline engines.		25							70.8	100		66.7
126. Operate, maintain and adjust diesel engines.								70.7	11.5			8.3
127. Plan, install and adjust water or sewage systems.			100					2.4	61.9	66.7		30.6
128. Knowledge of blueprints, space requirement and building materials for agricultural structures.		25	100						31.0	33.3		30.6
129. Plan, install, repair and maintain electrical systems.								2.4	38.1	33.3		27.8
130. Operate, maintain and adjust tractors, trucks, agricultural equipment and agricultural machinery.								34.1	60.2	100		22.2
131. Operate, maintain and adjust garden machines and equipment.								24.4	62.0	100		55.6
132. Arrange, organize and manage an agricultural shop facility.		25						17.1	5.3	33.3		8.3
133. Farm carpentry.								17.1	64.6	33.3		30.6
134. Concrete, masonry and tile skills.			100					36.6	57.5			25.0

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Agricultural Mechanics (cont'd)												
135. Knowledge of fuels and lubricants.		25						68.3	70.8	66.7		66.7
136. Planning for efficient use of buildings and equipment.		25	100					34.1	37.2	33.3		25.0
137. Install and use materials handling equipment.		25	100					22.0	18.6			25.0
138. Construct and maintain greenhouses, headhouses, pathhouses, or toolsheds.								17.1	17.1	100		22.2
139. Knowledge of paint and painting.		25	100					58.5	91.2	100		69.4
140. Knowledge of hydraulic systems.									.9			2.8
141. Use a transit, etc.								9.8				
142. Knowledge of refrigeration.												
143. Knowledge of types of metals.												
144. Use micrometers.												
145. Set up and operate metal working machines.												
146. Blacksmith skills (farrier).									8.8			
147. Know how to load and unload machinery (from vehicles).												
Animal Science												
151. Select and secure quality stock.									8.8			2.8
152. Housing and handling.			100					7.3	12.4			2.8
153. Feeding requirements and practices.			100					7.3	15.0			2.8
154. Knowledge of breeding principles and practices.								7.3	9.7			

COMPETENCIES NEEDED BY WORKERS IN OFF-FARM AGRICULTURAL OCCUPATIONS
IN TWO SCHOOL DISTRICTS IN THE ADIRONDACK AREA

Agricultural competencies	Per cent of full-time workers by occupational families, needing this competency											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Animal Science (cont'd)												
155. Sanitation and disease control practices.			100						7.1			58.3
156. Keep production, breeding and financial records.									.9			
157. Use records to improve feeding, breeding and other practices.								7.3	.9			
158. Produce high quality products.			100						5.3			2.8
159. Knowledge of grades and standards.			100						5.3			2.8
160. Ability to test animal products.			100						12.4			2.8
161. Knowledge of markets and marketing practices.			100						4.4			5.6
162. Cut meat.								7.3				
163. Pasteurize milk.												
164. Make cheese.												
165. Make ice cream.												
166. Transferring livestock (legal).												
167. Interpreting records (classification).												
168. Operate bottling machines.												
169. Ability to grade and candle eggs.												
170. Operate debeaking equipment.												
1. Shoe horses.												
2. Clip horses.												

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By

William W. Stevenson

Sponsored Cooperatively by

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and

Oklahoma State University

December, 1965

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Mr. Roy Butler, Graduate Assistant, Agricultural Education Department.

Dr. James Tarver, Sociology Department, Oklahoma State University, Consultant for the Study.

The Advisory Committee for the study:

Dr. Robert R. Price, Agricultural Education.

Dr. James Plaxico, Agricultural Economics.

Mr. George Abshier, Agricultural Extension Service.

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DIGEST

This report is a summarization of the findings in over 700 personal interviews with owners or managers of several types of businesses serving farmers' needs or processing and distributing farm products. Interviews were made in every county in Oklahoma and in almost every town. Businesses are concentrated in the larger population areas of the state; however, many of the firms were found in the more sparcely populated sections.

The report is divided into five sections. The first deals with the number of businesses in the population and the sample, number of persons employed, and the number needing agricultural competencies. The second section considers the number of agriculturally trained people that will be needed in the five year period, 1964-1969. Section three analyzes the competencies needed by persons in the different occupational titles in the businesses. The fourth section deals with characteristics of workers such as age, education, background, and salary. Section five is a summary of the findings related to professional workers in private, state, and federal agencies.

Generalizations that can be drawn from the findings are:

1. Thirty-eight percent of the workers in off-farm agricultural businesses need agricultural competencies in order to successfully perform their duties in the business.
2. The greatest number of employees is found in the service (skilled and semi-skilled) phase of the businesses.
3. Managers and owners of the off-farm agricultural businesses expect to have a 34 percent increase in the number of agriculturally competent employees by 1969.
4. The greatest increase in number of employees with agricultural training is expected in the Ornamental Horticulture, Agricultural Machinery, and Agricultural Supplies businesses.

5. Competency in human relations and salesmanship are generally needed by all employees, but in varying degrees.

6. Agricultural competencies needed are largely determined by type of business and product handled.

7. Salaries and wages in some service types of employment in off-farm agricultural businesses are relatively low. An effective training program for workers at this level should raise this beginning wage.

8. Approximately fifty percent of the employees in off-farm agricultural businesses need education beyond the high school level while for the other half a high school education is sufficient.

9. The average minimum age for employment in agricultural businesses is 20 years of age. While age requirements for some of the jobs available are below this, consideration should be given to a program of continuing education for many of our students.

10. Managers interviewed indicated that in 82 percent of the cases they would prefer employees with a farm or rural background. The remaining 18 percent had no preference as to background.

11. The annual need for professional college trained agricultural workers in the business and in service agencies interviewed was estimated to be about four hundred per year.

12. Occupational titles needing the greatest number of workers, not including professional workers, in the next five years are:

Agricultural Machinery Salesman	Cotton Ginner
Agricultural Machinery Mechanic	Greenhouse Grower
Agricultural Machinery Parts Man	Nursery Landscape Gardner
Agri. Machinery Mechanic's Helper	Applicator Flagman
Agricultural Supplies Manager	Meat Processing Butcher
Agricultural Supplies Salesman	Dairy Processing Processman
Agricultural Supplies Mill Worker	Grain Storage Elevator Supt.

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INTRODUCTION

As farmers in Oklahoma and the nation become more highly trained and more efficient in adapting new technological knowledge to their farming operations, farms increase in size and the number of workers required to produce the nation's food and fiber decreases. A concomitant yet opposite change occurs in those businesses which perform services for farmers or which market, process, and distribute the farmer's product. Farmers are demanding more and more skilled assistance from businesses off the farm in the operation of their highly complex production business. On the other hand, consumers are demanding a product which requires processing and distribution services which must be performed off the farm. Thus we have developing in this country a vast network of enterprises to perform these services for the farmer. The term, "Off-Farm Agricultural Business", has become generally accepted as the designation for these companies. The people employed in these businesses are said to be working in off-farm agricultural occupations.

Many of the workers in these off-farm agricultural businesses need competencies in agriculture. It was a growing awareness of urgent need for more information on requirements of these off-farm agricultural occupations which prompted the State Board for Vocational Education and Oklahoma State University to undertake a study which would identify the employment opportunities and training needs which exist in these particular types of businesses. This two-year study was started in January of 1964 under the direction of Dr. Everett Edington, then of the Agricultural Education Department, Oklahoma State University, and two graduate assistants in the Agricultural Education Department, William Stevenson and Roy Butler.

OBJECTIVES OF THE STUDY

In recognition of the need to change programs of vocational education in agriculture, and in light of the Vocational Education Act of 1963 which calls for the preparation of persons for employment in off-farm agriculture as well as for farming and ranching, state leaders in agricultural education and vocational agriculture gave careful consideration to designing this study. The plans for this study were oriented to achieving the following basic objectives:

1. To identify present and emerging off-farm agricultural occupations, other than farming and ranching, for which vocational technical or higher education should be available.
2. To determine present numbers of employees in these occupations, and to identify those occupational job titles which need agricultural competencies. (The term, agricultural competencies, is defined as knowledges or skills in one or more of the primary areas of plant science, animal science, agricultural business management and marketing, and agricultural mechanization.)
3. To estimate the annual turnover and entry opportunities in these occupations and job titles.
4. To determine competencies needed for entry and advancement in these occupations.
5. To determine other characteristics of these occupations such as beginning and maximum salary, minimum age for job entry, required formal education and experience, labor laws and union restrictions, and licensing and certification requirements.

STATEMENT OF PROCEDURE

The information was secured by personal interview with the owner or manager or other responsible person of the selected businesses. Businesses were selected by random sampling of a list of each type of business. The vocational agriculture teacher in the local community was asked to make the appointments for the interview, and to accompany the interviewer on at least one call if possible.

Information was secured from 719 businesses considered to be agriculturally related in the estimation of the staff of the Agricultural Education Department and the advisory committee. The population included all of the businesses within the selected categories now operating in the state of Oklahoma. The sample percentage varied from 40 percent to 66 percent, depending upon the number of businesses and the variation found in activities performed by the business.

Interview forms were approved by the advisory committee and were tested on a limited number of businesses before the actual interviews started. Form I covered a general review of the business, its functions, years in operation, and relation to agriculture. Employees were divided into the various job titles with the number of full-time and part-time employees needing agricultural competencies in each job title recorded. Form II was used to get information on each job title found in the business. The employer was asked to rate the importance of various competencies needed to enter and advance in the job title. These competencies were divided into agricultural competencies, business and distributive competencies, and trade and industrial competencies.

Data from the study were analyzed in the computer centers of Oklahoma State University and Ohio State University.

BUSINESSES INCLUDED IN THE STUDY

The types of agricultural businesses and industries used in the study were selected because of their agricultural importance to Oklahoma. There are, undoubtedly, other businesses which employ people needing agricultural competencies. The list of businesses interviewed presented in Table I represents only the major agricultural businesses and should not be interpreted as including all the potential employers of agriculturally trained people. Further studies of other types of enterprises would very likely identify other employment opportunities and training needs.

The data from this project were collected from 719 different agricultural businesses in Oklahoma. This represents 38 percent of the total of these types of businesses now in operation in the state. When forestry is not considered, this amounts to 42 percent of the businesses. Only the major forestry businesses were interviewed because it was found that the small individual operations offered very limited employment opportunities for those with agricultural training. Interviews were made in each county of the state to obtain the data.

The size of the sample varied from 40 to 66 percent of the total population depending on the number of businesses in existence and the variety of operations within the various types of businesses. Cooperation and interest on the part of the employers were excellent. Cases in which the interviewer failed to effect successful interviews with the manager or some other responsible person in the business were extremely rare.

In the course of the investigation, it was found that the term, Agricultural Supplies Business, is more appropriate than Feed, Seed, and Fertilizer and that Ornamental Horticulture should be used rather than Greenhouse and Nursery. These more acceptable terms will be used in the body of this report to refer to the businesses mentioned.

TABLE I

TOTAL NUMBER OF SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA, NUMBER INTERVIEWED, AND PERCENT OF TOTAL

Type of Agricultural Business	Total Number in Population	Number in Sample	Percent of Total
Meat Packing & Processing	255	102	40
Dairy Processing	38	21	55
Cotton Gins & Mills	159	74	47
Grain Storage	104	47	45
Agricultural Supplies (Feed, Seed, & Fertilizer)	390	156	40
Ornamental Horticulture (Greenhouse & Nursery)	317	127	40
Applicators	69	31	45
Forestry	192	10	--
Agricultural Machinery	320	128	40
Poultry Processing, Meat, & Eggs	35	23	66
Total	1879	719	38

EMPLOYMENT IN OFF-FARM AGRICULTURAL BUSINESSES

Tables II, III, and IV deal with current employment in off-farm agricultural businesses in Oklahoma. Consideration is also given to the number of employees who need agricultural competencies in order to be successful in their particular job. This was determined by asking the employer to designate those job titles which require agricultural competencies. It will be noted that 38 percent of all of the employees in these types of businesses need these competencies. Those businesses which have the largest percentages of workers possessing agricultural skills and knowledge are Agricultural Machinery, Ornamental Horticulture, and Agricultural Supplies. These businesses are also the ones having the greatest number of employees falling in this category.

Considering these businesses according to their distribution of full-time, part-time, and male and female employees with agricultural competencies (Table III), we find that Ornamental Horticulture hires a considerable number of part-time workers and female workers. Other businesses which use a large proportionate share of part-time workers are the cotton industry and the applicator business. We find a considerable number of part-time and female workers in the agricultural supplies business but their percentage of the total is relatively small.

Table IV looks at the workers needing agricultural competencies by level of employment. The service areas including skilled and semi-skilled workers show the greatest concentration of agriculturally trained people. The levels of Management, Sales, and Supervision indicate the next areas of greatest numbers of agriculturally competent employees. It must be kept in mind that these tables do not include the professional workers in agricultural agencies of the government and state. This information is presented elsewhere in this report.

TABLE II

TOTAL PERSONS EMPLOYED AND NUMBER NEEDING AGRICULTURAL COMPETENCIES IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA

Type of Agricultural Business	Total Number Employed	Number Needing Agricultural Competencies	Percent Needing Agricultural Competencies
Meat Packing & Processing	6,688	1,140	17
Dairy Processing	3,282	447	14
Cotton Gins & Mills	1,674	447	25
Grain Storage	1,528	455	30
Agricultural Supplies	3,712	2,205	59
Ornamental Horticulture	3,285	2,100	64
Applicators	1,098	544	50
Forestry	368	127	35
Agricultural Machinery	2,550	1,962	77
Poultry Processing, Meat, & Eggs	929	72	6
Total	25,114	9,499	38

TABLE III

NUMBER MALE AND FEMALE, FULL-TIME AND PART-TIME WORKERS IN JOBS REQUIRING AGRICULTURAL COMPETENCIES IN OKLAHOMA BY TYPE OF BUSINESS

Type Agricultural Business	Full-Time		Part-Time	
	Male	Female	Male	Female
Meat Packing & Processing	1002	68	60	10
Dairy Processing	445	2		
Cotton Gins & Mills	255	9	177	6
Grain Storage	420	7	28	
Agricultural Supplies	1885	110	200	10
Ornamental Horticulture	1372	130	540	58
Applicators	362	8	156	18
Forestry	113	4	10	
Agricultural Machinery	1782	58	110	12
Poultry Processing, Meat, & Eggs	62	8	2	
Totals	7698	404	1283	114

TABLE IV

NUMBER WORKERS IN JOBS THAT REQUIRE AGRICULTURAL COMPETENCIES IN OKLAHOMA
BY LEVEL OF EMPLOYMENT

Level of Employment	Meat Proc.	Dairy Proc.	Cotton Gins & Mills	Grain Storage	Agri. Supplies	Orn. Hort.	Appli-cators	Fores-try	Agri. Mach.	Poultry Processing, Meat & Eggs	Total
Professional	2	18	0	0	0	27	0	48	0	0	95
Technical	0	21	8	19	87	11	46	58	5	6	261
Managerial	292	76	164	174	623	389	90	6	416	27	2257
Supervisory	82	77	25	125	192	180	46	0	72	6	805
Clerical	9	2	38	18	164	20	22	4	77	3	357
Sales	120	103	20	28	412	133	6	0	182	4	1008
Skilled	519	150	162	89	573	689	179	9	917	26	3313
Semi-Skilled	116	0	30	2	154	651	155	2	293	0	1403
Totals	1140	447	447	455	2205	2100	544	127	1962	72	9499

EMPLOYMENT OPPORTUNITIES

One of the major objectives of this study was to determine the employment opportunities in off-farm agricultural business and industry. Tables V, VI, VII, and VIII give the employers' estimates of their needs of agriculturally competent employees over the five-year period, 1964 to 1969. Employers estimated a 34 percent increase in the number of employees possessing agricultural competencies in that five-year period. All businesses represented expected an increase in the number of these employees. Businesses which anticipate the greatest increase in number of these workers are Ornamental Horticulture, Agricultural Machinery, and Agricultural Supplies. Training programs in Oklahoma should probably concentrate in these areas with some attention given to training for those businesses which show more modest increases.

Table VI considers both increase in employees and estimated replacement needs in the several businesses. Again we find the greatest employment opportunities in the businesses dealing with horticulture, machinery, and supplies. Meat Processing, Dairy Processing, Grain Storage, and Applicators will also be needing agriculturally trained employees in numbers which justify training programs in these areas.

Considering employment opportunites by level of employment (Table VII) we find that the service areas of skilled and semi-skilled offer the greatest potential for agriculturally trained personnel. Managers, supervisors, and salesmen also offer considerable opportunity for placement in these off-farm agricultural businesses. The more detailed Table VIII shows the distribution of additional workers which managers estimated they will need in the various job titles connected with their businesses.

TABLE V

NUMBER OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA IN 1964, ESTIMATED NUMBER IN 1969, AND PERCENT INCREASE

Type Agricultural Business	Number Persons Needing Agricultural Competencies		Percent Increase
	1964	1969	
Meat Packing & Processing	1140	1510	32
Dairy Processing	447	629	40
Cotton Gins & Mills	447	498	11
Grain Storage	455	595	31
Agricultural Supplies	2205	2775	26
Ornamental Horticulture	2100	3063	46
Applicators	544	671	23
Forestry	127	143	12
Agricultural Machinery	1962	2780	42
Poultry Processing, Meat, & Eggs	72	104	44
Totals	9,499	12,768	34

TABLE VI

NUMBER OF NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED BY 1969 IN SELECTED AGRICULTURAL BUSINESSES IN OKLAHOMA

Type Agricultural Business	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Meat Packing & Processing	205	15	312	12	544	17	2	13	7	39
Dairy Processing	109		165		274					
Cotton Gins & Mills	43		26		69	54	2	27		83
Grain Storage	94		115		209	19		22		41
Agricultural Supplies	456	9	450	11	926	110		102		212
Ornamental Horticulture	598	6	601	11	1216	493	17	323	12	845
Applicators	165		91		256	99	9	55		163
Forestry	21		16		37	50				50
Agricultural Machinery	349		780	9	1138	30		39		69
Poultry Processing	14	—	25	2	41	2	—	—	—	2
Totals	2054	30	2581	45	4710	874	30	581	19	1504

TABLE VII

NUMBER NEW WORKERS WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969
BY TYPE OF BUSINESS AND LEVEL OF EMPLOYMENT

Level of Employment	Meat Proc.	Dairy Proc.	Cotton Gins & Mills	Grain Storage	Agri. Supplies	Orn. Hort.	Appli-cators	Fores-try	Agri. Mach.	Poultry Processing, Meat & Eggs	Total
Professional	2	7	0	0	0	10	0	58	0	0	77
Technical	0	5	10	28	74	7	62	6	2	5	199
Managerial	42	39	26	69	156	75	13	2	51	10	483
Supervisory	43	18	8	67	86	287	20	0	22	4	555
Clerical	0	0	10	0	24	2	11	0	19	2	68
Sales	83	55	8	26	283	105	0	0	167	2	729
Skilled	323	150	74	60	421	1333	109	17	630	20	3137
Semi-Skilled	90	0	16	0	94	242	204	4	316	0	966
Totals	583	274	152	250	1138	2061	419	87	1207	43	6214

TABLE VIII-A

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN THE MEAT PROCESSING INDUSTRY BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Professional										
Quality Control	2				2					
Managerial										
Manager	10		20		30					
Assistant Manager			2		2					
Plant Manager	8		2		10					
Supervisory										
Production Manager			5		5					
Manuf. Supervisor	10		15		25					
Foreman	8		5		13					
Sales										
Salesman	35		48		83					
Skilled										
Buyer	28		10		38					
Machine Operator			12		12					
Butcher	80	15	130	5	230	2	2	8	2	14
Processman	2		25	2	29					
Semi-Skilled										
Delivery	2		8		10					
Butcher's Helper	20		30	5	55	15		5	5	25

TABLE VIII-B

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN THE DAIRY PROCESSING INDUSTRY BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Professional										
Quality Control	2		5		7					
Technical										
Fieldman			5		5					
Managerial										
Manager	15		15		30					
Plant Manager	4		5		9					
Supervisory										
Foreman	5		7		12					
Production Supt.	2		4		6					
Sales										
Sales Supervisor			4		4					
Salesman	15		36		51					
Skilled										
Manuf. Supervisor			9		9					
Foreman			5		5					
Machine Operator	42		7		49					
Processman	24		45		69					
Manuf. Operator			18		18					

TABLE VIII-C

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN COTTON GINS & MILLS BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman	2				2	6		2		8
Managerial										
Manager	16		6		22	2				2
Assistant Manager	2				2					
Supervisory										
Foreman			2		2					
Elevator Supt.			2		2					
Plant Manager	4				4					
Clerical										
Bookkeeper	2				2	4	2	2		8
Sales										
Salesman	2		6		8					
Skilled										
Ginner	11		2		13	32		19		51
Pressman			6		6	4				4
Semi-Skilled										
Mill Worker	2		2		4	6		4		10
Deliveryman	2				2					

TABLE VIII-D

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN GRAIN STORAGE BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman			4		4	11		11		22
Formulator	2				2					
Managerial										
Manager	18		13		31					
Assistant Manager	9		2		11					
Storage Manager	11		16		27					
Supervisory										
Manuf. Supervisor	11				11					
Sales Supervisor	4		4		8					
Foreman	4		4		8					
Elevator Supt.	16		20		36	4				4
Sales										
Salesman	4		16		20	4		2		6
Skilled										
Mill Worker	4		29		33			9		9
Buyer	4		7		11					
Ginner	7				7					

TABLE VIII-E

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN AGRICULTURAL SUPPLIES BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman	7		10		17	15		35		50
Processman	5		2		7					
Managerial										
Manager	65		37		102					
Assistant Manager	15		28		43					
Office Manager	2			2	4					
Plant Manager	2		5		7					
Supervisory										
Warehouse Manager	2				2					
Sales Supervisor	7		15		22					
Foreman	30		25		55					
Elevator Supt.	5		2		7					
Clerical										
Bookkeeper	10	7	5	2	24					
Sales										
Salesman	95	2	162	7	266	10		7		17
Skilled										
Maintenance Foreman	2		7		9					
Mill Worker	175		107		282	80		50		130
Semi-Skilled										
Delivery	22		25		47	5		5		10
Loader	7		15		22			5		5
Machine Operator	5		5		10					

TABLE VIII-F

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN ORNAMENTAL HORTICULTURE BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Professional										
Landscape Architect			5		5	5				5
Technical										
Pest Control Supvr.			5		5					
Process Superintendent	2				2					
Managerial										
Manager	27		32		59	2		5	5	12
Assistant Manager		2	2		4					
Supervisory										
Shipping Manager	10		2		12	10		15		25
Plant Manager			2		2					
Farm Supervisor	7		5		12					
Sales Supervisor	2		15	2	19					
Foreman	45		20		65					
Fieldman	50		40		90	25		37		62
Clerical										
Bookkeeper				2	2					
Sales										
Salesman	37		30	2	69	12	12	10	2	36
Skilled										
Head Grower	17				17					
Grower	85		127		212	45		37		82
Grader	7		40		47	175		25		200
Machine Operator	37		12		49					
Transplanter			2		2	25		25		50
Landscape Gardener	190		157		347	172		155		327
Semi-Skilled										
Assistant Grower	82	2	100		184	10		2		12
Asst. Landscape Gardener		2	5	5	12	12	5	12	5	34

TABLE VIII-G

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN THE APPLICATOR BUSINESS BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman	13		16		29	24		9		33
Managerial										
Manager	4		9		13					
Supervisory										
Crew Chief	2		16		18			2		2
Clerical										
Office Manager	2		2		4	7				7
Skilled										
Machine Operator	9				9					
Pilot	24		24		48	11		15		26
Chemical Man			2		2	15		9		24
Semi-Skilled										
Flagman	111		22		133	42	9	20		71

TABLE VIII-H

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN FORESTRY BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Professional										
Forester	5		3		8	50				50
Technical										
Timber Technician	6				6					
Managerial										
Manager	2				2					
Skilled										
Mechanic	1		1		2					
Carpenter	5		10		15					
Semi-Skilled										
Delivery	2		2		4					

TABLE VIII-I

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN AGRICULTURAL MACHINERY BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman			2		2					
Managerial										
Manager	27		20	2	49					
Assistant Manager			2		2					
Supervisory										
Shop Foreman	5		17		22					
Clerical										
Bookkeeper	5		7	7	19					
Sales										
Salesman	25		142		167					
Skilled										
Manuf. Supervisor			2		2					
Mechanic	135		315		450			2		2
Parts Man	35		82		117	5		2		7
Welder	25		27		52					
Semi-Skilled										
Delivery	10		35		45					
Mechanic's Helper	30		82		112			5		5
Set-up Man	52		47		99	25		30		55

TABLE VIII-J

NUMBER NEW EMPLOYEES WITH AGRICULTURAL COMPETENCIES NEEDED IN OKLAHOMA BY 1969 IN POULTRY PROCESSING BY JOB TITLE

Job Title	Full-Time					Part-Time				
	Replacements		Additions		Total	Replacements		Additions		Total
	Male	Female	Male	Female		Male	Female	Male	Female	
Technical										
Fieldman			3		3					
Quality Control	2				2					
Managerial										
Manager	2		4		6					
Production Manager			4		4					
Supervisory										
Shipping Manager	2				2					
Plant Manager			2		2					
Clerical										
Bookkeeper	2				2					
Sales										
Sales Supervisor	2				2					
Skilled										
Warehouse Manager			2		2					
Delivery			4		4					
Grader	4		4	2	10	2			2	
Processman			2		2					

COMBINED JOB TITLE LIST - OKLAHOMA

Meat

Managerial	Manager
	Assistant Manager
	Plant Manager
	Sales Manager
Technical	Quality Control Man
Clerical	Bookkeeper
Sales	Salesman
Service	Foreman
	Buyer
	Grader
	Butcher
	Butcher's Helper
	Processor
	Deliveryman

Dairy

Managerial	Manager
	Assistant Manager
	Plant Manager
Technical	Fieldman
	Quality Control Man
Clerical	Bookkeeper
Sales	Sales Supervisor
	Salesman
Service	Foreman
	Production Supt.
	Processman

Cotton Gins

Managerial	Manager
	Assistant Manager
Technical	Fieldman
Clerical	Bookkeeper
Sales	Salesman
Service	Ginner
	Pressman

Grain Storage

Managerial	Manager
	Assistant Manager
	Elevator Supt.
Technical	Fieldman
Clerical	Bookkeeper
Sales	Salesman
Service	Foreman
	Mill Worker

Agricultural Supplies

Managerial	Manager
	Assistant Manager
	Department Manager
	Office Manager
Technical	Fieldman
Clerical	Bookkeeper
Sales	Sales Supervisor
	Salesman
Service	Foreman
	Mill Worker
	Deliveryman

Ornamental Horticulture

Managerial	Manager
	Assistant Manager
	Department Manager
Professional	Landscape Architect
Technical	Pest Control Specialist
Clerical	Bookkeeper
Sales	Sales Supervisor
	Salesman
Service	Production Foreman
	Maintenance Foreman
	Deliveryman
	Head Grower
	Grower
	Assistant Grower
	Landscape Gardener
	Asst. Landscape Gardener

Applicator

Managerial	Manager
	Assistant Manager
	Office Manager
Technical	Fieldman
Clerical	Bookkeeper
Sales	Salesman
Service	Crew Chief
	Pilot
	Flag Man
	Mixer
	Nurse Truck Driver

Forestry

Managerial	Manager
Technical	Timber Technician
Clerical	Bookkeeper
Service	Deliveryman
	Mechanic
	Forester

Agricultural Machinery

Managerial	Manager
	Assistant Manager
	Parts Manager
Clerical	Bookkeeper
Sales	Sales Supervisor
	Salesman
Service	Shop Foreman
	Mechanic
	Parts Man
	Mechanic's Helper
	Set-up & Deliveryman

Poultry

Managerial	Manager
	Production Manager
Technical	Fieldman
	Grader
Clerical	Bookkeeper
Sales	Sales Supervisor

GROUPING OF COMPETENCIES AND JOB TITLES

At the time each employer interviewed furnished the information about numbers of present and future employees in each job title in the business, a checklist of competencies (knowledge, skills, and abilities) was filled out separately for each job title. For each item on the checklist (a total of 63 items), the employer marked the degree of competency required, from none to high, on a three point scale.

A representative profile of the degree of competency needed in each knowledge or job activity was made for each occupation by calculating the mean to the nearest whole number value. A factor analysis program with varimax rotation was used to determine correlations between competencies as well as between job titles. "Factors" which emerge, as illustrated on the following pages, are groupings of competencies or job titles with high "factor loadings".

The groupings of the job titles divided the workers both by type of business and by field of activity. The type of business groups were further divided into one cluster which included sales and management and another which indicated service workers. The mean ratings in Table IX were calculated for each competency group in relation to the job title groups.

In general, it was found that the management category had higher competency requirements than the service group. One significant exception to this rule is in the competency area of agricultural machinery and power where the needs of service workers exceed those of management. In reading down the list of the fields of activity in Table X, it may be seen that the competency ratings drop in most instances.

COMPETENCY FACTOR GROUPS[1]

Employee Traits--Human Relations

Inventory, stock control, warehousing
Worker welfare (insurance, retirement, etc.)
Job opportunities and trends
Job applications, interviews
Buying and merchandising
Receiving, marking, shipping
Internal business organizations
Capital management, financing
Accounting, taxes
Experience in management decisions and problem solving
Employee-supervisor relations
Supervision
Employee relations with fellow employees

Salesmanship

Salesmanship
Customer relations
Public speech
Window and store display
Mathematics
Bookkeeping, business mathematics
Buying and merchandising

Business Management

Legal relations in business management
Government regulations (ICC, FICA, etc.)
Writing
Agricultural policy
Legal requirements of the job
Surveying
Trade relationships, promotion, advertising
Experience in management decisions and problem solving
Time study
Public speech
Accounting, taxes

Agricultural Business Management

Agricultural budgeting, records, and analysis
Farm financing (credit, taxes, etc.)
Accounting, taxes
Bookkeeping, business mathematics
Capital management, financing
Agricultural labor management

[1]From factor analysis of 60 competencies, 100 job titles, interviews with 700 businesses.

Plant and Soil Science

Physical characteristics of soil
Chemical characteristics of soil
Additional plant production practices
Plant growth, fertilization
Soil conservation
Plant propagation, seed production
Controlling insects, diseases, weeds

Animal Science

Animal growth, feeding
Animal breeding, selection
Animal housing and equipment
Animal health and sanitation
Agricultural marketing practices

Agricultural Machinery and Power

Safety skills
Sheet metal skills
Farm power and machinery
Welding skills
Manuals, technical and service, use of
Engines, repair and maintenance

Building Construction Technology

Carpentry and cabinet working
Plumbing
Blueprint reading
Heating and ventilation
Electricity
Masonry
Drafting and design
Farm buildings and conveniences
Farm construction and maintenance
Sheet metal skills
Rural electrification and processing
Soil structures (ditches, ponds, etc.)
Agricultural labor management
Tool and die making
Trade relationships
Electronics
Industrial chemistry

TABLE IX

AVERAGE COMPETENCY RATING FOR EMPLOYEES IN TWO FIELDS OF ACTIVITY
IN FOUR KINDS OF AGRICULTURAL BUSINESSES

Type of Business and Field of Activity	Competency Group (Subject Matter) Average Ratings*							
	Employee Traits, Human Relations	Sales manship	Business Management	Agricultural Business Management	Plant and Soil Science	Animal Science	Agri. Machinery and Power	Building Construction Technology
Agricultural Supplies:								
Management and Sales	2.0	2.2	1.9	1.9	2.2	2.1	1.3	1.2
Service	1.8	2.1	1.6	1.5	2.0	1.3	1.6	1.2
Agricultural Machinery:								
Management and Sales	2.4	2.5	2.1	1.8	2.1	1.4	1.8	1.4
Service	1.7	1.9	1.6	1.3	1.6	1.4	2.3	1.2
Ornamental Horticulture:								
Management and Sales	2.3	2.2	2.0	1.6	2.9	1.3	1.5	1.2
Service	2.0	2.1	1.8	1.3	2.5	1.1	1.6	1.2
Meat, Dairy, & Poultry Processing:								
Management and Sales	2.0	2.1	2.0	1.7	1.0	2.1	1.3	1.2
Service	1.4	1.5	1.4	1.1	1.0	1.6	1.5	1.1

Competency Rating Scale: High-3, Some-2, None-1

*See pages 26 and 27 for competencies within listed competency groups.

TABLE X

AVERAGE COMPETENCY RATING FOR EMPLOYEES BY FIELD OF ACTIVITY

Competency Group* (Subject Matter)	Field of Activity Average Ratings				
	Manager, Field Man	Assistant Manager	Salesman	Book-keeper	Service Worker
Employee Traits, Human Relations	2.0	2.4	1.8	1.7	1.4
Salesmanship	2.2	2.2	2.6	2.3	1.7
Business Management	1.9	2.1	2.2	1.9	1.4
Agricultural Business Management	1.7	2.0	1.5	2.1	1.1
Plant and Soil Science	2.1	2.0	1.8	1.8	1.2
Animal Science	2.1	1.3	1.2	1.4	1.5
Agricultural Machinery and Power	1.6	1.6	1.6	1.3	1.4
Building Construction Technology	1.3	1.3	1.1	1.1	1.1

Competency Rating Scale: High-3, Some-2, None-1

*See pages 26 and 27 for competencies within listed competency groups.

CHARACTERISTICS OF EMPLOYEES

This section of the report deals with the employers' evaluation of some of the characteristics which those designing the study thought might be important to those training for occupations in off-farm agricultural businesses. These characteristics include beginning and maximum salary, educational level requirements, minimum and maximum entry ages, and residential background preferences for the various job titles in the different agricultural businesses. The breadth and depth of these interviews gives us a comprehensive view of the characteristics which most employers look for in a prospective employee in the types of businesses interviewed.

Beginning and Maximum Salaries and Wages

The salaries received by workers in off-farm agricultural businesses vary widely within each of the businesses. As a matter of fact, the variation is much wider within the businesses than between businesses as we can see in Tables XI and XII. Generally, professional and managerial fields of activity command the highest beginning salary with technical, supervisory, and sales levels receiving wages in the middle category and skilled, clerical, and semi-skilled workers getting relatively low starting incomes. Maximum salaries show less variation than do beginning salaries. The professional, technical, managerial, and supervisory positions eventually reach higher wage levels than do those in sales and skilled occupations. Average salary level within a particular business is probably a better indication of the job's salary potential than averages between businesses. Wages in semi-skilled jobs, as would be expected, are relatively low and our training programs should be designed to move people rather quickly out of this level of employment. Table XIII gives a more detailed breakdown on the salaries which are being paid in the various job titles in off-farm agricultural businesses.

TABLE XI

AVERAGE BEGINNING MONTHLY SALARY IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY LEVEL OF EMPLOYMENT

Level of Employment	Meat Proc.	Dairy Proc.	Cotton Gins & Mills	Grain Storage	Agri. Supplies	Orn. Hort	Appli-cators	Fores-try	Agri. Mach.	Poultry Processing, Meat & Eggs	Total Avg.
Professional	275	500				430		400			401
Technical		500	450	550	379	351	298	208	350	350	382
Managerial	420	500	446	350	420	388	400	400	436	408	417
Supervisory	383	496	307	364	278	317	410		475	300	370
Clerical	250	250	250	265	250	240	400	224	300	308	274
Sales	400	354	340	320	300	250			400	600	370
Skilled	343	301	257	378	302	262	508	280	320	254	320
Semi-Skilled	285		219	200	273	168	325	200	233		238

TABLE XII

AVERAGE MAXIMUM MONTHLY SALARY IN SELECTED OFF FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY LEVEL OF EMPLOYMENT

Level of Employment	Meat Proc.	Dairy Proc.	Cotton Gins & Mills	Grain Storage	Agri. Supplies	Orn. Hort.	Appli-cators	Fores-try	Agri. Mach.	Poultry Processing, Meat & Eggs	Total Avg
Professional	420	600				640		625			571
Technical		600	600	675	475	453	413	265	625	797	545
Managerial	542	665	550	508	537	475	534	425	578	469	528
Supervisory	500	588	365	430	370	409	615		842	610	525
Clerical	370	275	285	315	300	320	500	240	350	375	333
Sales	500	588	438	340	400	350			600	700	490
Skilled	466	359	306	475	409	342	625	360	427	288	406
Semi-Skilled	325		273	240	347	190	400	240	315		291

TABLE XIII-A

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

MEAT PROCESSING

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Professional				
Quality Control	275	275	420	350-700
Managerial				
Manager	400	192-833	525	300-1000
Assistant Manager	360	200-560	500	200-700
Plant Manager	500	320-600	600	500-600
Supervisory				
Production Manager	300	300	400	400
Manuf. Supervisor	450	450	600	600
Foreman	400	320-500	500	360-800
Clerical				
Office Manager	200	200	400	400
Bookkeeper	300	200-400	340	200-500
Sales				
Salesman	400	125-500	500	200-833
Skilled				
Farm Supervisor	380	260-500	460	320-600
Buyer	417	300-700	600	400-1250
Grader	400	400	600	600
Machine Operator	360	360	540	540
Butcher	300	160-400	340	200-600
Processman	200	184-320	256	200-400
Semi-Skilled				
Delivery	370	240-500	410	280-540
Butcher's Helper	200	160-300	240	200-340

TABLE XIII-B

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

DAIRY PROCESSING

Level of Employment Job Title	Monthly Full Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Professional				
Quality Control	500	400-600	600	500-750
Technical				
Fieldman	500	300-542	600	400-750
Managerial				
Manager	500	280-833	750	320-1666
Assistant Manager	500	500	525	400-650
Plant Manager	500	360-700	720	500-1000
Supervisory				
Foreman	450	320-500	600	440-833
Production Supt.	542	328-600	575	400-750
Clerical				
Bookkeeper	250	250	275	275
Sales				
Sales Supervisor	408	400-667	715	500-1000
Retail Sales	300	160-375	460	260-600
Skilled				
Manuf. Supervisor	256	256	312	312
Machine Operator	400	400	460	460
Processman	325	200-450	400	350-550
Manuf. Operator	224	224	264	264

TABLE XIII-C

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON GINS

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	450	300-500	600	400-833
Managerial				
Manager	400	125-583	500	212-833
Assistant Manager	400	280-500	500	360-833
Supervisory				
Foreman	200	200	217	217
Elevator Supt.	400	400	500	500
Clerical				
Bookkeeper	250	200-340	285	200-400
Sales				
Salesman	300	250-333	400	300-500
Skilled				
Ginner	300	200-417	383	240-600
Pressman	270	200-340	320	240-400
Semi-Skilled				
Mill Worker	200	200	240	240
Delivery Man	136	136	240	240
Maintenance	320	320	340	340

TABLE XIII-D

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON MILLS

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Managerial				
Manager	583	450-600	700	650-800
Assistant Manager	400	400	500	500
Supervisory				
Plant Manager	320	216-425	378	232-525
Sales				
Salesman	380	300-458	475	450-500
Skilled				
Mill Worker	200	200	216	216

TABLE XIII-E

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

GRAIN STORAGE

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	600	600	750	500-1000
Formulator	500	500	600	600
Managerial				
Manager	425	288-833	600	300-1000
Assistant Manager	350	200-550	400	240-600
Storage Manager	275	250-300	525	450-600
Supervisory				
Warehouse Manager	320	320	400	400
Manuf. Supervisor	400	400	500	500
Sales Supervisor	400	400	450	450
Foreman	340	320-450	400	360-500
Elevator Supt.	360	200-500	400	240-850
Clerical				
Office Manager	240	240	280	280
Bookkeeper	290	250-400	350	300-500
Sales				
Salesman	320	216-500	340	240-833
Skilled				
Mill Worker	260	180-375	300	240-525
Mechanic	400	400	450	450
Buyer	450	400-500	750	500-1000
Ginner	400	400	400	400
Semi-Skilled				
Mechanic's Helper	200	200	240	240

TABLE XIII-F

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL SUPPLIES

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	417	350-500	550	500-750
Processman	340	340	400	400
Managerial				
Manager	350	200-1250	600	240-2500
Assistant Manager	400	200-833	500	232-1000
Office Manager	400	275-642	500	400-750
Shipping Manager	450	450	500	500
Plant Manager	500	380-667	583	440-1000
Supervisory				
Warehouse Manager	300	200-400	320	240-450
Sales Supervisor	240	200-625	320	240-1000
Foreman	270	192-500	390	200-833
Elevator Supt.	300	200-450	450	240-720
Clerical				
Bookkeeper	250	152-500	300	200-600
Sales				
Salesman	300	120-500	400	200-1000
Skilled				
Farm Supervisor	230	200-260	320	300-340
Maintenance Foreman	360	360	400	400
Mill Worker	260	160-367	290	200-450
Buyer	500	500	833	833
Egg Grader	160	160	200	200
Semi-Skilled				
Delivery	240	200-380	350	200-400
Loader	280	200-375	330	240-417
Machine Operator	300	300	360	320-400

TABLE XIII-G

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

ORNAMENTAL HORTICULTURE

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Professional				
Landscape Architect	430	374-600	640	450-800
Technical				
Pest Control Supvr.	317	317	333	333
Process Superintendent	437	437	625	625
Transplant Supt.	300	300	400	400
Managerial				
Manager	400	120-1000	500	200-2000
Assistant Manager	375	300-500	450	320-1000
Supervisory				
Production Manager	475	250-700	700	400-1000
Shipping Manager	350	200-600	433	433
Plant Manager	275	250-300	345	292-400
Farm Supervisor	350	300-400	375	300-450
Sales Supervisor	300	240-400	400	300-450
Foreman	240	200-360	310	200-800
Fieldman	232	232	300	200-400
Clerical				
Bookkeeper	240	140-400	320	200-500
Sales				
Salesman	250	160-500	350	240-1233
Skilled				
Maintenance Foreman	400	400	475	400-542
Head Grower	320	200-417	435	320-517
Grower	340	160-500	500	200-667
Grader	150	144-160	200	200
Machinery Operator	160	160	200	200
Landscape Gardener	200	160-250	240	200-400
Semi-Skilled				
Assistant Grower	176	100-300	200	160-400
Asst. Landscape Gardener	160	120-200	180	160-300

TABLE XIII-H

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

APPLICATOR BUSINESS

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	300	300	400	400
Mixer	296	292-400	425	400-450
Managerial				
Manager	500	250-833	667	400-1250
Assistant Manager	300	300	400	400
Supervisory				
Crew Chief	410	320-500	615	400-833
Clerical				
Office Manager	400	400	500	500
Skilled				
Pilot	615	400-833	800	400-1250
Chemical Man	400	400	450	450
Semi-Skilled				
Flag Man	325	325	400	400

TABLE XIII-I

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

FORESTRY

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Professional				
Forester	400	400	625	600-650
Technical				
Timber Technician	208	200-217	265	250-280
Managerial				
Manager	400	250-600	425	333-800
Clerical				
Bookkeeper	224	224	240	240
Skilled				
Mechanic	300	300	360	360
Carpenter	260	240-280	360	320-400
Semi-Skilled				
Delivery	200	200	240	240

TABLE XIII-J

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL MACHINERY

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	350	300-400	625	600-650
Managerial				
Manager	408	200-1000	600	300-1250
Assistant Manager	400	200-450	550	340-600
Plant Manager	500	500	583	583
Supervisory				
Sales Supervisor	875	500-1250	1667	1667
Shipping Manager	250	250	333	333
Shop Foreman	300	200-500	525	450-725
Clerical				
Bookkeeper	300	150-400	350	200-500
Sales				
Salesman	400	200-700	600	200-1000
Skilled				
Manuf. Supervisor	500	500	600	600
Mechanic	280	200-500	400	240-700
Parts Man	300	160-500	420	280-600
Welder	200	160-340	288	240-400
Semi-Skilled				
Delivery	240	140-260	287	240-340
Mechanic's Helper	200	140-300	340	180-500
Set-Up Man	240	192-350	300	192-600
Machine Operator	250	250	333	333

TABLE XIII-K

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

POULTRY PROCESSING - EGGS

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	300	200-400	440	440
Quality Control	400	400	700	700
Managerial				
Manager	400	240-700	500	300-800
Assistant Manager	375	375	450	450
Production Manager	450	400-500	525	500-550
Supervisory				
Shipping Manager	320	320	700	700
Plant Manager	280	280	520	340-700
Clerical				
Bookkeeper	308	216-400	375	250-500
Sales				
Sales Supervisor	600	600	700	700
Skilled				
Warehouse Manager	400	400	500	500
Delivery	216	216	240	240
Egg Grader	200	200	240	200-240
Processman	200	200	200	200

TABLE XIII-L

MEDIAN AND RANGE OF BEGINNING AND MAXIMUM SALARY IN OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

POULTRY PROCESSING - MEAT

Level of Employment Job Title	Monthly Full-Time			
	Beginning		Maximum	
	Median	Range	Median	Range
Technical				
Fieldman	500	500	1250	1250
Managerial				
Manager	370	340-400	400	350-450
Skilled				
Grader	200	200	260	260

Education Needed in Off-Farm Agricultural Occupations

Information supplied by the 719 employers interviewed as indicated in Table XIV shows that 50 percent of the jobs available in off-farm agricultural businesses may be filled by persons with a high school education. Forty-eight percent of the employees need education above the high school level. It is interesting to note the very low percent of the jobs which require less than a high school education. Those businesses which indicate the greater percentage of workers with beyond high school education are dairy processing, grain storage, and agricultural machinery. Meat processing, cotton processing, and agricultural supplies were business which required relatively lower percentage of employees with training above the high school level. Post high school technical training is indicated for surprisingly few of the employees. However, when we consider that this type of employee simply has not been available, we can understand why more employers do not require training at this level. Table XV gives a more detailed report of the educational requirements of the job titles in off-farm agricultural business. As would be expected, the amount of education necessary to be employed decreases as we go down the table by levels of employment.

We know that we will, for the immediate future, be faced with the prospect of large numbers of high school graduates who will be seeking employment without further training. This challenges those giving training and education at the high school level to strive to assure preparation which will meet job entry requirements.

TABLE XIV

EDUCATION NEEDED IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY LEVEL OF EMPLOYMENT

Level of Employment	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Professional			7	13	80	15
Technical		18	18	34	30	55
Managerial		32	11	32	25	735
Supervisory		63	20	10	7	164
Clerical		70	12	16	2	115
Sales	2	51	6	35	6	178
Skilled	4	64	22	7	3	516
Semi-Skilled	14	78	6	2		162
Percent of Total	2	50	14	21	13	1940

TABLE XV-A

EDUCATION NEEDED IN MEAT PROCESSING INDUSTRY IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Professional						
Quality Control					100	1
Managerial						
Manager		45	9	30	16	74
Assistant Manager		100				4
Plant Manager		50	17	17	16	6
Supervisory						
Production Manager		100				1
Manuf. Supervisor				100		1
Foreman		72		14	14	7
Clerical						
Office Manager			100			1
Bookkeeper		100				3
Sales						
Salesman		50		50		18
Skilled						
Farm Supervisor		100				2
Buyer		39		44	17	23
Grader				100		1
Machine Operator		100				1
Butcher	12	83	5			41
Processman	11	89				9
Semi-Skilled						
Delivery		100				3
Butcher's Helper	33	67				24

TABLE XV-B

EDUCATION NEEDED IN THE DAIRY PROCESSING INDUSTRY IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Professional						
Quality Control				14	86	7
Technical						
Fieldman				14	86	7
Managerial						
Manager			9	46	45	11
Assistant Manager					100	1
Plant Manager		7	8	8	77	13
Supervisory						
Foreman		17	17	33	33	6
Production Supt.					100	3
Clerical						
Bookkeeper		100				1
Sales						
Sales Supervisor				75	25	4
Retail Sales		80	20			5
Skilled						
Manuf. Supervisor		100				1
Machine Operator		100				4
Processman		75		25		4
Manufacture Operator		100				1

TABLE XV-C

EDUCATION NEEDED IN COTTON GINS IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman			40	40	20	5
Managerial						
Manager		56	10	27	7	59
Assistant Manager		40	20	20	20	5
Supervisory						
Foreman		100				2
Elevator Superintendent		100				1
Clerical						
Bookkeeper		63	12	25		16
Sales						
Salesman		67	33			3
Skilled						
Ginner	5	82	10	3		38
Pressman	12	88				8
Semi-Skilled						
Mill Worker		100				2
Delivery Man		100				1
Maintenance		100				1

TABLE XV-D

EDUCATION NEEDED IN COTTON MILLS IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Managerial						
Manager			34	33	33	3
Assistant Manager			100			1
Supervisory						
Plant Manager		100				2
Sales						
Salesman				100		2
Skilled						
Mill Worker		100				1

TABLE XV-E

EDUCATION NEEDED IN GRAIN STORAGE IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman		34		33	33	3
Formulator					100	1
Managerial						
Manager		17	14	43	26	35
Assistant Manager		56	11	33		9
Storage Manager		50		50		2
Supervisory						
Warehouse Manager				100		1
Production Supervisor				100		1
Sales Supervisor		100				1
Foreman		67		33		3
Elevator Supt.		64	22	14		14
Clerical						
Office Manager				100		1
Bookkeeper		71		29		7
Sales						
Salesman		29	14	57		7
Skilled						
Mill Worker	10	70			20	10
Mechanic			100			1
Buyer				50	50	2
Ginner		100				1
Semi-Skilled						
Mechanic's Helper		100				1

TABLE XV-F

EDUCATION NEEDED IN AGRICULTURAL SUPPLIES IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman		17	8	42	33	12
Managerial						
Manager		35	5	42	18	158
Assistant Manager		41	3	31	25	32
Office Manager		13	12	25	50	8
Shipping Manager			100			1
Plant Manager		43	29		28	7
Supervisory						
Warehouse Manager		100				3
Sales Supervisor		78	11		11	9
Foreman		72	14	11	3	35
Elevator Supt.		86	7	7		15
Clerical						
Bookkeeper		67	17	12	4	51
Sales						
Salesman		65	4	28	3	71
Skilled						
Farm Supervisor		100				3
Maintenance Foreman			100			2
Mill Worker	8	90	2			61
Mechanic		50	50			2
Buyer					100	1
Egg Grader		100				1
Semi-Skilled						
Delivery	14	81		5		21
Loader		88	12			8
Machine Operator		100				2

TABLE XV-G

EDUCATION NEEDED IN ORNAMENTAL HORTICULTURE IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Professional						
Landscape Architect			25	25	50	4
Technical						
Pest Control Supvr.		50		50		2
Process Superintendent				100		1
Transplant Supt.		17	33	33	17	6
Managerial						
Manager		26	13	25	36	112
Assistant Manager		38	12	38	12	8
Supervisory						
Production Manager		50			50	2
Shipping Manager		100				1
Plant Manager		100				2
Farm Supervisor		100				3
Sales Supervisor		50	50			4
Foreman		75	17	8		12
Fieldman		67	33			3
Clerical						
Bookkeeper		100				4
Sales						
Salesman	11	67		17	5	18
Skilled						
Maintenance Foreman		67	33			3
Head Grower		66	17	17		6
Grower		48	16	26	10	50
Grader		100				2
Machinery Operator		50	50			2
Transplanter		50		50		2
Landscape Gardener	28	67		5		21
Semi-Skilled						
Assistant Grower	13	70	4	13		23
Asst. Landscape Gardener		63	37			8

TABLE XV-H

EDUCATION NEEDED IN THE APPLICATOR BUSINESS IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman		12	12	76		8
Mixer			100			2
Managerial						
Manager		18	11	32	39	28
Assistant Manager		100				1
Supervisory						
Crew Chief		100				5
Clerical						
Office Manager		67		33		3
Sales						
Salesman		100				1
Skilled						
Machine Operator		100				1
Pilot		42	42	16		12
Chemical Man	20	80				5
Semi-Skilled						
Flag Man	29	71				7

TABLE XV-I

EDUCATION NEEDED IN FORESTRY IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Professional Forester					100	3
Technical Timber Technician		100				2
Managerial Manager		40		20	40	5
Clerical Bookkeeper		100				1
Skilled Mechanic			100			1
Carpenter		50	50			2
Semi-Skilled Delivery		100				1

TABLE XV-J

EDUCATION NEEDED IN AGRICULTURAL MACHINERY IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman		50	50			2
Managerial						
Manager		21	16	38	25	127
Assistant Manager		29	43	28		7
Plant Manager					100	1
Supervisory						
Sales Supervisor			50		50	2
Shipping Manager		100				1
Shop Foreman		24	71	5		21
Clerical						
Bookkeeper		80	8	12		25
Sales						
Salesman		30	10	47	13	47
Skilled						
Production Supervisor		100				1
Mechanic		42	57	1		97
Parts Man		59	40	1		77
Welder		67	33			3
Semi-Skilled						
Delivery		86	14			7
Mechanic's Helper	7	87	6			15
Set-up Man	14	78	8			37
Machine Operator		100				1

TABLE XV K

EDUCATION NEEDED IN THE POULTRY PROCESSING INDUSTRY IN OKLAHOMA BY JOB TITLE

Level of Employment Job Title	Less Than High School Percent	High School Percent	Post High School Technical Percent	Some College Percent	College Degree Percent	Total Number Interviews
Technical						
Fieldman		34	33		33	3
Quality Control					100	1
Managerial						
Manager		38	8	23	31	13
Assistant Manager			100			1
Production Manager			50	50		2
Plant Manager					100	1
Supervisory						
Shipping Manager				100		1
Plant Manager			50		50	2
Clerical						
Bookkeeper		50		50		2
Sales						
Sales Supervisor		50			50	2
Skilled						
Warehouse Manager		100				1
Delivery		100				1
Grader		100				7
Processman		100				4

Minimum Age to Enter Off-Farm Agricultural Occupations

Another worker characteristic closely tied to educational requirements is age of employability. Table XVI shows the average minimum age at which employers indicated they would be willing to hire employees.

As would be expected, Table XVI shows that entry age advances as the training and responsibility associated with the job increase. Entry into the service (skilled and semi-skilled), clerical, sales, and technical positions ranges from 20 to 23 years of age. Positions at the managerial and supervisory level may be entered at the average age of 26, while the minimum age for professional people is 31. Considering these averages, there appears to be a two-year gap between the lowest minimum entry age of 20 and the normal age of high school graduation. There are, however, certain job titles for which the minimum age limit is less than the average (Table XVII). Many employers have indicated that age is only an indication of more important characteristics which they desire in employees and that if these attributes can be found in younger people, age is not a factor in selection. Mental and emotional stability, willingness to accept responsibility, ability to work hard, and honesty and accuracy are more important than chronological age to many of those doing the hiring in off-farm agricultural businesses.

If teachers of vocational agriculture and others cooperating in the training of employees in off-farm agriculture can develop these worker characteristics so important to the employer, this gap between age of high school graduation and minimum age for employment may be narrowed. Education beyond the high school level should, of course, be the aim of those who can benefit from it and for whom it is possible.

TABLE XVI

AVERAGE MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY LEVEL OF EMPLOYMENT

Level of Employment	Average Minimum Age
Professional	31
Technical	22
Managerial	26
Supervisory	26
Clerical	22
Sales	22
Skilled	23
Semi-Skilled	20

TABLE XVII-A

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

MEAT PROCESSING

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Professional		
Quality Control	25	25
Managerial		
Manager	27	18-35
Assistant Manager	22	20-35
Plant Manager	32.5	30-35
Supervisory		
Production Manager	25	25
Manuf. Supervisor	24	24
Foreman	30	25-35
Clerical		
Office Manager	25	25
Bookkeeper	20	18-30
Sales		
Salesman	21	18-27
Skilled		
Farm Supervisor	21.5	18-25
Foreman	30	30
Buyer	25	18-35
Grader	22	22
Machine Operator	18	18
Butcher	20	16-30
Processman	22	20-30
Semi-Skilled		
Delivery	22	18-30
Butcher's Helper	20	16-30

TABLE XVII-B

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

DAIRY PROCESSING

Level of Employment Job Title	Minimum Age to Enter Median	Range
Professional		
Quality Control	30	30
Technical		
Fieldman	22	21-26
Managerial		
Manager	30	22-35
Assistant Manager	25	22-30
Plant Manager	23	21-30
Supervisory		
Foreman	25	25-30
Production Superintendent	30	25-30
Clerical		
Bookkeeper	20	20
Sales		
Sales Supervisor	28	25-30
Retail Sales	23	18-25
Skilled		
Manuf. Supervisor	18	18
Foreman	25	21-30
Machine Operator	21	21
Processman	21	18-25
Manuf. Operator	18	18

TABLE XVII-C

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON GINS

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Technical		
Fieldman	27.5	22-30
Managerial		
Manager	26	19-35
Assistant Manager	25	21-35
Supervisory		
Foreman	25	25
Elevator Superintendent	24	24
Clerical		
Bookkeeper	20	18-25
Sales		
Salesman	21	20-24
Skilled		
Ginner	25	18-40
Pressman	26	18-30
Semi-Skilled		
Mill Worker	21	18-25
Delivery Man	20	20
Maintenance	20	20

TABLE XVII-D

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON MILLS

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Managerial		
Manager	30	23-30
Assistant Manager	22	22
Supervisory		
Plant Manager	24	20-28
Sales		
Salesman	20	18-22
Skilled		
Mill Worker	30	30

TABLE XVII-E

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

GRAIN STORAGE

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Technical		
Fieldman	24	24
Mixer	21	21
Managerial		
Manager	25	20-35
Assistant Manager	23.5	20-30
Storage Manager	25	22-30
Supervisory		
Warehouse Manager	30	30
Manuf. Supervisor	26	26
Sales Supervisor	30	30
Foreman	27	24-30
Elevator Superintendent	25	20-30
Clerical		
Office Manager	27	27
Bookkeeper	25	20-30
Sales		
Salesman	22	20-26
Skilled		
Mill Worker	22	17-24
Mechanic	24	24
Buyer	25	24-26
Ginner	30	30
Semi-Skilled		
Mechanic's Helper	25	25

TABLE XVII-F

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL SUPPLIES

Level of Employment / Job Title	Minimum Age to Enter	
	Median	Range
Technical		
Fieldman	22	19-30
Processman	20	20
Managerial		
Manager	25	18-35
Assistant Manager	22	20-35
Office Manager	25	22-30
Shipping Manager	30	30
Plant Manager	32.5	30-35
Supervisory		
Warehouse Manager	25	25
Sales Supervisor	27.5	25-30
Foreman	25	20-35
Elevator Superintendent	25	18-30
Clerical		
Bookkeeper	21	16-30
Sales		
Salesman	22	16-40
Skilled		
Farm Supervisor	23	21-25
Maintenance Foreman	30	30
Mill Worker	18	16-30
Mechanic	21	20-22
Buyer	30	30
Egg Grader	20	20
Semi-Skilled		
Delivery	20	18-30
Loader	19	18-25
Machine Operator	25	21-30

TABLE XVII-G

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

ORNAMENTAL HORTICULTURE

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Professional		
Landscape Architect	22	21-30
Technical		
Pest Control Supervisor	22	22
Process Superintendent	22	22
Transplant Superintendent	24	24
Managerial		
Manager	25	20-40
Assistant Manager	22	18-25
Supervisory		
Production Manager	26	26
Shipping Manager	21.5	18-25
Plant Manager	22.5	21-24
Farm Supervisor	27.5	25-30
Sales Supervisor	24	18-26
Foreman	22.5	20-26
Fieldman	20	20
Clerical		
Bookkeeper	20	18-22
Sales		
Salesman	21	18-30
Skilled		
Maintenance Foreman	24	18-25
Head Grower	26	18-30
Grower	23	16-45
Grader	18	18
Machinery Operator	22	22
Transplanter	20	20
Landscape Gardener	17	16-20
Semi-Skilled		
Assistant Grower	20	18-24
Assistant Landscape Gardener	18.5	17-21

TABLE XVII-H

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

APPLICATOR BUSINESS

Level of Employment / Job Title	Minimum Age to Enter	
	Median	Range
Technical		
Fieldman	19	18-21
Formulator	20	18-24
Managerial		
Manager	25	20-35
Assistant Manager	22	22
Supervisory		
Crew Chief	24	21-30
Clerical		
Office Manager	21	20-22
Sales		
Salesman	21	21
Skilled		
Machine Operator	18	18
Pilot	23	20-30
Chemical Man	21.5	18-24
Semi-Skilled		
Flag Man	17	16-18

TABLE XVII-I

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

FORESTRY

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Professional		
Forester	25	25-30
Technical		
Timber Technician	22.5	21-24
Managerial		
Manager	30	25-40
Clerical		
Bookkeeper	21	21
Skilled		
Mechanic	30	30
Carpenter	24	24
Semi-Skilled		
Delivery	20	20

TABLE XVII-J

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL MACHINERY

Level of Employment	Minimum Age to Enter	
Job Title	Median	Range
Technical		
Fieldman	23	21-25
Managerial		
Manager	28	20-35
Assistant Manager	25	21-35
Plant Manager	30	30
Supervisory		
Sales Supervisor	35	35
Shipping Manager	30	30
Shop Foreman	28	20-35
Clerical		
Bookkeeper	21	18-26
Sales		
Salesman	25	18-32
Skilled		
Manuf. Supervisor	20	20
Mechanic	21	16-30
Parts Man	20	18-30
Welder	18	18
Semi-Skilled		
Delivery	19	18-20
Mechanic's Helper	18	18-25
Set-Up Man	18	16-30
Machine Operator	18	18

TABLE XVII-K

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

POULTRY PROCESSING - EGGS

Level of Employment Job Title	Minimum Age to Enter	
	Median	Range
Technical		
Fieldman	26.5	25-28
Quality Control	21	21
Managerial		
Manager	25	18-30
Assistant Manager	21	21
Production Manager	25.5	25-26
Supervisory		
Shipping Manager	25	25
Plant Manager	30	30
Clerical		
Bookkeeper	26	26
Sales		
Sales Supervisor	23	20-26
Skilled		
Warehouse Manager	21	21
Delivery	24	24
Egg Grader	20	20
Processman	20	20

TABLE XVII-L

MEDIAN AND RANGE OF MINIMUM AGE TO ENTER EMPLOYMENT IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

POULTRY PROCESSING - MEAT

Level of Employment Job Title	Minimum Age to Enter Median	 Range
Technical		
Fieldman	25	25
Managerial		
Manager	30	30
Plant Manager	30	30
Skilled		
Grader	20	20

Residential Background Preferred for Persons Working in Off-Farm Agriculture

Farm experience is considered to be an important asset and a definite advantage to beginning workers seeking employment in most jobs in off-farm agricultural businesses. As shown in Table XVIII, employers prefer a farm background in 78 percent of the positions considered. Four percent specified a rural, non-farm background, while 18 percent had no preference. An urban background was not preferred by any of the managers interviewed. Businesses which show the greatest percent of employees in which a farm background was desirable were grain storage, cotton, agricultural machinery, applicators, and agricultural supplies--those businesses dealing directly with farmers in sales or service.

Several reasons were given by employers for their preference for young men with a farm background. The farm youth has a store of knowledge which saves valuable training time. In the opinion of the interviewees, the farm youth is more able and willing to work hard. Through experience, business managers have learned that rural youth are punctual, have orderly work habits, and accept responsibility. Young men with a farm background know how to talk the farmer's language. They respect farmers and are sympathetic to farm problems. For these reasons the owners and managers of businesses which deal with farmers and farm products are looking for men with a farm background. Table XIX shows the residential background preference indicated by the managers in the individual job titles in the businesses studied.

TABLE XVIII

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA

Type of Business	Farm Percent	Rural Non-Farm Percent	No Preference Percent
Meat Processing	68	2	30
Dairy Processing	64	3	33
Cotton Processing	87	7	6
Grain Storage	92	3	5
Agricultural Supplies	82	7	11
Ornamental Horticulture	60	3	37
Applicators	84	0	16
Forestry	80	0	20
Agricultural Machinery	85	3	12
Poultry Processing	63	12	25
Average Percent	78	4	18

TABLE XIX-A

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

MEAT PROCESSING

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Professional				
Quality Control			100	2
Managerial				
Manager	61	1	38	74
Assistant Manager	25		75	4
Plant Manager	67		33	6
Supervisory				
Production Manager	100			1
Manuf. Supervisor	100			1
Foreman	72	14	14	7
Clerical				
Office Manager	100			1
Bookkeeper	33		67	3
Sales				
Salesman	67	5	28	18
Skilled				
Farm Supervisor	50		50	2
Buyer	87		13	23
Grader	100			1
Machine Operator	100			1
Butcher	71	2	27	41
Processman	56		44	9
Semi-Skilled				
Delivery	67		33	3
Butcher's Helper	58	4	38	24

TABLE XIX-B

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

DAIRY PROCESSING

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Professional				
Quality Control	71		29	7
Technical				
Fieldman	86		14	7
Managerial				
Manager	50	8	42	12
Assistant Manager	50		50	2
Plant Manager	46	8	46	13
Supervisory				
Foreman	83		17	6
Production Supt.	80		20	5
Clerical				
Bookkeeper	100			1
Sales				
Sales Supervisor	25		75	4
Retail Sales	40		60	5
Skilled				
Manuf. Superintendent	100			1
Foreman	83		17	6
Machine Operator	100			4
Processman	75		25	4
Manuf. Operator	100			1

TABLE XIX-C

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON GINS

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	100			5
Managerial				
Manager	90	5	5	59
Assistant Manager	60		40	5
Supervisory				
Foreman	100			1
Elevator Supt.	100			1
Clerical				
Bookkeeper	75	6	19	16
Sales				
Salesman	67	33		3
Skilled				
Ginner	89	3	8	38
Pressman	100			8
Semi-Skilled				
Mill Worker	100			2
Deliveryman	100			1
Maintenance	100			1

TABLE XIX-D

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

COTTON MILLS

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Managerial				
Manager	67	33		3
Assistant Manager		100		1
Supervisory				
Plant Manager		100		2
Sales				
Salesman	100			2
Skilled				
Mill Worker		100		1

TABLE XIX-E

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

GRAIN STORAGE

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	100			3
Mixer	100			2
Managerial				
Manager	86	8	6	35
Assistant Manager	78	11	11	9
Storage Manager	100			2
Supervisory				
Warehouse Manager	100			1
Manuf. Supervisor	100			3
Sales Supervisor	100			1
Foreman	100			32
Elevator Supt.	79		21	14
Clerical				
Office Manager	100			1
Bookkeeper	72	14	14	7
Sales				
Salesman	100			7
Skilled				
Mill Worker	100			10
Mechanic	100			1
Buyer	50		50	2
Ginner	100			1
Semi-Skilled				
Mechanic's Helper	100			1

TABLE XIX-F

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL SUPPLIES

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	100			12
Managerial				
Manager	86	6	8	158
Assistant Manager	81	6	13	32
Office Manager	75	25		8
Shipping Manager	100			1
Plant Manager	57	14	29	7
Supervisory				
Warehouse Manager	67		33	3
Sales Supervisor	67	22	11	9
Foreman	77	14	9	35
Elevator Supt.	87	7	6	15
Clerical				
Bookkeeper	73	4	23	51
Sales				
Salesman	85	7	8	71
Skilled				
Farm Supervisor	100			3
Maintenance Foreman	100			1
Mill Worker	89	6	5	61
Mechanic	100			2
Buyer			100	1
Egg Grader	100			1
Semi-Skilled				
Delivery	76		24	21
Loader	75		25	8
Machine Operator	100			2

TABLE XIX-G

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

ORNAMENTAL HORTICULTURE

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Professional				
Landscape Architect	50		50	6
Technical				
Pest Control Supervisor	100			2
Process Superintendent			100	1
Transplant Supt.	100			1
Managerial				
Manager	51	6	43	112
Assistant Manager	38		62	8
Supervisory				
Production Manager	100			2
Shipping Manager	71		29	7
Plant Manager	100			2
Farm Supervisor	100			3
Sales Supervisor	100			4
Foreman	75		25	12
Fieldman	100			3
Clerical				
Bookkeeper	50		50	4
Sales				
Salesman	67		33	18
Skilled				
Maintenance Foreman	50		50	4
Head Grower	50		50	6
Grower	72	4	24	50
Grader	100			2
Machinery Operator	100			1
Transplanter	100			2
Landscape Gardener	71		29	21
Semi-Skilled				
Assistant Grower	65		35	23
Asst. Landscape Gardener			100	15

TABLE XIX-H

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

APPLICATOR BUSINESS

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	75		25	8
Managerial				
Manager	82		18	28
Assistant Manager	100			1
Supervisory				
Crew Chief	100			5
Clerical				
Office Manager	100			4
Sales				
Salesman	100			1
Skilled				
Machine Operator	100			3
Pilot	75		25	12
Chemical Man	80		20	5
Semi-Skilled				
Flag Man	86		14	7

TABLE XIX I

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

FORESTRY

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Professional				
Forester	67		33	3
Technical				
Timber Technician	100			2
Managerial				
Manager	80		20	5
Clerical				
Bookkeeper			100	1
Skilled				
Mechanic	100			1
Carpenter	100			2
Semi-Skilled				
Delivery	100			1

TABLE XIX-J

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

AGRICULTURAL MACHINERY

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	50	50		2
Managerial				
Manager	87	2	11	127
Assistant Manager	86		14	7
Plant Manager	100			1
Supervisory				
Sales Supervisor	100			2
Shipping Manager	100			1
Shop Foreman	86		14	21
Clerical				
Bookkeeper	64	12	24	25
Sales				
Salesman	89	7	4	47
Skilled				
Manuf Superintendent	100			1
Mechanic	77	2	21	97
Parts Man	90	2	8	77
Welder	100			3
Semi-Skilled				
Delivery	86	14		7
Mechanic's Helper	93		7	15
Set-Up Man	95		5	37
Machine Operator	100			5

TABLE XIX-K

RESIDENTIAL BACKGROUND PREFERRED FOR PERSONS WORKING IN SELECTED OFF-FARM AGRICULTURAL BUSINESSES IN OKLAHOMA BY JOB TITLE

POULTRY PROCESSING - EGGS

Level of Employment Job Title	Farm Percent	Rural Non-Farm Percent	No Preference Percent	Number Interviews
Technical				
Fieldman	100			2
Quality Control			100	1
Managerial				
Manager	82	9	9	11
Assistant Manager	100			1
Production Manager	50		50	2
Supervisory				
Shipping Manager	100			1
Plant Manager	50		50	2
Clerical				
Bookkeeper		50	50	2
Sales				
Sales Supervisor	50		50	2
Skilled				
Warehouse Manager			100	1
Delivery	100			1
Egg Grader	67	33		6
Processman	34	33	33	3

POULTRY PROCESSING - MEAT

Technical				
Fieldman			100	1
Managerial				
Manager	100			2
Plant Manager			100	1
Skilled				
Grader	100			1

PROFESSIONAL AGRICULTURAL EMPLOYEES IN PUBLIC AND PRIVATE SERVICE AGENCIES

An attempt was made in this study to obtain information concerning professional agricultural workers in private and public organizations serving agriculture. Information obtained from interviews with the state head or some other responsible representative of the following agencies is contained in this part of the report:

- Federal Land Bank
- Veterinarians
- State Land Commission
- State Board of Health
- Murray State College
- Noble Foundation
- State Board of Agriculture
- OSU College of Agriculture
- OSU Experiment Station
- Agriculture Extension Service
- State Soil Conservation Service
- Farmers Home Administration--State
- Vocational Agriculture
- Federal Crop Insurance
- Agriculture Stabilization and Conservation

Number of Persons Employed and Anticipated Needs

There are 1,943 full-time and 73 part-time professional agriculture employees in the above mentioned services. It is estimated that 1,027 new employees will be needed by 1969 as replacements and new personnel. Since practically all of these employees will be college degree people and considering that the businesses discussed in the preceding sections will need about eight hundred college trained personnel, this indicates an annual demand of approximately four hundred college graduates in agriculture in the businesses and organizations covered in this study.

Number Currently Employed		Number Needed by 1969			
		Replacements		Additions	
Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
1,943	73	759	100	161	7

Minimum and Maximum Entry Age

The minimum average age at which a person may enter these professional agricultural occupations is 26 with the range being from 22 to 30. Some training positions are available which have a minimum entry age of 18 years. The average maximum age for job entry with the organizations interviewed is 46 years and a range of 40 to 50 years reported.

Education Required

The vast majority of these jobs (90%) require a baccalaureate degree or above for job entry and advancement. Ten percent of these professional jobs require only some college but the trend is toward more education rather than less as an employment requirement. The following chart illustrates the level of education required in this category of employment.

Educational Level Required	Percent of Jobs Requiring this Level
Some College	10
College Degree	60
College Degree Plus 18 Hours	2
Master's Degree	14
Doctor's Degree	14

Beginning and Maximum Salaries

Salaries in these professional agricultural occupations vary somewhat depending upon the level at which the individual is working and the administrative duties connected with the job. The following table shows the range of beginning and maximum salaries at these various levels.

Area of Work	Beginning Range	Maximum Range
Trainee	$4,000 - 5,000	
Fieldman	3,720 - 5,280	$ 5,880 - 7,800
Local (Public)	5,600 - 7,200	7,500 - 11,400
Local (Private)	7,200	12,300
County	5,000 - 7,200	11,000 - 11,700
District	6,000 - 11,400	11,300 - 14,170
State (Employee)	5,000 - 8,400	7,000 - 15,000
State (Administration)	7,200 - 12,000	10,200 - 20,000

CONCLUSIONS AND IMPLICATIONS

Studies of employment opportunities and training needs in off-farm agricultural occupations have been conducted in 26 states. Results of this study in Oklahoma and the studies in other states should give direction to local and state departments of vocational agriculture in planning new courses or in redesigning present courses. The training needs of agriculture--both production and business--have clearly become the responsibility of vocational agriculture and these studies which have been made should be valuable aids in curriculum planning and course construction.

Many of the people working in off-farm agricultural businesses need competencies in agriculture. Many of these competencies can be taught in high school vocational agriculture classes, while many will require education beyond the high school level. Employers expect an increase in the number of agriculturally competent employees in the next few years, and many will be looking to vocational agriculture to provide the training in agriculture.

Employers interviewed were almost unanimous in their desire for employees with training in human relations, communication, salesmanship, and safety. The need for training in the various fields of agriculture such as plant and soil science, animal science, agricultural mechanization, and agricultural business management was determined by the type of business and the level of employment being considered. Any program designed to train young men for employment in off-farm agricultural business should aim at increasing the students' abilities in this general area of employee traits as well as more specific instruction in the areas of agriculture which seem to be indicated.

A majority of the employment opportunities in off-farm agriculture are in the larger centers of population in Oklahoma. Considering this and the mobility of our population, it seems evident that our training programs in vocational agriculture must prepare students for employment opportunities which may be greater than the needs of the local community. Programs of instruction in vocational agriculture should be based on the needs and aspirations of the local students rather than the needs of the local community. Although most students may be trained for entry level employment many will advance to positions of leadership in agricultural industry.

More precise information is still needed to guide supervisors and teachers in program planning. Further research is indicated in the following areas:

1. A procedure for keeping informed on the needs and opportunities in production agriculture and agricultural business.
2. Determination of the most efficient method or combination of methods of training for employment in off-farm agriculture.
3. Detailed descriptions of the more important job titles in off-farm agricultural businesses.
4. Study of other businesses which may offer employment opportunities to people trained in agriculture.
5. A clear definition of what should be taught at the various levels of our educational system--high school, post high school, and college.
6. A re-definition of what is meant by agricultural competencies which includes agricultural business competencies as well as production competencies.

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The Jackson County Schools Vocational Education Research Project

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a supplement

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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VT000054

Jackson County Intermediate Education District
Court House Annex - Medford, Oregon

1965

PREFACE

This document is a condensed edition of the complete report which contains more than 800 pages. Copies of the complete report are on file in the Jackson County Intermediate Education Office, Court House Annex, Medford, Oregon. Copies of the complete report have been distributed to the superintendents of the eight high schools in Jackson County.

The complete report contains all of the data to support the statements made in this report. Since the complete report contains much data which is confidential in nature, it is anticipated that it will be used primarily by the administrators of the Jackson County high school districts as they evaluate the curricular offerings, equipment, facilities, and counseling programs of their schools.

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INTRODUCTION

It is important for educators to be constantly cognizant of the degree of balance they maintain in their high school programs between vocational and general education. The problem of curricular balance is increased in Jackson County since all eight high schools offer preparation for college and preparation for immediate entry into the work force upon graduation.

The Jackson County Vocational Education Research Project was conducted to determine the present status of vocational education in Jackson County high schools.

By conducting the research project, the researchers found data, both primary and secondary, which were used to test the hypothesis that there were jobs available in Jackson County for high school graduates who were adequately prepared by having completed approved vocational programs in high school.

Data were also collected to test the hypothesis that Jackson County high schools have adequate offerings in vocational education to meet the needs of high school students in Jackson County.

Vocational is defined as a program which would prepare a student with the knowledges, skills, and supervised on-the-job training to be qualified and accepted at the level of a one-year apprenticeship.

A vocational program is defined as the sequence of course offerings in which a qualified apprentice could be prepared.

Vocational education is education for work. Vocational education is organized instruction below college level which enables the learner to

prepare for a particular vocation. It includes supervised work experience and culminates with the learner having the equivalent training of one year of apprenticeship.

Within these concepts of vocational education the student is permitted to receive an education geared to his immediate needs. Yet, it is flexible enough to allow him to change his outlook as he matures.

RELATED RESEARCH

Since only a few vocational education studies of this type have been published, the researchers were necessarily limited to a review of similar surveys currently in progress in the State of Oregon and three studies completed outside the state. Many commonalities were found among all studies in objectives, methodology, and conclusions.

Objectives Found in Related Research

The objectives of the studies reviewed involved an analysis of present and future vocational education needs and the determination of both the competencies required to meet these needs and the extent to which schools are presently developing them. Specific attention was directed toward the upgrading of vocational education. Curriculum development activities utilized a cooperative approach coordinating local programs with regional or area vocational education centers. To this end, evaluation teams, committees, or self-evaluation check-lists were used to determine the adequacy of local facilities and equipment for meeting vocational education needs. Methods of sharing resources among several school districts to the attainment of this common goal were considered.

In some studies recognition was given to the importance of vocational counseling and the necessity for upgrading this aspect of the vocational education program to keep pace with the increased demands placed upon counselors. Increased emphasis is given to the motivation

of youth and changing their concepts and attitudes toward the world of work. Retention of the high school dropout and his preparation for job entry is a similar problem bearing attention. Study was also undertaken on the question of educating for specific skills as opposed to emphasizing general occupational education.

Methodology

In the "labor skills" surveys, assessment of industrial and distributive manpower needs for both the present and future was made. Depth studies on occupations open to high school graduates were also conducted. Projections were advanced on the competencies required for newly created positions. Surveys of literature were made for studies relevant to the projects. Lay advisory and general steering committees were created to offer guidance, review research, and serve as consultants and experts in specific vocational fields. In most related research projects inventory data on facilities and equipment were presented.

Conclusions Noted from Related Research

The conclusions of these studies are summarized in outline form as follows:

1. Trade is rapidly replacing manufacturing as a leading source of employment.

2. Rapid expansion is expected in the wholesale areas.

3. The service occupations have shown considerable growth during recent years.

4. Technological changes require more emphasis on technical and skilled labor than semi and unskilled labor.

5. The rate of growth for high school and post high school students will continue to exceed that of the early 60's.

6. Job opportunities are plentiful for properly trained personnel. This is especially true in such occupations as:

   a) Office occupations for women.
   b) Medical and health personnel (nurses, aides, technicians).
   c) Automotive mechanics and allied areas.
   d) Agriculture - related occupations.
   e) Supervisory positions (foreman, etc.)

7. Vocational education should:

   a) Accomodate individual differences yet provide self-realization and self-satisfaction.
   b) Develop a saleable skill.
   c) Provide technical knowledge equal to the individual's ability.
   d) Produce both the master craftsman and the highly skilled technician.
   e) Augment the academic program by giving it more significance in the eyes of the student.
   f) Operate on a 12-month basis to permit maximum utilization of facilities and staff.

RESEARCH METHODS AND PROCEDURES

The writing of the proposal for this research project was approved by the eight superintendents of the eight high school districts in Jackson County.

In approving the proposal, the superintendents approved released time for a representative of each vocational area from each high school to work on a half-day basis one day a week as consultants in the research project. The project was approved by the personnel in the Oregon State Vocational Education Department and money was granted under the provisions of Part A, Section 4(a) of Public Law 88-210 to the Jackson County Intermediate Education District Office for the research project.

Dr. Loy E. Prickett, Professor of Business, Chairman of the Division of Business at Southern Oregon College, was employed as the director of the research project. Mr. Darrell Langevin, doctoral student at the University of Oregon in Education Administration, was hired as the assistant director of the vocational project for Jackson County Schools.

The two basic research methods utilized by the researchers in the Jackson County Vocational Research Project of 1965 were the normative survey method and the documentary method.

The normative survey method was used to collect all data regarding inventories. The documentary method was used to determine what was being done in other vocational schools and to determine the job skills needed for Jackson County students.

Collection of Data for Job-Skills Survey

At the request of the personnel in the State Vocational Education Department and the State Department of Employment, the job-skills survey data was calculated from the documents published by the Department of Employment for the State of Oregon. Published materials from the Department of Labor were obtained.

The materials were studied in order that the ratios of Jackson County employment figures to the State of Oregon employment figures could be interpreted more meaningfully.

The occupations and/or categories were the same as those used by personnel in the State Vocational Office. The listing of occupations, the number of people employed at county and State level, the ratio of the county employment to the State employment, and the numbers of people to by employed two years hence and five years hence were computed.

Collection of Data on Inventories of Equipment, Facilities, and Courses

The procedures involved in the collection of data regarding the inventory of equipment, the physical facilities, the course offerings, and the number of students enrolled in the courses involved a cooperative effort of the research staff and the representatives from the respective vocational areas.

Each high school principal was asked to nominate a teacher from each vocational area. Each teacher who was selected represented his respective area and the school district.

Each week during the months of April and May the home economics personnel met on Monday mornings, the business education personnel met on Wednesday mornings, and the vocational arts personnel met with the vocational agriculture personnel on Thursday mornings.

At the first meeting questionnaires were distributed to each of the teachers present so that each could inventory the equipment and facilities for his school, in his respective vocational area.

After three weeks of meetings, all inventory data had been collected for the four vocational areas.

The importance of accuracy of data was stressed, since one of the important criteria would be whether or not equipment and facilities were available in the event additional vocational course offerings were needed.

A list of all courses offered and the number of students enrolled in each class in each school was developed by the research staff. This data was collected in order that decisions could be made regarding the degree of vocational competence which could be developed by students desiring to emphasize any particular vocational area. The sequence of courses and possible depth was determined for each vocational area.

Development of Curricular Material

After the collection of data on equipment, facilities, and courses had been completed with the help of the district representatives, the topic at the weekly meetings centered around the possible revision of vocational programs in the high school curriculum.

The teachers were encouraged to develop ideas regarding course sequences which would culminate with students attaining the level of a one-year apprentice in the particular area.

At the next weekly meetings for the month of May, the project director, teachers, and district representatives for each vocational area discussed in detail the topic of student selection and retention

in each of the vocational areas. This was accomplished by first taking the data from the job-skills survey and then deciding what skills, knowledges, and abilities were needed by the student to be accepted at the one-year apprenticeship level. With this data agreed upon by the representatives of the vocational area, it was then possible to briefly discuss the courses needed to achieve the goals.

Layman's Council

By April 15, a Layman's Council of local businessmen who had agreed to represent their occupational field in this community project had been organized. Membership of this council included representatives of forest products, agriculture, automotive, utilities, finance, manufacturing, and communications media.

Collection of Data from Jackson County High School Juniors and Seniors

A large part of the emphasis in this study on vocational education in Jackson County has been placed on the responses from the juniors and seniors in the Jackson County high schools. It was the belief of the researchers that the ideas, wishes, and plans of the Jackson County juniors and seniors regarding vocations and vocational education should be presented so that school administrators could make intelligent decisions regarding vocational education in Jackson County.

The development of the questionnaire involved numerous revisions. Suggestions were received from the following consultants: Dr. Arnold Wolfe, Associate Professor of Business, Southern Oregon College; Mr. Martin Elle, Director of Guidance and Counseling, Southern Oregon College; Mr. Fred Buehling, Director of Special Education, Jackson County Intermediate Education District Office; Mr. Alf Mekvold, Superintendent,

Jackson County Intermediate Education District; and Mr. Lynn Berntson, Test Consultant, Harcourt, Brace and World, Inc. Three pilot studies were made with the questionnaire before it was administered to 2473 Jackson County juniors and seniors.

The students answered the questionnaire on an answer sheet. The items on the answer sheet were coded and key punched on IBM cards.

The researchers wrote the program for having the data summarized and analyzed on the IBM 1620 computer.

Collection of Data on the Counseling Program

The persons in charge of the counseling and guidance programs in each of the Jackson County secondary schools were invited to attend a planning meeting. Stress was placed upon the need for obtaining information regarding the circumstances under which the counseling personnel worked.

Each counselor was asked to complete two questionnaires. One questionnaire was to be used to report working conditions "as is." The other was to be used to report "ideal" working conditions. Stress was placed upon the idea that each counselor should relate what he felt would be the most "ideal" circumstances under which he could work with students, as well as the number of students he felt would be the "ideal" number with whom to work.

Collection of Follow-Up Data on Jackson County High School Graduates of 1964

A questionnaire was devised by the researchers in order to secure data on each 1964 graduate of Jackson County high schools. The type of

data sought included the school from which the person graduated, his grade-point average, and his activities after graduating.

Progress Reports

The Executive Committee, which was comprised of six of the superintendents from cooperating schools, met in regular monthly sessions three times during the data-gathering period of this research project.

At each of the meetings a progress report was given. Approval was given by the Executive Committee at the conclusion of each report. One special session was called on Wednesday night, June 16. At this three and one-half hour meeting, a tentative report was given regarding data gathered during the research project. The researchers also presented some tentative conclusions and recommendations.

The consensus of the superintendents present was that an area vocational center which operated on three separate 3-hour sessions should be adopted. This would allow morning and afternoon sessions for regular high school students transported in, and three-hour sessions at night for other persons interested in vocational preparation.

ANALYSIS OF DATA COLLECTED

In Jackson County High Schools all facilities and equipment in the Vocational Education programs are being used to capacity. The data showed conclusively that it would not be possible to expand the use of the present facilities to the degree necessary for closing the gap for vocational education.

In most of the schools it was found that multiple use was made of most of the rooms used for vocational preparation.

These "multiple use" environmental factors could affect the quality of vocational preparation in that time and effort may not be utilized in the most efficient manner, since makeshifts would be necessary in equipment and teaching materials. For maximum vocational preparation it would typically be an advantage to find a room devoted to one kind of vocational preparation and all equipment and materials ready for use by instructors and students so that no waste of time is involved.

Analysis of the inventories should be made by each school administrator in order that he may determine the degree of performance of his own school's programs in the vocational fields which seem to be needed in Jackson County.

It is obvious from the list of equipment needs, as well as room needs, that vocational programs would be expensive to equip in each of the eight schools in Jackson County. It is <u>not</u> suggested by this researcher

that this be the case; it is simply pointed out so that administrators can evaluate their own particular programs and make the decision as to how they could make adequate vocational education available to the students in their districts.

Vocational Courses

Each high school administrator should check his course offerings from the viewpoint of adequacy for vocational preparation. By this, the researcher means the availability of advanced course work in each vocational area, so that the student has the opportunity made available to him to gain the skills and knowledges necessary for entry-level performance in the vocation of his choice.

In business subjects, for example, are the courses available which would enable a student to develop skills and knowledges for the types of jobs available to high school graduates? Are all the advanced courses offered? Is supervised work-experience required for one semester of the senior year? Is there a course in business for advanced secretarial practice and office management?

Each vocational area should be scrutinized with the same type of questions. Answers should be found for all questions regarding the adequacy of course offerings for vocational preparation. In other words, how far past the introductory courses can a student go in the present course offerings in the vocational curricula in the Jackson County high schools?

Each high school administrator should check to find answers to the question as to whether his school offers the courses for advanced vocational preparation which should prepare students for the jobs which

are available in Jackson County. These jobs are clearly indicated in the job-skills survey summary which was developed as a part of this research project.

Some of the areas which show an obvious shortage of courses are the areas of general office clerk, data-processing clerk, secretary, wage-earning programs in home economics, auto mechanics, drafting, electricity, electronics, body and fender, carpentry. cabinetmaking, welding, plumbing, forestry, and landscaping.

Guidance and Counseling

"Guidance and counseling can make or break any school program including the vocational programs," was a statement made to the counselors in the early part of this research project by the project director.

Tables were prepared which summarized working conditions for each counselor in a Jackson County high school. The tables are divided into sections which show the distribution of the counselors' time and inventory of working conditions by the school, the working conditions of individual counselors, the equipment used by counselors (shown as a total for the school as well as by individual counselors), and the time established for communicating with the publics of the counselors.

It is significant to note that nearly all counselors felt that they had not been able to allocate adequate time to counseling. They reported that they had been allocating too much time to related activities.

Important factors to be considered include: are students getting the vocational data they need on which to make a decision; and are they being selected and guided through the vocational and/or college preparatory programs in which they can be most successful?

Curricula

It would be presumptuous to assume that the completed data regarding curriculum construction could be organized and developed in the period of time permitted in this research report.

A basic concept under which the researchers worked on the areas of curriculum was that the school, through its curriculum, would assist students in preparing themselves to earn a living, as well as to help them enjoy the full life which they have earned.

There were many assumptions which were make by Dr. Prickett and the teacher representatives from the four vocational areas as they viewed vocational education for Jackson County. These assumptions were necessary guidelines that the teachers could use and upon which curricula could be constructed.

The first assumption was that the time for course electives (all course time other than the state requirements) could be made available for vocational courses.

A second assumption was that facilities, equipment, and teaching personnel would be made available to implement the vocational programs developed.

It was assumed that students' needs would be different. These differences in needs necessitates the development of programs for the above-average students, for the student with average ability, and the student with below-average ability. This assumption of differences in students also meant that students would be placed in the program where they would be most likely to succeed; provided, of course, that the ultimate aim of the vocational program was job placement.

Reliance was placed upon the data gathered from the job-skills survey, even though it was conservative in nature. But the assumption was made that students would not necessarily work in Jackson County; and, therefore, some items of the curricula were incorporated because of occupational needs in other parts of the state and the nation.

It was assumed that the guidance personnel and the guidance programs of the schools would be organized, staffed, and prepared to work effectively with the vocational programs, as well as with the general education and college-prep programs.

The personnel working on curricula assumed that students would be able to make changes from one program to another program, or from one level of accomplishment in one program to another level of accomplishment in the same program. This vertical movement was considered to be very important by all personnel who worked on curricular proposals.

It was assumed that the structure and procedures needed for vertical movement would be incorporated into the organization and administration of the vocational programs. However, all programs were to be culminated with a certificate which would indicate the specific degree of accomplishment the graduate of the program would have. Since the certificates would be issued at the completion of each vocational program, it was the consensus of the teacher representatives that students would tend to move upward in the vocational programs rather than move downward in order to earn the best certificate possible.

Another assumption of the teacher representatives was that class size would vary from eight to sixteen. The smaller classes would be for those involved in working with the slow learners in the practical programs and in the areas of construction in such classes as carpentry and cabinet-making. Class size would also be determined by the number of persons who could be supervised in their work experience during the senior year.

The final assumption was that there would be a selection and retention program established so that students could be placed in the vocational program according to their interest and abilities.

Organizing Curricular Offerings

The courses and programs which were studied and recommended by the teacher representatives were based on the premise that the introductory courses now being taught in high schools in Jackson County would continue on the same basis as they presently exist. These courses would continue to be exploratory in nature and would prepare students for advanced courses which would be taken in the 11th and 12th grades in the proposed vocational programs.

Also, it was contemplated by the teacher representatives that the advanced courses would probably be conducted most advantageously in rooms which were designed and constructed with special emphasis placed on the vocational courses to be taught. The need for specially-trained faculty to teach effectively the advanced vocational courses was discussed.

Contributing to the problem of organizational structure are the differences in school size for the high schools in Jackson County. School size creates a problem in that it seems inconceivable that all eight high

schools in the county could bear the cost of adding facilities, equipment, and teachers for all vocational programs needed in the curricula.

Another aspect is not financial, but includes the limited number of students available for many of the vocational areas in the majority of high schools in the county. For example, the senior class in one school may have only fifteen students. This size class would not be adequate to justify multi-tract vocational programs in the four major vocational areas. The numbers of classrooms needed would be prohibitive in the sense that there would not be enough students to warrant seven class periods of use for each room each day, if the facilities were expanded to the extent necessary to adopt the vocational programs indicated in the complete report.

The extent to which each school would develop vocational curricula would be determined by a number of factors, including philosophy of school administrators and the ability of the local community to pay for facilities, equipment and faculty needs.

In concluding the comments on curriculum, the researchers should like to emphasize and reiterate that these programs are basically a combination of ideas gathered at the curriculum meetings and from the literature in the field. This is in no way suggesting that school administrators in Jackson County put these exact programs into operation. They are presented simply as a starting place for teachers to work out sequential arrangements of courses which would make vocational preparation available to students who desire to enroll in the programs.

Further study should result in a curriculum that would ensure that a student who completed the program would culminate with at least a one-year apprenticeship level of ability, which would be recognized by the unions and by employers. A representative of the apprenticeship council indicated that many of these problems could possibly be solved with supervised work experience on a half-day basis during one of the semesters of the senior year. This supervision by a member of the vocational department of the school during the work-experience assignment would help alleviate the problems which are presently encountered by unions and by employers in helping young workers adjust to the job.

It was clearly illustrated by teacher representatives that they had already been placing students in the local industrial area. They reported that they had received numerous calls from prospective employers asking for the names of students who could qualify for jobs which were available. This clearly indicated that some high school students can and should be able to prepare themselves to earn a living upon graduation from high school. It may be that the introductory employment may be a low-level type of job in the occupation of their choice, but they would have the ability to get the initial start and also have the background upon which to continue their preparation for promotions.

VOCATIONAL INTERESTS, PLANS, AND PREPARATIONS OF STUDENTS

In an effort to determine the degree of interest held by Jackson County high school students in vocational education and a Vocational Education Center, a questionnaire was designed and adminstered to the juniors and seniors in the eight high schools participating in this study. Specific information was desired on the vocational plans of the students, the amount and type of preparation they had undertaken for carreers, factors which affected their career selection, and their sources of information on careers and vocations. All juniors and seniors present on the day the questionnaire was administered were asked to complete the questionnaire. Usable questionnaires were received from 1293 juniors and 1180 seniors.

To assist students in developing a clear concept of what was meant by the term "vocational education," a brochure entitled "An Occupational Education Center: What? Why?" was developed. It was distributed two or three days prior to the administration of the questionnaire. The pamphlet was designed to acquaint the respondents with the following:

1. The purpose of a Vocational Education Center.
2. Who would be eligible to attend.
3. Suggested location for such a Center in the County.
4. Some of the fields of training possible .
5. Some of the "facts" concerning employment of high school graduates and their participation in the labor force.
6. The significance of these facts for the education of high school students.

Description of the Students in the Sample

There is a great variation in the number of students enrolled in each of the eight high schools in Jackson County. The largest high school was Medford with 1173 respondents (47.4% of the sample). The smallest high school was Butte Falls with 22 respondents (0.9% of the sample).

The sex and class distribution of the students by school did not differ significantly from the sex and class distributions of the total sample. Girls accounted for 49.8% and the boys 49.9%. The junior classes are approximately 9% larger than the senior classes. Thus, there does not seem to be a variation in the need for vocational education because of inequities in the distribution of students by sex or class level.

Forty-four percent of the respondents estimated their accumulative grade point averages were within the C to C+ level. The next largest number of students (32.9%) were grouped within the B- to B+ grade point range. Nine and three tenths percent reported A to A- grades; 12.4% reported C- to D+, and 1.3% reported D to F grades. It is important to remember in the interpretation of this data that these figures represent the responses of students whose replies are estimates of their accumulative grade point averages throughout high school.

Vocational Interests of the Students

Most of the juniors and seniors of Jackson County high schools reported plans to continue formal education after graduation from high school. Approximately 1600 students (64.9%) indicated an intention to attend college, community college, vocational schools, or trade schools upon graduation from high school. There were 7.5% of the students who planned to work a year prior to entering college.

It is noteworthy that 18.5% of the students in the sample expressed an interest in those areas of education directly related to vocational education (business college, trade school, beauty college, apprenticeship, etc.). This percentage represents 446 students.

The post high school plans of the Jackson County juniors and seniors who answered the questionnaire are summarized in the following table.

Four-year College	46.5%
Junior College	8.8%
Business College	2.8%
Trade School	7.0%
Apprenticeship Training	4.2%
Job Entry	5.1%
Military Service	7.3%
Undecided	8.2%

Although only 5.1% of the students in the sample indicated a preference for full-time employment, inclusion of the 7.5% who intended to work for a year before entering college would increase the total to 12.6% or 302 students entering the labor force upon completion of high school. The number of students planning to enter the labor force immediately after graduation is generally lower than the number of students who actually go to work.

Analysis of the post high school plans of respondents by schools shows few college bound students are found in the two smallest high schools in Jackson County. By contrast, these schools have the largest percentages of students expressing interests in vocational and technical education. The smallest percentage of students preferring careers in the professional categories are also found in these two schools. Thus, in Jackson County

there appears to be some correlation between the post graduation plans of the students and the size of the high school attended.

Careers requiring vocational education attracted the interest of 23.3% of the girls and 13% of the boys (898 students). Most of these students were members of the junior class. Girls chose careers in the clerical, secretarial, and personal service occupations. Boys selected skilled labor occupations and those related to the technical fields.

Interest in vocational education was not confined to the students who had average grades or below. Over 17% of the students with A to A- grade point averages selected careers requiring vocational and/or technical education. This includes those occupations principally associated with the clerical, sales, technical, personal service, and skilled labor categories. As the grade point averages declined, the percentages of students increased who selected careers in the less skilled occupational categories. Within the grade point ranges of B+ to B- and C- or below, students were more interested in the personal service, skilled labor, and semi-skilled labor occupations. The lowest grade point averages (D or below) show many students who are interested in semi-skilled and unskilled labor occupations. It is noteworthy that there was a large percentage of students with grade point averages of C- or below who indicated an interest in the professional and managerial careers and who intended to enter college.

It was found that approximately the same number of the 1965 juniors and seniors planned to enter a four year college as actually did enter college from the 1964 graduating classes of Jackson County schools. More of the 1965 juniors and seniors indicated their intentions to enroll in community colleges than actually did enroll from the 1964 class. Nearly 3 times as many students in the sample planned to enter technical schools as actually attended technical schools from the 1964 class. Very few 1964 graduates

actually registered in apprenticeship programs or trade schools, while large numbers of the respondents expressed an interest in these fields. A decline in the number of students planning to enter the military service was noted.

Approximately twice as many graduates of the 1964 class entered full-time employment as indicated an intention to do so from the sample used in this research project.

Electives Selected by the Students

Since most of the high schools in Jackson County offer elective opportunities in Agriculture, Business, Homemaking, and Industrial Arts, the researchers endeavored to determine the number of students who had taken courses in each area. An effort was also made to learn what percentage of the total sample had taken college preparatory electives.

It was reported by 46.5% of the juniors and seniors that they had taken most of their electives in college preparatory classes. The rank order for vocational education electives was business, industrial arts, homemaking, and agriculture. When we delineated each vocational elective area by the characteristics of the students who most frequently enrolled in classes in these fields, we found the following data:

Elective Area	Sex	Class	G.P.A.
Agriculture	Boys	Juniors	C or below
Business	Girls	Seniors	C+ to C
Industrial Arts	Boys	Juniors	C- or below
Homemaking	Girls	Juniors	C- or below.

It should be noted that only one of the eight participating schools did not offer homemaking. Homemaking attracts 20% of the junior and senior girls.

Reasons why Students took Electives

The primary reason given by students for selecting electives in vocational areas was to obtain the knowledges and skills necessary for job entry in a specific vocational field. The second most prominent reason was to explore a vocational field. It was reported by 16.3% of the students that they took vocational electives in conjunction with college preparatory courses.

When electives taken by the students were compared with their choice of careers, the following data were revealed.

1. Students who elected industrial arts classes have selected skilled labor, semi-skilled labor, unskilled labor, and technical careers.

2. In homemaking, most respondents selected personal service occupations.

3. Business students planned careers in sales, clerical, and personal service.

4. While only a small percentage of the students had taken electives in agriculture, high percentages are found in the career categories of managerial, skilled labor, and semi-skilled labor.

The data indicated that students were taking electives in preparation for careers in specific occupations and that there was evidence of genuine interest on their part in vocational education.

Reasons for not Taking more Electives in Vocational Areas

Approximately 46% of the students indicated that "conflict with other electives" was the reason that they did not take more courses in vocational subjects. "Conflict with required courses" was the reason for not taking more electives in vocational subjects for 18.3% of the students. This would seem to indicate that many students did not have the opportunity to take electives in the vocational areas because of scheduling difficulties and conflicts.

Scheduling was amore serious problem to the students in the small high schools. Students who had selected professional and sales careers expressed more difficulty in scheduling vocational classes than did those students in the non-professional categories.

Areas in Which Additional Electives Would Have Been Taken

While considerable interest was evidenced by students in all of the vocational areas,most students preferred more advanced courses in business than in any other vocational area. The rank order of demand for more courses in other vocational areas are: industrial arts, homemaking, commercial art, and agriculture.

If advanced courses were offered in vocational areas, a description of the students who would enroll is given in the following table.

Vocational Area	G.P.A.	Sex	Class
Business	B+ to C	70% Girls 30% Boys	52% Seniors 48% Juniors
Homemaking	B+ to C	94% Girls 6% Boys	48% Seniors 52% Juniors
Industrial Arts	B+ to C-	10% Girls 90% Boys	48% Seniors 52% Juniors
Agriculture	B+ to C-	18% Girls 82% Boys	48% Seniors 52% Juniors

Interest in an Area Vocational Center at the High School Level

More than two-thirds of the Jackson County juniors and seniors reported interest in attending a vocational education center at the high school level. This represents 931 girls and 779 boys. Many of these students had planned careers in the secretarial, clerical, sales, personal service, skilled and semi-skilled occupations.

A Post High School Vocational Center

Significant decreases were found in the number of students who were "very interested" and "interested." An increase was evidenced in the number of respondents who were "not interested." There were 248 students (11.5%) who were interested in a Vocational Education Center at the high school level but who were not interested in a post high school Vocation Center.

Reasons for Attending a Vocational Center

Three reasons were given by students for attending a Vocational Education Center. They were:

1. To secure the necessary skills to obtain a job.
2. Post high school education is a must.
3. To participate in a work-experience program.

While the first and third responses are directly related to high school vocational education, the second indicates the interest of students in post high school formal education. Another relevant factor was the indication by 24.3% of the respondents that they were not interested in a vocation which required a college degree. This number of students would make the operation of a high school vocational center feasible.

The Potential Dropout

The responses of the students to the questions pertaining to dropping out of school reveals that 266 (10.8%) juniors and seniors of the high schools of Jackson County had given serious consideration to quiting school. Most of these respondents were junior boys with C+ or below grade point averages. "School was boring" and to "get a job" were the most frequent reasons given for thinking about dropping out of school. "Marriage" and "school was boring" were the reasons reported by girls.

Factors affecting Vocational Interest

Students who answered the questionnaire apparently have some misconceptions regarding the world of work and the amount of preparation necessary for job entry. Twenty-one percent of the respondents felt that they could obtain a job with only the training they received in high school. This percentage represents approximately 520 students.

A large number of students (310) either felt that mental ability had no affect on success, or they failed to understand its role in achieving success. Most of these students had accumulative averages of C+ to C.

The father's occupation and other parental influences were shown to be positively correlated with the aspirational level of the student.

The students' peers seemed to have considerable influence over the career choices, especially among students of the junior class level. Nearly 29% of the sample (706 students) replied that the career choices of their closest friends were the same as their own. For the most part, these students were junior girls with grade point averages of B+ to C.

Sources of Career Information

A majority of the students seemed to be unaware of the nature and function of a high school counselor's duties. Thirty-four percent of the students had either not been assigned anyone to assist them in career selection, or they were completely unaware that someone in the school had been designated to serve in this capacity. While no one carried the title of counselor in the smallest high schools, relatively large numbers of students in these schools indicated that the principal had been the person with whom they had conferred.

There was evidence that students did not utilize counselors as a source of assistance in career selection. Only 29.9% (738 students) had visited a counselor 2 or 3 times in the past 2 years. An additional 27.7% had not visited a counselor at all during this 2 year period. Students were either reluctant to visit counselors or they lacked opportunity to do so. In either case, there are implications for improvement in the guidance programs.

The students who had visited a counselor were generally senior boys who were planning to enter professional, technical, or managerial careers. Students who had not visited a counselor for assistance in selecting a career were planning careers in the semi and unskilled labor categories.

Students did consult with friends their own age, relatives, businessmen, and adult friends about career choices, but the amount of consultation was reported to be minor.

Parents were the most frequently reported source of career information utilized by students. Only 11% of the students indicated that they did not seek help from their parents.

The data collected in the survey showed that students desire to obtain the most assistance from counselors. While significantly high percentages indicated that they would like to have help from parents and businessmen, they preferred to receive the most help from counselors.

CONCLUSIONS AND RECOMMENDATIONS

The results of the labor skills survey show that jobs are available in Jackson County for qualified workers and that more jobs will be available five years from now. A few of the categories are listed to indicate that high school graduates with adequate vocational training could easily find initial employment.

1. Apprenticeship programs in the construction trades
   (carpentry, cabinet-making, welding, plumbing, electrical)

2. Office employment
   (general clerks, stenographers, secretaries, bookkeepers)

3. Personal Services
   (nurses aides, homemakers assistants, sales, appliance repair)

4. Automotive and machinery repair

5. Agriculture related occupations
   (landscaping, equipment sales, agriculture equipment repair)

Careful analysis of the data from the study has led the researchers to conclude that there are many deficiencies in the vocational education opportunities for the students of the Jackson County high schools. The curricular offerings are not in balance since the major efforts are exerted on the programs which offer preparation for college. If the students in the high schools of Jackson County are to have the opportunities (which may or may not include college) to develop their abilities to the greatest potential, it is imperative that steps be undertaken to remedy the lack of curricular balance.

The cost of not providing adequate vocational education in the high schools of Jackson County is prohibitive if we believe in educating youth for what they are going to do in life--including work.

Most of the vocational education programs in the high schools of Jackson County are introductory in nature. As such, they serve only to provide the opportunity for limited exploration of a vocational field.

The vocational facilities in nearly all of the high schools in Jackson County included "multiple-use" classrooms. This space was generally utilized to capacity. Equipment in these rooms was adequate for existing programs. However, if the changes necessary to make the curriculum vocational in scope are initiated, additional facilities (including "special use" rooms) and equipment must be provided.

Very few second and third year vocational courses are offered in the Jackson County high schools. Students reported that they would have taken more advanced courses if they had been available. More than two-thirds of the juniors and seniors indicated an interest in a Vocational Center. One-third of the juniors and seniors stated that they were "very interested" in attending a Vocational Center. When 1700 indicate an interest in advanced vocational courses at the high school level, there is little doubt about the need for such courses.

The guidance and counseling programs in the high schools of Jackson County are not understood by the juniors and seniors. The majority of the juniors and seniors indicated that they were not obtaining help from school counselors regarding vocational choices.

The counselors in the Jackson County high schools have too many (350 to 400) advisees to effectively help them in vocational matters.

It is recommended by the researchers that a more equitable and workable balance between vocational education and preparation for college be established in the high schools of Jackson County. This could be accomplished on a local district level or on a cooperative, county-wide level. Four possible solutions are presented to the administrators of the Jackson County high schools for their consideration.

1. Develop the vocational programs within the individual school districts in the fields of agriculture, business, home economics, and vocational arts.

2. Develop a vocational program in business in one school, vocational arts in another school, wage earning programs in home economics in another school, and agriculture in another school. Students interested in a particular type of vocational program could be transported to the school offering the program.

3. Develop a vocational education center for the county and transport interested students from all eight schools to it on a half-day basis.

4. Develop two or three vocational centers in the county to serve the schools in their immediate locale.

In the judgement of the researchers the most effective approach to improving the preparation of students for job entry would be the development of a county-wide plan of vocational education with the establishment of a County Vocational Education Center. Introductory courses would be offered at the local high school and the advanced courses would be offered at the center. Supervised work experience would be included in the senior year. All general education courses would be taken at the local high school. The students would graduate from their home high school. This approach would make available to all students the opportunity to attend a truly vocational program with the best curricular offerings. The County Vocational Educational Center would be the most economical method of balancing the curricular offerings.

It is recommended that research be continued to determine:

1. The best location for a County Vocational Education Center. Facilities, equipment, specialized rooms, and budget should be included in such a study.

2. Curricular patterns needed in a County Vocational Education Center, including supervised work experience in each subject area and apprenticeship approval.

3. The best type of introductory courses to be offered in the local high schools.

4. The most effective selection and retention program for each vocational area. Placement and follow-up programs should be included.

5. The administrative design which would be most effective in operating a County Vocational Educational Center.

6. How to establish an effective working relationship between the instructional staff at the center and prospective employers of the students.

7. How to improve the prestige of "vocational" education and "work."

A P P E N D I X

Jackson County Vocational Educational Research Project (1965)
Jackson County Intermediate Education District
Court House Annex; Medford, Oregon
Dr. Loy Prickett, Director
Mr. Darrell Langevin, Assistant Director

Introduction:

The Vocational Education Research Project has recently been established to assist the school districts of Jackson County in determining how they might better serve the high school students in the area of vocational education and training. To reach such a decision, a large amount of information must be collected. One of our chief sources is you, the high school student. We are interested in your plans, interests and opinions concerning post high school education and particularly vocational education.

To collect this information, we have developed the following questionnaire. It asks that you tell us what will help you become better prepared for your life's work. Please note: THIS IS NOT A TEST.

No attempt has or will be made to identify the individual completing the questionnaire; all information will be treated in a confidential manner. This information will be handled only by the research project staff (Dr. Loy Prickett and Mr. Darrell Langevin). School personnel will not have access to your answer sheets. Only the results of our analysis will be seen by any school personnel. For this reason, we urge you to answer frankly and honestly. We ask only that you indicate the name of your school and your sex.

Your help is greatly appreciated. Your answers will help provide better educational opportunities for you and the students who follow you in school. Thank you for your assistance.

Jackson County Vocational Education Research Project (1965)
Jackson County Intermediate Education District
Court House Annex; Medford, Oregon
Dr. Loy Prickett, Director
Mr. Darrell Langevin, Assistant Director

To: High School Juniors and Seniors of Jackson County

From: The Vocational Education Research Project

Subject: Educational Plans: Student Questionnaire

Instructions: Place the number for the appropriate answer in the space provided on the answer sheet. Please do not write on the questionnaire.

SELECT ONLY ONE ANSWER FOR EACH QUESTION

Part I

2. Which high school are you attending?

1. Ashland
2. Butte Falls
3. Central Point (Crater High)
4. Eagle Point
5. Medford
6. Phoenix
7. Prospect
8. Rogue River

3. What is your sex?

1. Female
2. Male

4. You are a member of the

1. Senior Class
2. Junior Class

5. What is the approximate average of your grades in high school?

1. A- or A average
2. B average (B- to B+)
3. C average to C+
4. C- average or below
5. D average or below

6. Which of the following best describes your plans after graduation from high school?

1. Enroll in college or university
2. Enroll in community college in Oregon (2 year college)
3. Enroll in community or junior college in another state
4. Enroll in technical institute in Oregon (Example: O.T.I.)
5. Enroll in technical institute out-of-state (Washington or California)
6. Enroll in private business college
7. Enroll in trade school (Example: Eugene Vocational-Technical School)
8. Enroll in beauty college
9. Enter military service
10. Enter apprenticeship training program (Example: Cabinet Maker, Auto Mechanic, Telephone Operator, Service Station Attendant, Practical Nurse.)
11. Get married (Do not intend to get a job or training)
12. Plan to work for a year or so before going to school
13. Get full-time employment. (You do not plan to obtain any further training except that which you will receive through experience on the job. Example: truck driver; fork lift operator)
14. Interested in joining the Youth Corps
15. Undecided

8. What is your choice of a career or vocation? (Please list the specific type of job on the answer sheet.)

9. Which of the following categories includes your choice of a career or vocation? (Choose only one number) (A few examples of each are given in parentheses)

   1. Professional: (Accountants, Architects, Dentists, Doctors, Engineers, Lawyers, Teachers, etc.)
   2. Managerial: (All occupations titled "Manager": company, store, business.)
   3. Clerical: (Bookkeepers, Secretaries, Stenographers, Typists, Office Machine Operators and Receptionists.)
   4. Sales: (Wholesale, retail, insurance, real estate)
   5. Technical: (Aviators, Designers, Draftsmen, X-Ray Technicians, T.V. and Radio Operators, Surveyors, etc.)
   6. Personal Services: (Barbers, Beauticians, Models, Practical Nurses, Watchmen, Firemen, Law Enforcement)
   7. Skilled labor: (Bakers, Carpenters, Electricians, Cabinet Makers, Crane Operators.)
   8. Semi-skilled labor: (Truck Drivers, Fork Lift Operator, Service Station Attendants, Bull-dozer Operators, Cleaners and Pressers,etc.)
   9. Unskilled labor: (Laborer (any industry), warehousemen, car cleaners, helpers, choker setters, fellers, buckers, lumber pilers, etc.)

10. Do you think that you can get a job in the vocation you have selected with only the training you received in high school?

    1. Yes
    2. No

11. Are the career choices of most of your closest friends the same as yours?

    1. Yes
    2. No

12. If your answer to No. 11 was No, indicate which of the following your closest friends plan to do? If your answer to No. 11 was Yes, answer 12 with a zero (0).

    1. Enroll in college or university
    2. Enroll in community college in Oregon (2 year college)
    3. Enroll in community or junior college in another state
    4. Enroll in technical institute in Oregon (Example: O.T.I.)
    5. Enroll in technical institute out-of-state (Washington or California)
    6. Enroll in private business college
    7. Enroll in trade school (Example: Eugene Vocational-Technical School)
    8. Enroll in beauty college
    9. Enter military service
    10. Enter apprenticeship training program (Example: Cabinet Maker, Auto Mechanic, Telephone Operator, Service Station Attendant, Practical Nurse.)
    11. Get married (Do not intend to get a job or training)
    12. Plan to work for a year or so before going to school
    13. Get full-time employment (You do not plan to obtain any further training except that which you will receive through experience on the job. (Example: truck driver; fork lift operator)
    14. Interested in joining the Youth Corps
    15. Undecided

14. Please list your father's main job. (Write in on answer sheet.)

15. Which of the following categories includes your father's occupation?

1. Professional
2. Managerial
3. Clerical
4. Sales
5. Technical
6. Personal Services
7. Skilled labor
8. Semi-skilled labor
9. Unskilled labor
0. Father not living

16. In which of the following areas have you taken the most of your elective class work? (Give only one answer)

1. Agriculture
2. Business
3. Homemaking
4. Industrial Arts
5. College Prep.

17. How many credits do you have in your elective class work? (Write in on answer sheet.)

18. If your electives have been in Agriculture, Business, Homemaking, or Industrial Arts, which of the following best indicates your reason for taking them? (Select only one number)

0. Have not taken any of these subjects.
1. To obtain the knowledge and skills to get a job in the field.
2. To see if I would like this vocational area.
3. I was looking for an easy course.
4. For a hobby or recreation.
5. I needed a credit to graduate.
6. My parents insisted.
7. My best friends were taking the class.
8. Advice of the school counselor.
9. I took some along with my college prep. program.

The following reasons are often given by students for not taking more courses in Business, Homemaking, Industrial Arts, or Agriculture. Write a one (1) in the corresponding space on the answer sheet if the statement is true for you; write a two (2) if the statement is false. (Answer each statement)

19. I had a conflict with required courses for graduation.
20. I had a conflict with other electives I wanted to take.
21. There was a personality conflict with the teacher.
22. The advanced courses I wanted were not offered.
23. I have no interest in these subjects.
24. My parents insisted that I take college prep. courses.
25. My school counselor encouraged me to take college prep. courses.

26. In which of the fields listed below would you have taken more courses had your school offered them? (Select only one number)

1. Business
2. Homemaking
3. Industrial Arts
4. Agriculture
5. Commercial Art
6. No interest in any of these subjects.

27. If a separate school (Occupational Education Center) were available in Jackson County, which offered courses on a half-day basis in Business, Homemaking, Industrial Arts, and Agriculture, would you be interested in attending? (A student would still attend his present high school for the regular required courses and activities. No additional tuition would be charged. Transportation would be furnished.)

    1. Very interested
    2. Interested
    3. Not interested

28. If a separate school (Occupational Education Center) were available in Jackson County, which offered courses on a full-time basis for one year past high school graduation, would you be interested in attending?

    1. Very interested
    2. Interested
    3. Not interested

Some of the reasons students frequently give for attending an Occupational Education Center are listed below. Please indicate if the reason would apply to you if an Occupational Education Center were started in Jackson County at the high school level or post-high school level. Record a one (1) for true or a two (2) for false in the corresponding space on the answer sheet. (Answer each statement)

29. To secure the necessary skills and knowledge to get a job in my chosen vocation.

30. To participate in a supervised "work-experience" program.

31. I would prefer to get as much of my training as possible in Jackson County.

32. I am not interested in a vocation that requires a college degree.

33. I prefer jobs which involve physical labor, outdoor activities, working with machinery, etc.

34. I prefer the kind of job which does not require any college training.

35. I feel that post-high school education is a must for me in my vocation.

36. I feel that I do not have the ability to do the level of work required for a college education.

37. My parents insist that I get vocational training in high school rather than go to college.

38. My counselor has encouraged me to get vocational training in high school rather than go to college.

How will your post high school education be financed? Place a one (1) in the corresponding space on the answer sheet if the method would apply in your case, and a two (2) if it would not apply. (If you do not plan to continue your education after high school, place a zero (0) in each blank for questions 39 through 46.

39. My parents will provide some assistance.

40. I could afford to attend only if I lived at home and commuted.

41. I have saved enough money for the first year (or more).

42. I need to work while attending school. (during the school year)

43. I intend to work during the summer to help pay my way.

44. My parents will provide all necessary finances.

45. I have other sources of assistance. (Scholarship; insurance plans, etc.)

46. I must have other kinds of assistance for any type of further education or training. (Government loans, student loans, etc.)

47. Have you ever given serious thought to dropping out of school?

1. Yes
2. No

If your answer to question 47 was no, write a zero (0) for answers 48, 49, and 50.

48. At what grade level was this idea foremost in your mind? (Select only one)

0. Never given serious thought to dropping out of school.
1. Grade Eight
2. Grade Nine
3. Grade Ten
4. Grade Eleven
5. Grade Twelve

49. Which of the following best indicates your reason?

0. Never given serious thought to dropping out of school.
1. I wanted to obtain a job and earn my own money.
2. I wanted to get married.
3. No one encouraged me to continue in school. (parents or teachers)
4. The classes I must take in school would not help me obtain the kind of job I want.
5. Most of my friends are out of school.
6. I couldn't see any purpose for the courses I had to take.
7. School in general was boring.

50. Why did you decide to stay in school? (Write in on answer sheet.)

51. Do you think a person's mental ability could affect his chances of success in the vocation he chooses?

1. Yes
2. No
3. Do not understand what you mean.

52. Who has been assigned by your school administration to offer you help with your vocational choices? (Give only one answer)

    1. A counselor
    2. A teacher
    3. The principal
    4. No one has been assigned

53. How many times have you talked with a school counselor in the past two years about vocations? (Use only one answer)

    1. 0 times (have not talked to him about a vocation)
    2. 1 time
    3. 2-3 times
    4. 4-5 times
    5. 6-7 times
    6. 8-9 times
    7. 10 or more times

Please mark the amount of help you have received from each of the following people on how to select a vocation. Answer this question in the following manner:
Use a one (1) to mean "they gave me much valuable assistance;"
Use a two (2) to mean "they gave me a little help;"
Use a three (3) to mean "they tried to help me but couldn't"
Use a four (4) to mean "they did not try to help me."
Use a five (5) to mean "I didn't seek their help."

54. Friends my own age

55. Adult friends (other than businessmen)

56. Teachers

57. Parents

58. Counselors

59. Relatives

60. Businessmen

From whom would you like more information and help in understanding your abilities and how to select a vocation?
Use a one (1) to mean "I would like more help from this group;"
Use a two (2) to mean "I am receiving satisfactory help from this group;"
Use a three (3) to mean "I would like less help from this group."
Use a four (4) to mean "I don't want any help from this group."

61. Friends my own age

62. Adult friends (other than businessmen)

63. Teachers

64. Parents

65. Counselors

66. Relatives

67. Businessmen

68. From which one of the following would you like to obtain the most help in regarding your choice of a vocation? (Choose only one number)

1. Friends my own age
2. Adult friends (other than businessmen)
3. Teachers
4. Parents
5. Counselors
6. Relatives
7. Businessmen

STOP

When you have completed the questionnaire to this point, please stop.

DO NOT PROCEED until you have received FURTHER INSTRUCTIONS.

If time permits, review your answers to this point and read the instructions for the next part.

DO NOT answer questions 69, 72, and 75 until you have been instructed to do so.

****

Instructions for Part II of the Questionnaire:

Please look over the following list of occupational categories. Under each category is a list of specific jobs. These categories will be the possible answers for questions 69, 72, and 75. Find and record your first choice for a career, then find and record your second choice for a career, and conclude by finding and recording your third choice for a career.

Here are some examples:

an electrician	14	1
	category	sub number
a practical nurse	6	7
	category	sub number
a steno and typist	4	7
	category	sub number
a landscape architect	19	7
	category	sub number

Part II

1. Semi-professional

    1. Commercial artist, designer
    2. Lab technician, therapist
    3. Photographer
    4. Radio Operator
    5. Surveyor
    6. Electronic Technician (Example: Radio or T.V. engineer)
    7. Draftsman
    8. Technician, except lab (Example: Dental Assistant)

2. Managerial

    1. Hotel, retail, wholesale, building supt.
    2. Buyer; purchasing agent
    3. Licensed Marine personnel
    4. Inspectors, public service managers and officials
    5. Industrial manager
    6. Realty and insurance
    7. Financial manager (savings and loan, banking)

3. Professional

    1. Medical Doctor
    2. Dentist
    3. Accountant
    4. Lawyer
    5. Teacher
    6. Pharmacist
    7. Architect
    8. Engineer
    9. Registered Nurse

4. Clerical

    1. Bookkeeper
    2. Clerk: general office, tellers, hotel, insurance, transportation, file, general industry, postal, shipping and receiving, stock clerks.
    3. Assistant librarians
    4. Office machine operator
    5. Postal carrier, or clerk
    6. General secretary
    7. Steno and typist
    8. Switchboard operator

5. Sales

    1. Demonstrator: Company representative for heavy equipment (trucks, busses, business equipment)
    2. Insurance sales
    3. Real estate
    4. Securities
    5. Retail sales clerk
    6. Specialty sales: Special products (electrical data processing equipment)
    7. Wholesale sales

6. Personal Service

    1. Airline Hostess
    2. Steward, housekeeper, maid
    3. Cook, cook's helper
    4. Waiter, waitress
    5. Beauty operator
    6. Barber
    7. Practical nurse, hospital attendant
    8. Recreation attendant
    9. Model

7. Protective Service

    1. Guard, or watchman
    2. Fireman
    3. Peace Officer (city)
    4. Peace Officer (county or state)

8. Food Products

    1. Baker
    2. Skilled dairy products processing
    3. Wholesale meat cutter
    4. Meat cutter, retail
    5. Semi-skilled; dairy, bakery, grain products, meat products.

9. Textile Products

    1. Furrier
    2. Garment alteration and repair
    3. Tailor
    4. Semi-skilled textiles

10. Lumber and Lumber Products

    1. Cabinet maker, woodworking machine operator
    2. Upholsterer
    3. Skilled sawmill (sawyer)
    4. Lumber grader
    5. Semi-skilled logging
    6. Semi-skilled sawmill
    7. Semi-skilled plywood
    8. Furniture manufacturer
    9. Boxmaker

11. Paper and Printing

    1. Skilled paper and paper goods (paper mill equipment)
    2. Skilled printing
    3. Photo Processing
    4. Dark Room and Blueprint

12. Leather Products

    1. Leather processing and manufacturing
    2. Leather working and repair

13. Metal Working

    1. Jeweler
    2. Machinist; tool and die maker
    3. Sheet metal worker
    4. Foundry: molder; core maker; boiler maker
    5. Structural steel worker
    6. Welder or machine welder and cutter
    7. Blacksmith
    8. Mechanical treatment of metals
    9. Machine tool operator; machine operator

14. Construction

    1. Electrician
    2. Painter
    3. Brick, stone, and tile mason
    4. Carpenter
    5. Cement finisher
    6. Plumber
    7. Roofer
    8. Semi-skilled construction (helpers or apprentice)

15. Transportation and Equipment

    1. Bus and taxi drivers
    2. Hoisting and loading engineer
    3. Heavy equipment operator (Bulldozer, grader, crane operator)
    4. Chauffer and driver (small equipment)
    5. Truck operator (heavy equipment)
    6. Fork lift and carrier operator

16. Utility and Public Service

    1. Power station operator (P P & L; Bonneville)
    2. Lineman and service man (P P & L; and telephone co.)
    3. Laundry and drycleaner operator
    4. Sewage plant and water works operator (city)
    5. Public service worker (highway, parks, etc.)
    6. Stationary engineer (boiler fireman)

17. Mechanics and Repairmen

    1. Millwright
    2. Airplane engine, auto mechanic, truck mechanic, body and fender repairman
    3. Service station attendant
    4. Repairmen and helpers, automobile
    5. Maintenance mechanic transportation equipment (washer, lub man)

18. Foremen, Manufacturing and Misc.

    1. Foreman, manufacturing
    2. Mineral extraction
    3. Construction or transportation
    4. Public utilities
    5. Services and amusements
    6. Fabrication of electrical equipment
    7. Assembler, manufacture of automotive
    8. Assembler, Misc. Manufacture packers, fillers, labelers

19. Agriculture

    1. Orchard
    2. Truck gardener
    3. Grain farmer
    4. Livestock rancher (for marketing)
    5. Livestock rancher (for breeding: horses, registered animals)
    6. Nurseryman (shrubs, plants, trees)
    7. Landscape architect (residential)
    8. Tenant farmer
    9. Farm laborer

20. I have no second choice

21. I have no third choice

Office of the Superintendent
Jackson County Intermediate Education District
Court House Annex
Medford, Oregon

Jackson County Vocational Education Research Project
Dr. Loy Prickett, Director
Mr. Darrell Langevin, Assistant Director

Please look through the following lists of job categories and select those which you feel high school graduates could use as initial jobs. Your selections should help you determine the courses and programs which could be taken by high school students wishing to enter one or more of the jobs on the list. In our weekly meetings, we will discuss ideal programs and their relationships to the jobs you have listed.

Office of the Superintendent
Jackson County Intermediate Education District
Court House Annex; Medford, Oregon

OREGON AND JACKSON COUNTY
PROJECTED EMPLOYMENT TRENDS
Two-Year and Five-Year

OCCUPATIONAL GROUP	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
1. Semi-Professional	13,970	479	1,869	4,232	64	150
2. Managerial and Official	33,425	1,240	2,768	6,344	106	234
3. Clerical and Kindred	46,870	1,711	5,397	14,287	196	519
4. Sales and Kindred	37,300	1,383	5,900	14,293	220	529
5. Personal Service	45,150	1,646	4,803	12,586	174	458
6. Protective Service	6,400	236	649	1,714	24	62
7. Building Service	11,700	430	1,090	2,994	40	110
8. Food Products	4,235	82	516	1,331	12	32
9. Textile Products	3,525	39	326	829	4	8
10. Lumber and Lumber Products	37,770	2,338	1,500	3,575	80	201
11. Paper and Printing	5,380	285	781	1,887	41	104
12. Chemical and Leather Products	620	4	78	254	0	1
13. Metal Working	17,930	296	2,393	5,909	34	91
14. Construction and Kindred	18,905	684	2,552	6,435	91	236
15. Transportation and Equipment Operators	26,800	980	2,192	5,679	80	207
16. Utility and Public Service	8,350	195	612	1,635	22	57
17. Mechanics and Repairmen	27,280	1,025	3,017	7,838	110	286
18. Foremen, Manufacturing, Misc.	12,235	337	1,151	2,738	28	66
TOTAL*	357,845	13,390	37,594	94,560	1,326	3,351

* Does not include professional, on-farm, self-employed, and unskilled.

1. SEMI-PROFESSIONAL OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Commercial Artist	(0-44)	3.68	300	11	39	96	1	4
Designers	(0-46)	3.68	100	4	6	19	0	1
Draftsman	(0-48)	3.68	2250	83	864	1771	32	65
Lab Technicians	(0-50)	3.68	3320	122	279	674	10	25
(Therapists, etc.) Misc. Med. Serv.	(0-52)	3.62	1250	45	82	188	3	7
Photographers	(0-56)	3.62	200	7	13	31	0	1
Radio Operators	(0-61)	3.62	240	9	26	62	1	2
Surveyors & Instrument Men	(0-64)	3.66	880	32	61	153	2	6
Embalmers	(0-65)	3.62	360	13	66	169	2	6
Technicians, except Lab	(0-66)	3.62	170	6	23	50	1	2
Electronic Technician	(0-67)	0.65	1100	7	76	202	0	1
Technicians, N.E.C.	(0-68)	3.68	2200	81	163	429	6	16
Semi-Professional and Apprentices to Professional	(0-69)	3.68	1600	59	171	388	6	14
TOTALS			13,970	479	1869	4232	64	150

2. MANAGERIAL AND OFFICIAL OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Hotel & Restaurant Mgr.	(0-71)	3.62	1740	63	105	281	4	10
Retail Managers	(0-72)	3.65	4000	146	244	655	9	24
Wholesale Managers	(0-73)	3.65	900	33	44	120	2	4
Buyers	(0-74)	3.65	1300	47	154	369	6	13
Inspectors, All	(0-79)	3.69	350	13	47	135	2	5
Credit Managers	(0-85)	3.65	1150	42	96	274	4	10
Bldg. Supt. (Manager)	(0-87)	4.00	650	26	32	60	1	2
(None) Licensed Marine Personnel	(0-88)	3.38	0	0	29	29	1	1
Purchasing Agents	(0-91)	3.68	900	33	84	217	3	8
Inspectors, Public Service Managers and Officials	(0-94-0-95)	3.69	900	33	99	254	4	9
Production Officials, Finance	(0-97)	3.68	16,000	589	1184	2980	44	110
Realty & Insurance	(0-98)	4.00	3500	140	521	655	21	26
Managers, N.E.C.	(0-99)	3.68	2035	75	129	315	5	12
TOTALS			33,425	1240	2768	6344	106	234

3. CLERICAL AND KINDRED OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Bookkeeper & Clerical	(0-01)	3.68	17,650	650	1767	4630	65	170
Machine Bookkeeper	(1-02)	3.68	1150	42	185	526	7	19
Checkers	(1-03)	3.65	3400	124	457	1106	17	40
Clerks, General	(1-04)	3.68	4000	147	508	1296	19	48
Clerks, Gen. Office	(1-05)	3.68	12,000	442	1424	3788	52	139
Financial Institution Clerk & Teller	(1-06)	4.00	1700	68	228	604	9	24
Hotel Clerk	(1-07)	3.62	500	18	32	85	1	3
Insurance Clerk	(1-08)	4.00	60	24	3	9	0	0
Printing & Pub. Clerks	(1-10)	6.22	290	18	37	98	2	6
Transportation Clerks	(1-11)	3.38	750	25	67	156	2	5
Clerks in Trade	(1-12)	3.68	1500	55	118	398	4	15
Collectors	(1-15)	4.00	425	17	62	153	2	6
File Clerks	(1-17)	3.68	1200	44	142	358	5	13
General Industry Clerks	(1-18)	3.68	6500	239	848	2068	31	76

3. CLERICAL AND KINDRED OCCUPATIONS (Continued)

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Assistant Librarians	(1-20)	3.69	195	7	35	89	1	3
Messengers, Office Boys, etc.	(1-23)	4.00	275	11	74	131	3	5
Office Machine Opr.	(1-25)	3.68	4500	166	634	1670	23	61
Timekeepers & Pay	(1-26)	3.68	800	29	61	169	2	6
Postal Clerks	(1-27)	3.69	3300	122	296	791	11	29
Postal Carriers	(1-28)	3.69	2600	96	185	527	7	19
Physician & Dental Assistants	(1-32)	3.62	1300	47	207	533	7	19
Secretaries	(1-33)	3.68	7800	287	1155	2962	43	109
Shipping & Receiving Clerks	(1-34)	3.68	3000	110	356	947	13	35
Tech. Clerks, N.E.C.	(1-36)	3.68	600	22	66	167	2	6
Stenos & Typists	(1-37)	3.68	14,000	515	1328	3786	49	139
Stock Clerks	(1-38)	3.65	2700	99	220	602	8	22
Switchboard Operators	(1-42)	3.38	3800	128	497	1166	17	39
Agents & Appraisers	(1-48)	3.68	1300	48	187	493	7	18
Misc. Clerks, N.E.C.	(1-49)	3.38	700	24	96	254	3	9
TOTALS			46,870	1711	5397	14,287	196	519

4. SALES AND KINDRED OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Demonstrators	(1-56)	3.65	340	12	55	141	2	5
Insurance Sales	(1-57)	4.00	4400	176	698	1736	28	69
Real Estate	(1-63)	4.00	1300	52	178	458	7	18
Sales, Securities	(1-65)	4.00	410	16	168	290	7	12
Counter Sales	(1-70)	3.65	8000	292	910	2276	33	83
Sales Specialty	(1-75)	3.65	11,000	402	1295	3242	47	118
Consumer Sales	(1-80)	3.65	3500	128	457	1027	17	37
Salesman Wholesale	(1-85)	3.65	4100	150	1444	3700	53	135
Salesman Wholesale	(1-86)	3.65	2750	100	453	1000	17	37
Salesman Wholesale	(1-87)	3.65	1500	55	242	423	9	15
TOTALS			37,300	1383	5900	14,293	220	529

5. PERSONAL SERVICE OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Bartender	(2-21)	3.65	2200	80	128	380	5	14
Bell Hop	(2-22)	(Too high) 3.62	160	6	8	23	0	1
Maid-Houseman	(2-24)	3.62	1750	63	153	417	6	15
Stewards Housekeepers	(2-25)	3.62	600	22	57	148	2	5
Cooks	(2-26)	3.65	7000	256	771	1939	28	71
Waiters & Waitresses	(2-27)	3.65	13,000	475	1289	3411	47	125
Dishwashers- Cook Helpers	(2-29)	3.65	7000	256	771	2029	28	74
Beauty Operators-Barbers	(2-32)	3.62	3900	141	507	1373	18	50
Practical Nurse (Unlic.)	(2-38)	3.62	1600	58	165	415	6	15
Recreation Attendant	(2-40)	3.62	650	24	54	145	2	5
Hospital Attendants	(2-42)	3.62	6900	250	865	2214	31	80
Matrons	(2-43)	3.69	210	8	26	66	1	2
Ushers	(2-48)	3.62	180	7	9	26	0	1
TOTALS			45,150	1646	4803	12,586	174	458

6. PROTECTIVE SERVICE OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Guards & Watchmen	(2-61)	3.68	1500	55	179	470	7	17
Firemen	(2-63)	3.69	2000	74	186	494	7	18
Peace Officers (City)	(2-66)	3.69	2200	81	197	523	7	19
Peace Officers (County-State)	(2-67)	3.69	700	26	87	227	3	8
TOTALS			6400	236	649	1714	24	62

7. BUILDING SERVICE WORKERS

Janitors, Charwomen, Window Cleaning, etc.	(2-82-84)	3.68	6500	239	544	1530	20	56
Porters	(2-86)	3.68	4000	147	332	888	12	33
Groundskeeper	(3-40)	3.68	1200	44	214	576	8	21
TOTALS			11,700	430	1090	2994	40	110

8. FOOD PRODUCTS OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Bakers	(4-01)	0.65	750	5	39	105	0	1
Skilled Dairy Products Processing	(4-06)	0.65	375	2	48	125	0	1
Wholesale Meat Cutter	(4-09)	0.65	160	1	10	27	0	0
Meat Cutter, Retail	(5-58)	3.65	1300	47	234	602	9	22
Semi-skilled Bakery	(6-02)	1.65	300	5	17	45	0	1
Semi-skilled Dairy Prod.	(6-06)	1.65	600	10	58	150	1	2
(None) Semi-skilled Grain Prod.	(6-08)	1.65	450	7	93	237	2	4
(None) Semi-skilled Meat Prod.	(6-09)	1.65	300	5	17	40	0	1
TOTALS			4235	82	516	1331	12	32

9. TEXTILE PRODUCTS OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
(None) Furrier	(4-21)	0.65	110	1	-5	2	0	0
Garment Alteration and Repair	(4-25)	3.65	325	12	17	45	1	2
Tailors	(4-26)	(Too high) 3.65	200	7	27	59	1	2
(None) Semi-skilled Textiles	(6-14 - 6-19)	0.65	490	3	15	41	0	0
(None) Semi-skilled Fabricated Textiles	(6-21 6-27)	0.65	2400	16	272	682	2	4
TOTALS			3525	39	326	829	4	8

10. LUMBER AND LUMBER PRODUCTS OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Cabinet Maker	(4-32)	6.31	1300	82	114	299	7	19
Woodworking Machine Operator (Skilled)	(4-33)	6.31	1000	63	184	444	12	28
Upholsterer	(4-35)	0.65	200	1	232	369	2	2
Cooperage	(4-38)	0.65	600	4	30	81	0	1
Lumber Grader	(6-29)	6.31	600	38	38	100	2	6
Semi-skilled Logging	(6-30)	6.31	8000	505	320	692	20	44
Semi-skilled Sawmill	(6-31)	6.31	13,000	820	-210	-308	-13	-19
Semi-skilled Woodworking Operator	(6-33)	6.31	1900	120	137	290	9	18
Semi-skilled Furniture Manufacturing	(6-36)	6.31	460	29	274	519	17	33
Boxmaker	(6-39)	6.31	210	13	16	47	1	3
Semi-skilled Misc. Wood Products	(6-39)	6.31	10,500	663	365	1042	23	66
TOTALS			37,770	2338	1500	3575	80	201

11. PAPER AND PRINTING OCCUPATIONS

OCCUPATION (3 digit groups)	Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
(None) Skilled Paper & Paper Goods (4-41 4-42)	6.31	300	19	20	43	1	3
Skilled Printing Occupations (4-44 through 4-49)	6.22	3500	218	519	1279	32	80
Photo Processing (5-86)	3.62	300	11	80	198	3	7
(None) Semi-skilled Paper & Paper Goods (6-41 6-42)	0.65	700	5	71	139	0	1
Semi-skilled Printing (6-49)	6.22	380	24	71	171	4	11
Dark Room & Blueprint (7-86)	3.77	200	8	20	57	1	2
TOTALS		5380	285	781	1887	41	104

12. CHEMICAL AND LEATHER PRODUCTS OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Skilled Industrial Chemicals	(4-52)	0.65	160	1	15	40	0	0
Semi-skilled Chemicals	(6-50 - 6-54)	0.65	380	2	36	152	0	1
(None) Semi-skilled Leather Products	(6-62)	0.65	80	1	27	62	0	0
TOTALS			620	4	78	254	0	1

13. METAL WORKING OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Jeweler	(4-71 4-72)	0.65	270	2	34	85	0	1
Machinist	(4-75)	0.65	5000	33	770	1870	5	12
Tool & Die Maker	(4-76)	0.65	475	3	56	154	0	1
Machine Tool Operator	(4-78)	0.65	600	4	100	246	1	2
Sheet Metal Workers	(4-80)	3.75	2100	79	251	637	9	24
(None) Molders	(4-81)	0.65	275	2	29	86	0	1
(None) Core Makers	(4-82)	0.65	410	3	83	233	1	2
Boiler Makers	(4-83)	0.65	440	3	27	80	0	1
Structural Steel Workers	(4-84)	3.75	700	26	104	251	4	9
Welders	(4-85)	3.68	3000	110	302	782	11	29
Blacksmith	(4-86)	0.65	175	1	11	31	0	0
Heat Treater	(4-87)	0.65	90	1	18	39	0	0

13. METAL WORKING OCCUPATIONS (Continued)

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Skilled Metal Processer N.E.C.	(4-88)	0.65	200	1	25	45	0	0
Machine Operators	(6-78)	0.65	2100	14	363	776	2	5
(None) Molders (Mach.)	(6-81)	0.65	100	1	23	48	0	0
(None) Foundry, N.E.C. Semi-skilled	(6-82)	0.65	450	3	38	97	0	1
Semi-skilled Metal Shop	(6-83 6-84)	0.65	150	1	13	33	0	0
Machine Welders & Cutters	(6-85)	0.65	600	4	78	210	1	1
Mech. Treatment of Metals, N.E.C. Semi-skilled	(6-88)	0.65	420	3	27	80	0	1
Semi-skilled Metal Fab, other than Elec. (Assem., etc.)	(6-93-6-95)	0.65	375	2	41	126	0	1
TOTALS			17,930	296	2393	5909	34	91

14. CONSTRUCTION AND KINDRED OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Electricians	(4-97)	3.75	2900	109	298	772	11	29
Painters, except Const.	(5-16)	0.65	280	2	65	101	0	1
Operating Engineers Construction	(5-23)	3.75	650	24	62	161	2	6
Brick, Stone & Tile Masons	(5-24)	3.75	500	19	197	447	7	17
Carpenters	(5-25)	3.75	7000	263	840	2160	32	81
Cement Finisher	(5-26)	3.75	600	23	60	146	2	5
Painter, construction	(5-27)	3.75	1900	71	290	778	11	29
Plumbers & Fitters	(5-30)	3.75	2500	94	385	935	14	35
Skilled Const.,N.E.C.	(5-32)	3.75	650	24	52	141	2	5
Spray Painters (non-const.)	(7-16)	0.65	300	2	24	60	0	0
Painters, rough	(7-27)	3.75	325	12	59	152	2	6
Roofers	(7-31)	3.75	400	15	132	334	5	13
Semi-skilled Const. N.E.C.	(7-32)	3.75	700	26	66	169	2	6
Rod & Chainmen	(7-87)	3.68	200	7	22	79	1	3
TOTALS			18,905	684	2552	6435	91	236

15. TRANSPORTATION AND EQUIPMENT OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Bus & Taxi Drivers	(5-36)	3.38	2100	71	191	497	6	17
Hoisting & Loading Engineers	(5-73)	3.68	1800	66	114	169	4	6
Const. machinery operators Bulldozer, graders, etc.	(7-23)	3.75	400	15	32	104	1	4
Routemen	(7-35)	3.65	3200	117	216	569	8	21
Chauffers & Drivers, except tractor	(7-36)	3.68	16,000	589	1420	3844	52	141
Tractor Operators	(7-36)	3.77	1200	45	96	190	4	7
Fork Lift & Carrier Operator	(7-88)	3.68	2100	77	123	306	5	11
TOTALS			26,800	980	2192	5679	80	207

16. UTILITY AND PUBLIC SERVICE OCCUPATIONS

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Power Station Opr.	(5-51)	3.38	350	12	14	39	0	1
Linemen & Service men	(5-53)	3.38	3000	101	282	707	10	24
Laundry & Dry Cleaners, Skilled	(5-57)	3.62	400	14	4	72	0	3
Stationery Eng.	(5-72)	3.68	600	22	32	81	1	3
Sewage Plant & Water Works Operator	(7-54)	3.69	200	7	26	67	1	2
Cleaners & Pressers (wet & dry) (incl. checkers)	(7-57)	3.62	3000	9	210	552	8	20
Pub. Service Highway Parks, etc.	(7-61)	3.69	800	30	44	117	2	4
TOTALS			8350	195	612	1635	22	57

17. MECHANICS AND REPAIRMEN

OCCUPATION (3 digit groups)		Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Millwright	(5-78)	6.31	1200	76	56	148	4	9
Airplane Engine Mechanic	(5-80)	(Too high) 3.62	580	21	79	214	3	8
Auto Mechanic (inc. truck, Body & Fender)	(5-81)	3.62	8000	290	1022	2652	37	96
Mechanics & Repairmen N.E.C.	(5-83)	3.68	9000	331	906	2346	33	86
Tool Dresser	(5-84)	0.65	100	1	9	24	0	0
Service Station Attend.	(7-60)	3.65	6000	219	505	1404	18	51
Repairmen & Helpers, Automotive	(7-81)	3.62	1000	36	110	284	4	10
Helpers to Maintenance Mechanics	(7-83)	3.68	1000	37	38	114	1	4
Transp. Equipment Washers, Greasers, etc.	(7-85)	3.38	400	14	292	652	10	22
TOTALS			27,280	1025	3017	7838	110	286

18. FOREMEN, MANUFACTURING, AND MISC. OCCUPATIONS

OCCUPATION (3 digit groups)	Jackson County % of Statewide	Statewide Employment	County Employment	Statewide Total Need 2 years	Statewide Total Need 5 years	County Total Need 2 years	County Total Need 5 years
Foremen, Mfg. (5-91 5-92)	3.77	4000	151	186	516	7	19
Foreman, Mineral Extraction (5-93)	3.77	50	2	2	13	0	0
Foreman, Construction (5-94)	3.75	600	23	76	186	3	7
Foreman, Transp., Comm. & Utilities (5-95)	3.38	900	30	61	167	2	6
Foremen, Services & Amusements (5-97)	3.62	1000	36	44	119	2	4
Foremen, N.E.C. (5-99)	3.68	750	28	43	110	2	4
(None) ORE Reduction Semi-skilled (6-90 6-92)	0.65	220	1	16	38	0	0
(None) Fabrication, elec. Equip. (6-97-7-00)	0.65	2200	14	126	324	1	2
(None) Assembler, Automotive (7-02)	0.65	750	5	243	443	2	3
(None) Manufacture of scientific apparatus (7-08 - 7-09)	0.65	300	2	39	75	0	0
Assembler, Misc. Manufacture (7-10 - 7-13)	0.65	315	2	99	251	1	2
Packers, Fillers, Labelers and related N.E.C. (7-68)	3.77	900	34	69	175	3	7
Misc. Semi-skilled N.E.C. (7-89)	3.68	250	9	147	321	5	12
TOTALS		12,235	337	1151	2738	28	66

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UNIVERSITY - FERTILIZER INDUSTRY RELATIONSHIPS

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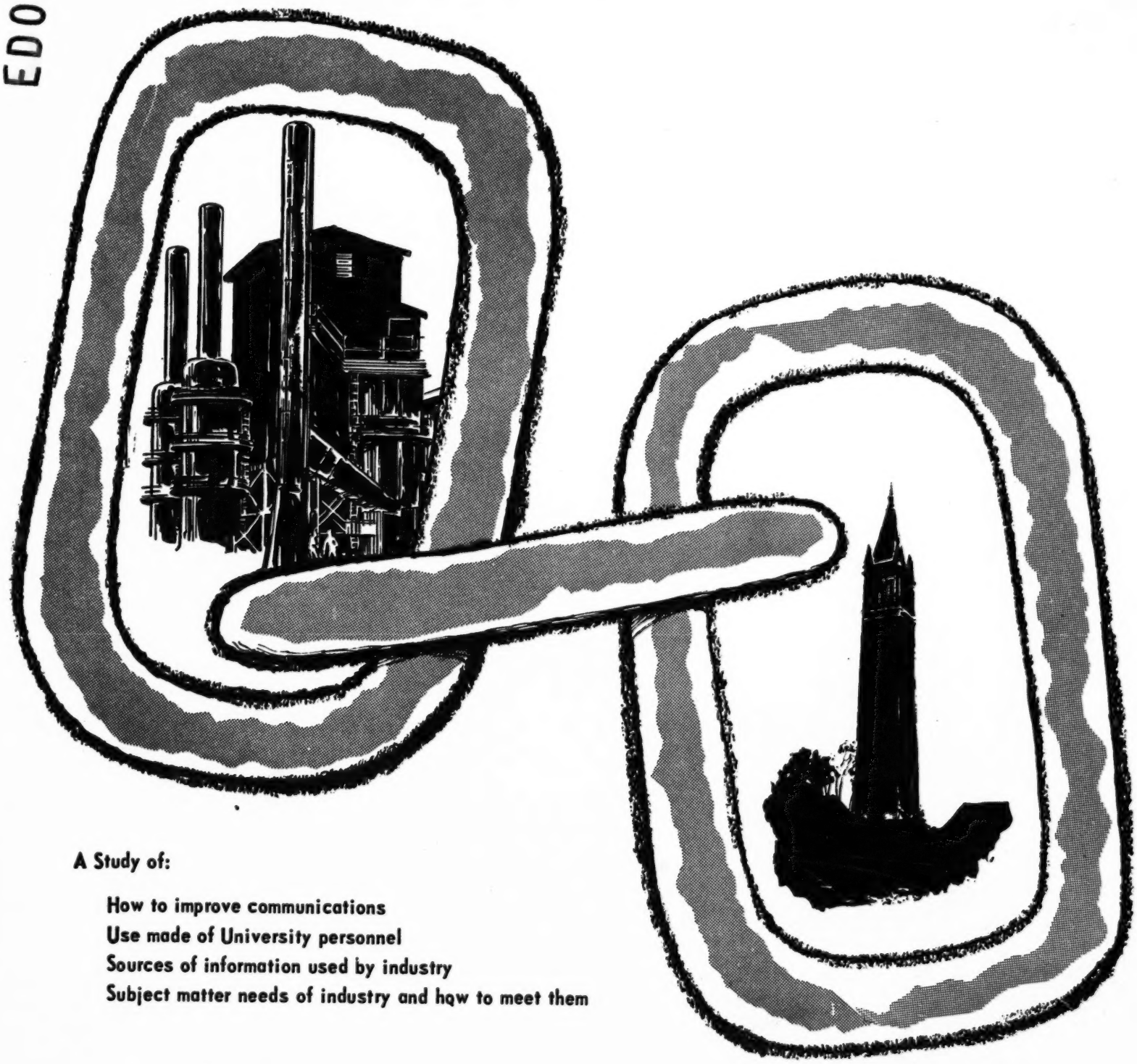

A Study of:

- How to improve communications
- Use made of University personnel
- Sources of information used by industry
- Subject matter needs of industry and how to meet them

VT000059

UNIVERSITY OF CALIFORNIA AGRICULTURAL EXTENSION SERVICE
and DEPARTMENT OF AGRICULTURAL EDUCATION

1962

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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UNIVERSITY-FERTILIZER INDUSTRY RELATIONSHIPS

A Study of Communications between the Division of Agricultural Sciences of the University of California and Representatives of the Fertilizer Industry

1962

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Study supported by funds from the National Plant Food Institute

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CHAPTER I

INTRODUCTION

THE PROBLEM

The University of California has the responsibility of bringing the results of research to farmers, ranchers, homemakers, and agricultural industries. The University's Agricultural Extension performs that function, passing on findings not only from the California Agricultural Experiment Stations and the United States Department of Agriculture, but also from industry and other authoritative sources.

The Division of Agricultural Sciences, within the University, has the continual task of maintaining the effectiveness of its various segments. One problem of concern is communication with agricultural industries. The change in the nature and degree of the services provided farmers by these industries has made it necessary to reappraise the role of Agricultural Extension Service personnel in working with industry representatives who deal with farmers. Typical of the agricultural industries that influence farmers' decisions is the fertilizer industry in California, with its large number of well-trained representatives.

This study was designed to determine how the Agricultural Extension Service can work with and through fertilizer-industry representatives in carrying out its educational program. Specifically, the objectives of this study are:

1. To determine the personal characteristics of fertilizer-company representatives.
2. To determine the use made of the personnel and services of the Agricultural Extension Service by fertilizer-company representatives.
3. To ascertain the sources that fertilizer-company representatives use to keep up to date on technical information.
4. To determine the adequacy of present sources of technical information for fertilizer representatives.
5. To determine the subject matter areas in which fertilizer men feel they need additional technical information.
6. To determine the attitudes of fertilizer men toward improving their subject matter competency.
7. To ascertain the best means of presenting technical subject matter to fertilizer men.

THE SITUATION

Advances in American agriculture have been spectacular in the past few decades, and the changes in the years ahead are expected to be even more dramatic. The output per farm worker has increased more in the past few decades than in previous recorded history, and is expected to increase further in the years ahead. Increases in production per worker and per acre can be attributed to many things but one of the most important factors is the increased use of commercial fertilizers--a spectacular change in California. Between 1920 and 1959, while national fertilizer tonnage was increasing three times, California tonnage increased 32 times.[1/] In that period, California use changed from less than one per cent of national tonnage to nearly 10 per cent. The 1959 census shows that between 1954 and 1959 both the tons of fertilizers used and the acres fertilized in California increased by one

1/ Statistics from an address, "Trends in Fertilizer Usage in California During 1920 to 1959," by Robert Z. Rollins, Chief, Bureau of Chemistry, California State Department of Agriculture.

third. Those increases were concentrated in the San Joaquin Valley north of Kern County and most of the counties in Northern California, where the range of increase per county was from 50 per cent to more than 100 per cent.[2/] The increases reflect high per-acre rates of fertilization in California. The highest rate is in Kern County, where the average is 503 pounds per acre. The state average is 420 pounds, 41 per cent greater than the national average, 298 pounds per acre. In 1960 California farmers used over 1,275,000 tons of commercial fertilizer plus 1,100,000 tons of agricultural minerals, the most important of which was gypsum.

The great increase in the use of fertilizer and agricultural chemicals has created many problems for farmers. Since few are able to remain informed on the many new developments in the use of agricultural chemicals, more and more farmers rely heavily on "off-farm experts" for recommendations. Since the Division of Agricultural Sciences of the University of California, through the Agricultural Extension Service, is a basic source of information on how to use fertilizers properly, it faces the problem of determining what is the best means of getting the latest findings of research on agricultural chemicals into use on farms.

The fertilizer representative who makes the sale is in an excellent position to relay information to the farmer. A survey in Northern California showed that up to 90 per cent of the farmers look to their dealers for specific information on fertilizer use. Most (66 per cent) of the farmers who asked fertilizer dealers for information followed their recommendations. This same study showed that a large majority of the fertilizer company representatives relied on the Agricultural Extension Service for their information.[3/]

A study of 349 commercial cotton growers in California showed that 80 per cent

2/ "Use of Commercial Fertilizers in California by Counties in 1959," Sacramento, California, State of California Department of Agriculture, Announcement No. FM-347, March 15, 1961.

3/ Thompson, O. E., L. P. Donker, and D. D. Kleist, "How Fertilizer Dealers Affect Fertilizer Use," University of California, Davis, 1959, 19 pages.

of them relied on commercial representatives as a first source of information for pesticide recommendations. The growers also indicated that they regarded the Agricultural Extension Service as an authoritative source of information.[4/]

A study of a random sample of 140 farmers in Des Moines County, Iowa, showed that local fertilizer dealers were surpassed only by farm magazines as a source for fertilizer information. Third in importance was the Agricultural Extension Service.[5/] Sources of information mentioned as used infrequently were neighbors, newspapers, and agricultural college specialists.

Thus, because fertilizer dealers have direct contact with many farmers and are influential in farmer decisions on fertilizer use, they can be considered informal members of "The University Team." Consequently, the Agricultural Extension Service and other segments of the Division of Agricultural Sciences must provide fertilizer industry representatives with the latest information on effective use of fertilizers.

THE PROCEDURE

This study was necessarily conducted by a mail survey. Thus, the sample is not random, though it is believed to be representative of the industry. Several pilot studies were used to perfect the survey form and study design. In addition, throughout the development of the survey instrument and study design the researchers had the counsel of the National Plant Food Study Committee on the Davis Campus of the University of California.

The study population comprised all the men licensed to sell fertilizer in California in 1960. This list of 2,300 was obtained from the licensing agency, the Bureau of Chemistry, State Department of Agriculture. A survey form was mailed to each man in December, 1960. Follow-up reminder cards were sent each

4/ Lawson, W. M., "Commercial Cotton Farm Operator's Perception of the California Agricultural Extension Service," Thesis, Ph.D. 1959, University of Wisconsin, Madison, 217 p.

5/ Wickner, I. A. and J. C. Hodges, "Soil Facts plus Teamwork Increase Farm Income," National Plant Food Review, Vol. 7, No. 1, Spring 1961.

non-respondent. Responses were received from 1,005. Of these, 299 could not be used, leaving 706 usable returns. It was concluded that although the mailing list derived from license application was quite complete, it included many who were not actually engaged in sales of fertilizers. Since the license is relatively inexpensive, it appears that many apply for it who don't actually need it in their work, and many keep their licenses current after they quit the selling field. (Many who returned incomplete survey forms stated the work they were doing didn't involve the sale of fertilizers to farmers, and therefore their survey forms were not included in the sample.)

The data were placed on IBM punch cards for ease of tabulation and analysis. Numerous analyses were made to identify factors that influenced responses to various items.

CHAPTER II

SUMMARY OF FINDINGS

As noted in Chapter I, this study was designed to determine how the Agricultural Extension Service can work with and through fertilizer-industry representatives in carrying out its educational program. In analyzing the replies of 706 fertilizer-industry representatives to a ten-page questionnaire a great deal of information was developed that will be of interest to the industry and to the University of California. For obvious reasons, only the more important of these findings are included in this chapter.

Once again the reader is reminded that the findings apply strictly to the 706 fertilizer-company men who returned complete survey forms, though there are many indications that they are representative of the industry as a whole. One example is the relationship found between the amount of fertilizer sold in an area and the number of respondents from the area. The San Joaquin Valley, which had the highest total fertilizer use, also had the most fertilizer salesmen responding to the survey. Comparisons in each of the other areas of the state likewise showed general similarity between total fertilizer used and the number of respondents.

The findings that follow are grouped according to the general objectives of the study.

I. TO DETERMINE THE PERSONAL CHARACTERISTICS OF FERTILIZER-COMPANY REPRESENTATIVES

A. Men entering fertilizer sales work are older than men entering most occupations. It was found that 55 per cent of the respondents had less than ten years of experience in this field, yet only 14 per cent of the group were under 31 years old.

B. A rather high proportion (41 per cent) of the men were college graduates. Another 28 per cent had some college preparation. Those with the least experience and those working for the large companies tended to have the highest level of education. Likewise, the employees (salesmen, fieldmen, and consultants) had higher educational attainments than the owner-managers. The academic major completed in college appeared not to influence the position the fertilizer representative held in the company.

C. The fertilizer companies represented had relatively small sales staffs. Over 42 per cent had fewer than four, and 68 per cent had fewer than seven salespersons. About one in eight had over twelve. The companies with the larger staffs tended to be in the San Joaquin Valley.

D. There is opportunity for young men who wish to enter fertilizer sales work. The 236 respondents who were involved in hiring new staff indicated that there were openings for 402 men in the field. The majority (253) were new positions. The positions required certain academic preparation and personal qualities.

E. Fertilizer salespersons in this study usually also sold agricultural pesticides. The most common companion product for fertilizers was insecticides.

II. TO DETERMINE THE USE MADE OF THE PERSONNEL AND SERVICES OF THE AGRICULTURAL EXTENSION SERVICE BY FERTILIZER-COMPANY REPRESENTATIVES

A. About three fourths of the fertilizer representatives knew at least one farm advisor doing soil fertility work; a few were able to name five. The 544 that knew at least one

farm advisor knew an average of 2.3.

B. About 35 per cent of the fertilizer men contacted the farm advisor often for information. Another 59 per cent seldom used the farm advisor's services, and about 6 per cent never did. The frequency of contact with farm advisors didn't appear to be influenced by the number the fertilizer representative knew.

C. The frequency with which farm advisors were contacted was related to the length of service of fertilizer representatives. Those with over 20 years contacted the farm advisors more frequently than did those with less than five years' experience. However, the former group knew only an average of 1.30 farm advisors whereas the latter knew an average of 1.95. Likewise, there was a higher proportion (38 per cent) of those with over 20 years of service who knew no farm advisor. For those with less than 5 years' service, this figure was 15 per cent.

III. TO ASCERTAIN THE SOURCES THAT FERTILIZER-COMPANY REPRESENTATIVES USE TO KEEP UP TO DATE ON TECHNICAL INFORMATION.

A. Meetings were a popular means for fertilizer representatives to obtain current technical information. Slightly over half (59 and 55 per cent) attended meetings sponsored by their own company and/or the University of California. About one fourth attended meetings provided by trade associations such as the National Plant Food Institute. Most (76 per cent) of those who attended meetings participated in one to three events. The remainder attended over four.

B. It was found that the University of California, fertilizer companies, and trade associations have meetings in each

geographic area of the state in approximately the same proportions as there were respondents from the area. The position held in the company by the fertilizer representative did not influence the proportion that attended meetings sponsored by each of the agencies. However, the position in the company did influence the average number of different meetings attended. Owner-operators averaged 1.16, whereas hired managers and employees respectively attended an average of 1.37 and 1.52.

C. The number of years in fertilizer work influenced attendance at meetings. Average attendance tapered off from 1.49 meetings each for those with 5 to 9 years to 1.14 for those with 20 years or more of experience.

D. As the level of education increased there was a tendency for more participation in meetings sponsored by the University of California and the fertilizer trade associations. The reverse appeared true for company-sponsored meetings. The over-all average attendance at meetings increased from 1.0 for those with no high school to 1.62 for college graduates.

E. Fewer respondents had attended fertilizer schools than had attended meetings on fertilizer use. About 27 per cent attended schools sponsored by own company, and 18.3, 11.3, and 10.2 per cent respectively attended schools sponsored by the University of California, by other fertilizer companies, and jointly by industry and the University. Most individuals (80 per cent) attending fertilizer schools participated in one or two. Individuals who participated in more than two schools generally attended those sponsored

by own company.

F. Attendance at fertilizer schools was apparently influenced by educational level. Only 38 per cent of those with no high school attended at least one fertilizer school. The per cent of attendance increased with each educational level to 75 per cent for the college graduates. Position in the company is also believed to have influenced school attendance. The proportion of owner-operators attending schools sponsored by own company was somewhat less than the proportion of hired managers and employees at these meetings. The reverse was true for meetings sponsored by other fertilizer companies. Position in company didn't influence attendance at University of California schools or at schools sponsored jointly by industry and the University.

G. Most of the fertilizer schools (70 per cent) were ten hours long or less. Of these, 44 per cent were conducted by the fertilizer representative's own company, 25.6 per cent by the University of California, 16.5 per cent by other fertilizer companies, and 14.1 per cent jointly by industry and the University. Schools longer than 10 hours were generally provided by the fertilizer company or the University of California.

H. Schools were rated as good by about 70 per cent of those who attended. There was little difference in ratings according to sponsor of the schools.

I. Fertilizer newsletters were a popular means of getting up-to-date technical and practical information to fertilizer men. About three fourths indicated they received such letters

regularly from the farm advisor. An equal number stated they received such information from their own company. About half received letters from various fertilizer trade associations. In general, fertilizer men rated these letters as very helpful in their work. Between 75 and 85 per cent of the respondents in the San Joaquin Valley, Sacramento Valley, and Desert area received farm-advisor newsletters. In Southern California and the Coastal area this dropped to 62.1 and 49.6 per cent, respectively. The percentage that received farm-advisor newsletters was smaller (59 per cent) for employees with 1-4 years' service than for employees with 20 years' service (75 per cent).

J. It was found that 85 per cent of fertilizer representatives who received farm advisors' newsletters always read them; 14 per cent read them sometimes. Fertilizer newsletters by fertilizer companies and the trade associations were always read by 78 and 73 per cent of the fertilizer representatives who received them.

K. The five most popular resource materials used by fertilizer representatives were fertilizer newsletters from various sources, Western Fertilizer Handbook, California Agriculture, University of California Bulletins, and the California Farmer.

L. When fertilizer men needed help in solving specific soil fertility problems they generally turned to individuals rather than printed material. The three most used sources of information were the farm advisor, co-worker in own company, and the specialist in own company, in that order. A very few indicated they seldom or never needed assistance in solving soil fertility problems.

M. Many test and demonstration plots were conducted by fertilizer representatives. From the figures given it is estimated that these fertilizer-company representatives conducted 3500 to 4000 test or demonstration plots annually. Over half (59 per cent) conducted plots with farmers, one third with own company, and one seventh with farm advisors. Few (less than 4 per cent) cooperated directly with the Agricultural Experiment Station on plots. Those conducting plots usually had one to three with a particular cooperator. Of those conducting over 9 test plots with a single category of cooperator, most (54 per cent) were with farmers. Neither educational level of the respondent nor years of service appeared to influence which kind of cooperator was used in test or demonstration plot work.

N. Most fertilizer trials were conducted in field crops. Fewer fertilizer trials, in about equal numbers, were conducted in forage crops, fruit and nut crops, and vegetable crops.

O. Whether fertilizer representatives conducted field trials wasn't influenced by level of education. However, the number of trials appears to be affected by level of education. The number of trials per man conducting tests averaged 1.29 for high school graduates, 1.42 for men with some college, and 1.49 for college graduates. Thus, those with more education tended to place more emphasis on field trials.

IV. TO DETERMINE THE ADEQUACY OF PRESENT SOURCES OF TECHNICAL INFORMATION FOR FERTILIZER REPRESENTATIVES

A. Fertilizer information from the respondent's own company was rated as very adequate by 28 per cent of the respondents. That from the University and trade associations was rated as very adequate by 28 and 11 per cent, respectively. About half

rated fertilizer information from the University of California and the fertilizer companies as moderately adequate.

V. TO DETERMINE THE SUBJECT-MATTER AREAS IN WHICH FERTILIZER MEN FEEL THEY NEED ADDITIONAL TECHNICAL INFORMATION.

A. When rating subject areas in which instruction would be helpful, fertilizer men placed research information on fertilizers and general fertilizer information, with interpretation, in first and second place by a wide margin. Test-plot design and analysis were last among the eight suggested subject areas.

B. The extent of need for fertilizer information is quite similar in field crops, fruit and nut crops, and vegetable crops. The need for fertilization information was less pronounced for forage crops. About 55 per cent said they needed additional fertilizer information often. Respondents in the Coastal area, San Joaquin Valley, and Southern California had more need for fertilizer information than those in the Sacramento Valley and Desert area. The need for fertilizer information in the various crop areas seemed unaffected by level of education, position in company, or years of service.

C. Most fertilizer men (53 per cent) want both technical (fundamental principles) and applied information (specific recommendations) included in meetings, schools, and publications. About 9 per cent indicated that they wanted only technical information, and about one third wanted only applied information.

VI. TO DETERMINE THE ATTITUDES OF FERTILIZER MEN TOWARD IMPROVING THEIR SUBJECT-MATTER COMPETENCY.

A. The fertilizer men represented in this study felt a need to keep up to date in technical subject matter. Most of their companies

(86 per cent) encouraged them to participate in professional activities. Fewer than 2 per cent of the men indicated that their company wasn't interested in having them attend fertilizer meetings and schools. Practically all would attend a joint industry-University meeting to discuss needed research in soils and plant nutrition.

B. Obtaining time to attend fertilizer schools and meetings was no problem for most respondents. Over 67 per cent indicated that their company would give up to six days; about 23 per cent would give more than six days.

VII. TO ASCERTAIN THE BEST MEANS OF PRESENTING TECHNICAL SUBJECT MATTER TO FERTILIZER MEN.

A. In rating the value of the various methods the University of California could use to present fertilizer information to them, the respondents gave top priority to area schools, extension courses, and meetings in that order. The lowest-rated of the 13 methods included was newspapers, radio, and television. Only 6 of the 706 respondents listed this as the single best method to use.

B. Late fall and early winter were rated as preferable seasons for schools and meetings. Day meetings were preferred over night meetings.

CHAPTER III

CONCLUSIONS AND IMPLICATIONS

The following conclusions are drawn from the data collected from the 706 fertilizer representatives who returned usable survey forms. Accompanying each conclusion is the implications that the authors feel this has for the University of California and industry.

1. The 706 representatives in this study mentioned the names of 1248 farm advisors they knew who were working in soil fertility and plant nutrition. Over 77 per cent knew the name of at least one farm advisor working in this subject area. Thus, it can be said that farm advisors are well known by the fertilizer-company representatives, but one might wonder why more of the fertilizer representatives didn't know at least one farm advisor. Both farm advisors and fertilizer-company representatives could benefit from the increased flow of information that wider acquaintance would make possible.
2. Meetings and schools on fertilizer usage are the best means of transmitting up-to-date technical information to fertilizer representatives. Also, the fertilizer newsletters sponsored by the various agencies were well received and used. In contrast, fertilizer representatives rated very low the fertilizer information received via newspapers, radio, and television. In fact only 6 of the 706 respondents listed these means as the best method of obtaining fertilizer information. Farm advisors should consider this in planning their information programs on fertilizer usage, and should also keep in mind that fertilizer representatives

generally turn to individuals and not to mass media for information to solve specific problems. The most popular sources of information used by fertilizer representatives for solving specific problems were farm advisors, co-workers, and specialists in own company, in that order.

3. In general, fertilizer representatives attended many schools and meetings sponsored by the farm advisors and others. They also used the fertilizer newsletters provided by various groups. They nevertheless rated the over-all supply of information thus received as only moderately adequate. About 28 per cent rated fertilizer-company information as very adequate, and 21 and 11 per cent respectively rated information from the University of California and fertilizer trade associations as very adequate. Thus, effort should perhaps be made on the local level by farm advisors, fertilizer companies, and others to determine what additional information should be provided fertilizer representatives. Here, a local advisory committee of key fertilizer-company representatives could perhaps be used for the mutual advantage of both groups. Formal or informal evaluation of the adequacy of information could also be obtained by a survey or interview procedure.

4. The primary subject-matter need of fertilizer representatives was to obtain the latest research information on soil fertility and plant nutrition. They gave a low priority to meetings on sales promotion, financial aspects of the fertilizer business, and research techniques. It appears that farm advisors need to continue to place primary emphasis on technical and general fertilizer information in meetings, schools, and written materials for these representatives. Evidently, educational programs dealing with the business aspects of their jobs are being adequately handled by fertilizer companies and others.

5. The general attitude of fertilizer representatives toward professional and technical improvement was very healthy. Also, they were very appreciative of the services now provided by the University of California, their own companies, and trade associations. Farm advisors need to continue these services and to strengthen close working relations with fertilizer representatives. This will be of mutual benefit to the industry and the Agricultural Extension Service.

6. It is recognized that each fertilizer representative contacts many farmers, and since these representatives outnumber farm advisors many-fold, it is recommended that educational materials, meetings, and schools be provided especially for this group by the Agricultural Extension Service. These men were interested in professional improvement, and rated the farm advisor high as a source of information. Providing special technical services for the fertilizer representatives is further justified by the academic preparation of these men which permits a more technical presentation of information than is appropriate for most farmer groups. This procedure would be of mutual benefit to fertilizer representatives and farm advisors, for it would provide the farm advisor with an opportunity to extend his influence to more farmers and provide a means for the fertilizer representatives to obtain solutions to problems. It would also provide a means for fertilizer representatives to direct field problems needing research to personnel of the University.

7. If farm advisors and fertilizer representatives are not already informed about each others' test and demonstration plot work, they will benefit by this exchange of information. It is conservatively estimated that over 10,000 test and demonstration plots are conducted yearly by these two groups.

8. A smaller proportion of new fertilizer representatives received farm

advisor fertilizer newsletters than received such letters from their own company. Also, employees with one to four years of service used farm advisors less than employees with longer service. Perhaps farm advisors need to make a special effort to keep abreast of changes in fertilizer personnel and keep their mailing lists up to date.

9. Since there are many opportunities for qualified young men to enter fertilizer sales work (402 openings in the companies in the study), some effort is needed by the industry to make prospective employees aware of these opportunities through institutional placement services. Fertilizer companies also need to inform agricultural institutions of the academic preparation they feel employees should have. Perhaps the California Fertilizer Association could act as a liaison between the industry and agricultural colleges on problems of curriculum and demand.

10. For farm advisors to work effectively with fertilizer-company representatives they will need to become aware of the general characteristics of this group. The representatives in this sample were mostly men over 30 years old but under 50; over half had less than ten years' experience in fertilizer sales; most (71 per cent) had some college preparation (41 per cent with 4-year college degrees); and practically all those with college preparation had attended agricultural schools. In general these men were anxious to learn more about research findings in soil fertility and plant nutrition. To ensure that the subject matter of newsletters, meetings, and schools is appropriate, each farm advisor needs to determine the general educational level and professional attitude of his group. Perhaps this could be accomplished by using a formal or informal advisory committee composed of key fertilizer men in the area. This could also be determined by survey or interview.

CHAPTER IV

DISCUSSION OF DATA

The information in this section was derived from the responses of 706 fertilizer-company representatives to the various items on the survey form. The reader is reminded that this is not a random sample, though there is good reason to believe that this incidental sample is representative of the industry, as is shown in the following section. All of the statements in this discussion are supported by tabled data. In the interest of space, however, certain tables had to be omitted.

DESCRIPTION OF THE SAMPLE

Geographic Area

Since there are striking differences in the agriculture in the various areas of the state it was decided to identify the general area in which each fertilizer representative worked. To do this the state was divided into five general areas--Coastal Area, San Joaquin Valley, Sacramento Valley, Desert Area, and Southern California Area. As would be expected, the San Joaquin Valley produced the most responses, over twice as many as the next-highest. About two thirds of the gross tonnage of fertilizer is applied in the ten leading agricultural counties, six of them in the San Joaquin Valley.

It is impossible to state conclusively that representation in the sample is in proportion to the amount of fertilizer sold in each area, but there appears to be a relationship. A review of Table I will show a general relation between the amount of fertilizer sold in an area and the percentage of respondents in the study from that area. This was particularly true for the Sacramento Valley. Thus it appears that the sample in this study represents the consumption areas adequately.

TABLE I

Comparison of Proportion of Respondents from Each Area of the State With the Per Cent of Fertilizer Sold in That Area

Area	Total Sample		% Fertilizer** Sold in State
	No.	%*	
Coastal Area	125	17.71	11.08
San Joaquin Valley	284	40.23	47.92
Sacramento Valley	124	17.56	17.68
Desert Area	66	9.35	13.22
Southern Calif.	103	14.59	7.83
No Reply	4	0.57	2.27

* Per cent of 706 responses

** 1959 figure released by State of California Department of Agriculture

Age, Experience, and Position in Company

Since the use of fertilizers has been expanding rapidly (a 33 per cent increase in 1954-1959), it was anticipated that many of the employees would be quite new in the industry. This fact can be observed in Table II.

It will be noted in Table II that over half (55 per cent) of the respondents had less than ten years of experience, and that one fourth had ten to fourteen years of experience. Only 20 per cent had been in fertilizer work for 15 years or more. Thus it can be said that those in this sample had relatively short tenure, for over three fourths of them had entered this kind of work since World War II.

TABLE II

Fertilizer Representatives by

Years of Experience in Industry

Years in Industry	Fertilizer Representatives	
	No.	%*
1-4 years	163	23.09
5-9 years	229	32.44
10-14 years	172	24.36
15-19 years	68	9.63
over 19 years	74	10.48

* Per cent of 706 responses

One would naturally expect, then, that the group would be a relatively young one, but that does not necessarily follow. Though 55 per cent had less than 10 years of experience only 14 per cent (Table III) were under 31 years old. Half of the employees were over 40 year old. Thus it is quite apparent that those in the sample entered the fertilizer industry at an age above the normal age for entering most occupations. For example, at least 61 of the 163 with 1-4 years of experience were over 30 years old, and at least 45 with less than 9 years of experience were over 40 years old. Experience in other fields of agricultural sales work is perhaps a prerequisite for entry into this industry.

TABLE III

Fertilizer Representatives in Each Age Category

Age Category	Fertilizer Representatives	
	No.	%*
20-30 years	102	14.45
31-40 years	247	34.99
41-50 years	225	31.87
51-60 years	91	12.89
over 60 years	33	4.67
no response	8	1.13

* Per cent of 706 respondents

When the age categories were stratified by position in the company, only 25 per cent of the owner-operators were under 41 years old, and 48 per cent of the hired managers and 63 per cent of the employees were under 41 years old. As would be expected, more owner-operators than hired managers and employees were over 50 years old (31 per cent vs. about 10 and 10 per cent). The stratification of each of the positions in company by length of service likewise showed that the majority (78 per cent) of those with less than ten years service were the employees. Over half (54 per cent) of those with more than 19 years of service were owner-operators.

It follows, then, that there is perhaps a progression from employee position into the manager and owner-operator category. New men tend to be hired as employees (fieldman, salesman, or consultant).

To obtain information on the duties and responsibilities of the respondents, each was asked to identify the position he held in the company. This is reported in Table IV. The smallest group was owners who do not manage their own concerns. Those who were either owners or managers made up slightly less than one half (45 per cent) of the group. The employees making up the rest of the group are a

composite of fieldmen, salesmen, consultants, and others with similar titles. Since many of these men were employed by small companies, and since this industry is in a transition period, the job titles weren't always consistent. For example, some sales staff are called fieldmen whereas others are classified as consultants. There appears to be a tendency to want to get away from calling these employees salesmen. When they give advice and counsel on various soil fertility problems they feel a title such as fieldman or consultant is more appropriate, and incidentally may give more prestige to the position.

Level of Education

The educational level attained by respondents is shown in Table V. It can be seen that 90 per cent of this group had at least a high school education. About 20 per cent had stopped with high school, leaving 70 per cent with some college education. Over 41 per cent had earned college degrees--the majority (248) were baccalaureate degrees. Another 21 had earned master's degrees, and 2 had doctorates. This group had educational achievement far beyond that in many industries, indicating that college preparation is one of the requirements for entry into this field.[6/]

TABLE IV

Fertilizer Representatives by Position in Company

Position in Company	Fertilizer Representatives	
	No.	%*
Owner	83	11.76
Owner-manager	119	16.86
Hired manager	119	16.86
Employee	354	50.14
Other	31	4.39

* Per cent of 706 responses

6/ Thompson, O. E., "Training Requirements of Workers in the Production and Distribution of Nursery Plants," Sacramento, California, State Department of Education. 1959.

Some interesting differences were found when the educational levels of the owner-managers, hired managers, and employees were compared. Over one third (34 per cent) of the owner-managers and one fourth (24 per cent) of the employees attended college without obtaining a degree. Only 31 per cent of the owner-managers were college graduates, and about 46 per cent of each of the hired manager and employee groups held four-year college degrees. The difference may reflect the fact that owner-managers tend to be somewhat older and that men quite new in fertilizer sales have higher educational achievement than older employees. In fact, over 55 per cent of the fertilizer representatives who had 1 to 4 years of experience were college graduates. The age category having the lowest proportion (16 per cent) of college graduates was the group with 15 to 19 years of service. The college graduates accounted for about 41 per cent of fertilizer representatives in this sample.

When the college graduates in each of the common college academic majors were stratified by position held in the company, little if any correlation was found between college major and present position. For example, about the same percentage of business majors were salesmen as were managers. The same was generally true for the other common college majors.

Owners who were not also managers were considered separately in this section. In the remainder of this report, owners are combined with owner-managers under the latter classification.

TABLE V

Fertilizer Representatives by Level of Education

Level of Education	Fertilizer Representatives	
	No.	%*
No high school	21	2.97
Some high school	51	7.22
High school graduate	140	19.83
Some college	197	27.90
College graduate	291	41.22
No reply	6	0.84

* Per cent of 706 responses

As might be expected, the majority of those graduating from college had majored in one of the agricultural curricula. The most popular majors were horticulture and general agriculture, with 56 and 47 graduates, respectively. Forty of the men had B.A. degrees, and most of these had majored in business.

Most of the graduates were from colleges of agriculture and the University of California. The largest number, 103, were University of California graduates. California State Polytechnic College, Fresno State College, and Chico State College respectively provided 64, 67, and 1 graduates. Forty-six had ended formal education at the junior-college level. Private colleges accounted for 48, and 122 had attended out-of-state institutions.

Size of Fertilizer Companies

Since the fertilizer industry is relatively young, it would be expected to include many small companies. That was true in this study. Table VI shows that over 42 per cent of the respondents worked in companies with fewer than four employees. Over two thirds (68 per cent) were employed in companies with fewer than seven employees. Only about one in eight was with a company that had more than twelve employees. Thus it can be said that the fertilizer companies represented tended to be small companies in terms of total sales staff. It is recognized that many of these companies have rather large crews for handling and delivering fertilizer, and actually applying it in many instances.

TABLE VI

Fertilizer Companies by Size of Staff

Size of Staff	Fertilizer Representatives	
	No.	%*
1-3	302	42.78
4-6	177	25.07
7-9	66	9.35
10-12	36	5.09
Over 12	90	12.75
No reply	35	4.96

* Per cent of 706 responses

When size of company is related to geographic regions, most of the larger companies, those with over 7 employees, were found to be in the San Joaquin Valley. The Desert Area and the Sacramento Valley Area had the smallest companies in terms of sales personnel.

Comparisons between size of company and age of respondents indicated that the younger men outnumbered the older men in the large companies. This is to be expected since the expansion in the fertilizer industry has undoubtedly resulted from the growth of existing companies.

The educational level of respondents varied with size of company. There was a trend for those in the larger companies to be college graduates. Though 41 per cent of all salesmen were graduates of four-year colleges, over half of the salesmen in companies with over 12 employees were college graduates. This once again illustrates that the younger men in fertilizer work tend to be college graduates.

Employment Needs In Industry

The individuals who were responsible for hiring sales staff were asked to indicate the number of persons they would need to employ this year. Of the 402 they indicated that they needed, the majority (253) were for new positions, and about one third (149) were replacements of men who would be retired or otherwise not available. Practically all these positions involved both sales and consultant services. Some employers indicated that they were more interested in the experience and personal characteristics of a man than in whether he had a college degree. Others placed at least a baccalaureate degree as a prerequisite for employment, and gave preference to the college majors of general agriculture, agronomy, and entomology, in that order.

Employers were very interested in the personal characteristics of prospective employees. High among the characteristics they looked for were honesty, pleasing personality, ambition, good appearance, and intellect.

Present employees were asked to indicate the college major that would have been

the best preparation for the work they are now doing. Here again, majors in agronomy, entomology, general agriculture, and soils rated high. Many indicated that a baccalaureate degree would have been helpful. In addition, 49 felt they should have had a Master of Science degree, 13 a Master of Arts degree, and 29 a Doctor of Philosophy degree.

It is evident, therefore, that there are opportunities for employment in the fertilizer business, though the prospective employee must possess certain qualifications in both academic preparation and personal qualities.

Responsibilities of Fertilizer Salesmen

Even though most of the respondents would consider themselves fertilizer salesmen, consultants, fieldmen, or company managers, only 64 (slightly less than 10 per cent) spent 100 per cent of their time in fertilizer work. About 48 per cent spent over one fourth of their time in insecticide sales. About one third of the men indicated that they spent more than half of their time in fertilizer sales, only 20 per cent spent as much as half of their time in insecticide sales, and only about 3 per cent spent over half their time in the sales of herbicides and other pesticides. Thus, though 90 per cent of the respondents were involved in the sales of other products, fertilizers were their single main concern.

USE FERTILIZER REPRESENTATIVES MADE OF FARM ADVISORS

To determine the use that fertilizer representatives made of Agricultural Extension Service personnel, each was asked to record the names of the farm advisors he knew that worked with soil fertility problems, and was further requested to indicate the frequency with which he contacted each for information.

Over three fourths of the respondents knew at least one farm advisor, and over one half knew two or more (See Table VII). In all, 1,248 farm advisors were named, making an average of about 1.8 names for each respondent and an average of 2.3 names for respondents who knew at least one farm advisor.

TABLE VII

Number of Farm Advisors Known by Fertilizer Representatives

Number of Farm Advisors Named	Responses of Fertilizer Representatives	
	No.	%*
0 Farm advisors	162	22.95
1 Farm advisor	544	77.05
2 Farm advisors	354	50.14
3 Farm advisors	195	27.62
4 Farm advisors	103	14.58
5 Farm advisors	52	7.36
Total Names Mentioned	1248	

* Per cent of all 706 respondents

The frequency with which farm advisors were contacted for information on fertilizer usage is quite revealing. Table VIII shows that about 35 per cent of the fertilizer representatives contacted the farm advisor often. Regardless of how many farm advisors the respondents knew, the frequency of contact was about the same. About 55 to 60 per cent contacted the farm advisor only seldom, and 6 per cent never contacted a farm advisor.

TABLE VIII

Relationship of Frequency of Contact by Fertilizer Representatives With Farm Advisors to Number of Farm Advisors Known

Number of Farm Advisors Named	Frequency of Contact					
	Often		Seldom		Never	
	No.	%*	No.	%*	No.	%*
1 Farm advisor	208	38.23	302	55.51	34	6.25
2 Farm advisors	109	30.79	232	65.53	13	3.67
3 Farm advisors	72	36.92	114	58.46	9	4.61
4 Farm advisors	33	32.03	57	55.33	13	12.62
5 Farm advisors	17	32.69	30	57.69	5	9.61
Total	439	35.17**	735	58.89**	74	5.92**

* Per cents computed on number of respondents in each row

** Per cent of 1248 farm advisor names listed

When the frequency with which farm advisors were contacted was stratified by length of service in the fertilizer industry, several things were apparent. A higher proportion of the fertilizer representatives with over nineteen years of service used the farm advisor more frequently than any of the other service categories. Frequency was lowest for the group with 1-4 years of service. Table IX shows that only 31 per cent of this group used the farm advisor often, compared with 50 per cent for the group with over nineteen years of service. However, those with longer service knew fewer farm advisors than did those with less service. For example, those with 1 to 4 years of experience knew an average of 1.95 farm advisors whereas those with over 19 years of service knew an average of 1.30. The number that didn't know a single farm advisor increased markedly as the years of service increased. Only 15 per cent of those with 1 to 4 years of experience listed no farm advisor. This percentage increased with each age category, up to 38 per cent for those with over 19 years of experience in fertilizer work. The mean for the entire group was about 23 per cent.

TABLE IX

Relationship of Years of Service of Fertilizer Representative to Frequency of Contact with Farm Advisors

Frequency of Contact	Years of Service				
	1-4 n=310	5-9 n=432	10-14 n=302	15-19 n=88	Over 19 n=96
	%*	%*	%*	%*	%*
Often	31.03	33.71	37.75	32.95	50.00
Seldom	59.56	62.67	55.96	65.91	41.67
Never	9.40	3.62	6.29	1.14	8.33
Average no. of farm advisors known	1.95**	1.93**	1.76**	1.29**	1.30**

* Per cent of number in column which is a total of farm advisors mentioned by those in each years of service category

** Average number of farm advisors known by each fertilizer representative in the years of service category

A comparison of the frequency with which owner-operators, hired managers, and employees contacted farm advisors revealed that hired managers were most likely to contact them often. In fact, 40 per cent of these men contacted farm advisors often, whereas 32 and 34 per cent, respectively, of the owner-operators and employees contacted them often. Only 5 to 7 per cent of those who knew farm advisors never contacted them. Respectively 60 and 62 per cent of the owner-operators and employees seldom consulted the farm advisors they knew. It can be said that position in the company affected the use made of farm advisors, but this influence was rather minor.

INFORMATION SOURCES USED BY FERTILIZER REPRESENTATIVES

As anticipated, fertilizer representatives used many different means of keeping up to date on the latest technical information on soil fertility and fertilizer usage. The means included: helping to create new information or verify existing information through test plots; attending fertilizer meetings or schools; consulting with resource persons; and reading reference materials. The emphasis on each means varied with the different fertilizer representatives. Following is an explanation of the use made of each of the information sources.

Test-Plot Work

Test plots or demonstrations were conducted with various cooperators in the communities. The 777 different test-plot situations recorded on the survey forms are shown in breakdown in Table X. Obviously, many conducted test plots with more than one type of cooperator. The most popular cooperator was the farmer, with whom 409 different fertilizer representatives (58 per cent) conducted plots. About one third conducted plots with their own company, and 15 per cent cooperated with farm advisors. Only about 4 per cent cooperated directly with the Agricultural Experiment Stations on test plots. Almost half (48 per cent) of the fertilizer representatives conducted 1 to 3 test plots. About one fourth conducted 4 to 6 and about one fifth had over 10 plots. From these figures it is estimated that

3500 to 4000 different test or demonstration plots were conducted by these fertilizer representatives with various cooperators.

TABLE X

Number of Test or Demonstration Plots Fertilizer Representatives Conducted with Each Category of Cooperator

Cooperator	Number of Plots				
	1-3 n=372	4-6 n=189	7-9 n=54	10 n=162	Total n=777
	%	%	%	%	%
Farm advisors	20.70	8.47	7.41	5.56	13.64
Local farmers	43.82	66.14	61.11	54.32	52.64
Own company	30.38	23.81	29.63	38.89	30.50
Agriculture Expt. Station	5.11	1.59	1.85	1.23	3.22
Total	47.88*	24.32*	6.95*	20.85*	

* Per cent of 777 sets of test or demonstration plots conducted by fertilizer representatives

Little if any relation was found when educational level was compared with the number of test plots conducted (see Table XI). Likewise, no obvious differences in tendency to conduct test plots could be attributed to the number of years of service in fertilizer work. Those with 1 to 4 years of service did about the same proportion of their test plot work with farm advisors, local farmers, and own company as did those with over 19 years of service.

TABLE XI

Level of Education of Fertilizer Representatives Who Conducted Test or Demonstration Plots with the Various Cooperators

Cooperator	Education			
	Some H.S.	H.S. Grad.	Some College	College Grad.
	%	%	%	%
Farm advisor	7.84	15.21	14.28	14.19
Local farmer	64.71	57.24	53.57	52.68
Own company	27.44	27.54	32.14	33.12
	n=51	n=138	n=224	n=317

Thus, fertilizer representatives do extensive test and demonstration plot work, mostly with local farmers, next with own company, and then with farm advisors. Very few worked directly with the Agricultural Experiment Station on test-plot studies.

Test or Demonstration Plots on Fertilizer in Various Types of Crops

Fertilizer representatives use test or demonstration plots to verify certain general recommendations or to create new information. Here it was of concern to know just which types of crops were used for test plots, for it was assumed that these were the general problem areas that fertilizer representatives encountered.

It was found that 361 (51 per cent) of the respondents had test plots involving field crops (Table XII), 31 per cent were with vegetable crops, 30 per cent with fruit and nut crops, and 27 per cent with forage crops. It is quite obvious that field crops create the most problems for fertilizer representatives.

TABLE XII

Number of Test or Demonstration Plots Fertilizer Representatives

Conducted in Each of the Major Crop Areas

Crop Areas	Number of Test Plots				
	1-3 n=604	4-6 n=201	7-9 n=48	Over 9 n=131	Total n=984
	%	%	%	%	%
Field crops	36.75	38.81	27.08	36.64	51.13
Forage crops	21.52	14.42	14.58	16.79	26.63
Fruits and nuts	20.36	23.88	29.16	22.14	30.31
Vegetable crops	21.35	22.89	29.16	24.43	31.30

Table XII shows that the majority of the representatives had 1 to 3 test plots. Next came 4 to 6 plots, and last was over 9 plots. Also of note is the similarity in the proportions of each grouping of test plots that were in the various types of crops.

When the number of respondents that conducted test plots in each crop area was stratified by level of education, differences were very small, though the average number of plots did vary with educational level (Table XIII). The average number of plots per individual was 1.38 for those with some high school, 1.29 for high school graduates, 1.42 for those with some college, and 1.49 for college graduates.

TABLE XIII

The Level of Education of Fertilizer Representatives Who Conducted Test or Demonstration Plots in Each of the Major Crop Areas

Crop Areas	Level of Education			
	Some H.S. n=70	H.S. Grad n=180	Some College n=280	College Grad n=436
	%	%	%	%
Field Crops	37.14	35.00	37.14	35.78
Forage Crops	21.42	18.33	18.57	19.27
Fruits and Nuts	22.85	18.89	20.00	23.39
Vegetable Crops	18.57	27.77	24.29	21.56
Average Test Plot Per Respondent*	1.38	1.29	1.42	1.49

*See Table V to find number of respondents in each level of education category

In sum, educational level appeared not to influence the crop area in which they conducted test plots, but did influence the number of test plots conducted.

Participation in Meetings on Fertilizer Use

For many years meetings on the latest technical aspects of soil fertility have been conducted by various agencies and companies for farmers and fertilizer-industry personnel. To find the extent to which fertilizer representatives participated in these meetings, they were asked to indicate how many meetings, by each sponsoring agency, they had attended during the past year. Meetings were defined as educational programs not longer than one day.

Table XIV shows that over one half (55 per cent) of the respondents attended meetings sponsored by representatives of the University of California (usually farm advisors), fifty-nine per cent attended meetings sponsored by fertilizer companies, and about one fourth attended meetings sponsored by trade associations such as the National Plant Food Institute, National Potash Institute, and the California Fertilizer Association. Obviously, some representatives attended meetings sponsored by each of the agencies. The majority attended 1 to 3 fertilizer meetings yearly. The major difference between the meetings sponsored by farm advisors and those by companies is that attendance at company meetings are usually mandatory for their own employees. Meetings sponsored by representatives of the University of California are open to the public, with attendance naturally optional.

TABLE XIV

Number of Meetings Sponsored by the Various Agencies

That Were Attended by Fertilizer Representatives

Sponsoring Agency	Number of Meetings Attended				
	1-3 n=747	4-6 n=153	7-9 n=40	Over 9 n=42	Total n=982
	%	%	%	%	%
University of California	39.76	42.48	35.00	23.81	54.67
Fertilizer Company	38.15	51.63	60.00	69.05	59.07
Trade Association	22.09	5.88	5.00	7.14	25.35
Total	76.06*	15.58*	4.97*	4.28*	

* Per cent of 706

It can be noted in Table XV that 48 per cent of those attending meetings were in the San Joaquin area although about 40 per cent of the respondents were from this area. Thus, there were perhaps more opportunities to attend meetings in this region. In the other regions, participation in meetings approximated the proportion of respondents from that area. There is a striking similarity in participation pattern

in the different agency meetings among the various regions. This indicates that the University of California, fertilizer companies, and trade associations have meetings in each area of the state in approximately the same proportion as there are fertilizer representatives in the area.

TABLE XV

Number of Fertilizer Representatives from the Various Areas of the State Who Attended Meetings Sponsored by the Different Agencies

Sponsor of Meeting	Area in State				
	Coastal n=135	San Joaquin n=469	Sac Valley n=169	Desert Area n=87	So. Calif. n=117
	%	%	%	%	%
Univ. of Calif.	39.26	37.74	40.83	42.53	41.88
Fertilizer Co.	44.44	43.28	43.19	39.08	37.60
Trade Assoc.	16.30	18.98	15.98	18.39	20.51
Total	13.82*	48.00*	17.30*	8.90*	11.98*

* Per cent of 977, the total number attending at least one meeting sponsored by one of the agencies

The position held by the individual did not affect the proportion of each group that attended meetings, but did influence the average number of meetings attended. Operator-owners averaged 1.16 meetings attended, hired managers 1.37, and employees 1.52 (Table XVI).

TABLE XVI

Number of Fertilizer Representatives in Each Position in Company Who Attended Meetings Sponsored by the Various Agencies

Sponsor of Meeting	Position in Company					
	Owner Operator n=234		Hired Manager n=163		Employee n=541	
	No.	%	No.	%	No.	%
University of California	96	41.02	66	40.49	209	38.63
Fertilizer Company	96	41.02	64	29.26	239	44.17
Trade Association	42	17.95	33	20.25	93	17.19
Average**		1.16		1.37		1.52

** For number in each position in company, see Table IV

It is quite obvious from Table XVII that those with 5 to 9 years of service attended more meetings than did other fertilizer men. This group was followed by those with 10 to 14 years of experience. One point is quite noticeable, however--that is, that there was a tapering off of the average number of meetings attended as respondents had over 9 years of experience. Very little difference is noted in the proportion of each age category that attended meetings.

TABLE XVII

Years of Service of Fertilizer Representatives
Who Attended Meetings Sponsored by the Various Agencies

Sponsor of Meeting	Years of Service				
	1-4 n=232 %	5-9 n=342 %	10-14 n=240 %	15-19 n=84 %	Over 19 n=84 %
Univ. of Calif.	36.21	40.05	39.16	40.47	44.04
Fertilizer Co.	47.84	42.98	40.42	36.90	36.90
Trade Assoc.	15.95	16.96	20.42	22.62	19.05
Average No. Meetings Attended*	1.42	1.49	1.39	1.23	1.14

* To find number in each Years of Service category, see Table II

As the level of education of fertilizer representatives increased there was a tendency for more participation in meetings sponsored by University of California and by fertilizer trade associations (Table XVIII). The reverse appeared true for the fertilizer-company meetings. The average number of meetings, of whatever sponsor, attended by each educational level increased from 1.08 for those with some high school to 1.62 for college graduates.

TABLE XVIII

Level of Education of Fertilizer Representatives
Who Attended Meetings Sponsored by the Various Agencies

Sponsor of Meeting	Level of Education				
	Some H.S. %	H.S. Grad. %	Some Coll. %	Coll. Grad. %	Total %
Univ. of Calif.	36.36	39.75	38.05	40.42	54.25
Fertilizer Co.	50.90	49.07	44.40	37.23	58.64
Trade Assoc.	12.73	11.12	17.54	22.34	25.21
Average No. at Meeting Per Respondent *	1.08	1.15	1.36	1.62	

*To find number of fertilizer representatives in each Level of Education category, see Table V

Schools Attended by Fertilizer Representatives

Another means available to fertilizer representatives for receiving up-to-date technical information is from fertilizer schools. Such schools, usually devoted to an intensive study of one or more major subject areas on fertilizer, consist of several meetings extending over more than one day.

As might be expected, the number of respondents who had attended fertilizer schools was far less than those that had attended meetings. Few fertilizer representatives attended more than one or two schools per year. The schools most commonly attended were those sponsored by the fertilizer companies (Table XIX). Over one fourth (27%) had attended at least one such school during the past year. Next were schools sponsored by the University of California (Agricultural Extension Service), which were attended by 18 per cent of the respondents. Schools sponsored jointly by industry and the University of California enrolled about 10 per cent of the fertilizer representatives. A slightly higher percentage (11%) attended schools sponsored by fertilizer companies other than their own.

TABLE XIX

Number of Fertilizer Representatives Who Attended Schools Sponsored by the Various Agencies (Data Stratified by Number of Schools Attended)

Sponsor of School	Number of Schools			
	1-2 n=377	3-4 n=52	4+ n=43	Total n=472
	%	%	%	%
Own Company	34.22	57.69	74.41	27.05
Univ. of Calif.	30.77	17.31	9.30	18.27
Other Fertilizer Company	17.77	17.31	9.30	11.33
Joint Industry/UC	17.24	7.69	6.98	10.20
Total	79.87*	11.02*	9.11*	

*Per cent of 472 fertilizer representatives who had attended at least one fertilizer school

It is further evident (Table XIX) that if an individual attended more than two schools they were likely to be sponsored by his own company. Of the 43 attending more than 4 schools, 74 per cent attended those by their own companies.

When the number attending each type of school is stratified by educational level (Table XX) it will be noted that the proportion that attended at least one school increased as educational level increased. Only 50 per cent of those with some high school attended at least one school, whereas 75 per cent of the college graduates attended fertilizer schools. It is quite obvious that those with some college and college graduates dominate the numbers that attend schools. It must be kept in mind, however, that these two groups make up about 70 per cent of the respondents in this study.

TABLE XX

Level of Education of the Fertilizer Representatives
Who Attended Schools Sponsored by the Various Agencies

Sponsor of School	Level of Education			
	Some H.S.	H.S. Grad.	Some Coll.	Coll. Grad.
	n=26 %	n=71 %	n=138 %	n=219 %
Own Company	34.61	38.03	36.23	43.84
Univ. of Calif.	23.08	29.58	28.99	27.85
Other Fertilizer Company	26.92	19.72	19.56	12.79
Joint Industry/UC	15.38	12.68	15.22	15.52
Total	50.98*	50.71*	70.05*	75.57*

* Per cent of fertilizer representatives in each Level of Education category; numbers in each category obtained from Table V

Length of Fertilizer Schools

It was interesting to find that about 70 per cent of the schools attended by fertilizer representatives ran from 1 to 10 hours. The majority of the schools

under 10 hours (44 per cent) were sponsored by the respondents' own company. About one fourth of the schools running from 1 to 10 hours were sponsored by farm advisors. Sixty-eight (18 per cent) of the schools ran 11-20 hours. Of these, the highest number (41 per cent) were conducted by representatives of the University of California. Forty-two (11 per cent) of the schools ran 21-30 hours. The majority (60 per cent) of these schools were sponsored by the respondents' own company. It is apparent that most of the schools are less than 10 hours long, and that those offering over 10 hours of instruction are generally sponsored by the respondents' own company or the University of California.

TABLE XXI

Hours Fertilizer Representatives Spent in Schools Sponsored by the Various Agencies During 1960

Sponsor of School	Hours Per School			
	1-10 n=254	11-20 n=68	21-30 n=42	Total n=364
	%	%	%	%*
1 Own Company	43.70	33.82	59.52	22.52
2 U. of Calif.	25.59	41.18	33.33	15.16
3 Other Fert. Co.	16.54	10.29	-	6.94
4 Joint Industry--U. of Calif.	14.17	14.71	7.14	6.94
Total	69.78**	18.68**	11.54**	

* Per cent of 706 respondents
** Per cent of 364 fertilizer representatives responding to item

Evaluation of Fertilizer Schools

In assessing the educational value of the schools, 70 per cent of the respondents rated them good and about 28 per cent said they were only fair. Only 2 per cent rated them as poor. Of the schools sponsored by own company, 73 per

cent were rated as good, 26 per cent fair, and 1 per cent poor. Ratings of University of California and schools sponsored jointly by the University and industry were almost exactly the same as ratings of own-company schools. Schools sponsored by fertilizer companies other than their own were rated somewhat lower.

Rating of Fertilizer Newsletters

The newsletter, which usually consists of short abstracts of research results and other pertinent and timely information on fertilizer usage, was widely used by fertilizer-company representatives. In fact 77 per cent received such letters from their fertilizer company, 72 per cent received those distributed by farm advisors, and 53 per cent received newsletters from the trade associations (Table XXII). In general (84 per cent), they rated these letters as very helpful in their work. About the same per cent rated the fertilizer-company letter as helpful, and slightly less (75 per cent) rated trade-association letters as helpful. Some (12 to 20 per cent) seldom used the information in the newsletter, and practically none (1 to 4 per cent) said they never used the information in the newsletters.

TABLE XXII

Ratings That Fertilizer Representatives Gave Newsletters Sponsored by the Various Agencies

Rating of Newsletter	Sponsors of Letters					
	Farm Advisor		Fertilizer Co.		Trade Assn.	
	No.	%*	No.	%*	No.	%*
1. Helpful	426	83.52	471	86.42	278	74.93
2. Seldom used	72	14.12	70	12.84	77	20.75
3. Never used	12	2.35	4	0.73	16	4.31
Total	510	72.23**	545	77.20**	371	52.55**

* Per cent of column

** Per cent of 706 respondents

There was considerable difference in the prevalence of farm-advisor newsletters in the various areas of the state (Table XXIII). Coverage was best in the San Joaquin and Sacramento Valley areas, where 80 and 82 per cent of the fertilizer representatives indicated they received such newsletters. In the desert area of Imperial and adjacent counties, 75 per cent received newsletters. The lowest areas were Southern California and Coastal Areas, where the respective coverages were 62 and 50 per cent. Farm-advisor newsletters were rated helpful by 83 to 88 per cent of the fertilizer representatives in all areas of the state except Southern California where 69 per cent rated these letters as helpful. Over one fourth (27 per cent) of the men in this area indicated they seldom used the farm-advisor fertilizer newsletters.

TABLE XXIII

Rating of Value of Farm-Advisor Newsletters by Fertilizer Representatives in the Various Areas of the State

Rating of Newsletter	Area of State				
	Coastal n=62	San Joaquin n=228	Sacramento n=104	Desert n=49	So. Calif. n=64
	%	%	%	%	%
1. Helpful	85.48	85.09	88.46	83.67	68.75
2. Seldom used	9.68	12.28	11.54	16.33	26.56
3. Never used	4.84	2.63	-	-	4.69
Total	49.60*	80.28*	82.26*	74.24*	62.14*

* Per cent of number of respondents from that area; number of respondents in area appears in Table I.

Fertilizer-company newsletters apparently had better statewide coverage than did farm-advisor letters, especially in the coastal area. There only 50 per cent received farm-advisor letters whereas 70 per cent received fertilizer-company newsletters. In other areas the coverage was about the same for the two letters.

Years of service had little or no influence on the proportion that rated farm-advisor newsletters as helpful. The percentage of each age category that received

newsletters however, did vary somewhat. Newsletters were received by 59 per cent of those with less than 4 years of service and by those with over 19 years. About three fourths of the remaining age categories received fertilizer newsletters.

Newsletters from fertilizer companies had a better general coverage of the experience categories of respondents. Thus, new fertilizer representatives perhaps get on fertilizer-company mailing lists sooner than they get on farm-advisor lists.

No appreciable difference was found in the ratings given to newsletters by respondents with different levels of education. Likewise, no appreciable difference was found in the proportion of owner-operators, hired managers, and employees that rated the various newsletters as being helpful. It was noted, however, that the average number of newsletters rated as helpful did vary. Those with no high school averaged 1.14, and this average increased gradually to 1.73 for those with college degrees.

In addition to rating the value of newsletters, respondents were asked how frequently they read these publications (Table XXIV). About 85 per cent indicated they always read the farm-advisor letter. Slightly less (78 and 73 per cent, respectively) indicated they always read the fertilizer-company and trade-association letters. It is obvious from Table XXIV that those receiving newsletters made good use of the information.

TABLE XXIV

Frequency With Which Fertilizer Representatives Read Fertilizer Newsletters Sponsored by the Various Agencies

Frequency of Reading	Sponsor of Newsletter					
	Farm Advisors		Fertilizer Co.		Trade Assn.	
	No.	%*	No.	%*	No.	%*
1. Always	414	84.83	402	78.36	260	73.44
2. Sometimes	70	14.34	111	21.64	87	24.58
3. Never	4	0.82	-	-	7	1.98
Total	488		513		354	

* Per cent of column

Books, Periodicals, or Magazines Commonly Used as Resource Materials

Fertilizer representatives were asked to record the resource materials they used most frequently. Table XXV lists the 15 books and other kinds of publications reported most commonly. Here again, fertilizer newsletters from all sources were ranked high as a source of fertilizer information. Many other information sources were given besides the top-ranking 15 included here.

TABLE XXV

Ranking of Books, Periodicals, and Magazines Used
As References by Fertilizer Representatives

Rank	No. Responses	Publications
1	139	*Fertilizer Newsletter
2	117	Western Fertilizer Handbook
3	113	California Agriculture
4	113	University of California Bulletins
5	105	California Farmer
6	99	Agricultural Chemicals--West
7	76	USDA Year Book
8	67	Farm Journal
9	60	Western Crop & Farm Management
10	48	Crop Life
11	47	Hunger Signs in Crops
12	45	Western Fruit Grower
13	41	**Farm-Advisor Letters
14	36	Crops and Soils
15	35	Fertilizer Salesman Handbook

* All sources of fertilizer newsletters

** Other than those devoted exclusively to soil fertility

Information Sources Usually Used by Fertilizer Representatives

The respondents were asked to identify the first, second, and third source they would prefer to use should they encounter in the field a fertilizer problem they could not solve. Table XXVI lists the 10 sources named in an order of rank according to a weighted score.

TABLE XXVI

Ranking of Information Sources Used by Fertilizer Representatives in Solving Specific Fertilizer Problems

Rank	Weighted Score*	Information Source
1	844	Local farm advisor
2	795	Co-worker in own company
3	707	Specialist, fertilizer company
4	451	Commercial laboratory
5	240	Reference book, bulletins, etc.
6	206	Specialist, Agr. Ext. Service
7	192	Seldom if ever need help
8	176	Personnel of Agr. Expt. Sta.
9	74	Farmers in neighborhood
10	33	Other fertilizer dealers

* Weighted score obtained by allowing three points for first choice, two for second choice, and one for third.

It is well illustrated here that, though printed materials are important, they are not ranked particularly high as sources of information to solve specific problems. When fertilizer representatives have particular problems they turn to personal counsel. Farm advisors were ranked first as a source of specific information, followed closely by co-workers in own company. Some fertilizer representatives, as indicated in the 7th-ranking item, feel they seldom if ever need assistance in solving soil fertility problems.

SUBJECT-MATTER AREAS IN WHICH FERTILIZER REPRESENTATIVES FEEL THEY NEED ADDITIONAL INFORMATION

To find out if certain types of crops present more fertilizer problems than others, respondents were asked to indicate how often they needed information on fertilizers in field crops, forages, fruit and nut crops, and vegetables (Table XXVII). When all crops are considered together, about one sixth (16 per cent) say they always need additional information, 39 per cent often need assistance, and 35 and 10 per cent respectively seldom or never need information. Slightly over half of the respondents frequently needed additional information on fertilizer usage in the various crops.

TABLE XXVII

Frequency With Which Fertilizer Representatives Need Information on the Various Types of Crops

Crop Type	Frequency of Need for Information							
	Always		Often		Seldom		Never	
	No.	%*	No.	%*	No.	%*	No.	%*
Field Crops	92	26.29	245	28.22	209	26.83	37	16.67
Forage Crops	69	19.71	159	18.32	242	31.06	56	25.23
Fruit and Nuts	87	24.86	242	27.88	155	19.90	70	31.53
Vegetable Crops	102	29.14	222	25.57	173	22.21	59	26.58
Total	350	15.77**	868	39.11**	779	35.10**	222	10.00**

* Per cent of responses in column
** Per cent of 2219--total responses

Needs for fertilizer information are quite similar for field crops, fruit and nut crops, and vegetable crops. With forage crops, however, the proportion of those needing fertilizer information always or often is considerably lower than for other crops. Those seldom or never needing additional information for forage crops is recognizably higher.

When fertilizer-representative needs for fertilizer information on all crops were compiled for each area of the state, it was found (Table XXVIII) that the needs were

very similar in the Coastal, San Joaquin, and Desert areas. The needs of those in the Sacramento and Los Angeles areas were somewhat different, however. Sacramento fertilizer representatives expressed less need for information than the first three mentioned, whereas those in the Los Angeles area needed more. There, over one fourth indicated that they always needed information on fertilizer usage.

TABLE XXVIII

Need for Fertilizer Information by Fertilizer Representatives in the Various Areas of the State*

Need for Information	Area in State				
	Coastal n=281	San Joaquin n=903	Sacramento n=554	Desert n=184	So. Calif. n=235
	%**	%**	%**	%**	%**
Always	18.51	17.28	9.39	16.85	25.11
Often	39.86	43.63	33.93	35.87	34.47
Seldom	41.64	39.09	56.68	47.28	40.42

* This is a summary of the need for fertilizer information in field, forage, vegetable, and fruit and nut crops.

** Per cent of column

Educational level appeared not to influence the proportion often needing fertilizer information. See Table XXIX. Those seldom or never needing additional information, however, tended to be influenced by additional education.

TABLE XXIX

Influence of Level of Education of Fertilizer Representative on Need for Information on Fertilizer*

Need for Information	Level of Education			
	Some High School n=138	High School Graduate n=415	Some College n=611	College Graduate n=960
	%	%	%	%
1. Always	24.64	16.87	15.85	14.48
2. Often	36.96	38.55	38.13	39.37
3. Seldom	28.26	35.18	37.64	36.25
4. Never	10.14	9.40	8.35	9.90

* This is a summary of the need for fertilizer information in field, forage, vegetable, and fruit and nut crops.

Neither the position in the company nor the years of experience in fertilizer work appeared to influence the need for additional information on fertilization of field crops, forages, fruit and nut crops, and vegetables. Regardless of stratification, about one sixth always needed additional information, two fifths often needed additional help, and one third and one tenth respectively seldom or never needed assistance.

Subjects for Instruction

Respondents were asked to rate eight suggested subject areas relating to their jobs, to determine how helpful instruction in each would be to them. They were also asked to identify the subject area in which instruction would be most helpful. Table XXX shows that certain areas were given a decided preference. The selection of the most helpful subject area was used to determine the rank order given each area.

TABLE XXX

Rating of Subjects for Meetings or Schools by Fertilizer Representatives*

Subject Areas	Rating of Subject Areas			
	No. Selecting Item Most Helpful	Very Helpful	Moderately Helpful	No Help
		%**	%**	%**
1. Research information on fertilizers	231	71.67	16.86	2.69
2. General fertilizer information	131	65.58	23.51	2.97
3. Methods of financing fertilizer usage	56	42.21	26.35	18.13
4. Better advertising and sales promotion	47	38.24	34.84	14.59
5. New fertilizer application equipment and methods	40	54.96	31.73	5.67
6. Improved methods of handling fertilizers	27	43.77	35.55	8.92
7. Better business procedures	13	23.94	31.59	25.50
8. Research techniques (test-plot design)	10	30.17	38.24	16.29

* Subject areas ranked in order of preference determined by the fertilizer representatives choice of the single most helpful subject area

** Per cent of 706 in sample

Areas 1 and 2, which deal with technical subject matter, were respectively listed as most helpful by 231 and 131 respondents. The third-ranked subject area, that of financing fertilizer, was selected as most important by only 56 respondents. All other areas were selected first choice by fewer than 50 fertilizer representatives.

Thus, fertilizer representatives are interested primarily in technical subject matter as it relates to the usage of fertilizer by farmers. Of secondary importance are problems dealing with financing, sales promotion, mechanics of application and handling of fertilizers, business practices, and procedures for conducting research trials.

Nature of Subject Matter Needed

Those who prepare newsletters for fertilizer representatives, as well as those who plan fertilizer meetings and schools are undecided as to the degree of emphasis that should be given to the practical and to the technical aspects of the fertility problems being considered. The responses of fertilizer men to this problem are summarized in Table XXXI. Few (9 per cent) are interested in programs or materials that include only theory. The majority (53 per cent) favor a middle-of-the-road approach, including both technical and applied subject matter in the same presentation.

TABLE XXXI

Kind of Additional Subject-Matter Information Needed

Nature of Information Needed	Number	Per Cent*
1. Technical (fundamental principles)	62	8.78
2. Practical (specific recommendations)	232	32.86
3. Both practical and technical	371	52.55

* Per cent of column

The degree of emphasis requested for technical or applied information appeared not to be influenced by position in the company, educational level, or years of experience in fertilizer sales work.

ADEQUACY OF INFORMATION FOR FERTILIZER REPRESENTATIVES

A general assessment was made of the adequacy of information now received from the University of California via the Agricultural Extension Service, from various publications, fertilizer company publications and meetings, and from trade-associations sources such as the National Plant Food Institute, American Potash Institute, and the California Fertilizer Association publications. These data are summarized in Table XXXII. About 21 per cent of the entire population of 706 rated the information from the University of California as very adequate. This is somewhat lower than the 28 per cent for fertilizer companies, and is higher than the 11 per cent for the information from fertilizer trade associations. Very little difference was found between the proportion that rated the University of California and fertilizer company information as moderately adequate. Both of these are somewhat higher than the 38 per cent that indicated trade-association information as moderately adequate.

TABLE XXXII
Rating of Adequacy of Fertilizer Information
Provided by the Various Agencies

Source of Information	Rating of Information					
	Very Adequate		Moderately Adequate		Inadequate	
	No.	%*	No.	%*	No.	%*
1. University of Calif.	148	20.96	342	48.44	108	15.30
2. Fertilizer Company	195	27.62	346	49.01	60	8.50
3. Trade Association	79	11.19	265	37.53	95	13.46

* Per cent of 706 respondents

GENERAL ATTITUDE OF FERTILIZER-COMPANY REPRESENTATIVES TOWARD IMPROVING SUBJECT-MATTER COMPETENCY

The very fact that so many voluntarily participated in this study indicates an interest in the activities of the University of California, and their general professional attitudes.

When asked to indicate the general attitude of their company toward participation

in educational activities other than those of their own company, 86 per cent were favorable--with only about 1 per cent unfavorable (Table XXXIII). The remainder either didn't know the attitude of their company or omitted the item.

TABLE XXXIII

Policy or Attitude of Company Toward Participation of Employees in Fertilizer Meetings and Schools

Attitude Toward Professional Improvement	No.	Per cent*
Favorable	607	85.98
Unfavorable	9	1.27
Not Known	79	11.19

* Per cent of 706

Another indication of attitudes toward professional improvement is the overwhelming "yes" response given to the question, "Would you attend a joint University of California-industry meeting to discuss needed research in soils and plant nutrition?" Seventy-five per cent said yes, about 21 per cent didn't know. The remainder (4 per cent) either said no or by-passed the item. When asked, "...if they felt the fertilizer industry should have more say in the determination of University of California research program in soil fertility..." 51 per cent said yes, one third indicated no opinion, and about 12 per cent said no.

When asked how much time they could devote to fertilizer training meetings and schools yearly, only 4 per cent said "none." Almost one fourth indicated they could spend over six days (Table XXXIV). Obtaining time to attend professional meetings apparently is not an obstacle with most fertilizer-company representatives.

The time of day the meetings will be held was of some concern. About one third indicated a preference for all-day meetings, slightly more--36 per cent--wanted half-day meetings, and some 22 per cent indicated a preference for night meetings. When asked what months they preferred to have fertilizer meetings held,

about 40 per cent indicated that November and December were best, 30 per cent said January and February, and about 12 per cent chose September and October.

TABLE XXXIV

Time Fertilizer Representatives Could Devote to Fertilizer Meetings and Schools

Time Available	Number	Per Cent*
1-2 days	171	24.22
3-4 days	190	26.91
5-6 days	117	16.57
Over 6 days	163	23.09
None	30	4.25
Other	35	4.96

* Per cent of 706 respondents

Thus it is quite apparent that fertilizer representatives do have a favorable attitude toward up-grading themselves in their field. Their companies are also quite agreeable. When educational activities are planned consideration should be given to having them in late fall or early spring and held during the daytime.

BEST MEANS OF PRESENTING INFORMATION ON FERTILIZER USAGE TO FERTILIZER-COMPANY REPRESENTATIVES

Many of the common means used to bring pertinent information to fertilizer representatives have already been reported in this study. Newsletters, meetings, and schools were used extensively. The most frequently used printed resource materials and the usual human resources used have been mentioned. Now it is of interest to know how fertilizer representatives rate all of these information sources. The purpose was to find the methods of presenting material that would be most effective. To do this, respondents were asked to rate 13 methods now used to present information. In addition, each was asked to indicate the one method that would be the most beneficial for him. The responses are summarized in Table XXXV.

The methods listed are in order of preference by the respondents. That is, "area schools (2-3 days) on fertilizers" listed as number one was rated as the single most important method by the largest number of respondents. Actually 101 indicated that this was the method of presenting information that would be most beneficial to them. Only 6 mentioned that farm news via newspaper, radio, or T.V. was most helpful to them. This listing, then, can be used as a guide in selecting a method to use in presenting fertilizer information.

TABLE XXXV

Rating of Methods the University of California (via Extension Service) Could Use to Disseminate Fertilizer Information to Fertilizer Representative (Listed in Order of Preference)*

Methods	Rating of Method			
	Very Helpful	Helpful	Not Helpful	No Opinion
	%**	%**	%**	%**
1. Area School (1-3 day) on Fertilizers	38.11	37.62	8.79	15.47
2. Extension Courses (5-10 meetings)	40.75	34.70	11.29	13.26
3. Meeting (1 day)	42.15	43.27	4.00	10.58
4. Copy Each New Bulletin on Fertilizer	58.91	35.95	1.96	3.17
5. Farm Advisor Newsletter	45.10	44.95	6.53	3.42
6. Personal Contact Farm Advisor	25.77	53.07	8.87	12.29
7. Newsletter State Specialist	37.78	49.52	6.19	6.51
8. Preliminary Research-Findings Report	34.71	42.81	10.41	12.07
9. Tours, Farm-Advisor Test Plots	28.18	52.33	10.41	9.34
10. Field Days on Experiment Station	26.89	49.92	9.18	14.01
11. Listing Research Project Under Way	23.45	47.72	12.87	15.96
12. Directory U.C. Personnel Working on Soil Fertility	26.15	37.66	16.45	19.74
13. Farm News Via Newspaper, Radios, T.V.	14.21	52.05	21.75	11.98

* Methods are ranked in order of preference determined by fertilizer-representative choices of the single most helpful method

** Per cent of those rating each method

It should be noted that these methods include only those that are or could be used by the University of California through the Agricultural Extension Service. No effort was made to evaluate the methods of information dissemination that might be used by fertilizer companies or trade associations.

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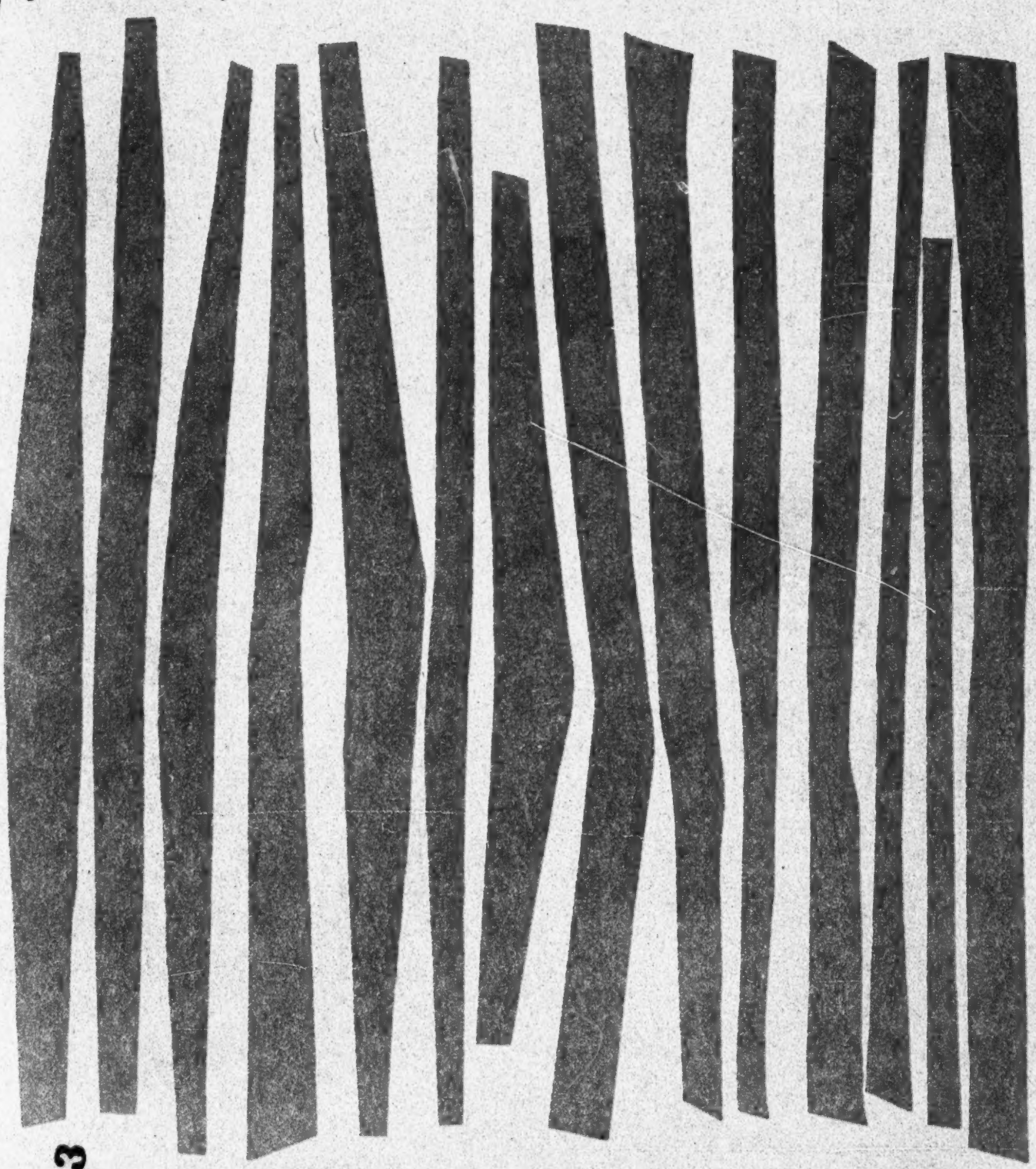
STUDY OF ILLITERACY IN TEXAS AS RELATED TO VOCATIONAL EDUCATION

AUTHORIZED BY THE STATE BOARD OF EDUCATION

J. B. Adair, Project Coordinator



VT 00063

TEXAS EDUCATION AGENCY
AUSTIN, TEXAS
SEPTEMBER 1964

STUDY OF ILLITERACY IN TEXAS AS RELATED TO VOCATIONAL EDUCATION

AUTHORIZED BY THE STATE BOARD OF EDUCATION

J. B. Adair, Project Coordinator

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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TEXAS EDUCATION AGENCY
AUSTIN, TEXAS
SEPTEMBER 1964

TEA-9-64-1M-487-B-485

FOREWORD

Data from the Bureau of the Census reveal that in 1960 Texas had approximately 700,000 citizens aged 25 and over who completed less than five years of schooling.

These educationally deficient adults have difficulty in securing employment and are untrainable for occupations because they do not possess the basic skills of reading, writing, and speaking the English language.

To secure a better insight into this problem, the State Board of Education in September, 1963, authorized a Study of Adult Illiteracy as it relates to adult vocational training for employment. The study, which was completed in September, 1964, has been conducted by J. B. Adair of the Baylor Literacy Center, who has been on the staff of the Texas Education Agency since December, 1963.

This report of the study will be made available to the Governor and the Fifty-ninth Legislature.

J. W. Edgar
Commissioner of Education

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A STUDY OF ILLITERACY IN TEXAS AS RELATED TO VOCATIONAL EDUCATION

Introduction

Social and economic changes, the increase in automation, and higher skill requirements for jobs have displaced large segments of the population in Texas. Many of these are either illiterates or functional illiterates with low educational attainments, unable to readjust to the economic and social needs of modern society, and lack the educational skills necessary for retraining.

Language and cultural patterns have further isolated or separated some members of ethnic groups. Inability to communicate satisfactorily has set up psychological barriers contributing to fear, misunderstanding, and lack of community participation. Population pockets from some ethnic groups appear to hold to a life style dictated by custom and low economic level of living, which minimizes educational achievement for their children.

Every ninth man in Texas walks in the shadow of ignorance. The blackboard curtain has set up real and psychological barriers that separate and isolate him and his family from the community.

One of the major concerns of the leaders of Texas is this large educationally deficient segment of our population. This group of illiterates constitutes about 11 per cent of our population fourteen years and older, or 13.4 per cent of our population twenty-five years and older. There are 731,218 individuals fourteen years and older with less than five years of schooling.

At the request of the House Interim Committee on Migrant Labor, Fifty-seventh Legislature, M. A. Browning, Assistant Commissioner for Vocational Education of the Texas Education Agency, prepared a Report on the Educational Needs of Migrant Workers. The report defined the major educational problems of the migrant worker and proposed a practical educational program for the migrant family.

This report formed the basis of educational programs for migrants, recommended to the Fifty-eighth Legislature. Two of six bills dealing with migrant problems were passed. These bills were concerned with child labor and compulsory school attendance of children of migrants. Bills proposing basic education programs for migrants were not passed. However, the sum of $30,000 was appropriated for a pilot study in migrant education to be conducted by Texas Southmost College. The college could not match the sum with $30,000 and this action program has not been initiated.

In September, 1963, the State Board of Education authorized a study of illiteracy in Texas as it relates to adult vocational education for employment. The major objectives of the study, conducted under the direction of the Vocational Division of the Texas Education Agency, are outlined as follows:

- To determine statistically the extent of illiteracy in Texas
- To estimate the financial and economic loss to the State as the result of illiteracy
- To show how the illiterate, without basic education, is unable to pursue vocational training
- To identify some of the major factors contributing to illiteracy
- To determine the extent of work being done among the illiterates by benevolent groups, churches, individuals, communities and literacy councils in Texas

This study is based on four assumptions or hypotheses:

1. There is a significant relationship between membership in an ethnic group and illiteracy.
2. There is a positive relationship between low socio-economic status and illiteracy.
3. There is a definite relationship between illiteracy and crime.
4. There is a direct relationship between illiteracy and unemployment and the inability to puruse vocational training.

The ultimate objective would be the development of a program of basic education for illiterates to be submitted to the State Board of Education and the Commissioner of Education.

Definition of Terms

The following terms are frequently used in this study:

Anglo - is used to refer to Americans of non-Spanish and non-Negro heritage.

Mexican - is used to describe recent immigrants and those of Mexican citizenship.

Spanish surnames - is used synonymous with the terms "Spanish-speaking people," "Spanish-speaking groups," "Latin American."

Non-White - is used to describe the Negro group.

Illiterate - is used to describe individuals with no formal schooling. The Census Bureau defines an illiterate as "a person who cannot both read and write a simple message either in English or any other language."

Functional illiterate - is one with less than five years of formal schooling who does not have education skills necessary to function effectively in modern society.

Migrant - one who is engaged in hand labor in seasonal agricultural employment and moves to work for temporary periods at places of temporary residence.

Adult - means a person who has reached the age of twenty-one years.

Dropout - a student who drops out of public or private school without completing high school.

The general term "illiteracy or illiterate" is used in this study to refer to those individuals with no schooling and those individuals with less than five years of schooling unless otherwise indicated.

Limitations of the Study

Time has been a major factor in determining the scope of this study. No effort has been made to determine the number of illiterates who are uneducable. No attempt has been made to study or evaluate the methods of teaching illiterates, nor has the writer proposed a curriculum for basic education. Time did not permit extensive study of the effect of cultural patterns or urbanization upon illiteracy.

J. B. Adair, Project Coordinator
Texas Study on Illiteracy

SECTION I

DEVELOPMENT OF LITERACY PROGRAMS IN TEXAS

The first effort to teach adult illiterates in Texas came with the establishment of the Educational Program under the Works Progress Administration during the summer of 1936. J. E. Jackson was appointed State Director and held this office until December, 1936. Following his resignation, C. W. Huser, Assistant State Director, was appointed State Director, a position he held until the cessation of the program in 1943.

This program included four areas of instruction: Literacy and Citizenship Education, General Education, Parent Education, and Vocational Education.

While extensive programs were carried out in each area, the most significant contribution was made in the area of Literacy and Citizenship Education. Many were taught to read and write to enable them to pass their citizenship tests. More than one thousand young men were reclassified for military service through this program.

The following statement by Norris Hiett, Associate Dean, Division of Extension, The University of Texas, summarizes the results of this program:

> During its existence in Texas the WPA Education Program taught 86,855 adults how to read and write. The 4,947 enrollees who became naturalized citizens as a result of training received in WPA classes were largely individuals who completed literacy training before receiving specialized training for naturalization. The 1,152 selectees under Selective Service who through training in literacy education classes were reclassified for military service represent another accomplishment within literacy education.[1]

Over forty per cent of the individuals taught in the Works Progress Administration literacy and citizenship program were between the ages of 16 and 24. These are today in the 36-44 age group. An examination of Table VII shows

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[1] Hiett, Norris, Some Administrative Aspects of the WPA Adult Education Program in Texas.

a marked difference between the number of illiterates in the 35-44 and the 45-64 age groups. Twenty years later the impact of the Works Progress Administration literacy program is still evident.

Little organized effort to combat illiteracy in Texas during the period from 1942 to 1957 is observable. However, some programs for aliens were continued through county superintendents of schools in south and southwest counties, and a few programs were conducted by individuals, civic groups, and church groups. But these programs lacked continuity and evaluation and did not make any significant impact upon illiteracy.

Baylor Literacy Center

New interest was created in literacy work in the State by the establishment of the Baylor Literacy Center in 1957. The idea for establishment of this project resulted from a speech by President Eisenhower delivered on the Baylor Campus. Paul Geren, Administrative Assistant to the President of Baylor University, was instrumental in the development of the idea which led to the establishment of the Literacy Center.

The objective of the Center was to train leaders in State and international literacy work. Through efforts of Richard Cortright, first Director of the Center, hundreds of teachers were trained through workshops on the Baylor Campus and in various cities throughout the State.

Through the leadership of Mr. Cortright, his associates and successors, literacy councils were organized in many cities of the State. By 1961, thirty-three local literacy councils had been organized, fifteen of which are still active.

University credit courses have been offered on the campus and hundreds of illiterates have been taught by teachers trained in the Center. Workshops and conferences have been conducted on the campus and in communities in the State. Some materials have been published and sold through the Baylor Bookstore.

During the fall of 1963, the literacy program was reorganized with the intent to give more attention to the training of teachers and leaders on the campus. Presently, the program is jointly sponsored by the Department of Religion and the Department of Journalism. Leaders are trained in regular credit courses on the campus and in workshops on and off the campus. This includes methods of teaching illiterates and the techniques of writing curriculum materials. The present literacy program is under the direction of J. B. Adair.

Texas Literacy Council

The Texas Literacy Council was organized in October, 1959, in Waco, Texas, as an independent, non-sectarian, non-profit corporation. Its purpose, as stated in the Consitution and By-Laws, is as follows:

> ARTICLE III--PURPOSES: The purpose of the Texas Literacy Council is:
>
> 1. To help the local literacy councils more effectively achieve their goal; i.e., the finding of illiterates and semi-illiterates and teaching them to read and write so that they may take their rightful places as adult literate citizens of Texas.
> 2. To advise local councils who ask for assistance in accomplishing this.
> 3. To publish a quarterly newsletter in order to keep the local councils informed about each other and about news in the field of literacy.

Annual conferences have been held by the Texas Literacy Council. Through varied programs and workshops, the problems of illiteracy have been kept before the public. Leaders have been encouraged and trained to work with illiterates. Local literacy councils and teacher training workshops for illiterates have been organized in various cities.

The Texas Literacy Council has the following standing committees: Membership, Scholarship, Research, Public Relations, Testing and Counseling, Library and Publications, and Nominations. Three of these--the Research Committee,

the Public Relations Committee, and the Committee on Testing and Counseling--have been active in evaluation of present programs and in experimenting with new methods and techniques.

Accurate records are not available at the Baylor Literacy Center or the Texas Literacy Council to give the full results of the present literacy movement in Texas, as many individuals and local teaching groups were not affiliated with the Texas Literacy Council.

According to the most reliable data available from the records of the Texas Literacy Council and the Baylor Literacy Center, the following table has been compiled.

TABLE I

Number of Teachers Trained for Literacy,
Number of Illiterates Taught and
Number of Local Literacy Councils
1957--1964

Period	Teachers Trained	Pupils Taught	Local Councils
Sept., 1957--May, 1961	2,257	1,738	33*
May, 1961--May, 1963	687	1,385	28
May, 1963--May, 1964	394	1,434	23

*Of the 33 councils listed in 1961, 15 are still in operation in 1964, and 8 new ones have been formed.

Literacy Programs by Television

A number of television programs have been planned for illiterates in large cities in Texas by educational television stations and commercial stations.

One of the first television programs to be viewed in the State was carried by KWKC in Waco. This program beamed the program, "Operation Alphabet," often called "Operation ABC." Similar programs have been produced in Dallas by Station WFAA. The Dallas program was called "Operation LIFT."

The Dallas project was started April 14, 1961, by the Council of Jewish Women. In the initial stages of the project, Dallas Public Schools gave assistance. Eleven vocational homemaking teachers worked in housing units teaching people proper use of surplus commodities. They visited in the homes and encouraged illiterates to view the program and attend the centers.

"Operation LIFT" was televised from 6:10--6:40 p.m. on Mondays, Tuesdays, and Thursdays. The plan was to encourage illiterates to view the telecasts, and then go to literacy centers at night in the housing centers and study and discuss the lessons.

"Operation Alphabet" - KLRN-TV - Austin

KLRN-TV, Austin, completed a telecast of "Operation Alphabet" during the spring of 1964. The program was beamed to the Austin and San Antonio areas.

Harvey Herbst, Manager of KLRN-TV, reports that very little organized activity took place in Austin, while in San Antonio more than six hundred were enrolled in the television series. Most of those enrolled in the television series were enrolled in about thirty different centers and met with teachers to discuss the television lesson. Mr. Herbst further states that the organized efforts of the San Antonio Literacy Center contributed to the effectiveness of the program in that area.

Literacy Training in Colleges and High Schools

Junior and senior colleges have not been active in literacy training in recent years. Many classes in basic education were organized during the early days of the Veterans' Program following World War II.

Questionnaires were sent to all junior and senior colleges in the State to determine the extent of literacy training. Responses received from sixty-one colleges indicated four colleges or universities are offering literacy or basic education courses. About one hundred students were enrolled in all the programs, two of which were related to naturalization of aliens.

A few college and university teachers are teaching foreign-born students and adults individually, but little organized effort is being made to offer programs of basic education to adults.

Examination of courses offered by colleges and universities reveals the lack of professional education courses in adult education dealing specifically

with literacy or basic education. A number of courses deal with vocational education for adults. The only credit courses in basic education are offered at Baylor University.

Questionnaires were sent to four hundred of our larger school districts in the State regarding literacy or basic education programs for adults. One hundred eight responded. According to these reports, only fourteen schools offered any type of basic education or literacy training to adults. About four hundred adults were enrolled during 1963.

Literacy Training Under the Manpower Development and Training Act in Texas

The Manpower Development and Training Act (MDTA) is a Federal law intended to alleviate unemployment that is caused by lack of skills essential for the available jobs. The responsibility for carrying out the provisions of this Act is divided between the United States Department of Labor and the Department of Health, Education, and Welfare. In Texas, it is divided between the Texas Employment Commission (TEC) and the Texas Education Agency (TEA).

After working with the Manpower Development and Training Act in Texas for several months, the Texas Employment Commission found that many unemployed people were unemployed because of the lack of basic education. This same finding by other states stimulated Congress to pass an amendment to the Manpower Development and Training Act allowing up to twenty weeks for literacy training above the fifty-two weeks of occupational training.

The initial classes in literacy training in Texas are currently being conducted in San Antonio, Harlandale Independent School District and St. Philip's College, with the occupational objective being Maids, General. A total of 180 people will be enrolled. Other proposals in literacy and occupational training in custodial, farming, and sewing machine operators are in the final stages of completion. One project in All-Around Farm Machinery with literacy training has been approved to be conducted by Del Mar Technical Institute, Corpus Christi. A project to train cooks with literacy has been approved for Laredo.

SECTION II

DISTRIBUTION OF ILLITERACY IN TEXAS

The population of Texas is made up from varied racial and cultural groups. While there has been a gradual assimilation of most of the cultural groups, two large ethnic groups, Latin American and Negro, have retained strong racial identity. Even though illiteracy is not confined to any race, the percentage of illiteracy among these two groups is substantially higher than among the Anglo Americans.

Figure I shows the distribution of illiteracy in Texas as follows: counties having an illiteracy rate of 20 per cent, counties having an illiteracy rate of 10-20 per cent, and counties having an illiteracy rate of less than 10 per cent. Tables II, III and IV give a more complete statistical analysis of the population according to these three classifications.

Counties with an illiteracy rate of more than 20 per cent are counties in the extreme southwest. Counties with an illiteracy rate of 10 to 20 per cent are also located in South and Central Texas. Most of the counties having an illiteracy rate of 10 per cent or more have a high percentage of Latin American population. According to the 1960 United States census, Texas has a population of 9,581,528 persons. The projected population for 1963 according to estimates from the United States census is 10,397,000. This would indicate an increase of 815,472 during the last three years. In 1960 there were 669,215 persons age 25 and older having completed less than five years of schooling. The number of illiterates has probably increased slightly, while the percentage in relationship to the total population has decreased during the last three years.

About seven per cent of the adult population 25 years and older would be classified as illiterates when the figure 669,215 is compared to the total Texas population of 9,581,528.

FIGURE I

DISTRIBUTION OF ILLITERACY IN TEXAS
SHOWING COUNTIES WITH MORE THAN 20 PER CENT,
10 TO 20 PER CENT, AND 10 PER CENT OR LESS: 1960

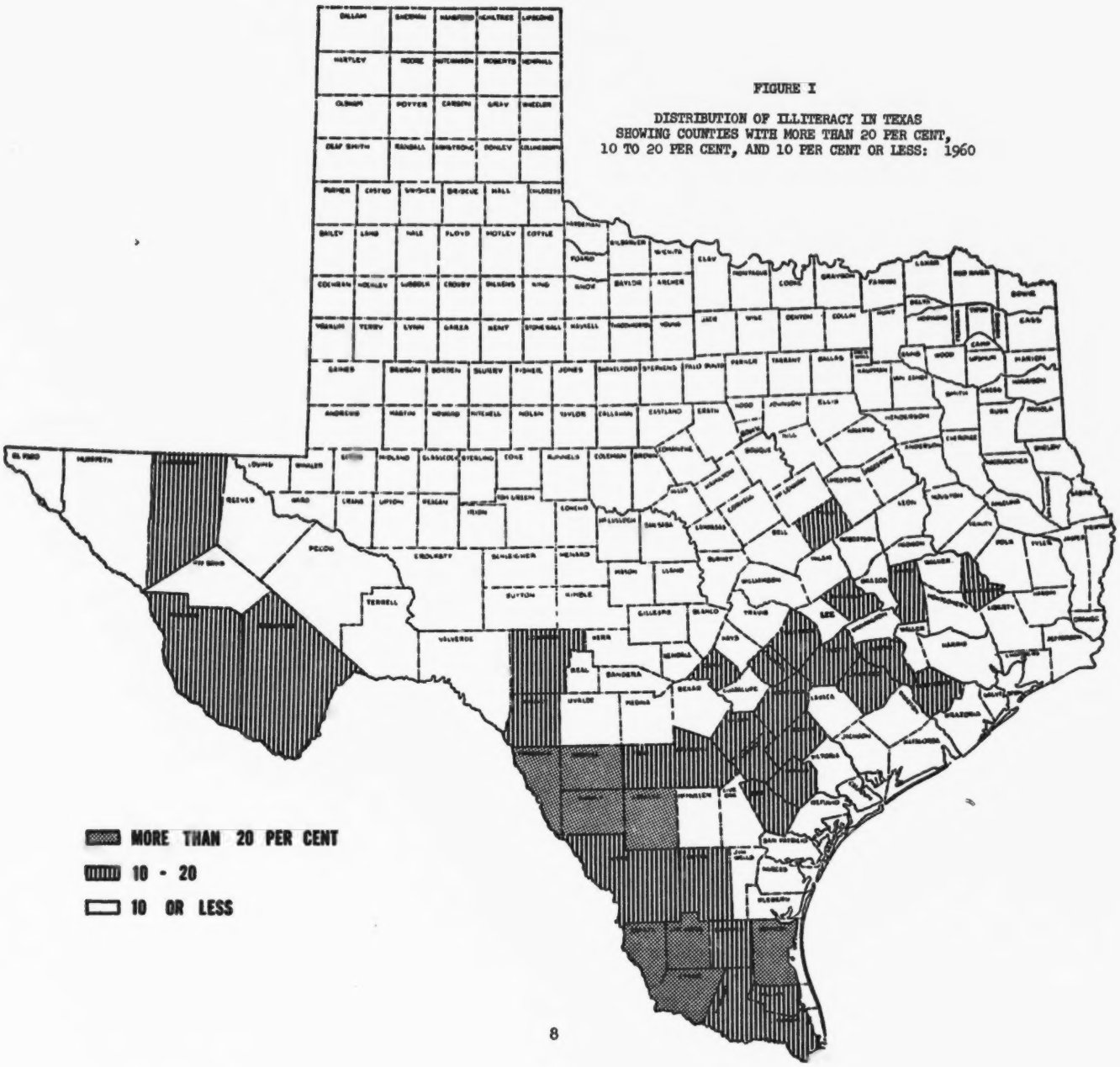

TABLE II

TEXAS COUNTIES WITH MORE THAN TWENTY PER CENT ILLITERATE POPULATION
SHOWING TOTAL POPULATION, NUMBER NO SCHOOLING, NUMBER LESS THAN 5 YEARS SCHOOLING,
AND TOTAL NUMBER NO SCHOOLING AND LESS THAN 5 YEARS SCHOOLING,
PER CENT OF THE TOTAL POPULATION, AND
MEDIAN SCHOOL YEAR COMPLETED

County	Population	Persons 25 Years and Older		Total No. Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
		No Schooling	Less Than 5 Years Schooling			
Dimmit	10,095	1,019	1,097	2,116	20.9609	5.3
Jim Hogg	5,022	479	614	1,093	21.7642	6.1
Kenedy	884	128	77	205	23.1900	*
La Salle	5,972	835	585	1,420	23.7776	4.8
Maverick	14,508	1,162	1,764	2,926	20.1682	5.6
Starr	17,137	1,511	2,298	3,809	22.2268	5.0
Zapata	4,393	388	615	1,003	22.8318	5.1
Zavala	12,696	1,333	1,512	2,845	22.4086	4.5

* Not Available

TABLE III

TEXAS COUNTIES WITH AN ILLITERACY RATE OF 10-20 PER CENT,
SHOWING TOTAL POPULATION, NUMBER WITH NO SCHOOLING,
NUMBER WITH LESS THAN FIVE YEARS SCHOOLING,
TOTAL WITH NO SCHOOLING AND LESS THAN FIVE YEARS SCHOOLING,
PER CENT OF ILLITERATE POPULATION,
MEDIAN SCHOOL YEAR COMPLETED
1960

County	Population	Persons 25 Years and Older		Total No Schooling & Less Than 5 Years	Per Cent Illiterate of the Total Population	Median School Year Completed in County
		No Schooling	Less Than 5 Years Schooling			
Atascosa	18,828	1,391	1,717	3,108	16.5073	7.8
Austin	13,777	152	325	477	12.3684	7.6
Bastrop	16,925	544	1,758	2,302	13.6012	7.8
Bee	23,755	1,247	1,329	2,576	10.8440	9.1
Brewster	6,434	201	472	673	10.4601	10.8
Brooks	8,609	596	843	1,439	16.7151	7.1
Burleson	11,177	425	1,089	1,514	13.5457	7.8
Caldwell	17,222	885	1,412	2,297	13.3376	8.3
Cameron	151,098	10,075	13,380	23,455	15.5230	7.8
Colorado	18,463	396	1,560	1,956	10.5942	8.2
Comal	19,844	746	1,510	2,256	11.3687	8.2
Culberson	2,794	115	174	289	10.3436	9.6
DeWitt	20,683	970	2,005	2,975	14.3838	7.9
Duval	13,398	1,011	1,415	2,426	18.1072	7.0
Edwards	2,317	113	226	339	14.6310	9.4
Falls	21,263	657	2,014	2,671	12.5617	8.1
Fayette	20,384	341	2,240	2,581	12.6619	7.4
Fort Bend	40,527	1,801	3,904	5,705	14.0770	7.7
Frio	10,112	1,041	928	1,969	19.4719	6.4

TABLE III--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of the Total Population	Median School Year Completed in County
Goliad	5,429	377	557	934	17.2039	7.5
Gonzales	17,845	1,073	1,694	2,767	15.5057	7.8
Grimes	12,709	378	1,524	1,902	14.9658	8.0
Guadalupe	29,017	1,228	2,138	3,366	11.6001	8.4
Hays	19,934	1,313	1,302	2,615	13.1183	8.8
Hidalgo	180,904	14,967	18,513	33,480	18.5071	6.2
Houston	19,376	524	1,544	2,068	10.6730	8.7
Jackson	14,040	478	975	1,453	10.3490	8.6
Jeff Davis	1,582	96	140	236	14.9178	7.8
Jim Wells	34,548	1,955	2,948	4,903	14.1918	8.2
Karnes	14,995	1,003	1,379	2,382	15.8853	7.5
Kaufman	29,931	691	2,411	3,102	10.3638	8.7
Kinney	2,452	103	315	418	17.0473	8.3
Kleberg	30,052	1,300	1,706	3,006	10.0027	9.7
Lavaca	20,174	383	2,230	2,613	12.9523	7.6
Lee	8,949	120	941	1,061	11.8561	7.6
Leon	9,951	259	821	1,080	10.8532	8.6
Liberty	31,595	829	2,760	3,589	11.3594	8.6
Limestone	20,413	1,292	1,443	2,735	13.3983	8.6
Live Oak	7,846	499	573	1,072	13.6630	8.2
Madison	6,749	137	550	687	10.1793	8.7
Medina	18,904	900	1,495	2,395	12.6693	8.5
Menard	2,964	101	212	313	10.5601	9.7
Milam	22,263	649	1,737	2,386	10.7173	8.5
Newton	10,372	230	942	1,172	11.2997	8.0
Pecos	11,957	493	730	1,223	10.2283	10.2
Polk	13,861	285	1,253	1,538	11.0959	8.3
Presidio	5,460	352	479	831	15.2198	8.8

TABLE III--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of the Total Population	Median School Year Completed in County
Real	2,079	65	155	220	10.5820	8.5
Reeves	17,644	924	1,367	2,291	12.9846	9.6
Refugio	10,975	584	739	1,323	12.0547	9.0
Robertson	16,157	587	1,454	2,041	12.6323	8.2
Sabine	7,302	228	609	837	11.4626	7.9
San Augustine	7,722	166	650	816	10.5672	8.0
San Jacinto	6,153	221	798	1,019	16.5610	7.3
San Patricio	45,021	3,307	3,381	6,688	14.8553	8.1
Sutton	3,738	130	271	401	10.7277	9.7
Terrell	2,600	169	181	350	13.4615	9.8
Trinity	7,539	241	722	963	12.7736	8.4
Tyler	10,666	263	863	1,126	10.5569	8.4
Uvalde	16,814	965	1,472	2,437	14.4939	8.5
Val Verde	24,461	1,449	1,502	2,951	12.0641	9.6
Walker	21,475	655	1,670	2,325	10.8265	8.7
Washington	19,145	436	2,123	2,559	13.3664	7.7
Webb	64,791	4,096	7,202	11,298	17.4376	6.5
Wharton	38,152	1,253	3,419	4,672	12.2458	8.1
Willacy	20,084	1,726	1,991	3,717	18.5073	6.1
Williamson	35,044	1,265	2,827	4,092	11.6767	8.3
Wilson	13,267	882	1,385	2,267	17.0875	7.0

TABLE IV

TEXAS COUNTIES WITH AN ILLITERACY RATE OF 10 PER CENT OR LESS,
SHOWING TOTAL POPULATION, NUMBER WITH NO SCHOOLING,
NUMBER LESS THAN 5 YEARS SCHOOLING, TOTAL NO SCHOOLING AND LESS THAN 5 YEARS SCHOOLING,
PER CENT OF ILLITERATE POPULATION,
MEDIAN SCHOOL YEAR COMPLETED: 1960

County	Population	Persons 25 Years and Older		Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
		No Schooling	Less Than 5 Years Schooling			
Anderson	28,162	318	1,654	1,972	7.0023	9.3
Andrews	13,450	62	249	311	2.3123	11.5
Angelina	39,814	536	2,388	2,924	7.3442	9.2
Aransas	7,006	156	414	570	8.1359	9.3
Archer	6,110	12	232	244	3.9935	10.3
Armstrong	1,966	12	52	64	3.2553	12.1
Bailey	9,090	152	325	477	5.2475	10.0
Bandera	3,892	29	186	215	5.5242	10.2
Baylor	5,893	72	239	311	5.2774	9.9
Bell	94,097	1,055	3,000	4,055	4.3004	10.6
Bexar	687,475	22,557	39,303	61,860	9.0024	10.0
Blanco	3,657	48	179	227	6.2073	9.1
Borden	1,076	11	20	31	2.8810	11.0
Bosque	10,809	96	675	771	7.1329	9.3
Bowie	59,971	824	3,703	4,527	7.5486	9.5
Brazoria	76,200	928	3,143	4,071	5.3422	10.5
Brazos	44,895	920	2,237	3,157	7.0320	11.0
Briscoe	3,577	27	117	144	4.0257	10.4
Brown	24,728	251	1,157	1,408	5.6940	10.4
Burnet	9,265	142	401	543	5.8608	9.6
Calhoun	16,592	414	891	1,305	7.8652	9.9
Callahan	7,929	79	316	395	4.9817	10.2
Camp	7,849	113	434	547	6.9690	9.2
Carson	7,781	29	192	221	2.8403	11.3

TABLE IV--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
Cass	23,496	424	1,539	1,963	8.3546	8.7
Castro	8,923	170	305	475	5.3233	10.8
Chambers	10,379	188	699	887	8.5461	9.1
Cherokee	33,120	692	2,574	3,266	9.8611	8.8
Childress	8,421	51	361	412	4.8925	10.2
Clay	8,351	36	198	234	2.8021	9.9
Cochran	6,417	137	288	425	6.6230	10.2
Coke	3,589	22	112	134	3.7336	10.7
Coleman	12,458	162	548	710	5.6991	10.1
Collin	41,247	446	2,352	2,798	6.7835	9.3
Collinsworth	6,276	48	266	314	5.0032	9.8
Comanche	11,865	151	538	689	5.8070	9.4
Concho	3,672	112	195	307	8.3606	10.0
Cooke	22,560	145	911	1,056	4.6809	9.8
Coryell	23,961	80	508	588	2.4540	10.5
Cottle	4,207	86	286	372	8.8424	9.0
Crane	4,699	22	89	111	2.3622	11.8
Crockett	4,209	84	190	274	6.5099	11.6
Crosby	10,347	253	571	824	7.9637	9.7
Dallam	6,302	56	213	269	4.2685	10.6
Dallas	951,527	7,913	26,844	34,757	3.6528	12.0
Dawson	19,185	657	1,034	1,691	8.8142	9.5
Deaf Smith	13,187	253	466	719	5.4523	10.7
Delta	5,860	85	379	464	7.9181	9.3
Denton	47,432	252	1,388	1,640	3.4576	11.0
Dickens	4,963	133	275	408	8.2208	9.5
Donley	4,449	30	193	223	5.0124	10.2
Eastland	19,526	165	921	1,086	5.5618	9.6
Ector	90,995	762	2,230	2,992	3.2881	11.3
Ellis	43,395	990	2,477	3,467	7.9894	9.3

TABLE IV--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
El Paso	314,070	6,808	16,798	23,606	7.5162	11.1
Erath	16,236	77	560	637	3.9234	10.3
Fannin	23,880	301	1,770	2,071	8.6725	9.0
Fisher	7,861	186	470	656	8.3408	9.4
Floyd	12,369	259	525	784	6.3384	10.0
Foard	3,125	38	164	202	6.4640	9.6
Franklin	5,101	51	307	358	7.0182	9.0
Freestone	12,525	227	835	1,062	8.4790	8.7
Gaines	12,267	98	375	473	3.8559	10.8
Galveston	140,364	2,196	6,494	8,690	6.1910	10.2
Garza	6,611	135	293	428	6.4741	9.8
Gillespie	10,048	107	628	735	7.3149	8.1
Glasscock	1,118	4	27	31	2.7728	11.2
Gray	31,535	94	598	692	2.1944	11.2
Grayson	73,043	638	3,146	3,784	5.1805	10.0
Gregg	69,436	642	2,969	3,611	5.2005	10.7
Hale	36,798	917	1,569	2,486	6.7558	10.5
Hall	7,322	72	349	421	5.7498	9.5
Hamilton	8,488	108	364	472	5.5608	9.4
Hansford	6,208	---	73	73	1.1759	11.8
Hardeman	8,275	136	504	640	7.7341	9.8
Hardin	24,629	405	1,752	2,157	8.7580	9.1
Harris	1,243,158	13,581	43,176	56,757	4.5655	11.3
Harrison	45,594	806	2,818	3,624	7.9484	9.4
Hartley	2,171	4	58	62	2.8558	11.7
Haskell	11,174	252	658	910	8.1439	9.5
Hemphill	3,185	33	51	84	2.6374	11.2
Henderson	21,786	402	1,465	1,867	8.5697	8.7
Hill	23,650	331	1,760	2,091	8.8414	9.0
Hockley	22,340	420	820	1,240	5.5506	10.5

TABLE IV--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
Hood	5,443	41	170	211	3.8765	9.5
Hopkins	18,594	198	917	1,115	5.9966	9.3
Howard	40,139	631	1,807	1,176	4.5019	11.1
Hudspeth	3,343	113	181	294	8.7945	10.0
Hunt	39,399	445	1,612	2,057	5.2209	10.0
Hutchinson	34,419	74	536	610	1.7723	11.8
Irion	1,183	17	89	106	8.9603	9.7
Jack	7,418	61	253	314	4.2329	9.9
Jasper	22,100	381	1,745	2,126	9.6199	8.6
Jefferson	245,659	4,938	11,506	16,444	6.6938	10.8
Johnson	34,720	336	1,425	1,761	5.0720	9.7
Jones	19,303	379	958	1,337	6.9278	10.0
Kendall	5,889	64	350	414	7.0301	8.8
Kent	1,727	12	41	53	3.0689	11.0
Kerr	16,800	450	984	1,434	8.5357	10.0
Kimble	3,943	73	208	281	7.1266	10.5
King	640	14	34	48	7.5000	----
Knox	7,857	122	475	597	7.5983	9.6
Lamar	34,234	484	2,241	2,725	7.9599	9.2
Lamb	21,896	416	1,080	1,496	6.8323	9.9
Lampasas	9,418	194	472	666	7.0716	10.0
Lipscomb	3,406	34	117	151	4.4334	10.2
Llano	5,240	43	230	273	5.2099	10.1
Lubbock	156,271	2,197	4,762	6,959	4.4532	11.6
Loving	226	---	19	19	8.4071	----
Lynn	10,914	358	562	920	8.4295	9.7
McCulloch	8,815	235	594	829	9.4044	10.2
McLennan	150,091	2,045	6,904	8,949	5.9624	10.2
McMullen	1,116	49	53	102	9.1398	11.0
Marion	8,049	143	557	700	8.6967	8.8
Martin	5,068	156	232	388	7.6559	10.0
Mason	3,780	57	191	248	6.5608	10.1

TABLE IV--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
Matagorda	25,744	640	1,778	2,418	9.3925	9.1
Midland	67,717	594	1,430	2,024	2.9889	12.4
Mills	4,467	20	177	197	4.4101	9.9
Mitchell	11,255	273	568	841	7.4722	9.7
Montague	14,893	102	749	851	5.7141	9.4
Montgomery	26,839	463	2,053	2,516	9.3744	9.0
Moore	14,773	43	187	230	1.5569	11.7
Morris	12,576	227	624	851	6.7669	9.8
Motley	2,870	69	133	202	7.0383	9.8
Nacogdoches	28,046	530	1,880	2,410	8.5930	9.1
Navarro	34,423	699	2,341	3,040	8.8313	9.0
Nueces	221,573	8,999	12,638	21,637	9.7652	10.0
Nolan	18,963	183	728	911	4.8041	10.4
Ochiltree	9,380	17	166	183	1.9510	11.8
Oldham	1,928	---	30	30	1.5560	12.1
Orange	60,357	751	2,374	3,125	5.1775	10.4
Palo Pinto	20,516	156	905	1,061	5.1716	10.3
Panola	16,870	282	1,228	1,510	8.9508	8.9
Parker	23,808	117	763	880	3.8462	10.4
Parmer	9,583	162	336	498	5.1967	11.1
Potter	115,580	396	2,085	2,481	2.1466	11.7
Rains	2,993	32	169	201	6.7157	8.2
Randall	33,913	42	187	229	.6753	12.5
Reagan	3,782	38	96	134	3.5431	11.2
Red River	15,682	249	1,271	1,520	9.6926	8.6
Roberts	1,075	3	23	26	2.4186	11.3
Rockwall	5,878	162	390	552	9.3909	9.2
Runnels	15,016	278	805	1,083	7.2123	9.6
Rusk	36,421	513	2,221	2,734	7.5067	9.6
San Saba	6,381	156	275	431	6.7544	9.7
Schleicher	2,791	108	83	191	6.8434	10.4
Scurry	20,369	279	638	917	4.5019	10.8

TABLE IV--Continued

County	Population	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years Schooling	Total No Schooling & Less Than 5 Years	Per Cent Illiterate of The Total Population	Median School Year Completed in County
Shackelford	3,990	32	131	163	4.0852	11.0
Shelby	20,479	438	1,573	2,011	9.8198	8.4
Sherman	2,605	---	43	43	1.6507	11.6
Smith	86,472	860	3,480	4,340	5.0261	10.6
Somervell	2,577	49	191	240	9.3132	8.8
Stephens	8,885	82	306	388	4.3669	11.5
Sterling	1,177	45	11	56	4.7579	11.7
Stonewall	3,017	34	125	159	5.2701	9.8
Swisher	10,607	159	334	493	4.6479	11.0
Tarrant	538,956	3,739	14,851	18,590	3.4522	11.5
Taylor	101,078	1,193	2,551	3,744	3.7041	12.0
Terry	16,286	332	744	1,076	6.6069	10.0
Throckmorton	2,767	47	86	133	4.8066	10.5
Titus	16,785	300	817	1,117	6.6548	9.4
Tom Green	64,630	1,153	2,861	4,014	6.2107	10.7
Travis	212,136	5,406	7,997	13,403	6.3181	11.6
Upshur	19,793	240	1,169	1,409	7.1187	9.2
Upton	6,239	96	139	235	3.7666	11.3
Van Zandt	19,091	267	1,354	1,621	8.4909	8.9
Victoria	46,475	1,717	2,795	4,512	9.7084	9.4
Waller	12,071	209	763	972	8.0524	9.4
Ward	14,917	320	453	773	5.1820	11.0
Wheeler	7,947	32	207	239	3.0074	10.1
Wichita	123,528	969	3,456	4,425	3.5822	11.5
Wilbarger	17,748	260	928	1,188	6.5247	9.7
Winkler	13,652	122	340	462	3.3841	11.3
Wise	17,012	127	689	816	4.7966	9.8
Wood	17,653	245	1,145	1,390	7.8740	9.0
Yoakum	8,032	70	163	233	2.9009	11.3
Young	17,254	98	536	634	3.6745	10.1

A comparative study of illiteracy in the United States, shown by the United States Department of Health, Education, and Welfare in 1960, indicates there were about 672,000 adult illiterates 25 years and older in Texas and a total of 5,031,000 adults 25 years and older. When the number of adult illiterates 25 years and older is compared to the total adult population 25 years and older, illiteracy is 13.4 per cent. Table V shows Texas ranks forty-first in relation to the fifty states and the District of Columbia in the number of illiterates 25 years and older in comparison to the same total age group.

In the section of this study entitled Population Distribution by Ethnic Groups, the number of illiterates 14 years and older has been given as 731,218. Since there are 6,562,992 persons 14 years and older, the percentage of illiteracy for this age comparison is 11 per cent. In this study, 731,218 will be used as the number of illiterates in Texas. This number includes 58,992 identified in Table VII in the 14-25 age group. Tables and charts not using this age group are identified as including ages 25 years and older.

Examination of Table II shows eight counties having an illiteracy rate of more than 20 per cent. In each of these counties the median school year completed is six years or less. It should be observed, however, that these counties are in areas of relatively sparse population. While the percentage of illiteracy is high, there are only 15,417 functional illiterates in eight counties, whereas there are more than 60,000 functional illiterates in the city of San Antonio.

In a realistic look at illiteracy, the number of illiterates must be considered, as well as the percentage of illiterates. This is particularly true in the large metropolitan areas where there are many functional illiterates but the percentage is relatively low.

Table III indicates 30 counties with an illiteracy rate between 10 and 20 per cent of the total population. This includes 123,277 functional illiterates.

TABLE V

PER CENT OF POPULATION 25 YEARS OLD AND OLDER
IN 50 STATES AND DISTRICT OF COLUMBIA: 1960
WITH LESS THAN 5 YEARS OF SCHOOL COMPLETED: 1960

State	Rank	Per Cent	State	Rank	Per Cent
Utah	1	2.8	Pennsylvania	27	6.9
Iowa	2	3.0	New Jersey	28	7.0
Idaho	3	3.3	Missouri	29	7.1
Oregon	4	3.3	D. C.	30	7.2
Washington	5	3.4	Rhode Island	31	7.4
Nebraska	6	3.6	Maryland	32	7.7
Wyoming	7	3.6	New York	33	7.8
Kansas	8	3.7	Alaska	34	8.2
Vermont	9	3.8	UNITED STATES		8.3
Nevada	10	3.9	Oklahoma	35	8.6
Minnesota	11	4.0	Florida	36	9.2
South Dakota	12	4.1	Arizona	37	10.0
Montana	13	4.1	West Virginia	38	11.0
New Hampshire	14	4.4	New Mexico	39	12.2
Main	15	4.7	Virginia	40	13.1
Colorado	16	4.7	Texas	41	13.4
Indiana	17	4.9	Kentucky	42	13.8
Wisconsin	18	5.3	Tennessee	43	14.8
Ohio	19	5.4	Hawaii	44	15.0
California	20	5.7	Arkansas	45	15.4
Michigan	21	5.8	Alabama	46	16.3
Massachusetts	22	6.0	North Carolina	47	16.5
North Dakota	23	6.0	Georgia	48	17.6
Illinois	24	6.3	Mississippi	49	18.8
Connecticut	25	6.3	South Carolina	50	20.3
Delaware	26	6.6	Louisiana	51	21.3

FIGURE II

METROPOLITAN AREAS, ABILENE, AMARILLO, AUSTIN, BEAUMONT-PORT ARTHUR, BROWNSVILLE-HARLINGEN-SAN BENITO, CORPUS CHRISTI, DALLAS, EL PASO, FORT WORTH, GALVESTON-TEXAS CITY, HOUSTON, LAREDO, LUBBOCK, MIDLAND, ODESSA, SAN ANGELO, SAN ANTONIO, TEXARKANA-(TEXAS - ARKANSAS) TYLER, WACO, WICHITA FALLS HAVING A TOTAL OF MORE THAN 350,000 FUNCTIONAL ILLITERATES.

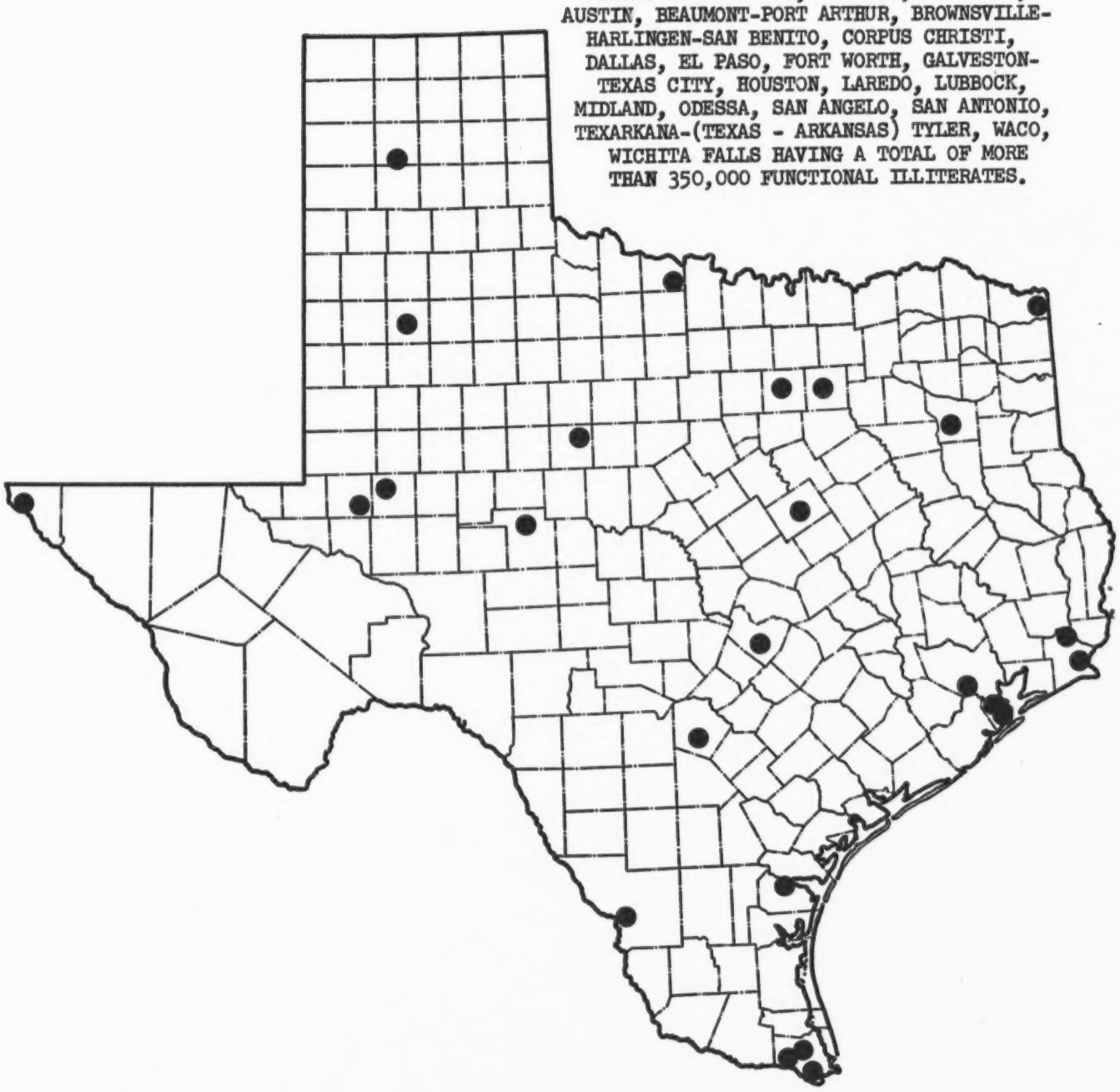

TABLE VI

NUMBER OF INDIVIDUALS 14 YEARS AND OVER 64, ACCORDING TO AGE, NON-WHITE, ANGLO, AND LATIN, RESIDENCE, SEX IN TEXAS 1960

	AGE GROUPING					
	14-24	25-34	35-44	45-64	Over 64	Total
NON-WHITE						
Rural						
Male	28,205	14,072	12,671	27,163	15,031	97,142
Female	24,878	14,063	13,817	28,019	15,032	95,809
Urban						
Male	65,947	57,669	50,273	74,055	26,194	274,138
Female	72,332	68,013	59,785	81,288	30,809	312,227
Total	191,362	153,817	136,546	210,525	87,066	779,316
LATIN						
Rural						
Male	30,158	20,312	16,042	20,850	5,990	93,352
Female	28,405	18,150	13,553	16,404	4,851	81,363
Urban						
Male	65,966	89,761	71,203	87,327	26,664	340,921
Female	104,115	79,929	60,468	69,544	22,905	336,961
Total	228,644	208,152	161,266	194,125	60,410	852,597

TABLE VI(CONTINUED)

	AGE GROUPING					
	14-24	25-34	35-44	45-64	Over 64	Total
ANGLO						
Rural						
Male	148,829	97,298	108,876	215,239	98,597	668,839
Female	119,022	96,740	110,564	209,376	102,020	637,722
Urban						
Male	436,525	345,387	341,529	456,909	155,448	1,735,798
Female	408,047	373,163	367,247	515,771	224,492	1,888,720
Total	1,112,423	912,588	928,216	1,397,295	580,557	4,931,079
TOTAL	1,532,429	1,274,557	1,226,028	1,801,945	728,033	6,562,992

* Abstracted from 1960 Census Reports

TABLE VII

NUMBER OF INDIVIDUALS 14 YEARS AND OVER 64,
WITH FIVE YEARS OF SCHOOLING OR LESS,
FOR NON-WHITE, ANGLO, AND LATIN, RESIDENCE, SEX
IN TEXAS: 1960

	AGE GROUPING					
	14-24	25-34	35-44	45-64	Over 64	Total
NON-WHITE						
RURAL						
Male	1,945	2,330	3,493	11,763	9,982	29,513
Female	1,200	1,341	2,043	7,290	7,898	19,772
URBAN						
Male	2,335	4,792	7,866	23,871	15,188	54,052
Female	1,734	2,877	5,955	17,816	14,254	42,636
Totals	7,214	11,340	19,357	60,740	47,322	145,973
LATIN						
RURAL						
Male	6,648	11,173	10,380	15,697	4,890	48,788
Female	6,108	9,243	8,749	11,835	3,803	39,738
URBAN						
Male	10,501	20,092	22,279	41,042	15,790	109,704
Female	12,300	25,303	27,531	44,626	17,402	127,162
Totals	35,557	65,811	68,939	113,200	41,885	325,392
ANGLO						
RURAL						
Male	3,586	4,398	7,108	24,946	25,241	65,279
Female	2,497	2,462	4,113	14,734	18,946	42,752
URBAN						
Male	5,455	7,121	11,050	30,813	28,906	83,345
Female	4,683	5,159	7,565	23,082	27,988	68,477
Totals	16,221	19,140	29,836	93,575	101,081	259,853
TOTAL	58,992	96,291	118,132	267,515	190,288	731,218

*Abstracted from 1960 Census Reports

Most of these counties are located in the southwest and central areas of the State.

Table IV shows the illiteracy distribution among counties having an illiteracy rate of ten per cent or less. Again, it should be noted that some counties have a large number of illiterates, such as Bexar County with 61,680, Dallas County with 34,757, Harris County with 56,757, Nueces County with 21,637, Tarrant County with 18,590, and Travis County with 13,403, but show a relatively low percentage of illiteracy in comparison to the total population.

Figure II shows location of 21 metropolitan areas having about one-half of the total illiterate population. This may indicate a trend toward urbanization of the educationally deficient in an effort to secure work or welfare benefits.

Population Distribution by Ethnic Groups

There is a significant relationship between membership in an ethnic group and illiteracy. This study is more concerned with the statistical evidence of this fact than with contributing factors, only because of the limitation of time and scope.

Table VI shows the number 14 years and older in the three ethnic groups as follows: non-white--779,316; Latin American--852,597; Anglo--4,931,079, giving a total of 6,562,992. This table gives a further distribution according to age, sex, rural and urban.

According to Table VII, the three ethnic groups have a total of 731,218 individuals 14 years and older with less than five years of schooling. The groups are divided as follows: Latin American--325,392; Anglo--259,853; and non-white--143,973. Table IX shows the membership in these three ethnic groups according to age and the percentage in each group.

Examination of Table VII shows there are more functional illiterates among the whites 64 years and older than any other ethnic group. However, the percentage of illiteracy among the Latin American and the non-white population is almost four times the percentage of illiteracy among the Anglo population. For example, the percentage of illiteracy among the Anglo rural male 65 and older is 25.6 in contrast to 81.6 per cent for the Latin American and 66.4 per cent

TABLE VIII

PER CENT OF LATIN INDIVIDUALS WITH FIVE YEARS OF SCHOOLING OR LESS, ACCORDING TO AGE, PARENTAGE, RESIDENCE, AND SEX IN TEXAS: 1960

	AGE GROUPING					
	14-24	25-34	35-44	45-64	Over 64	Total
FOREIGN BORN						
Rural						
Male	51.9	78.2	78.5	85.7	90.1	78.5
Female	49.2	73.7	78.2	86.3	91.3	77.8
Urban						
Male	23.4	44.6	49.4	67.6	79.6	58.6
Female	28.6	47.8	51.8	70.6	81.3	60.0
FOREIGN OR MIXED PARENTAGE						
Rural						
Male	18.8	52.4	66.6	80.3	84.8	51.1
Female	20.4	55.4	71.4	76.7	81.3	51.3
Urban						
Male	10.1	28.1	39.2	61.3	79.8	31.8
Female	10.2	30.8	46.7	65.6	76.9	34.8
NATIVE PARENTAGE						
Rural						
Male	18.8	44.7	54.2	63.6	68.2	40.1
Female	19.0	40.8	54.4	60.9	64.9	38.4
Urban						
Male	9.5	25.5	36.9	53.9	64.6	26.6
Female	9.4	26.3	40.6	54.0	61.7	27.3
TOTAL	13.8	35.0	47.5	65.3	77.0	39.7

* Based on 1960 Census Reports

TABLE IX

PER CENT OF INDIVIDUALS WITH FIVE YEARS OF SCHOOLING OR LESS,
FOR AGES 14 AND OVER 64,
NON-WHITE, LATIN, ANGLO RURAL AND URBAN,
MALE AND FEMALE IN TEXAS 1960

	AGE GROUPING					
	14-24	25-34	35-44	45-64	Over 64	Total
NON-WHITE						
RURAL						
Male	6.9	16.6	27.6	43.3	66.4	30.4
Female	4.8	9.5	14.8	26.0	52.5	20.6
URBAN						
Male	3.5	8.3	15.6	32.2	58.0	19.7
Female	2.4	4.2	10.0	21.9	46.3	13.7
LATIN						
RURAL						
Male	22.0	55.0	64.7	75.3	81.6	52.3
Female	21.5	50.9	64.6	72.1	78.4	48.8
URBAN						
Male	15.9	22.4	31.3	47.0	59.2	32.2
Female	11.8	31.7	45.5	64.2	76.0	37.7
ANGLO						
RURAL						
Male	2.4	4.5	6.5	11.6	25.6	9.8
Female	2.1	2.5	3.7	7.0	18.6	6.7
URBAN						
Male	1.2	2.1	3.2	6.7	18.6	4.8
Female	1.1	1.4	2.1	4.5	12.5	3.6
TOTAL	3.8	7.6	9.6	14.8	26.1	11.1

*Abstracted from 1960 Census Reports

for the non-white for the same age groups according to Table IX.

Table VII shows almost 60,000 functional illiterates within the three ethnic groups between the ages of 14 and 24. Latin Americans make up the largest group, with 35,557, which is more than 50 per cent. The extremely high percentage of illiteracy among the Latin Americans in each age group should be noted. Fifty-five per cent of the adults in the age group 35-44 and 75.3 per cent in the 45-64 age group have less than five years of education.

Table VII shows there are 118,132 individuals in the 35-44 age group and 267,515 in the 45-64 age group, which represents an increase of 149,383 between these two age groups. Several factors may contribute to the wide numerical difference between the two age groups. Many in the 45-64 age group may have had more limited educational opportunities than afforded the 35-44 age group. It has been noted earlier in this study that the Works Progress Administration educational program in Texas taught 87,000 illiterates during the years 1938-43. Many of those taught in the Works Progress Administration program would be in the 34-44 age group today. The literacy program of the Works Progress Administration may have been the major factor contributing to the lower literacy rate in this age group.

Further study of Table VIII shows a higher rate of illiteracy among the foreign-born, ranging from 23.4 per cent for urban males between the ages of 14-24 to 91.3 per cent for foreign-born females over 64 years of age. It is significant to note that 51.9 per cent of the foreign-born rural males in the 14-24 age group are functional illiterates.

It should be noted that Latin Americans with foreign-born parents or mixed parentage show a much lower rate of illiteracy. Rural males in this category show an illiteracy rate of 18.8 per cent as compared to 51.9 per cent for rural males in the 14-24 age group in the foreign-born category.

There has been a very slight decrease in illiteracy among Latin Americans of native parentage in the 14-24 age group as compared to those born of foreign or mixed parentage. Table IX shows the percentage of illiterates according to age groups, sex, race, and urban or rural.

Population Changes by Ethnic Groups

Most of the registered aliens in Texas were either born in Mexico or came from Mexican ancestry. This is also true of migrants. During the last ten years, the greatest percentage of population increases have come within the ethnic group with Spanish surnames. According to Table X compiled by the Institute of Public Affairs, The University of Texas, the per cent of gain has been much higher among those with Spanish surnames.[1]

TABLE X

TEXAS POPULATION BY ETHNIC GROUPS, PER CENT OF POPULATION FOR 1950-1960 AND PER CENT OF GAIN FOR 1950-1960

Ethnic Group	1960 Population	Per Cent of Population 1950	Per Cent of Population 1960	Per Cent Gain 1950-60
Anglo	6,957,021	73.8	72.6	22.2
Spanish Surname	1,417,810	13.4	14.8	37.1
Non-White	1,204,846	12.8	12.6	22.4
Total	9,579,677	100.0	100.0	24.2

According to Table X, 14.8 per cent of the total population in 1960 were individuals with Spanish surnames. During the ten year period 1950-1960, there were 1,417,810 individuals with Spanish surnames. The number of individuals with Spanish surnames increased from 13.4 per cent to 14.8 per cent of the total population. The per cent of gain during this decade was 37.1, in contrast to 22.2 per cent gain for Anglos and 22.4 per cent for Negroes.

The Spanish surname population is expected to continue to grow at a much faster rate than other Texas ethnic groups but not to the extent that this group will become the largest group numerically in the State. It is expected

[1] Current Affairs Comment, Institute of Public Affairs, The University of Texas, Vol. 10, Number 1, January, 1964.

that the percentage of population with Spanish surnames will increase from 14.8 per cent to 17.9 per cent. If this rate should continue to the year 2000, the Spanish surname population would be 21.61 per cent of the total population.

With the rate of Spanish-speaking population growing at this projected rate and with the immigration of more than 20,000 from Mexico, the problem of illiterates will continue to be a major problem among this ethnic group. It has been pointed out earlier in the study that the rate of illiteracy is particularly high among children of foreign-born parents, running as much as 51 per cent for males with foreign-born parents. Table XI indicates that the rate of illiteracy is also high among Spanish-speaking individuals with native parentage.

TABLE XI [2]

NUMBER OF LATINS ACCORDING TO PARENTAGE
NATIVE OF NATIVE PARENTAGE
NATIVE OF FOREIGN OR MIXED PARENTAGE, AND FOREIGN-BORN
AND PER CENT OF LATIN POPULATION
IN EACH GROUP IN TEXAS--1960

	1960 Population	Per Cent of Population 1950	1960
Native of Native Parentage	776,284	46.5	54.8
Native of Foreign or Mixed Parentage	442,387	35.3	31.2
Foreign-Born	199,139	18.2	14.0
Total	1,417,810	100.0	100.0

Table XII shows the rate of increase of Spanish population in areas of the state.

[2] Ibid.

TABLE XII

POPULATION OF SPANISH SURNAME IN
BEXAR, EL PASO, HIDALGO, CAMERON, NUECES, HARRIS,
AND WEBB COUNTIES FOR YEARS 1950-1960
AND PER CENT OF INCREASE FOR TEN YEAR PERIOD 1950-1960

	Spanish-Surname Population		Per Cent Gain
	1950	1960	1950-1960
Bexar	176,877	257,090	45.3
El Paso	89,555	136,993	53.0
Hidalgo	112,422	129,092	14.8
Cameron	81,080	96,744	19.3
Nueces	58,939	84,386	43.2
Harris	39,171	75,013	91.5
Webb	47,525	51,784	9.0
Total	605,569	831,102	37.2

Alien Population

The presence of a large registered alien population appears to be a contributing factor to illiteracy. Texas ranks third among the states in the number of registered aliens, with 241,001, of which 204,382 are Mexican Nationals.

Mexican Nationals have moved from fifth to first place among aliens in the United States in recent years.[3] While more than half of the five million

[3]Farrell, Raymond, Annual Report of Immigration and Naturalization Service, Washington, D. C., 1963, p. 84.

aliens in the United States live in the East, the alien population has shifted to the South and West. According to Table XIII, California has more resident aliens than New York, Texas ranks third, with 241,001, leaving Illinois in the fourth place with 194,279.[4]

Figure III gives a graphic comparison of the number of registered aliens in the four major states. Table XIV indicates that 87,457 Mexican aliens were admitted to the State during the years 1959-1963. During the year 1963, 20,962 Mexican aliens were admitted, while only 4,835 were naturalized according to Table XVI. The rate of naturalization in Texas is much lower than in other states having a large number of aliens. Table XVI further shows 124,178 aliens were naturalized in the United States in 1963. Texas, with the third largest number of resident aliens, naturalized only 4,835 aliens, as compared to California, where 21,948 were naturalized, or New York, where 28,844 became American citizens. (See Table XV) Figure IV gives a graphic comparison of the number of aliens naturalized by the four states.

Table XV shows the number of aliens naturalized in Texas, California, Illinois, and New York over a ten year period. It should be noted that during this ten year period, 338,624 aliens were naturalized in New York, 204,137 in California, and 92,241 in Illinois, while only 45,072 were naturalized in Texas. During the year 1963, 4,835 aliens were naturalized, whereas in 1962, 5,816 became citizens. This shows that there were about 1,000 fewer aliens naturalized in Texas during 1963 than in 1962.

Most of the aliens from Mexico enter Texas through cities on the Mexican border. Table XIV indicates 8,764 Mexican Nationals entering Texas through

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[4]Our Immigration, A Brief Account of Immigration of the United States, United States Department of Justice, Immigration and Naturalization Service, 1962, p. 18.

El Paso, 4,710 through Laredo, the next largest group, 2,083, coming through Eagle Pass. According to this table, 20,962 Mexican Nationals entered legally. It is not known how many entered illegally. Immigration authorities report Mexican Nationals were deported during the year 1964 for illegal entry.

Although all aliens are required by law to be able to speak and read a language before a visa is granted, most entering Texas would be classified under our definition of functional illiterates. Further study of Table VIII indicates that foreign-born Mexican Nationals show an unusually high illiteracy rate. This table further reveals that children born of mixed parentage show a high rate of illiteracy, even in the age group 14-24.

Unless there is a heavy out-migration, the number of permanent Mexican aliens will increase substantially in Texas. As indicated, there are 204,382 aliens presently registered. (See Table XV.) The fact that fewer persons of Mexican nationality have been naturalized may account for the high proportionate rate of growth of Mexican aliens and the high rate of illiteracy among them and their children.

Time will not permit a study of the casual factors discouraging Mexican Nationals from becoming citizens. Their reluctance to become American citizens may be related to their life style and low educational level.

TABLE XIII

ALIEN POPULATION IN TEXAS, CALIFORNIA ILLINOIS AND NEW YORK
AND THE UNITED STATES FOR THE YEARS: 1940-1963

State of Residence	1940	1951	1960	1961	1962	1963
Texas	213,898	165,927	237,514	233,579	237,749	241,001
California	542,464	326,158	567,484	617,733	660,418	710,419
Illinois	325,070	110,563	199,405	197,197	199,001	194,279
New York	1,257,510	545,990	553,703	563,700	574,637	600,468
U. S. Total	5,009,857	2,265,032	2,948,973	3,038,304	3,128,765	3,236,684

Annual Report, Immigration and Naturalization Service, 1963.

FIGURE III

NUMBER OF REGISTERED ALIENS IN
CALIFORNIA, TEXAS, ILLINOIS, NEW YORK: 1963

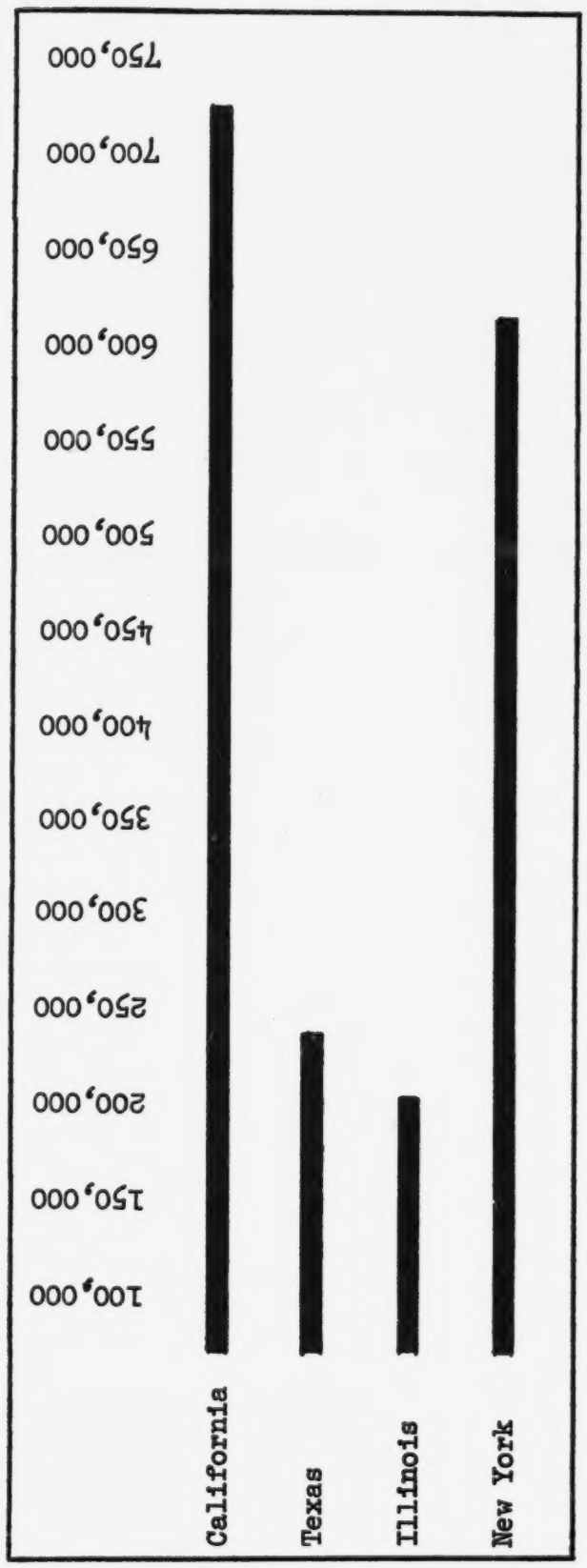

TABLE XIV

IMMIGRANTS ENTERING TEXAS BY CITIES

Years: June 30, 1959 - 1963

Mexican Border	1959	1960	1961	1962	1963	Total
Brownsville, Texas	506	1,470	1,940	1,904	1,669	7,449
Del Rio, Texas	81	190	183	367	341	1,162
Eagle Pass, Texas	575	1,111	1,251	2,225	2,083	7,245
El Paso, Texas	4,881	6,245	7,977	10,191	8,764	38,058
Hidalgo, Texas	858	1,517	1,510	2,200	1,954	8,039
Laredo, Texas	2,656	4,015	4,344	4,930	4,710	20,655
Roma, Texas	288	459	603	778	995	3,063
Other Mexican Border	294	355	341	350	446	1,786
TOTAL	10,079	15,362	18,113	22,941	20,962	87,457

Annual Report, Immigration and Naturalization Service, 1963.

TABLE XV
ALIENS REPORTED UNDER THE ALIEN ADDRESS PROGRAM,
SELECTED NATIONALITIES WITH MORE THAN 500
TOTALS FOR TEXAS, CALIFORNIA, ILLINOIS, NEW YORK, AND U.S.: 1963
WITH TOTAL NATURALIZED FOR 1954-1963 AND BREAKDOWN FOR 1962 AND 1963

State of Residence	Grand Total	Total Permanent Residents	Mexico	Canada	United Kingdom	Germany	Italy	Cuba	Japan	Ireland	Netherlands
Texas	241,001	233,232	204,382	3,359	5,126	6,615	812	939	970	594	700
California	710,419	655,558	266,577	80,152	49,896	33,121	16,336	3,417	23,838	6,166	22,003
Illinois	194,279	181,483	30,575	8,782	10,165	26,815	14,378	2,485	1,707	5,445	2,090
New York	600,468	544,167	2,277	41,275	55,098	48,129	87,496	29,625	1,881	25,405	5,459
U. S. Total	3,236,684	2,892,015	577,895	339,659	247,811	247,805	228,766	93,453	61,943	61,102	55,107

State	1962	1963	1954-1963
Texas	5,816	4,835	45,072
California	21,010	21,948	204,137
Illinois	9,542	9,461	92,241
New York	31,225	28,844	338,624
U.S. Total	127,307	124,178	1,338,459

FIGURE IV

NUMBER ALIENS NATURALIZED
CALIFORNIA, TEXAS, ILLINOIS, NEW YORK DURING 1963

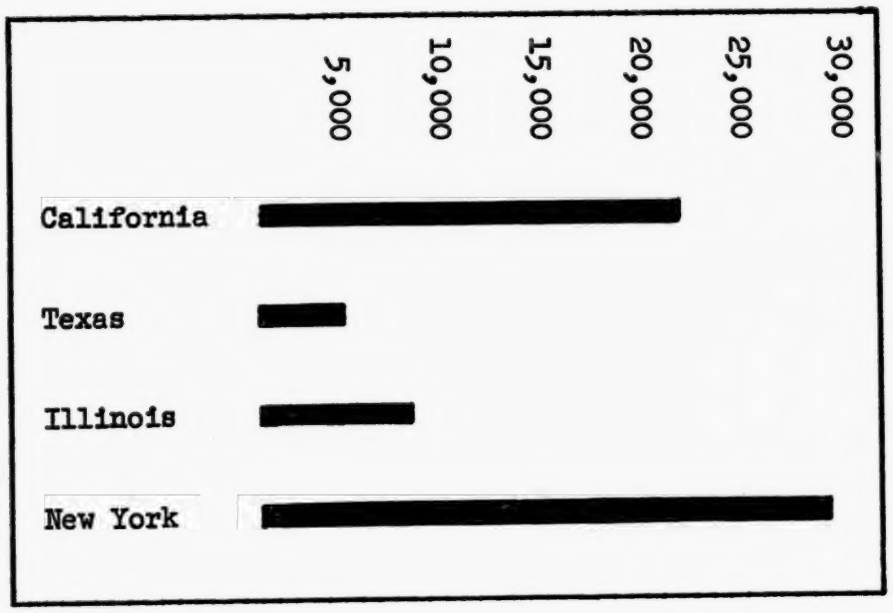

TABLE XVI

PERSONS NATURALIZED BY TYPE OF COURT AND STATE OF RESIDENCE
FOR TEXAS, CALIFORNIA, ILLINOIS, NEW YORK, AND TOTAL
FOR THE UNITED STATES FOR YEAR ENDED JUNE 30, 1963

State	Total	Federal	State
Texas	4,835	4,105	730
California	21,948	18,098	3,850
Illinois	9,461	9,100	361
New York	28,844	24,889	3,955
U. S. Total	124,178	99,398	24,780

Illiteracy in Relation to Migrants

According to Texas Employment Commission data, there are more than 128,000 migrants, including men, women, and children, living in the State. More than 95,000 of this group travel out of the State for seasonal employment, while about 33,000 remain within the State for farm labor jobs. According to these figures, Texas has the largest home-based migrant labor force of any state in the United States.

The increase in farm mechanization has forced the migrant to travel farther distances and to work shorter periods. For example, use of cotton harvesting machinery has been so extensive over the last two or three years that it has become a major threat to the livelihood of thousands of migrants who have depended on cotton picking for a living. It is estimated that State-wide cotton harvesting by machine will soon reach 90 per cent and above.[5]

> Since the use of machinery is also increasing rapidly in other crops in the States to which our farm workers migrate, for example, in sugar beets, potatoes, snap beans, etc., it is becoming increasingly difficult for our Texas migrants to find steady employment during the crops season, and they must travel farther for fewer days of work. It seems clear that since these workers are not generally skilled in other work and cannot, as a rule, secure employment in industry or the services, they will become unemployed in increasing numbers from now on. This poses a serious problem to the communities in South Texas where they have their homes, as these communities are entirely unprepared to sustain the large concentrations of underemployed and unemployed with which they will be faced. Thus the problem becomes a matter of concern to the State, requiring study and remedial action that only the State is equipped to provide.[6]

The number of migrants going out of the State may have had a slight increase during the last two years as they searched for employment.

According to Table XVII, there is a high rate of illiteracy in counties having large numbers of home-based migrant laborers. Hidalgo County, with the largest number, has an illiteracy rate of 18.5 per cent, while Maverick,

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[5]Texas Council on Migrant Labor, February, 1963.
[6]Ibid.

Zavala, and Starr Counties, with more than 3,000 migrants each, have an illiteracy rate of more than 20 per cent. In each of these counties, the median school year completed is about the sixth grade.

Further examination of Table XVII shows areas with large numbers of migrants having a high increase of school-age scholastic population during the last ten years. For example, the twelve counties having the largest number of migrants show an average school-age scholastic increase of more than 42 per cent. The increase of school-age scholastic population has increased 77.64 per cent in Bexar County, which has more than 8,000 migrants. The increase in Nueces County has been more than 69.30 per cent, where there are more than 5,000 migrants.

In areas of high concentration of migrant laborers, the illiteracy rate is generally higher, the median school years completed is lower, and the per cent of school-age scholastic population increase is much higher than the State average.

The large number of school-age children in the migrant group presents some serious educational problems. Table XVIII reveals that more than 44,600 youth under the age of 16 are in the migrant labor groups. It should be further noted that the average size of the migrant family is 6.2. It is estimated that 24,350 school-age children are following the harvest out of State, and several thousand commute from home to work.

A study made for the State Board of Education by R. P. Ward, former president, Pan American College, estimates that as many as 85,000 school-age children of migrant families were out of school for many weeks during the year 1961-62. This number would include both out-of-State migrants and those who lived at home and commuted to work. Colonel Tausch, Executive Director of the Migrant Labor Council, estimates between 30,000 and 40,000 school-age children are in the migrant group moving out of State. These figures are based on the number registered with the Texas Employment Commission and the Council on Migrant Labor.

Presently, five pilot projects have been organized to give accelerated education programs to migrant children when they are home based. Five additional programs will be inaugurated in 1964-65. From 15 to 20 per cent more children remained at home to attend school during the 1963-64 year. Legislation enacted by the last Legislature may have accounted for this increase in school attendance. Two bills were passed dealing with problems and needs of Texas migrants--the Child Labor and Compulsory School Attendance Bills.

Report on Educational Needs of Migrant Workers

At the request of the House Interim Committee on Migrant Labor, Fifty-seventh Legislature, the Texas Education Agency prepared a Report on the Educational Needs of Migrant Workers. The report defined the major educational problems of the migrant worker and proposed a practical educational program for the migrant family.

Recommendations of this report resulted in concern for the educationally deficient and enactment by the Fifty-eighth Legislature of legislation dealing with migrancy. This study helped form the basis for six bills concerning education for adult migrants and illiterates.

Funds in the amount of $30,000 were appropriated to finance a pilot program for the education of adult illiterates. This appropriation was made to Texas Southmost College, with the requirement that the funds be matched by private grants. To date, this project has not been initiated.

TABLE XVII

RANK OF COUNTIES WITH THE LARGEST NUMBER OF MIGRANT WORKERS
TOTAL POPULATION IN EACH COUNTY
NUMBER OF PERSONS 25 YEARS AND OLDER WITH NO SCHOOL
NUMBER OF PERSONS 25 YEARS AND OLDER WITH LESS THAN FIVE YEARS OF SCHOOLING
PERCENTAGES OF ILLITERATES AND
THE MEDIAN SCHOOL YEAR COMPLETED FOR MALE AND FEMALE

County	Rank of County in Number of Migrant Workers		Total Population in County	Persons 25 Years and Older		Scholastic % Increase	Population % Decrease	Per Cent Illiterate of the Total Population	Median School Year Completed
	Rank	Number		No Schooling	Less Than 5 Years				
Hidalgo	1	25,000	180,904	14,967	33,480	30.84		18.5	6.2
Cameron	2	10,000	150,098	10,075	23,455	33.34		15.5	7.8
Bexar	3	8,000	687,475	22,557	61,740	77.64		9.0	10.0
Webb	4	5,000	64,791	4,096	11,298	32.57		17.4	6.5
Nueces	5	5,000	221,573	8,999	21,637	69.30		9.8	10.1
Maverick	6	4,400	14,508	1,162	2,926	43.34		20.1	5.6
Zavala	7	4,000	12,696	1,333	2,845	22.18		22.4	4.5
San Patricio	8	3,000	45,021	3,307	3,688	36.79		8.2	8.1
Starr	9	2,200	17,137	1,511	3,809	29.48		22.2	5.0
Willacy	10	2,000	20,084	1,726	3,717	14.34		18.5	6.1
Travis	11	1,200	212,136	5,406	13,403	69.64		6.3	11.6
Val Verde	12	1,107	24,461	1,449	2,951	49.09		12.1	9.6
Dimmit	13	1,097	10,095	1,019	2,116		10.31	21.0	5.3
Uvalde	14	1,000	16,814	965	2,437	27.72		14.4	8.5
McLennan	15	824	150,091	2,045	8,949	38.10		6.0	10.2
Jim Wells	16	728	34,548	1,955	4,903	33.61		14.2	8.2
Kleberg	17	648	30,052	1,300	3,006	52.49		10.0	9.7
El Paso	18	614	314,070	6,808	23,606	93.01		7.5	11.1
Medina	19	535	18,904	900	2,395	19.60		12.6	8.5
Frio	20	533	10,112	1,041	1,969	13.29		19.5	6.4
Brooks	21	530	8,609	596	1,439	1.79		16.7	7.1

TABLE XVII--Continued

County	Rank of County in Number of Migrant Workers: Rank	Rank of County in Number of Migrant Workers: Number	Total Population in County	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years	Scholastic % Increase	Population % Decrease	Per Cent Illiterate of the Total Population	Median School Year Completed
La Salle	22	497	5,972	835	1,420		33.79	23.8	4.8
Williamson	23	477	35,044	1,265	2,650		2.84	7.6	8.3
Atascosa	24	415	18,828	1,391	3,108	3.19		16.5	7.8
Hale	25	410	36,798	917	2,486	58.33		6.8	10.5
Wilson	26	395	13,267	882	2,267		5.60	17.1	7.0
Lubbock	27	388	159,271	2,197	6,959	85.04		4.5	11.6
Karnes	28	383	14,995	1,003	2,382	7.70		15.9	7.5
Hays	29	368	19,934	1,313	2,615	23.20		13.1	8.8
Zapata	30	365	4,393	388	1,003	13.90		22.8	5.1
Caldwell	31	353	17,222	1,034	2,297		2.11	13.3	8.3
Harris	32	349	1,243,158	13,581	56,757	99.67		4.6	11.3
Bowie	33	320	59,971	824	4,527	.79		7.5	9.5
Bell	34	282	94,097	1,055	4,055	56.32		4.3	10.6
Duval	35	271	13,398	85	2,426		21.53	18.1	7.0
Bee	36	247	23,755	1,247	2,576	37.68		10.8	9.1
Dallas	37	241	951,527	7,913	34,757	103.70		3.7	12.0
Tarrant	38	223	538,956	3,739	18,590	90.33		3.4	11.5
Guadalupe	39	208	29,017	1,228	3,366	27.10		11.6	8.4
Falls	40	182	21,263	657	2,671		16.75	12.6	8.1
Deaf Smith	41	179	13,187	253	819	60.10		6.2	10.7
Brazos	42	165	44,895	920	3,157	41.50		7.0	11.0
Taylor	43	153	101,078	1,193	3,744	86.68		3.7	12.0
Wharton	44	143	38,152	1,251	4,672	11.93		12.2	8.1
DeWitt	45	133	20,683	970	2,975	4.79		14.4	7.9
Victoria	46	129	46,475	1,603	4,475	75.77		9.7	9.4
Jones	47	124	19,303	379	1,347		14.31	7.0	10.0
Lamb	48	121	21,896	416	1,496	15.61		6.8	9.9
Grimes	49	117	12,709	378	1,892		2.85	14.9	8.0
Dawson	49	117	19,184	657	1,691	3.05		8.8	9.5

TABLE XVII--Continued

County	Rank of County in Number of Migrant Workers: Rank	Rank of County in Number of Migrant Workers: Number	Total Population in County	Persons 25 Years and Older: No Schooling	Persons 25 Years and Older: Less Than 5 Years	Scholastic % Increase	Population % Decrease	Per Cent Illiterate of the Total Population	Median School Year Completed
Terry	50	110	16,286	332	1,076	11.29		6.6	10.0
Houston	50	110	19,376	524	2,068		19.14	10.7	8.7
Menard	51	100	2,964	101	313		21.28	10.5	9.7
Tom Green	52	97	64,630	1,153	4,014	37.02		6.2	10.7
Cottle	53	94	4,207	86	372		24.54	8.8	9.0
Scurry	54	91	20,369	279	917	9.37		4.5	10.8
Lamar	55	88	34,234	484	2,725		19.19	8.0	9.2
Lynn	56	85	10,914	358	1,220		8.49	11.2	9.7
Haskell	57	83	11,174	252	910	20.82		8.1	9.5
Comal	58	82	19,844	746	2,256	44.73		11.4	8.2
Coleman	59	79	12,458	162	710		22.74	5.7	10.1
Fort Bend	59	79	40,527	1,801	5,705	41.27		14.1	7.7
Gonzales	60	76	17,845	1,073	2,767		8.99	15.5	7.8
Burleson	61	73	11,177	425	1,514		9.64	13.5	7.8
Brazoria	61	73	76,200	925	4,071	78.40		5.3	10.5
Jim Hogg	62	69	5,022	479	1,093	4.83		21.8	6.1
Swisher	63	67	10,607	159	493	41.15		4.6	11.0
Bastrop	64	66	16,925	544	2,302		.86	13.6	7.8
Presidio	65	65	5,460	352	881		11.00	16.1	8.8
Smith	66	62	86,472	860	4,330	30.37		5.0	10.6
Cass	67	60	23,496	424	1,963		17.37	8.4	8.7
Castro	68	56	8,923	170	475	86.88		5.3	10.8
Knox	69	55	7,857	122	597		31.99	7.6	9.6
Galveston	70	54	140,364	2,196	8,690	63.76		6.2	10.2
Howard	71	53	40,139	631	1,807	40.74		4.5	11.1
Wilbarger	72	51	17,748	260	1,188		15.07	6.7	9.7
Milam	73	50	22,263	649	2,386		1.05	10.7	8.5
Gregg	73	50	69,436	642	3,611	32.17		5.2	10.7

TABLE XVIII

MIGRANTS IN TEXAS ACCORDING TO
AGE, SEX, FAMILY, AND WORK GROUP: 1963

Men 16 years of age and over	48,600
Women 16 and over	34,800
Youths under 16	44,600
Families	18,700
Unattached men	10,000
Unattached women	2,000
Work Groups (crew leaders & family heads) ...	8,320
Size of families (av. no. of members)	6.2*

*Since many families leave their school-age children at home base, this figure represents migrating members only.

Texas Council on Migrant Labor, March 1964.

SECTION III

ILLITERACY IN RELATION TO CRIME

Texas prison officials, aware of the educational needs of inmates, diagnose educational deficiencies and provide educational programs to train and rehabilitate them.

According to Alonzo Langley, Director of Education, Texas Department of Corrections, Huntsville, Texas, tests are given to each inmate upon entry to determine his educational level. All inmates are encouraged to enroll in the prison training program where special provision has been made for basic and vocational education, with compulsory education for illiterates.

> An act to provide that the Texas Prison Board shall arrange for schools in all of the penitentiaries and penitentiary farms of the State of Texas, providing for compulsory instruction of illiterates; and hours of attendance that credit shall be given on sentence for attendance and instruction in such schools; providing for teaching the Constitutions of the State of Texas and the United States; providing that the Chaplains shall be charged with the duty of organizing and supervising such schools; providing that instructors shall be prisoners as far as practicable and that Texas Prison Board shall make rules and regulations making effective the provisions of this Act.[1]

Examination of the prison statistics indicates a close relationship between crime and illiteracy. Tables XIX and XXI show the total prison population according to Anglo, Negro, and Mexican and the number of years completed in school for those entering before 1962. Examination of these tables show a total of 2,223 inmates with a fifth grade education or less and 6,351 with an eighth grade education or less. This indicates that almost one-half of the inmates of the prison system have less than an eighth grade education. According to Table XX, the percentage of illiteracy, based on results from the Graves-Votaw-Rogers achievement test was 16.9 per cent. It further reveals that 12.7

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[1]H.B. 10, 41st Legislature, Schooling for State Convicts.

per cent of the inmates have a grade equivalence of three years, 12.5 per cent four years, and 13.5 per cent five years. These figures indicate that 55.6 per cent of the prison population would be classed as functional illiterates.

Table XXII is based on questionnaires completed by 889 inmates of the Texas Prison System, showing wide discrepancies between grade level reached as reported and grade level according to achievement tests. According to this table, 95 reported a high school education but no one showed achievement level comparable to high school.

Five hundred eighty-eight claimed to have attained the eighth grade level, while achievement tests indicate 690 having an achievement level no higher than grade five.

These figures indicate those reporting either had education of inferior quality, were weak students, or misrepresented the grade level achieved. It could not be claimed that all inmates would show the same correlation between grade completed and achievement level. It does, however, indicate a real need for the type of training program being offered in the penial systems. It further indicates a need for more vocational education in the public schools of Texas.

This table further shows the average educational attainment for the eleven year period to be less than the sixth grade. The grade average for the eleven year period is 5.1 years of schooling. This average is only slightly above the level of the functionally illiterate.

Table XXIII gives the results of 950 youths at Gatesville State School for Boys. According to this table, 53 of the boys had not gone beyond the fifth grade, and 504 had not completed the eighth grade.

It should be noted that 382 did not give the educational level of their fathers. However, this questionnaire reveals that 128 fathers did not complete the fifth grade and that 220 finished the eighth grade or less. The educational level of mothers is about the same as the fathers, with 112 mothers finishing the fifth grade and a total of 227 finishing the eighth grade.

Further examination of Table XXIII shows that one-half of the parents were living together and 286 of their parents were receiving Welfare aid.

It should be noted that 472 of the boys had been previously confined once or more.

TABLE XIX

PRISON POPULATION ACCORDING TO
YEARS SCHOOLING REPORTED
WHITE, BLACK, MEXICANS, MALE AND FEMALE
TOTAL BY YEARS: 1962

Years Schooling Reported	White		Black		Mexican		Total		Total By Years
	Male	Female	Male	Female	Male	Female	Male	Female	
0	76	2	107	6	185	6	368	14	382
1	14		25	2	22		61	2	63
2	48	1	79	1	60		187	2	189
3	139	3	181	6	149		469	9	478
4	168	3	180	16	128	4	476	23	499
5	207	7	214	11	172	1	593	19	612
6	396	9	287	4	245	5	928	18	946
7	558	11	369	22	289	4	1,216	37	1,253
8	1,079	22	482	16	326	4	1,887	42	1,929
9	854	38	420	21	211	4	1,485	63	1,548
10	844	32	606	28	117	1	1,567	61	1,628
11	466	20	516	29	67	2	1,049	51	1,100
12	651	41	308	31	33	4	992	76	1,068
13	96	6	29	4			125	10	135
14	96	3	25	3	3		124	6	130
15	34	5	10	1			44	6	50
16	24	2	11	1	3		38	3	41
17	6		2				8		8
18	2						2		2
19	3		1				4		4
20		2						2	2
Omitted	6	2	84	1	29		119	3	122
Total Inmate Population	5,767	209	3,936	203	2,039	35	11,742	447	12,189

W. H. Gaston
Statistical Survey Inmate Population as of December 31, 1962.

TABLE XX

AVERAGE PERCENTAGE PER GRADE AND
AVERAGE EDUCATIONAL ATTAINMENT FOR NEW INMATES
BASED ON RESULTS OF GRAY-VOTAW-ROGERS ACHIEVEMENT TESTS
1950-1960 TEXAS PRISON SYSTEM

Average Percentage Per Grade for the 11 Year Period (1950-1960)				Average Educational Achievement of New Inmates for Each Year of the 11 Year Period (1950-1960)			
Illit.	16.9	8th	7.8	1950	5.2	1956	5.0
3rd	12.7	9th	6.3	1951	5.2	1957	4.8
4th	12.5	10th	1.6	1952	5.1	1958	5.4
5th	13.5	11th	5.1	1953	5.0	1959	5.5
6th	11.4	12th	0.9	1954	5.4	1960	5.2
7th	11.3			1955	4.9		

TABLE XXI

PERCENTAGE OF INMATES BY RACE
TEXAS PRISON SYSTEM
1950 to 1960

Race	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
White	57.6	54.9	56.3	55.4	56.1	53.9	53.8	53.0	56.4	52.1	54.8
Negro	28.7	28.6	25.9	27.8	27.7	30.4	30.1	32.1	28.0	28.9	28.9
Mexican	13.7	16.5	17.8	16.8	16.2	15.7	16.1	14.9	15.6	19.0	16.3

TABLE XXII

GRADE LEVEL REACHED AND GRADE ACHIEVEMENT LEVEL OF
889 INMATES TEXAS PRISON: 1964

HIGHEST GRADE REACHED IN SCHOOL BEFORE ARREST OR CONFINEMENT	Illi.	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
0	22													22
1	10													10
2	20													20
3	37													37
4	33				2							1		36
5	24			4		1								29
6	32			14										46
7	37			27	28	9	1							102
8	22			25	29	27	6							109
9	21			22	26	39	27	4	1					140
10	13			13	25	28	18	28	4					129
11	7			8	8	44	9	24	10	4				114
12	2	-	-	8	10	13	16	21	9	15	1	-	-	95
Total	280	0	0	121	128	161	77	77	24	19	1	1	0	889

TABLE XXIII

EDUCATION LEVEL AND GENERAL INFORMATION
ON
950 YOUTH AT GATESVILLE STATE SCHOOL FOR BOYS

Education

	0	1	2	3	4	5	6	7	8	9	10	11	12	Beyond HS	Blank
Highest Grade Reached	4	4	2	9	12	22	63	178	210	238	159	43	1	0	6
Highest Grade Father Reached	24	8	12	29	24	31	26	29	37	45	34	54	100	115	382
Highest Grade Mother Reached	26	4	23	24	15	20	22	39	54	48	61	61	141	105	317

General Information

			Parent or Parents			Parents Received Welfare		Confined More than Once		Times Confined Previously					
Married	Single	Other	Living Together	Divorced or Separated	Deceased	Yes	No	Yes	No	0	1	2	3	4	5
26	907	17	450	356	139	286	664	472	478	18	203	148	55	16	31

SECTION IV

ECONOMIC STATUS RELATED TO MEDIAN SCHOOL YEAR COMPLETED AND MEDIAN FAMILY INCOME

The economic status of counties and areas appears closely related to illiteracy and median school year completed. Illiteracy is higher in areas with a declining economy. Expanding areas of economy have lower rates of illiteracy and a higher median school year completed. Two factors may account for these trends. In the first place, areas with an expanding economy have attracted younger and more highly educated individuals, leaving the older, less mobile population in areas with a declining economy. Secondly, life style or cultural patterns of ethnic groups in areas of a receding economy appear as a deterrent to educational achievement. Table IX shows a lower level of educational attainment among persons of Spanish surnames or in areas of minority groups.

Table XXIV gives the median school years completed and the average median family income for 252 counties. In the twelve counties with a median school year of less than seven years of schooling, the average median income is less than $2,500, whereas counties with a median of twelve years of schooling have a median family income of more than $5,600.

When the median educational level of a county is raised, the average median family income generally is higher. The average median income of counties is increased at the rate of almost $500 for each additional year of schooling.

TABLE XXIV

MEDIAN SCHOOL YEARS COMPLETED
AND AVERAGE MEDIAN
FAMILY INCOME

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Kenedy	1.3	*$	
Zavala	4.5	2,314	
La Salle	4.8	2,296	
Starr	5.0	1,700	
Zapata	5.1	1,766	
Dimmit	5.3	2,480	
Maverick	5.6	2,523	$ 2,431.46
Jim Hogg	6.1	2,357	
Willacy	6.1	2,902	
Hidalgo	6.2	2,780	
Frio	6.4	2,676	
Webb	6.5	2,952	
Duval	7.0	2,878	
Wilson	7.0	2,941	
Brooks	7.1	3,222	
San Jacinto	7.3	1,737	
Fayette	7.4	2,378	
Goliad	7.5	2,627	
Karnes	7.5	2,820	
Austin	7.6	2,745	
Lavaca	7.6	2,493	
Lee	7.6	2,408	2,811.20
Fort Bend	7.7	3,950	
Washington	7.7	2,614	
Atascosa	7.8	3,195	
Bastrop	7.8	2,805	
Burleson	7.8	2,451	
Cameron	7.8	3,216	
Gonzales	7.8	2,682	
Jeff Davis	7.8	3,877	
De Witt	7.9	2,668	
Sabine	7.9	2,517	
Grimes	8.0	2,223	
Newton	8.0	2,548	
San Augustine	8.0	2,233	
Falls	8.1	2,287	
Gillespie	8.1	3,475	
San Patricio	8.1	3,803	
Wharton	8.1	3,692	
Colorado	8.2	3,552	
Comal	8.2	4,448	
Jim Wells	8.2	3,717	

TABLE XXIV --Continued

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Live Oak	8.2	$ 3,500	
Rains	8.2	*	
Robertson	8.2	2,468	
Caldwell	8.3	2,995	
Kinney	8.3	3,538	
Polk	8.3	2,806	
Williamson	8.3	3,100	
Guadalupe	8.4	3,643	
Shelby	8.4	2,570	
Trinity	8.4	2,341	
Tyler	8.4	2,694	
Medina	8.5	3,541	
Milam	8.5	2,924	
Real	8.5	2,530	
Uvalde	8.5	3,538	
Jackson	8.6	4,209	$ 3,061.36
Jasper	8.6	3,485	
Leon	8.6	*	
Liberty	8.6	3,732	
Limestone	8.6	2,597	
Red River	8.6	2,306	
Cass	8.7	3,361	
Freestone	8.7	2,361	
Henderson	8.7	2,941	
Houston	8.7	1,901	
Kaufman	8.7	3,460	
Madison	8.7	2,111	
Walker	8.7	2,787	
Cherokee	8.8	2,971	
Hays	8.8	3,402	
Kendall	8.8	3,617	
Marion	8.8	2,351	
Presidio	8.8	3,699	
Somervell	8.8	2,723	
Panola	8.9	3,340	
Van Zandt	8.9	3,180	
Cottle	9.0	3,033	
Fannin	9.0	2,772	
Franklin	9.0	2,876	
Hill	9.0	2,784	
Montgomery	9.0	3,724	
Navarro	9.0	3,247	
Refugio	9.0	4,493	
Wood	9.0	3,483	
Bee	9.1	3,762	
Blanco	9.1	3,441	
Chambers	9.1	5,258	

TABLE XXIV --Continued

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Hardin	9.1	$ 4,523	
Matagorda	9.1	4,124	
Nacogdoches	9.1	3,000	
Angelina	9.2	4,245	
Camp	9.2	3,276	
Lamar	9.2	3,129	
Rockwall	9.2	3,926	
Upshur	9.2	3,661	
Anderson	9.3	3,639	
Aransas	9.3	4,095	
Bosque	9.3	2,916	
Collin	9.3	4,077	
Delta	9.3	2,142	
Ellis	9.3	3,900	
Hopkins	9.3	3,042	
Comanche	9.4	2,747	
Edwards	9.4	4,090	
Fisher	9.4	3,975	
Hamilton	9.4	2,582	
Harrison	9.4	3,723	
Montague	9.4	3,484	
Titus	9.4	3,889	
Victoria	9.4	4,805	
Waller	9.4	3,219	
Bowie	9.5	4,082	
Dawson	9.5	4,757	
Dickens	9.5	3,225	$ 3,792.41
Hall	9.5	3,655	
Haskell	9.5	3,809	
Hood	9.5	3,282	
Burnet	9.6	3,715	
Culberson	9.6	4,203	
Eastland	9.6	3,324	
Foard	9.6	3,364	
Knox	9.6	3,646	
Reeves	9.6	4,559	
Runnels	9.6	3,726	
Rusk	9.6	3,862	
Val Verde	9.6	3,918	
Crosby	9.7	3,701	
Irion	9.7	4,024	
Johnson	9.7	4,622	
Kleberg	9.7	4,193	
Lynn	9.7	4,043	
Menard	9.7	3,387	
Mitchell	9.7	4,083	
San Saba	9.7	2,883	
Sutton	9.7	4,410	

TABLE XXIV --Continued

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Wilbarger	9.7	$ 4,189	
Collingsworth	9.8	3,483	
Cooke	9.8	4,288	
Garza	9.8	5,150	
Hardeman	9.8	3,772	
Morris	9.8	4,912	
Motley	9.8	3,366	
Stonewall	9.8	3,898	
Terrell	9.8	4,724	
Wise	9.8	4,127	
Baylor	9.9	3,825	
Calhoun	9.9	5,329	
Clay	9.9	4,478	
Jack	9.9	4,375	
Lamb	9.9	4,156	
Mills	9.9	2,854	
Bailey	10.0	4,244	
Bexar	10.0	4,766	
Concho	10.0	3,472	
Floyd	10.0	4,307	
Grayson	10.0	4,264	
Hudspeth	10.0	4,636	
Hunt	10.0	3,934	
Jones	10.0	4,165	
Kerr	10.0	4,039	
Lampasas	10.0	3,414	
Martin	10.0	5,651	
Terry	10.0	4,867	
Coleman	10.1	3,292	
Llano	10.1	3,468	
Mason	10.1	3,120	
Nueces	10.1	4,908	
Wheeler	10.1	4,362	
Young	10.1	4,588	
Bandera	10.2	2,973	
Callahan	10.2	3,643	
Childress	10.2	4,180	
Cochran	10.2	4,822	
Donley	10.2	3,438	
Galveston	10.2	5,375	
Lipscomb	10.2	5,074	
McCulloch	10.2	3,429	
McLennan	10.2	4,684	
Pecos	10.2	5,288	$ 4,556.87
Archer	10.3	4,590	
Erath	10.3	3,111	
Palo Pinto	10.3	3,936	

TABLE XXIV --Continued

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Briscoe	10.4	$ 3,669	
Brown	10.4	3,592	
Nolan	10.4	4,749	
Orange	10.4	5,572	
Parker	10.4	4,053	
Schleicher	10.4	5,115	
Brazoria	10.5	6,038	
Coryell	10.5	3,551	
Hale	10.5	4,650	
Hockley	10.5	4,783	
Kimble	10.5	3,683	
Throckmorton	10.5	4,241	
Bell	10.6	3,981	
Dallam	10.6	4,696	
Smith	10.6	4,603	
Coke	10.7	4,858	
Deaf Smith	10.7	4,499	
Gregg	10.7	5,033	
Tom Green	10.7	4,634	
Brewster	10.8	4,032	
Castro	10.8	4,270	
Gaines	10.8	5,410	
Jefferson	10.8	6,001	
Scurry	10.8	5,535	
Borden	11.0	5,247	
Brazos	11.0	4,064	
Denton	11.0	4,595	
Kent	11.0	4,208	
McMullen	11.0	4,618	
Shackelford	11.0	4,405	
Swisher	11.0	4,770	
Ward	11.0	6,010	
El Paso	11.1	5,157	
Howard	11.1	5,692	
Parmer	11.1	4,789	
Glasscock	11.2	5,956	
Gray	11.2	6,022	
Hemphill	11.2	5,164	
Reagan	11.2	5,788	
Carson	11.3	5,502	
Ector	11.3	6,128	
Harris	11.3	6,040	
Roberts	11.3	4,400	$ 5,575.54
Upton	11.3	5,595	
Winkler	11.3	6,248	
Yoakum	11.3	6,070	
Andrews	11.5	6,391	

TABLE XXIV --Continued

County	Median School Yrs. Completed	Average Median Income (Families)	Average Median Income for Group-Counties
Stephens	11.5	4,443	
Tarrant	11.5	5,697	
Wichita	11.5	5,322	
Crockett	11.6	5,339	
Lubbock	11.6	5,425	
Sherman	11.6	5,803	
Travis	11.6	5,058	
Hartley	11.7	6,691	
Moore	11.7	6,121	
Potter	11.7	5,570	
Sterling	11.7	4,924	
Crane	11.8	6,478	
Hansford	11.8	5,921	
Hutchinson	11.8	6,348	
Ochiltree	11.8	6,096	
Dallas	12.0	6,188	
Taylor	12.0	5,246	
Armstrong	12.1	4,618	$ 5,600.67
Oldham	12.1	4,806	
Midland	12.4	6,036	
Randall	12.5	6,710	

*Information not available.
Data not available on King and Loving Counties.

UNEMPLOYMENT AMONG ILLITERATES

A survey was made during the spring of 1964 in sixty-two Texas Employment Commission offices to determine the extent of unemployment among the educationally deficient. The number of individuals with an eighth grade education and less, registered in the active files of the Texas Employment Commission offices, was tabulated for those in the following occupational groups: domestic service occupations, agriculture, semi-skilled and unskilled occupations.

Table XXV gives a summary of unemployed individuals with an eighth grade education or less, registered with Texas Employment Commission offices, in sixty-two of the Texas Employment Commission offices operating under the twelve regional Texas Employment Commission offices. This table shows the number of years of schooling for age groups 16-20, 21-25, 26-30, 31-35, 36-40, 41-45, 46-50, and over 50.

This data, based on tabulations and estimates from active file cards in Texas Employment Commission offices during the spring of 1964, does not reveal the full extent of unemployment, as many individuals with less than an eighth grade education are not registered in Texas Employment Commission offices. Many do not keep their files and are placed in the inactive file.

Table XXV shows 8,763 individuals ages 16 and over 50 with no formal schooling; 1,504 with one year of schooling; 3,532 with two years; 6,081 with three years; and 6,962 with four years of schooling. According to these figures, 34,976 individuals with less than a fifth grade education were registered in Texas Employment Commission offices. There were 76,867 registered in Texas Employment Commission offices having less than an eighth grade education.

The number of individuals receiving surplus commodities is another indication of unemployment. Counties with a high rate of illiteracy received larger welfare in the form of commodities. According to Table XXVI, in Duval County an average of 4,000 persons received commodities each month. Starr County, with a total population of 17,137, received commodities for about 5,000 individuals each month. According to this table, almost one-third of the population of Starr County received welfare. There appears to be a strong relationship between educational level of a county and the amount of welfare received.

Almost 12,000 persons were given commodities per month in Fort Worth, 12,487 in San Antonio, 17,932 in Harris County, and 13,991 in Dallas.

TABLE XXV

NUMBER OF UNEMPLOYED REGISTERED IN
TEXAS EMPLOYMENT COMMISSION OFFICES IN TEXAS
SHOWING AGE AND EDUCATION LEVEL
SPRING 1964

Years of Schooling	16-20	21-25	26-30	31-35	36-40	41-45	46-50	Over 50	Total
0 Years	226	474	830	1,145	1,461	970	1,034	2,623	8,763
1 Year	34	38	108	147	211	177	225	564	1,504
2 Years	51	125	244	537	658	402	427	1,088	3,532
3 Years	141	245	486	758	1,119	748	729	1,855	6,081
4 Years	187	403	708	887	1,196	800	808	1,973	6,962
5 Years	368	597	856	973	1,397	983	840	2,120	8,134
6 Years	807	1,051	1,196	1,372	1,603	1,043	1,068	2,209	10,349
7 Years	1,502	1,526	1,150	1,241	1,458	1,170	1,225	2,423	11,695
8 Years	2,819	2,801	2,195	2,121	2,510	1,758	1,921	3,722	19,847
Total	6,135	7,260	7,773	9,181	11,613	8,051	8,277	18,577	76,867

TABLE XXVI

REPORT OF WELFARE DISTRIBUTION BY CITIES AND/OR COUNTIES REFLECTING THE NUMBER OF PERSONS APPLIED FOR AND APPROVED, THE NUMBER OF PERSONS CERTIFIED LOCALLY AS BEING ELIGIBLE, AND THE NUMBER OF PERSONS SERVED DURING THE PERIOD

JUNE 1963 AND JULY, 1964

City or County	Approved	Certified	Served
Anderson	1,200	1,034	947
Angelina	600	536	492
Bee	2,271	1,407	1,342
Brooks	2,400	2,012	1,886
Brown	1,800	1,525	1,446
Cameron	7,237	7,250	5,934
Camp	1,000	1,000	945
Carson	100	58	46
Cherokee	724	715	654
Childress	400	284	267
Cochran	312	228	206
Coke	130	72	66
Cooke	1,400	1,258	1,142
Cottle	800	630	532
Crosby	509	406	244
Crystal City	925	162	162
Dallam	200	174	149
Dallas	16,971	16,742	13,991
Dawson	1,050	979	829
Denison (City)	500	401	278
Dickens	629	523	481
Duval	5,000	4,372	4,003
Eastland	1,600	1,611	1,224
Fisher	400	302	290
Floyd	500	336	313
Foard	450	318	277
Franklin	830	717	656
Galveston	4,600	4,685	4,319
Garza	156	136	127
Grimes	1,000	326	321
Hale	2,000	1,694	1,374
Hardeman	539	473	438
Hardin	3,000	2,318	2,018
Harris	20,278	23,141	17,932
Haskell	1,300	782	700
Hemphill	150	208	142
Henderson	2,000	1,708	1,439
Hidalgo	2,100	1,265	998
Hockley	1,250	804	663
Howard	1,156	1,046	919
Hudspeth	260	64	47
Hutchinson	700	630	609
Irion	180	120	121
Jackson	523	421	396
Jefferson	4,500	3,537	3,344

TABLE XXVI--Continued

City or County	Approved	Certified	Served
Jim Hogg	1,900	1,791	1,674
Jim Wells	3,536	2,597	2,288
Jones	1,900	1,384	1,198
Kent	200	259	115
Kinney	624	637	610
Knox	800	623	547
Lamb	1,200	842	720
Liberty	1,800	1,704	1,542
Lubbock	1,000	563	407
Martin	140	77	62
Matagorda	2,000	1,862	1,762
Mavrick	3,000	2,295	2,095
McLennan	3,000	2,156	1,978
Milam	2,847	2,735	2,541
Montague	970	932	912
Moore	125	66	60
Morris	750	739	711
Motley	277	251	223
Newton	1,100	1,065	1,026
Nueces	4,500	2,631	2,358
Orange	1,800	2,078	1,510
Polk	1,780	1,649	1,693
Potter	1,500	1,119	977
Reagan	162	146	137
Red River	2,760	2,668	2,638
Sabine	1,391	1,144	1,004
San Antonio (City)	14,259	12,955	12,487
San Augustine	1,100	986	991
San Jacinto	2,200	2,073	2,031
San Patricio	4,250	1,844	1,708
Scurry	1,000	682	573
Shelby	1,172	1,165	1,080
Smith	252	254	230
Starr	6,000	5,274	4,938
Stonewall	255	251	201
Sweetwater-Nolan	947	925	838
Swisher	526	289	240
Tarrant	12,530	12,845	11,715
Terry	300	210	180
Titus	2,292	2,177	1,460
Tom Green	3,000	2,368	2,176
Trinity	1,400	1,274	1,170
Upshur	2,300	2,259	2,183
Van Alstyne (City)	84	77	77
Webb County-Laredo	11,150	10,211	9,728
Wilbarger	1,700	1,167	1,021
Zapata	2,000	1,933	1,299

Summary and Recommendations

A large educationally deficient segment of Texas has become one of the major concerns of leaders in the State. This group of functional illiterates constitutes 11 per cent of our population fourteen years of age and older, or 13.4 per cent of our population twenty-five years of age and older.

Texas has more than 731,000 functional illiterates in the fourteen year and older age group. The State ranks forty-first out of fifty-one states and territories with per cent of adults twenty-five years and older with less than five years of schooling.

Literacy Programs in Texas

The first effort to teach illiterates in Texas was initiated with the Works Progress Administration in 1936. This program included four areas of instruction: Literacy and Citizenship Education, General Education, Parent Education, and Vocational Education.

Significant contributions were made in the areas of Literacy and Citizenship Education. Many citizens, taught to read and write, were able to pass their citizenship tests and more than one thousand young men were reclassified for military service.

During six years the Works Progress Administration program taught 86,855 adults to read and write. The effect of this program can be seen in the statistics for the 45-69 age group twenty years later.

There was little organized effort to combat illiteracy in Texas during the period from 1942-1957.

New interest was created in literacy work by the establishment of the Baylor Literacy Center in 1957. The Baylor Literacy Center trained hundreds of teachers through workshops on the Baylor Campus and in cities throughout the State.

The Texas Literacy Council was organized in October, 1959, in Waco, Texas, as an independent, non-sectarian, and non-profit corporation. The Texas Literacy Council has established many training workshops to train teachers and leaders in literacy. Annual conferences held by the Texas Literacy Council have helped keep the problems of illiteracy before the public. The Texas Literacy Council has encouraged the establishment of teaching centers and the development of curriculum materials.

There are twenty-five active literacy councils in Texas communities affiliated with the Texas Literacy Council. The most active councils are located in San Antonio, Corpus Christi, Victoria, and Tyler. Almost 1,000 were enrolled in teaching centers in San Antonio during the year 1963-64.

All teaching in these programs is done by voluntary teachers trained in literacy workshops.

Programs to teach illiterates to read by television have been conducted by three or more television stations in Texas. The first program was carried by KWKC in Waco, Texas. Similar programs have been carried by WFAA in Dallas, Texas. The most recent such educational program was beamed by KLRN-TV, Austin, Texas. This program was beamed to the Austin and San Antonio areas. Little interest in the program was evidenced in Austin, while more than six hundred were enrolled in the television series in San Antonio. The organized efforts of the San Antonio Literacy Center greatly contributed to the effectiveness of the program in that area. Adults were encouraged to view the program and then go to a teaching literacy center for further study.

The television programs were not filmed in this region and often did not reflect the culture or thinking of the adults viewing the program. There is a real need for material prepared in this section for a new television series.

Junior and senior colleges have not been active in literacy training in recent years. Many classes in basic education were organized during the early days of the Veteran's Program following World War II.

About one hundred adults are enrolled in basic education offered by colleges in Texas. At least two of these programs are related to naturalization of aliens.

Fourteen public schools offer basic education to fewer than four hundred adults; many of these programs offer remedial training prerequisite to vocational type training. Some of these programs have not been very well defined.

The Manpower Development Training Act (MDTA) is a Federal law intended to alienate unemployment that is caused by lack of skills essential for available jobs.

The initial classes in literacy training in Texas are currently being conducted in San Antonio, Harlandale Independent School District and St. Philip's College, with the occupational objective being Maids, General. A total of 180 people will be enrolled. Other proposals in literacy and occupational training with the employment objectives of custodian, farming, and sewing machine operator are in the final stages of completion. One project in all-around farm machinery with literacy training has been approved to be conducted by Del Mar Technical Institute, Corpus Christi. Another project involving literacy training for preparation of cooks has been approved for Laredo.

Distribution of Illiteracy in Texas

The percentage of

- illiteracy is higher among Latin American and non-white groups than among the Anglo.
- illiteracy is higher in counties located in the extreme southwest, where eight counties have an illiteracy rate of more than 20 per cent.

According to the 1960 United States census, Texas has a total population of 9,581,528, of which 672,000 have less than five years schooling. There are 5,031,000 adults 25 years and older. The rate of illiteracy is 13.4 per cent within this age group.

There are 731,218 illiterates out of a population of 6,562,992 ages fourteen and older. The rate of illiteracy is 11 per cent for this age group.

There are eight counties with an illiteracy rate of more than 20 per cent. However, these counties are in sparsely populated areas. Thirty counties have an illiteracy rate between 10 and 20 per cent. These counties, located in the southwest and central areas of the State, have more than 123,277 illiterates.

The greatest concentration of illiterates is found in twenty-one metropolitan areas, where there are more than 350,000 illiterates. There has been a definite trend toward urbanization of the educationally deficient.

Population Distribution by Ethnic Groups

In the three ethnic groups fourteen years and older, the members are as follows: non-white - 779,316; Latin American - 852,597; Anglo - 4,931,079; giving a total of 6,562,992. There are a total of 731,218 individuals fourteen years and older with less than five years of schooling. The groups are divided as follows: Latin American - 325,392; Anglo - 259,853; non-white - 145,973.

There are 60,000 functional illiterates within the three ethnic groups between the ages of fourteen and twenty-four. Latin Americans make up the largest group with 35,000, which is more than 50 per cent.

Population Changes by Ethnic Groups

During the ten year period 1950-1960, the rate of growth of the non-white and the Anglo population was slightly more than 22 per cent, while the growth among Latin Americans was 37 per cent.

The Latin American group is expected to grow at a much faster rate than the other racial groups. It is predicted that the Latin American group will be about 22 per cent of the total population by 2000 A.D.

Alien Population

The presence of a large registered alien population appears to be a contributing factor to illiteracy.

There are 241,001 registered aliens in Texas of which 204,382 are Mexican aliens.

About 20,000 Mexican aliens legally enter the State each year. Many illegal entries are reported.

There are about 5,000 aliens naturalized each year. At the present rate of immigration, the number of aliens is increased by about 15,000 each year.

Illiteracy in Relation to Migrants

There are more than 128,000 migrants, including men, women, and children, in Texas.

More than 95,000 of these leave the State for employment, while 33,000 remain in the State for farm labor jobs.

There is a high rate of illiteracy in counties with the largest number of migrants. Hidalgo County, with the largest number, has an illiteracy rate of 18.5 per cent, while Maverick, Zavala, and Starr Counties, with more than 3,000 migrants each, have an illiteracy rate of more than 20 per cent.

The large number of children among the migrants presents some real educational problems. It is estimated that as many as 44,600 children, under sixteen years of age, are in the migrant group.

Five pilot projects have been organized to give accelerated educational programs to migrant children in South Texas. Five additional programs will be initiated during the 1964-65 school year.

About one-fourth of the illiterate population is located in the areas of high concentration of migrant workers.

Illiteracy in Relation to Crime

Examination of data showing educational level of Texas inmates indicates a high rate of illiteracy. A study done over a ten year period, 1950-1960, on all new inmates reveals that 16.9 per cent were completely illiterate, 12.7 per cent had a grade equivalence of three years, 12.5 per cent four years, and 13.5 per cent five years.

The results of 950 questionnaires administered to youth at the Gatesville State School for Boys show a low level of educational achievement among the boys and their parents.

Economic Status Related to Median School Year Completed and Median Family Income

The rate of illiteracy is higher in areas with a declining economy. Areas of expanding economy have lower rates of illiteracy.

In twelve counties with a median school year of less than seven years of schooling, the average median income is less than $2,500, whereas counties with a median of twelve years of schooling have a median family income of more than $5,600.

When the median educational level of a county is raised, the average family income is generally higher. The average median income of counties is increased at the rate of $500 for each additional year of schooling.

Unemployment Among Illiterates

It has not been possible to determine the full extent of unemployment among the educationally deficient, as many do not register in Texas Employment Commission offices.

According to data based on tabulation and estimates from active files in Texas Employment Commission offices, there were 76,867 adults unemployed with less than an eighth grade education. Of this number, 8,763 individuals had no formal schooling, 1,504 had one year of schooling, 3,532 had two years of schooling, 6,081 three years, and 6,962 had four years of schooling.

The number of individuals receiving surplus commodities is another indication of unemployment. Counties with a high rate of illiteracy received larger welfare in the form of commodities. For instance, in Duval County an average of 4,000 persons received commodities each month. Starr County, with a total population of 17,137, received commodities for about 5,000 individuals

each month. This means that almost one-third of the population of this county received welfare.

Almost twelve thousand persons were given commodities per month in Fort Worth, 12,487 in San Antonio, 17,932 in Harris County, and 13,991 in Dallas.

GENERAL RECOMMENDATIONS

The large number of educationally deficient adults will continue to create serious social and economic problems unless immediate steps are taken to relieve the problem.

The problem of training the educationally deficient adult is a major responsibility of the State educational system. The Texas Education Agency should assume the responsibility of initiating a program of basic and vocational training, setting standards and administrative policies.

The programs of basic education and vocational training for adults should be organized and administered in the local school system or in a local college or university.

Since illiteracy is more than an educational problem, other agencies, including Welfare, Health, and the Texas Employment Commission, should be involved in State and community projects. These agencies can help locate, enlist, and encourage the educationally deficient to attend programs of basic education and vocational training. Local groups from churches, civic clubs, parent-teacher associations, industry and business can encourage and promote local participation.

The following recommendations are made in an effort to meet the needs of the educationally deficient:

1. Encourage Governor John Connally to appoint a committee on Literacy and Basic Education to study ways of initiating a cooperative State attack upon illiteracy, using all the educational, social, welfare, and economic resources of the State. Such committee would encourage the cooperative efforts of all social and welfare agencies in enlisting, motivating, and training the educationally deficient.
2. Develop a philosophy of education based on the assumption that education is a life-long process and that the State has a responsibility in providing basic continuing education to the adult citizenship.
3. Establish a State program of adult basic education with full-time director. Such program of basic adult education should be in the Vocational Division of the Texas Education Agency. Basic education of adults should be closely related to vocational and citizenship training.
4. Encourage the Fifty-ninth Legislature to pass legislation authorizing the use of local and State funds in basic adult education.
5. Encourage local educational units to enforce compulsory school attendance laws. Special attention should be given to the school attendance of children of migrants.
6. Study the ten migrant project schools presently being conducted for children of migrants, with view to expand this program to include programs of basic education for the parents.
7. Encourage the Commissioner of Education and Governor of Texas to establish working relations with Government of Mexico to deal with some of the problems of illiteracy common to the State of Texas and to Mexico.
8. Promote further studies into the psychological and social needs of the educationally deficient.

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OFFICE OF EDUCATION

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RESEARCH PROJECT

EXPERIMENTAL PROGRAM 00018

Prepared by

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District 131

Aurora, Illinois

July 9, 1965

VT000065

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INTRODUCTION

In the fall of 1964, Aurora East High School introduced a program structured specifically for the academically handicapped. Enrollees in the Learning Center program were previously in a slow-learner program at the junior high level, a program begun in 1961 with 7th grade and carried through the three junior high years. While the self-contained (slow-learner) program at the junior high level was extended into the high school grades via the Learning Center Program, the latter took a greater emphasis in vocational orientation, schedule flexibility and work experience opportunities. The curriculum was vocationally orientated and included emphasis on remedial work in reading, English, spelling, and vocabulary. The program was partially financed by the State of Illinois and was officially designated the Learning Center Program with remedial education provided in a classroom termed the Learning Center.

In addition to the classroom curriculum, a work experience program was created to give the student of this program on-the-job experience. The job placements were within the school environment and supervision of the students in their positions was provided by the teachers who employed them.

The program was coordinated by personnel employed by the Board of Education, District 131, Aurora, Illinois. This personnel included a vocational counselor and a teacher-coordinator.

The responsibilities performed by the counselor were to assist all of the students in resolving problems that they may incur, aid them in building a choice of curricula best suited to their individual abilities and needs, and assist in their occupational orientation and the operation of the work program.

The coordinator performed such responsibilities as operating the Learning Center, communicating with other teachers concerning student progress in their classes, assisting in presenting occupational information, and assisting in the operation of the work program.

It is the purpose of this paper to present a brief summary of the program's structure, to evaluate its acceptance and effectiveness, and to provide knowledge of needed improvements and revisions.

LEARNING CENTER CLASSROOM PROGRAM

Statement of Philosophy:

The Sophomore Learning Center classroom curriculum is structured to educate the academically handicapped at his level of competency with the realization that the curriculum must provide success and enhancement to his interests.

Program for Occupational Orientation in the Classroom

The Occupational Program and Language Arts Program should be integrated so that the slow learner can observe how the two areas are inter-related in assisting him with his education.

A. Employment and the English Language

B. Social Security

C. The Application Blank

D. The Letter of Application

E. The Occupational interview

F. Discussion of vocationally orientated reading selections and related occupational material.

1. Occupational rudiments
2. Occupational performance
3. Occupational security

G. Library assignments

1. Answering want ads
2. Written reports on developments or elements of some occupational area.
3. Securing career information

Language Arts Program

A. The friendly letter

B. The sentence

1. Simple subject
2. Simple predicate
3. Fragments
4. Variety in sentence structure
5. Agreement
6. Repeated subjects
7. Basic common errors such as ain't, them there, that there, their, there, saw, seen, etc.
8. Punctuation and capitalization
9. Double negative
10. Penmanship

C. The paragraph

D. Spelling and vocabulary

E. Remedial reading

1. Improvement of comprehension skills
2. Improvement of word attack skills
3. Improvement of speed

F. Additional enrichment

1. The novel as reading enjoyment (Shane by Schaefer and The Pearl by Steinbeck are suggested for group study.)
2. Reading selections involving teen-agers
3. The magazine
4. The newspaper
5. Self analysis of reading through use of tape recorder
6. Special library assignments

a. Book reports (oral)
b. Written or oral summaries based on items in newspapers, encyclopedias, or magazines.
c. Understanding the card catalogue

THE WORK PROGRAM

Introduction:

It was assumed that the work program would provide these potential drop-outs with the opportunity to learn the responsibility necessary in an on-the-job situation and to gain financial assistance to pay for expenses incurred during the school year. It is believed that these expenses will contribute to this student's reason for dropping out of school since he is quite concerned if he cannot be a part of the normal school activity. For many of these students, the idea of earning some money and minimizing their school problems were probably their only reasons for remaining in school. Through the work program and its monetary attraction these students most likely have been provided a better chance to adjust to the society of the work world.

Work Program Statistics

Total enrollment -- 1964-1965	20
Per cent of students enrolled in the program	48.8%

Types of job responsibilities performed:

1. Performance of simple clerical duties for teachers such as filing or correcting papers.

2. Assisting the Industrial Arts Department with various duties such as cleaning up and maintaining order of tools, etc.
3. Monitor for the counselor's office.
4. Maintenance of the cars in the Driver's Education Department.
5. Shelving books in the library.
6. Employment in the cafeteria as dishwasher, etc.
7. Issuing equipment and performing various duties such as keeping the locker area clean, counting towels, and keeping score for the intramural activities for the Physical Education Department.
8. Packing equipment for the Chemistry Department.

Observations

The response by those teachers who employed these students was very positive in nature. Except for one or two boys, each student was punctual and performed his duties without complaint and efficiently.

Generally speaking, these students should have job situations that require more physical ability than mental ability. However, in a mental maturity test these students as a whole scored very low on the non-language section which seems to indicate that even in this area they are very limited in the type of physical labor they are able to perform. The types of job responsibilities listed should indicate partially what type of labor this student can perform successfully.

Two case histories can be illustrated to exemplify successful work assignments. One boy was employed by the track coach to help with various duties during the track season. Before his employment, the student was quite withdrawn and did not mingle well with other students; but as a result of this work assignment, he was able to associate with students more readily. It was the opinion of the track coach that through the association with the track team, this student learned to associate and converse more freely with his peer group.

The other student was a girl who came from an undesirable home environment and as a result felt rejected. She was irresponsible in her dress and her organization of everyday activities. After her employment in the guidance office as a monitor, she became changed in her feelings of rejection. She realized that someone trusted her and was interested in helping her enough to employ her and give her the opportunity to reveal that she was a responsible person. After some time in this work assignment she began to show signs of improvement in her attitude toward life, her responsibility concerning daily activities, and in her personal grooming.

ATTENDANCE AND ACADEMIC RECORDS

General Record

Average per cent of days in attendance per student	91.4%
Average per cent of days absent per student	8.5%
Average number of days absent per student	15.4 days

Dropout Record

Total enrollment in September, 1964	48
Total dropouts as of June, 1965	7
Total enrollment for September, 1965 (Juniors)	41
Per cent of students remaining in school	85%

PART I

A comparison of the attendance record of work program enrollees to the attendance record of those expressing no desire to be enrolled or who had part-time work outside the school environment. The comparison is computed for the fourth quarter since this is the quarter of the school year when absence seems most acute.

	Not Enrolled In Work Program	Enrolled In Work Program
Number of students	21	20
Days Absent	98	57
Mean	4.66	2.85
Per cent of days	10%	6%

PART II

A comparison of attendance third quarter before enrollment in the work program to fourth quarter attendance after enrollment in the work program.

		(Number of absences)	
Student	Enrollment Date	Quarter Preceding	Quarter Following
A	Early fourth quarter	3	0
B	Early fourth quarter	8	1

(cont'd)

Student	Enrollment Date	(Number of absences) Quarter Preceding	Quarter Following
C	Late fourth quarter	6	2
D	Early fourth quarter	20	3
E	Early fourth quarter	5	3
F	Early fourth quarter	13	6
G	Early fourth quarter	4	4
H	Fourth quarter	1	0
I	Fourth quarter	2	0
J	Fourth quarter	6	1
	Totals	68 days	20 days
	Mean	6.8 days	2.0 days

PART III

A comparison of the academic record third quarter (before enrollment in work program) to the academic record fourth quarter (after enrollment). Use the following table as a guide: F--0, D--1, C--2, B--3, A--4.

	Third Quarter Averages	Fourth Quarter Averages
	1.8	2.1
	2.0	2.2
	1.4	.8
	2.0	3.6
	1.6	1.0
	2.4	2.6
	1.8	2.0
	1.6	1.6 (Brought two F's up to D's)
	1.5	1.8
	.8	1.5
Totals	16.9	19.2
Mean	1.69	1.92

PART IV

A comparison of attendance of students enrolled in the work program throughout the year to attendance of students enrolled fourth quarter only.

Absence record for students enrolled all year

Student	
A	16
B	12
C	2
D	8
E	35
F	5
G	11
H	8
I	14
J	12
Totals	123 days
Mean	12.3 days

Absence record for Students enrolled Fourth Quarter only.

Student	
A	12
B	27
C	14
D	10
E	13
F	2
G	9
H	10
I	36
J	9
	142 days
	14.2 days

Observations

The results of the comparisons in parts I, II, and III seem to indicate that employment in the work program has an influence on the students attendance and academic records. The rise in the academic record could seemingly be attributed to the idea that regular attendance provides for higher academic achievement.

The results in part IV seem to indicate that employment of the student must be done earlier in the year as those in employment all year have a better attendence record. In addition, the comparison in part III seems to indicate that earlier employment would also improve academic achievement, again probably as a result of the better attendance.

CALIFORNIA TEST OF MENTAL MATURITY

Date of testing: September, 1964

Grade 10

Short form

Number absent 3

Learning Center Intelligence Scores

	Intelligence Quotient		
	Language	Non-Language	Total
	66	63	68
	67	64	69
	70	65	72
	71	69	73
	72	71	74
	73	72	75
	74	73	76
	75	76	78
	77	78	79
	79	79	80
	80	81	81
	82	83	82
	83	84	83
	88	85	84
	89	87	85
	90	88	86
	92	90	87
	95	92	88
	98	95	91
	100	97	92
	103	98	101
		102	
		103	
		105	
Mean	80.97	83.21	82.34
Median	80.00	83.50	81.00

Chronological Age (Average) 15-9

Mental Age (Average) 13-2

Observations

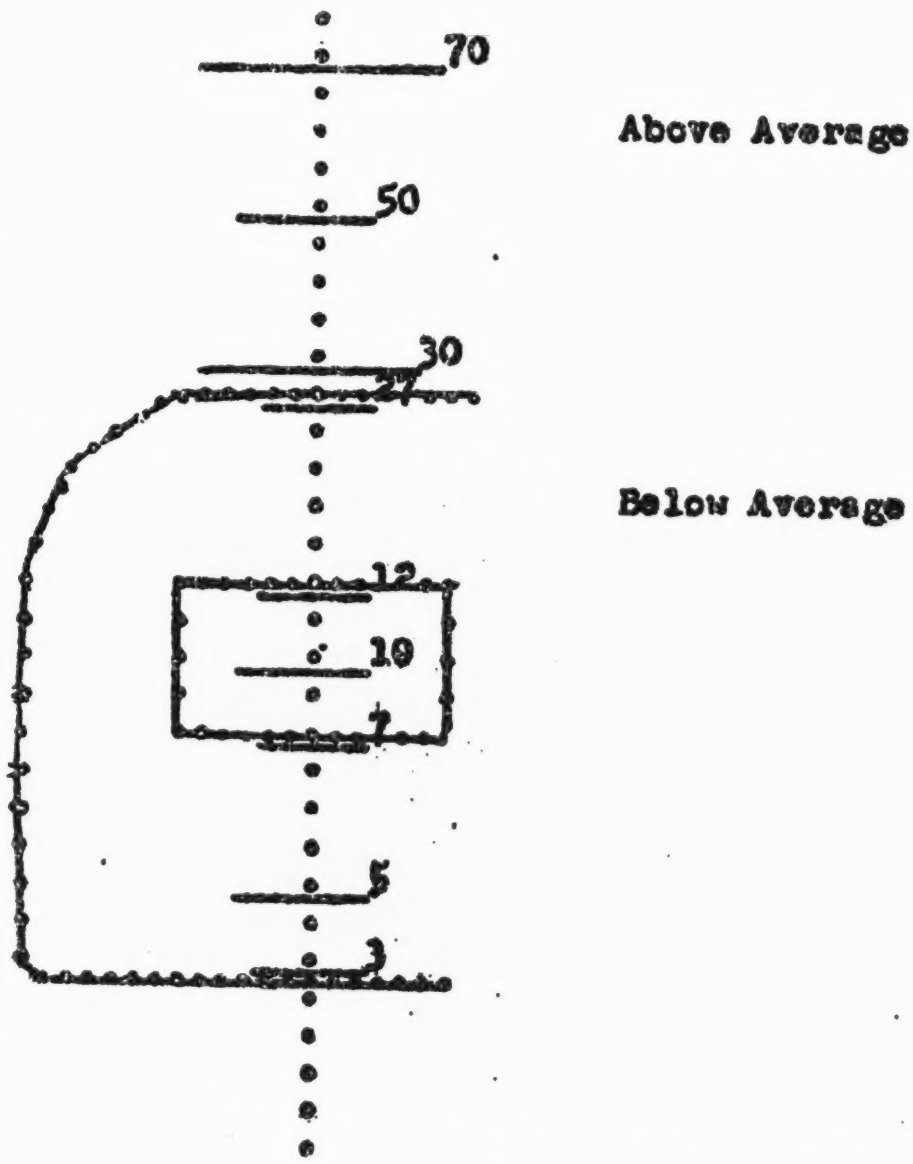
The scores reveal a higher intelligence quotient in the area of non-language skills which seems to indicate that this student's curriculum should be and is vocational in structure.

The assumption held by many that these students (well below average in language skills) should be grouped separately in the school program seems valid. A second assumption, however, that because these students are low in language skill performances infers that they can perform well in mechanical, manual or other non-language skills does not appear valid. These students still need to be grouped together for maximum performance potential.

If one studies the distribution of scores, he readily sees that within this slow group lies a range of individual differences from 63 to 105. This seemingly supports the need for individualized instruction for these students and the need for restricting classroom enrollment (twelve or fifteen is suggested) to provide for the individualized instruction.

PERCENTILE

RANK



READING PERFORMANCE SCORES

SRA Reading Laboratory Test

Date of Test: June, 1965

Number of students: 25 (English classes only)

Listed are the reading level scores from lowest to highest including the expected reading level. (The expected reading level grade score is the grade at which the student should be reading.) Note: The expected reading level score is based on I.Q. and age.

	Present Reading Level	Expected Reading Level
	1.0	6.0
	3.0	6.7
	3.5	6.8
	4.0	6.9
	5.0	7.1
	6.0	7.4
		7.6
		7.8
		8.0
		8.1
		8.2
		8.8
		9.1
		9.6
		9.7
Mean	4.23	7.51
Median	3.75	7.80

RESULTS OF QUESTIONNAIRE DISTRIBUTED TO FACULTY MEMBERS

To teachers who had Learning Center students in their classes:

1. A. What changes have you observed in these students over the year?

ATTITUDE:	1. Improved	4
	2. Some improvement	3
	3. No change	3
	4. Students have been cooperative, but the teacher has seen no change.	4
	5. Improved as their interest increased	1
	6. Change for the good in some students, others for the worse.	1
	Total	16

BEHAVIOR:	1. Improved	4
	2. Some improvement	1
	3. No change	4
	4. Satisfactory all year	6
	5. No comment	1
	Total	16

ACHIEVEMENT:	1. Improved	9
	2. Some improvement	2
	3. No change (poor)	3
	4. Tried but achieved very little	1
	5. No comment	1
	Total	16

PERSONAL GROOMING:	1. Improved	7
	2. Some Improvement	2
	3. No change (poor)	3
	4. Much Improved	2
	5. Satisfactory	1
	6. No comment	1
	Total	16

B. If there were any changes, what do you think caused them? (The number of times a cause is repeated is given to the right.)

1. These young people have succeeded more often and failed less often. Success	2
2. The work program has stimulated several of the boys. Also they appreciated the help they are receiving.	1
3. Someone caring what they do both academically and in life.	4
4. Study conditions	1
5. The setting she was in forced her to mature	1
6. No comment	6
7. Felt the student was still apathetic toward school	1

2. What are your reactions concerning the communication between you, the counselor, and the coordinator of the program?

1.	Excellent	1
2.	Communication adequate	2
3.	Communication should be improved	7
4.	Communication should be improved especially at the beginning of the year.	1
5.	The individual teacher should be responsible for getting information once he knows he has one of the L.C. students.	1
6.	No communication	2
7.	No comment	2
	Total	16

3. According to hearsay among students in the Learning Center, how would you term the program?

Successful	3
Moderately successful	5
Unsuccessful	0
Have heard nothing	8
Total	16

Additional comments by the teachers:

Two teachers indicated that some of the students did not like to be associated with the Learning Center. (A tally was taken in the fall and eight of the students expressed this feeling, but in the spring a similar tally was taken and only three expressed this feeling.)

The questions herein were asked of all the teachers; therefore their reactions will be combined in giving the results.

1. Based on comments overheard among other teachers, how would you term the program?

Successful	20
Moderately successful	13
Unsuccessful	1
No comment or didn't feel qualified to evaluate.	12
Total	46

2. From your personal reactions, how would you term the program?

Successful	19
Moderately successful	11
Unsuccessful	0
No comment or didn't feel qualified to evaluate.	16
Total	46

3. What changes would you suggest for improvement of the program in the future?

a. For these pupils to achieve to any significant degree, they should be put in a typing class by themselves with no more than eight or ten in the class. They would then get the personal attention they need.

b. Let the faculty know who are in the program at the start of the new school year. (This will definitely be done earlier next year.)*

c. Assign the students to a work program immediately. (It is the opinion that this student needs at least two weeks to adjust to his new school environment if he is a sophomore.)

d. Inform the teachers to encourage the students. (Very good suggestion, but isn't it probable that teachers should be encouraging all students all of the time and should not have to be told to do so?)

e. Friendship is important--do schedule single Learning Center students in a class with at least one or two others.

f. Closer coordination between teacher, coordinator, and counselor.

g. Time permitting, have the coordinator observe the slow learners in some of their classes and discuss some of the students problems with the teacher in the classroom. (Excellent suggestion, but as you point out, time is limited.)

h. All classes involving these young people should be kept under 20.

i. More information distributed to teachers concerning students and the program.

j. Give coordinator even more control over this group. (The suggestion is not understood too well, but the coordinator feels that he has been allowed more than enough control and room for experimentation.)

*Parenthesis denote comments made by the coordinator.

k. Keep the students in classes they can possibly handle. (This has been strived for in scheduling, though it cannot always be achieved.)

l. Do not mix these students in classes containing students of higher ability. (more grouping)

m. More stress on ethical and moral values as they relate to the student.

n. More homework, including reading. (Experiments with homework on this group of students indicated negative reactions. Assignments were never or seldom completed, even under threat, etc. More class time devoted to individual work proved more advantageous than allowing study time to be used for homework.)

o. Extended to more students.

p. Larger room; more facilities. (Presently a larger room containing more facilities is being constructed.)

q. A "special" diploma for these students who never attain anything near the level of the regular classes and who remain here and pass the Learning Center requirements for graduation.

r. If the teachers know that these people will not receive a regular diploma, they will possibly be a little more lenient in their requirements for the work expected of the group.

s. More emphasis on remedial reading and on-the-job program (work program). (Both areas are being intensified for next year.)

t. More practical work. (Three-fourths of the classroom curriculum is devoted to practical aspirations.)

Number of questionnaires distributed	88
Number of completed forms returned	46
Per cent completed and returned	52% (approx.)

RESULTS OF QUESTIONNAIRE DISTRIBUTED TO STUDENTS IN THE LEARNING CENTER CLASSROOM PROGRAM

(English classes only)

1. Did you like to read before coming into this class?

2. Do you enjoy reading more, less, or the same since coming into this class?

Number of students indicating "yes" with feelings still the same.

Yes	8
Same	8

Number of students indicating "yes" but now enjoying reading more.

Yes	7
More	7

Number of students indicating "no" but now enjoy reading more.

No	6
More	6

Number of students indicating "no" with feelings still the same.

No	4
More	4

Total students who always liked reading	8
Total students who still dislike reading	4

Observations

Those students who expressed a dislike for reading after a year of work in the program gave reasons such as too confining, it takes too much time to read, too tiresome, too difficult, and not constructive. These opinions concerning reading were asked of books, and when they were asked their feelings concerning magazines and newspapers, the students revealed that they had enjoyed reading them because they were short in length and had pictures in them. It does seem important to associate closely magazines and newspapers with the reading curriculum for this student, although one should still be attempting to instill in them the fact that books can be important vehicles for improvement of self worth.

Those students who indicated that they enjoyed reading more gave various reasons such as finding books that were interesting or more mature. They also pointed out that they enjoyed reading from paperback books. (When asked why, they couldn't explain the reason. But paperbacks did have a surprisingly positive affect upon them, possibly because the books have a more mature appeal to the students and less of a book-look. There was one instance when a student would not read a story contained in a regular hard bound book, but he did read the very same story when it was presented to him some weeks later in paperback form.) Generally many of them indicated that they enjoyed reading more because they could see a need as they began to understand directions and read tests more easily in their other classes.

Their comments concerning the remaining questions revealed positive reactions to class time devoted to oral discussion of occupational information and to individual assistance by the coordinator in discussing and resolving areas of difficulty.

They also expressed a dislike for workbooks of a highly detailed nature. It is also recommended by the coordinator that workbooks should be kept at an absolute minimum and if possible, completely abandoned. The coordinator also discovered that if the topics are carefully screened to the interests of the students, those students can readily enjoy oral discussion and discuss the topics quite well. Experiments this year with oral discussion strongly support the need for this type of student to experience oral discussion as it was found that his verbal expression and communication were sadly lacking in development. It is quite possible that through oral work and discussion, this student's writing ability could improve more rapidly than previous years. Another possibility of improvement through oral discussion might be his reading ability as he hears words, speaks them, and assimilates new ones.

PARENTAL ACCEPTANCE

Little provision was made to acquire parental evaluation of the program as orientation given to them concerning the program was very skeletal. During the year via telephone conversation and open house, the Learning Center personnel was able to assimilate some reactions. Generally speaking, these reactions were positive and most parents believed the program would benefit their child because he would receive "special attention."

Arrangements are now under way to improve parental orientation. This was begun this spring by mailing each parent a letter which explained the program and its benefits to their child. This letter will be followed in the fall with a personal visit by the coordinator and/or the counselor.

CONCLUSIONS

Based on the surveys and the personal reactions of the counselor and the coordinator, a list of what is believed to be the strengths and weaknesses of the program is presented as follows:

<u>Strengths</u> (They are not listed in order of importance.)

1. Theory that success breeds success.
2. Occupational orientation in the classroom.
3. Someone caring enough to help them with academic and living problems.
4. A maximum of twelve students per class.
5. A counselor especially for this group.
6. The use of role playing during classroom discussion of the job interview.
7. Stimulation of interest in reading.
8. The program most likely had a strong influence in reducing dropouts among these students.
9. Class curriculum presented at their level of ability and interest.
10. A practical use for English and subsidiaries was presented.
11. Two panel discussions presented to inform teachers of the program.
12. The work program which gave the student an opportunity to learn on-the-job responsibility and gain some financial assistance.

<u>Weaknesses</u> (They are not given in order of importance.)

1. Communication between faculty and Learning Center personnel needs to be improved in inter-discussion of student-academic and discipline problems.
2. Because of scheduling difficulties, personnel were unable to provide anticipated field trips.

3. More orientation provided for parents who have children in the program.

4. More homogeneous grouping of the students in their industrial arts classes.

5. An achievement test was not given in the fall of 1964 and again in the spring of 1965 to more specifically measure student achievement.

<u>Note</u>: It is hoped that these weaknesses can be resolved during the 1965-66 school year.

EXPANSION PLANS

The general design of this year's program will be maintained except for the necessary revisions and changes. But those students who were enrolled in the tenth grade program of last school year will be moved to an eleventh grade program designed to continue their educational experiences from the tenth grade program.

Their educational experiences for the eleventh grade will consist of English and American history (both required subjects for graduation) and a more sophisticated work program; namely, a cooperative work study program wherein these students would have occupational assignments in the community.

Also included in the plans for next year will be the addition of two new classrooms with facilities designed specifically for the enhancement of this student's educational experiences. Some highlights will include special study carrels for individual study and projects, an area in the center of the room for group discussion, and possibly a small section which will contain a library of occupational information.

CLOSING STATEMENT

The coordinator strongly believes that a sophisticated program for these students must attempt to provide a well rounded curriculum consisting of the academic, the vocational, and the realistic experiences that will provide them with the opportunity to develop responsibility and integrity within their personalities.

LIST OF OCCUPATIONS AND GUIDANCE TOPICS BEING DISCUSSED BY STUDENTS IN THE LEARNING CENTER

Application forms
Appreciation for good work
Behavior in a job interview
Behavior in emergencies
Budgeting money
Cooperation
Courtesy
Co-worker relationships
Customer relations
Dating
Discount buying
Double dating
Driver responsibility
Driving safety
Efficiency on the job
Employer-employee relationships
Family relationships
Financial responsibility
Good grooming
Improving one's personality
Interview techniques
Job satisfactions
Looking for jobs
Performance on the job
Qualifications for job
References
Responsibility on the job
Self-evaluation
Success on the job
Supervisor attitudes and responsibilities
Telephone usage
Union regulations and benefits
Use of Leisure time
Using newspaper want ads

Budgeting money
Budgeting time
Child care
Courtesy on the job
Customer relations
Diet
Driving courtesy
Employers' appreciation of good workers
Entertaining
Environmental conditions on jobs
Family responsibilities
Fringe benefits
Health habits

Patriotism
Personality and jobs
Physical fitness
Pride in one's work
Promotion opportunities
Punctuality
Responsibility on the job
Self-understanding
Supervisor-worker relationships
Training on the job
Use of leisure time

Accepting advice
Accepting criticism
Adapting to change
Apologizing for misbehavior
Asking for advice
Behavior in social situations
Budgeting money
Child care
Consumer credit
Cooperation
Correcting mistakes
Dating
Dealing with disappointment
Facing responsibility
Family problems
Family responsibility

Financial responsibility
Helping others
Honesty
Improving job performance
Installment buying
Job ambition
Making decisions
Physical fitness
Problems of older workers
Promotion opportunities
Punctuality

Responsibility on the job
Self-evaluation

List of occupations, etc. (cont'd)

Helping others
Hobbies and jobs
Honesty
Insurance protection
Job satisfaction
Part-time jobs

Employer's appreciation of good workers
Family cooperation
Fringe benefits
Good citizenship
Handling emergencies
Helping others
Honesty
Interview techniques
Job mobility
Job satisfactions
Part-time jobs
Planning for the future
Pride in one's work
Promotion opportunities
Respect for older people
Responsibility on the job
Responsibility to the community
Supervisor-worker relationships
Trustworthiness
Use of Leisure time
Accepting criticism
Accepting personal limitations
Asking for advice
Behavior in social situations
Controlling one's temper
Cooperation
Courage
Dating
Driving safety
Family responsibility
Family sharing
Handling disappointments

Accepting responsibility
Changing jobs
Community awareness
Community pride
Cooperation
Dignity of all honest work

Handling emergencies
Hobbies
Improving one's personality
Making and keeping friends
Marriage responsibilities
Physical fitness
Planning for trips
Popularity
Respect for older people
Respect for the rights of others
Safety in the home
Self-evaluation
Sibling relationships
Sportsmanship
Use of Leisure time
Water safety

Learning Center Course of Study for Math

Sophomore Year

1st Semester

A. General review of basic processes

1. Addition and subtraction
2. Multiplication and division
3. Fractions

a. Reduction of fractions
b. Addition of fractions
c. Subtraction of fractions
d. Multiplication of fractions
e. Division of fractions

4. Decimals

a. Reading and writing decimals
b. Changing the form of decimals
c. Addition and subtraction of decimals
d. Multiplication of decimals
e. Division of decimals

B. Practical application of basic processes

1. Banking

a. Check writing
b. Endorsements
c. Bank statements
d. Bank deposits
e. Savings account

2. Payrolls

a. Total hours
B. Total wages
c. Social Security
d. Overtime
e. Withholding tax

3. Sales slips

a. Total purchase price
b. Sales tax
c. Discounts
d. Making change

4. Charge accounts and loans

   a. Interest
   b. Monthly payments
   c. Installment buying
   d. Good credit rating

5. Percentage

   a. Percentage and rate
   b. Base

C. Reinforcement of basic processes

   1. Addition, subtraction, multiplication and division
   2. Fractions
   3. Decimals

D. Review of certain practical applications

   1. Payrolls
   2. Interest
   3. Banking

2nd semester

A. Assignment of project covering certain practical applications

   1. Payroll
   2. Check writing
   3. Interest and paying on time
   4. Sales slips

B. Long measurements

   1. Yards
   2. Feet and inches
   3. Board feet
   4. Square feet and square inches
   5. Distance and cost of gasoline to travel distance
   6. Measuring distance on maps

C. Weight

   1. Pounds and ounches
   2. Tons

D. Dry measurements

   1. Quarts
   2. Pints
   3. Gallons
   4. Dozens

E. Meter reading

1. Electric meters
2. Gas meters
3. Water meters

F. Story problems

G. Profit and loss

1. Business
2. The automobile

a. Expense of purchasing
b. Expense of operating

3. Home

a. Mortgage
b. Expenses of operating a home and using thrift in buying for the home

1. Food
2. Furniture
3. Clothing
4. Incidentals

H. Project concerning certain practical areas

1. Review of whole numbers
2. Insurance
3. Tax
4. Review of denominate numbers
5. Story problems
6. Thrift in buying for the home
7. Installment buying
8. Saving wisely

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AN ANNOTATED BIBLIOGRAPHY FOR YOUNG AND ADULT FARMER EDUCATION

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PREFACE

This annotated bibliography for adult and young farmer programs is structured for professional educators, supervisors, administrators, and teachers who are often confronted with the problem of adequate reference for resource information to cope with professional responsibilities in young and adult farmer programs.

The Agricultural Education Magazines (July 1959 to August 1965) are the sources of the annotated bibliographical data. Many of the articles are current and reflect findings from empirical investigations by individuals of great competency and interest in adult and young farmer education.

The references are conveniently categorized in the sub-areas which form the Table of Contents as follows:

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AN ANNOTATED BIBLIOGRAPHY FROM THE AGRICULTURAL EDUCATION MAGAZINE
for
"Young and Adult Farmer Education"

I. PHILOSOPHY AND OBJECTIVES

CLARY, J. R. and R. J. DENNY. "Use Local People To Review Local Programs". Vol. 36, No. 12 (June 1964) Pp. 270-273.

The values, objectives, steps and guide for self study of vocational agriculture programs are used.

DIMICK, DONALD E. "Improving Post-High School Training". Vol. 33, No. 5 (Nov. 1960) Pp. 106-107.

A school administrator projects his views on improving post-high school training.

HUMMEL, RICHARD, and H. C. HORSTMAN. "Young and Adult Farmer Classes Should Be Separate - Can Be Combined; Both Sides of the Issue". Vol. 37, No. 5 (Nov.1964) Pp. 114-115.

A scholarly commentary on both sides of the issue.

PHIPPS, LLOYD J. "Replanning Young and Adult Farmer Education". Vol 33, No. 2 (Aug. 1960) P. 27.

Many citizens, local, state and national should be involved in planning out-of-school farmer education.

THOMPSON, JOHN F. "Adjustment in Adult Education in Agriculture". Vol. 35, No. 5 (Dec. 1962) P. 116.

The impact of adult farmer education in the program of Agricultural Education and the need for adjustments are shared.

II. NEEDS AND INTERESTS

ABRAHAMS, MORRIS N. "The Need for Young Farmer Education". Vol. 32, No. 3 (Sept. 1959) Pp. 56-57.

A study of the needs for young farmer education in Louisiana reveals a continued need for a balanced program.

ANDERSON, ROBERT L. "Ten Ways to Please Adult Farmers". Vol. 36, No. 4 (Oct. 1963) Pp. 81-82.

A listing of ten ways to satisfy adult farmers is demonstrated in Nebraska.

BEAM, H. E. "The Factor of Leadership Style in Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) Pp. 112-113.

An analysis is made of the leadership styles and group cohesion and recommendations are made for modifying one's technique for effectiveness.

BENTLY, RALPH B. and JAMES P. CLOUSE. "Determining the Tractor Phase of Farm Mechanics". Vol. 32, No. 9 (March 1960) Pp. 203-206.

Tractor needs of farmers are revealed in this Purdue study.

BOUCHER, LEON W. "Interest Groups - A Guide to Adult Farmer Course Organization". Vol. 35, No. 5 (Dec. 1962) Pp. 123-124.

Another way of adequately meeting needs of adult farmers is the Enterprise Interest Approach - Concentrating instruction in a given area.

BYRAM, HAROLD. "Agricultural Education in Central America". Vol. 37, No. 11 (May 1965) Pp. 276-79.

A description of the provisions for agricultural education in Central America and Panama with emphasis on secondary and post secondary levels.

DAVIS, PHILLIP B. "Selected Factors Associated with Attendance at Adult Farmer Classes". Vol. 33, No. 8 (Feb. 1961) Pp. 179-181.

Some selected factors associated with attendance at Adult Farmer Classes.

DONALD, E. L., J. L. SMITH and G. T. DOWDY. "Assisting the Part-Time Farmer". Vol. 37, No. 10 (April 1965) Pp. 244-245.

This study revealed the upsurge in part-time farming in Alabama during the past decade, and the need for technical assistance by Vocational Agriculture teachers to work with this sector of the clientele.

HARRIS, R. R. "Farmers' Need for Shop Abilities in Georgia". Vol. 33, No. 7 (Jan. 1961) Pp. 148-50.

A doctoral study to determine shop abilities needed.

HOLTZ, ALFRED H. "Approved Practices Studied in South Dakota". Vol. 35, No. 5 (Dec. 1962) Pp. 125-26.

A study reveals correlation of approved practices to the following factors; age of farmers, size of farms and farming status.

LESTER, H. T. "Establishing Young Men in a Farm Business". Vol. 34, No. 2 (Aug. 1961) Pp. 42-44.

According to this study the earlier one starts to farm, the better. Also, considerable education is required by farmers to guarantee success today.

LOCKWOOD, LARRY, and C. E. BUNDY. "What Dairymen Need to Know". Vol. 37, No. 7 (Feb. 1965) Pp. 202-203.

A study to determine the compentencies needed to succeed in dairying -- forty-six are listed as needed by farmers.

PETERSON, MILO J. "Profit is the Goal of Adult Farmer Training". Vol. 36, No. 8 (Feb. 1964) Pp. 182-84.

The authors propose reorganization of school districts; good state level leadership; breaking of tradition; base programs upon needs of farmers to enhance profit assurance for adult farmers.

REDD, R. T. "Help Young Farmers Become Established". Vol. 32, No. 3 (Sept. 1959) Pp. 52-53.

A suggested list of what teachers can do to help young farmers is centered around three problems -- financing, labor and procurement of land.

ROSS, HENRY. "When You Visit a Tunisian Farmer". Vol. 37, No. 11 (May 1965) Pp. 284-85.

The author shares experiences of visits to farmers in Tunisia while abroad and their deviant pattern of agriculture.

STROUTMAN, JAMES J. "Needs and Interests of Young Farmers". Vol. 32, No. 3 (Sept. 1959) Pp. 57-58.

This study determined interests and needs of a young farmer class in Iowa.

SWANSON, ROBERT M. "Opportunities for Establishment of Young Farmers in Marengo, Iowa Community". Vol. 35, No. 5 (Dec. 1962) Pp. 115-116.

A study to determine needs for young farmers in an Iowa Community.

TODD, JOHN D. and A. J. PAULUS. "What Causes Farmers to Attend Adult Classes?". Vol. 33, No. 2 (Aug. 1960) P. 32.

A study was conducted to determine reasons why farmers attended and did not attend adult classes.

TUGEND, DAVID M. "Maryland Farmers Suggest Farm Mechanics Curriculum". Vol. 36, No. 9 (March 1964) Pp. 210-11.

A survey reveals that Maryland farmers want and need strong farm mechanics curriculum.

ZIGLER, JACOB S. "Part-time Farming -- A Way of Life". Vol. 37, No. 10 (April 1965) Pp. 243-244.

Part-time farming is consistent with the present era and vocational agriculture teachers should work closely with this category of farm clientele.

III. ORGANIZATION AND PROGRAM

ABERCROMBIE, THOMAS V. "Helping Farmers Keep Up-To-Date". Vol. 33, No. 4 (Oct. 1960) P. 93.

A unique Farmer Ranch Club is organized to meet educational and social needs and it is oriented toward keeping clientele up-to-date by mass media and by inviting eminent speakers.

BAIL, JOE P. "Involving People Helps". Vol. 34, No. 1 (July 1961) P. 10.

In developing a "Climate of Understanding" in vocational agriculture, one should involve more people in the program of agricultural education.

CAMPBELL, J. M. "Mobilizing a State Effort for Young Farmer Program". Vol. 37, No. 5 (Nov. 1964) Pp. 108-110.

More emphasis is needed on well planned farm instruction, young farmer organization, larger farm units, increased specialization, increased mechanization, higher capital requirements, and in-service training of teachers.

COLEMAN, WICKAM B. "Young Farmer Program Keeps Members Busy". Vol. 37, No. 5 (Nov. 1964) P. 120.

Broad programs for diversified agriculture should undergird planning along with leadership responsiblities.

DUGDALE, BRYAN. "The Use of Advisory Committees for a Wisconsin Young and Adult Farmer Program". Vol. 35, No. 3 (Oct. 1963) Pp. 68-69.

The writer has used a modified plan of an advisory council with adult and young farmer classes to plan more effective out-of-school programs.

DUMAS, HOWARD W. "Five Ways to a New Era in Adult Farmer Education". Vol. 36, No. 4 (Oct. 1963) Pp. 77-78.

A Nebraska educator relates five ways to upgrade adult farmer education.

FIDLER, LLOYD B. "More Effective Young and Adult Farmer Courses". Vol. 33, No. 2 (Aug. 1960) Pp. 45-46.

A plan is suggested for conducting effective and functional young farmer courses oriented toward small interest groups as opposed to groups based upon age.

FULLER, JOHN. "Michigan Teachers Work with County Agents on Adult Farmer Courses." Vol. 35, No. 5 (Dec. 1962) Pp. 114-115.

An account is given of joint efforts by vocational agriculture teachers and county agents in Michigan in conduting short courses for adult farmers.

HEATH, E. PHILLIPS. "Space Ship Philosophy for Young Adult Farmer Programs". Vol. 33, No. 5 (Nov. 1960) Pp. 107-110.

Vocational agriculture teachers should be aware that there is plenty of room at the top for young farmers. Some program techinques are listed.

JOHNSON, W. T. SR. "A Supervisory Effort in Adult Education for Negro Farmers". Vol. 35, No. 5 (Dec. 1962) P. 117.

A success story on adult farmer education for Negroes in North Carolina as state supervisors work with small groups of farmers and teachers throughout the state.

KENNEDY, FRANK E. "Activities for Young Farmers". Vol. 33, No. 2 (Aug. 1960) Pp. 28-30.

A diversified program of work is published of a banner young farmer program along with implementation procedures.

LOREEN, C. OSCAR. "Factors Associated with Adult Class Development". Vol. 32, No. 3 (Sept. 1959) Pp. 54-56.

This study revealed the factors (attitude, training, ability, etc.) associated with adult class development.

MARSHALL, AVERY E. "A Packaged Young Farmer Program". Vol. 36, No. 4 (Oct. 1963) Pp. 82-83.

A plan in Wisconsin borrowed from merchandising "Packaging" which is paying off in adult and young farmer classes.

MURPHY, ANTHONY. "Joint Adult Meetings in Vocational Agriculture". Vol. 33, No. 2 (Aug. 1960) Pp. 34-42.

A joint effort in which three vocational agriculture departments united their adult farmer programs in a small Louisiana Parish.

MYERS, PRINGLE J. "For Teachers of Young Farmers". Vol. 37, No. 5 (Nov. 1964) Pp. 111-112.

Suggestions for successful young farmer classes are listed.

NORTON, WESLEY. "Anderson Community Supports their Young Farmer Program". Vol. 36, No. 5 (Nov. 1963) Pp. 113-114.

A program for young farmers in California based upon the premises that a young farmer program will provide education, cooperative participation leadership development, community service, fun and followship.

PARKER, JOHN FREDERICK. "Ways to Improve Adult Farmer Classes". Vol. 35, No. 5 (Dec. 1962) Pp. 116-17.

Guidelines for upgrading adult farmer education.

PHIPPS, LLOYD J. "Conducting Comprehensive Education Programs for Beginning Farmers". Vol. 32, No. 6 (Dec. 1959) Pp. 127-29.

Empirical data from a study in Illinois in five centers revealed that six major factors are pertinent in conducting comprehensive programs for beginning farmers, as follows: status, wives wanted in classes, inventories as a basis, course of study, year-round meetings and systematic instruction.

RILEY, HAROLD E. "A Countywide Approach to Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) P. 118.

A success story that gets results in a countywide approach to adult farmer education.

WARMBROD, J. ROBERT. "Reimbursement Policies Influence Young and Adult Farmer Education". Vol. 37, No. 6 (Dec. 1964) Pp. 148-49.

A study of the relationship between distributing state and federal funds to local districts and the scope of the young and adult farmer programs in selected states from 1950-1960.

IV. SUBJECT MATTER CONTENT - AGRICULTURAL MECHANICS

BEAR, W. FORREST. "Projects for Farm Mechanic Programs". Vol. 33, No. 7 (Jan. 1961) Pp. 162-63.

Some ideal suggestions for securing projects for the young and adult farmers are listed.

BENTLEY, RALPH R. and JAMES P. CLOUSE. "Plow and Mower Phases of Farm Mechanics". Vol. 33, No. 7 (Jan. 1961) Pp. 151-53.

The activities conerning maintenance and repair of the plow and mower that should be included in the farm mechanics course of study.

BLAKE, DUANE L. and NORMAN N. ROBINSON. "Content for Today's Farm Machinery Instruction". Vol. 37, No. 8 (March 1963) Pp. 226-27.

A study to determine content for farm machinery instruction.

BRISTOL, BENTON K. "Teachers Evaluate Farm Mechanics Plans". Vol. 33, No. 7 (Jan. 1961) Pp. 157-58.

This study secured data that provided a basis for developing additional farm mechanics plans of value to teachers and students.

ELKINS, MELVIN J. "Beating the High Cost of Farm Machinery". Vol. 33, No. 7 (Jan. 1961) Pp. 161-62.

Some ideas for beating the exorbitant cost of farm machinery and guidelines on purchasing procedures for the farmer.

HENDERSON, HARRY D. "The Modular Farm Shop". Vol. 33, No. 7 (Jan. 1961) Pp. 150-51.

The Modular Farm Shop (an added flexibility to the teaching of agricultural mechanics).

HENDERSON, HARRY D. and CHARLES SALOUTOS. "Teaching Farm Building Construction". Vol. 36, No. 9 (March 1964) Pp. 200-202.

A suggested topic outline for farm structure units.

JACOBS, C. O. "Making Tool Storage Attractive and Functional". Vol. 36, No. 9 (March 1964) P. 204.

Storage facilities for tools should be attractive and functional in order to meet the needs of farmers.

MARVIN, R. PAUL. "Unit Operations for Teaching Farm Mechanics". Vol. 36, No. 9 (March 1964) Pp. 205-207.

A tabulated breakdown is listed for unit operations for the various types of farm machinery.

ROGERS, PHILIP. "Determining Farm Mechanics Instructional Needs at High School, Young and Adult Farmer Levels". Vol. 34, No. 7 (Jan. 1962) Pp. 149-150.

Two major determinants of farm mechanics content are as follows: 1) What will and can be taught which depends upon the shop facility and the instructor's knowledge of his subject and 2) a survey of your area as a means of determining the needs of both high school and adult farmers.

SALOUTOS, CHARLES. "Improving Instruction in Farm Machinery". Vol. 33, No. 7 (Jan. 1961) Pp. 156-57.

An account of the use of a steam cleaner to improve instruction in farm machinery.

YOUNG, ORVILLE L. "Shop Tools Owned by Farmers". Vol. 37, No. 7 (Feb. 1965) Pp. 200-201.

A study used to assit young farmers in determining a tool inventory and priorities in purchasing shop tools.

V. SUBJECT MATTER CONTENT - MANAGEMENT

ANDERSON, C. A. "Adult I, II and III". Vol. 32, No. 3 (Sept. 1959) Pp. 53-54.

An adult program is recommended to be built around a three year structure.

BULLARD, A. G. "In our Adult Farmer Program You Start with a Farm Management Core". Vol. 36, No. 4 (Oct. 1963) Pp. 79-81.

A sophisticated and scholarly commentary on the new approach to adult farmer education in North Carolina whereby the broad unit method form a Farm Management Core is employed.

COOPER, MELVIN W. "Using Full-Time Teachers for Young and Adult Farmers". Vol. 36, No. 5 (Nov. 1963) Pp. 114-115.

A descriptive account of how a full-time teacher for young and adult farmer classes in Wisconsin can gear and operate a functional program with farm mechanics management courses.

DEYOE, GEORGE P. "Improving Farming Programs through Selection". Vol. 33, No. 1 (July 1960) Pp. 9-11.

Selection and adoptation of farming programs develop skills and enhance knowledge as well as develop ability.

EDINGTON, EVERETT D. "Predicting the Success of Pennsylvania Young Farmers in Farm Management". Vol. 35, No. 3 (Oct. 1962) Pp. 61-62.

An extensive account of research which correlated ten predictor variables with each of the five criterion measures of farm management success for 192 young dairy farmers in Pennsylvania.

McCORMICK, FLOYD. "Strengthen Farm Management Instruction". Vol. 38, No. 2 (Aug. 1965) Pp. 35-42.

Several suggestions are listed for using new funds (Voc. Ed. Act 1963) to strengthen farm management instruction and upgrade programs in farm business managament.

RAMSEY, TED. "A Kentucky Young Farmer Program Designed for Member Participation". Vol. 35, No. 3 (Oct. 1962) Pp. 61-62.

A Kentucky farmer class is oriented toward the areas of living: leadership, recreation, farming programs and finance.

REIDEL, WALLACE F. "Farm Tours Emphasized in Iowa Y. F. A. Program". Vol. 37, No. 5 (Nov. 1954) P. 110.

Industrial, livestock and conservation tours in addition to regular farm tours have added enthusiasm to young farmer programs.

ROY, PAUL and SAM DALE. "Vo-Ag Leadership in Community Development". Vol. 33, No. 4 (Oct. 1964) Pp. 94-95.

A descriptive account of a vocational agriculture program participating in community development in Louisiana Parish to meet the educational and economical needs of the community.

RYBURN, JOSEPH D. "Better On-Farm Service Centers". Vol. 33, No. 7 (Jan. 1961) Pp. 153-55.

The development and use of a rating scale to determine better on-farm service centers.

SCARBOROUGH, CAYCE. "Farm Management for Whom?". Vol. 36, No. 3 (Sept. 1963) Pp. 54-65.

The author believes that farm management should be structured and taught to farm managers during daylight hours.

VI. SUBJECT MATTER CONTENT - PLANT SCIENCE

LOFTEN, W. T. "New Types of Adult Class". Vol. 34, No. 1 (July 1961) P. 9.

An adult class in Florida was organized and oriented toward watermelon production and marketing. It developed into a successful co-op -- 2,000 acres of melons.

VII. METHODS AND MATERIALS

AGAN, ROY. "Better Farming - The Proof of the Pudding of the Adult Farmer Class". Vol. 35, No. 5 (Dec. 1962) Pp. 118-19.

A test for effectiveness "proof of the pudding in adult farmer class lies in the progress toward success or objectives."

ASHBY, LELAND E. "Farm Demonstration Plots - A Useful Teaching Aid". Vol. 34, No. 11 (May 1962) Pp. 244-45.

Crop demonstration plots are valuable tools to teach agricultural concepts and practices as a joint or cooperative approach by both high school and adult farmers.

BUNDY, C. E. "How Farmers Adopt New Practices". Vol. 33, No. 2 (Aug. 1960) Pp. 30-32.

The Adoption Concept - awareness, interest, evaluation, trial and adoption is described with implications for on-the-farm follow-up.

CRAIG, ROBERT. "Vo-Ag Specialists Spark Texas Adult Program". Vol. 36, No. 5 (Nov. 1963) Pp. 112-13.

A success story of how state level personnel spearheaded a dynamic program in adult programs in Texas through short courses.

GADDA, H. W. "Improving the On-Farm Instruction of Young and Adult Farmers". Vol. 33, No. 11 (May 1961) Pp. 261-63.

Seven common problems and possible solutions are listed for improving adult on-farm instruction.

HALLER, ALLEN. "Increasing the Effectiveness of Adult Farmer Instruction through the Improved Use of Audio-Visual Materials". Vol. 34, No. 9 (March 1962) Pp. 206-207.

A series of techniques on use, role, and techniques are described which grew out of a study made by the author in Indiana. Conclusions - Ag. teachers need training in A.V. materials, a need for a repertoire of A.V. materials, and A.V. materials get results when used effectively.

HUDSON, AROL. "Audio-Visual Aids in Adult Education". Vol. 34, No. 3 (Sept. 1961) Pp. 60-62.

Audio-visual aids provide the most effective means of meeting the new theory of learning in all types of education - learning through experience.

JEWELL, JR., L. M. "Some Guides for On-Farm Instruction for Young Farmers". Vol. 37, No. 5 (Nov. 1964) Pp. 116-17.

The following areas of instruction are significant as a guide for on-farm instruction for young farmers, planning, conducting and evaluating programs.

MOECKEL, ROLF. "Effective On-Farm Instruction of Adult Farmers". Vol. 34, No. 34 (Sept. 1961) Pp. 64-66.

This study yielded promising practices that lend themselves to effective on-farm instruction.

ROSS, JAMES. "A Look into the Young Farmer Program". Vol. 32, No. 12 (June 1960) Pp. 283-284.

An evaluation study of instructional methods used by vocational agriculture teachers with Iowa farmers.

SMITH, GLEN. "Class Participation - An Important Factor". Vol. 34, No. 10 (April 1962) Pp. 236-37.

A technique that proved successful to elicit class participation involved observing home samples of quality hay and silage followed by discussions on feeding problems.

TENER, E. L. "Using a State Directory of Resource Personnel for Adult and Young Farmer Education". Vol. 36, No. 7 (Jan. 1964) Pp. 136-37.

A compilation of specialists in various fields of adult farmer education may be circulated to teachers of agriculture, listing: firm, organization, name and title of specialist, channel request for service, speciality and area served.

VIII. YOUNG FARMER ASSOCIATION

BRUM, H. D. "Organizing the State Young Farmer Convention". Vol. 37, No. 5 (Nov. 1964) Pp. 112-113.

A pictoral analysis of a young farmer convention emphasizing husband-wife involvement.

JACKSON, J. R. "What Makes Young Farmer Chapters Tick?". Vol. 33, No. 2 (Aug. 1960) Pp. 42-44.

This study resulted in suggestions on organization, principles, problems and standards for making a young farmer chapter tick.

LESTER, H. T. "Developing a Young Farmer Organization". Vol. 33, No. 2 (Aug. 1960) Pp. 33-34.

General procedures were described for initiating a functional young farmer organization which also reflects an annual program of activities.

YEATTS, A. L. "Virginia's State-Wide Young Farmer Program." Vol. 35, No. 3 (Oct. 1962) Pp. 65-66.

Virginia has a strong state association - 1498 members, and 95 local chapters. Their primary objective is to develop group and individual responsibility of young farmers through programs of instruction and to progress in farming.

IX. EVALUATION

BUNDY, CLARENCE E. "March is a Good Time for Evaluating Adult Farmer Programs". Vol. 35, No. 8 (March 1963) Pp. 192-94.

A criteria for evaluating is set fort which embraces methods and time of year.

HANSEN, ALFRED W. "Evaluating Young Farmer Programs". Vol. 33, No. 2 (Aug. 1960) Pp. 44-45.

Six basic steps in evaluating young farmer programs are described and accompanied by a success story in evaluation.

HORNER, JAMES T. "Evaluation is Inevitable--Intelligent Evaluation Imperative for Effective Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) Pp. 109-119.

The author' comments on the nature of evaluation, who evaluates, when and where should adult farmer programs be evaluated and why evaluate adult farmer education?

KNOX, ALAN B. "Developing an Evaluation Plan in Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) Pp. 110-121.

An approach to evaluation is described which includes -who attends, appropriateness of objectives, differential achievement, and application of learning.

MERRILL, KEITH C. "Idaho Farmers Evaluate the Farm Mechanics Course of Study". Vol. 34, No. 11 (May 1962) p. 259-63.

A depth study was conducted of selected and randomly chosen farmers regarding areas of farm mechanics that were emphasized in an Idaho farmer program.

PALZKILL, JEROME P. "Foresight and Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) P. 123.

An analogy of foresight and predictability of future needs of adult farmer programs with implications for teacher education.

PHIPPS, LLOYD J. "Using Research to Improve Adult Farmer Education". Vol. 35, No. 5 (Dec. 1962) Pp. 111-12.

Research may be used to improve adult farmer education. Procedures are; (1) determine interest (2) location of courses (3) observing that farmers are semi-strangers and (4) implementing adult learning.

QUARLES, N. K. "Local Study Can Improve the Y. F. A.". Vol. 36, No. 4 (Oct. 1963) Pp. 78-79.

Studies like this one reveal many causes of disparities in young farmer classes.

ROGERS, JOHN H. "The Young Farmer Number Racket". Vol. 37, No. 5 (Nov. 1964) P. 107.

The misuse of numbers is pointed out as an evaluation facet in young farmer programs.

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JOB ENTRY CURRICULUM

Prepared for Experimental Program Developers emphasizing Distributive Education
By The State Department of Education, Tallahassee, Florida
In cooperation with the University of South Florida, Tampa

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DISTRIBUTIVE EDUCATION PROGRAM
College of Education
University of South Florida

1/65/100 January, 1965

THE

JOB ENTRY CURRICULUM

STATE DEPARTMENT OF EDUCATION
Tallahassee, Florida

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PREFACE

The guide entitled, The Job Entry Curriculum, was specifically prepared for experimental program developers in Florida's 67 counties who are seeking to create unique pre-employment training programs. The search incited by additional funding and fostered by the wasted Americans is the excitement of Vocational Education today. Because pre-employment training possibilities are unique to a locale, the best program for a school lies within the creative imagination of the occupationally oriented educator who can lead its development.

Having received requests for the ground rules governing the job entry curriculum, the State Department of Education encouraged a review of all available information. Wendell G. Gingrich, then a student at the University of South Florida, studied the reports from the National Clinic on Distributive Education, which was held in Washington, D.C. in October, 1963. He later consulted with Mary V. Marks and John A. Beaumont of the U.S. Office of Education. Assisted primarily by Rex C. Toothman, State Supervisor of Distributive, Cooperative, and Business Education, William P. Danenburg and Donald P. Jaeschke of the University of South Florida, he compiled information for this guide. Discussions with Nat Clark, Supervisor of Vocational Education, Pinellas County; C. A. Bellum, Director of Vocational and Industrial Education, Sarasota County; and James Pope, teacher-coordinator, Distributive Education, Seminole High School, Largo, Florida, proved most valuable.

The program presented in this publication emphasizes preparation for distributive occupations but of equal importance are other areas of employment and combinations of vocational programs now in operation. This initial draft is offered to assist not to impair program uniqueness.

Questions concerning the institution, financial assistance, and consulting services should be directed to Mr. Rex C. Toothman, Supervisor of Distributive, Cooperative, and Business Education, State Department of Education, Tallahassee, Florida.

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INTRODUCTION

Job Entry

Pre-employment training is preparation for successful performance and employability in a distributive occupation. There must be a consideration of the individual's ability to relate himself to people, to the profit motive, to products, and to services offered for consumer use by his employer. Judgement skills, rather than manual skills, are keys to employability. Judgement skills are developed individually out of attitudes of service to others, appreciation of customer needs, knowledge of product performance, and acceptance of the social and economic responsibility of free competitive enterprise.

With an awareness of the needs of distribution, we shall be required to build completely new programs which may require new curricula, new organization of preparatory programs of the type suggested in this manual, investigation of new occupational areas, and a close working relationship with other vocational areas.

Vocational Education Act of 1963

Before the passage of the Vocational Education Act of 1963 (Perkin's Bill; Public Law 88-210), Cooperative Distributive Education in Florida was a daily continuum of practical training on-the-job, specific study related to the job and general study related to business for those students sixteen years of age and older. Instruction, therefore, was limited to employed persons.

Public Law 88-210 revitalized this concept by providing that "any amounts allotted (or apportioned) under such titles, Act, or Acts for distributive occupations may be used for vocational education for any person over fourteen years of age who has entered upon or is preparing to enter upon an occupation, and such education need not be provided in part-time or evening schools." This statement indicates then that vocational education may be totally in-school training. It could come before employment rather than precede or coincide with employment.

Pre-employment Training as a Part of Vocational Education

Emphasis should be placed on the fact that the Job Entry Curriculum or pre-employment program is a part of vocational education. It in no manner should become a general education course in its present concept.

Vocationally directed education differs from general education in that it is:

1. Job oriented. It endeavors to make students competent in skills, knowledge, and practices of the individual student's occupational objective.
2. Student oriented. The classroom is a place of instruction, where students participate individually or in large or small groups in various projects in the field of distribution. The individual student's many needs are of importance in vocational education.
3. Community conscious. The vocational education teacher must be aware of the needs of the community. His program should reflect those needs in that students upon

graduation will have skills and competencies required by local businessmen.

4. Flexible. Rigid schedules or teaching units are changed to meet the needs of the student. Organization should not be an obstacle to education. When dealing with human beings, certain interests are shown at various times. This interest is a motivating force for learning. In order to capitalize on this interest, we must be able to change plans when needed. This flexibility does not mean that a goal is lost sight of or that standards are not kept.

5. Learned by doing. Participation activities, projects, laboratories, problem solving and other similar activities are routine means to learning.

6. Broad in scope - and yet specialized. The study by the student at times is the particulars of his specific career in the field of distribution; quite different from others in his class. However, at the same time, general concepts are studied as well.

Objective and Considerations for Job Entry Curriculum

The Job Entry Curriculum then is a part of all of these conditions of vocational education. Just as in cooperative vocational education for Distributive Education with on-the-job training, the goal of the pre-employment program is gainful employment. Similarly, it must take into consideration, must be the focal point or evolve from the students, the employment opportunities of the trainees, the school, the local community,

and the parents.

It is also strongly recommended that an advisory committee of local businessmen and educators be established to continue local direction and aid to the program. For further information on this matter, refer to the U. S. Office of Education Bulletin #288 on Organization of Advisory Committees (OE-84009).

Purposes of Job Entry Curriculum

The purposes of this program appear to be twofold:

1. To prepare secondary and post-secondary students for immediate employment in distributive occupations upon graduation from high school or post-secondary school.
2. To prepare freshmen, sophomores, and/or juniors of high schools and students of post-secondary schools to enter the cooperative training programs.

However, this pre-employment program is in its initial stage. Present plans will be held largely to juniors or seniors of high schools. In that regard, this manual will emphasize this feature.

Category of Students

The students would fall into four categories:

1. Those academically talented who desire more knowledge of business, of their future careers, and preparation for employment and entrance into the Distributive Education Cooperative Training Program.
2. Those who have not been challenged by the academic and general education.
3. Those who have not acquired basic education and social skills to perform appropriately in business or academic

fields.

4. Those who do not want to work part-time during their school years but who do wish to broaden their knowledge of business and employment in their career objective.

An honest effort should be made to enlist students which fall into one of the four categories into separate classes as determined by the most comparative need reflected in the specific school. Even then, flexibility would be required in classroom instruction and experiences as students will not progress or achieve the same goal at the same time. In large schools, grouping by career objectives might be possible.

Specific Objectives of Job Entry Curriculum

The Job Entry Curriculum for Distributive Education is designed to provide the following objectives:

1. For the students:

   a. To evaluate his interests, aptitudes, and abilities for his future career.

   b. To instill sound principles and judgements before entering employment.

   c. To recognize and acquire the basic qualities young people need in order to succeed in business.

   d. To complete school studying something vital to his interests.

   e. To learn better human relations by participation activities.

   f. To discover the kinds of work habits desired.

g. To become more proficient in basic communications and mathematics.

h. To arrive at thoughtful judgements and decisions through study of economics.

i. To begin earnest investigation for future career objective and goals.

j. To receive "employment readiness."

2. <u>For the community</u>:

a. To participate in the national, state, and local effort to help up-grade the nation's working force.

b. To aid in discovering and selecting future employees.

c. To assist in planning training to meet the employers' specifications.

d. To become associated with the local school system.

e. To become familiar with students and their problems in order to prepare these students for good citizenship.

f. To become better working agencies through association with cooperating school agencies.

3. <u>For the school</u>:

a. To extend and improve existing cooperative programs.

b. To broaden educational opportunities to meet the demands of all students.

c. To allow students to become better individuals who will represent the school and society by minimizing weaknesses and strengthening attributes through extensive individual counseling and coaching.

d. To provide for closer teacher evaluation for entrance to the cooperative training program.

e. To begin student's earnest investigation for future career objective, goals, and employment.

f. To become closely associated with businesses in the community.

4. For the parents:

a. To have better knowledge of what is being taught to their child.

b. To know that their child is gaining knowledge vital for his future.

Summary

In summary, the field of distribution is calling for highly-trained people to conduct its business. Expansion of this field will be more pronounced as further mechanization, automation and future implementations are utilized.

The Job Entry Curriculum, as part of the vocational education, will aid students in preparing for this expanding field and for life-goals in general.

FACTORS IN ORGANIZING A PROGRAM

Conditions for Establishment of Job Entry Curriculum

The Job Entry Curriculum for Distributive Education is adaptable to any conditions which exist in a local situation. These conditions will probably focus between the two following extremes:

1. Area is conducive to an extensive cooperative training program. Many training agencies are available and willing to cooperate. School staff is large and coordinator is highly qualified. However, pre-employment training could up-grade and fortify the existing training program and broaden the curriculum for various student needs.
2. Area is not conducive to cooperative training program. Working stations are few. School is small and staff is limited in number. A pre-employment program would provide vocational education, which is needed to broaden the opportunities in curriculum.

This latter condition would probably occur in a small rural community. Its program should then take on the distributive characteristics of areas where the majority of the graduates find jobs. The teacher should then contact these areas for aid and assistance in his program, if at all possible.

School Time Allocation for Job Entry Curriculum

To establish a Job Entry Curriculum for Distributive Education with or without a cooperative on-the-job training program, the following time periods are recommended:

1. One period a day for one year.

2. Two periods a day for one year.

3. One period a day in conjunction with a required course, such as General Business or Vocational Agriculture.

Teacher Qualifications

A teacher qualified in distributive education is recommended. Teachers not qualified should enroll in the usual qualifying courses before taking on the responsibility of this duty. The effectiveness of a program will surely depend on the teacher of that program.

Student Enrollment and Selection

Student enrollment, because of the very nature of the instruction, must be limited per class, similar to the Distributive Education Cooperative Training Program. Students will be selected by the teacher with the cooperation of the school personnel. An application must be made by each student, as shown in Appendix 1. Student's career objective should be in the field of distribution, i.e., retailing, wholesaling, and service occupations.

Although the student selects a career objective in a distributive occupation, he might aspire to a managerial position. This aspiration should be considered in selection and training of the student.

Discipline of Distributive Education

The student studying the discipline of distribution has certain competencies to achieve for employment. They include:

1. Social competency. One working in the field of distribution has a set of personal characteristics which are occupationally relevant. Distribution is characterized as being

people-oriented, not machine-oriented; and as such, human relations are most important. Personal appearance appearance, personality traits, and attitudes add up to social competency.

2. Basic skill competency. Basic skills of communications and mathematics to his employment situation are tools as much as a typewriter is to a typist. The whole field of distribution revolves around these skills. This fact places a premium on one's facility to use these subjects.

3. Specialty competency. One working in the field of distribution is closely associated with a specialty, usually a product or a service. The degree of success is dependent upon the knowledge he possesses of this specialty, which is becoming more complex each year. A functioning knowledge of this specialty then, whether it be furniture, insurance, fabrics, automobiles, petroleum or data processing equipment, becomes the center upon which other knowledges and skills are applied.

4. Marketing competency. Demonstrated accomplishment in the performance of one or more of the functions of distribution is essential. These functions are, in summarized form, selling, sales promotion, buying and inventory operations, market research, and management. While the immediate job responsibility is generally centered in one of these functions, an accomplished worker has understandings and appreciations of all the functions operating within the business enterprise.

Time Allocation for Competencies of Distributive Education

The amount of time to be spent on each area of competency is left to the discretion of the school. Some suggestions of dividing the time among these competencies are shown in Figure 1 (page 12).

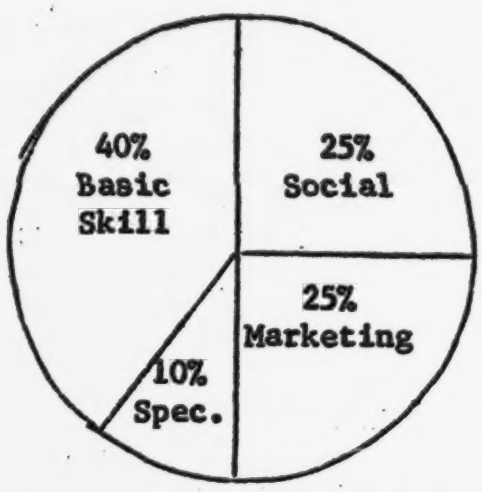
Method of Instruction for Job Entry Curriculum

In carrying out this program, the vocational approach should be used. Under these circumstances, it will require methodology that encourages total understanding, creativity, problem-solving in a non-uniform way, interpretation, analysis and control of job behavior. Participation and experience activities are an essential ingredient in this plan. These activities may be accomplished by individual or group projects in a specially-equipped classroom, in a special assignment, and in situations simulating experiences related to employment opportunities.

Instructional techniques such as situation analysis, case problems, discussion exercises, games, directed observations, and role playing will help individuals to learn from each other. Many school activities can be used to generate a basis for group projects. Such projects could include service activities designed to support sports or forensic programs in the school, management activities related to snacks, souvenirs, school store, products produced by other students, and group competition activities drawn from the awards programs of the local, state or national Distributive Education Clubs of America (DECA). These activities, resource people, and reference materials will substitute for a textbook in this program. No outlay for a standard textbook is anticipated.

FIGURE 1

Those who have not acquired basic education and social skills to perform appropriately in business or academic fields.



Those who have not been challenged by the academic and general education.

Those who are academically talented who desire entrance into the Cooperative Training Program or to broaden their knowledge of business.

Conditions for a Quality Program

When we accept the project or participation plan as being the method of teaching, three conditions for quality programs seem essential:

1. Training plans showing participation activities for individual enrollees. Similar to on-the-job training plans agreed to by the employer and the teacher-coordinator of a cooperative training program, a training plan for participation activities should be made for each individual. These plans will be based on instructional objectives stated as learning outcomes, starting with each individual at his level of employability. They will provide a variety of selected learning experiences that will lead the individual through a series of achievement levels related to his occupational goal.
2. Adequate time for individual involvement in participation activities. Individually developed training plans require adequate time in the individual's schedule to permit involvement in participation activities. Time provided may vary according to the complexity of the activity.
3. Adequate time for coordination activities. The instructor must have time as part of the regular school day to develop and utilize community and school resources for occupationally directed learning experiences. Coordination as a technique for identifying and evaluating participation activities will need to be developed to a high degree.

Summary

In summation, the program is part of vocational education. A vocational approach in the form of participation and experience activities must be used; otherwise, the program will become a mere textbook course.

PROGRAM OUTLINE

Considerations for Establishment of Program

Several aspects would be taken into consideration when preparing the program outline for each individual school. Some of these aspects would be:

1. Age, mental and emotional maturity of students
2. Local business conditions
3. The establishment and accomplishment of the cooperative training
4. The local economic conditions
5. The overall attitude of the administration

A Suggested One Year Program Outline

However, taking a condition where a high school presently has a Distributive Education Cooperative Training Program, the following outline might be used:

I. Introduction (Time allocation: 3% or 1 week of 36 week school year)

Learning Outcome: To prepare student for vocational method teaching, class standards, and preview of activities

A. Vocational Education and Vocational Distributive Education

1. Define and describe
   Objective: to encourage vocational attitude

2. Method of operating, standards and grading system in class

3. Club activities
   Objective: to instill DECA enthusiasm and parliamentary procedure

4. Standard forms that will be used in class
   Objective: to begin practice of using some forms used in Distributive Education Cooperative Training Program

II. Organizing Activities (Time allocation: 3% or 1 week)
Learning outcome: To determine pre-knowledge or class characteristics and to begin direction of class activities for each individual

A. Pre-testing (as desired)

1. Program Outline Pre-test

2. Personality Test (See Distributive Education Notebook by Rath & Mason, Orientation Section.)

3. Student history

4. Individual interviews

5. Socio-gram

B. Individual Training Plan

1. Prepare and discuss with each individual

III. Business Ethics and Standards (Time allocation: 8% or 3 weeks)
Learning outcome: To instill general employment specification (See Fitting Yourself for Business, Parts III & IV, by MacGibbon; Retailing Principles, & Practices, by Rickert, Meyer, & Haines, Units 7 & 8)

A. Honesty - Employee must be honest, but not frank.

B. Courtesy - Employee must be courteous.

C. Competition - Employee must realize that he is constantly competing for his job and higher positions. He does not have a right to his job.

D. Cooperation - Employee must cooperate with management and co-workers, even though he is competing with the latter.

E. Creativity - Innovation or new ideas are always needed on a job. Progress for the employee's business means better working conditions, raises and security.

F. Neatness - Employee's working habits in regards to being neat will pay.

G. Good grooming - Grooming will determine if employee gets and keeps his job.

H. Personality - Employee's total habits and concepts will spell success, or failure, or stagnation.

I. Enthusiasm - Pursuing what one wants is half the battle of any obstacle.

J. Thoroughness - Completing any job in an orderly and efficient manner is necessary for success.

K. Communication - Understanding and being understood in both written and spoken forms must be accomplished for effective employeent.

L. Speed - Efficiency is based on speed and accuracy.

M. Improvability - Usually nothing stands still. Employers feel employees should continually be improving themselves or their worth is very little. No man is indispensible.

N. Knowledge and further study - Job progress usually means retraining and further study.

IV. Human Relations and Personality Development (Time allocation: 22% or 8 weeks)
Learning outcome: To understand the conditions of human nature and characteristics of people.
(See Retailing Principles & Practices, Unit 4)

A. Habits

B. Personality Patterns

C. Getting along with people

D. Various theories on development and needs

E. Needs, drives, and motivation

F. Basic selling principles

V. English for Business (Time allocation: 11% or 4 weeks)
Learning outcome: To instill better habits in the use of English.
(See Retail Merchandising, Wingate, Weiner et al.)

A. Vocabulary

B. Written forms

C. Speech

VI. Mathematics for Business (Time allocation: 11% or 4 weeks)
Learning outcome: To condition facility of this tool subject.

A. General mathematics

B. Bookkeeping principles (if desirable)

C. Basic financial statements and their meaning

VIII. Economics for Business (Time allocation: 33% or 12 weeks)
Learning outcome: To pursue the overall goal of Distributive Education and to foster an understanding of the functions of distribution in relation to the student's career goal.

A. Distribution, marketing, and merchandising

B. Profit motive

C. Types of businesses

D. Elements of cost

E. Living wage and cost of living

F. Consumer economics

G. Types of goods

H. Credit and banking system

IX. Business Law and the Student (Time allocation: 6% or 2 weeks)
Learning outcome: To inform student about legal conditions of employment.

A. The law of contracts (See Essentials of Business Law by Rosenberg & Crank)

B. Child-labor laws (U.S. Department of Labor, Wages, Hours & Contracts Division)

C. Income Tax Law (Internal Revenue Office)

D. Hour-wage law (U.S. Department of Labor, Wage, Hours & Contracts Division)

E. Workman's Compensation (See above reference)

F. Unemployment Compensation (See above reference)

X. Job Application and Interview (Time allocation: 3% or 1 week)
Learning outcome: To acquaint student with means and conditions to apply for employment.
(See Fitting Yourself for Business by MacGibbon, Part II)

PROJECTS

Projects are the means to allow students to participate in studying on their own or in small groups. These could be various lengths and used for in-class discussion, community aids to business, and future references.

Many projects could be accomplished right in the school as a benefit to the school, other clubs, students as well as the pre-employment enrollees. Some of the projects may be as follows:

1. Sell refreshments at all school atheletic events.
   Learning outcome: Human relations, salesmanship and financing.

2. Work in the school store.
   Learning outcome: Human relations, salesmanship, financing, and inventory control.

3. Participate in the work of the school cafeteria.
   Learning outcome: Food service activity and financing.

4. Prepare research manual on chosen career.
   Learning outcome: Study of specialty.

5. Select a type of business, prepare research paper on requirements to enter same.
   Learning outcome: Study of employment requirements and economic conditions in chosen career.

6. Prepare merchandise manual on a particular product.
   Learning outcome: To study product specialty.

7. Make an interview with a local businessman and report results.
   Learning outcome: To prepare for employment and study of Unit X.

8. Go to several stores and observe methods of various salesmen and report on same.
   Learning outcome: To observe salesmanship and human relations principles in Unit V.

9. Look up state law requirements for business or student work requirements and report same.
   Learning outcome: To prepare for management or ownership of business and study of Unit IX (Business Law).

10. Compare the differences between Capitalism, Socialism, and Communism.
    Learning outcome: To prepare for Unit VIII (Economics for Business).

11. Compare the types of markets, e. g. monopolistic.
    Learning outcome: To prepare for Unit VIII.

12. Prepare research paper on stock and/or commodity markets.
    Learning outcome: To prepare for Unit VIII.

13. Report on a particular industry giving its condition, future, and problems.
    Learning outcome: To prepare for future career goal and study of Unit VIII.

14. Survey the traffic of a particular area for a projected amount of business that could be sustained.
    Learning outcome: To prepare for future ownership or management.

15. Survey the zoning laws and means to change them.
    Learning outcome: To prepare for ownership or management.

16. Survey the population tendencies of your local or state area.
    Learning outcome: To prepare for ownership or management and study of Unit VIII.

17. Prepare reseach on the importance and advent of automation of retailing.
    Learning outcome: To prepare for Unit VIII (Economics for Business)

18. Survey consumer choices of a particular product.
    Learning outcome: To prepare for Unit V (Human Relations) and Unit VIII.

19. Sell advertising for school paper or yearbook.
    Learning outcome: Begin principles of advertising and study of salesmanship in Unit V.

20. Prepare an assembly program to tell about Distributive Education.
    Learning outcome: Overall theme of course and Unit VI (English).

CONCLUSION

The main purpose of the Job Entry Curriculum is not just preparation for gainful employment but preparation for gainful employment in a career of the student's choice. The program should be a time of "retreat," a "search for tomorrow," whereby the student begins to realize that he is at the doorstep of his future. It is a time to find out who he is, what are his needs and desires, and how does he proceed to fulfill them in his career objective.

The standards of the program should be such that the student realizes that serious thinking of his future is the goal. A variety of vocational methods could be used to meet this end.

APPENDIX I

(Attach Photo Here)

STUDENT APPLICATION
FOR DISTRIBUTIVE EDUCATION

Personal Information

_____ Name

_____ Date

_____ Home Address

_____ Phone

Explain any physical handicaps, such as weak eyes, poor hearing, etc.

_____

_____

_____ Family Doctor

_____ Present Homeroom Teacher and Room No.

_____ Date of Birth

_____ Height

_____ Weight

_____ General Health

_____ Father's Name

_____ Occupation

_____ Where Working

_____ Mother's Name

_____ Occupation

_____ Where Working

_____ Guardian's Name

_____ Occupation

_____ Where Working

_____ Father's Nationality

_____ Mother's Nationality

_____ Guardian's Nationality

School Information

Are you financially able to remain in school until graduation?_____

Is it necessary for you to contribute to your own support while in high school?_____

Number of brothers_____ Number of sisters_____

What prompted your interest in this program?_____

How do you spend your leisure time?_____

What high school subject do you like best?_____ Why?_____

What high school subject do you like least?_____Why?_____

In what subject do you make your best record?_____

Do you intend to go to college?_____

How many days were you absent last year?_____

What subjects do you need to graduate?_____

Have you discussed this program with your parents?_____

Do you have a hobby?_____ What is it?_____

Do you get along well with others or do you prefer to be alone?_____

Will you have to work your way through college?_____

How many school credits have you earned in the following:

English_____Mathematics_____Science_____History_____

Commercial_____Foreign Languages_____Home Economics_____

Shop_____Others_____

Subjects and Grades Last Year

_____

_____

_____

_____

_____

Subjects You Are Now Taking

Subject	Grade	Instructor's Name	Room No.

Subjects To Be Taken Next Semester
(Do not fill in)

_____

_____

Occupational Information

Are you interested in (a) getting a job?_____ or (b) training for future work?_____

If you have ever been employed, fill in the following; if not, list one or more persons other than relatives for character references.

Employer or Character Reference	Address	Date	Type of Work

What type of occupation do you desire training in? 1st choice_____ _____ 2nd choice_____3rd choice_____

Have you a preference for any company in which you would like to be placed?_____ Why?_____

Do you have any means of contacting this company?_____
Who?_____ Title?_____

I shall do my part in assisting my son/daughter to fulfill all obligations to the program, including regularity of attendance and maintaining of a satisfactory scholastic standing.

_____ _____
Parent's Signature Student's Signature

APPENDIX II

A ONE YEAR PROGRAM CONTENT PREPARED BY ROBERT TIPPING, TEACHER-COORDINATOR, SARASOTA HIGH, SARASOTA, FLORIDA, WHERE COOPERATIVE DISTRIBUTIVE EDUCATION IS ESTABLISHED.

Basic understandings are needed by students before they begin their occupational experiences if they are to derive maximum benefit from them.

1. Introduction to course. What is marketing and distribution? What kind of jobs, working conditions and opportunities are in the field of distribution?

2. Overview of our economic system
   a. What shall we produce with our productive resources?
   b. How much shall we produce in total and how fast shall the economy grow?
   c. Who shall get the goods and services produced?

3. Economics of distribution
   a. Thorough understanding of supply and demand
   b. Pricing

4. Basic Business Records and Their Meaning
   a. Balance sheet
   b. Profit and loss statement
   c. Method of preparation

5. Function of Marketing and Merchandising
   a. Assembling, pricing, transporting, storing and their importance in distribution
   b. Understanding the selling function
   c. Marketing and the many channels of distribution
   d. Appreciating the importance of credit and understanding its basic principles

6. Salesmanship. Understanding the approaches used in selling and merchandising and how they are applied in the various sales media.
   a. The importance of a pleasing personality in selling
   b. How to acquire product knowledge
   c. Developing effective speech and writing skills
   d. Formation of businesslike habits
   e. Formulating and following a code of ethics
   f. Mechanics of beginning retail sales: sales slips, cash register practice and stock procedures

7. Career Development
   a. What duties and responsibilities are carried out by persons employed in distributive occupations?

b. Study literature on selected occupations.
c. Find out how technological developments affect these occupations.
d. Help the student to estimate own potential for occupational success in light of personal characteristics, work experience, academic record, and the results of psychological tests.
e. Select tenative career goals.
f. How to apply for a position
g. Job application and job interview

8. Occupational Adjustment Competencies
   a. Getting along with co-workers
   b. Factors and traits which make up a business personality
   c. How to present a neat, attractive appearance
   d. Learning a job quickly and completely
   e. Profiting from supervision
   f. Appreciating managerial problems
   g. Understanding and abiding by laws concerning business and labor
   h. Practicing personal living that leads to good work living

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For an extensive list of materials available from various state departments of education, refer to report Methods and Materials for Teaching Independent or Specific Related Units of Study in Distributive Education. Write Mr. Donald Jaeschke, College of Education, University of South Florida, Tampa, Florida.

Films

The Employment Interview. Charge $1.50 14 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

Face in the Mirror (Personality). Charge $2.00, 22 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

Good Looks. Free, color, 20 min., refer S792 Assoication Films, Inc.

The Inner Man Steps Out (Personality). Charge $3.00, 35 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

Installment Buying. Charge $1.50, 11 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

Let's Be Human. Charge $1.50, 18 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

What is a Contract. Charge $1.50, 11 min sound, refer General Extension Division of Florida, University of Florida, Gainesville.

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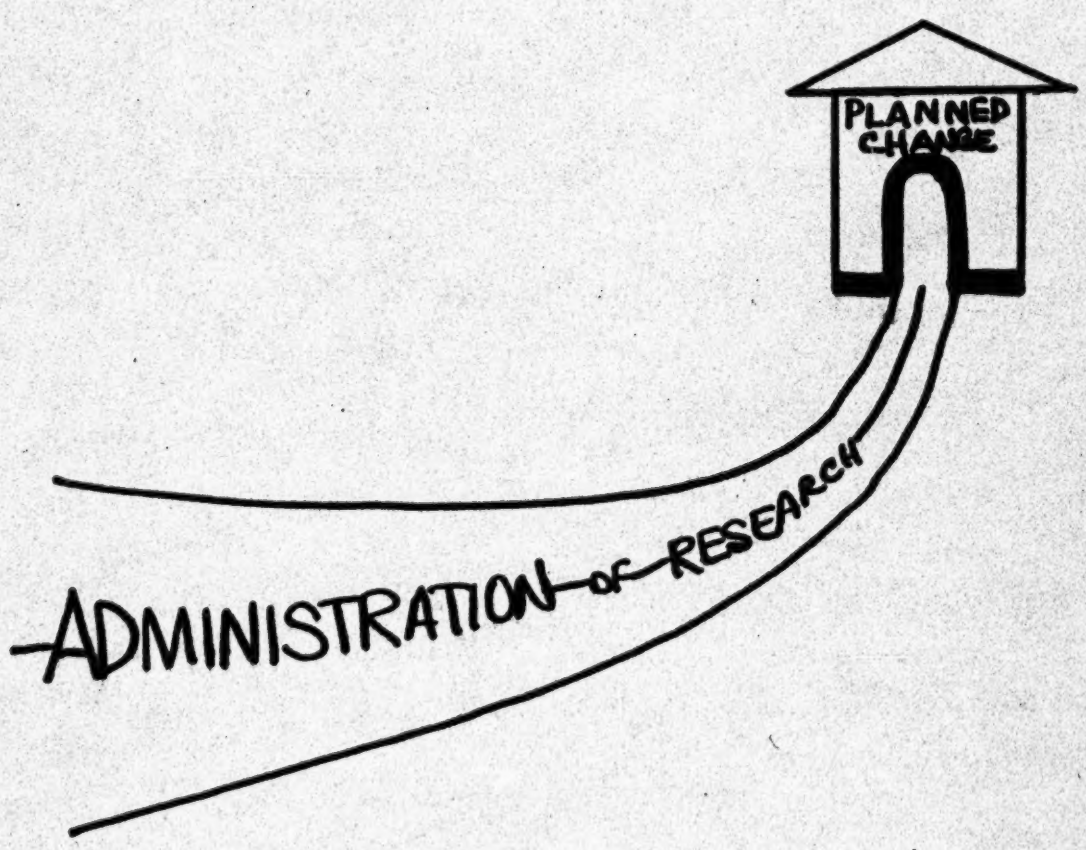
NATIONAL VOCATIONAL-TECHNICAL EDUCATION SEMINAR ON THE ADMINISTRATION OF RESEARCH



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Columbus, Ohio

May 24 to 27, 1965

This conference was supported by a grant
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VT000077

REPORT

OF

A NATIONAL VOCATIONAL EDUCATION SEMINAR

ON THE

ADMINISTRATION OF RESEARCH

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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The Center for Research and Leadership Development

in Vocational and Technical Education

May 24 to 27, 1965

The Ohio State University

Columbus, Ohio

PREFACE

Expanded programs of vocational and technical education, increased funds for research and development, rapid changes in technology, educational innovations, and new orientations and relationships are but a few of the many factors which emphasize the need for increased quality and quantity in our research and development efforts. One of the critical considerations in our expanded efforts is the administration of research. It was the broad purpose of this seminar to focus on those administration aspects which facilitate improved and expanded programs of research and development. Admittedly, a seminar of such brief duration can only scratch the surface. We also recognize that many worthwhile ideas and suggestions developed during the seminar deliberations "fell between the chairs" and were not captured in this report. However, we believe the papers presented by the consultants will be of value to the participants and other research workers and administrators who were not able to attend.

This Vocational Education Research Seminar was one of four conducted in cooperation with the American Vocational Association Research Committee, the Occupational Research and Planning of the U. S. Office of Education, and the host institutions. Other research seminars were conducted at the University of Minnesota, the University of Nebraska, and Michigan State University.

As seminar director, I would like to acknowledge the assistance and cooperation of personnel in Occupational Research and Planning in the Vocational and Technical Education Division of the U. S. Office of Education; members of the Program Planning Committee at The Ohio State University; Dr. Rupert Evans, Chairman of the American Vocational Association Research Committee; and Dr. William John Schill, Coordinator of the Vocational Education Research Seminars this year, both of The University of Illinois. Special thanks is due the capable consulting staff for their varied and valuable contributions to the seminar. One of the strengths of the seminar was the varied background and perspective of the participants. Their enthusiasm, interest, and participation contributed materially to the seminar outcomes.

Robert E. Taylor
Director

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PURPOSE OF SEMINAR

To improve the quality and quantity of research and development in vocational education

OBJECTIVES

1. To develop a concept of the role of research and development in state programs of vocational education and the conditions essential to its success

2. To develop an understanding of a functional organizational structure for conducting a program of research and development in vocational education

3. To clarify key individual and organizational roles and relationships

4. To develop competencies in administering a program of research and development

5. To develop an understanding of the dynamics of planned change and its application to vocational education

6. To develop empathy and support for research and development in vocational education

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	Thaine D. McCormick	State Director for Vocational Education, Kansas State Department of Education
Kentucky	Carl F. Lamar	Research Specialist in Vocational Education, University of Kentucky

State	Name	Position
Louisiana	Caroll W. Eubanks	Director of Guidance and Research, Louisiana State Department of Education
Maryland	Melvin H. Garner	Supervisor of Trade and Industrial Education, Maryland State Department of Education
Minnesota	Jerome Moss, Jr.	Teacher Educator, Trade and Industrial Education, University of Minnesota
Mississippi	A. G. Shepherd, Jr.	Research Coordinator, Division of Vocational and Technical Education, Mississippi State Department of Education
Missouri	Tom Mock	Supervisor, Missouri State Department of Education
New York	Virgil E. Christensen	Assistant Director of Research in Agricultural Education, Cornell University
	James R. Hastings	Chairman, Field Services and Research, Division of Industrial Arts Technology, State University College
	C. W. Hill	Professor of Agricultural Education, Cornell University
	Milton C. Olson	Dean, School of Business, State University of New York at Albany
North Carolina	T. Carl Brown	State Supervisor of Distributive Education, North Carolina Department of Public Instruction
Oklahoma	Ruth E. Burris	State Supervisor, Health Occupations Training, Oklahoma State Board for Vocational Education

State	Name	Position
Oregon	Ronald Kaiser	Supervisor, Program Development, Oregon State Department of Education
Pennsylvania	George L. Brandon	Director, Vocational Teacher Education, Pennsylvania State University
Tennessee	George W. Wiegers, Jr.	Head Teacher Educator, Department of Agricultural Education, University of Tennessee
Utah	Mark Nichols	State Director of Vocational Education, Utah State Department of Education
Virginia	Rufus W. Beamer	Head, Department of Education, Virginia Polytechnic Institute
Washington	Ray Jongeward	Director of Research, Washington State Department of Education
West Virginia	Joseph K. Bailey	Supervisor, Vocational Program Services, West Virginia State Department of Education
Wisconsin	Donald M. Brill	Supervisor, Vocational and Adult Education, Wisconsin State Department of Education
	Vernon Swenson	Chief, Business and Distributive Education, Wisconsin State Board of Vocational and Adult Education

PRESENTATIONS

BY THE

CONSULTANT STAFF

THE ROLE OF RESEARCH AND DEVELOPMENT IN VOCATIONAL EDUCATION

by
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There are a number of steps in the process of inventing and diffusing innovations in any field of human endeavor--medicine, agriculture, industry, education--any field. What goes on at one stage of the research and development process is quite different from what goes on at another. In fact, the circumstances which are correct for any one of them are essentially wrong for all the others. The purposes are different; the people are different; the costs, the signs of excellence and the measures of success for the several stages all are different. Inasmuch as those differences cannot be reconciled, the stages cannot be telescoped or combined. Moreover, since each one must grow out of the preceding (in a carefully-planned program) they must occur in a certain sequence over a period of time. Their order cannot be changed. Furthermore, most people prefer to work in one stage and find working in the others uncomfortable if not distasteful.

Those are my propositions to you.

It ought not be necessary to cover this ground with you who are experts in vocational education because you are all students of agriculture and industry. Those two fields (along with medicine, business, and the military) offer the most compelling proof of what a serious program of research and development can accomplish. I can do little more than call sharply to your attention what you already know but perhaps have not yet applied to your work as educators.

Frankly, if you were not educators it would hardly be necessary. But since you are, I will pretend that you are as innocent of research and development as the remainder of the profession and will even presume to tell you something about agriculture.

Most of us who have written about research and development in education have recognized several stages along a line of activity. All of us tend to put something called basic research over toward the early end, something called development along in the middle, and something called demonstration over toward the late end. Beyond that modest amount of agreement, however, we cannot seem to go. We all cut the line at different places and use all sorts of names to label the segments.

It is well worth noting that the man who likes to work at a particular stage carefully slices it up into several substages and names each one. I am reminded of the map showing the USA as seen by Ohioans--Steubenville on the Atlantic, Dayton on

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EDITOR'S NOTE. Dr. Brickell preceded his paper with comments based on his experiences reported in the publication, Organizing New York State for Educational Change. See pages 23-29 of an article from Theory Into Practice, Vol. I, No. 2, April, 1962, which capsules these experiences and observations.

the Pacific, and Cincinnati on the Gulf. This pheonomenon is worth your attention because the people whose work you administer are likely to be myopic Ohioans about their own work. They may show little, if any, interest in the work of men at other stages. Unless you yourself can keep the entire research and development spectrum in view, the more able and energetic of the men who work for you will inevitably lead you to over invest in their favorite stage.

Last week in Washington as a panelist for one of the research and development programs I read a proposal from an extraordinarily able group of researchers who enjoy working together. They proposed to spend many weeks and much money getting together to plan what to do, a little time working with school people persuading them to do it, and many months and much more money evaluating the effect of their work on the schools. Like almost every multi-stage proposal I have ever read, it ballooned out at the proposers' points of special interest, then deflated at the others. That particular proposal was dumbbell-shaped.

Because the names of the several stages are not worth arguing about and because the smaller divisions are difficult to distinguish, I will simply number the major steps in order. Some of the names commonly used to label various stages are shown below the line in a rough sequence from left to right. (See attached chart titled: A Research and Development Sequence on page 22).

STAGE I - INQUIRING INTO THE WAY THINGS ARE. The ideal circumstances for Stage I are: detachment from any specific or immediate problem, the absence of a timetable, and no expectations except that knowledge will be produced. (More about the circumstances later.)

The whole process of inventing and diffusing innovations in any field should begin with an understanding of what the world is made of and how it is put together.

In the human enterprise we know as vocational educators, we want to start by understanding the circumstances, processes, and effects of learning to work. We want to know why man works--the economic, political, social, and ego-related significance of it to him. We want to know the psychological effect of unemployment. We want to know how girls choose careers. We want to know how factory work was represented in 19th Century English novels. We want to know the relation between intelligence and manual dexterity. We want to know what leads to success or failure on the job. We want to know which old jobs will disappear, which new ones will emerge. We want to know the salaries paid to refrigeration maintenance men during their first three years of employment. We want to know how many boys cut electronics class at Southwest Tech the day after Thanksgiving last year. Throughout all this, we would especially like to know the relationships of cause and effect so that we can deliberately control events in the future.

You can see that some of this information is more "basic" than the rest. That is, it explains more. You can also see that the information gathered will be "useless" in and of itself. It will remain "useless" until someone takes it and says, in effect, "Well, if that's the way things work, how could I make a particular thing happen? Now if I were to take . . ." With that thought, he has moved across the line from Stage I into Stage II.

STAGE II - CREATING A PROCEDURE FOR GETTING SOMETHING DONE. The ideal circumstances for Stage II are ones of artificial enrichment and extraordinary freedom. (More about that later.)

In Stage II a goal is set and a procedure is devised to achieve it. The planner does not have to know anything whatever about Stage I. That is, we can have invention without research, engineering without physics. But you can see that a man can design better if he knows the properties of his materials in advance.

In vocational education, Stage II is the translation of what is known about learning vocations into programs for teaching vocations. It is the creation of teaching equipment, teaching materials, teaching schedules, and teaching procedures. If the resulting program is to be exported outside the original invention setting, it must first be fully formulated, clearly described, and accompanied by all the equipment and materials (books, films, teachers' manuals, pupil examinations) needed for its use. If this is not done, an exportable instructional program has not yet been invented and it cannot possibly be moved into Stage III.

STAGE - III DETERMINING WHAT A PROCEDURE WILL DO. The ideal conditions for Stage III are those which are controlled whenever possible and closely observed when control is not possible. (More about that later.)

In Stage III we find out what the newly-devised procedure is good for--if anything--and what is costs to use. We compare its effectiveness and efficiency to that of other procedures which already exist and have the same goals.

Here we are not interested in whether it will grow in the greenhouse or tick in the laboratory. Since we are checking it out for possible widespread use, we test it under all kinds of circumstances, exposing it to the risks of all weather conditions, indifferent care, and ordinary people.

In vocational education, Stage III means actual use of the program in the whole range of school classrooms with all kinds of teachers and all sorts of students. At the end, we want to be able to say to the prospective user: "If you have these kinds of socio-economic conditions in your community, and this kind of teacher in your school, and if your students are thus and your goals are these, and if you can acquire the following equipment and materials and use them as indicated, then this particular procedure will do such and such a thing for you."

When we can say that about a program, it is ready for Stage IV.

STAGE IV - MOVING A PROCEDURE INTO GENERAL USE. The ideal conditions for Stage IV provide for the dissemination of information; the demonstration of the proven procedure in natural, garden-variety settings; the persuading of administrators; and the training of teachers. (More about that later.)

In Stage IV the new procedure is moved out of the evaluation phase and installed in the field settings for which it has been proven useful.

It is important that what is spread be an authentic version of what was invented in Stage II and proven in Stage III. It is not unusual to find that field settings are

not yet equipped to use an innovation. If they cannot be properly equipped, the innovation cannot be spread. Moreover, once a new program has been installed, it must be maintained or it will tend in time to lose its distinctiveness and fall in quality.

The purpose of Stage IV activity is not to gain new knowledge, not to develop new procedures, and not to evaluate them. The purpose is to spread what has been proven superior.

A Closer Look at the Several Stages.

The most striking feature of the research and development patterns in other fields is the existence of separate agencies for different functions. The distinctions between the several stages is perhaps clearest in agriculture, where it took fifty years of trial and error to discover the differences and get organized to deal with them. (Please forgive me while I run a bucket of coals up to Newcastle.)

In 1862, Federal legislation authorized the creation of colleges of agriculture as part of the land-grant institutions established under the Morrill Act. (You will recognize this as a Stage IV activity, intended to reach pre-service farmers.) In 1887, twenty-five years later, the Hatch Act created agricultural experiment stations to discover something definitive for the colleges of agriculture to teach. (This was primarily to take care of Stage III and Stage II, with minor attention to Stage I.)

I would estimate that vocational education today is about where agriculture was in 1887. We are educating workers today fairly well and we can go on doing it, getting gradually better by swapping the practices we evolve through trial and error. But suddenly we are offered over $20 million a year to get better faster.

For twenty-five years after the Hatch Act of 1887, in addition to underpinning the college curricula, the experiment stations tried to disseminate research findings directly to farmers. Issuing research reports was soon abandoned because (and here the analogy with education becomes irresistible) research men wrote increasingly esoteric reports addressed primarily to each other. The stations then tried three-day institutes, traveling exhibits, bulletins, speeches, demonstrations at the stations--the same kind of techniques we use today in education. They failed for them as they have for us and for many of the same reasons. As a consequence, the Smith-Lever Act in 1914 created the agricultural extension service to solve the special problem of disseminating innovations to farmers already in service. Both the Morrill Act and the Hatch Act neglected this problem. (So does the Vocational Education Act of 1963, as I read it. I wonder whether it will take us twenty-five years to find that out.)

The Smith-Lever Act completed the basic machinery of agricultural research and development--fifty years after it was begun. I note with great interest that it has not had to be significantly redesigned in the fifty years since. An impressive test of its adequacy. Permit me to oversimplify in describing how it works:

Drawing upon basic research in agriculture itself and in the scientific fields which underlie it, the staff of an agricultural experiment station is free, for example, to develop (to invent or create) a new strain of seed. The new seed is then tested on a wide variety of plots owned, leased or otherwise controlled by the

experiment station. During this evaluation period, the circumstances surrounding the growth of the seed are controlled where possible and are observed and recorded where control is impossible, as with rainfall. At the conclusion of a successful field test, staff members of the experiment station describe the results in research reports. The dissemination process then begins. An extension specialist translates the research into a practical plan for using the new seed strain. The county agent is then responsible for promoting the use of the new seed. He frequently starts by persuading one farmer to demonstrate its use on his own farm so that neighboring farmers can be brought in to observe the results. For the farmers who want to change, the agent supplies the necessary knowledge and offers his continuing help.

Medicine and industrial development offer parallel examples.

Let us now examine each phase of research and development in education with greater care. The conditioners of success suggested here are offered as possible criteria for judging proposals. They are different at each stage, of course, and the differences should be carefully noted. Although the categories created here are an idealized conception, which will be followed only rarely in the proposals you will receive, they can serve to help you--and the proposers--understand what they are driving at and whether they have the right horses for the task.

STAGE I

The best atmosphere for inquiring into the way things are is one in which highly capable men have been released to pursue their own interests and are expected only to produce knowledge. There is, ideally, no goal in sight other than the discovery of information. There are no deadlines. There will be time to pursue at greater length whatever is discovered. The results do not have to draw the applause of other workers, get into the newspapers, or succeed in the marketplace.

The men working at Stage I are not responsible for seeing that their work is translated into something useful at Stage II. In all likelihood, no Stage I study will lead directly to a Stage II product. In fact, Stage I studies will often lead to nothing whatever. What men discover at Stage I goes into the general fund of knowledge generated by mankind. There it may someday be drawn upon--if anyone cares to do so.

For its part, Stage II activity will always dip into the whole pool of knowledge produced by Stage I and will not attempt to sustain itself on a trickle on information from a single Stage I source. In other words, it is neither reasonable nor necessary to expect all research inquiry to have immediate value.

Indeed, it does not matter whether the possible implications of a Stage I study are too expensive, impractical, or otherwise unacceptable for operating vocational education programs as we know them today. In fact, while the inquiry is in progress, any concern for the applicability of the findings can distract the researcher, narrow his effort, and hasten him to unjustified conclusions.

Our failure to recognize the value of basic research and our reluctance in education to finance adequately the special circumstances needed for it--along with

our natural but premature eagerness to have the researcher translate his results into educational programs--have prevented or damaged many basic research efforts. They have led some of our finest minds to try to convert their finding to practical use and to seek recognition through advertising them or to seek money for further research through selling their findings to schools. Such use of research talent, although understandable, is wasteful. Fundamental progress stops while these men go out into the marketplace. They should be supported to do what only they can do. We distract them to our loss.

Stage I research does not conclude with a set of instructions telling the reader what to do with the results. It says simply, "The investigators note with interest that, within the limited scope of our inquiry, things seem to work about like this--with such and such a degree of probability that we are correct." It is up to the reader to make what he can out of the knowledge offered to him.

I might remind you that the state legislatures and the Congress have not typically expected the men who staff the bureaus of the executive branch to pursue knowledge in a lesisurely atmosphere of detachment without regard to its ultimate use. You may consider how much Stage I inquiry it is fair to expect from the men in state education departments.

Much of the research into human behavior which underlies--or should underlie--vocational education programs is carried out not by vocational education specialists themselves, but by economists, sociologists, anthropologists, and psychologists. It will undoubtedly lie there, unused, unless sifting through it becomes a standard part of all Stage II activity. It is my opinion that future efforts to develop vocational education programs should draw heavily upon Stage I research. I believe that the best designs will come from the conscious, deliberate, planned translation of that research into programs for teaching.

STAGE II

The basic ingredients of a good invention setting are a richness of talent and a freedom to explore. At its best, Stage II provides for (1) a group of highly intelligent people, (2) a somewhat limited problem, (3) time to concentrate on a solution, (4) ample money and resources, (5) freedom to try almost anything, (6) the likelihood that the solution will be used somewhere, and (7) the prospect of personal recognition if the problem is solved. The more artificial, enriched and free the setting, the more distinctive the innovation it is likely to produce.

Freedom is essential. The atmosphere and the actuality of freedom must be deliberately created.

The Atmosphere. I always did poorly as a boy on the match-stick puzzles in my comic books. I could never move three matches and wind up with five squares, or whatever. When I turned in frustration to the solution, it usually said something like: "Stand matches #4 and #6 on end and lay #2 horizontally across the top. (We didn't say you had to lay them flat!)" I was always a victim of self-imposed restrictions. Most of us bring to any problem a set of limitations which are in us rather than in the problem. The technique of group "brainstorming" is governed by a set of rules meant to wipe out artificial limits--you are to say whatever springs into your mind, you are encouraged to stretch another man's unorthodox suggestion into something

really outlandish (the old-fashioned word for "way out") you are not to criticize anyone's idea no matter how wild, and so on.

The Actuality. Beyond the matter of climate, you want the kind of exhilaration that comes when top management says, "Men, we want a solution and we don't care what it costs." The lifting of a monetary ceiling is a shorthand way of promising equipment, consultant advice, secretarial help, travel money, tryout schools--whatever, and this is important, whatever the inventors themselves think they need.

I have traveled occasionally among education's Stage II hothouses--those especially-created curriculum development settings blessed with a favorable climate and enriched soil. I usually check out the seven ingredients I have suggested to you here. Once I met two biology teachers who had been hired by an industrial giant for the summer and freed to pursue their own research on the DNA molecule in the hope that they might come up with some techniques useful for teaching high school biology. They came out of their modern laboratory, past their technician's office, and into the paneled anteroom. We stood on the carpet, chatting about their travels in conjunction with the project; then I ticked off the seven criteria and asked, "Right or wrong?"

"Wrong on one," said the older. "You don't need lavish resources."

"You don't?" I said, looking around.

"No," he said. "The resources don't have to be lavish. All that's necessary is that they give you everything you ask for."

His remark is a classic. It goes to the heart of the matter. For what would in any other circumstance be extravagant is in an invention setting a matter of simple necessity.

The typical operating school does not provide a setting rich enough or free enough to generate new instructional programs. Faculties usually carry heavy responsibility for operating standard programs. Often overburdened with routine duties, they can rarely take their hands off the wheel of labor long enough to invent something better.

The national curriculum studies sponsored by the National Science Foundation's Course Content Improvement Section--PSSC physics, SMSG mathematics, BSCS biology, CHEM and CBA chemistry--all sprang, without exception, from artificially created, enriched, free settings. They did not arise naturally from the workaday world. None of them would exist today if a large group of talented men had not been paid and freed to concentrate specifically on designing them. NSF spent about $1½ million to develop CBA chemistry, $6 million to develop PSSC physics, and $8 million to develop SMSG mathematics. Those, by the way, are all Stage II costs; they do not include Stage IV costs, which in the case of PSSC have run an additional $8 million so far. Six million to develop PSSC, $8 million to spread it. No wonder it is the success story of our time.

Not all limitations are monetary. State education departments are notoriously prudential in outlook, and they have their regulations to prove it. The Federal funds which came to vocational education first with Smith-Hughes and subsequently with

other laws have--until the Vocational Education Act of 1963--been accompanied with highly prescriptive provisions. Regulation in any form, no matter how broad and no matter how well intended, always inhibits innovation. Suppose you require only the most general conditions--say that students be taught in a school building by college-educated personnel at a per pupil cost of $400 per year or above. No government agency stops at that. But even if it did, the room for inventing new forms of vocational education would have been severely restricted.

The five states involved in the Ford-financed Western States Small Schools Project faced this problem head on 3½ years ago. They established five criteria for membership. The fifth, titled "Freedom to Experiment," requires that "all governing boards (i.e., state boards of education, boards of trustees, etc.) of the state departments of education or institutions of higher learning must adopt a resolution that the project will not be obstructed by any regulations which might restrict or deter or in any way deny the free and unrestrained examination of methods and techniques specifically designed to assist in the development of higher quality of educational opportunity."[1] I commend their fine example to you. Existing regulations ought to be suspended in Stage II while better methods are being sought.

In summary, the Smith-Hughes and George-Barden Acts did not give us the continuous cycle of innovation we must have in vocational education--largely because, in my opinion, they did not call for the deliberate creation of Stage II seedbeds. The Act which brings us together today corrects that condition. What it takes for Stage II is bright people, a limited problem, time to work on it, lavish resources, maximum freedom, the probable use of the invention, and the promise of recognition for the inventors. To the best of my knowledge, if you omit any one of them, the resulting invention will be fragmentary or deformed.

STAGE III

At its best Stage III activity provides conditions in which the forces which might influence the success of the new approach being tested can be controlled when possible and kept under close surveillance when actual control is impossible. The detachment from practical affairs, which is an important feature of Stage I and the great freedom which must characterize Stage II, would be inappropriate and ultimately destructive in Stage III.

Stage III calls for the systematic testing of a new instructional approach to find what it will accomplish under what conditions. The empirical evaluation of programs by using them in many different schools under carefully controlled or closely observed conditions can be described as field testing. In the test, the novel procedure must be used over a period of time and its results compared with the results of other procedures used under similar conditions. The process requires two restrictions: (1) procedures must not be changed in mid-stream; otherwise it

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[1] Colorado State Department of Education, An Introduction to the Western States Small Schools Project, Colorado State Department of Education, Denver, p. 18.

will not be clear what is being evaluated, and (2) the circumstances in which the procedures are used must be kept comparable; otherwise it will not be clear what environmental conditions are determining the outcome.

A broad field test is desirable because we know so little about the conditions which affect learning in school. New programs should be tested in situations so diverse that all the forces which play upon learning, even though unknown, will nonetheless be present to influence the results. A program may prove satisfactory in most schools while giving spectacular results in one particular setting and abysmal results in another. Only by extensive field testing can we avoid the error of labeling a program a success or a failure because it happened to be tried in a single circumstance where an unknown factor dictated the results.

We are relatively unfamiliar with Stage III endeavors at the present time in education. Ordinarily the step is skipped entirely and we move directly from II to IV, disseminating raw, untested inventions. Many of our most talked-about and earnestly promoted innovations have yet to be carefully assessed--instructional television, flexible scheduling, team teaching, non-graded plans, programed instruction, and even the widely-respected NSF science and math courses mentioned earlier. The same situation appears to exist in vocational education.

The field testing called for in Stage III is to be distinguished from the common use of field trials in Stage II. Field trials are often used to collect suggestions from teachers as to how the course could be improved and to determine whether the course is workable at all in a natural setting. All the NSF courses have had the benefit of field trials and were greatly modified by them. But try-out for the purpose of redesign is not the same as testing to find whether a completed program is effective and to ascertain where it should be used. It is this final step that we usually skip.

Note also that field use is not the equivalent of field testing. Years of field use may prove only that a practice in vocational education is feasible--not necessarily that it is effective. It is revealing to observe that the degree to which a program has been carefully evaluated has nothing to do with its age. I daresay we have as little actual hard evidence about the effectiveness of work experience in distributive education as we have about the effectiveness of our new courses in computer technology.

The evidence we seek from a thoroughly-planned, well-designed Stage III activity will not come to us in any other way. It is not a natural occurence. It must be consciously planned for and men must be trained to do it. As many as twenty or thirty different schools should be used in a single test. The process may occasionally be concluded within one or two years, but will usually take longer because longitudinal studies will often be required.

In the same way that Stage II development can proceed without the benefit of Stage I research, Stage III evaluation can be applied to any program no matter how it was developed. It is not necessary to wait until an innovation has been bred in the incubator recommended for Stage II. New approaches have been and will continue to be designed in all sorts of settings, including an occasional local school system. They should be as eligible for field testing as any developed under more scientific conditions.

STAGE IV

Like all earlier phases, Stage IV has its own subordinate stages. The chief ones are: (1) acquainting schools with the existence of the new program, (2) persuading school administrators to adopt it, (3) making certain the school acquires the necessary machinery and materials, and (4) teaching staff members how to conduct the program.

Clearly, Stage IV is not "research" and it is not "development" in the sense of creating something new. Yet any so-called research and development program which stops short of Stage IV may never touch a pupil in a classroom. The heavy work of research and development lies in moving proven new programs out into the field settings where they ought to be used.

Innovations are not eagerly sought by all schools. They do not flow automatically across the nation simply because they have merit. They can be urged from national platforms, attractively packaged, tested and found to be good, stamped "Safe for human consumption"--and still they may sit in the warehouse.

I offer you my observations about Stage IV--my favorite term for it is dissemination--as it appears to work in elementary and secondary education generally and leave it to you to test them against your own experience in vocational education.

As Everett Rogers will undoubtedly tell you when he speaks later in the conference, it is one thing to be informed and another to be convinced. Knowing that something exists is only a first--and not very big--step in the successful adoption of an innovation. (This is one of the things it took agriculture twenty-five years to discover and the Smith-Lever Act to cure.) Furthermore, since we are discussing institutional adoptions rather than farming practices, keep in mind that the man to convince is the administrator located at the control center of the institution we want to change.

The most effective way to convince a school staff that it should adopt a new program is to let it observe the successful new approach in action. Nothing persuades like a visit. Written descriptions of the new program, speeches about it and research reports concerning it should all be regarded as preliminary or supplementary to a visit.

The innovation must be demonstrated under conditions which are not abnormal, artificial, or unrealistic--that is, not too different from the everyday circumstances in the observer's own school and community.

The most persuasive demonstration consists of the continuing use of the new approach as a basic part of regular instruction in a normal school setting. Anything which smacks of a "performance" by extraordinary teachers working under artificial conditions for a limited time is likely to be unconvincing. The observer may express interest, but he cannot be certain the approach would work day and day out in the hands of the average teacher in his own school.

After the visit, if the local school decides to take on the new program, it is essential that its staff be thoroughly educated in the professional skills necessary to carry it out. The development of those qualities in the staff requires far more elaborate steps than most schools even think of providing ordinarily. In the ideal situation for re-education, the teacher of teachers knows more about the innovation than those he is re-educating and has himself succeeded in using the program with

children. The instruction reaches simultaneously all teachers who should use the innovation, extends over a long period of time, and is interspersed with actual classroom practice in using the innovation.

Furthermore, turnover in local faculties is so high that re-education for an innovation must be available continuously to new teachers entering the school. Adequate arrangements for doing this locally are almost non-existent, as you know. Here is where state leadership directly or through intermediate units is essential.

In summary, successful dissemination depends upon realistic demonstrations followed by intensive, continuing re-education.

Let me conclude my observations about Stage IV with a comment about local adaptation. Adaptation is widely recommended as superior to adoption. No doubt it is superior to the blind, slavish adoption of an ill-fitting innovation. But it has been my own observation that most local adaptations of programs developed outside are not a shrewd ingenious tailoring of the innovation to make it fit local needs. The final adaptation usually looks to me more like what they have left after they knocked the corners off getting it through the door. It appears to be the part they were actually able to get inside the school, given their shortcomings of space, time, equipment, materials, and trained personnel. I trust the point is apparent.

A Few Final Generalizations About the Research and Development Sequence.

These final generalizations are based on my own observations and constitute my own views. I cannot guarantee their accuracy; I can only say that they fit my experience.

As one moves from Stage I through Stage IV, from basic research to the dissemination of innovations, the following seems to be true:

* One man working alone can accomplish less and less.
* More and more people must be dealt with.
* Costs rise sharply.
* The value of a dollar diminishes.
* The amount of hardware and materials needed goes up.
* The average level of human talent goes down.
* Sharpness of thinking diminishes.
* Quality of ideas tends to be diluted.
* Ideas must begin to be pushed rather than left to be pulled from one stage to the next.
* Facts unaided by emotion become less persuasive.

* Emotion unenlightened by facts becomes more persuasive.

* Strategies of educational change must deal less with individual men and more with their institutions.

Probably the most significant final generalization I can offer - and in some ways the most disturbing - is this:

A mature program of research and development is one in which men are busily disseminating in Stage IV a set of innovations which are decidedly worse than those being tested in Stage III, which are themselves definitely inferior to those being invented in Stage II, which are themselves worse than they could have been if men had only known what they are now learning in Stage I. Or to accentuate the positive, what is now being learned in Stage I will soon make what is new being invented in Stage II look primitive, even though present Stage II developments frankly look far superior to those being tested in Stage III, which are clearly better than what is now being spread in Stage IV, which has, of course, already been proven superior to what schools were doing before.

Responsibility for Managing Research and Development.

Certain agencies in education are better equipped to work at one stage than another in research and development. They are differently situated with respect to legal responsibility, organizational structure, tradition, values, viewpoint, funds, and personnel. My view is that they should apply their strengths and not attempt to be all things to all men.

You will certainly reject this view outright. At least my experience has been uniform on this point. In my own 1961 study of educational change in New York State, for example, I wrote about the shortcomings of the state department, the school study councils, the teachers colleges, the laboratory schools, the commercial publishers, and everybody else. Afterwards, each told me that I had been wrong about it but that there was a lot of truth in what I had said about the others. However, their opinions were identical on one point: Each organization felt that, properly financed, it could almost single-handedly encompass the whole research and development sequence. Most of them, of course, knew that Buffalo is on the Pacific.

Quite honestly, I expect that you will go into your discussion groups later today and spend most of the time explaining that your own agency is both responsible and equipped to do the whole job. Nevertheless, I will propose that, as shown on the chart titled, A Research and Development Sequence, Stage I is especially suitable for universities and research institutes; Stage II, for universities, research institutes, and state agencies; Stage III, for state agencies; Stage IV for intermediate units and local school systems.

The reasons for this recommendation cannot be recounted here today, but are carefully presented in the report of my 1961 New York study, along with detailed recommendations for administrative structure. I do not know enough about vocational education to know how precisely the structure will fit. To take but one example of an exception, it was quite evident that in New York State in 1961, local vocational agriculture programs were well served in Stage IV without the benefit of intermediate

units--probably because of the high quality of state personnel, their large number relative to the number of local programs, and their tradition of aggressive field leadership.

You will discuss proper administrative structure throughout in this conference. My only concern about structure is that if you ask an agency to stretch itself over a function not normal to it, it will be long on lip service and short on performance--and it will not even know that it is cheating.

One final point needs to be made: I speak here only of the management of the function, not of the participants. Local schools, for example, will be participants in every stage, I through IV.

The Need for a Planned Sequence of Research and Development

A school, like any other institution, tends to continue doing what it was established to do, holding itself relatively stable and resisting attempts at restructuring. There is a sound reason for this: Stability in the institutional structure makes for maximum output of the results that structure was designed to produce. Any change in the arrangement of its elements tends to cut down production, at least until new habit patterns are formed.

There are two distinct groups of people who might be expected to call for change in an institution such as a school--those inside it and those outside of it. There is no question that, for reasons detailed at great length in the literature, the most powerful demands for change are generated outside an institution rather than inside it.

The case is no different with schools. They will be under external pressure to keep on modifying their vocational education programs as far into the future as any man can see. The primary reason for a systematic program of research and development is to see that the changes which are coming as a result of external pressures--and they are coming, one way or another--to see that the changes are made on a rational basis, are good for students, and ultimately good for our society.

A RESEARCH AND DEVELOPMENT SEQUENCE

I	II	III	IV
INQUIRING INTO THE WAY THINGS ARE	CREATING A PROCEDURE FOR GETTING SOMETHING DONE	DETERMINING WHAT A PROCEDURE WILL DO	MOVING A PROCEDURE INTO GENERAL USE
Basic research	Development	Field testing	Dissemination
Applied research			
Theory building	Innovation	Laboratory testing	Diffusion
Basic scientific investigation - content indifferent	Design	Evaluation	Demonstration
	Invention	Assessment	Teacher training
Basic scientific investigation - content relevant	Engineering		Installation
Empirical studies	Exploration	Formulation	Adoption
Experimentation	Curriculum development		Adaptation
	Application		
Surveys			Implementation
	Building pilot models		
Status studies			Production
	Making prototypes		
Research			Manufacture
	Classroom experimentation		
			Distribution
	Classroom trials		
	Field trials		

Suggested Managing Agency:

UNIVERSITIES & RESEARCH INSTITUTES	UNIVERSITIES, RESEARCH INSTITUTES, & STATE AGENCIES	STATE AGENCIES	INTERMEDIATE UNITS & LOCAL SCHOOL SYSTEMS

Henry M. Brickell
Manhasset, New York
May, 1965

(Dr. Brickell's Comments Based On His Experiences Reported In The Publication, Organizing New York State for Educational Change)

THE DYNAMICS OF EDUCATIONAL CHANGE[1]

What causes schools to change the way they allocate teachers, time, space, or other resources? How is shifting to ungraded classes, programed instruction, television, team teaching, large- and small-group instruction, and the like, achieved within the institutional framework? Given an existing set of dynamics and statics, how can more innovations be stimulated, evaluated, and the best ones extended to other schools and school systems?

To study the problem firsthand in New York State, the writer visited thirty-five local school systems of every complexion (one hundred schools, fifteen hundred classrooms), thirteen colleges and universities, the State Education Department, ten regional college-affiliated school-study councils, schools of medicine and agriculture, and a variety of professional, commercial, and school-related citizens' organizations. The discussion that follows is based upon the findings for one state, New York, but it has implications for school systems throughout the country.

The Process of Change within Local Schools

A school is a social institution in which someone teaches something to someone else with a method at a time in a place. The six major structural elements of the institution are teachers, subjects, students, methods, times, places. This study focused exclusively on programs which require significant shifts in the normal arrangement of those institutional elements. The writer did not investigate classroom practice—the behavior that the teacher is usually free to exhibit in his own classroom with his own pupils. It was found that the public and the school board, the administrator, and the teacher exert varying degrees of influence in instituting broad educational changes.

The Public and the Board. Parents, citizens' groups, and boards of education are not strong agents in determining the path of instructional innovation, but their influence is decisive when exerted. The public and the board are important sources of demands for new or better results, but not for specific instructional innovations, perhaps because they know little about teaching methods. However, if they do develop a lively interest in a new type of program—foreign languages in the elementary school, for example—that innovation is likely to appear.

The public and the board ordinarily do not inhibit the profession in introducing structural innovation. Factors such as mutual selection of each other by administrators and communities evidently cause public wishes to be absorbed into the schools so effectively that severe dislocations between the hopes of the profession and the ambitions of the community are rare. Thus the public is not identifiable as a separate force.

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[1] Theory Into Practice, Vol. I, No. 2, April, 1962.

The Administrator. Instructional innovations of the type studied are introduced by administrators—not by teachers. Even in the best of circumstances for the expression of new ideas—in schools where administrative authority is exercised with a light hand and faculty prerogative is strong—teachers seldom suggest distinctly new types of working patterns for themselves.

The complexity of group decision-making and the difficulty of a peer group's choosing among several attractive possibilities (or, more exactly, possibilities with different degrees of attractiveness for each member) are well known. The value of leadership and the uses of authority in such a situation are also well known. An administrator is powerful because he can marshal the necessary authority, if not the necessary leadership, to precipitate a decision. He may not be, and frequently is not, the original source of interest in a new type of program; but unless he gives it his attention and actively promotes its use, it will not come into being.

The great significance of administrative initiative is heavily disguished. Phrases like "democratic administration," "the team approach," "shared decision-making," and "staff involvement" are commonplace. Behavior to match them is rare. The participation patterns in widespread use are very often little more than enabling arrangements, organized after an administrator has decided the general direction (and in some cases the actual details) of an instructional change. The control center of the school, as things are managed today, is the administrator.

The Teacher. In the absence of administrative initiative, classroom teachers apparently can make only three types of instructional change:

1. Change in classroom practice—that is, any alteration in instructional procedure which a teacher can accomplish in his own classroom without disturbing the work of other teachers.

2. Relocation of existing curriculum content—an activity which a group of teachers commonly initiates and can carry forward relatively unassisted so long as there is no administrative opposition. A typical example would be the relocating of arithmetic topics between the fourth and fifth grades to assure proper dovetailing.

3. Introduction of single special courses at the high-school level—these are commonly terminal courses in a sequence. They are often begun at the initiative of a teacher who has just returned from an intensive learning experience, such as a summer institute.

Introducing the Change and Evaluating It

Professional suspicion about the value of innovations in other school systems, and even about the sincerity of other innovators, is a widespread and serious inhibitor of educational change. Administrators and teachers suspect that many new programs may have been concocted largely to gain recognition for their sponsors.

The most persuasive experience a school person can have is to visit a successful new program and to observe it in action. Speeches, literature, research reports, and conversations with participants outside the actual instructional setting are interesting

but relatively unconvincing. However, anything "abnormal," "unreal," or "artificial" in the circumstances surrounding an observed program—that is, anything appreciably different from conditions in the visitor's own school system—can rob a visit of persuasive effect. For this reason, people from a rural school district, for example, have little interest in visiting a wealthy suburb.

Despite initial apathy or even opposition on the part of a number of teachers, new instructional programs can be successfully introduced. Faculty members ordinarily begin to prefer new methods within four months to a year after a novel program has been introduced, regardless of their very early reactions. It seems reasonable to believe that after teachers learn how to do the new job, they feel competent and secure.

Proposed innovations often arouse feelings of inadequacy and uncertainty in teachers. These feelings should not be mistaken for outright resistance to the change; this is seldom the case.

The key to successful innovation is providing assistance to the teachers as they begin to implement the new approach. More new programs have been destroyed by inability than by reluctance.

In evaluating instructional innovations, pupil reaction is usually considered sufficient as a criterion. In the eyes of the practitioner, no other evidence outweighs student reaction as a measure of success. More complex evaluative techniques are rarely used. Even if the normal operation of the school produces pertinent information, such as scores on standardized achievement tests, the data are inspected with interest but are almost never regarded as conclusive in and of themselves. For example, if achievement-test scores show little or no difference as a result of the new procedure (which is what they usually show) but students nevertheless respond to the instruction with interest or enthusiasm, the method is judged to be superior to what was done before.

Instructional changes are nearly always reported as resulting in improvement. Almost everything new seems to work better. The writer's observations led him to conclude that the attention, encouragement, and recognition given to teachers by persons outside the classroom during the introduction of new programs are among the strongest causes of their success.

Classroom teachers normally work in such isolation that the kind of attention provided by the principal and others during major instructional changes can scarcely fail to have an exhilarating effect. The "Hawthorne effect"—higher production stimulated by a change which does not alter the original resources—evidently goes hand in hand with educational innovation.

The Role of Outside Institutions and Organizations

A number of organizations outside the local school system attempt to influence innovations. They meet with mixed success.

The State Education Department. Because the state education agency in New York is larger and more influential than that in most other states, observations concerning it may have limited applicability. The following might fit a number of other state education departments:

The department both promotes and inhibits change. It encourages the adoption of innovations that it officially endorses, discourages the adoption of others. Departmental discouragement inhibits all but two types of schools—the slow-movers who never even reach the boundaries of state approval and the fast-movers who, in their own words, "Don't ask."

The department has no adequate mechanism for encouraging experimentation along lines that it does not officially approve. Despite many recent moves to sponsor innovation, it is still essentially prudential in outlook and devotes much of its effort to regulatory activities. It is entirely too small to provide direct service to the schools.

The Colleges and Universities. Except for their role in training teachers, which is universally regarded as being of critical importance, the colleges and universities have little influence on instructional innovation in elementary and secondary schools. Very few of the local programs studied during the survey had been suggested, planned, evaluated, or even observed by college personnel—on either a paid or voluntary basis.

The colleges and universities are not well organized to exert direct influence on elementary and secondary programs and do not consider this to be one of their basic responsibilities. Institutions of higher learning are organized primarily to teach regular courses of predetermined content and length.

For instructional shifts of major scope, it is necessary to deal with the entire staff rather than with individual teachers. College courses designed for a collection of individuals must teach information and skills which will be useful in a variety of school settings. They cannot be directed narrowly toward the needs of one particular system, the form in which they would be most useful to a school system adopting a new instructional program.

No one in the profession understands the necessity for continuous in-service education as well as the college personnel who are providing pre-service education. They said quite frankly, "We do not pretend to turn out a finished product." They assert that the colleges do not attempt to equip the prospective teacher with specific instructional techniques, but concentrate on developing a general professional wisdom from which he can draw the specific techniques that he needs for any given task. Actual instruction in specific techniques was said to be the responsibility of the schools which employ the college graduates—a responsibility which most local schools patently are unable to meet.

Despite college disclaimers of any serious effort to teach specific techniques, the writer came away from the interviews with the strong impression that certain specific techniques are indeed taught but that they can be better described as "currently in vogue" rather than as "basic professional wisdom." These are exemplified by methods of using a textbook, making lesson plans, and assigning homework. After close study, the writer concluded that teacher-education programs do not train teachers in how to carry out new instructional processes until those processes are in general use.

Professional Associations. The professional associations are the most effective communicators, not primarily because of their publications and programs, but rather

because of the opportunities they provide for informal contact among individuals at meetings. (A talk with a trusted friend who has himself experienced a new program is very close to an actual visit in its persuasive effect.) Notwithstanding their effectiveness compared to other agencies, the communication which the associations provide is random, disjointed, overlapping, and unfocused.

College-Affiliated School-Study Councils. The college-affiliated school-study councils act primarily as communicators of information. They are rarely tied in directly with the process of changing the instructional approaches used in their member schools. These councils are generally poorly financed and weak in influence.

The heart of the problem seems to be that the study councils are usually managed by college personnel interested chiefly in discovering new information and paid for by local school systems interested chiefly in learning to do in the best way what is already known. The result is an enterprise so underfinanced that it can perform neither function very well.

Private Philanthropic Foundations. The great contribution of the private philanthropic foundations in education, as in other fields, is that they have created conditions under which able people could be freed to concentrate at least temporarily on limited functions. Some promising new programs have resulted. Nonetheless, it is difficult for private foundations to promote the spread of any distinctive instructional approaches that they have sponsored because of the professional suspicion aroused by any new approach, particularly one which is being actively advertised.

Commercial Organizations. The commercial organizations, such as textbook publishers, are extremely powerful. When they promote an instructional change, a great wave of influence sweeps over the schools. On the other hand, once they begin to market a given product, they serve as powerful inhibitors of change because they seek volume distribution and repeated sales of the same product.

All in all, the commercial organizations tend to be a unifying influence over curriculum content and instructional methods not only on the state-wide level, but nationally as well. They seem to hold the better schools and the better teachers short of the point they could reach, while taking poorer school systems and less capable teachers further than they would otherwise go.

The Three Phases of Instructional Innovation

The key conclusion of this study is that the design, the evaluation, and the dissemination of innovations are not at all the same. They are three distinctly different processes. The circumstances which are correct for any one of them are essentially wrong for the others. They cannot be reconciled. Moreover, most of the persons who work well in one phase do not work well in another.

The hallmark of the ideal design setting is freedom; the hallmark of the ideal evaluation setting is control; the hallmark of the ideal demonstration setting is normality.

Phase 1: Design. The ideal circumstances for the design of an improved instructional approach are artificial, enriched, and free. At their best, they provide a group of highly intelligent people, a somewhat limited problem, time to concentrate on a solution, ample money and resources, freedom to try almost anything, the likelihood that the solution will be used somewhere, and the prospect of personal recognition if the problem is solved. The more artificial, enriched, and free the setting, the more distinctive the innovation it is likely to produce.

Phase 2: Evaluation. The ideal circumstances for the evaluation of a new instructional approach are controlled, closely observed, and unfree. At their best, they provide conditions in which the forces that might influence the success of the new approach can be controlled when possible and kept under close surveillance when actual control is impossible. The freedom which is essential in searching for a good design is destructive in making a good evaluation.

Phase 3: Dissemination. The ideal circumstances for the dissemination of a new approach through demonstration are those which are ordinary, unenriched, and normal. At their best, they are exactly like the everyday situations in the observer's own school and community. Anything which the observer could label "abnormal" or "unrealistic"—such as the enriched conditions necessary for good design or the controlled conditions necessary for proper evaluation—robs the observed program of persuasive effect.

The most formidable block to instructional improvement today is that education—unlike medicine, agriculture, and industry—fails to distinguish the three phases of change: design, evaluation, and dissemination. The campus laboratory schools offer the most spectacular example of trying to put everything into one shell. They are expected, at the same time and in a single setting, to invent new programs, to evaluate them, to demonstrate them for the purpose of persuading the public schools to do likewise, to show the best now-known ways to teach, and to be a safe place for professors' youngsters to go to school. All these functions cannot of course be performed at one time in one setting. The campus schools respond by demonstrating the best known ways to teach because that function fits in with their responsibilities for teacher training.

A Word about Basic Research in Education

Another serious block to instructional improvement is the fact that education fails to support adequately the basic research which should precede the design of new instructional programs.

Basic research in education is the study of the circumstances, processes, and effects of human learning. The basic-research effort may well be "useless" in the sense that it has no immediate application to schools as educational institutions. Ultimately, when converted into instructional procedures, it is extremely useful.

In a logical sequence of events, basic research should be labeled "Phase 1." It should precede and help generate the design effort. However, the writer found that most innovation does not flow methodically from basic research, but is undertaken quite independently. Thus he bowed to the facts and labeled program design "Phase 1." It is his opinion, however, that design efforts should draw upon basic

research into human learning and that the best designs will come from the conscious, deliberate, planned translation of that research into programs for teaching.

Th Solution

Because the problem of change is large, the solution must be equally large. It should deal realistically with the conditions which now exist and not attempt to do the impossible, should draw funds from the most appropriate sources and give responsibility to those best able to take it, and should use the effective structures already in existence but abandon those which are not effective.

In Organizing New York State for Educational Change, the writer has recommended a solution he believes is big enough to solve the problem in that state. The heart of the plan is the creation of special, separate circumstances for the design, evaluation, and dissemination of new instructional programs. It seems probable that this plan has implications for other states.

A PHILOSOPHY OF RELATIONSHIPS FOR STATE RESEARCH AND DEVELOPMENT

by
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Much has been said about the gap existing between research and practice, and we are reminded of the old Vermont farmer who, when asked to cooperate in some agricultural research, commented, "Shucks, I ain't farming half as well as I know how to now!" Well, our thesis concerns the need for more of both research and practice, and suggests the pressing urgency of systematic organization and a thorough understanding of the processes involved in Research and Development.

According to Charles F. Kettering, research is a high-hat word that scares a lot of people. It needn't. It is rather simple. Essentially, it is nothing but a state of mind--a friendly, welcoming attitude toward change, going out to look for change instead of waiting for it to come. Research for practical men is an effort to do things better and not to be caught asleep at the switch. The research state of mind can apply to anything: personal affairs or any kind of business, big or little. It is the problem-solving mind as contrasted with the let-well-enough-alone mind. It is the composer mind instead of the fiddler mind. It is the tomorrow mind instead of the yesterday mind.

Research is theoretical analysis, exploration, and experimentation directed toward the increase of knowledge, and thereby the power to control phenomena.

Webster defines "research" as "...studious inquiry...critical and exhaustive investigation or experimentation having for its aim the revision of accepted conclusions, in the light of newly discovered facts." The word "research" is so widely used with such varying connotations that great confusion results. Research can be defined as the application of human intelligence in a systematic manner to a problem of which a solution is not immediately available.

Webster describes "development" as "a step or stage in growth, advancement; hence, an event or happening."

There is today an increasing awareness and sense of urgency for research and development (improvement if you will) in education. In many areas we find persons seeking, striving, straining, clamoring, thirsting, imploring for change to meet the needs of today. This applies to all of education, including most certainly that which you represent--vocational-technical education.

Vocational programs were for many years predominantly characterized by a high level of excellence--and were generally so recognized. The interest and attendance at this conference testifies of your belief that we need now devote special attention toward organizing for research and development. Behind this must have been--among other things--the feeling that our field of mutual interest needs some new vigor, some variations of old ideas, some brand new ideas, and widespread willingness to adapt to the needs of changing times.

I suggest the problem which confronts you is of such priority and importance as to merit well-planned organization, systematic innovation, flexibility, and adaptiveness in your research and development activities. As yet, there is little--or, at most, inadequate--assurance that our developing programs will possess these essential qualities.

My assignment today concerns the challenge of organizing for change in vocational-technical education. Let me begin by focusing your attention on the overall setting and talking about state departments of education.

State divisions of vocational education are important parts of state departments of education, and that which characterizes the latter generally characterizes their divisions of vocational education.

Perhaps more so than ever before, it is today essential that state departments of education be strengthened. This is supported by the philosophy of the present federal administration as reflected by various actions, the Elementary and Secondary Education Act of 1965 being the most recent.

Not long ago James Bryant Conant said, in referring to policy-making for the public schools, "What is needed are strong state boards of education, a first-class chief state school officer, a well-organized state staff, and good support from the legislature." Conant has also noted that in some instances, "the state education departments, though possessing considerable formal authority, are capable of little more than the performance of routine duties." In commenting further about the determination of educational policy in the United States, he says,[1]

> "Educational policy in the United States has been determined in the past by the more or less haphazard interaction of (1) the leaders of public school teachers, administrators, and professors of education, (2) state educational authorities, (3) a multitude of state colleges and universities, (4) private colleges and universities, and (5) the variety of agencies of the Federal government, through which vast sums of money...have flowed to individual institutions and the states....It is my thesis that such a jumble of influential private and public bodies does not correspond to the needs of the nation..."

Dr. Conant also points out the need for strengthening state departments when he said,[2]

> "Without appearing to belabor an obvious point I do wish to emphasize how reformers intent on using the Federal power have repeatedly been forced to use what I have called 'Federal bribery' to accomplish their purposes."

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[1]Conant, James Bryant, Shaping Educational Policy, New York: McGraw-Hill, 1964, p. 31.

[2]Ibid., p. 120.

Institutions of higher education have long excelled in many phases of education, but theirs is not the business of setting policy for public schools, or for providing direct leadership to them. They have rightfully had a monopoly on undergraduate and graduate work, but they have not and should not assume or be delegated state-wide or local responsibility for public education. This is neither philosophically desirable nor legally in order. The colleges and universities, through the consultant activities of professors, have made efforts of some significance to provide assistance to local schools; however, this has not been a major or top-priority concern of higher education, and it is grossly inadequate for many reasons.

Constitutional and statutory (as well as logical) responsibility for the public schools rests with the state which has established an agency with state-wide responsibility for this purpose. At the 1964 annual conference of the Council of Chief State School Officers, Conant said that as recently as five years ago he would have advocated that local boards were the keystone to educational policy and that state departments of education were just to be "tolerated." He went on to say to the chief state school officers, however, "It is now clear to me that the jobs which you hold are or should be the key positions in education and not the structure of public education...in the United States."

As long ago as 1957 John Guy Fowlkes[3] of the University of Wisconsin, in referring to state departments of education and the chief state school officers, said, "These are the agencies and officials who, more than any other educational organizations and workers, have responsibility for and work with, to varying degrees, all levels, kinds, and forms of public education in our country."

There is an increasing concern nationwide about the strengths, capabilities, and limitations of state departments of education as they currently exist. There is general recognition that the weakest link in the educational triad of local schools, higher education and the state department of education is most often the latter. Frequently, one hears criticism that these departments not only fail to promote changes for improvement in education, but they also obstruct the efforts of others.

Techman[4] concluded that the present standards of state departments are not able to keep pace with postulated new practices, and little leadership was found.

The average state department of education[5] has 75 professional staff members available to work on educational problems and programs. Such a

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[3]Thurston, Lee M., and Roe, William H., State School Administration New York: Harper Bros., 1957, p. vii.

[4]The Influence of State Departments and Regional Accrediting Associations in Secondary School Experimentation, The Ohio State University, 1962.

[5]Will, Robert F., State Education, Structure and Organization, p. 33.

department works with 425 school districts, including 1,003 elementary schools, 80 junior high schools, and 220 high schools. These are staffed (1963-64) with 10,827 elementary teachers, 1,916 junior high teachers, and 5,401 senior high teachers. There are in addition 170 superintendents, 42 assistant superintendents, 633 elementary principals, 74 junior high principals, and 159 senior high principals. In summation, the 75 state department of education staff work with 1,303 schools and about 20,000 local school people--for the purpose of maintaining standards, teacher and administrator training, and the general improvement of education including buildings, methods, and materials for teaching.

How can any state department of education staff be effective with a ratio of 75 SDE persons to 20,000 local school people? Some state department consultants[6] estimate their average "visit" to schools to be one half-day each seven years. A few are able to approach the level of one visit in each two-year period. Obviously, this precludes reliance upon the procedure of working with individual teachers--especially when one takes cognizance of the time required for desk work and travel. It would be not only impractical, but also unrealistic and undesirable to attempt to increase SDE staff to a number that could satisfactorily (under traditional procedure and organization) meet the challenges and effectively influence change for improvement.

Beginning with the precedents set by Horace Mann in Massachusetts, state departments of education have quite adequately performed such tasks as record keeping, disbursement of funds, inspection, compliance checking, and enforcement of minimum standards. There is today another function which is sorely needed by public education. That is one of service and leadership to point the direction for change and improvement in education, and to assist with its implementation in the public schools. (This does not preclude continued performance of services in record keeping and compliance checking, but these should constitute a minor function rather than the raison d'etre.) Instead of spending 90 percent of their time on inspection and compliance checking, and 10 percent on promoting specific change for improvement, state departments should reverse the ratio and devote 90 percent to leadership for change.

The Need for Research and Development in Education

The average citizen today recognizes that "R and D" stand for the two most important words in American industry--Research and Development, which form the basis for most of the outstanding achievements of our country's industries. Companies which show the greatest progress and market the largest number of new products are those which budget generously for research and development, establish responsibilities, and organize accordingly. Many of our outstanding growth companies pour back into research and development as much as 10 percent of their net incomes. The automotive industry is a prime example. How long

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[6]Discussions of the writer with personnel in Oregon, Washington, and Wisconsin state departments of education in January and February, 1965, and with each of the 50 chief state school officers and staff members during 1959-60.

could (or can) any of the leaders in this industry compete without continual research and development? A common story among the most active industries is that more than half of their new products are less than ten years old. Were it not for strong research and development programs, companies in the fields of electronics, drugs, and metal products (to name just a few) would soon be out of business.

Professional people, such as the doctor, the pharmaceutical worker, and the dentist, must carefully follow new research in order to keep abreast. We are most critical of our professional people who fail to make use of the findings of research.

The U. S. Department of Agriculture, the land-grant colleges, the Agricultural Experiment Stations, the county agricultural staffs (agents) and a multitude of farmers cooperate in performing the essential tasks of research and development in agriculture. These agencies and individuals are responsible for research on agricultural problems, whether local, state, national, or international, and have a mutual interest in achieving solutions and improvements. Some federal monies are utilized, but the major amount of the activity is supported by state funds. This widely dispersed research effort within each state is coordinated and correlated by a state agency to bring about overall balance, avoidance of gaps, and a balanced attack on agricultural problems in general.

The technological advances which have resulted in agriculture and industry have not come about spontaneously or haphazardly. They originated in deliberately planned, carefully organized, and adequately financed programs of research and development. The methods, organizations, and procedures utilized in American industry and agriculture are the objects of worldwide admiration and emulation.

We are now allocating huge sums of public capital to research in education, but how well are we organized? The truth of the matter is that, excellent though our basic research has been, far too much of it remains on the shelves and in the pigeon holes gathering dust. The necessary follow-through activities and implementation have been sadly neglected.

Currently, we have at our fingertips sources of financing far greater than ever before. We have not previously organized for change or systematic innovation--but now we must or fail in our endeavor.

The Change Process and Implications for Divisions of Vocational Education

Generally recognized today is the need for accelerated change to keep education programs and practices in tune with demands created by the rapid expansion of knowledge, an intensely competitive society, the expanding population, new ways of living, and the changes created by increased automation.

Too often there is undesirable competition between agencies or institutions in different levels of education, and sometimes apprehension and resentment of each other's actions--or lack of action. This is little short of calamitous, in view of the magnitude of the over-all task in education and need for improvement.

Comprehension and agreement concerning individual and joint responsibilities are essential if we are to effectively influence change for improvement in education. Changes in education are inevitable, whether planned or not, and it behooves us to actively endeavor to influence the process.

The research work traditionally done by the colleges and universities has been generally excellent insofar as basic research activities go; however, there is great need for applied research for activities such as program invention, field testing, dissemination, demonstration, and implementation. The latter activities (frequently encompassed by the word "research") are appropriate functions of the State Department of Education and of local schools, as well as sometimes higher education.

The divisions of vocational education should have prime responsibility for isolating major problem areas and then coordinating the efforts (sometimes subcontracting) to attack problem areas in education. Some of the problem areas can be attacked best by local schools. Experience has proven that they will not be so attacked, however, unless the State Department of Education, with the aid and cooperation of many schools and colleges, identifies and spotlights them, and then exerts coordinating leadership to bring about improvement.

Certain kinds of research and development may properly be done by the division of vocational education. The division should arrange for local school and higher education personnel to devote energies toward achieving solutions to the problem areas which have been isolated and defined. The division has major justification to concern itself with many kinds of research and research-related research, but much less with basic research.

It is neither desirable nor feasible for personnel of most local schools to thoroughly acquaint themselves with the technicalities (red tape) and general requirements. Likewise, it is equally or more undesirable to train or acquire local school personnel already skilled in the intricacies of the necessary research design.

The divisions of vocational education need personnel skilled in research design to provide state-level service for public schools (and to a lesser extent to higher education)throughout the state.

Local schools are the logical setting for many applied research activities and field testing. They constitute the focal point for implementation.

Commissioner Keppel, in his letter dated April 9 and addressed to state departments, has detailed means that states can follow in applying for funds to establish a state program of research and development in vocational and technical education. State departments, universities, and even private organizations have vital roles to play in this essential function. The details of implementation may vary to some degree from state to state, but the need and the motivation is similar the country over.

Essential to the successful establishment of research and development programs is a thorough understanding of the Process of Change, and agreement concerning roles.

The chart* (and accompanying explanation, see pages 37,38 and 39) which follows details our philosophy pertaining to specific division of responsibilities for the several areas of research and research-related activities.

Summary

We can summarize by saying that, although we have dealt with the several areas (problem definition, research, program development, field testing, dissemination, and implementation) to some extent separately, we recognize that these are overlapping and frequently some are entirely omitted from consideration. Because of the varying responsibilities and because the many activities cannot be separated into neat little cubicles, it is highly imperative that the three agencies (local schools, higher education, and the Department of Education) always be involved and cooperating regardless of the immediate area concerned. Similarly, the division of vocational education should be continually communicating and cooperating with other divisions of the department.

Of basic importance is some understanding of the change process. Implementation or action will probably not ensue, unless we specifically plan and create a favorable climate for change.

Involvement of many persons is a must, and each needs adequate comprehension of his responsibility and authority.

State personnel are too frequently prone to believe that their superior levels of training, position and experience (sometimes referred to under the term prejudices) entitle them to consider their own opinions sacred--thereby prohibiting flexibility and obstructing development of the kinds of programs needed in vocational-technical education today.

At long last, the people of this country have come to recognize the basically rigid and non-comprehensive programs existing in the great majority of our secondary schools. These programs, primarily college-prep in nature, resulted from rigid adherence to the concept that the supreme goal of education could only be matriculation in the conventional 4-year institution (college or university).

Now that we have support and resources to improve education for the youth of this afternoon and tomorrow, it behooves us to carefully and thoroughly organize for Research and Development, and to avoid some of the obvious errors of the past.

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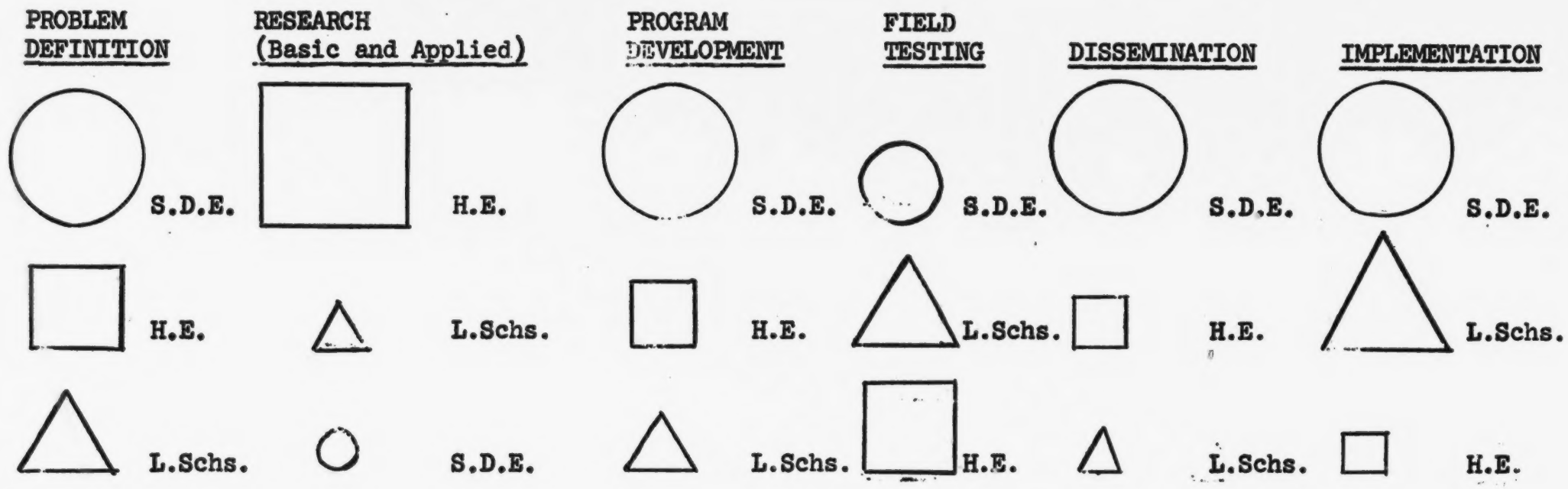
*A synthesis of individual discussions and workshop activities involving Dean Lindley Stiles, Drs. Philip Lambert and John Guy Fowlkes of the University of Wisconsin; Dr. Egon Guba of The Ohio State University; Dr. Jack Culbertson of UCEA; Dr. Keith Goldhammer of the University of Oregon; and others. Refined from Cooperative Research Project #F-032 (Principal Investigator, Allen Lee), 1964.

A Flannelboard Presentation:

A TAXONOMY OF ACTIVITIES INVOLVED IN EDUCATIONAL CHANGE
IN PUBLIC SCHOOL PROGRAMS*



1. Problem Definition is an area for which the state department of education should fulfill the major role after thorough communication and consultation with local schools and higher education.

2. The major role for basic Research should continue with higher education; however, it is vital that local schools and the state department of education have minor involvement.

3. The state department of education should have the major leadership role for Program Development; however, it is essential to have significant involvement of colleges and universities and local schools.

4. In Field Testing the three agencies generally should have equal involvement.

5. In Dissemination the major leadership role should be carried by the state department of education; however, local schools and institutions of higher learning should fulfill supporting roles.

6. In Implementation the major roles should be with local schools and the state department of education because the Constitution gives responsibility to the state, which in turn delegates some. Higher education should play a minor role.

* CRP F-032, Allen Lee, Principal Investigator

(Flannel Board Presentation)

	PROBLEM DEFINITION	RESEARCH	PROGRAM DEVELOPMENT	FIELD TESTING
PURPOSE	Establish Priority	Discover Truth	Structure & Vehicle	Try out Empirically
EFFECT ON CHANGE	Focus Attention	Give Direction	Facilitate Change	Determine Local Usefulness
ACTIVITIES	Observe, Confer	Analyze, Inquire, Synthesize, Describe	Create, Devise, Construct, Fabricate	Evaluate, Adapt
APPRAISAL CRITERIA	Reactions	Validity	Potential for Meeting Needs	Efficiency, Usefulness

(Flannel Board Presentation)

	DISSEMINATION	IMPLEMENTATION
PURPOSE	Provide Visibility	Improve Education
EFFECT ON CHANGE	Provoke Interest	Incorporate Change
ACTIVITIES	Advise Circulate	Use Available Resources
APPRAISAL CRITERIA	Transmission Effectiveness Degree of Comprehension	Achievement of Goals

A RATIONALE FOR THE ESTABLISHMENT OF A VOCATIONAL EDUCATION RESEARCH STRUCTURE

by
Herschel T. Lester, Jr.
Director of Research
Division of Vocational Education
University of Georgia

"If a man does not keep pace with his companions,
perhaps it is because he hears a different drummer."

Henry David Thoreau, 1906

Many of the functionaries charged with research fructification in vocational education encounter many circumambient adversities and seemly urgent priorities which retard or facilitate the process of structuring and conducting educational research programs. It is the purpose of this paper, (1) to explore the current situation in terms of useable research structures, (2) to outline procedures for implementing research findings, and (3) to suggest plans for future research structures.

CURRENT RESEARCH STRUCTURES

Without a doubt, these are challenging days for persons who administer or conduct educational research for it appears that we are truly entering an era when research is to become an integrated part of the total educational program. This statement is already true regarding some phases of education; however, it would appear that vocational education is on the threshold of entering this era. In the past, most completed research as related to vocational education appears to have provided a sublimenal stimulus to the total program. This may be due to the fact that too many studies were poorly planned. This procedure encouraged little interlocking departmental, college, university, or state coordination. The end results of this approach has produced studies in which perfunctory and haphazard research methods were employed. In fact, it would seem from a casual observation, that much of the completed educational research might be found lacking if evaluated using these criteria. Many conditions or factors may be responsible for some of these insufficiencies, such as; (1) lack of interest on the part of educators, (2) lack of "hard money" on a long-term basis, (3) lack of administrative understanding and corroboration, (4) rigid university and state department policies and regulations, and (5) federal programs which do not even attempt to understand the foregoing statements. Perhaps the problem of the first magnitude that is easily recognized by vocational educators and is evident in nearly all research organizations and structures is--Time. Individuals who conduct vocational research or design research proposals do so with little encouragement or adjustments in administrative duties or in the number of classes or students taught. In short, research is postponed until all other duties are completed and all monies spent. Due to this haphazard and lack of support approach, many of today's educators are learning little respect for research findings.

Graduate Research

Several well known patterns or approaches to research may be identified with the one familiar to most, being "Graduate Research." The scheme or method employed is to take advantage of "captive or slave labor" to conduct vast research studies with half vast qualified personnel. In fact, most graduate studies attempt to meet minimum specific requirements of a graduate school, while others meet only those requirements of a professor. These studies, in some cases, have been undertaken using poor research procedures and methods to "prove" certain philosophical beliefs, to "confirm" personal biases in regard to educational procedures, and to "attack" foregone conclusions. In the past, these types of studies often found funds, personnel, and time. How much we learn and are able to use from this approach is questioned and opened to discussion. It would appear that this scheme of conducting research has encouraged little hybridization or cooperation between departments, while in fact, in some cases coordination between professors within their own departments has been very limited. This method also discourages administrators from using the results as it is easily seen that problems have been approached on a non-random and/or limited scale. In addition, this approach has encouraged students to reach unjustified conclusions and encouraged students to dislike research. These and many other pitfalls concerning graduate research could be overcome by providing adequate full-time research grants in which graduate students or others could undertake a research internship at full salary for an extended period.

Paradigm Structures

A structured research program cannot be defined as just a survey, a graduate problem involving a thesis or dissertation, or a staff study of a small area. However, in the past this definition has often been applied by vocational educators to research areas in attempts to obtain data that could be used to design, develop, and evaluate vocational programs. It is very evident, upon close examination, that many past studies collected woefully inadequate data. These data were analyzed and developed into clouded perceptions and concepts that could not be translated into useable form. Research should be a procedure or method which people may use as an attempt to enter the doorway of knowledge in vocational education. The approach should be an investigation beyond where we are at present in areas which few have ever visioned in their thinking and none have planned for in their programs. It includes the unknown, the new, the unexplored, and charting of a destiny for vocational education, and in many cases, a study of our "holy golden bovines." This approach to research is useable throughout all aspects of education, but it should be considered imperative for vocational education, as training programs of high quality must be projected to meet the future needs of a rapidly changing technological society.

Structured research efforts will not just happen, on the contrary, it will require untiring leadership efforts of state departments of education, universities, and federal agencies as attempts are made to develop this phase of vocational education. Several problems must be overcome before long-range planned research programs may be undertaken. Some of these may be outlined as follows:

1. Adequate time must be made available.

2. Adequate permanent funds must be made available.

3. Administrators and teachers must be convinced of the value of planned research.

4. Personnel must be adequately trained in techniques.

5. Personnel and students must be willing to conduct programmatic research.

To meet situations now developing in vocational education, we must structure research that will provide comprehensive and flexible guidelines to broach and inaugurate programs which will prepare individuals to enter upon, make progress in, and become adjusted to the world of work. If we are not to be passed by in the race of progress, we cannot rely on trial and error, catch as catch can, but we must make planned educational changes discovered by adequate research programs. The paradigm under discussion should focus with explicit sharpness on the behavioral characteristics of teachers and students. These teachers and students should be studied in terms of how to develop new educational concepts and perceptions, upgrade course content, determine the necessary prerequisite knowledges and attitudes needed to be successful in vocational programs, and develop new instructional methods and procedures.

Federal and State Morphic

If planned research programs are to be designed and structured to broach the past void of research findings, certain existing conditions must be modified. Those who administer federal educational research programs must change present funding procedures for it appears that projects which are submitted and designed by persons who have insufficient experiences, but who have academic backgrounds in certain disciplines, received priorities. It should be made crystal clear to all these persons that federal research monies are appropriated under legislative authorizations; therefore, the monies have been allotted for specific purposes. In short, vocational education research monies must be made available to focus upon research problems which are directly related to the stated objectives of the 1963 Act. It must be remembered that all public monies must be accounted for in terms of the specific purposes for which the monies were appropriated, and not in terms of what a group of federal administrators, panel members, or others may deem.

Within the last few months, much time and money has been spent by federal officials to conciliate and emphasize the need for mutual cooperative efforts between vocational educators and persons who represent related disciplines which appear to logically support vocational education, i.e., anthropology, economics, education, political science, psychology, and sociology. These efforts have been in terms of a conjunctor of vocational educators and persons of other disciplines to broach research problems on a mutual basis. Over a period of years, this trend may be beneficial to vocational education. This philosophy is very benevolent to the "scholarly disciplines" to say the least. Much can be said for the hybridization of these disciplines with vocational education, but much thought and study should be given to the plan before unmitigated abandonment is attempted by our self-appointed leaders.

With today's trends within these so-called "scholarly" disciplines being conditioned on the assumption that dichotomies (i.e., night-day, black-white, and fabrications-truth) are representatives of reality, it would appear that extreme caution should be exercised by persons doing research concerning learning as all vocational education learning experiences do not appear to be dichotomies. These disciplines overly stress the use of empirical data deemed so necessary by some for scientific study. The postulation that anything not directly observable is not a fit subject for scientific inquiry should be open for much discussion as a plausible theory. In fact, it may not even be tenable as an assumption. It does not appear to perturb these pharisaical persons that much of the data of vocational education is not directly observable and is not known only through long-term effects. For in study after study, these so-called non-vocational educators continue to exhibit statistics which are overly refined to determine differences between what a person means when the answer is "very much" instead of "much." These types of over-designed studies attempt to formulate universally applicable generalizations; however, this approach is likely to provide an inadequate orientation to the research worker in a field just beginning to systematize its knowledge.

Explore the assumption--"Problems of learning and of motivation are basic problems to vocational education." This same statement is also a major preoccupation of psychologists and general educators. This same type of crossroads situation has been faced in the medical profession in terms of: "How much of the needed research should be done by the medical research physician and how much should be done by non-medical researchers?" Large numbers of sociologists, anthropologists, educational psychologists, and other non-medical research specialists, are being employed within the field of health research. However, in nearly all undertakings, medical research specialists direct the overall program along medical objectives. Several assumptions may be advanced as to why the medical profession employs this approach, such as, (1) fear that the non-medical research will take off on a tangent, (2) lack of medical experience which is basically needed to define and carry out the research that must be done to meet program objectives, (3) perhaps, in order to obtain federal funds these persons must be employed or the projects will not be approved, and (4) lack of trained medical research personnel.

It would seem from the prevailing philosophical approach to research that these so-called research specialists should be able to "draw from the proverbial hat" a solution to all problems, especially in the areas of vocational education. Somehow, it seems that too many federal personnel feel that research sociologists, psychologists, etc., qualifications Ph.D.--can by magic means, sidestep all the critical questions relating to criteria, problems of data collections, and existing programs, especially as related to students, teachers and other school environmental settings. This is the most gross injustice and falsification of thinking that can be imagined. Even the most capable senior research persons have had great difficulty in formulating quality studies in areas of learning and motivation.

PROCEDURES FOR IMPLEMENTING FINDINGS

It has been recognized by almost all vocational and other educators and administrators on local, state, and national levels that need for dissemination

of research findings should have first priority. However, this has not been the case. Most efforts at dissemination of research findings have been uncoordinated; for example, dissemination of proven innovations, such as, materials regarding programmed learning, newer methods of audio-visual aids, and computer technological studies have not even been attempted.

Several other innovations and research findings which have not been disseminated could be listed. It is mandatory that careful attention be given to the flow of information to classroom teachers if research findings are to have immediate and desired effects on education practices. The usual means of communicating research findings, (i.e., journal publication and presenting papers at professional meetings) are too slow and ineffective for most teachers. Other media besides print, should be used, such as: (1) educational television, (2) computer instruction, using the IBM or similar systems, in a series of schools, (3) radio, (4) demonstration programs in varying types of schools on a large scale, and (5) the use and involvement of faculty members from public schools and colleges in the planning and carrying out of specific research studies. In fact, most research has been primarily oriented toward the controlled conditions of the laboratory and not toward classroom educational environments. Some thought and effort should be given to the future needs for research aimed at application of findings related to methods and basic research, including use of important learning variables. These undertakings should be in terms of basic concepts and principles as related to the practical problems of the uncontrolled environmental classroom situation. This approach could also provide a much-needed bridge between learning process personnel interested in laboratory controlled research on the one hand, and those interested in actual classroom situations on the other. This applied research and developmental approach may have several outcomes, i.e., a useable teaching method or device, film or an educational program of superior quality.

The foregoing is not meant to downgrade basic or exploratory research or hypotheses testing, but to evaluate in educational environments these new-found methods and techniques. Other methods which should be looked upon in a favorable light are exploratory work in non-data producing activities as needed in critical reviews of literature, generation of theory and other similar activities. Demonstrations of new innovations should be provided for purposes of affording teachers, administrators, and the public an opportunity to see the new method or system. Of course, the well known pitfalls of "demonstration researching" must be overcome, i.e., an innovation versus some unidentified conventional method, lack of basic control data, short-term demonstration programs, and the use of one or two teachers to "prove" the innovation. If demonstrations are to be undertaken, sound research methods should be used based upon reflective thought and a thorough review of the literature.

PLANS FOR THE FUTURE

The foregoing sections outline many questions which are most difficult to answer. An attempt must be made to structure a planned research program that will provide valid data in which vocational-technical education programs may be founded. Briefly, the following procedure may be used as a beginning place:

1. Establish a procedure whereby one person within the state may coordinate all research undertaken in vocational education.

Duties of the individual would be as follows:

a. Consult with research personnel or interested people in planning, designing, structuring and undertaking of research projects.

b. Collect and disseminate information on research procedure.

c. Collect and disseminate research publications.

d. Secure necessary administrative approval for undertaking projects.

e. Secure funds for carrying out studies.

f. Accept completed projects.

2. Establish a State Research Committee to review all proposals and to establish funding priorities for submitted proposals. The Committee should point out significant research problems and assign priorities and responsibilities for making the studies.

This Committee should have as members the following individuals:

a. One teacher educator from each vocational service.

b. One supervisor from each vocational service.

c. State director for vocational education.

d. Dean of the college.

f. Director of research.

Other duties of the State Committee may include:

a. Plan a comprehensive, long-range State research program.

b. Provide means for acquainting teachers, administrators, and others with pertinent research findings.

c. Involve research specialists and consultants in other fields.

d. Establish needs for additional qualified research personnel.

It should be pointed out that this procedure is based upon the premise that a permanent research budget will be established. Without this budget, qualified personnel to draft proposals and direct studies will be hard to procure. In addition, without a permanent budget, qualified graduate students cannot be recruited who are capable of conducting quality studies for an extended period of time.

3. Establish individual research committees by services similar to the AVA research committees. These committees are to be made up of teachers and other selected people and will assist in pointing out the problem areas.

SUMMARY

The purpose of this paper has been to (1) explore the current situation in terms of useable research structures, (2) to outline procedures for implementing research findings, and (3) to suggest plans for the future.

In the past, most completed research as related to vocational education appears to have provided a sublimenal stimulus to the total program. This has been caused by many factors; however, the factor which stands out, and is easily recognizable by vocational educators, is--Time.

Graduate studies have been used in the past to conduct vast research studies with half vast qualified personnel. In fact, most graduate studies have been almost useless as a tool in planning vocational programs. It should be pointed out that structured research efforts will not just happen, on the contrary, it will require untiring leadership efforts of state departments of education, universities, and federal agencies to develop this phase of vocational education.

If planned research programs are to be designed and structured to broach the past void of research findings, certain existing conditions must be modified. In short, vocational education research monies must be made available to focus upon research problems which are directly related to the stated objectives of the 1963 Act. Much can be said for the hybridization of these disciplines with vocational education, but much thought and study should be given to the plan before unmitigated abandonment is attempted by our self-appointed leaders.

Implementing research findings has been recognized by almost all vocational and other educators and administrators on local, state, and national levels. It is mandatory that careful attention be given to the flow of information to classroom teachers if research findings are to have immediate and desired effects on education practices.

Plans for the future must be organized around a structure of planned research efforts. These efforts should include: (1) coordination of research efforts, (2) establishment of some type of state review panel must be established, and (3) structure individual research committee by services.

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OCCUPATIONAL EDUCATION IN RESEARCH
The New York State Education Department's Structure

by
Alan Robertson
Associate in Vocational Education Research
New York State Department of Education

New York State has pioneered the appointment of personnel to its staff to work full time on research in across-the-board vocational education. As early as the Fall of 1962, plans were made and a position approved in the budget of the Vocational Education Instructional Services Office to add such a position to the Office of Research and Evaluation.

In a recent survey of State and U. S. Dependency Education Departments (January, 1965) conducted for the Research Committee of the American Vocational Association, it was determined that this arrangement was unique in the fifty states. While it was true that several State Boards for Vocational Education had assigned research duties either full or part time to Vocational Education staff members, or observed the practice of channeling assignments to a specific member of the State research staff (who could be housed at a State University), the New York State Department of Education's provision for vocational education research was unduplicated.

In essence, it provides for a full time research professional with the same basic research qualifications as other professionals of the same grade, broadly knowledgable in vocational education although not a subject matter specialist, and appointed from a Civil Service list as a research associate in the Office of Research and Evaluation. Salary and travel expenses are carried on the Vocational Education state staff budget, and until the beginning of fiscal '66 were paid for through Title I, George-Barden Act. Supervision of vocational education research staff, is, however, under the Associate Commissioner for Research and Evaluation through the Chief of the Bureau of School and Cultural Research and the Director of the Division of Education Research.

Major work assignments and duties generally originate with the Assistant Commissioner for Vocational Instructional Services, i.e., the State Director for Vocational Education, and are channeled either directly by him or via the Associate Commissioner for Research and Evaluation to the Associate in Vocational Education Research. Excellent professional relationships and mutual regard between the Chief Administrators of the two offices have made a major contribution to the smoothness of operation of this dual arrangement.

The advantages of this structure lie in that, for an expenditure for one professional staff salary and expenses, Vocational Education thus has the full resources and potential of all of the other Research and Evaluation staff behind its own man on the team. As illustrated by the accompanying diagram showing the personnel structure of the Research and Evaluation Office, a variety of specialized research talent is thus available for formal project assistance or informal consultation on vocational education research problems. On the research staff, are specialists in

research in the social sciences and social structure, on elementary, secondary, and higher education, in experimental design and program evaluation, in educational psychology and in the application of statistical techniques to research problems. Data requiring computer analysis is channeled through the Bureau of Statistical Services which provides for data coding and "run sequences" and then routes this to the Division of Data Processing which houses and operates its own equipment. The complexity of modern vocational education problems which deal with the labor market economy and changes, with all elements of human behavior, with social structures as well as problems of learning, vocational subject content and educational facilities structure for all persons of all ages, makes a quality one-man operation in vocational education a difficult task.

Within the framework just described, activities of the Vocational Education Research Associate have been those of short-term project data gathering and analysis, of consultation in research project design, execution and dissemination with the operating bureaus such as Home Economics, Agriculture, Trade and Technical education, with coordinating of contract research projects for these Bureaus with agencies outside the Education Department, and more recently, as a coordinator and resource person to those public and private educational agencies developing project proposals for funding under Sections 4(a) and 4(c) of the Federal Vocational Education Act of 1963.

Under the present limited vocational education research program a compilation of total functions and activities would include the headings below. The Associate in Vocational Education Research under general supervision conducts research and does evaluation in the area of occupational education.

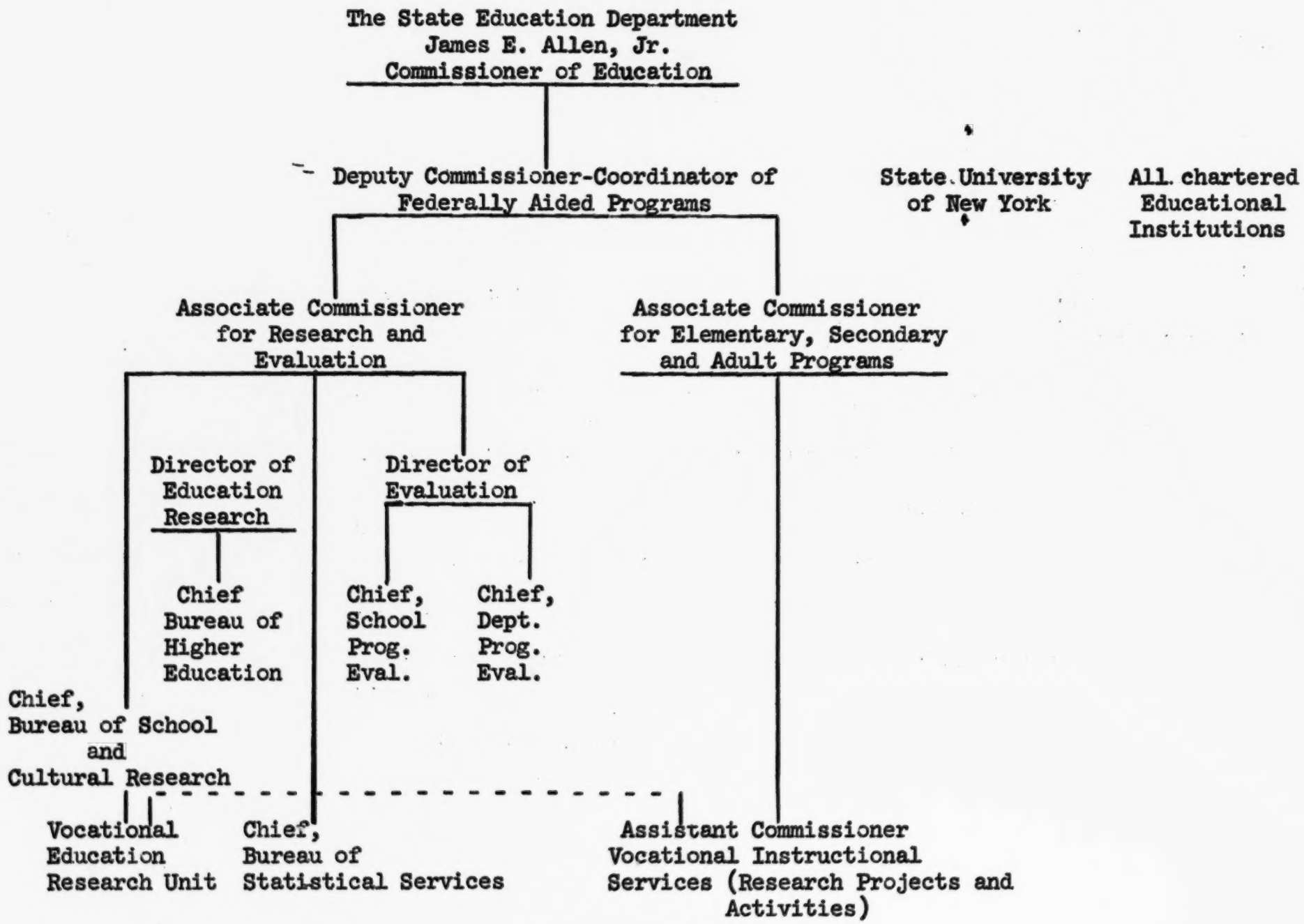
1. Assumes complete responsibility for conducting of research projects for a broad range of types of studies, including the identification of training needs of youth and adults, measuring the effectiveness of occupational information materials and programs, evaluating programs and methods of preparing youth and adults for entry or upgrading in occupations, conducting population and program studies in determining education needs, program characteristics, financing, and administration of area vocational schools, and for studies and evaluations of professional services, including administration, supervision, teacher education, instruction, etc., in occupational education.

   Submits advisory opinions after careful study if research projects shall be conducted within the Bureau of School and Cultural Research, the Education Department, or contracted out to local school systems, colleges, and universities, or private research institutions.

   With regard to projects conducted within the Bureau, he prepares outlines of the research, discusses outlines with appropriate consultative personnel, prepares instruments to be used (e.g., data gathering and tests), plans procedures for data tabulation and analysis of results, supervises necessary clerical work, and writes reports.

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE BOARDS OF REGENTS
THE STATE BOARD FOR VOCATIONAL EDUCATION

James E. Allen, Jr.
The President of the University



OFFICE OF RESEARCH AND EVALUATION

Present Staff

ASSOCIATE COMMISSIONER

Division of Research

1 Director

2 Bureau Chiefs

5 Associates

1 Assistant

3 Aides

Secretaries and File Clerks

Consultant and Consultant Aides

Division of Evaluation

1 Director

2 Bureau Chiefs

2 Associates

1 Associate Statistician

1 Assistant

3 Aides

Secretaries and File Clerks

Bureau of Statistical Services

1 Chief

1 Associate Statistician

2 Senior Statisticians

2 Statisticians

12 Statistical Clerks

Secretaries and File Clerks

Division of Electronic Data Processing

Division of Educational Finance Research (under Finance)

All grades at associate or above require earned doctorate and demonstrated research competency. (N=19)

2. He provides consultative field services to local educational agencies in the development of local occupational education research programs, and projects to be federally funded. He assists them in assembling and analyzing data and in the interpretation of their findings.

   Assists local school systems in identifying and conducting special demonstration, experimental, and pilot programs designed to meet the special needs of the groups of persons mentioned in Federal supportive legislation for occupational education.

3. Prepares materials for the dissemination of the results of research and experimental programs through summaries of research findings by reporting to professional meetings, communication with other members of the Education Department, and through articles in professional journals.

Representation on the Interdepartmental Manpower Research Committee makes the resources of the State Departments of Labor, Commerce, Agriculture, Youth, Welfare and the like, available to the Education Department.

The success of this operation and operating arrangement in Vocational Education Research pointed up the unmet need in research, in proportion to the mammoth vocational education present and projected operating program in New York as much as it yielded research results. Accordingly, a second research position on the associate level has been authorized but is as yet unfilled. Please note the recruiting announcement on the last page. If anyone is interested personally or have any doctoral candidates getting through either this June or this summer, please contact me before Thursday afternoon.

However, we feel that this structure is spread too thin to do the job which needs to be done in New York State. Accordingly, we have submitted a proposal, as several other states have, for funding of an expanded research unit to be known as the Bureau of Research and Evaluation in Occupational Education which would continue to operate under the Associate Commissioner for Research and Evaluation in the relationship previously described.

While it is too premature to discuss any big plans for this since the proposal is awaiting USOE panel review, I thought I might mention some ideas as to the expanded role of such an operation, so that it might assist some states in crystallizing their thinking.

One of the advantages of a Bureau operation would give us more opportunity to encourage the submission of small research, experimental, or pilot programs from school systems and provide for funding under section 4(a) Ancillary Services with much less red tape. We feel that one of our top priority needs in the state is to get more vocational education teachers and administrators interested in conducting and utilizing research.

In addition, a Bureau would concentrate in the following activities in addition to doing more of those things we mentioned previously:

1. Evaluation in Occupational Education, would be to identify and corrdinate research opportunities and projects by all educational agencies, public and private concerned with occupational education in New York State. It would do this by:

   a. Scheduling periodic state-wide conferences, similar to those already held, to identify high priority research problems and suggest institutional and procedural arrangements in carrying them out;

   b. Establishing a "data bank" on occupational education statistics and previous research studies which would be available to all public and private educational agencies contemplating research or evaluation projects;

   c. Establishing a system of mutual reporting of on-going or planned research, pilot training and other type projects in the State;

2. Scheduling periodic meetings with other large states planning occupational education research units, to exchange information and give assistance in program development.

3. Identification of the components contributing to quality in area of Secondary and Community College Occupational Education Programs and the development of program quality measurement scales and practices for use by local educators.

4. The promotion of the application of research techniques and utilization results of previously conducted studies in occupational education by local educators in problem areas. This would be conducted by means of lectures, seminars, conferences, and workshops in cooperation with such institutes as Cornell University.

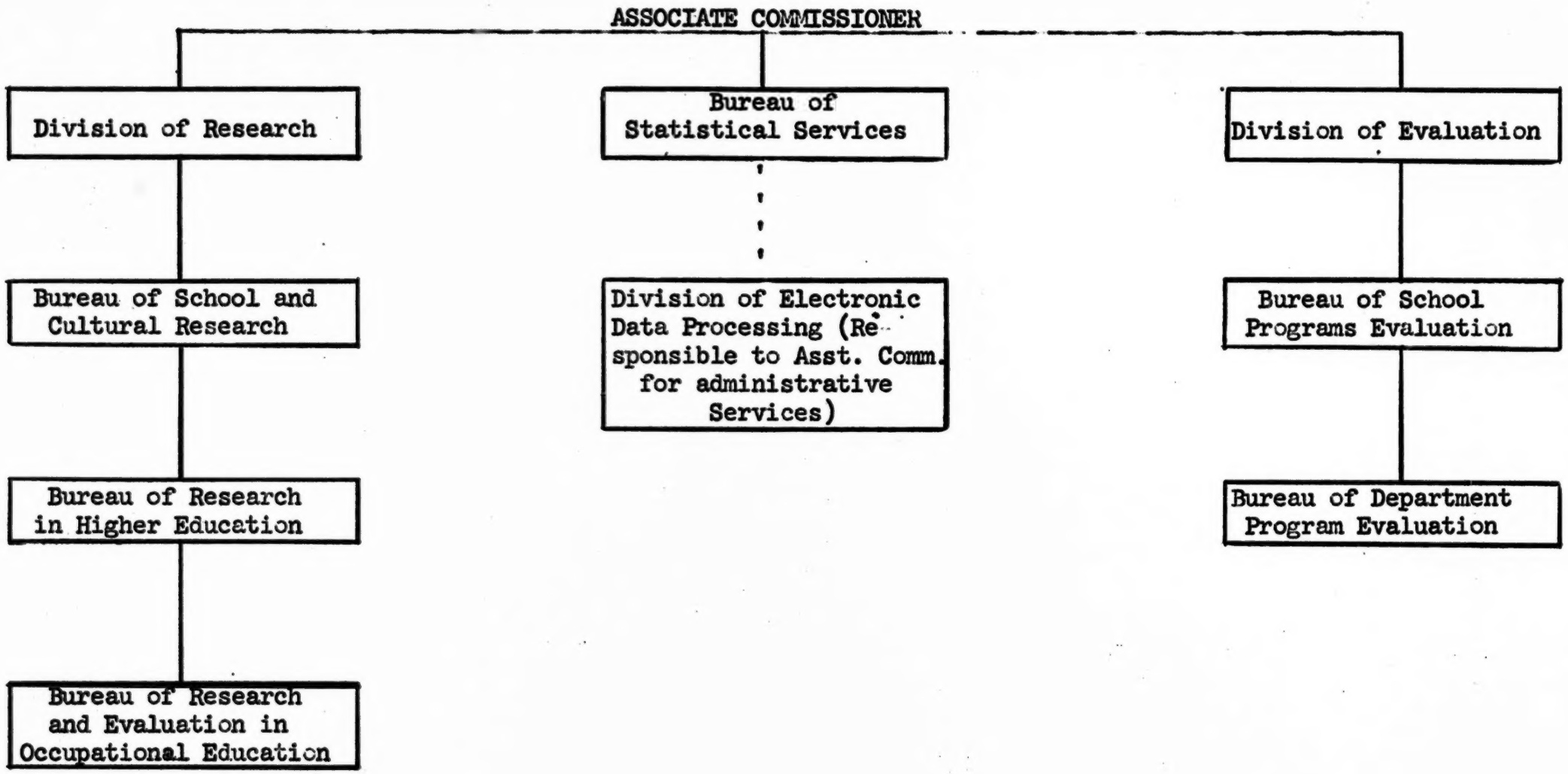
5. Identification of new methods, materials, and organizations for instruction in occupational education, through analysis and study of the most successful Manpower Development and Training Programs, and other non-traditional programs, and dissemination of this information to other educators in New York and other states.

6. The establishment of regular instruments of reporting to those concerned with the guidance and counseling of occupationally-bound youth and adults, the results of such researches and evaluations which might have bearing on the labor market, the necessary skills and attitudes needed by the student, and the educational opportunities needed to bring the two together.

Organization and Location

OFFICE OF RESEARCH AND EVALUATION

Proposed Staff



This would be in cooperation with the Vocational Unit in the Bureau of Guidance.

7. The identification and demonstration through cooperating agencies, of new approaches to trade, technical and other vocational teacher training and certification.

   a. Providing readily available consultant services in project planning design, and evaluation to all educational and related agencies.

   b. Setting up a "one man" coordinating contact for all areas of occupational education research with each major higher education institution or research-oriented school system in the state.

Personnel

The proposed Bureau of Research and Evaluation in Occupational Education would be staffed during the first year as follows:

* Chief of the Bureau (1)
  Associates in Research (2)
* Assistant in Research (1)
* Research Aide or Trainee (1)
  Stenographer (1)
* Typists (2)

During the second year of Bureau Operation, it is planned that additional staff be added to the above as follows:

* Associate in Research (1)
* Research Aide or Trainee (1)
* Senior Stenographer (1)

The type of professional staff we would look for and the New York State Civil Service grades and salaries may be of help to other states as they plan their own staffs.

Qualifications by Grade and title:

Specifications and salary are in accordance with New York State Civil Service classification:

1. Chief of the Bureau G-28

   Salary - $13,170 to $15,625 in five annual increments

   Qualifications - One year of full time in Education Research or one year of permanent service as an Associate in Education Research in the New York State Education Department. Experience in vocational education or its supportive services preferred.

2. Associates in Education Research (3) G-24

Salary - $11,482 to $12,745 in three annual increments

Qualifications - Completion of the requirements for an earned doctoral degree including 12 graduate or undergraduate semester hours in education other than practice teaching and 12 hours in research methods and four years of experience in education or in research or in an equivalent combination. Ability to plan and conduct research must be demonstrated, as evidenced by the authorship of a doctoral thesis or equivalent research reports.

3. Assistants in Education Research G-20

Salary - $8,600 to $10,385 in five annual increments

Qualifications - One year of permanent service as Education Aide; or Master's degree and specialization in education including eight graduate or undergraduate semester hours in research methods such as education research, statistics, tests and measurements, historical research or sociological research and two years of experience in education or research and one year of education or of graduate study in education or research.

4. Education Aides G-14

Salary - $6,180 to $7,535

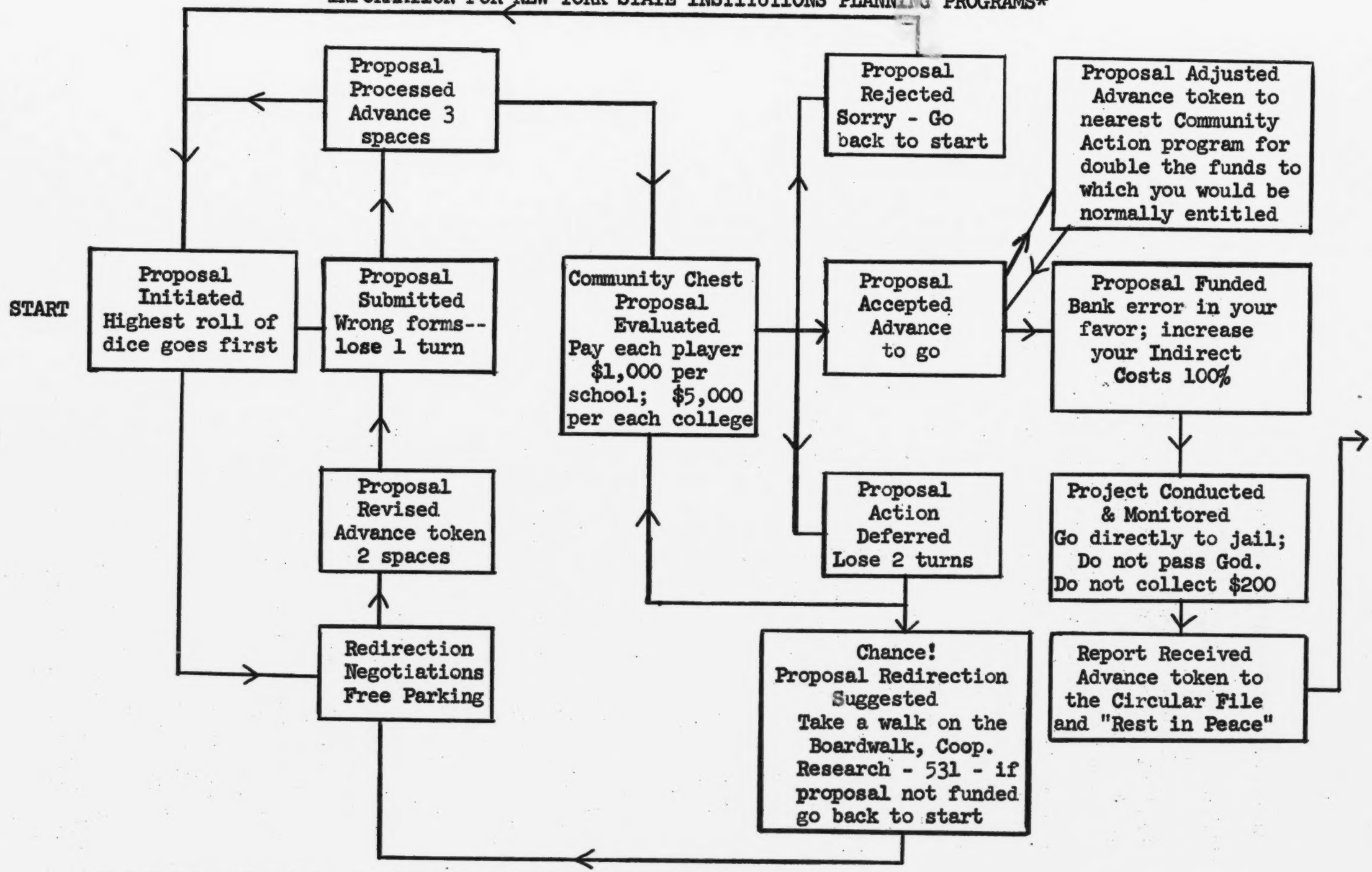
Qualifications - One year of permanent service as Education Trainee or a Master's degree with 12 hours in education exclusive of practice teaching.

5. Education Trainee G-13

Salary - $5,835 to $7,130

Qualifications - Appointments are made from the Professional Career Test by certification of candidates having a bachelor's degree with 12 credit hours in education excluding practice teaching. No work experience is required. After a one-year training program, successful incumbents are advanced directly to the Education Aide level without further examination.

FEDERAL OCCUPATIONAL RESEARCH AND PLANNING PROGRAM (4)c
PROPOSAL PROCESSING SYSTEM
INFORMATION FOR NEW YORK STATE INSTITUTIONS PLANNING PROGRAMS*



* A Working Knowledge of Monopoly, Parker Bros. would be helpful.

ADMINISTRATIVE CONCERNS IN ASSESSING DEVELOPMENT
AND DEMONSTRATION PROJECTS

by
David L. Clark
Associate Dean
College of Education
The Ohio State University

"Development of Proposals"

I. Statement of the Problem

A. Establishing the existence of a situation (e.g., an anomaly, a series of contradictory "facts," unverified findings, or an uncharted area) which defines the problem.

B. Relating the problem to its general, scientific, and social antecedents.

C. Justifying the utility, significance, or interest inherent in the investigation of the problem.

II. Objectives

A. Stating the definite goals or ends which will be sought as a result of conducting the research.

B. Justifying the selection of the specific objectives to be sought by identifying the criteria employed in making the choice.

III. Logical Structure or Theoretical Framework

A. Expounding the structure or framework within which the situation will be investigated.

B. Validating the application of the particular logical structure or theoretical framework proposed.

IV. Hypotheses or Questions

A. Proposing the specific questions which will be answered or the hypotheses which will be tested in the study.

B. Validating and Justifying the questions or hypotheses chosen for study.

V. Related Research

A. Describing the studies, programs, and writings which undergird the substantive and methodological aspects of the investigation.

B. Criticizing the identified materials in terms of their strengths and weaknesses.

C. Relating the identified materials to the current project.

VI. Procedural Plan

A. Outlining the overall structure within which the research will be conducted including the variables which will be considered, the conditions which will be controlled, the processes by which the data will be gathered, the sample, and the sources of data.

B. Detailing the design of the analytic procedures and the sample sufficiently to indicate that (a) the hypotheses are tested or the questions are answered unambiguously--the condition of internal validity; and (b) the findings are generalizable to the population or circumstance required by the hypotheses or questions being considered--the condition of external validity.

C. Operationalizing the variables or conditions in the investigation by specifying the instrumentation or the techniques of instrument development including the rationale supporting their selection or development.

VII. Work Schedule and Resources

A. Describing the time schedule of the project, the human and technical resources required, the physical arrangements which have been or will be made to carry on the work, and the fiscal requirements of the study.

B. Justifying the adequacy of the described personnel and facilities to carry out the study, the budget requests, and the rationale underlying any special conditions or arrangements which are necessary.

VIII. General Characteristics of the Proposal (Gamesmanship)

A. Internal logic and consistency.

B. Balance between necessary detail and reasonable length.

C. Adequacy of communication, e.g., legibility, readability, clarity, etc.

D. Force of presentation.

E. Appropriateness to designated grantor.

F. Evaluation procedure followed by grantor.

PROCEDURES AND TECHNIQUES FOR THE ADMINISTRATION OF RESEARCH

by
Orville G. Bentley
Dean, College of Agriculture
South Dakota State University
and
Director, South Dakota Agricultural Experiment Station

There are few hard and fast rules to suggest as guidelines for the administration of research; however, these observations may be helpful to you as you look forward to developing your research program in the field of vocational education.

First I would suggest that a successful research program depends less on its organizational structure than on the technical competence and dedication of a research staff. Nonetheless the organization and the philosophy of the administration toward research is of utmost importance to the morale and the effectiveness of an otherwise qualified staff. People do research. It is best done by people whose personality represents a rare blend of technical competence and dedication to scholarly pursuits well spiced with patience, optimism, and confidence. Similarly, the research administrator also has to have these same characteristics. In addition, his attitudes must be structured around a latticework that includes such items as project outlines, budgets, and other factors necessary to establish and maintain a cohesive program. The research administrator must have the vision and ability to encourage his staff to develop both a long-time and short-time approaches to research problems as a stratagem for building an overall program. A sound program must provide an opportunity for the research worker to follow ideas to fruition. Research is not usually accomplished by an inquisitive mind flitting from idea to idea; on the other hand, a too rigid structural framework for developing a research program is not good. As is frequently the case, the real answer as to the best structure for the research organization lies somewhere between the two.

The administrative framework of a research organization can be flexible thus permitting an arrangement that best fits the research mission and the resources available for achieving its goals. To accomplish the research objective a prosaic rule is paramount; a clear understanding of research goals and working arrangements, both within the unit and the units' relationships to the overall organization, is needed. Once the administrator has these relationships established, he can bring together a staff and proceed with program development.

It might be helpful at this point to comment on experiences gained through contact with research programs and their administration in agricultural experiment stations.

The research program of an agricultural experiment station is a part of the total research effort of the university. The experiment stations are supported by state appropriated monies and federal grant funds authorized under the Hatch Act. These funds are supplemented by monies from other granting agencies such as Health, Education and Welfare--especially the National Institutes of Health;

the National Science Foundation; Office of Naval Research; Department of Defense; and agencies of the U. S. Department of Interior. In addition, most experiment stations receive substantial amounts in private grants and contracts in support of various projects in the biological and natural sciences, and in studies that might be classified as being in the social sciences.

The research mission of the experiment stations is broad in scope and clearly encompasses research in social, economic, and educational problems of young people--particularly rural youth. In the development of the research programs of the experiment station, the interdisciplinary approach is the modus operandi. For example, if an experiment station were developing a research program in the field of vocational education, I would anticipate that the director would hope to mobilize a team of scientists including part or all of these disciplines: sociology, education, economics, psychology, home economics, political science, vocational agriculture, resource development, technicians and statisticians. In most experiment stations, scientists from many of these disciplines are now involved in research programs.

Another important facet of an experiment station program is "to know your territory," as the phrase goes in a popular musical comedy. Since experiment stations are concerned with agriculture and rural life, the staff knows and attempts to understand rural problems--farming, ranching, and social and economic problems associated therewith. The traditional contacts and established lines of communication with rural people, their organizations in the agribusiness complex serving rural America have been utilized as valuable tools to aid the research worker and agricultural experiment station to obtain research data on numerous educational problems. Conversely, these same channels are used to disseminate knowledge gained through research.

The experiment stations have been fortunate throughout most of their existence to have had an educational counterpart in the state university and land-grant college--the cooperative extension services. Not only has the cooperative extension service been the avenue for the dissemination of information, but it provides a mechanism for a "feed back" device from both the rural and urban sectors of our economy and population.

One can speak in generalities about methods of carrying out research and methods for its administration. It might be helpful to this group as it looks forward to developing a research program in vocational education to go through some of the steps considered in developing a "typical" research project in an agricultural experiment station.

1. The first and perhaps as important an aspect as any in the development of a research program is arriving at a philosophical base of understanding toward research. Many people regard research as an accumulation of facts and figures to meet some operational need whereas research should be designed to accumulate new knowledge about a given problem or within a given scientific discipline. The research worker who has a genuine desire to initiate a research program should be encouraged to discuss it with his scientific colleagues and departmental

chairman. Ultimately, it is essential that the experiment station director know about the research interest of the individual, either directly or through administrative channels. Frequently the most direct route will be through the department head.

Most directors aren't concerned whether the staff member or the department is within the Department of Agriculture; a director should be more concerned about the quality of ideas and the research competence of persons wanting to do research, than in the organizational structure. Organization is important,but it should not preclude the initiation of good research.

2. The next step is the identification of the problem. To do this requires consideration of some or all of these factors:

   a. Competent staff with time allocated for research.

   b. Departmental and inter-departmental research committees.

   c. State-wide and national level advisory committees.

   d. A clear-cut understanding of the critical questions facing people and the vision and imagination to apply research techniques to assemble meaningful data or to evaluate hypotheses and alternative procedures or programs.

3. Research planning requires communication of ideas and the delineation of resources needed to accomplish the research. The conventional administrative instrument to accomplish this requirement is the research project outline. These elements should be in a good project proposal:

Title	Budget
Objectives	Personnel and location
Reasons for undertaking research	Duration
Procedure	Approval

Stress the statement of objectives and the elaboration of procedures. A good research outline is one that spells out:

a. A program of research and its broad, long-time objectives.

b. A specific outline for accomplishing a segment of this research (usually called the "Research Project"). The project may be designed to cover from two to five years.

4. The evaluation of research results usually involves these elements:

   a. Orderly accomplishment of objectives.

   b. A clearer understanding of the problem or phenomenon under study.

   c. Difficulty in knowing the potential value of research and when it will "pay off."

   d. Publications.

   e. Contribution to knowledge. (Surveys give transitory information frequently, but research on more basic concepts provides a basis for generalizations beyond the scope of the population sample studies, or a physical or natural phenomena investigated).

5. Problems that creep into the administration of research programs.

   a. Failure of departments and individuals to develop a long-term research plan and goals. Planning should be looked upon as a "think device" to answer the question, "How will I use my brains, technical help, research funds to solve problems and expand knowledge within my scientific or professional discipline?" A corollary question should be, "How can I best organize and direct my talents and resources to obtain meaningful results of potential benefit to people, my state, or region?"

   b. The tendency to stray away from the basic research objective by following interesting or tangential lines of research interest.

   c. The pressure to deal with applied aspects and neglect basic research; the latter usually demands more knowledge and imagination from the investigator. John Dewey stated, "Theory is, in the end, the most practical of all things."

   d. Too many projects leading to inadequate financial support, insufficient personnel, and diluted research leadership. Use as a guide professional man years for each category of personnel; project leaders, technical assistants, graduate students; a worthwhile project usually requires a minimum of 0.5 professional man year (p.m.y.), 0.5 m.y. technical assistants, and 1 or 2 graduate assistants. A project involving 1 p.m.y. requires about $20,000 for personnel alone, and a total of from $25,000 to $35,000 of funds to provide for technical assistance, supplies and travel.

e. Failure to complete and publish results.

6. The use of lay advisory committees to advise on research needs and to aid in the evaluation of research is currently popular. This device is useful, but each group needs to know its mission (advisory), and the research leader must assume the responsibility to (a) use a committee once it is formed, and (b) to bring understandable and pertinent questions before the group. Advice from a committee needs to be evaluated and, ultimately, the committee will want to know what happened to its suggestion.

PROCEDURES AND TECHNIQUES FOR THE ADMINISTRATION OF RESEARCH

by
Calvin J. Cotrell
Assistant Director for Vocational Education
American Institute for Research
Pittsburgh, Pennsylvania

As a member of this panel, I represent private non-profit research in the behavorial sciences. I am employed by the American Institutes for Research of Pittsburgh, Pennsylvania, which was founded in 1946 by Dr. John C. Flanagan, who has served as its president. The firm currently consists of approximately 235 regular full-time employees.

As indicated by its title, the organization is divided into several institutes and programs. Some of these are:

International Research Institute

Institute for Performance Technology

Institute for Research in Education

Military Assistance Institute

Cross-Cultural Research Program

Measurement and Evaluation Program

Among its many and diverse research activities, A.I.R. is currently engaged in several vocational research projects which are being sponsored by the Ford Foundation, Vocational-Technical Division of the U. S. Office of Education, and the Office of Manpower, Automation and Training of the U. S. Department of Labor.

Is vocational research needed? There is an imperative need for research in vocational education. Successful business and industry have for years depended upon research as the foundation for the development of saleable products. Millions have been spent for this kind of research, but what have we done in Vocational Education? There has been very little research in this area. Then what have we used as the basis for the development of successful products in our schools? We have been accused of relying upon armchair logic when other support was needed to establish sound programs. As an example of effort in one phase of vocational education research, however, there have been some one-year follow-up studies of vocational school graduates. This is helpful but it, nevertheless, falls short of being a continuous follow-up to develop data on employment factors other than placement. It is essential to have some evidence on job progression, job security, and other factors of employment performance which have to be measured over a longer time span.

How do we get the right people to recognize all of the vocational research needs? For one thing we may have some state directors of vocational education who do not appreciate the need for research. It seems they are going to have to undergo some "arm twisting."

The utilization of advisory committees by those responsible for research may be an effective approach to convincing the proper authorities of the need for vocational education research. I would see both general and specific area advisory committees utilized. By a general advisory committee I mean one consisting of representatives of all the vocational services or functions of vocational education. These would be vocational agriculture, distributive education, home economics, trade and industrial education, vocational guidance, post-secondary vocational-technical education, and others less traditional in nature. Specific area advisory committees could be organized in any of the areas mentioned. A representative of each of the specific area committees may serve on the general advisory committee.

How do you evaluate research? Assuming that the final report is sound in terms of content, including proper and accurate statistical treatment and good writing, there would be at least three major concerns:

1. The project must have been completed in accordance with the requirements of the contract.

2. Something new should have been learned while completing the research which is beyond the requirements of the contract. (A new technique developed or a new approach tested.)

3. The project should be recognized by appropriate audiences as making a contribution.

How do you obtain staff? Provide an atmosphere conducive to research which allows sufficient freedom but adequate supervision and advisement. Comfortable facilities will help, but more important would be the encouragement and the practice of good human relations.

Employee benefits, such as paying for moving expense, non-contributory retirement plans, life insurance, hospital-medical insurance, and other benefits will help in attracting staff.

Perhaps the most valuable feature facilitating employment of staff would be the provision for flexibility in salary schedules enabling the administration to attract and employ competent researchers.

Provision for employing consultants should be provided in all contracts in order to provide for specialized staff needs and to provide part-time staff in the event of difficulty in locating permanent staff.

There should be provision in the research organization for various kinds of supporting staff. The lack of secretarial, graphic arts, and other supporting staff essential to research activity has been known to discourage prospective candidates from accepting positions offered by some research organizations.

PROCEDURES AND TECHNIQUES FOR THE ADMINISTRATION OF RESEARCH

by
Egon G. Guba
Director, Bureau of Educational Research and Service
The Ohio State University

It is, of course, a difficult matter to summarize one's contribution to what was essentially a conversation between five people. I would like to pull together the major points that I tried to make with regard to what I believe were the five major problems or questions addressed by the panel.

1. How do you present the "story" of your research agency to its public, particularly its sponsors?

Every research agency has a variety of publics with different interests to serve and with different perspectives within which they view the work of the organization. For my agency I can distinguish at least three such publics: the political community, the research community, and the practitioner community. Each requires different kinds of "data."

The political community is not much concerned with the substance of what we do as with the number of persons we reach in some way and with whether those persons we do touch have a generally favorable impression of our work. Thus, it is a political datum to be able to say that we worked in 43 of the 88 Ohio counties last year, or that we received 276 letters of praise from persons who attended our regional custodians' workshops.

The research community is concerned with whether or not our work meets minimal standards of scientific rigor and whether or not the results of our research make a contribution to knowledge. Our list of publications, a description of the areas within which we are working, and statistical tables of our findings are data of interest to the research community.

The practitioner community is concerned with applications we can make of our research to their problems, or the consultant help that we can render to them as they seek to develop solutions to their action problems. The nature of our services, the ease with which they can be obtained, and the practicality of our recommendations are typical data of interest to the practitioner community.

Obviously all three communities are crucial to us. We need their understanding and support and we need to give them an opportunity to influence our work through their suggestions and criticisms. Channels of communication, as through advisory boards, must be kept open. We must also remember, however, that each represents a quite different interest, and that these interests may at times be in conflict.

2. How does the research administrator relate to his personnel?

Like all administrators, the research administrator must constantly tread a thin line between telling the researcher what to do (an institutional program) and supporting the researcher in what he wants to do (an individual program). Where we know what we don't know, we can set up a program to find out, and under such circumstances an organizational program makes sense. When we don't know what we don't know, we must largely rely on the researcher's own instincts to guide us (the "green thumb" researcher, as one participant suggested). In the latter case we must be especially careful to provide extant psychological support, for there is nothing more anxiety-producing than to be on a road whose direction is unknown, and whose end may be useless of attainment. The research administrator must know when to allow the researcher to push on and when to call a halt. I don't know of any good operational indication that tells one when to select each option; however, the research administrator who doesn't have a good "sixth sense" in this area won't remain an administrator long.

3. How is a research program evolved?

In every area, as I have already implied, there are things we know that we don't know, and other things we don't know that we don't know. A program must have flexibility to permit movement in both these arenas. In the former case, it is convenient to sketch a kind of "cognitive map" that will soon pinpoint the areas in which our knowledge is impoverished, and we can push ahead in a programmatic way to resolve these. In the latter case we must rely on our insights, on our feelings of unease or disquiet, and even on serendipities to push on.

4. How does the research administrator evaluate the work of his agency?

There are a number of very operational criteria that all of us apply: do we stay within the limits of our budgets; do we stay out of trouble with the auditors; is our work accepted for publication, and if so, are reprints requested; can we get follow-up grants; and the like. Insofar as the work fits into a program, we can ask whether closure has been obtained, whether a "no-knowledge" area on our conceptual map has been closed out, and whether the research is heuristic, i.e., whether it opens as many new questions as it answers.

One criterion which many people wish to apply is whether the research leads to any practical application. This is a criterion which I resist stoutly, unless it is the avowed intention of the project being evaluated to produce such an application. Generally, the researcher's function is to produce knowledge; and while I may hope that that knowledge might sometime be applied, I believe it is a subversion of the researcher's time and talent to require him to achieve those applications.

If applications are desired, a special development and diffusion unit should be established to be responsible for them. We have been particularly lax in education in setting up such mechanisms intermediate to research and

practice, apparently on the assumption that applications occur automatically once knowledge is given and an alert practitioner is properly motivated to improve his lot. Agriculture has known for almost a century that this is not enough--the Agricultural Extension Service is a splendid example of such an intermediate agency. We need a similar mechanism in education.

5. Is proposal writing necessary and desirable?

That proposal writing is necessary is clear from the fact that it is on the basis of proposals that grants are given. It is often argued that it is not a desirable activity, however. A colleague of mine recently estimated that fully a third of his time was given either to writing proposals or to evaluating proposals written by others. What a waste, he implied!

I do not agree with this position. My own experience in reading and evaluating proposals leads me to believe that researchers are troubled by a considerable amount of muddy thinking. I am sure that only thirty to forty per cent of the proposals that I read have even a reasonable problem defined, and many of these subsequently fall down because their objectives or procedures are not matched to the problem.

I believe that proposal writing, when viewed not as a chance to get money but as an opportunity to order one's mind about the research to be done, can be of great benefit. The discipline it imposes on the mind is more than repaid by the greater effectiveness and efficiency of the subsequent research activity. I strongly urge that we continue to insist on well-disciplined project proposals, even if we devise other ways of funding, because of the great positive effect on the researcher's mind.

PROCEDURES AND TECHNIQUES FOR THE ADMINISTRATION OF RESEARCH

by
Robert L. Burton
Laboratory Director, Circleville Research and Development Laboratory
E. I. DuPont de Nemours and Company
Circleville, Ohio

I am pleased to be here; I hope that I can be of some assistance to you by bringing to you the outlook of an industrial laboratory. The Circleville laboratory of the DuPont Company includes about one hundred fifty people of whom about forty are technically trained. Our funding, of course, is entirely private; we seek money from no one other than our own management. We spend our money within our own company, that is--we do very little research with other research organizations. Our budget is between three and four million dollars a year, which is directed at providing the scientific and engineering basis for maintaining our position in the field of plastic films, which have a variety of both industrial and packaging uses. Again, as this organization is substantially different from yours, I hope that perhaps I can bring some new points of view to you.

(The question has been asked by Dr. Bender on how personnel responsible for research at DuPont get more money allocated to research.) I think that a key to this, on the part of the director or administrator of research, is to have clear, understandable objectives. Now, I want to emphasize "understandable." These objectives should be understandable, not to the scientific community who will be doing the research, but rather to those people who are responsible for the expenditures and for the results, who will eventually want to see something change, as a result of the research! There is no better way to get a proposal killed than for me to present to my management a dissertation on electron-bonding, or a discussion of pi-electrons. This does not mean anything to the people. The thing that is important for me to do is to talk about earnings which can result from achievement of certain objectives. If I propose to develop a polymer that will stand up at a thousand degrees centigrade and which is needed in jet airplanes, this can be understood as a business objective, but if I launch into a dissertation on how I am going to study high temperature polymers in terms of purely technical activities, I do not sell the objective. So, let me make a real point ... make sure that your audience understands your objectives.

(In that case, who is the audience?) The audience consists of the man to whom you are selling the program. Now, if I am talking to the president of the company, I may talk along one line; I would not use those same presentations to talk to people whose interests are primarily scientific! You have to have clear, understandable objectives in terms of your specific audience. Now, I guess in your case, you are going to be dealing with a heterogeneous group--political people, educational people--I think that you have to tailor-make your presentation.

(Concerning the use of advisory committees which has been under discussion today) let me make just one point. With the use of advisory committees, I think that it is very important for an administrator not to let himself get trapped by the committee,

so that he is forced to accept their recommendations. You should use them as advisory committees, dealing with them in such a way that you are not committed to accepting their advice. Otherwise, as an administrator you have lost control of your activities.

(Concerning recruiting staffs and establishing staffing patterns for research programs in industry, keeping in mind the conflicts which arise between research personnel and management personnel, Dr. Burton had this to say.) Certainly, we are trying hard to recruit people, and there is just tremendous competition; I think that this is universal. Actually, there is not a shortage of bodies--there is a shortage of minds, and this is the reason that we all are competing for the top five, ten, and fifteen per cent of the students in any field. But, I want to go back to Egon's point on this conflict between research and management, which is a perpetual subject for discussion. There is a concept which I think is very helpful to research administrators, and that is to recognize the difference between what some people call "functional control," and "operational control" of the people in your organization. By "functional control," you provide objectives. You tell them, "where we should go," "what do we want to do?" Then you say to your researcher: "All right, now get me there! You pick your methods and tools. I will support you as needed, but you must get me to the objective." And, if you tell the man this, and if he accepts that objective, you are in good shape. providing he has the ability to pick the route and to execute the program. Obviously, some checks and controls are needed.

In "operational control," on the other hand, you tell the man: "This is where I want to be, and this is just how I want you to get there." And, brother, you are in trouble, when you do this, when you practice operational control of competent research people. Because, as a matter of fact, it is just barely conceivable that they may have better ideas than you, and they just will not follow your route. Further, they will feel that they are cogs in the organization, instead of being vital, important, creative parts. I think that it is very important, again, for any administrator to say to himself: "Now, what kind of control am I providing--functional or operational?"

(When asked how industry knows it is getting its money's worth in research, Dr. Burton commented that:) In some respects, industry is a little easier. If I can turn to our profit-and-loss sheet, and see that new products developed in our research laboratory are selling and making money, I can say that was money well spent. However, the problem is that it frequently takes so long to get things to a profitable position that you have to get some intermediate measure of effectiveness. The thing that I personally do is to examine my environment and see if things are changing as a result of our work. When I say, "things changing," I mean a variety of things. If new facilities are appearing, this is change, and if it has resulted from our work and since there are enough checks and balances including judgment of other people who had to evaluate the work I judge our research to have been effective.

How are ideas changing? Have people in other organizations changed their points of view; for instance, the sales division, the manufacturing division, the management--sometimes have different points of view with regard to a specific situation. Now, if research unifies a position, so that salesmen or production men change their positions or attitudes, I say, "Great, we have done some good research." So, I think a good measure is positive change in ideas, facilities, profit and loss. If the same people continue to sit around the same old table, talking about the same old ideas, except asking for more money, you do not have very good research.

There are people who are dedicated to maintaining the status quo, who are afraid of the new, and who do not want to learn a new way. If a man is making his living teaching kids how to read Braille, he could see this thing as a personal threat to his security, and so resist the change. Good research must include preparation for the utlization of the research. Frequently, the researcher by himself cannot do this, but it is the responsibility of the research administrator to see that this vital part of the work is done by appropriate people.

(When questioned about what should be the nature of a research proposal, the following comments were made.) Within DuPont Company, research projects are made in one page; if I send off a two-page project, it will come back unsigned and unread as being "too long." This is independent of the project size. I sent off one the other day for $700,000 which actually was less than a page, and it was authorized promptly. I think that the key thing was that I prepared the audience: I stated the business objectives, and I stated the technical objectives which had to be achieved to accomplish the business objectives. The objectives were accepted and since management had confidence that my organization had the scientific competence to do the job, that was it.

(The question was asked, "Even though you said that you sent away one page, you must have had something of more than one page to back it up. In other words, all of the thought that you have given to this, in terms of the planning, does not represent just one page, does it?") Well, all right, this is true, and it gets back, I think to the key that the organization has to have confidence in its parts. As a matter of fact, I perhaps overdramatized this large project. In that case, I had discussed the project, but I think that the audience that I had with the key people lasted no longer than half an hour. Now, to get back to some smaller projects which involve twenty or thirty thousand dollars, I have had those kinds of things authorized and other directors in the DuPont Company can get these things authorized by writing things down specifically and sending them off. I may call the boss and say, "We have had an idea and are sending down a project. Look it over and if you have any questions, call me." Sometimes I get questions, and sometimes I do not.

(In closing, Dr. Burton made the following comments which summed up his concerns as an administrator of research.) One of the problems that an administrator faces is that of wearing many hats, and I think that it is important for an administrator to recognize and be conscious at all times as to which hat he is wearing. For my own thinking, I divide my activities into four areas: First, that of Planning; second, that of Organizing; third, that in Leading; and, fourth, that in Controlling. Now, my relationship to the organization is quite different as I am consciously exercising these different functions. In the Planning session, there may be a great deal of exchange ... I need to be open, receptive to all of the ideas in the organization. At some point, though, there comes a time for decision. In Organizing, again, this is a case where the administrator needs to lay out what needs to be done to accomplish the results. And in this regard, let me say that I recommend very, very highly (the use of) arrow-diagrams or Pert Charts for both Planning and Control. It is also important that after you make them, you review them regularly to see how you are doing and to make appropriate changes. The third function is this one of Leading; this is extremely important. In this regard ... achieving enthusiasm for attainment of the organizational objective is most helpful in getting maximum productivity from researchers. This gets back to the concepts of operational and functional control. Then, there is this fourth function of Controlling--when you are finding out whether the money has been well spent, whether the budget is over or under, and so on.

I have found these concepts to be very useful and recommend them for your consideration.

THE ANATOMY OF A FUNDED PROPOSAL

by
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The advent of 11.8 million dollars for occupational research and planning makes it crystal clear there are problems needing solution. Today, there are some 1,200,000, about as many as make their living producing automobiles, planes, and ships--working in the invention industry called "Research and Development" (Velie[1], 1965). The research capabilities of education, in contrast, number about 3070 (AERA[2], April, 1964) and education, too, employs about as many persons who make their livelihoods manufacturing automobiles, planes, and ships (NEA[3], February, 1964). In vocational education, Evans (1963) pointed out a little over a year ago that we approximate fewer than one hundred competent researchers. It is no wonder then that we are here today to examine and strengthen our determination to mount a more adequate program of problem solving.

Wanted--Vocational Innovators

Few would disagree that we need more problem solving. But we solve problems every day, so why so much fuss about needing research? The answer is quite simple. Educators as a whole and vocational educators in particular are quite naive when it comes to sophisticated problem solving. Educational researchers communicate in a jargon somewhat unfamiliar to the average vocational educator. For example, a "hunch" is a hypothesis, a "design" is a procedure, and a "variable" may be a number of different things, many of which can't even be accounted for. "Reinforcement" is not something put in concrete to make it stronger, and "control group" is not how well the teacher disciplines a group of students. These and many other terms are going to be found more frequently throughout the professional literature, because educators are becoming research minded.

To imply that vocational educators are not problem solving minded would certainly be incorrect. However, to say they are research sophisticated would also be a mistake. Enough formal research just isn't in evidence in vocational education.

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[1]Velie, Lester, "Wanted - One Million Innovators in Science," The Readers Digest, April, 1965.

[2]American Educational Research Association, Newsletter. Vol. XV, No. 2, April, 1964, p. 1.

[3]National Education Association, "School Statistics, 1963-64." National Education Association Research Bulletin, February, 1964, p. 2.

From the conception of the Cooperative Research Program (Public Law 531) vocational education has had less than a dozen studies approved for grants. Under the 11.8 million dollars in the Vocational Education Act of 1963, proposals submitted by our own people are conspicuous by their absence. Only a handful of formal research staff studies have been going on over the years. Few vocational teacher education institutions even consider releasing staff members part time to do research as is often done in other disciplines. The bulk of vocational education research has been at the graduate student level, and even here the number of studies leaves something to be desired.

Lawrence W. Prakkin[4] (April, 1965) points out in an editorial entitled "To Keep the Faith":

> Changing of habit patterns of long standing is difficult and disconcerting. Problems of curriculum, courses of study, equipment, facilities, and staff are compounded by the new and broader approach vocational education can take with the new resources as its command. Adding these new responsibilities does not mean that the old programs are bad--they just are not enough to do the present-day job. We will have to live with change if we are to meet our obligations and make every effort to adjust to new requirements, new administrative organization and changing responsibilities.

Change in our field is a must, but to know what changes produce what results, and why, are the keys that need to be accounted for through research.

I have been asked to discuss with you the development of a proposal that was funded. This applies success in one way or another. The particular proposal I am drawing my experience from is really not important, but to satisfy the curious it is entitled, "The Preparation of Youth for Effective Occupational Utilization," and was funded by the Cooperative Research Branch for a two-year period at an amount of $201,000. In other words, it is a sizeable undertaking and even now has a number of people involved in carrying it out. The anatomy of this experience is pertinent to those of you here. So from here on I am referring to the process, the stumbling blocks, and the hazards of getting involved in this business of putting together proposals.

The Incubation Period

The incubation period represents the starting point. Frankly the article that appeared in Harper's Magazine by Edward Chase[5] (April, 1963), "Learning To Be Unemployable" annoyed me to the point of wanting to look at vocational education in a

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[4]Prakkin, L. W., "To Keep the Faith," School Shop, April, 1965.

[5]Chase, Edward T., "Learning To Be Unemployable," Harper's Magazine, April, 1964, p. 1.

more positive light than he did. After all, those of us in the business certainly know where to look to find the dirt, and Chase had pried into some of our darkest corners.

It so happened this particular article and the study by Mary Kohler[6] (1962) which focused on some of the problems of vocational education in New York City hit print about the same time, thus giving double reinforcement to my desires to study vocational education from a more positive setting.

I casually mentioned the repulsiveness of these two readings to a colleague of mine[7] at lunch one day. The interesting thing, this chap is a labor economist, and it took such a conversation to learn that labor economists are interested in our problems. Anyway, shouldn't they be when you come to think about it (which I submit may be new to you also). Well, immediately we had a point of mutual interest and one that took on dimensions of an interdisciplinary nature.[8] The more we began exploring our joint interests, the more obvious came our individual strengths and weaknesses relative to this whole business of man, education, and work. It should be obvious to you that such a team approach focusing on any problem is pretty hard to beat. This I am sure was one of the strengths of our proposal.

During this incubation period we held many discussions in order to delimit the problem so it could be properly attacked. Naturally, put two heads together and there is never going to be entire agreement, but the team concept will prevail if the overall goal is of mutual interest.

At the same time we were thinking of sources of funds to conduct a sizeable study. Now at this point I pause to remind you that nothing ever prevented the vocational education leadership to use a sizeable amount of state and federal money for research, but this never occurred to us. Just being aware that now there are several sources of funds is mighty important. My colleague had some experience with the Ford Foundation, and we knew they weren't buying anything of this type at the moment. I had recently received a grant from the Cooperative Research Branch, so I knew they were interested in vocational education. It was, therefore, natural that we couched our format in the Cooperative Research style. Incidentally format is important. If we had chosen the Ford Foundation track, our style would have been much more of the essay nature with greater emphasis on the development of the problem and less on the procedure.

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[6]Kohler, Mary Conway, Youth and Work in New York City, New York, New York, Taconic Foundation. 1962.

[7]Kaufman, Jacob J., Professor of Economics, The Pennsylvania State University, University Park, Pennsylvania.

[8]Not that education is a discipline, but rather that educators can work with the disciplines on mutual points of concern.

Few realize the tremendous amount of time involved in preparing or writing a proposal. And let's keep in mind the competition for funds is great, so what is submitted in the way of a few written pages (usually 15 to 20 single space typed) has to be good. Therefore, the dichotomy of the task when more than one person is actually preparing a proposal was our next problem. The "problem statement" was definitely a joint endeavor as were the objectives. The review of literature section was facilitated by each of us having kept a card index on our readings; these being turned over to one individual to develop. The procedure section grew out of our discussions and was written by one of us. This left only the budget and here we looked into a crystal ball for something that seemed logical in terms of the size of the project.

Other aspects which we were sensitive about dealt with internal university mechanics. We were in different departments, in fact in different colleges. This proved to be no problem as most college or university administrators are surprising agreeable to having the disciplines work closer together. Moreover, most higher education institutions have a contracts officer who can be of immeasurable assistance in preparing the budget phase of the proposal and can help in expediting it through proper channels. I'm sure it doesn't surprise you to know that colleges and universities are set up for receiving and administering grants much better than most State Departments of Education. I think our friends in the physical sciences have had something to do with this as they have been bringing research money to campuses for quite a few years.

The Prenatal Care

I cannot repeat too often that the writing of proposals takes time and is in itself costly. It is, however, the gamble one takes if seeking outside grant funds. The importance of this step should be obvious to those of you here because we all know to begin any project without a well thought-out and developed plan is tantamount to failure. We in vocational education have been guilty of this whether we'll admit it or not. The pressures often seem so great that we are forced into action before the master plan is developed. We tend to rationalize this by the statement that we are "men of action," but I wonder how much further we would have been advanced if we had taken the time to get the facts to back up some of our actions. Actions which incidentally even now are being challenged. I, for one, respect the awarding of grants on a well thought-out proposal.

The prenatal care of the proposal which I am describing was one of not only writing the several drafts but getting the department chairman to be sympathetic to devoting load time to the activity. Proposal writing on a moonlighting basis cannot be expected <u>if</u> you are really interested in research. It must become part of the job and time for it to be done adequately must be found.

The typing of several drafts is a clerical consideration needed to be taken into account and the final duplication and collation with its thirty or

so copies represents considerable work load. From my experience, the climate for these details is much greater at the college or university setting than again in State Departments of Education.

A word at this point should be said about timing. One of the early bits of information needed is the cut-off date(s) of the agency to which you are planning to submit. In some cases there may be only one such date per year. The Sears Roebuck Foundation firms up their budget once each year; the Cooperative Research Branch three times a year; and the Vocational Education Act of 1963 is operating on about a three month cut-off. The dates of submission provide a target time in which to get the proposal firmed up. It's far better to skip a cut-off date than to hastily put together the proposal.

Keep in mind whatever you place in the budget will have to be negotiated in contract form, even if the proposal is approved. Therefore, know how you arrived at your budget figures. Then, too, you should be aware that there is such a term as "efficiency of budget." A good proposal can be thrown out because the budget is unreasonable. At the same time an underpriced budget calls attention to the naiveness of the submitter. The overhead rate (usually 20 per cent for U. S. Office of Education funds) is expected to pay for something in the way of a university contribution. The asking for desks, chairs, and typewriters; in other words, routine pieces of office equipment waives a red flag in the eyes of some review panelists. Graduate assistants are a legitimate part of any research undertaking. However, to assume a single proposal is going to buy enough graduate students to put a department in the graduate program business for a long time is also unrealistic.

Moreover, the principal investigator himself should be well aware that it is his talent that is being bought. So, it stands to reason when a budget is examined. only to find the principal investigator devoting less than one-fourth time raises serious question in the minds of the reviewers as to who they are buying to do the job.

All-in-all, the prenatal care period of this anatomy is one of hard work, much frustration, and genuine relief when the proposal is packaged up and shipped off. Our project had an interesting turn of events when I decided the pastures were greener over at Rutgers and left Pennsylvania State just prior to the time of submission.

The Delivery

The waiting for a reply can be a frustrating experience. The delivery of this information can take three months or longer. As an experienced father will usually indicate, the first one is the most difficult to sweat out. Premonition is usually worthless at this point.

What usually happens, one needs a little time to relax from the tensions that have been built up during the prenatal period, and it will take at least a few months before psychologically you are ready to try another one. Meanwhile, the experience you have had will have stimulated your thinking along other problems and other research. This is why researchers seem to be such dreamers; walking around with their heads in the clouds hardly speaking to their colleagues.

In due time some response to your submission is received. This may be quite emphatic, especially if you have dealt with one of the private foundations. Yes, we are interested or no we are not. The U. S. Office of Education funding agencies will deliver in a more subtle manner. A stands for approval and all is well. P means provisional approval and some small changes must be made. R indicates you are being encouraged to resubmit, but possible major revisions will be needed. D means disapproval and you might as well look for another problem or try another granting agency. And H is reserved for "hold" as there is something lacking in the proposal or more information is forthcoming. The healthy baby is, of course, an out-and-out approval. But don't get too discouraged if you end up with the need for some minor changes or even are requested to resubmit. These are hopeful signs and the tape kept from the review panel discussions may be most helpful in revision and resubmission. Assistance in this respect comes from the person who is monitoring your proposal.

If a contract is written, have the ammunition to back up your original budget request. A lot can happen between the time the proposal was first submitted and the writing of the contract. Don't hesitate to ask for additional sums (usually small) which you may have overlooked. On the other hand, don't be afraid to reduce your budget request on unrealistic items which the monitor may point out to you. Reach a satisfactory agreement to both parties and by all means if you have any doubt, plan to have the university contract official present.

One last point that should be made quite clear. The usual practice is that the research grant is the right of the researcher and not the institution to which the researcher is attached. This is to say, if the researcher (principal investigator) moves, he has the prerogative of taking the grant with him and the funding agency will usually back him up. He is what they bought in the first place.

In Conclusion

In too short a time I've tried to relate one successful experience to you. For each success there may be a number of failures, but this is part of the "learning by doing" in which we all believe. We have pointed out the long way vocational educators have to go to develop a real research capability; we've tried to indicate an interdisciplinary approach to our problems is looked upon with favor; we've traced some of the steps in proposal preparation, and we've called attention to those of you who will administer the vocational program of research that this is not a moonlighting business--that we must get geared up to the job in terms of competent personnel, time, and financial assistance. The end product though will add a blue chip stock to your holdings which will pay dividends long needed by vocational education.

In closing let me say, we are on the move. We've had some success already and we must keep in mind that it is far more preferable to do a few things well than to do a lot of things in a haphazard manner. Vocational educators must administer their research programs well even to the extent of starting out on a very small scale. For whatever we do must reflect in the quality of our product and not in the mass production of more of the same.

DIFFUSING EDUCATIONAL INNOVATIONS

by
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and
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Michigan State University

INTRODUCTION

Education is fast changing and administrators of educational organizations need to alter their styles, methods, and structures to keep in tune with the times. I wish to review certain investigations dealing with change in education, and to point out some of their action implications for you.

Further, to you who are in positions of responsibility dealing with educational research, I'd like to suggest a fruitful topic for needed studies: research on the diffusion of educational innovations.

We spend tremendous resources in education in developing educational innovations and additional thousands in inducing local schools to adopt them, yet I know of only one U. S. educational researcher who is entirely devoted to the scientific study of how these new educational ideas diffuse. We seem surprised that kindergartens required over 50 years to reach widespread adoption by public schools, and similarly are fascinated that language laboratories increased from about zero in 1955 to over 4,000 in 1962, yet we know little about how either innovation was communicated and adopted.

A theme of my paper is that we need to devote increased research attention to investigation of the process by which educational innovations diffuse. Such research investment will pay off, I predict, in speeding the rate of adoption of these ideas; it will also, as bonus, add to our fundamental understanding of human behavior, especially that dealing with communication and change.

Objectives of this paper are to:

1. Point out the evident increasing rate of change in U. S. schools.

2. Trace the major research traditions in past innovation diffusion studies.

3. Speculate about how the nature of the educational institution likely affects applicability of past diffusion research to the case of educational innovations.

4. Describe four types of findings from past studies dealing with (a) the innovation process, (b) adopter categories, (c) the rate of adoption, and (d) opinion leaders.

5. List possible implications for action from educational diffusion research.

RATE OF CHANGE

Figure 1 shows the rate of change for three educational innovations. These data, suggest an increasingly rapid rate of change. This faster rate of educational diffusion may be due (1) to the ethos of the post-Sputnik era, with an increased emphasis upon the importance of education and especially upon certain school subjects, NDEA and foundation support for innovation, etc.; (2) to other concurrent changes from the 1920's to the 1960's like improved travel and mass communication, more professional school staff, etc.; and (3) to differences in the innovations themselves; for example, better "packaging," greater credibility of communication source, differential degrees of upsetting the total school structure, financial cost, etc.

Figure 2 shows how the rate of change in New York state schools increased in the post-Sputnik era. Is there a similar snowballing rate of change in your states' schools?

RESEARCH TRADITIONS ON DIFFUSION

One cannot help but be impressed, after reviewing the same 732 available publications on the diffusion of innovations, with the amazing similarity of findings by each of six major research traditions, which was accomplished in spite of the great lack of awareness by each tradition of the others. One would least expect this occurrence among researchers studying how ideas spread!

The six major traditions are:

1. Anthropology, where typical studies are concerned with how ideas diffuse from one society to another or with the social consequences of technological innovations.

2. Early Sociology, where S-shaped adopter distributions have been found and where some correlates of innovativeness were determined.

3. Rural Sociology, where major research attention has focused upon correlates of farmer innovativeness, how properties of innovations affect their rate of adoption, and upon communication channels at stages in the adoption process.

4. Industrial, where industrial economists and engineers have studied the correlates of innovativeness among industrial firms.

5. Medical Sociology, where investigations were conducted on the diffusion of a new drug among physicians, and on the acceptance of the Salk polio vaccine.

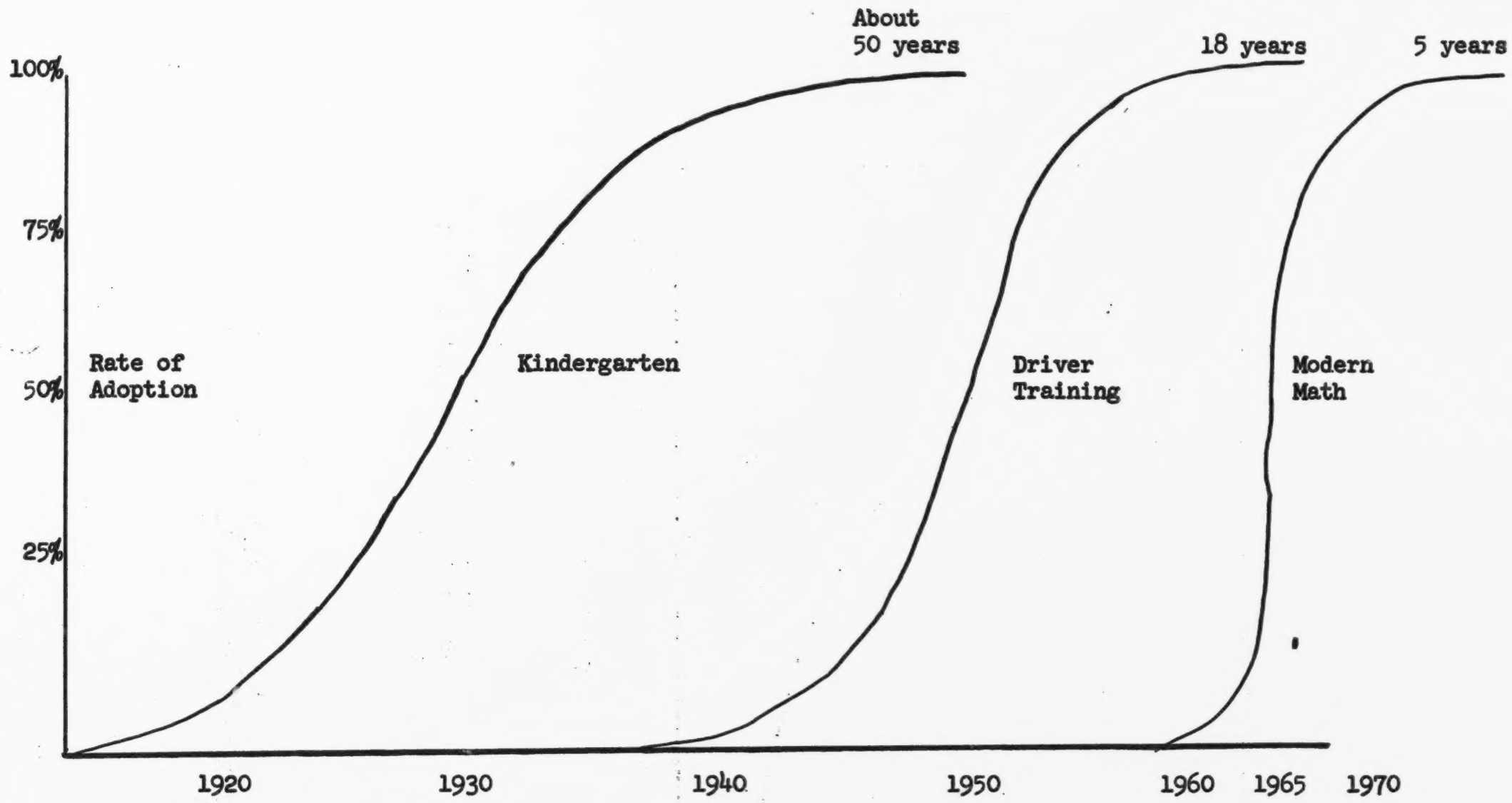

Figure 1. Approximate Rate of Adoption for Kindergartens, Driver Training, and Modern Math in U. S. Schools.

Source:

[1]Mort, Paul R., Principles of School Administration, New York: McGraw-Hill, 1946, pp. 199-200.

[2]Allen, Harley Earl, The Diffusion of Educational Practices in the School Systems of the Metropolitan School Study Council, D. Ed. Thesis, 1956, New York: Teachers College, Columbia University.

[3]Carlson, Richard O., School Superintendents and the Adoption of Modern Math: A Social Structure Profile, in Matthew B. Miles (ed.), Innovation in Education, New York: Bureau of Publications, Teachers College, Columbia University, 1964.

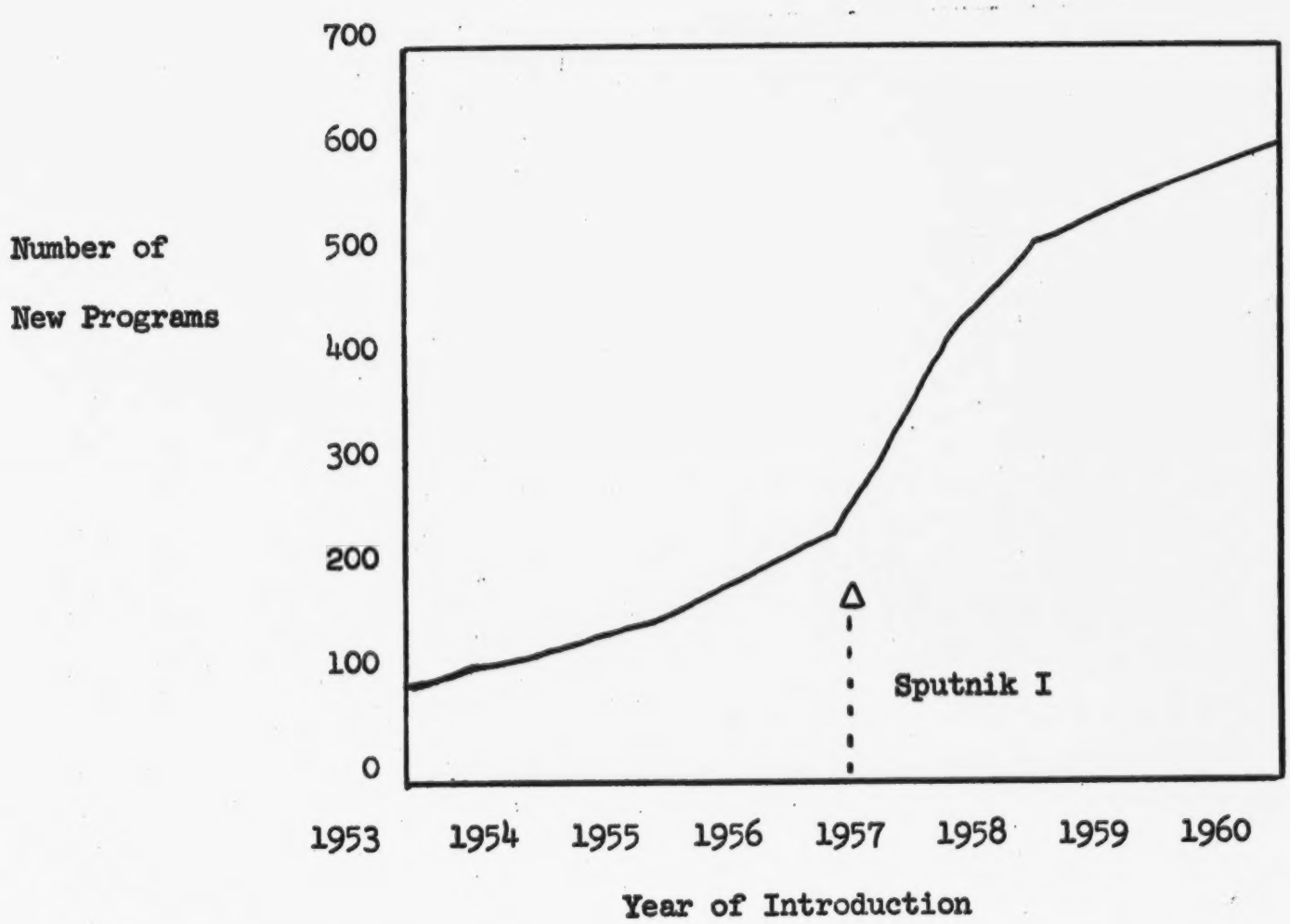

Figure 2. The Rate of Adoption of Educational Innovations Increased After Sputnik in New York Schools.

Source:

[4]Brickell, Henry M., State Organization for Educational Change: A Case Study and a Proposal,(1964, p. 495), in Miles op. cit.

6. Education, where studies on the correlates of innovativeness among schools were conducted, especially by Paul Mort and his followers at Teachers College, Columbia University. In recent years, however, some educational diffusion research has been completed at Ohio State, Pittsburgh, Oregon, North Carolina, and Michigan State.

THE NATURE OF EDUCATION AS IT AFFECTS DIFFUSION

U. S. education is an inviting bathtub in which to float one's diffusion research boats. But there are certain aspects of the nature of U. S. education that should make us cautious on applying the results of studies in other traditions, such as rural sociology, where the most studies have been conducted.

1. One difference between agriculture and education is that, as Pelley[5] (1948, pp. 170-171) pointed out, "Unfortunately, there seems to be no possible profit motive in being an educational innovator." The primary motive for more innovative schools must come through the school staff's or the community's desire for more effective learning by their children. However, the amount that learning increases as a result of adopting educational innovations is often difficult to measure. So the adoption motives for farmers and educators are different.

2. Another distinction is that there is no corps of change agents in education at all comparable to extension agents, farm dealers, and others in agriculture.

3. Likewise, educational innovations are less clear-cut in their advantage over the existing ideas they replace than in agriculture. Undoubtedly one reason for the relative slowness of educational adoption when compared with agriculture, medicine, or industry is the absence of adequate scientific sources of innovation in education. Chemical companies and the network of agricultural experiment stations provide accurate measurement under controlled conditions for a new idea. Farmers, as a result, have developed credibility for agricultural research as a source of innovations. Education, on the other hand, has only campus or university schools, and those classes in the nation's schools willing to cooperate in experimentation. Here, first responsibility is to the student, not to research. And the results of educational research are often ambiguous, incomplete, and confusing.

4. Innovation decisions in education may not be an individual matter. The unit of adoption is often a school system, rather than individual teachers. For example, many school systems establish innovation deadlines for adoption by all their teachers, as is fairly common today in the case of modern math. Innovations adopted by social systems rather than by individuals are likely to have a slower rate of adoption.

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[5]Pelley, J. H., Invention in Education, D. Ed. Thesis, New York: Teachers College, Columbia University, 1948, pp. 170-171.

In any event, educational diffusion occurs within a school system, as well as between schools. And in the case of innovation diffusion within a social structure, the norms, statuses, and formal structure of the system affect the process of diffusion.

A SUMMARY OF FINDINGS FROM DIFFUSION RESEARCH

1. The Innovation Process

An innovation is defined as an idea perceived as new by the individual (Rogers,[6] 1962, p. 13). Individuals go through a mental process of learning about a new idea, becoming favorable or unfavorable toward the innovation, and either adopting or rejecting it. The innovation process is individual; the diffusion process occurs for a social system. No matter what the change, someone in the school district proceeds through the innovation process If the change is one involving a single teacher using a different method, he will negotiate each of the steps. However, if the school district makes an administrative decision to try an idea, each individual teacher may not go through all the steps of the process. In this situation the decision-maker, for example, department head, curriculum supervisor or administrator, goes through the innovation process, while the teacher using the adopted innovation may jump directly from awareness to adoption.

Five steps have been postulated in the innovation process:

1. Awareness - The individual begins to hear of the new idea but he lacks information about it.

2. Interest - The individual becomes interested in the new idea and looks for more information about it.

3. Evaluation - The individual begins to try the new idea in his imagination. He tries to determine how it fits into his situation and how he could use it.

4. Trial - The individual tries the innovation in a small experiment to test its effectiveness.

5 Adoption - The individual, after having tried the new idea, puts it into standing operational procedure.

Currently, I prefer to conceptualize the innovation process in three fundamental functions, which are closely synonymous to stages in a process, except that they do not always occur in chronological order.

1. Knowledge (which includes the activity at the awareness and interest stages in the "adoption" process).

2. Attitude Change (The individual probably starts with neither favorable nor unfavorable attitudes toward the new idea, at least until after he first learns about it).

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[6] Rogers, Everett M., Diffusion of Innovations, New York: Free Press of Glencoe, 1962, p. 13.

3. Behavioral Change (either adoption or rejection). I prefer "innovation process" to "adoption process," because the former implies to me that all decisions must not necessarily end in adoption, but could also terminate in rejection.

Useful generalizations have emerged from past research on the innovation process, for example, that mass media communication channels are most important in creating knowledge about an innovation, but that personal communication channels change attitudes.

The three functions in the innovation process need not occur in any chronological order, other than that knowledge must occur first. Sometimes, individuals are forced to adopt or reject in spite of contrary attitudes. The compliance type of decision may occur often in schools and in other situations where the social structure exerts great influence on adoption or rejection. Also, further information-seeking may occur after the behavioral change stage, so as to reinforce already-made decisions.

2. Properties of the Innovation and Rate of Adoption

The rate of adoption over time varies considerably from one idea to another, as pointed out previously. The properties of an innovation, as perceived by adopters, affect its rate of adoption. Generally, more rapid rates of adoption are characteristic of innovations that:

1. Have more relative advantage over the existing ideas being replaced. Innovations like hybrid corn which increased yields about 20 percent are adopted more quickly than new ideas which have less relative advantage.

2. Are less complex; new ideas that are simpler to understand are adopted more quickly than ideas difficult to grasp. In education the adoption of a team teaching approach constitutes a more involved innovation than one of choosing a new text.

3. Are more visible; new ideas whose use and results are more plainly seen are more quickly adopted than those with results are difficult to perceive. An example is the increased use of the overhead projector. Teachers can readily observe the implications of this tool for improving instruction through a simple demonstration.

4. Are more divisible for trial; new ideas which allow small scale sample experiments are more readily acceptable than ideas which require a massive shift of effort at once and allow less possibility of trial. The decision to teach PSSC provides an example. An innovator cannot teach one day by the new method and one day by the old method so as to obtain a measure of difference.

5. Are more compatible; new ideas that fit with values and attitudes presently held more easily gain approval than those opposite to presently accepted practice. Modern math and PSSC fit current U. S. emphasis upon science; this compatibility with social values undoubtedly speeds their rate of innovation.

3. Adopter Categories

Innovativeness is the degree to which an individual is relatively earlier than his peers in a social system in adopting new ideas. Innovativeness appears to be a generally consistent type of behavior; individuals who are innovative for one idea tend to be similarly innovative for other new ideas.

As was indicated in Figure 1, most adopter distributions approach an S-shaped ogive over time. This S-curve occurs because in the early years of adoption of an innovation, only a few individuals adopt. Later, the rate of adoption increases sharply as a large number of individuals adopt the new idea in each time period. At this point, the innovation becomes part of the lifestream of the social system. In the last stages of diffusion fewer and fewer individuals adopt in each time period as only the last "hold-outs" remain to adopt. The composite result of this adoption behavior is an S-shaped adopter distribution.

For the sake of easier conceptualization and understanding, the continuum of innovativeness is often arbitrarily divided into five adopter categories: innovators, the first 2.5 percent of adopt; early adopters, the next 13.5 percent; early majority, the next 34 percent; late majority, the next 34 percent; and laggards, the last 16 percent to adopt.

Innovators are venturesome individuals; they desire the hazardous, the rash, the avant-garde, and the risky. Since no other model of the innovation exists in the social system, (at the time they adopt), they must also have the ability to understand and use complex technical information. An occasional debacle when one of the new ideas adopted proves to be unsuccessful does not disquiet innovators. However, in order to absorb the loss of an unprofitable innovation, they must generally have control over substantial financial resources.

Their propensity to venturesomeness brings them out of their local circle of peers and into more cosmopolite social relationships. Even when the geographical distance between innovators may be considerable, they often have been found to form cliques. They are thus like long distance circuit riders who spread new ideas as their gospel.

The description of innovators is sharpened by contrast to that of laggards, who are the last to adopt an innovation. Laggards are localistic; many are near-isolates. Their point of reference is the past, and they interact primarily with those peers who have traditional values like theirs. Laggards tend to be suspicious of innovations, innovators, and change agents. When laggards finally adopt an innovation, it may already be superceded by another more recent idea which the innovators are using. While innovators look to the road of change ahead, the laggard has his attention fixed on the rear-view mirror.

A summary of characteristics and communications behavior of individuals in different adopter categories is found in Table I on Page 95.

TABLE I

SUMMARY OF CHARACTERISTICS AND COMMUNICATION BEHAVIOR OF ADOPTER CATEGORIES[7]

Characteristic or Behavior	Innovators	Early Adopters	Majority		Laggards or Late Adopters
			Early	Late	
1. Time of adoption	First 2.5% to adopt new ideas	Next 13.5% to adopt	Next 34% to adopt	Next 34% to adopt	Last 16% to adopt
2. Attitudes and values	Scientific and venturesome	Progressive	More conservative and traditional	Skeptical of new ideas	Agricultural magic and folk beliefs; fear of debt
3. Abilities	High level of education; ability to deal with abstractions	Above average education	Slightly above average education	Slightly below average education	Low level of education; have difficulty dealing with abstractions and relationships
4. Group memberships	Leaders in county-wide or state organizations; travel widely	Leaders in organizations within the community	Many informal contacts within the community	Little travel out of community; little activity in formal organizations	Few memberships in formal organizations other than church; semi-isolates
5. Social status	Highest social status, but their farming practices may not be accepted	High social status; looked to by neighbors as "good farmer"	About average social status	About average social status	Lowest social status
6. Farm businesses	Largest, most specialized, and most efficient	Large farms; slightly less specialized and efficient	Slightly larger than average sized farms	Slightly smaller than average sized farms	Small farms; low incomes; seldom farm owners
7. Sources of information	Scientists; other innovators; research bulletins	Highest contact local change agents; farm magazines; extension bulletins	Farm magazines; friends and neighbors	Friends and neighbors	Mainly friends and neighbors; radio farm shows

[7]North Central Rural Sociology Subcommittee for Diffusion of Farm Practices, Adopters of New Farm Ideas: Characteristics and Communication Behavior, East Lansing: Michigan Extension Service, 1960.

How do schools like Newton, Winnetka, Shaker Heights, and Cape Kennedy differ from their more laggardly sister schools? In short, innovators . . .

1. Are relatively higher in social status.

2. Tend to use mass media rather than personal communication channels.

3. Are more cosmopolite; they travel over a wide area and have social relationships outside of their social system.

4. Exert opinion leadership. Because of their prior experience with the new idea, innovators obviously are in a position to influence the adoption decisions of their peers. Several studies have shown, however, that the norms of the social system may act as an intervening variable between innovativeness and opinion leadership. For example, in communities where the norms are traditional, innovators are not looked to by their peers as sources of advice.

5. Are viewed as deviants by their peers.

6. Are wealthier; the Mort studies (Ross,[8] 1949) found a consistently high relationship between the financial resources of a school system and its innovativeness, although Carlson (1962, p. 340) reported no such relationship in the case of modern math.

4. Opinion Leadership

In every social system there are certain individuals who have a relatively disproportionate share of influence over their peers' decisions. Opinion Leadership is the degree to which individuals are sought for information and advice. Opinion leaders, when compared to followers, seem to conform more closely to the norms of the social system. They serve as role-models for others in the system. Individuals tend to interact most with others who have similar characteristics, values, etc. Thus, we find that the innovator is often too far ahead of the rest of his social system to offer a good model; opinion leaders are more often early adopters.

Some of these patterns of influence and opinion leadership can be observed in Figure 3, which deals with the spread of 2,4-D weed spray in one Midwestern Rural Neighborhood. Undoubtedly, somewhat similar patterns of influence about an innovation occur among teachers in a school.

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[8] Ross, Donald H., Administration for Adoptability, New York: Metropolitan School Study Council, 1949.

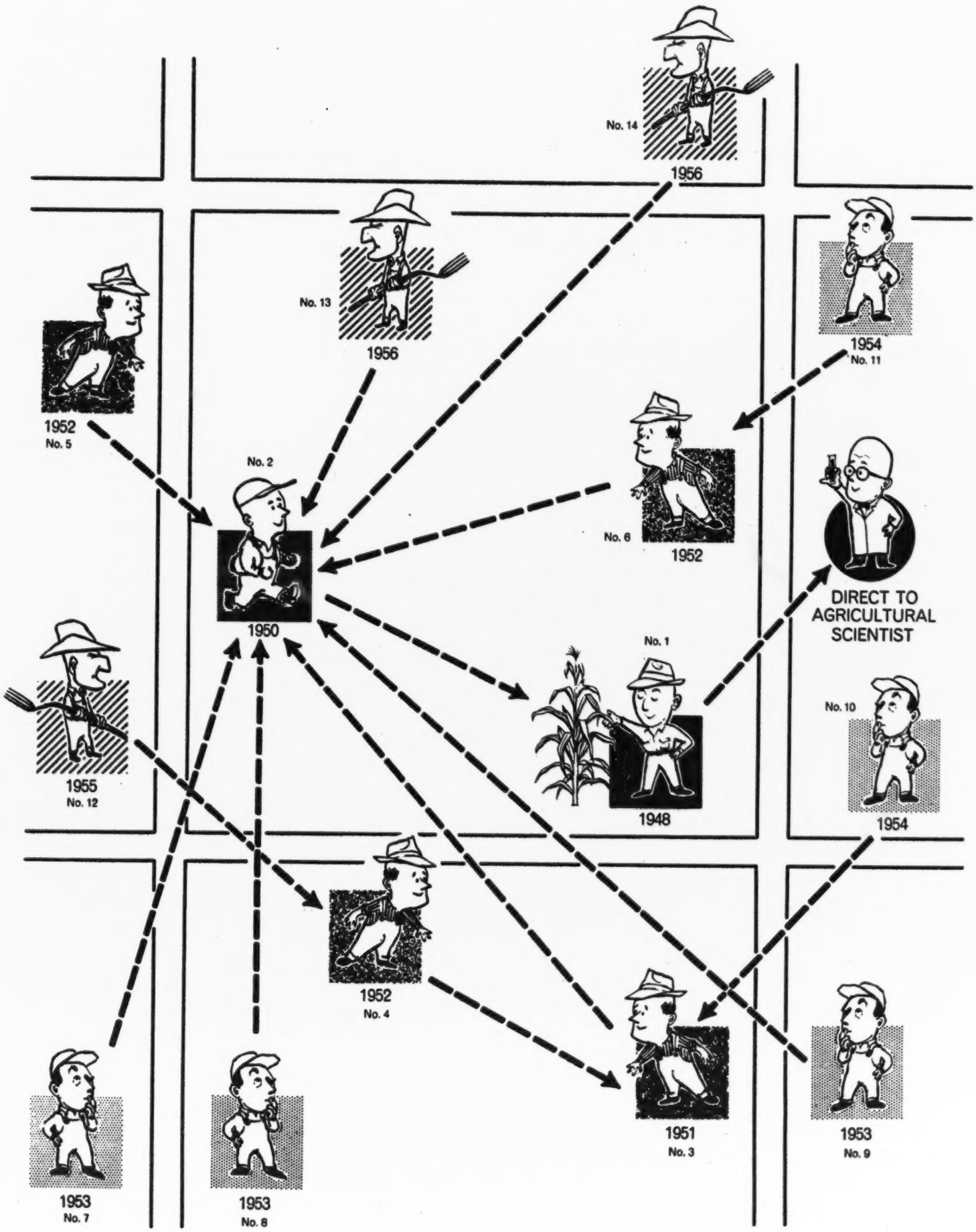

Figure 3. Patterns of Influence in the Diffusion and Adoption of 2,4-D Weed Spray Among Fourteen Farmers in One Midwestern Neighborhood.[9]

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[9]North Central Rural Sociology Subcommittee for Diffusion of Farm Practices, Adopters of New Farm Ideas: Characteristics and Communication Behavior, East Lansing: Michigan Extension Service, 1960.

IMPLICATIONS FOR CHANGE AGENTS

Certain implications may be drawn from past diffusion research that may be useful to administrations of educational organizations.

1. Selection of "Good" Innovations

One important role of the educational change agent is to select good innovations, and discard those innovations which will be inappropriate for his clients to adopt. In this role, the change agent plays the task of "gatekeeper," which he should be qualified to do on the basis of his superior training, expertize, wide communication contacts, and access to other experts.

2. Developing Ability of Clients to Evaluate Innovations

Too often, change agents simply seek to promote widespread adoption of innovations, rather than to try to increase the ability of the members of the client system to evaluate innovations. This tactic may mean that change agents would not use "innovation bribes" to influence schools to adopt language labs and other experimental projects. Rather, these change agents would seek to provide their clients with basic understandings underlying the nature of the innovations they are promoting.

3. "Packaging" Innovations

Change agents can often achieve a more rapid rate of adoption for a given, "good" innovation by packaging it in certain ways rather than others. In essense, this approach seeks to use the characteristics of innovation (for example, relative advantage, compatability, etc.) to achieve a more rapid rate of adoption. An example, perhaps, might be found in the case of modern math. By labeling this idea as "modern," its sponsors undoubtedly newness. One might wonder, how "modern" will our modern math be 25 years from now?

Another example of packaging is the change agent who "ties in" an innovation with a bundle of related practices. Perhaps one of the best examples is the India "package programme," in which farmers are urged by change agents to adopt a complete package of farm innovations, including fertilizers, improved seeds, irrigation, etc.

4. Working Through Opinion Leaders

Figure 3 illustrated the importance of working through opinion leaders. One can imagine the greater effectiveness of a change agent who concentrates his attention upon farmer number "2" in Figure 3..

To some extent we could use demonstration schools as opinion leaders in education. Demonstration schools will be effective in diffusing educational innovations to the extent that these demonstrators are similar to the schools we are seeking to influence. This is one reason why university schools and lab schools are largely ineffective as demonstrations, and are often being discontinued in the U. S. They had largely become elite schools for the education of intellectually-talented faculty children. This eliteness destroyed their credibility as demonstrators.

I would suggest that we seldom use demonstration schools wisely to disseminate new ideas. How do we determine who visits the demonstration school? What follow-up do we make with these visitors after they return to their home schools? Could the same function of demonstration be fulfilled by an effective film showing the same innovation in practical school use?

5. Basing Programs on Needs

Earlier in the present paper, I discussed the compliance adoption decision in which the individual is forced to adopt by the system. In other words, the individual felt no need for the innovation. One would suspect that once the structural influence were removed, the individual would reject the innovation.

Generally, innovations will be adopted more readily and permanently if they answer needs perceived by members of the client system. This implies that the change agent should select innovations which promise to fulfill his clients' needs. Also, he should devote part of his efforts to developing these needs on the part of his clients.

6. Anticipating the Consequences of Innovations

A change agent should anticipate the consequences of an innovation in his social system; and if these effects are undesirable, they should be avoided. The literature of anthropology is replete with cases of primitive societies which disintegrated after well-meaning change agents introduced new ideas, which turned out to have undesirable as well as desirable effects.

Is about the same occurrence not involved in the case of certain educational innovations which are only fads or fashions?

One means to anticipate the undesirable consequences of innovations is to try them out in pilot schools on a field trial basis.

Conclusion

In this paper I have sought to trace some of the main findings from diffusion research and to apply these to education. The real value of this exercise will be evident when we have numerous, careful studies of the diffusion of educational innovations. I urge you to devote some of your plentiful research resources to this priority topic.

APPLYING THE PRINCIPLES OF DIFFUSION TO UTILIZATION OF RESEARCH

by
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Department of Educational Administration
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I feel very fortunate to have had the opportunity to take part in the Research Seminar for the past four days. As a former school administrator and a trainer of public school administrators, I feel that you have treated us kindly. It has, indeed, been a learning experience for me, too.

When Bob Taylor, Jim Christiansen, and I talked some months ago about my possible participation in this conference, they asked that I focus primarily on two specific areas. First of all, they requested me to examine Dr. Rogers' analysis of diffusion research;and secondly, they asked that I focus on some very practical problems involved in the diffusion of research. To quote directly from those conversations, "What are the nuts and bolts issues involved in the diffusion of research?" This I am happy to attempt, for as we examine past innovation efforts, we often find that this is the area where we have been least successful--the area where we have done so very little to exchange traditional methods for creative new approaches to the problem.

Even the most cursory examination of recent legislation which provides for the funding of new research efforts reveals evidence of conscious concern for the diffusion of research on the part of framers of this legislation. It is also interesting to note that this concern for diffusion is not restricted to any one field or subject-matter area. In this sense, these new efforts represent a commendable departure from the traditional. Clearly, the challenge has been presented and funds in amounts not formerly available in education are potentially at the disposal of those who are interested in initiating planned change in education.

While I have been asked to focus on a specific area in the conference, I would like to take the liberty to draw upon a number of the presentations which have been made this week in addition to the pointed references in the presentation made by Dr. Rogers this morning. I have also been requested to allow you a very ample period for questions. Initially, I would like to draw heavily on the Lee, Brickell, and finally the Rogers presentations.

Dr. Rogers has pointed to the fact that we have spent tremendous resources in education in developing educational innovations and additional thousands of dollars in inducing local schools to adopt them, yet as a serious student of the field he is able to identify only one United States educational researcher who has devoted all of his time to the scientific study of how these new educational ideas diffuse. I believe that we do have some modern examples of successful rapid diffusion of educational innovation, but I would have to

agree that systematic scientific study of even these dramatic innovations is not available to the student of change. As one illustration, I would like to make some reference to some programs that have been widely adopted in the United States in a relatively short time. I refer specifically to the Course Content Improvement Programs of the National Science Foundation. These include such programs as the Physical Science Study Committee's secondary school physics program, the School Mathematics Study Group's program in elementary and secondary mathematics, and the Biological Sciences Curriculum Study Program in high school biology. These are recent programs, introduced during the past seven years, and their adoptions by school systems have been at a rate which surpassed the introduction of any past innovations in American education. In the case of P.S.S.C. for example, we find that in a period of five years, this program has moved from introduction in seven schools to an estimated use by 40 per cent of all students electing high school physics. In its second experimental year, with materials clearly labeled as "experimental," over 500 teachers and 50,000 students used the B.S.C.S. biology materials in 35 states--indeed a test group of major significance.

Dr. Rogers has given you some figures on rate of adoption of new programs which he has labeled "modern mathematics." In one of these programs, Dr. E. G. Begle, Director of the School Mathematics Study Group, stated that in a two-year period over six hundred thousand S.M.S.G. textbooks were purchased for use in grades 7 through 12, within five years after the initial introduction of the materials. Certainly we have in these and other similar programs ample evidence of a new adoption rate in American education. If we examine the literature relative to evidence of diffusion research related to these programs, we find little in the way of careful analysis. If, on the other hand, we examine the programs themselves, their planning and development procedures, their provision of resources for testing, revising and dissemination, we can observe concrete evidence of new approaches which they have utilized. Here we find ample recognition of the fact that planning stages require many diverse talents, provision for long-term coordination, stimulation and appraisal activities and lastly the allocation of resources commensurate with the task undertaken. Much remains to be done in terms of diffusion research on these new National Science Foundation programs and on others that have been undertaken since these initial efforts were pioneered by scientists and mathematicians.

Dr. Rogers' research reported to you this morning has supported the fact that recent innovations have enjoyed an increasingly rapid rate of change. He suggests that this increase in adoption rate may be due to "the ethos of the past sputnik era," improved travel, mass communication, more professional staff and differences in the innovations themselves. In his review of 732 innovations, he has pointed to the "amazing similarity of findings of each of six major research traditions" as they pertain to the diffusion of innovations.

As I reflect on the excellent presentations which have been made during these past four days, it would appear that we have some implied areas of agreement which are worth noting at this point.

1. In a number of ways we have clearly implied and agreed that research and development is not the exclusive domain of any one agency, group, or institution.

We have alluded to the roles of the state departments of education, the colleges and universities, the United States Office of Education, as well as local school systems. We have identified the necessity for involvement of these groups, and we have also pointed to the need for imaginative new plans to provide for the coordination of the efforts of these agencies. Making resources and personnel available in adequate amounts and at the desired times in order to move from the initial research effort to the successful diffusion and adoption of appropriate findings of this research has been given attention by a number of the seminar speakers.

2. There is no single best way to carry through the research, development, field testing and dissemination activities involved in innovation.

One of our problems is to make certain that we examine all of the possible alternatives and choose the one most appropriate to the task we have outlined for ourselves. One of the problems in making a choice from among a number of alternatives is that of assessing the forces with which we must ultimately deal if the innovation is to become widely adopted. One agency which we haven't mentioned very often during this conference is the professional organization. In most cases, it is not a single professional organization,for if we consider all phases of research and development, we find a number of identifiable professions present at various points in the research and development process. Let's take one example here--P.S.S.C.

At the initiation of this project the P.S.S.C. group worked closely with the American Institute of Physics, the American Association of Physics Teachers, and the National Science Teachers Association. While I do not have time here to describe the specific types of involvement in each case, I would like to make three points.

a. These professional groups were involved very early in the formative stages of the project.

b. A sincere effort was made to include their concerns in any proposed new program.

c. They continued to be active as the program developed.

Another evidence of a new type of activity on the part of a professional education group can be observed in the activities of the American Association of School Administrators over the past ten years--activities which have significant implications for the adoption of innovation at the local school level. This is indeed a factor to be considered if we concur with Dr. Brickell in the importance of the administrator as an inhibitor or facilitator of innovation. The A.A.S.A. has initiated a program which is designed to give

the practicing administrator some voice in the selection of persons to be trained as school administrators,and this professional organization has also developed an accreditation plan which results in the profession's having some voice in the content of the program designed for training educational administrators.

Another professional activity which has only begun to be a factor which must be considered in the research and development process is the relationship of teachers, school board members, professional organizations, and state legislatures in this expanding new area of professional negotiation and collective bargaining. New and strikingly more comprehensive contracts are being written in this area and professional organizations are taking strong stands as is evident in New York, Utah, and Oklahoma. One of the most crucial questions and one which concerns the topic of our seminar is--What areas are appropriate for negotiation? Even the most cautious observer would have to admit that the scope of negotiable items is being broadened. In one major agreement for example, in addition to the traditional areas of salary, welfare and working conditions, the following topics have also been agreed upon as negotiable items by the parties to the contract:

a. General objectives and long-term educational goals.

b. Recruitment of qualified teachers.

c. The improvement of difficult schools.

d. The reduction of class size.

e. The development of a more effective curriculum.

The extent to which the last area is implemented could have serious implications for the diffusion process.

Still other references supporting the profession as a force to be utilized in the area of diffusion could be identified but time does not permit.

3. Another area of concern during the past four days of our seminar could probably be summarized by stating that conditions affecting research, development and dissemination vary from state to state, but in each case there are conditions which impinge on the program,and these conditions or forces must be dealt with in some way if innovation is to be successful.

If I may, I would like to make two observations relative to this point.

a. The types of conditions which face the innovator will vary not only from geographical area to area but also variations will occur as we move from one content area to the other.

b. While these conditions will not, in some cases, impinge on the innovation until it reaches the dissemination stage, they need to be planned for in the earlier stages of research and development.

Let me use P.S.S.C. as an example. One of the conditions which P.S.S.C. had to deal with early in the planning stages of its program was the relationship of the College Entrance Examination Board's achievement test in the area of physics. This examination has assumed an ever increasing importance in the area of college admission. The designers of the P.S.S.C. program took the position that a new selection of content for a program in high school physics would necessitate some revision in the examination designed to measure achievement in the program. In its initial year the P.S.S.C. and the College Entrance Examination Board issued a joint written statement on the interpretation of C.E.E.B. physics test scores for those students enrolled in the P.S.S.C. program. A copy of this letter was sent to all colleges and universities to which P.S.S.C. students applied for admission. Later an alternate C.E.E.B. physics examination was developed for P.S.S.C. students and finally the C.E.E.B. examination was modified to include appropriate P.S.S.C. materials.

Moving to the "nuts and bolts" phase of dissemination we can also note some other provisions in this program which helped to speed dissemination of the innovation.

a. Initially, free textbooks were furnished to the early schools which participated. This had implications when we consider adoption plans, book rental programs, and other textbooks arrangements prevalent in schools across the country.

b. Free newly designed achievement tests were also furnished.

c. In some cases new laboratory materials were made available to schools without cost--this might be a factor in a school system which has just built and equipped a new school, but would like to participate in the new program.

Even a hasty examination of factors such as those mentioned above will illustrate the fact that these conditions will vary as we move from geographical area to area and as we move from one content area to another.

I don't think that we have mentioned any subject more frequently during this seminar than we have the need for adequate and diversified staff as we consider the research and development process.

4. We seem to agree that in the research and development effort there is a need for an adequate staff with many different competencies, drawn from diverse societal agencies and that these diverse resources need to be placed in new and unique relationships.

Personally, I believe that this is our most serious problem as we contemplate mounting significant research and development efforts. Many argue that if we were to carefully assess the talent available and the challenge being presented in terms of support which is now visible, we need not only to develop imaginative plans for utilizing resources presently available in all disciplines, but we also must face the task of training new people; and we must, in the planning, phases of our programs, provide resources commensurate with the task.

We can note some new innovations here if we again examine some of the new programs mentioned above. These programs have not depended upon the traditional methods for diffusing innovation. Rogers makes the point earlier that "innovations adopted by social systems rather than by individuals are likely to have a slower rate of adoption." Traditionally innovation has been carried out in isolated areas. Innovations have been designed, tested, demonstrated, and then recorded in professional journals. The innovation sites are subsequently visited and sometimes the program or portions of the program have been adopted by the visitors. Publishers and developers of material recognize the innovation and it may then be included for wider distribution.

It is interesting to note the departure from this procedure which was followed by the developers of the Course Content Improvement Programs of The National Science Foundation. In the initial stages experimenters (teachers) were very carefully selected. No one was allowed to use these materials without careful screening and then a significant training program was developed for every participant. In the ensuing phases, these initial innovators were further screened and those who survived this screen were utilized to train an ever expanding group of participants. Gradually, the new materials were also included in pre-service training programs for new teachers. When we assess the total cost of these programs, we note that a considerable allocation of resources utilized by these programs were used for training purposes. These groups utilized all available talent but committed themselves to training additional staff to insure a fair trial of the new materials by persons competent to use these new programs. This would appear to be a significant departure when we consider the implications for the future of carefully developed innovations if they are introduced by persons not properly trained to utilize them. We must then allocate resources appropriate to the task. If a six-week institute is necessary for training purposes, let's not try and do the job with a drive-in conference or a two- or three-day workshop. It is also important to point out here that our training responsibilities are not related exclusively to the dissemination stages. Our needs at the research and development stage are also significant and the supply is short.

5. While the types of talent needed vary greatly in the various stages of research and development, there is a need to include representatives from all of the various talents in the early stages of planning.

In recent innovations, a recognition of this principle is often visible in the composition of the initial steering or planning committee. While each individual stage will require a predominance of one type of skill or talent, consideration must also be given at each of these points to phases which will

follow. Some recognition of this principle is evident if we examine the composition of the steering or planning committees used by the N.S.F. Course Content programs which have spread so rapidly. Representatives from professional organizations, publishing houses, communications media, testing agencies, and business and industry are new additions to planning units in education. Implications for the total planning task in terms of conditions and forces pertinent to the research and development phases of innovation appear to have been included at the very outset in these new programs.

In this connection, it was also encouraging to note some comments made by Dr. Guba earlier in this seminar. A first-rate researcher in his own right, he recommended the utilization of public school personnel at the problem definition and research levels. He pointed to a great untapped resource here. In addition to the research competencies which can be found in some public school personnel, their inclusion in the early phases of the research and development process enable them to provide double service as their contributions to dissemination activities are equally important. Many of the problem areas appropriate for research and development efforts are often visible to school personnel long before they become apparent to the agencies traditionally concerned with research and development activities. A dramatic case in point is the recent attention given to the need for new programs for the culturally deprived. Public schools were dealing with problems associated with cultural deprivation long before colleges and universities recognized the need for developing new programs and altering their teacher training experiences.

If we are willing to concede the need for a great variety of talent in the initial planning stages and in the phases which follow, we need also to consider potential impact of these staffing implications on the agencies which furnish the personnel. Again problems vary a great deal as we examine the different agencies which might contribute personnel. First of all, when we select personnel and make assignments, we must make certain that the assignment is a reasonable and a realistic one. In so many cases, responsibilities are added to persons who already have a full load without removing any of these responsibilities. In other cases, we have not maximized the contribution which the project can make to the agency from which the person has been drawn. In other cases we innocently create problems for the institution. From the university point of view, I can point to a number of problems created by full-time involvement in a project. In some cases when we remove an outstanding person from his area in a university staff, we temporarily at least remove one of the university's most valuable resources. Students who have been attracted to the university to study with this person find that he is no longer available to them. The removal of a person for a two- or three-year period thus makes a major impact on the program. In other cases, full-time involvement of project staff can have undesirable effects which tend to isolate the project and thus reduce the potential impact of the project as it relates to the on-going program of the institution. Carl Schaefer offered one possibility here by suggesting the appointment of two persons each on a half-time basis to the project and the replacement of these two half-time positions through the appointment of an additional person on a full-time basis. In this way, maximum stimulation can be provided for both the project and the on-going program of the university or other cooperating agency. In the field of public

schools we have only scratched the surface in terms of the possibilities available in extended summer contracts for personnel and released time arrangements.

In the comments outlined above, I have tried to react to the five steps in the innovation process postulated by Dr. Rogers. I have tried to examine the environmental or field of forces within which both the social system and the individual relate to the innovation process from awareness to adoption. I would tend to agree that the rate of adoption varies considerably from one idea to another. The properties of an innovation may affect its rate of adoption, but I am not certain whether this variation in adoption rate is due to its perceived complexity as viewed by the potential adopter or the use of common dissemination techniques regardless of the complexity of the innovation. We may not have had the resources available commensurate with the tasks we have undertaken. We may also not have been able to think "big enough" because of prior conditioning. For example, how many of us would have conceived a new high school physics program that would require $7,000,000 to develop and disseminate--back in 1956.

As I attempted to review and react to Dr. Rogers' six implications for change agents, I found myself in general agreement but somewhat concerned that all implications might not be clear to the casual reader. So much is included in each of these statements. In the materials presented above, an attempt has been made to both react to and amplify these implications.

In selecting "good" innovations for example, what criteria does the "gatekeeper" use? Which ones is he free to use? Which ones are imposed upon him by the social system of which he is a part? Some are local, some are regional, some are national. What kinds of resources do we need to develop and disseminate the innovation? When we speak of developing the ability of clients to evaluate innovations, we are outlining a tremendous task. It may have to be done once by one group at the national level for example and then again at the local level. Dr. Rogers pointed to the necessity for basing programs on needs as we identify the varying needs of local public school systems in terms of purposes and goals of these institutions we immediately build in requirements which must be recognized and planned for.

The definition of the innovation package or the packaging of innovations may be restricted to the typical marketing definition of that term, as we may choose to include in the "package" much of the planning research, development and dissemination activity as our definition of the total "package." The "package" is very different as we move from one definition to the other.

I have tried to expand a bit on Dr. Rogers' opinion leader categories to include agencies which perform an important role in developing educational opinion groups such as colleges and universities, testing agencies, publishers, professional organizations, state departments, and accrediting agencies. Again let me underscore how much these influences of opinion vary as we move from area to area.

In anticipating the consequences of innovation, we have pointed to the need for careful appraisal and also for the inclusion of persons capable of assessing the consequences of innovation at the conceptual, design and planning stages of the innovation.

I found Dr. Rogers' paper most helpful in providing a framework on which to hang some of my concerns and observations relative to the change process and more specifically the diffusion process. It has been a most stimulating experience for me to take part in your seminar, and I would like to again thank those who made it possible.

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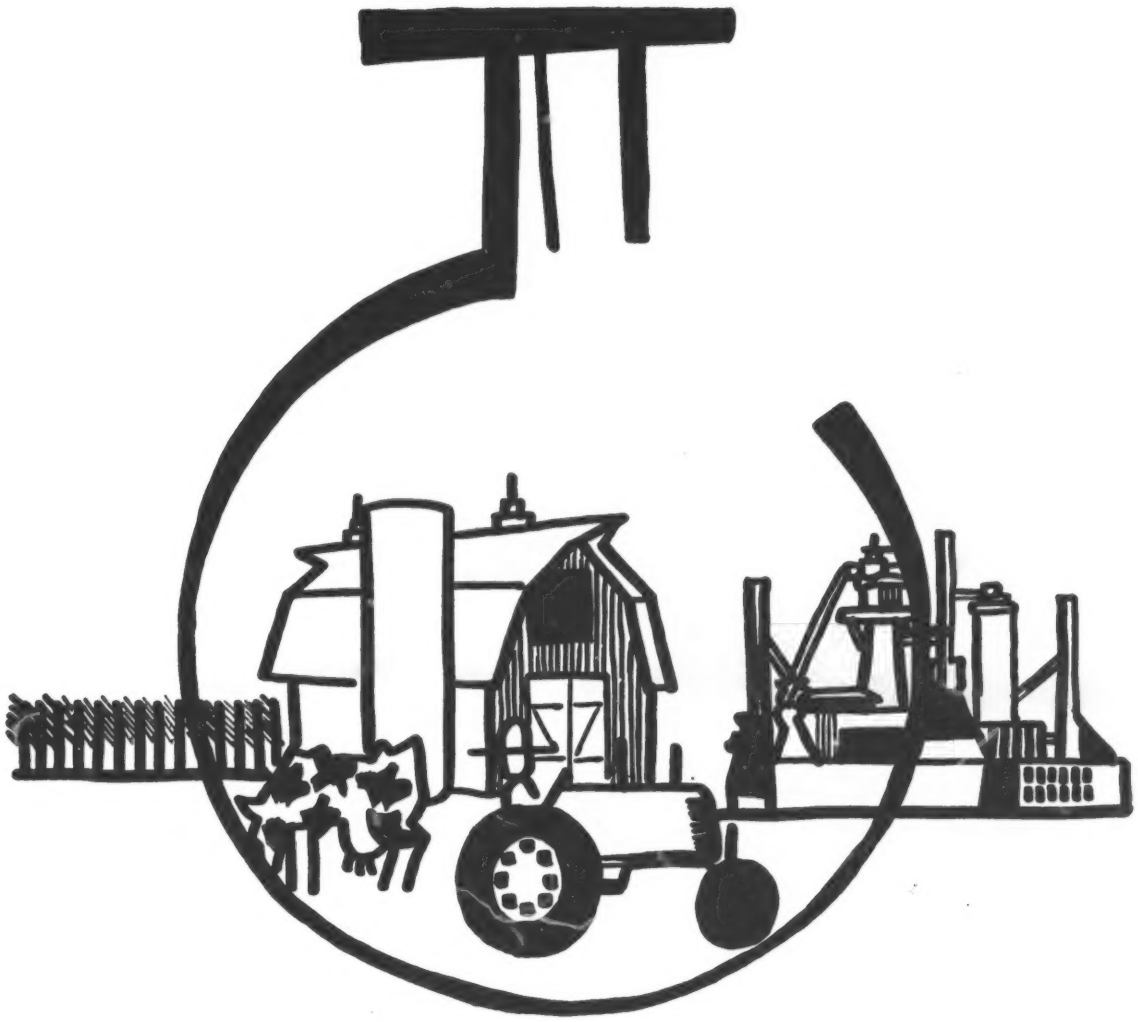
REPORT

of

A NATIONAL SEMINAR ON AGRICULTURAL EDUCATION

PREPARING AGRICULTURAL TECHNICIANS



The National Center for Advanced Study
and Research in Agricultural Education

July 20 to 24, 1964

THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO

VT000478

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A C K N O W L E D G E M E N T

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PREFACE

Over one hundred state and national leaders in agricultural education and vocational and technical education, representing thirty-eight states, the District of Columbia, and Guam, met at the National Center, July 20 to 24, 1964, to focus on their responsibilities for providing leadership in the development and expansion of programs for preparing agricultural technicians. This seminar was developed to devote attention to one of the significant changes in the structure of our nation's work force- the rapid development of occupations which are between the skilled worker and the professional.

The technological explosion in agriculture and the rapid expansion of the off-farm segment of the agricultural industry have brought about an increasing need for these semi-professional workers, commonly called technicians. Other factors which contribute to the urgent need for development of adequate technician training programs and which also place increased emphasis on the importance of this seminar are:

1. One of the key features of the 1963 Vocational Education Act is its emphasis on serving all age groups. We are challenged to serve the "no man's land" between high school and the baccalaureate degree.

2. Agricultural occupation studies being conducted in the various states are revealing an increasing need for agricultural technician training programs.

3. Many states are developing the needed educational organizational structure for providing agricultural technician training programs, such as area vocational schools, technical institutes, and community colleges.

4. The current needs of the labor market demand quality vocational education. Agricultural technician programs provide the means for adequately developing needed depth of know-how and know-why.

Since funds will be available under the Vocational Education Act of 1963 for agricultural technician programs, it is obvious that state staff members--supervisors, teacher educators, and other leaders in vocational and technical education--will have definite responsibilities and opportunities for leadership in this area, irrespective of the institutional setting in which such programs are offered.

The primary purpose of the seminar was to assist these leaders in identifying and clarifying their role in the initiation, conduct, and evaluation of agricultural technician programs. As the seminar progressed, it became increasingly apparent that the development of programs for preparing agricultural technicians would necessitate effective working relationships with a wide range of agencies, groups, and institutions.

For a more detailed over-view of the seminar purposes and the setting in which these purposes were implemented, the reader is referred to the presentation, "The Problem - The Setting - The Plans for Preparing Agricultural Technicians," page 9.

In retrospect, the seminar meetings were characterized by a positive, stimulating spirit of free inquiry. Traditional practices and concepts were questioned and re-evaluated in light of present or future circumstances. The seminar did not attempt to develop policies or to establish definite guidelines for the development of technician training programs in specific institutional settings, but rather examined ways and means in which such programs could flourish in a variety of institutional settings.

One of the major difficulties in reporting a meeting of this type is trying to capture the "spirit of the meeting" and the many other benefits accruing from such an activity. The following presentations of the consultant staff and the task force reports constitute the major thoughts emanating from the seminar discussions. They should be read and interpreted with an understanding of the framework and limitations under which they were developed. They should not be looked upon as final, but rather as developmental as they contribute to the reader's understanding of preparing agricultural technicians.

As would be expected in meetings of this nature, the major benefits were derived by the participants as they shared ideas, raised questions, acquired new insights, and broadened and extended their concepts and understandings. Admittedly, this report cannot and does not contain all of the values emanating from such interactions. However, we believe the interest and enthusiasm kindled during these sessions will spark new interests and examination of the problems associated with preparing agricultural technicians in the states and institutional settings represented by the participants.

As seminar director, I would like to express my appreciation to the participants for the enthusiasm and cooperation they manifested throughout the seminar. Acknowledgement is also due the consultant staff who through their participation, dedication, and forward-looking and thought-provoking presentations added an immeasurable dimension to the seminar deliberations. Robert M. Knoebel, Director of the Technical Education Branch in the U. S. Office of Education, and Jerry J. Halterman, Instructor of Agricultural Engineering at Modesto Junior College, California, also merit our thanks for their splendid work as special consultants during the seminar.

Finally, the entire agricultural education profession and the National Center, in particular, acknowledge their gratitude to the SEARS-ROEBUCK FOUNDATION for underwriting the expenses of the seminar.

If this seminar is the first of a series of state, regional, and national meetings, conferences, and research studies designed to expand and improve agricultural technician training throughout the nation, it will have fulfilled its purpose. Admittedly, much remains to be done. However, we believe some firm foundations have been laid.

Robert E. Taylor
Director

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P A R T I C I P A N T S

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	F. J. Ruble	Assistant Supervisor, Vocational Agriculture
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	Charles W. Whitney	Executive Director, Farm and Power Equipment Retailers of Ohio
	Richard H. Wilson	Teacher Educator, Agricultural Education, Ohio State University

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	Clifford M. Painter	Agricultural Education Supervisor
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C O N S U L T A N T S

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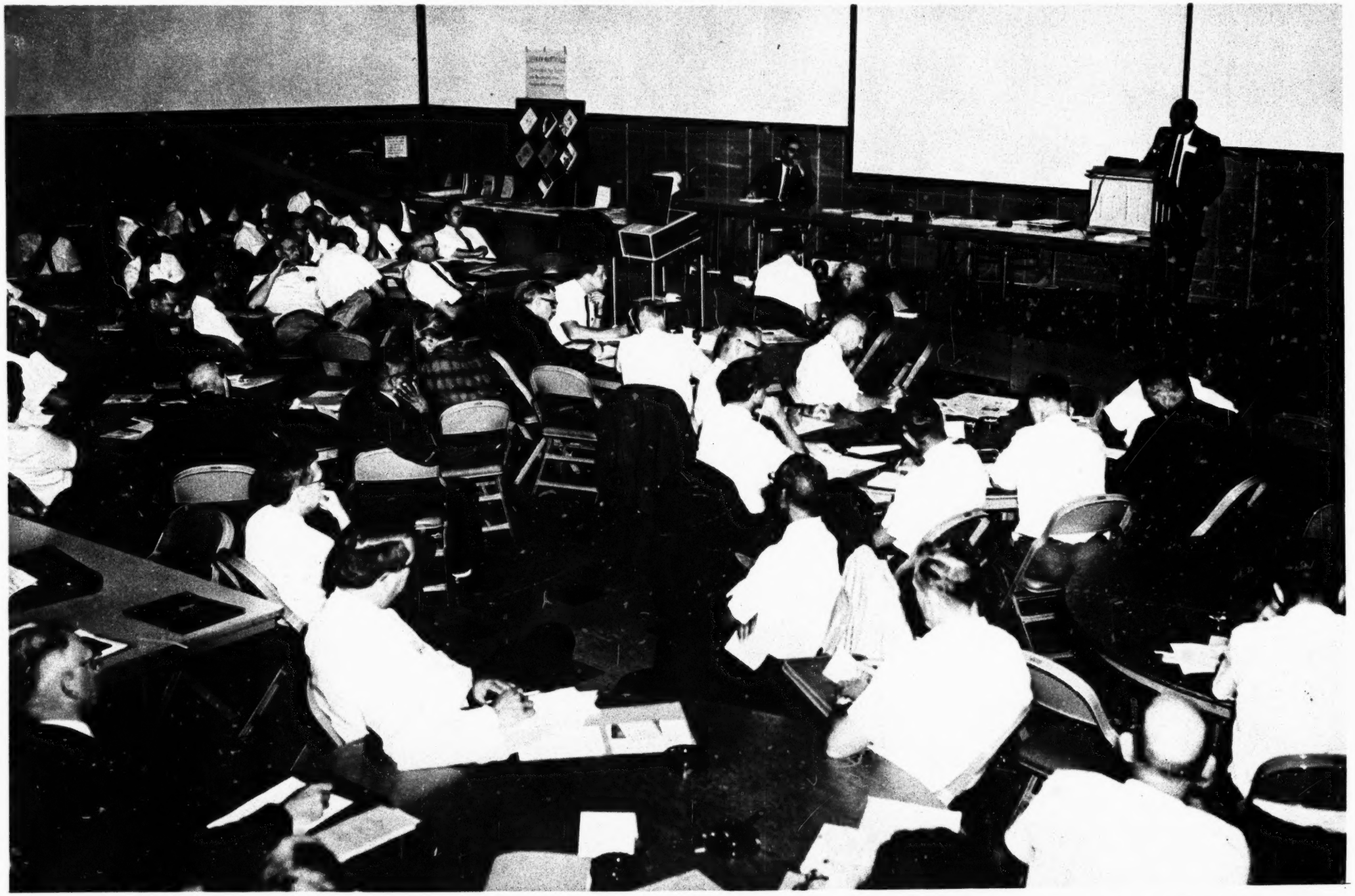
A. W. Tenney	Director, Agricultural Education Branch, U. S. Office of Education



An outstanding group of national consultants made presentations during the seminar. Here G. A. Sherman, Dean of Agriculture, Mt. San Antonio Junior College, California, is addressing the group on "Determining Curricular Content for Agricultural Technician Programs." Presentations of consultants were followed by "table talk," questioning, and task force discussions.

PART I

SEMINAR GUIDELINES

THE PROBLEM - THE SETTING - THE PLANS FOR PREPARING AGRICULTURAL TECHNICIANS

by
Robert E. Taylor
Director, National Center
for Advanced Study and Research
in Agricultural Education

We are delighted that you are here to participate in and contribute to this National Seminar. I believe the presence of over 100 busy, responsible state and national leaders in agricultural education from 38 states is ample and dramatic evidence of the importance and cruciality of the seminar theme. Providing an adequate and effective corps of agricultural technicians is the urgent task which confronts us. Most assuredly, it will require the resources, the best thinking, and the cooperation of all groups represented here if we are to succeed.

It would seem desirable to review briefly some of the dynamics of the present situation which relate to our immediate and challenging task.

First, in terms of the broad setting, we see new thrusts and emerging trends. For example:

1. The increased complexity of every-day life in a society shifting from a primarily rural to an urban, industrialized one.

2. The tremendous impact of increased technical and scientific knowledge.

3. The new role of education in our society, standing between man and his job, which recognizes that the lack of education is a barrier between men and jobs.

4. The dramatic increase in sophistication and complexity of occupations at all levels.

5. The virtual disappearance of unskilled, common labor jobs.

6. The impact of automation and the flow-process industries on production, on jobs, and on people.

7. The aspirations within a free society which leave no person content to stay in his place.

8. The realization that knowledge is the key to a better life, not just for a few but for many.

9. The belief that only the educated are free and its implication, then, that all of the free must be educated to the maximum of their capabilities.

10. The wide range of needs for semi-professional manpower.

11. The manpower shortage in professional and technical categories, contrasted with devastating unemployment in the unskilled and semi-skilled categories.

12. The realization that a "disaster gap" is opening up between those of our citizens with advanced education and those with little education.

13. The urgent need for millions of citizens who can both think and do -- and the gradual disappearance of a bi-polar society in which an elite few did all the thinking and the rest did all the work.

Shifting our view from the broad societal setting and focusing primarily on the complex field of agriculture -- production, processing, marketing, and servicing -- we note the following trends:

1. The technological explosion in agriculture -
   Increased private and governmental investments in agricultural research have resulted in a literal explosion of knowledge.

2. Increased applications of science to agriculture and the recognition of the biophysical scientific base of agricultural technology -

3. Increased mechanization and the application of the systems concept to agriculture -
   These have reduced unskilled labor and increased the need for highly skilled workers.

4. Increased capitalization per worker -
   This is evidence of and permits further technological advancement and development in both on-farm and off-farm phases (input - output) of agriculture.

These and related developments have contributed to significant changes and adjustments in agriculture and agricultural education. We see, for example:

1. An escalation of the competencies required by agricultural workers. Job skills are increasing. There is a premium on "know-why" as well as "know-how". The cognitive demands of a job are equal to or sometimes supersede the manipulative aspects of the job. We see the need for occupational skills being undergirded by a sound general education base.

2. Standards for agricultural college degree programs are advancing.

3. A widening gap appears to be developing between high school vocational courses and baccalaureate degree programs. This has been referred to as a no-man's-land by various agricultural education leaders.

4. There is developing an increased demand for middle-manpower, para-professional workers, technicians if you please. This need is not restricted to the domestic scene but also is evident as we examine our nation's commitments and responsibilities to developing countries.

There appears little doubt but that we need an increased supply of agricultural technicians. For example, industry has for a number of years identified certain ratios between the number of professional workers and the number of technicians needed to support them. These ratios range from 1:1 to 1:5 and perhaps higher. On some of the space shots from Cape Kennedy the ratio of scientists to technicians was 1:3.

What should it be in agriculture? How many agricultural technicians are needed? In 1963 there were 6,128 baccalaureate degrees in agricultural areas conferred by land-grant colleges. If we assume only a 1:1 ratio between professionals and technicians, we see a need for over 6,000 agricultural technicians annually. How many agricultural technicians are we training? Probably no one really knows. Estimates indicate the number to be less than 500 per year. I ask you--how serious is this gap?

What would an adequate supply of skilled, competent, agricultural technicians mean to the agricultural industry and the nation? What appear to be some of the obvious advantages and benefits from an expanded program of agricultural technician training? Following are some of the more obvious values of an expanded program in this area:

1. It should provide the means of making more effective use of our professional agriculturalists, freeing them in many instances from sub-professional tasks for truly professional level work.

2. It should permit four-year agricultural degree programs to attain the depth and level of excellence demanded by modern agricultural technology by focusing primarily on professional preparation, and to concentrate chiefly on becoming the scientific base, the fountainhead, of knowledge in agriculture.

3. It should bring into balance the manpower structure of agriculture, help it become pyramidal rather than hour-glass in shape, and allow us to more effectively utilize our human resources in agriculture.

4. ?

This list should be concluded with a question mark because I am sure you will readily think of other values and benefits from an expanded and improved agricultural technician training program.

We should also mention that the values of and need for expanding technical education were recognized by Congress in its passage of the National Vocational Education Act of 1963. Funds will soon be available. The needs are evident. The situation demands leadership action on the part of state staffs and others to initiate new programs and to improve and expand existing programs.

To summarize to this point, the "climate" in which we meet is good. There never was a better time or greater urgency for improving and extending agricultural technician programs.

I have been told by my friends in distributive education that part of good salesmanship is knowing when to quit selling and when to let the customer buy. I suspect you already are more aware of the need for improving our capacity in this vital area than am I. That's why you are here. In a sense, you have already bought.

Now, where do we go from here? How do we plan to proceed, to maximize the individual and group benefits from our week together?

First, the major underlying purpose of this seminar is to assist state and national leaders in agricultural education in identifying and clarifying their leadership role in initiating, improving, and extending agricultural technician programs. In fulfilling this global purpose, a number of specific areas have been identified for discussion to aid us in thinking through some of the problems and alternatives. These major areas are:

Needs for training programs
Objectives
Curricular content
Student services
Staffing
Plant facilities and equipment
Financing
Relationships to other agencies and groups

Through the seminar we hope to fulfill our underlying purpose and develop greater understandings and competencies in the problem areas. Furthermore, we would hope that this seminar will give greater visibility to the needs and opportunities in technical education in agriculture and that this area of our professional responsibility will receive increased attention and prominence in other meetings and activities of agricultural educators.

There will be three types of involvement for you as a participant:

1. As a member of the total seminar;
2. As a round-table discussion group member.
3. As a member of a task force.

Working together, how will we proceed to get the job done? What are some of the "ground rules" or operational procedures that we will follow?

First, I would like to emphasize that neither the Center nor the seminar staff has a "package" that we are trying to unload. We do not profess to have "answers" to current problems in technician training. We do not have a fixed position, but rather an attitude--an attitude

- that we have made a splendid beginning in technician training but that it can be better;
- that because of increased needs our efforts should be expanded;
- that the leadership for these adjustments and extensions may well come from members of this seminar;
- that together, this week, we should be able to develop concepts and understandings that will assist us in moving ahead.

Furthermore, we believe that learning is an active process, that this week should be a growth experience for all of us, and that this will most likely happen through active participation by everyone.

To assure maximum benefits from the seminar to you individually, to the state or institution you represent, and to the profession, we encourage, we want, yes, even require your best participation and thinking. Everyone's ideas are important regardless of position. Irrespective of the size of your state program, whether or not you have previously been involved in technician training, your years of experience notwithstanding, we want your ideas and questions. Hopefully, we will have active participants, not passive observers.

Before we begin the seminar it seems appropriate to examine our resources. In any discussion of available resources for a seminar of this type it is essential to think of the participants themselves as the most valuable resource. You representatives of 38 states, in yourselves, constitute a valuable and rich resource. Your knowledge and experiences, coupled with the contributions of our consultant staff and provided with a stimulating atmosphere, cannot help but contribute to our group progress.

Remember that the "bull sessions" during coffee breaks, in the dormitories, and at other times will provide additional opportunities for an important exchange of ideas on a wide range of topics.

During the seminar we will have an opportunity to hear presentations from a number of leaders in agricultural education, vocational education, and related fields. I am sure that you will find their contributions especially helpful.

I particularly want to reemphasize the opportunity and obligation you have to raise questions with these people, questions which contribute to our deliberations here and apply to problems back home. The members of the consulting staff will, in most instances, be available for further questioning during our task force efforts. They have been asked to project their thinking, to make specific suggestions for moving ahead in their particular areas of technical education, to do some "frontier thinking" if you please. A copy of their presentations will be a part of the seminar report which will be sent to each participant.

A large number of other sources of assistance exists on the campus in terms of staff personnel and University libraries. Feel free to utilize them fully.

I especially want to call your attention to three major premises upon which this seminar is structured:

1. We believe that this is <u>not</u> a policy or action group. It is a study group. The outcomes of the seminar will be guides to individuals and states who are free to accept or reject the suggestions as they deem appropriate. Furthermore, I would hope that we will be operating in a spirit of openmindedness, in a free and permissive climate that will permit honest expressions and differences of opinion; that we will set our sights high in terms of quality and standards, focusing on what ought to be rather than merely perpetuating or protecting what we have. I would hope that we will think in terms of "we", not "I", and of what is good for agriculture and the people we serve.

2. We believe that technical education in agriculture can thrive in a variety of institutional settings; that technical training can be effective in community colleges, technical institutes, area vocational schools, four-year colleges, and universities. It is not our purpose here to prove that one setting is better than the other or that only one type of institution should be given this responsibility. This is for each state to decide. Rather, our concern here is how we work together to make technical education in agriculture more effective in any of these institutional settings.

3. We believe that agricultural technician training is not the only type of post-high-school occupational training in agriculture that is needed. It does not supplant young farmer, adult farmer, or other full-time but less extensive vocational offerings. Neither does it minimize the need for professional level preparation.

These are the three major premises that we have followed in planning this seminar. I hope that they will provide the philosophical structure and freedoms needed to make our deliberations effective.

While it may be premature to suggest specific follow-ups for this meeting, it does seem timely to at least hurriedly overview some of these possibilities:

1. Report on this seminar to your fellow staff members upon your return. Also report to your national professional groups.

2. Review the implications of this seminar for your state, identify priorities, determine responsibilities, and provide leadership in improving and expanding agricultural technician training.

3. Consider conducting a state seminar on preparing agricultural technicians, involving appropriate agricultural and educational leaders.

4. Plan to participate in future Center programs (possible follow-up activities to this seminar).

5. Provide a feed-back to the Center. Keep us posted on developments, activities, and progress in implementing some of the seminar outcomes. Give us suggestions as to how the Center can continue to assist this development.

In summary, we have the prospects of a stimulating and rewarding experience during the next week. The essential ingredients are here. We have an urgent task, common concerns, a rich background of experiences, an outstanding consultant staff, a favorable climate, and, we hope, an appropriate setting for effective group effort here at the Center. Let's make the most of it.

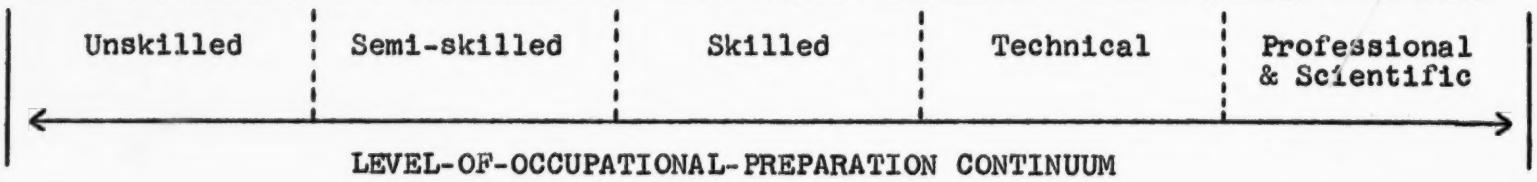
THE AGRICULTURAL TECHNICIAN

The following definition of an agricultural technician was developed during the seminar. An attempt was made to define this worker in terms of (1) the position on a level-of-occupational-preparation continuum, (2) the kind, amount, and level of educational preparation required in a specific occupational field, and (3) the characteristic kinds of activities performed on the job which reflect the level of competency and proficiency required by the worker for successful job performance.

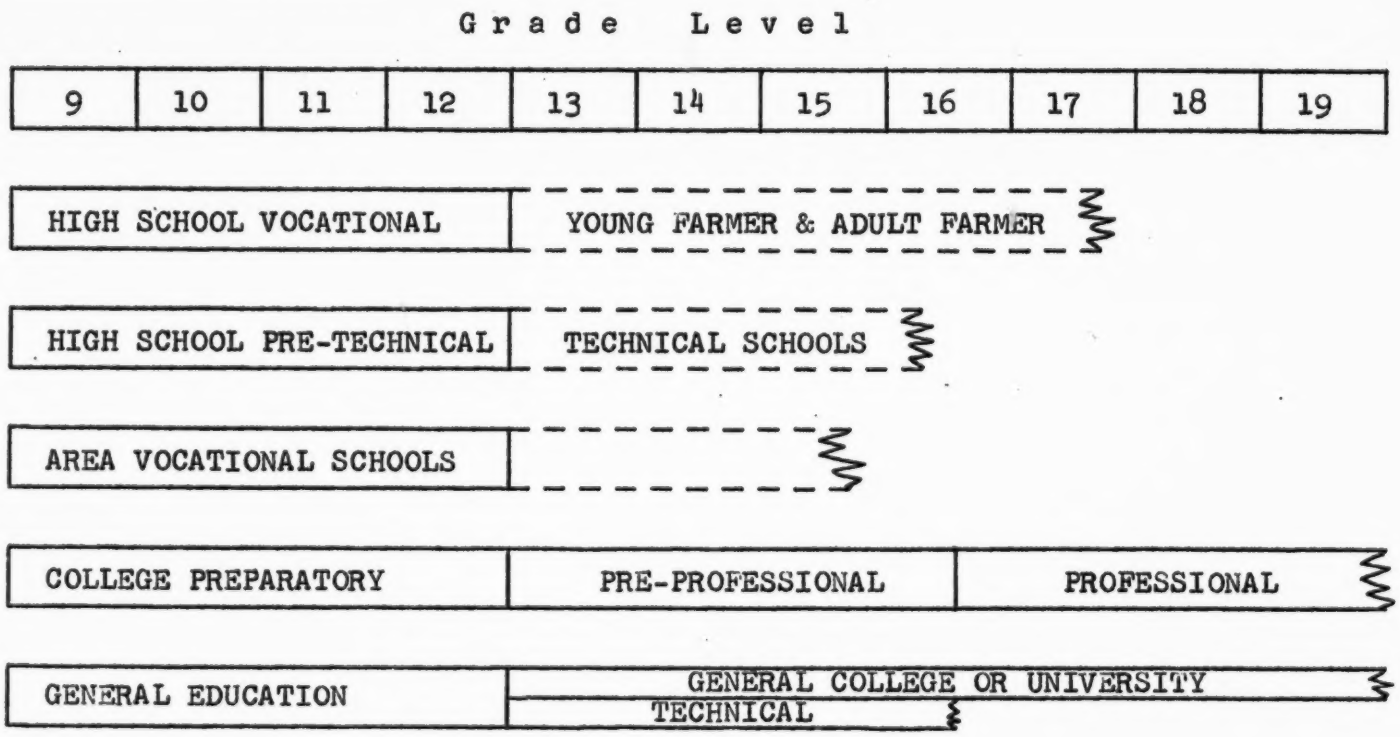
> An agricultural technician is a worker located between the skilled worker and the professional in the job classification structure, in his work performance, and in his educational attainment. He possesses the skill and ability, working independently or with minimal supervision from a professional, to analyze and interpret information, diagnose problems, make decisions, and make practical applications of theoretical knowledge in performing specific tasks in a specialized field in the production, processing, distribution, or marketing of goods and services in agriculture. He must exercise cognitive skills primarily but also must be able to supervise and perform manipulative skills.

The following diagrams and guides are presented to further define the technician, his training, and qualifications.

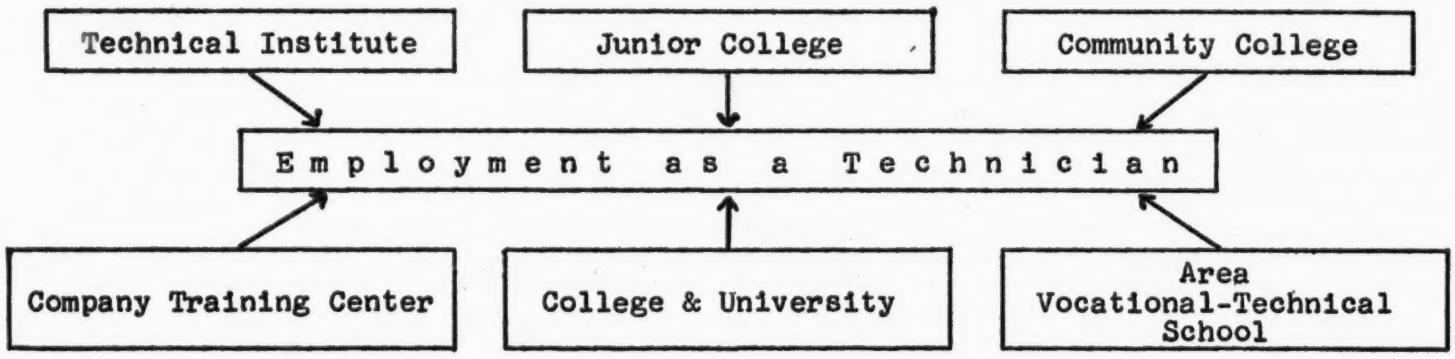
1. THE POSITION OF A TECHNICIAN ON THE LEVEL-OF-OCCUPATIONAL-PREPARATION CONTINUUM



2. PATTERNS OF EDUCATION



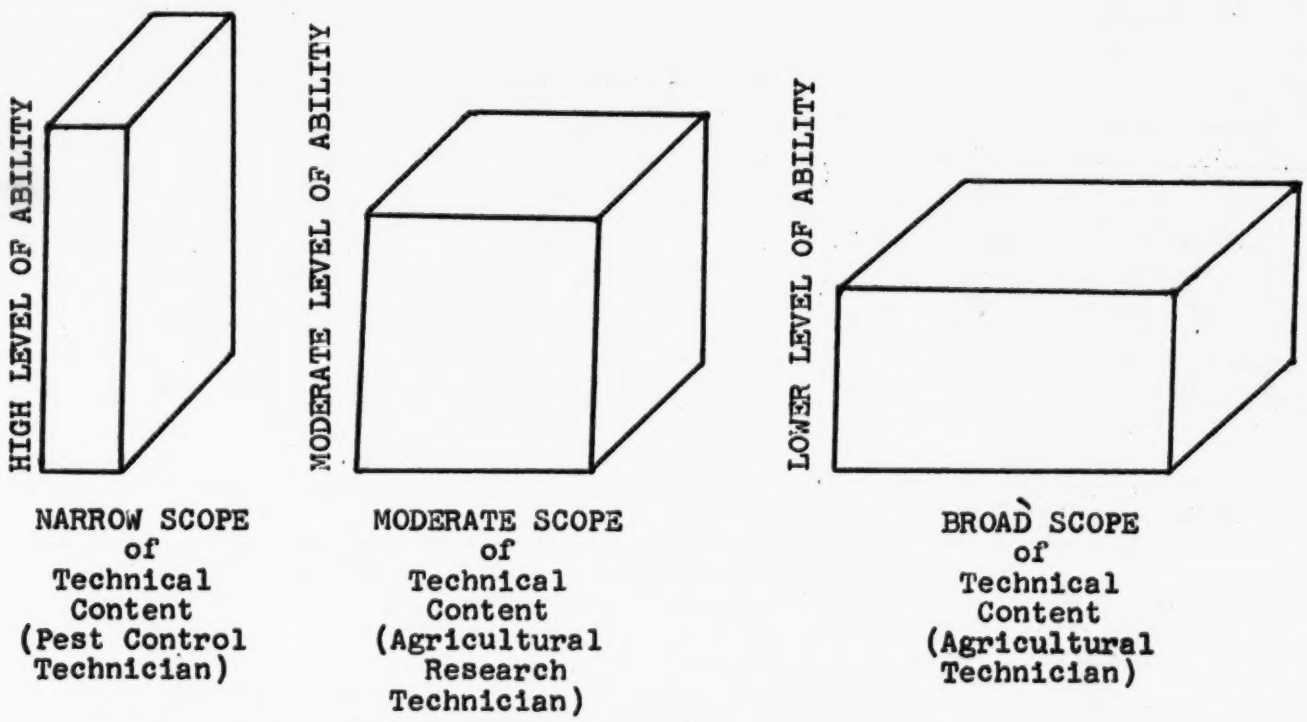
3. INSTITUTIONS ENGAGED IN TECHNICAL EDUCATION IN AGRICULTURE



4. EXAMPLES OF JOB TITLES OF AGRICULTURAL TECHNICIANS

Quality Control Technician
Pest Control Technician
Agricultural Research Technician
Soil Conservation Technician
Agricultural Engineering Technician
Forestry Technician
Agricultural Biological Technician
Turf Grass Technician
Landscaping Technician
Laboratory Technician
Plant Quarantine Inspector
Shop Foreman
Field Service Manager
Animal Science Technician
Standardization Inspector
Fieldman
Products Technician
Farm Management Technician

5. TYPES OF TECHNICAL OCCUPATIONS AND PREPARATION



6. GUIDE FOR PERSONNEL CLASSIFICATION ACCORDING TO LEVEL-OF-OCCUPATIONAL PREPARATION

Professional Level

That preparation and/or experience for occupations requiring a high degree of mental activity. This generally requires an academic background of

several years of formal education in organized courses concerned with theoretical and practical aspects of complex fields of human endeavor, culminating in a baccalaureate or higher degree. A license, registration, or certification is normally needed. Examples include agricultural engineers, soil chemists, plant pathologists, and medical doctors.

Technical Level

That preparation and/or experience for occupations requiring both cognitive (know why) and manipulative (know how) abilities, theoretical and practical understandings, and a high level of job competence; preparation normally acquired in specialized post-high school training programs; generally considered as semi-professional preparation to prepare persons to bridge the gap between skilled workers and professional personnel. Examples include surveyor aids, draftsmen, engineering technicians, and sales technicians.

Skilled Level

That preparation and/or experience for occupations requiring crafts and manual skills, a comprehensive knowledge of work processes, and a high degree of manual dexterity learned to a great extent through work experience and apprenticeship periods. Examples include mechanics, machinists, spray painters, and welders.

Semi-skilled Level

That preparation and/or experience for occupations requiring the exercise of manipulative ability of a fairly high order, but limited to a fairly well defined work routine; typically an operative type activity with the major work reliance upon vigilance and alertness, in situations in which lapses in performances would cause extensive damage to product or equipment. Examples include operators of field crops cultivators, orchard sprayers, harvesting equipment, and pruners.

Unskilled Level

No formal training or experience required. Work performed is predominantly manual, requiring performance of simple duties that may be learned within a short period of time and which require the exercise of little or no independent judgment. Examples include fruit and vegetable pickers, truck loaders, parts washers, and farm hands.

Mr. R. C. S. Sutliff, Chief, Bureau of Agricultural Education, New York, moderated a panel discussion on "Problems Associated with Establishing an Agricultural Business Technology Program." Other panelists shown here are (left to right): Warren G. Weiler, State Supervisor of Agricultural Education, Ohio; H. B. Drake, Coordinator of Agri-Business Technology, Springfield and Clark County Technical Education Program, Springfield, Ohio; Charles W. Whitney, Executive Director, Farm and Power Equipment Retailers of Ohio; and R. O. Brinkman, Director of Technical Education, Springfield and Clark County Technical Education Program, Springfield, Ohio.

Mr. Max H. Kuster, Head, Agriculture Department, is pointing out some of the features of the new Agricultural Supply Curriculum at Joliet Junior College. On-lookers include (left to right): A. W. Tenney, Director, Agricultural Education Branch, U. S. Office of Education; Lloyd J. Phipps, Chairman, Department of Agricultural Education, University of Illinois; and Robert E. Taylor, Director, National Center for Advanced Study and Research in Agricultural Education.

PART II

PRESENTATIONS

BY THE

CONSULTANT STAFF AND PANEL GROUPS

WHAT IS A TECHNICIAN?

by
Byrl R. Shoemaker
State Director of Vocational Education
Ohio

This is a general overview of what you are going to cover this week. From here on you will begin to talk about details. Mr. Mount mentioned to you that agriculture is changing. Most of us in the field of administration say it has to change. I would be willing to agree (and not coming directly from the field of agriculture, I think I can say this) that the agriculture program at the high school level, combined with a sound FFA program, is probably the finest general education program that I know. I would say, and say honestly, that we have proved through a study for Dr. Bender that graduates of the agriculture program who go on to college do as well as their counterparts with equal ability. About ten to twelve percent of our students from the agriculture program at the high school level go on to college in Ohio. I would say, "This is fine and we can approve of this."

But I will say just as honestly that neither one of these factors will keep vocational agriculture in business. Neither one will keep vocational agriculture in the curriculum because they are not unique to vocational agriculture. You may be doing them better than any other program in the school but they are not unique because each program in the school has a responsibility to contribute to the general education of youth, and they have a college preparatory curriculum which is entirely acceptable to the universities. I am not downgrading those factors of your program, but I am merely saying if they are not unique to your program they're not going to keep you in business, so change is important in agriculture as the work force of our nation changes.

You're under fire--have been. Many of us have talked and explained the need for continued vocational agriculture because of the fine job you're doing. Too many people want to do away with it.

Many of our fine people in agriculture did not become concerned about the growth of area vocational centers because they felt that one- and two-man agriculture departments in small schools could satisfy the needs in agriculture. Again, I say, "It ain't so." You now have the same problem in agriculture that all of the other phases of vocational education have in terms of not one program but a number of different programs; and if you aren't concerned now, you had better become so. You no longer have one general program that can solve all the problems and serve all the needs of agriculture. You know now the need for separate programs, separate emphasis, specialization, if you want to call it this, in terms of your area of agriculture. Yes, you're going to have production agriculture in terms that you have known it, but you're also going to have horticulture, floriculture, landscaping and nursery work, and off-the-farm agricultural occupations in many areas that I am not here to talk about today.

One of the areas of need is technical education. The people providing funds for you are not going to accept and listen to the figures from the Department of Agriculture about how many people are working in agriculture. They may be right and they may be wrong. Right or wrong, what I'm saying is that they're not going to listen to facts that fifty percent of the people are in the field of agriculture. Our federal government, our state, our legislative committees that I have met with (and I am only talking to you from my standpoint and as I have met with congressional committees) are talking census figures and Department of Labor projections. Now you may not like this, but this is the basis on which they are working. These are some of the real problems you face as you move ahead with technical education and other phases of agricultural education.

Let's look quickly, then, at something we have done in terms of trying to identify the levels of people and numbers of people in agricultural education. We had a chart (Figure 1) which we have been using for years in which we pointed up some of these occupational levels and needs in Ohio from the census figures of 1960. We found, for instance, that 42.2 percent of our people, according to our census, are employed as craftsmen, technicians, operatives, or semi-skilled workers in industry. We found that 7.6 percent of our people were in occupations requiring a baccalaureate degree. We have some other people with baccalaureate degrees in these other areas.

Now our first chart on employment showed that 3.7 percent of our people were employed in farm production agriculture occupations, and according to our census, that's all they show. Now you can quarrel with that and argue with it, but the point is, this is the figure used by our people in government.

Herb Brum conducted a very sophisticated study. I don't know whether it's going to be reported at this conference or not. But his study is supported by all the help The Ohio State University could give it and we appreciated that. Out of this came information that in Ohio there were 5.3 percent of the state's labor force in the non-farm occupations which required skills in agriculture--required them. This study will stand up under heat and examination. We found that 5.3 percent are in non-farm occupations requiring agricultural skills in addition to the 3.7 that were in production agriculture. Clerical office practice, 14.4 percent; distribution, 14.7 percent; other, 12.1 percent.

But that looks like a small figure until you begin to project it and compare it with the number enrolled. Too many people think we have too many people enrolled in agriculture. Taking those figures which we can sell to anyone on the basis of their source, let's look at how our students are enrolled (Figure 2.) We find that 3.1 percent of our students are enrolled in trades and industrial education; 2.1 percent of our students are enrolled in vocational agriculture; and 11.8 percent are enrolled in office practice programs; with 0.7 percent in cooperative office practice programs; 1.3 percent in vocational distributive education; and 81 percent in college preparatory or general. And we can't tell you how many are enrolled in a sound college preparatory course, and how many are enrolled in a program just to get the necessary 16 3/4 credits to graduate.

So this is a comparison figure in relationship between on-going programs and training needs. They still show the need for our present agricultural education program and a growth of programs to prepare people for specialized farm and off-farm occupations.

Now we took the Department of Labor figures on employment projections and added one more to them (Figure 3). If you'll come down from the top, you will see that the term "technical" was left off and should be added to the word "professional". Professional and technical are going to increase about 50 to 55 percent; management occupations, about 23 percent; clerical, about 31 percent; sales work, about 28 percent; craftsmen, about 18 to 23 percent; operatives or semi-skilled workers, 18 percent; service workers, about 25 percent; and laborers, no change. This is what Mr. Mount referred to: The laboring group who earn their living with their backs are going out of business. The farmer and farm worker--the projection is that there will be 18 per cent less production people on the farm in agriculture.

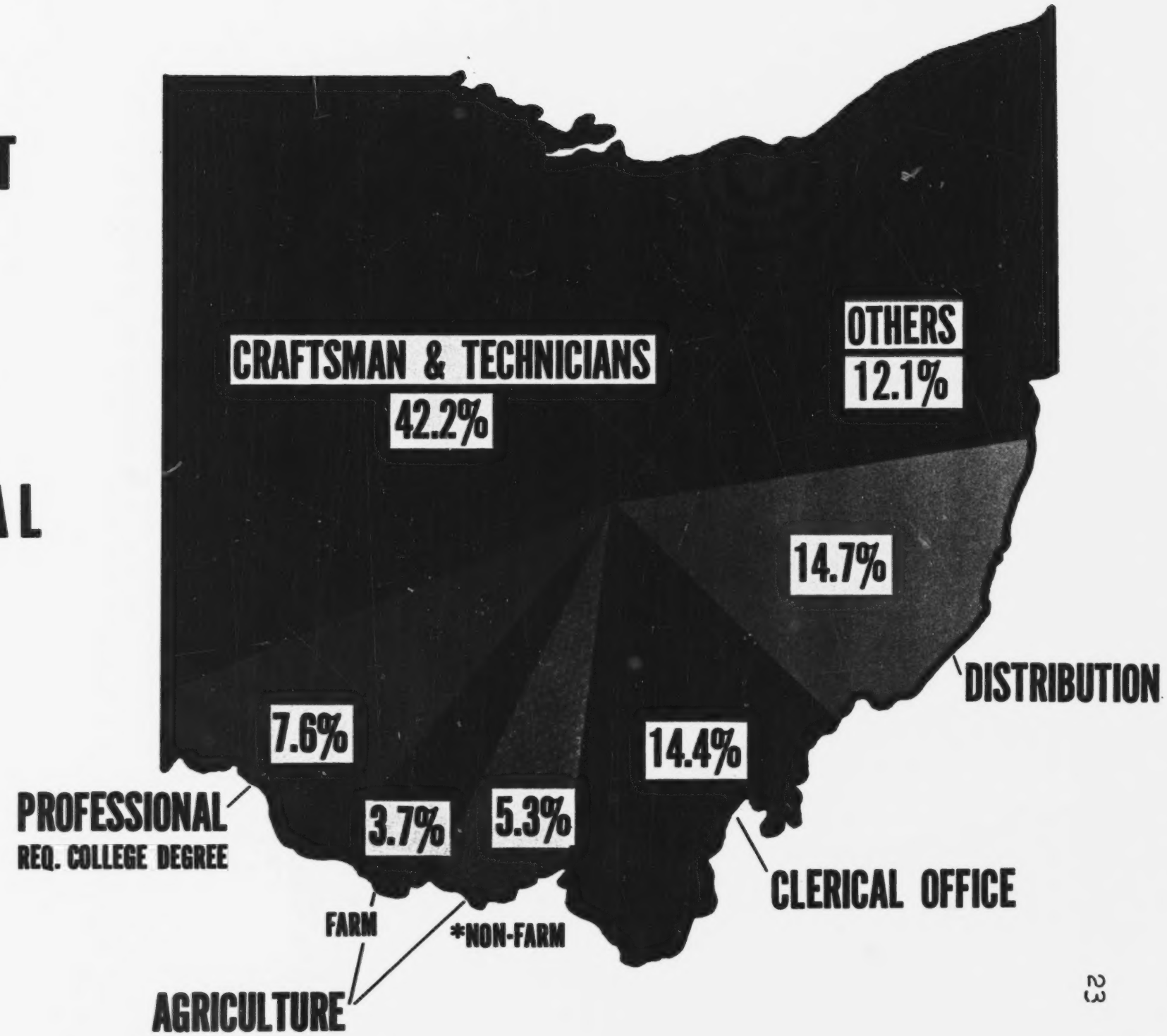
We took the study that was made by Herb Brum and others and projected it on the basis of all of these other figures and identified a twenty-eight percent increase in non-production agriculture occupations. We are going to need about a twenty-eight percent increase in terms of people employed in the broad framework of agriculture, people with essential skills and knowledge in the area of agriculture.

One of the new areas for expansion in all vocational fields, whether it's agriculture, business, or whatever, is in the area of post-high school education at both the skilled and the technical levels. Now I am going to use the term "skill" when I speak of what you normally class as your agriculture programs--as a skill level of program as contrasted with technical education.

Mr. Mount identified it so clearly when he said they have people of all ranges in this technical area. Everybody can be called a technician. The person that comes into your home and changes one TV tube after another until he finally hits the right tube is called a technician. The brake specialist who does nothing but work on your brakes calls himself a technician. Everyone calls himself a technician today. It's a popular term.

Some of the vocational programs at the high school level are called technical because the idea of technical is popular. People want to call everything technical and you can become quite confused. It took me two or three years, several years back, to try to figure this thing out before we finally identified our purposes and just what should be called technical. As we began to talk about technical education to the people in agriculture they said, "Wonderful!" In the post-high school program

EMPLOYMENT BY OCCUPATIONAL AREAS



Source: U.S. Census - 1960
*STATE DEPT. ED. STUDY

Figure 1

HIGH SCHOOL ENROLLMENT BY PROGRAMS

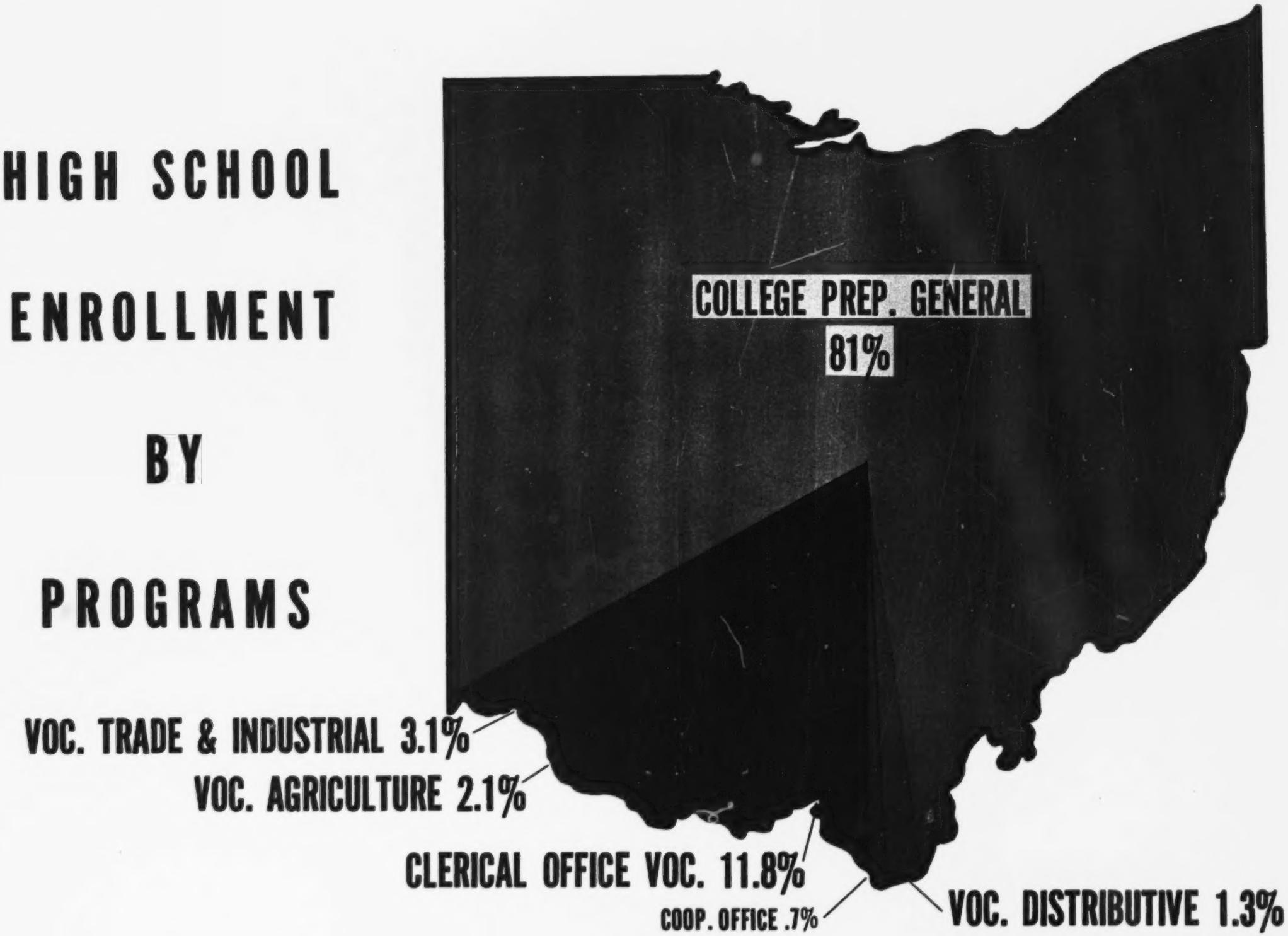
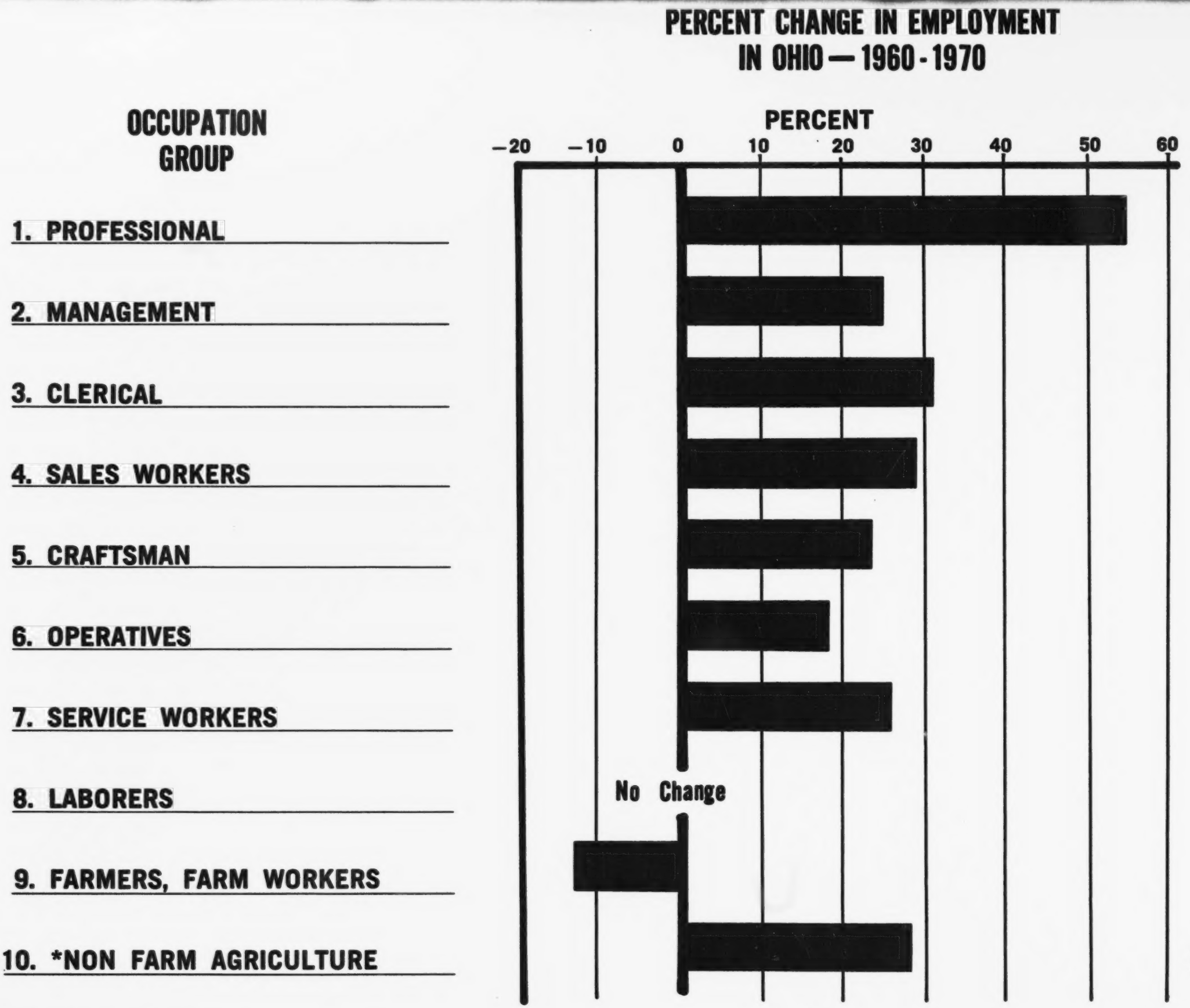


Figure 2

Source: State Dept. of Educ.



SOURCE: OHIO BUREAU OF UNEM. COMP.
*STATE DEPT. ED. STUDY

Figure 3

we'll train some fine mechanics. The thought was expressed, "I do need a helper on the farm and if you'll train a person two years beyond high school, I know he will make me a better helper on the farm." Well, gentlemen, this is fine, but it's not technical education. It is important to do, and when I speak today about technical education I'm not downgrading in any way the need for continuing the other areas of horticulture and agricultural training. Too often, as we begin to talk about technical education, we think we have to step on everything else that's been done before in order to build technical education. This is not true. We are talking about another area--a new possibility in the area of education.

Technical education in agriculture is new. It's so new that educators are going to lead the industry. Industry isn't hollering for technicians in agriculture right now for the very simple reason that they don't know what a technician is. They don't know what they can do.

I was in Indiana where they had some exhibitors. I was talking to a man who was handling chemicals for agriculture and as we talked we began to find out that that area of work needs some technicians. They've been using engineers for a certain spot. He said, "We don't need engineers, but we don't have anything else to put in that occupation."

So a point here is that you're going to lead, not follow, the industry in terms of technical education; but in leading you must have the full support of the potential employers. One, you've got to have the support of the employers to the point that they will employ the people that you're going to train. Secondly and just as important, you've got to have the support of the professions that these technicians are being prepared to support. An example: We're not ready in Ohio to have technicians in veterinary medicine because the profession is not ready to support it. My point is very simple: Until the profession is ready and willing to support that area, you'd better work on something else because that is a group that you're oriented to in a technical area. You must have the support of the profession.

It's pretty important to understand the level and place of technical education, so I want you to use a chart clear out of your field in a segment of employment in which the technician has been developed rather highly--in the industrial field related to engineering. Here, we're going clear out of your field. I'm going to move to the area of industry and talk about the levels that we look at, the spectrum of employment in industry.

At one level to the right on Figure 4 you have a small group of people, even smaller than shown here--a group of people called "scientists". These are trained in your graduate programs in the universities. You very seldom, if ever, find a scientist that came up the hard route. It's hard enough going the way he has to go through the university level. But this is a small group of people.

Engineers support the scientists. These are the people who take the ideas, the raw ideas, from the scientists and develop them into something that you and I can use. You've known about engineers for years--mechanical, civil, electrical, aeronautical, chemical--all the engineering fields, and in your own area, your agricultural engineers. This is a professional level. Whatever your professional levels are, they would fit in here, trained at the baccalaureate level in the university. They have been pushing the engineer more and more into the theoretical level. They've required more knowledge in the engineering levels. It used to be that when I graduated from college, to become an engineer a person had to spend five years "on the board" as they called it--five years drafting in order to become an engineer. Today, the engineering school doesn't even have time to give them the skills of drafting. In civil engineering, they had to drop surveying because they don't have time, with all the other things they teach, to put this in engineering.

So a new place has been developed in the field, not substituting for the professional, not substituting for the skilled, but a whole new area of education related to engineering, a group of people which we are calling technicians. This is the group of people of whom we are speaking as we use the term "technician" in Ohio.

Supporting this group of people are the skilled craftsmen, machinists, tool and die makers, welders, sheet metal workers, cosmetologists--what we class as the skill-crafts level in the industrial area. A supporting group for them are the semi-skilled workers, the individual machine operator whom we class as semi-skilled. Then the fading group at the other end are the unskilled.

The only reason for identifying these people separately is that you organize an educational program differently to serve each group of people and that's the only reason--not for status purposes, but because you're going to organize their educational program differently.

If we look at the area on the chart below the broken like as being the amount of technical knowledge required by these different occupational groups and the area above as the amount of manipulative effort and skill required, we'll get some concept as to why the programs are different for these groups.

As we delve into the craftsman level here, there are even different levels of technical knowledge needed. At one end might be the bricklayer who has great need for mechanical skills but less need for technical knowledge. At this end of the occupational area there might be an electrician, most of whose work is in what he knows. This group of skilled people are concerned with construction, maintenance, repair, and servicing.

As we move to the technical group, we are talking about design, development, testing, and management. This is the easiest way I know to explain it to a group of industrialists. For this group, then, their stock in trade becomes their technical knowledge. They don't need to be able "to do" as much as they need to be able "to know" about doing and be skilled in the work related to the professional area. You draw the correct curriculum content and organization of the program from the professional field, providing sufficient skills for this field to enable them to understand about the area. Science and engineering, of course, move on higher and higher in the realm of the theoretical and the technical ladder.

Let me give you a team relationship. Here might be a mechanical engineer, a tool and die designer, and a tool and die maker. All three are part of a team relationship--no one serving the job of the other one or taking over the job of the other person.

You will have others speaking before you about other points of view and, as was pointed up, no one is here to sell you a package that you'll buy. You have to apply this, what you hear, the ideas that you hear, to your own situation, in your state, and in your local area.

In Ohio, we set up these standards as we began to develop post-high school technical education, and, incidentally, we believe that technical education is post-high school education. We believe that vocational or skilled level education can be done at the high school level but we believe true technical education is post-high school education. We have set these standards for ourselves in Ohio. They may or may not be acceptable to your group and some others may have some better ones as they talk with you this week. We require technical education to be a two-year, post-high school program and we're looking at technician training as a <u>level of education</u>, the same as we looked at professional training.

Professional training cuts across all these fields, as Mr. Mount mentioned. We believe that technical education will be a level of education which cuts across all of these fields, the same as a professional area and professional level does at that top level. We don't believe that any field of work is going to be left out if it is alive and awake as far as technical education is concerned.

The two-year, post-high school program is in session thirty-six weeks per year. We have a minimum attendance in class and lab of twenty-five hours per week. Now this is heavy. We've started on this basis. In addition to this is all the home study.

In terms of curriculum, we have set standards on a rather broad basis. We say that 15 percent of the time over a two-year period must be spent on basic skills. In agriculture this would be learning about actual agricultural practices, and in tool and die designing it would be learning how machine tools work.

Twenty percent of the time is spent on communications, including report writing and industrial economics. Twenty percent is on communications because the ability to communicate is important to a technician as he relates both to the engineer and to the skilled worker. Fifty percent of their time is on math, science, technical information, and laboratories related to that field of work. You see,

RELATIONSHIP OF KNOWLEDGE AND SKILL IN INDUSTRIAL OCCUPATIONS

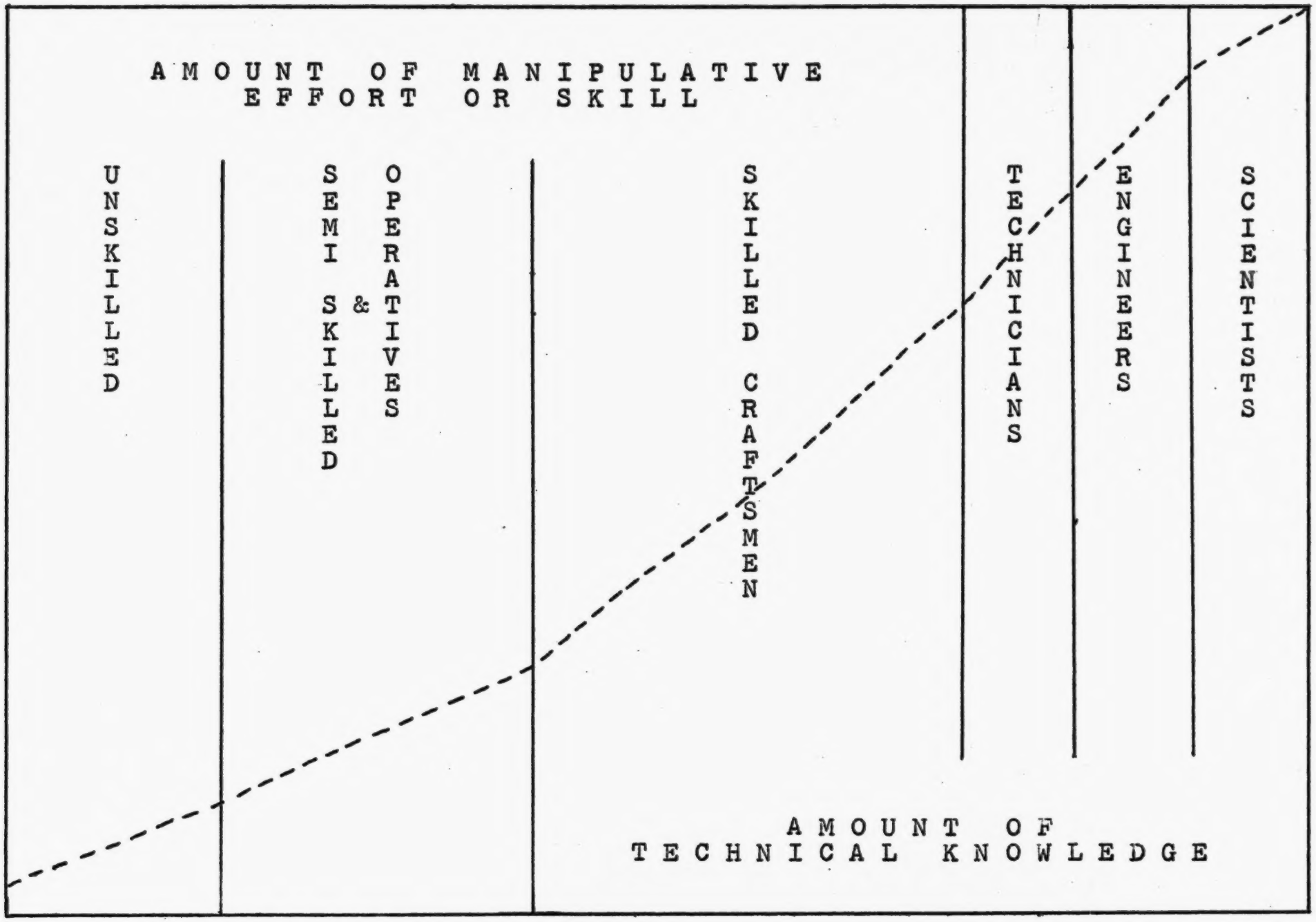


Figure 4

this applies to any technical field, whether it is engineering technology or agricultural or business or whatever area it may fit.

Fifteen percent of the time can be spent on anything--ancient Greek, cultural subjects, or whatever you would wish to use. There is one interesting thing--in all the curriculums that have been submitted to us so far, this fifteen percent of the time has been put back on the technical area.

All of these curriculums that have come to us have been reviewed, not only by our educators but by the people to be served. No technical curriculum should ever be established without involving the employers who are going to employ and the professions to which the technicians are going to be related. These two groups must be involved in the establishment of any curriculum. No matter how good you may think you are in curriculum development, the efforts cannot leave these people out and have the person accepted and prepared to do the job for which he is being educated.

This has become our standard in Ohio for a curriculum as it comes in and these are the only bases. We use these broad bases which leave plenty of leeway for the adaptation of the curriculum to the needs of the group to be served.

In terms of staff, right now (and these standards can be changed as we get more experience in this area) we see a combination of five years of training and experience. If they are going to teach technical courses, they have to have at least two years of collegiate level training. If they are going to teach a skills area, they have to have at least two years of experience. You say, "Those standards are pretty low." Yes. But nothing prevents you from going as far above the standards as you want. We have found in staffing our technical education areas that we have had to have a very flexible standard for the staff personnel that we use.

Most of the people, I would say, come from the professions. Most of the instructional staff come from the profession to which the technical area is related. In the majority of our engineering technologies the majority of the staff personnel come from the engineering field. So we encourage the people to look toward the professions for their staff personnel, along with specialists in areas that they may have need of in terms of their curriculum area.

In terms of students, again, this is not a course for drop-outs. We say in Ohio that the person must have graduated from high school or have passed the equivalent examination. We put the equivalency factor in our standards to allow for that boy who is a late bloomer and suddenly decides that he needs something and wants to do something. We wouldn't rule him out. For all practical purposes, our technical areas require high school graduates. We have encouraged the technical centers to test the student in terms of his potential, his abilities, and his achievement levels, and enroll him on that basis rather than require a certain set of subject areas. In some cases a boy would have to take time for some brush-up courses, as he would in going to a university take some additional areas of study before he could enter.

We have to add about twenty to thirty thousand dollars of equipment in the engineering areas in order to equip the laboratories and special labs for a technical area, in addition to all of the equipment existing in a public school vocational center. I believe that in the one agriculture program about $10,000 was added. This will be explained to you a little more in detail later in the week.

But technical education is not cheap education. It is expensive education just as college education is expensive education. Therefore, it has to be organized to do a job. Enroll the students that can achieve, in order to be acceptable on an economical basis.

It has been mentioned that technical education could be provided in many ways, and so at this conference you are probably going to hear about these many ways. A part of how you do it in your state is going to depend on the political organization of your state. At the present time in Ohio, we are functioning with eleven technical centers with anyplace from three to five technical areas of the type that I have described operating in these centers. But we are doing it a little bit "under the counter" on the basis of existing vocational laws rather than any pattern or laws in Ohio dealing directly with technical education. It is being done in some states under a university. I think in Indiana they have had some technical education at Purdue for years. In some places it is being done in the university branches,

throughout the state. It is being operated through the community colleges. I notice our good friend, Wes Smith, from California, is here and undoubtedly will review these with you. It is being done through technical institutes. New York State has a technical institute approach. Some of these are under public education control; some of these areas are under county and state control. So you can find anything you want because we have such a heterogeneous operation throughout the nation.

Conant made his study of community colleges in California, but he made the statement that community colleges might not fit in Ohio because of the pattern of organization of education that has grown up within that state.

The issue is: Wherever you put it, will it become primary education or will it become secondary education? By this I mean, will it become a primary function and concern of that institution in which the student is enrolled, in which he feels a status in being enrolled, or will he feel himself a secondary citizen "not able to make the first team so I'm on the second team"? This is an issue that those of us in vocational education know from way back. We have had to live with this problem of trying to become primary education.

We say that the curriculum should be such that it is not controlled by a desire of those who are going on to a four-year college program. My feeling (I'm expressing opinion here now, not fact) is that if you organize your curriculum so as to provide college level credit, you will not end up with a technical program at the level which will best serve the person and industry and the business. It must have a level of its own; it must have a curriculum of its own; it must have a status or position of its own, if it is going to grow and serve rather than gradually evolve into the first two years of a college engineering program. You don't need technical education for that. The colleges have very fine first two-year programs leading into engineering fields. Such a procedure would provide a "me, too" operation. You will find in some places that the two-year institutions, some very fine institutions, apparently have become simply ashamed of what they were doing and are trying to grow into four-year educational engineering institutions.

Let me show you a couple of curriculums that have been developed here in Ohio, and we have some copies of these which will be passed around to you. This is the one that will start this fall and this curriculum is still tentative. This is the curriculum the students will follow in terms of a two-year, post-high school agricultural equipment technology program. The people from the field, the leaders from the field of agriculture, sat with our staff and determined that one of the areas that was needed was an agricultural equipment technician, not a repairman. This man will not repair equipment. Repairing equipment is good and needed but it is not a technician level program. This will be a type of curriculum that will be used, as we see it now, for the students entering a two-year, post-high school program in agricultural equipment technology.

One other one here, but which has already been in operation one year, is the one in agricultural business technology. Identified here are some of the types of occupations in which these people will go--feed and farm supplies; sales and purchases; marketing farm produce; production, use, and application of farm chemicals; seed selection and uses. These are the types of occupations for which these people are being prepared and there is the curriculum which is planned. These students have completed one year.

We're a little slow, maybe, in getting started in agricultural technician training. This is our first; it was started last year. The agricultural equipment technology will start this next fall. We know that a conservation technician program is needed in Ohio to train people to work with agronomists. We know about other areas, but we just have not been able to move fast enough. The present programs are experimental. Once we have determined that they are functioning well, we will move them to other technical centers in Ohio.

So, in summary, I would say this: Wherever the profession will accept a paraprofessional (and I have begun to use this word simply because I don't like the word "semi" under which we seem to be putting a status situation in terms of the individual), a person who works alongside a professional--wherever there are enough jobs to warrant the training, you can establish a technical program to prepare paraprofessionals for them. I believe sincerely that technical education in agriculture, in business, in all areas in our state, is going to be one of the fastest growing

educational areas. I also say just as sincerely that it is not going to serve the greatest number of people in vocational education. It's important; it's a new area; it's something that everybody is interested in and wants to establish. We must do it, but as we do it, let's not forget to maintain sound programs, broad programs, developing programs in our total field of vocational education, which, to me, includes technical education.

AGRICULTURAL TECHNICIAN TRAINING
POSSIBILITIES AND RESPONSIBILITIES

by
A. W. Tenney
Director, Agricultural Education Branch
U. S. Office of Education

I am highly pleased that you have given me an opportunity to participate in a National Seminar on Agricultural Education on the Preparation of Agricultural Technicians. I am delighted to see such a large representation of State supervisors and teacher educators in agricultural education and representatives from agricultural colleges, junior colleges, and technical institutes. I note that more than forty States are represented at this seminar.

Dr. Taylor and others associated with the National Center are to be commended for the excellent plans that have been made and for the strong leadership that is being provided in agricultural education.

As we start the seminar let us recognize that we are discussing the preparation of technicians for our largest and most basic industry. Sometimes people forget the place of agriculture in our lives today. It is helpful for us to review the facts concerning farming and agriculture. According to the latest information available from the U. S. Department of Agriculture, we have some 3.7 million farms. These farms have total assets in excess of 217 billion dollars. These assets are more than two-thirds of the market value of all corporation stocks listed on the New York Stock Exchange. In 1963 more than 36 billion dollars worth of products were marketed by our farmers. Industries allied with agriculture employ 40 per cent of the working population. A total of 58 per cent of the United States' land is in farms.

It is recognized that for many years, due to the efficiency of production on the farm, it has become possible for a smaller number of farmers to product an abundance of food and fiber for our nation. We must recognize, however, that agriculture is more than farming. According to Dr. Robert S. McGlothlin, Industrial Economist, Stanford Research Institute:

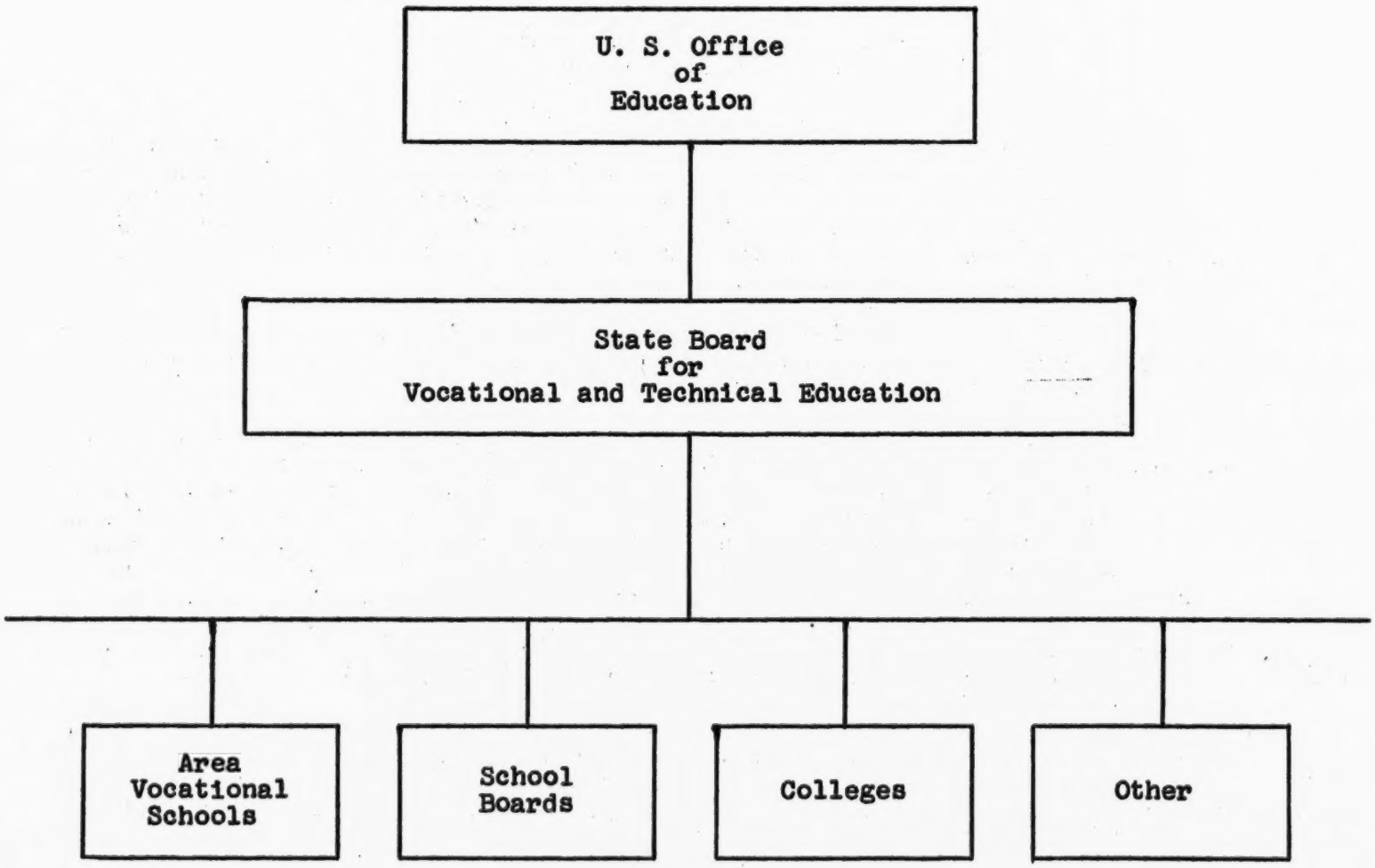
> That the traditional concept of agriculture as farming and ranching is invalid is further emphasized by the number of people engaged in agriculture. Between 1947 and 1954, the workers in agriculture remained essentially constant, at 24 million. However, the decline in the farming segment has been almost exactly balanced by a rise in non-farm agricultural employment. For every person leaving farming and ranching, one is added in non-farming components of the industry.

So, today as we launch our "Seminar on the Preparation of Agricultural Technicians," we have a challenging task to meet the broad need for preparing technicians for farming as well as for related fields which demand technicians with an agricultural background.

We are delighted to have many associates with us today who may not be completely familiar with our administrative structure in vocational education. For this reason I should like to call your attention to the chart on the following page which illustrates the Federal, State, and local relationships that exist. The U. S. Office of Education has been authorized by the Congress to administer the funds appropriated for education.

Since 1917 this administrative structure has worked most effectively. Each State has a State Board for Vocational and Technical Education. This State Board has prepared a plan for the operation of vocational education in the State. This plan is submitted to the U. S. Commissioner of Education for approval. After the plan is approved, the State is required to operate the program under the provisions of the State plan. The State Board in turn contracts with local school boards, area schools, colleges and other institutions as necessary to provide the vocational training needed.

The Federal-State administrative structure has proved invaluable for administering war training programs and for launching new and enlarged programs of vocational education.



Since 1917 many reviews have been made of vocational education. The late President Kennedy recognized that many needs for occupational training were not being met. As a result, he requested the Secretary of the Department of Health, Education, and Welfare to appoint a Panel of Consultants to make a careful review of vocational education and of the needs for the continuation and expansion of such programs. This distinguished Panel included in its review the need for technician training. The following recommendations made by the Panel are related to technician training and to vocational agriculture training programs:

> Our advancing technology demands more skilled craftsmen and highly skilled technicians in occupations requiring scientific knowledge. Vocational and technical education must prepare many more technicians and skilled craftsmen for employment in industry, business and agriculture and the health fields.
>
> The area vocational school and the specialized vocational school in large urban centers both provide a diversity of occupational training programs to large numbers without the usual restrictive residence requirement. Many more of these schools are needed, especially for training highly skilled craftsmen and technicians.
>
> Technician training is also available in community or junior colleges, agricultural and technical institutes, and vocational-technical schools. To expand their output--a national need of urgent importance--the Federal Government must increase its support of full-time, post-high school vocational and technical training.
>
> The vocational agriculture program under Federal reimbursement, should be broadened to include instruction and increased emphasis on management, finance, farm mechanization, conservation, forestry, transportation, processing, marketing the products of the farm and other similar topics.

In its "Agenda for Action," the Panel recognized that there is a need to meet the critical need for highly skilled craftsmen and technicians through education and training beyond high school. The report of the Panel of Consultants was made available to the Congress. After detailed hearings and careful study, Congress passed the Vocational Education Act of 1963. This Act was enacted:

1. To maintain, extend, and improve existing programs of vocational education;

2. To develop new programs of vocational education;

3. To provide part-time employment for youths who need the earnings from such employment to continue their vocational training;

4. To develop programs for persons with special educational handicaps;

5. To provide programs for employed persons to upgrade their skills or to learn new ones.

The Congress has not yet appropriated funds to implement this Act. It authorized appropriations as follows:

1964 -- $ 60,000,000

1965 -- $118,500,000

1966 -- $177,500,000

1967 -- and for each fiscal year thereafter -

$225,000,000

The funds are in addition to the 55 million dollars which were provided by the previous vocational education acts. This is going to mean a very substantial increase in programs of vocational education since for each Federal dollar spent in the past, States and local communities have spent about $4.50. This did not include expenditures for land, buildings and equipment.

We are pleased to know that the new Act authorizes expenditures of funds for the construction of area vocational education schools. This is going to be very helpful in connection with the providing of technician training in agricultural occupations.

The new Act amended the George-Barden Act as follows:

any amount allotted (or apportioned) under such titles, Act, or Acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupation involves work of the farm or of the farm home, and such education may be provided without directed or supervised practice on a farm;

There are many other provisions in the Act that you will want to study carefully. One of these refers to periodic reviews which must be made of vocational education programs. This requirement makes it advisable for us to consider the development of programs of evaluation as we plan new instructional programs.

As we move forward to broaden and to enlarge the field of vocational education, let us not forget that these programs have served the Nation well since 1917. During the past year four million students, of whom half were adults, enrolled in classes of vocational education. Two-thirds of the high schools of the Nation offer one or more courses in the field of vocational education.

Today we face many problems in providing technician training in agriculture. We are fortunate to have you men assist in solving some of these problems. We are pleased that studies are being made in 42 States to determine the various agricultural occupations that exist. An attempt is also being made to find out the competencies that are needed and the number of individuals who should be trained for these agricultural occupations. A number of these studies have already been completed. Some will be reported on at this Seminar. These studies will serve as a firm foundation for launching sound programs of technician training in agriculture.

It appears that there will be a task for most of us to do in connection with technician training in agriculture. High schools, junior colleges, technical schools and agricultural colleges will all find that they are needed to assist in providing training. It is not yet known how many courses and types of courses will be needed. In some cases one course may prepare persons for technical jobs in agriculture for an entire State. In other situations it may be necessary to offer courses in many centers.

The studies are providing proof that agriculture is a broad and complicated field. Agriculture includes production, processing, marketing and servicing. Technical jobs both on the farm and in other agricultural occupations are increasing. The use of new machines, chemicals, fertilizers and new techniques both on and off the farm are making new opportunities in agriculture for personnel adequately trained to serve in this broad field. The courses offered in manpower training for the preparation of farm workers in the field of agricultural technology show that there are many opportunities for placement of well-trained persons on farms. There is a need for technicians to prepare farm ponds, to assist with drainage and irrigation, to assist in installation and maintenance of automatic feeding equipment and in the performance of many other important farm activities. It is likewise being found that persons with advanced training in agriculture are needed in centers that distribute products to farmers. In the processing of farm products there is a growing need for technicians. Our task is challenging. I am pleased that we are accepting this challenge.

Dr. Taylor has asked me to discuss with you some of the responsibilities of State staffs in implementing agricultural technician programs. I suggest the following for your consideration:

1. Each State should obtain facts about the need for technician training in agriculture. Studies that have been made should be reviewed. Other studies may be necessary. We have the opportunity to obtain valuable assistance from many sources. The State Department of Agriculture has much information on technicians in agriculture. Other agricultural agencies can be of help. Associations such as the Farm Equipment Institute, the National Florists Association, the Professional Forestry Association, the National Arborists' Association and the Turf Managers Association can be of much help. We have been working with these associations at the national level. The Farm Equipment Institute, which serves 200 farm machinery firms, has volunteered to assist us in the development of programs of education which can prepare persons for entry into the farm machinery field. They are in a position to assist in evaluating studies, to help determine training needs and to assist in the preparation of appropriate literature that will stimulate students to enroll in courses designed to prepare for these fields. A number of these associations have already made estimates of the number of persons they will need in the near future. They have also informed us of some of their needs for upgrading of persons already employed. We must work closely with these and with other associations.

2. In order to provide the services on the State level which are needed, it will be necessary for State staffs either to employ new personnel or to assign new responsibilities to existing personnel.

3. The need for training in each State must be analyzed carefully. Consideration must be given to both immediate and potential needs.

4. The number, types and locations of proposed training programs for technicians must be determined. This can only be done after careful analysis of occupational needs.

5. As soon as training needs are determined, plans should be made to provide the vocational education programs needed. As an illustration, persons who prepare for entry into a local farm machinery distribution center may need training in agriculture, salesmanship, record keeping and perhaps in the major overhauling of farm machines.

6. Use a consulting committee. Representatives from appropriate fields in the community may be in a position to help plan and evaluate the new programs of vocational education. They may be glad to share in the promotion and in the designing of programs. We must involve others.

7. Direct the preparation of course outlines. Some work is already being done on the national level in the development of course content outlines. We need to work together in the development of many additional course outlines. It is inefficient and unnecessary for each local teacher to develop a complete course outline for certain courses that may be taught in a similar manner throughout the Nation. Outlines have already been prepared for training forestry technicians and for the training of landscaping aides.

8. See that necessary facilities, equipment, and supplies are available. The new programs are going to need new types of facilities and equipment. It will be necessary to help provide the right types of equipment and facilities so that effective instruction may be given. In some cases, if machines are too expensive for purchase, it may be possible to provide participation experience by leasing such equipment or by arranging placement for occupational experience with firms that own such equipment.

9. Obtain instructors. This is going to be very difficult in some areas. A number of States are finding it difficult to employ enough teachers of vocational agriculture education to meet the needs of local communities. It will be necessary to plan new types of programs to train teachers for the broad field of agriculture. Many States will have to employ persons who possess the necessary skills and then give them some teacher education while they are at work. This has been proven effective in other vocational fields.

10. Develop quality programs. As we strive to provide training for those who will become technicians in the field of agriculture, let us also emphasize the importance of quality programs. These programs call for superior instructors, good equipment and appropriate occupational experience wherever possible.

11. Inform the public. We have the task of informing the public about the new Vocational Education Act and about the new programs of education in agriculture which may be launched. Adequate information can help individuals to recognize the need for training and to understand the opportunities that exist. These are essential steps in the obtaining of enrollment for courses which may be offered.

12. Evaluate programs. Let us remember that Congress is expecting systematic evaluation of vocational education programs. Let us develop adequate plans to determine the placement records of students and plans for follow-up so that we may be able to determine the effectiveness and value of these training programs. Our placement in the past records has been excellent.

13. See that needed guidance is provided. The need for occupational guidance in the field of agriculture is greater now than it has ever been before because of the complexity of the agricultural industry. In addition to providing guidance for students and prospective students, teachers of vocational agriculture should assist school guidance counselors by making available appropriate information about opportunities for employment in farming and other agricultural occupations.

14. Assist in providing placement and follow-up of graduates. Even though major responsibility for job placement of graduates is in the hands of the Government Employment Offices, teachers of vocational agriculture can be of much help to students in obtaining satisfactory placement. We must strive to encourage teachers to keep in touch with former students who are placed so that we may help to determine the effectiveness of the instruction and the additional training needs of these persons.

We face the future with confidence. We can look back with pride on the achievements of vocational education in agriculture since 1917. By careful study, such as is being given this week to the problem of technician training in agriculture, and by the use of the findings of appropriate studies, we are in a position to move forward aggressively and with confidence. We are grateful to all those who have gathered here at this seminar to assist in the design of these important technician training programs.

GUIDELINES FOR THE DEVELOPMENT OF TRAINING PROGRAMS
FOR AGRICULTURAL TECHNICIANS

by
Joe R. Clary
Consultant, Vocational Education
North Carolina

I am very honored to be asked to make a presentation to this very distinguished group of agricultural educators from throughout the nation. Dr. Taylor and his staff are to be congratulated on another very excellent seminar if the rest of the week lives up to the fine first day - at least to this point.

Some of my most valuable professional experiences have been had through seminars and workshops and conferences sponsored by our National Center. I think it is one of the finest things we have. Let's all become enthusiastic supporters and work toward expansion and greater support for our Center.

Today I have been asked to report to you briefly on a recently completed study concerned with the development of some tentative guidelines for the development of training programs for agricultural technicians. This study was completed during this past year and used as a dissertation study here at Ohio State. Two copies of the study have been made available to Dr. Taylor for use in this seminar. I want to pause here briefly to thank Mr. Warren Weiler, State Supervisor here in Ohio; his staff; and the Division of Vocational Education for making available a research assistantship which helped make this study possible.

Need for the Study

The need for this study was predicated on five points:

1. The rapidly changing occupational structure in the United States has resulted in a critical shortage of technicians, including agricultural technicians.

2. The total educational system has failed to develop sufficient programs to prepare the increasing numbers of technicians and semi-professional personnel needed.

3. Vocational educators in a number of states have indicated that programs for the training of agricultural technicians will be developed in their states within the next five years.

4. No previous studies dealing with the development of agricultural technician training programs could be located by the investigator--at least as reported in Summaries of Studies in Agricultural Education. Attention was given to two California studies, those of Jerry Halterman and Mt. San Antonio College.

5. No guidelines specifically developed for planning and conducting agricultural technician training programs could be found.

Major Purpose of the Study

The major purpose of this study was to develop guidelines for use in planning and conducting agricultural technician training programs.

Objectives of the Study

Three specific objectives were identified to guide the direction of the study:

1. To determine the status and characteristics of present agricultural technician training programs.

2. To determine, for a number of categories, the degree of emphasis administrators of present agricultural technician training programs believe should be given to certain procedures in developing successful training programs.

   You will see these categories in the visualized material a little later.

3. To synthesize, refine, and evaluate a tentative set of guidelines for use in planning and conducting agricultural technician training programs.

Scope of the Study

This was a national study limited to the 48 contiguous states of the United States. Public institutions at the post-high school level, excepting four year colleges, with organized curricula designed for the preparation of agricultural technicians constituted the universe of the study.

Methodology Used

The idea for this study grew out of an extensive study of the literature concerning the changing occupational structure in the United States and the surge of agricultural occupations other than farming and ranching and from discussions with several leaders in agricultural education.

As the idea grew and a definite need for such a study was established, a further review of the literature was made with emphasis on technician training programs. From this review the investigator synthesized a tentative list of guidelines and supporting statements.

A small group of educators was selected to help with initially refining and modifying the tentative list of guidelines for submission to a larger national jury for further refinement and evaluation.

The investigator carefully selected a national jury of experts and asked them to evaluate the tentative guidelines and supporting statements according to the extent to which they believed each guideline and/or supporting statement important to the successful development of agricultural technician training programs. I am very pleased that five of the eight vocational education members of the jury are here today.

State directors of vocational education in the 48 contiguous states in the United States helped identify public post-high school institutions, excepting four year colleges, with organized curricula designed for the preparation of agricultural technicians. Many of the institutions represented in the study are represented here today.

The United States Office of Education and published educational directories were also helpful in identifying institutions used in the study.

Instruments were prepared by the investigator to secure data on the status and characteristics of present agricultural technician training programs in the institutions identified by the state directors. A structured procedures check list was developed, scaled and used in recording the degree of emphasis the institutions believed should be given to certain procedures in the development of successful agricultural technician training programs.

Visits were made by the investigator to a limited number of institutions with agricultural technician training programs.

The investigator used the literature on the development of agricultural technician and other technician training programs, the evaluations of the tentative guidelines by the jury along with their additions and other comments, the study of the status and characteristics of present agricultural technician training programs, the reactions of the institutional representatives as to emphasis which should be given to procedures in the development of such programs, and the information and ideas gained while visiting some of the institutions as a basis for refining the

tentative set of guidelines for the development of agricultural technician training programs.

I could talk all night on facets of the study but our main concern today is: What are some of these guidelines the literature, institutional representatives, and the jury said were important in developing agricultural technician training programs?

GUIDELINES FOR THE DEVELOPMENT OF TRAINING PROGRAMS FOR AGRICULTURAL TECHNICIANS

Section I. Objectives

GUIDELINE: Agricultural technician training program objectives should reflect the unique characteristics of technical education of less than the baccalaureate degree, but above the high school level.

Therefore:

a. The objectives should be such that resulting curricula are primarily occupation-centered and planned toward occupational competence for the graduate.

b. Clearly defined and realistic objectives for the training programs should be developed under the guidance of a professional educator assigned to give leadership in this area.

c. Lay personnel in agricultural businesses and industries should be involved in the development of objectives for agricultural technician training programs.

d. A major objective of the training program should be to prepare the student for immediate productive employment in the technician occupations for which training is provided.

e. The objectives should allow for preparation of students for clusters of related technician occupations.

f. The objectives should be in harmony with the legal bases on which the institution was founded.

g. _____.

Section II. Types of Programs Offered

GUIDELINE: The types of agricultural technician training programs to be offered should be determined with primary but not exclusive attention to occupational (job opportunity), educational and interest surveys of people and industries to be served.

Therefore:

a. An advisory committee including representatives of the agricultural businesses and industries should help carefully plan any surveys made.

(1) The main purpose to be served by each survey should be determined before instruments for it are developed.

(2) The precise information desired should be determined and instruments developed to assure its being obtained.

(3) Sufficient funds and/or time should be budgeted for making the surveys.

(4) A well-qualified person to direct the survey should be carefully selected.

(5) The sources of information should be carefully selected.

(6) Consultant help in field research should be obtained in developing the survey plan and guide.

b. Extensive and dependable information and data are needed, including:

(1) The identification of jobs or occupational clusters dependent upon agricultural technician training programs.

(2) The types and number of employment opportunities currently available and those realistically expected over a given period of time.

(3) The amount of support employers will give to the program.

(4) Other available sources of education and training for the particular area under consideration.

(5) The number of potential students who are now interested and would enroll in the program.

c. The survey findings must be carefully analyzed to determine what agricultural technician training curriculums should be established.

(1) Specialized consultant help should be secured in analyzing and interpreting the survey data.

(2) Advisory committees should be involved in analyzing and interpreting the survey data.

d. _____.

Section III. Curriculum Content

GUIDELINE: Curriculum content for agricultural technician training programs should be closely related to present and future occupational needs.

Therefore:

a. Curriculum content should be primarily occupation-centered.

b. A balance between technical-supporting content and class-laboratory experiences is essential for learning concepts and principles and their application.

c. Preliminary drafts of curriculum content should be developed through a study of the present and future job requirements in the occupational fields selected and the allocation of the required knowledge, skills and understandings to courses of instruction.

d. The depth and scope of mathematics and science must be tailored to occupational needs of those enrolled.

e. The difficulty level should be such that it can be mastered by a reasonably high proportion of the students within the time limits of the curriculum.

f. The curriculum should be flexible enough to be easily revised as needed in advance of the changing competencies of the technician.

g. Curriculum content should be planned with advice, counsel and support of the agricultural industry for which the training program is being developed. Other agricultural education leaders should also be involved.

h. The curricula for the agricultural technician training programs should be coordinated with the total institutional program.

i. _____.

Section IV. Recruitment

GUIDELINE: A planned recruitment program should be developed to acquaint prospective students with the opportunities for becoming trained as agricultural technicians and for employment upon successful completion of this training.

Therefore:

a. The recruitment program should include activities with the following groups:

(1) High school counselors, teachers, and administrators.

(2) High school students.

(3) Agricultural industries, businesses, and associations.

(4) Parents of high school students.

(5) Other agricultural organizations and agencies.

b. Specific responsibility for giving leadership to recruitment activities should be assigned.

c. Personal contacts with individuals and/or groups of prospective students should be made and maintained.

d. Emphasis in recruitment activities should be based upon fitting the talents and interests of the prospective student to the technician job.

e. Recruiting efforts should clearly show how the training program is essential to securing a job as a technician.

f. _____.

Section V. Student Services

GUIDELINE 1: Selection. Selection of students for agricultural technician training programs should be based on interests, aptitudes, previous education, intellectual capacity and background experience - the criteria varying with the occupations for which training is given.

Therefore:

a. Prospective students should be interviewed and appraised with respect to personal traits, physical handicaps and the like in relation to the job of technician.

b. Policies and procedures for student selection should be carefully developed to assure admission of only qualified students.

c. Only those applicants who have a reasonable chance of success in the training program should be admitted.

d. Self-selection by the prospective student should be a significant part of the selection process.

e. An adequate testing program is important in selection.

f. _____.

GUIDELINE 2: Counseling. Institutions providing agricultural technician training programs should develop an adequate counseling and guidance program, coordinating it with counseling programs of local schools.

Therefore:

a. Counseling services should be made available for the following levels of counseling:

(1) Counseling prior to enrollment.

(2) Advisor counseling regarding courses, requirements, study techniques, student organizations and the like.

b. A trained guidance counselor should be provided to give leadership to and coordinate guidance activities.

c. The counseling and guidance service should provide the following:

(1) A placement service.

(2) A vocational information service.

(3) A follow-up and research service.

(4) A counseling service.

d. _____.

GUIDELINE 3: Placement and Follow-up. Placement and follow-up services in agricultural technician training programs should result in graduates being placed in the jobs for which they were prepared and also provide information for proper analysis of program effectiveness.

Therefore:

a. An organized and well-planned placement service should be made available to graduates of agricultural technician training programs.

b. Placement personnel should have extensive contacts with agricultural businesses and industries.

c. Records of employment are essential and should be used for analyzing program effectiveness.

d. Good relationships with prospective employers of graduates should be developed long before actual placements are made.

e. Institutions preparing agricultural technicians should locate desirable placement opportunities for graduates.

f. Up-to-date placement records should be kept for use in public relations, recruitment and counseling.

g. _____.

GUIDELINE 4: Residence Facilities. Residence facilities should be made available for students enrolled in agricultural technician training programs when sufficient need is demonstrated based on the opportunity of students to obtain programs of their choice which are not available to them otherwise and when the addition of these facilities serves as a means to enable the institution to more fully meet its objectives.

Therefore:

a. The following factors should be considered when determining whether residence facilities should be provided:

(1) Geographic location of the institution.

(2) The possibility of placing agricultural technician training in an educational institution within commuting distance.

(3) The institution's objectives.

(4) The number of students needing housing.

b. _____.

Section VI. Library

GUIDELINE: Students enrolled in agricultural technician training programs should have ready access to a well-organized, appropriately coordinated library which provides a ready reference to up-to-date information and which has an appropriate range of authentic and professional publications in the area of work for which technicians are being trained.

Therefore:

a. The institution library should be readily accessible for use by students in the agricultural technician training program.

b. The library should be well-equipped with:

(1) Technical periodicals in agriculture.

(2) Reference books.

(3) Technical publications developed by manufacturers of agricultural equipment.

(4) Pertinent agricultural research bulletins (both publicly and privately sponsored research).

(5) Pertinent government publications in agriculture.

c. _____.

Section VII. Instructional Staff

GUIDELINE: The instructional staff in agricultural technician training programs should have technical occupational competence in the area for which training is offered and should understand and be proficient in teaching skills and competence essential to successful performance as an agricultural technician.

Therefore:

a. Potential instructors should have adequate backgrounds of technical training, technical experience and appropriate teacher training.

b. An adequate number and variety of instructors should be provided.

c. Adequate funds should be provided to meet the competition of industry for the talents of qualified personnel on the instructional staff.

d. In-service training should be provided for the instructional staff.

e. The agricultural technician teacher:

(1) Should be able to establish rapport with students.

(2) Should know how to teach technical subjects.

(3) Should be proficient in applicable manual skills and the use of tools.

(4) Needs a thorough knowledge of the principles and laws of science and mathematics.

(5) Should be a perpetual student as well as mentor.

f. _____.

Section VIII. Facilities and Equipment

GUIDELINE: Adequate and appropriate facilities and equipment are essential and should be made available in the training of highly competent agricultural technicians.

Therefore:

a. In the planning of all facilities, the objectives of the program should be kept in mind.

b. An adequate number of various types of well-equipped classrooms should be provided.

c. Facilities and equipment should be available for the student to learn to use the precision instruments, the hand and machine tools, materials, processes and operations involved in the technician occupations for which training is given.

d. Equipment lists should be derived from the content of the courses of study which make up the curriculum.

e. Laboratories should be well-equipped for extensive use for testing, research, experiments and so that instruction can be based on the application of a particular science to industrial processes.

f. _____.

Section IX. Acceptance

GUIDELINE: Planned and continuous efforts should be made to increase the acceptance and prestige of technician occupations (including agricultural technicians) and technician training programs.

Therefore:

a. Close and continuous contact with industry is desirable.

b. Counselors, other educators and parents should be educated to the fact that technician education is not a "second best" education.

c. The institution should develop and maintain good community relations.

d. "Satisfied customers" should be used to increase acceptance of the program.

e. Planned efforts to increase prestige of technician occupations and technician training programs should be made.

f. An associate degree or other appropriate form of recognition should be awarded graduates to increase the status of the program.

g. _____.

Section X. Evaluation

GUIDELINE: Continuous and planned programs of evaluation should be characteristic of agricultural technician training programs.

Therefore:

a. Program evaluation should involve students, graduates of the program, employers of graduates, potential employers and others.

b. Adequately planning for continuous and comprehensive evaluation is an integral part of program planning.

c. Evaluation procedures should provide for objective evaluation of both the processes and the products of agricultural technician training programs.

d. Evaluation should be concerned with the future as well as the past and present.

e. _____.

Section XI. Accreditation and Licensing

GUIDELINE: Agricultural technician training programs should become accredited and/or licensed as early as possible by a recognized accrediting or licensing agency in order to assure the public that some kinds of recognized standards are being met and to protect graduates from pseudo-technician graduates.

Therefore:

a. Copies of the criteria for accreditation and/or licensing should be secured as early as possible and efforts made to meet them.

b. _____.

Section XII. Location

GUIDELINE: Agricultural technician training programs should be located in institutions in areas of population and agricultural industry and business concentration so as to be readily accessible to those whom they are designed to serve.

Therefore:

a. The program should be located where similar type training is not already offered by other institutions in the area.

b. Location of the program should be made only after a survey of need, interest and resources is made and evaluated.

c. The institution in which the program is located should lend itself to serving a commuting population of a number of full-time students.

d. The program should be located in an area where students might get first hand observation of and/or work experience in the cluster of occupations for which the training is being given.

e. _____.

I have copies of the guidelines and supporting statements for distribution at this time. Please do not look upon any of these as sacred or final. They are not. At best, they are only tentative. My fondest hope is that each of these will be improved upon before you leave here on Friday afternoon.

I certainly do appreciate the wonderful attention you have given me and wish for each of you a very rich professional experience while you are here.

Thank you very much.

THE LABOURERS ARE FEW

by
Wesley P. Smith
State Director of Vocational Education
California

Few professional honors surpass the one accorded me today: The opportunity to appear before my own branch of the vocational education family--in a national setting--and to discuss a matter that has both functional and symbolical significance for our program. Functional, because we must at once shape our actions to accommodate a new, additional task in agricultural education. Symbolical, because the manner and the spirit with which we perform this task will certainly predict our ability to cope with other challenges sure to emerge in the future.

Our common mission is to confer on the preparation of agricultural technicians. My own portion of this discussion involves the leadership responsibility of state staffs in this new enterprise thrust upon us by the technological surge in the industry we have long served.

The title I have given this statement, "The Labourers Are Few," is not intended to be subtle. Instead, it proposes an indictment for our efforts to date. In Luke 10: 2, we read: "The harvest truly is plenteous, but the labourers are few." The need for technician training pervades all of agriculture. It is a need that is both diverse and urgent. It is a need that cannot be compromised. It is a need, however, that has not yet attracted more than perfunctory interest by our profession. In all the land there are but a handful of practitioners in this segment of vocational education in agriculture.

Others much more capable will describe the nature of technician training, the extent of measurable need for such training, and the wherewithal necessary to conduct such training. The remainder of my comments will be limited to the responsibilities and the obligations we have in providing leadership to the development, the conduct, and the evaluation of such training.

At the outset, I must indicate my prejudice and my single theme today by commenting that my version of true leadership will not permit operational involvement. In other words, whether we be state supervisors or teacher educators, our leadership in technician education is both subverted and diluted every time we become operationally entangled in its development. If I were to identify any single factor that has served as a deterrent to the evolutionary and orderly development of agricultural education, it is our traditional predilection to enmesh our energies and our minds in the operational phases of the program we lead. We can't seem to resist the temptation to actually perform in the band in addition to waving the baton. Think hard on this accusation--whether it be in error or not. I challenge you to take off your frocks of participation when you become leaders. And I suggest that it isn't merely physical involvement about which I speak, but also the manner in which we continue to permit our thoughts to be so engaged in the operational machinery that there is no time for the free-thinking so essential in true leadership.

I choose to dwell on this fascination we in agricultural education seem to have for actual program involvement. It is because of this preoccupation we seem to have for the operational aspects of our program that we have created a sterile vacuum of profunctory leadership instead of producing a stratum of enterprising leaders who, by stubborn resolution, have disengaged themselves from the whirlpool of program action. Lest you think too ill of this proposition, answer for me--and for yourselves--the failure of the most wonderful leadership development opportunity--the program of agricultural education--to produce leaders for our total profession in the number proportionate to the opportunity. And think long and hard of the thousands of young men who rise majestically through the continuum of youth groups, agricultural colleges, teacher training, and teaching, only to reach a plateau strewn with potentialities suppressed by a helpless intoxication caused by emotional attachment to the operating phases of agricultural education. What I am saying, in so many words, is that the very nature of the program that produces boundless leadership potentiality is being permitted to destroy that which it produced!

I dwell on this matter for a purpose. Somehow, for some reason or other, as already noted, leadership in the development of technician training in agriculture

has been somewhat less than adequate to date. The reason is not that our leaders in agricultural education are incompetent. Instead, it seems to be due to the fact that we, as leaders, have not seen the need for such training even though we are watching the program constantly. We watch--but we do not see! And this blurred vision is common with us, not only in technical education, but in many other aspects of our program where the lockstep of tradition is apparent.

Although such probing is painful, I choose to use this opportunity to examine further the role we serve. Leadership begets leadership, and here today we have a substantial segment of the leadership in agricultural education. If we can learn to assess objectively the total span of agricultural education for the purpose of locating its strengths and weaknesses, its gaps and its duplications, we begin to perform as leaders. If we can recognize instinctively the full spectrum of the current and future training needs of the giant industry we serve, we have an essential basis for leadership. If we can stand off and indiscriminately take the dimensions of tasks that need to be fulfilled, we show talent for leadership. And when we clear the focus on all of these factors and can then design the strategy and promote the efforts that will result in the development of operating programs keyed to all these ingredients, without ourselves getting entangled in the machinery, we have become true leaders.

Before returning to specific leadership needs in the preparation of agricultural technicians, I suggest that we give heavy thought to the need to learn better the actual function of leadership. The role of leadership in any aspect of human endeavor grows increasingly complicated. Competency in leadership is always relative, and so it becomes essential that those who would provide leadership in any field must possess equal or greater talents for leadership than do those who are to be led. Our profession has become more and more sophisticated. Our profession has adopted higher and higher standards. Our profession serves at all educational levels. Our profession has a full spectrum of specializations. It becomes an easy matter to suggest, therefore, that leadership in our profession requires a many-faceted array of talents heretofore not essential.

All job requisites continue to spiral upward, and so it is with the job of leadership. In real truth, the competency of leadership can no longer be left to chance through the pick-up method. The talents of leadership must be developed systematically, through organized instruction, through experience, and through precept. In passing, I must express the selfish thought that the National Center for Advanced Study in Agriculture could find few projects with greater potential than that of leadership development. And I must also challenge the great collegiate institutions all over the nation to do likewise.

Now let's take a closer look at the role we should assume as leaders in agricultural education in this matter of preparing agricultural technicians. Based upon the philosophy of leadership expressed at such length already, I have the notion that the supervisorial staff in agricultural education at the state level have the initial responsibility to assess the degree of need for such preparation. This is not a unilateral determination, of course. The assessment is made in cooperation with the industry, with other governmental agencies serving the industry, and with the operational segments of agricultural education in schools and colleges. A "dip-stick," so to speak, is used to obtain readings of need. This is no process for amateurs--and it is not a process that should involve amateurish methods. It is a professional measurement of the dimensions of a known or suspected need. The technique of assessment will not countenance undue influence by antagonistic emotions or by inherited tradition. It permits no side-stepping or procrastination.

It seems to me that here with the current national attention upon technical education in agriculture, we have a working example of the need for true leadership. Either there exists a need for the specialized preparation of agricultural technicians or there is no need. Widespread indices say there is. The staging of this national conference is one index.

All right, what shall we do? Wait for someone else to develop a prototype? Reject the whole matter out of hand? Launch into an operation, full-bloom, overnight? Transfer the responsibility to another agency?

Or shall we sensibly, systematically, thoroughly examine the entire proposition --for the purpose of finding the factors that will lead to the next judgment--what shall be our course of action?

And must we, ourselves, perform this measuring function? I think not. Perhaps it would be better if we did not. In the first place, there are no doubt those who can perform the actual measurement better than we. In the second place, our decisions might be unduly influenced by the process of examination, thus jeopardizing the objectivity of our later judgments. And, too, involvement in the leg-work of such activity characteristically detracts from other leadership services we should be rendering.

Let us now assume that the need has been verified. Here, again, true leadership is tested, because now the task is to meet the need to develop a program.

And, once again, the temptations to become operative abound. Shall we, as state staff members, perform this task? Shall we design the curriculum? Shall we establish the specifications? Shall we determine who will teach? Shall we decide the nature of the equipment?

And, again, I say no. Inability to resist this temptation has been our downfall in the past. Through such operational activity, we become committed to the program--to the details--we have helped to develop. In doing so, we sterilize our ability to made objective evaluations.

So, let's farm out this task. And, again, I suggest that there are others who are more competent to find these answers than we! There was a time when our personal attentions were necessary but this is not the situation today.

Finally, when these determinations have been made, we arrive at that point where actual programs are to be inaugurated and conducted. I suppose that it is in this phase that we are less tempted to be operational. Nevertheless, we often are unable to resist the vicarious involvement that finds us emotionally tied to the actual operation. It may well be that such emotional involvement is just as distractive to leadership energies as physical involvement.

My theme today has little variety. It has a reoccurring note. It says that if we are to be leaders in agricultural education we must revolutionize our technique of leadership. And in the development of technical education we have a case in point. I express the conviction that the industry we serve abounds with need for technicians. I stipulate this need. Yet, with all of our glorious history, we have neither anticipated nor recognized this need. As a result, the industry has been denied some of the proficiency it needs. And our profession has been denied an attainment it deserves. I suggest, too, that this industry we serve abounds with other needs for specialized preparation, on both a pre-service and an in-service basis that likewise goes unnoticed by us--and unserved by us.

Let us use the agricultural technician as a practice device to break out of our shell of seeming indifference to new training needs--an indifference influenced by faulty leadership practice, not by deliberate intent. Let us recognize that, as state staff, our fascination with operational involvement has produced calluses on our mental antennae that dull our sensitivity.

As state staff, let us use this single aspect of new service to both develop our leadership technique and to demonstrate the manner in which our program of agricultural education can accommodate new training demands.

As state staff, let us back off from the chores of operation and contemplate from a distance both the program we lead and the industry we serve. From such a vantage point we can be more flexible in our thinking and in our performance.

As state staff, let us set about the deliberate improvement of our leadership competency.

As state staff, let us disperse to others the details that tend to smother our inventiveness, our enthusiasm, and our inspiration.

As state staff, let us start today--using technical education in agriculture as our new proving ground.

DETERMINING NEEDS FOR AGRICULTURAL TECHNICIANS

by
Lloyd J. Phipps
Chairman, Department of Agricultural Education
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Agricultural Technicians--A Definition

The first task in determining the need for technicians who must have technical abilities in agriculture is defining the terms, technician and agriculture. Both terms are in a period of transition as to meaning. Until a few years ago, a technician was a person who had great skill or knowledge regarding the techniques of some process. A technician, according to Webster could be an artist, a musician or a writer. In recent years the meaning of the term was narrowed, by many, until a technician was limited to a person supporting a professional worker in one of the several fields of engineering. This undue limiting of the fields of work of technicians, in my opinion, was due, at least partially, to the passage of the National Defense Education Act. Very recently many persons have recognized that the meaning of the term has been unduly restricted and that we could have technicians and should have technicians in many areas of work.

In our Illinois study, Technical Education in and for Rural Areas, we did not define a technician so narrowly that he was limited to the engineering fields. A technician was defined as a semi-professional, highly skilled worker who could be differentiated from both the professional person and the highly skilled worker. A technician is located midway between the skilled person and the professional person in the developmental structure of jobs, in his work performance, and in his educational attainment. The jobs of most technicians may be traced to recent applications of scientific and technological knowledge in the production and distribution of goods and services. The technician must have the ability to perform many high level skills in his field of work. His success also depends on his understanding of scientific principles and his ability to apply these scientific principles in solving problems of modern design, production, distribution, and service. Thus, in any field of work that has both professional level personnel and skilled workers, it is theoretically possible to have technicians.

In our Illinois study, Technical Education in and for Rural Areas, it was also necessary for us to define agriculture. If agriculture is more than farming, what is it? We decided that agriculture involves more than farming plus the input and output services for farming. It involves many things that are not usually considered as even related to farming and the input and output services for farming. As an operational definition, we decided that we were interested in any technical level job requiring a person with knowledge and skills usually taught in courses in:

1. Plant science
2. Animal science
3. Economics of agriculture
4. Agricultural education
5. Rural sociology
6. Entomology of agriculture
7. Horticulture
8. Floriculture
9. Soils
10. Food technology
11. Forestry
12. Landscape architecture

Incidentally this definition was adopted prior to even the first draft of the Vocational Education Act of 1963.

Determining Needs

With the preceding definitions we can perhaps communicate regarding the need for technicians with agricultural competencies. If we plan to establish educational programs for technicians who must have technical competence in agriculture, and I assume

this is why we are interested in determining needs, we must find answers to many questions. A few of these questions are:

1. Are technicians needed with technical competence in agriculture?

2. What agricultural competencies do these technicians need?

3. Where would these technicians work and under what conditions?

4. How many of these technicians are needed?

5. What are the job opportunities for technicians with technical competence in agriculture?

6. What specialized, technical education do these technicians need?

There are at least four ways of attempting to obtain answers to these questions. They are:

1. Conduct new studies and reanalyze previous studies.

   We have underway and have conducted many studies regarding job opportunities in occupations requiring workers with knowledge and skill in agriculture. If we were to analyze or reanalyze the data from these studies, we could obtain much information regarding the need for technicians with technical competence in agriculture, and the opportunities for gainful employment for such technicians. I maintain that we have more information about the need for technicians with technical competence in agriculture than we realize. We probably have as much information as any other subject matter discipline regarding the need for technicians. We have this information because of the foresight of researchers in agricultural education and because of the encouragement of studies in this area by the Agricultural Education Branch, Vocational Education Division, U. S. Office of Education. Walter Arnold, A. W. Tenney, Duane Nielsen and others are to be commended.

   Additional studies will need to be made. I will discuss some of my ideas regarding these studies later.

2. Obtain the assistance of professionals in the various disciplines in agriculture.

   Byrl R. Shoemaker has stated that it may be possible to establish technician education programs in any area where the professionals in that area want the assistance of technicians. We in agriculture have probably given inadequate attention to the solicitation of help from professional workers in agriculture. They can help us answer the six questions posed earlier. They can also help us plan educational programs for technicians. Without the support of professional workers it may be very difficult to establish technician education programs.

   After our study at Joliet, Illinois, Max Kuster, vocational agriculture teacher, informed me that the local veterinarian had become enthused about the prospect of preparing technicians to assist the veterinarians. In some other sections of Illinois, we encountered apathy and even opposition from veterinarians. We must obtain their support and help. The best way of obtaining their support is to involve them in studying needs and in planning programs to meet these needs.

3. Observe existing programs of technical education designed to prepare workers with technical competence in agriculture.

   Unlike some occupational areas we have had considerable experience over many years with agricultural education programs at the technical level. We have not identified them in all cases as technician programs, but that is what they are. This past year I prepared a partial summary of these programs. I can supply you with this summary if you desire it. We should capitalize on the successes and the failures of these programs. We do not have to learn everything about technician education the "hard way."

4. Plan and conduct pilot or experimental studies.

We cannot learn everything we need to know by conducting surveys, analyzing previous research, involving professionals and studying existing technician education programs. We will never get technician level education involving agriculture "off the ground" unless we start pilot programs. Pilot programs are also needed to capture the imagination and attention of the populace regarding the need and potential in technician education for persons who must have technical competence in agriculture.

Illinois Technical Education Studies[1]

Allow me to inform you regarding our studies pertaining to technical education for persons who must have technical competence in agriculture. Approximately two years ago we started a study entitled, Technical Education in and for Rural Areas. This research project involved more than a study of technical education for persons who must have technical competence in agriculture. Today, however, I will only discuss the aspects of the study pertaining to technical education in agriculture. I believe that we have some information about the need for technical education that is different from the information being obtained in other studies. Our information is no better than the information other researchers are obtaining, but it is different because of the objectives and methods of our study.

O

See Below

At the beginning we assumed that we could not identify in advance where persons would be working that needed technical competence in agriculture. We also assumed that the job activities of workers would give us many leads regarding the technical education in agriculture that technicians need. We further assumed that we needed to discover the job activities of agricultural technicians in order to learn what other technical competencies were needed in addition to the technical competencies in agriculture. In other words, we were interested in technical education and not merely agricultural education. A technician with technical competence in agriculture who lacks the other technical competencies he needs will not be prepared for gainful employment as a technician.

Because of these assumptions we selected a random sample of all businesses, excluding farming, in a fourteen county rural area. We found jobs that needed persons with technical competence in agriculture and we found these jobs where we expected them and also where we did not expect them. If we had preselected certain types of businesses to study, we would have missed some technician level jobs that required workers with technical competence in agriculture. In your studies, we urge you to study all businesses and to select these businesses at random. Unfortunately some of the studies that have been conducted will have limited value because the businesses or jobs selected for study were not selected at random.

In June, 1964, we published a preliminary report that presented our basic data. Our next report will present curriculums for preparing technicians who need technical competence in agriculture. The basic data provide, we believe, the information needed for developing these curriculums. Copies of the report of the basic data are available, but we believe that the next report on curriculums will be of considerably more value to practitioners. *

A very abbreviated report of some of the findings of the study follows. For the business firms in areas of the region studied with population centers of less than 25,000, the following estimates apply to all workers requiring post-high school education in agriculture:

7,803 workers were currently employed
5,490 workers had been employed during the past 5 years due to business growth and employee turnover
3,536 workers will be needed in the next 5 years due to business growth
1,673 workers will be needed in the next 12 months due to business growth and employee turnover

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[1]Staff studies involving Lloyd J. Phipps, A. H. Krebs, Paul Hemp, J. Robert Warmbrod, and Gerald R. Fuller *

Thus, for each 100 workers currently employed:

70 workers had been employed during the past 5 years due to business growth and employee turnover
45 workers will be needed in the next 5 years (growth)
21 workers will be needed in the next 12 months (growth and turnover)

For each 100 workers requiring knowledge and skill in agriculture who were employed at the time of the study in areas with population centers of less than 25,000, it was estimated that:

10 were working as technicians
50 were working in jobs which required some post-high school nontechnical education
21 were working in jobs which required post-high school nontechnical education
19 were working in jobs which required high school graduation only

For agricultural businesses in areas of the region studied with population centers exceeding 25,000, the following estimates apply to all workers needing post-high school education in agriculture:

1,241 workers were currently employed
680 workers had been employed during the past 5 years (growth and turnover)
398 workers will be needed in the next 5 years due to business growth
181 workers will be needed in the next 12 months (growth and turnover)

Thus, for each 100 workers currently employed in agricultural businesses in population centers in excess of 25,000 for the region studied:

55 workers had been employed during the past 5 years (growth and turnover)
32 workers will be needed in the next 5 years (growth)
15 workers will be needed in the next 12 months (growth and turnover)

For each 100 workers who needed knowledge and skill in agriculture and were employed at the time of the study in agriculturally oriented businesses in areas with population centers exceeding 25,000, it was estimated that:

28 were working as technicians
39 were working in jobs which required some post-high school technical education
7 were working in jobs which required post-high school nontechnical education
26 were working in jobs which required high school graduation only

A factor analysis of knowledges required in agriculturally oriented businesses indicated that the agricultural knowledges needed clustered into factors which I have named as follows: (You may want to give them other names.)

1. Agricultural Business, Animal Science
2. General Agriculture, Plant Science
3. Agriculture Business Mechanics
4. Soils and Mechanics
5. Agricultural Management
6. Agricultural Construction
7. Agricultural Engineering

We found that persons aspiring to high level jobs in the following types of businesses need the greatest breadth of technical agricultural education.

1. Agricultural supply and service companies
2. Pest control businesses

We also found that many of these workers needed competencies other than technical competencies in agriculture.

With this information, we obtained the cooperation of Joliet Junior College in establishing a two-year agriculture supply curriculum to prepare high level workers for agricultural supply businesses. It will be a four semester program with the last semester devoted to trainee employment in jobs. The trainees will be supervised by a

teacher competent in technical agriculture and competent in the organization and management of agriculturally oriented businesses. He will also conduct a seminar for the trainees during the fourth semester. Max Kuster, vocational agriculture teacher at Joliet Junior College, will be in charge of the program. He will have the assistance of two other vocational agriculture teachers, one being hired especially for this program, plus the other technical teachers employed at Joliet Junior College.

The curriculum follows:

First Semester

Courses	Hours
Communicative Skills I	3
Introduction to Agricultural Supply Businesses	3
Retailing of Agricultural Supplies	3
Agricultural Economics	3
Survey of Political, Social, and Economic Problems	4
Physical Education	1
Total	17

Second Semester

Communicative Skills II	3
Chemistry of Agriculture	3
Agriculture Mathematics	2
Conservation of Natural Resources	2
Principles of Feeding	3
Survey of Political, Social, and Economic Problems	4
Physical Education	1
Total	18

Third Semester

Agricultural Chemicals and Supplies	3
Agricultural Business Management	3
Crop Production	4
Salesmanship	3
Agricultural Supplies Handling	2
Agricultural Records and Reports	2
Physical Education	1
Total	18

Fourth Semester

Advanced Agricultural Seminar	6
Agricultural Business Experience Program	12
Total	18

Summer Program Between 1st and 2nd Years

Agricultural Seminar	3
Agricultural Business Experience Program	6
Total	9

The pilot program will be studied at Joliet continuously. If the problems encountered can be overcome, additional programs will be started in future years.

Two programs that have been discussed tentatively are (1) technical education for ornamental horticulture workers and (2) technical education for agricultural equipment workers.

Summary and Conclusions

The Illinois studies, the studies in other states, and the existing programs of technical education for workers who must have technical competence in agriculture have established the need. Professional workers in agricultural education should, therefore, do the following:

1. Continue to study the need for technicians with technical competence in agriculture. These studies should investigate the specific competencies in agriculture needed by technicians instead of focusing almost total attention on the global needs of technicians in agriculture.

2. Recognize that technicians who need technical competence in agriculture usually also need technical competence in other disciplines.

3. Enlist the aid of educators in other disciplines in preparing technicians who must have technical competence in agriculture so that the technicians prepared will be able to obtain gainful employment.

4. Involve the professional workers in agriculture in planning technician level programs.

5. Conduct local studies as a means of assuring local people of the need for technician education in agriculture and in other disciplines.

6. "Earmark" funds for research relating to technical education of workers who need technical competence in agriculture.

7. Involve all people or their representatives in studies, program planning, and evaluation relating to technical education in agriculture.

8. Establish pilot programs as rapidly as possible. The time has come to divert some of our time and funds away from studies of global needs. We need to devote more of our efforts toward pilot programs where we are forced to make detailed studies of specific needs.

PANEL:
PROBLEMS IN ESTABLISHING AN AGRICULTURAL BUSINESS TECHNOLOGY PROGRAM

Moderator: R. C. S. Sutliff
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H. B. Drake
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Springfield and Clark County Technical Education Program
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Springfield and Clark County Technical Education Program
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Charles W. Whitney
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Warren G. Weiler
Head State Supervisor of Agricultural Education
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Presentation by Mr. Drake

Agri-business technician training is a relatively new experience for us. Many attempts have been made to define the agricultural technician; we have made several ourselves; and the more often it is tried the less sure we become that a description is possible. Our program at Springfield was designed to meet employers' needs in specific fields--a need that could be met with less than a four-year college program --but one that was not being met by any existing program. Whether this conforms to the accepted concept of a technician or not is debatable, but we in agriculture may have the privilege of establishing new concepts. Certainly we are placing less emphasis on technical courses in agriculture than engineering programs are placing on technical subjects in their field. We are placing more emphasis on sales and management skills than is done in other technical programs.

Our stated objective in this pilot program was to develop key personnel for the areas of:

1. Feed and farm supply sales & purchases;
2. Marketing farm produce - grain & livestock;
3. Selection, use and application of farm chemicals, including fertilizers, insecticides & herbicides;
4. Seed selection & use.

A key person is being interpreted as one who is willing and ready to assume some responsibility, demonstrate initiative, and possess such skills as will enable him to make a worthwhile contribution to a business and its customers.

It is anticipated that graduates will be employed in sales positions, as assistant managers expecting to grow into management, as field men for companies in the four areas listed or in some comparable capacity doing contact work with farm people.

We are now in the process of organizing the second pilot program - one in agricultural equipment. While this program was developed with an entirely different advisory committee than the original agri-business program, the aims are to do much the same for the agricultural equipment businesses as we are doing for the four areas mentioned in the first pilot program. We are not training mechanics. We are preparing a more skilled worker.

The course of instruction is two years in duration, with 25 hours class time per week and 36 weeks each year. This time is divided as follows:

1. Basic laboratory experiences:
   A minimum of 15% of the total instruction time is devoted to basic laboratory or manipulative experiences in the appropriate area.

2. Related technical subjects:
   A minimum of 50% of the total instructional time for the programs is devoted to technical agricultural subjects. This particular area is being interpreted broadly and includes the phases of agricultural training future employers indicated they desired in the trainees.

3. Communicative & leadership subjects:
   A minimum of 20% of the total instructional time is devoted to development of skills in oral expression, increasing rate of reading, writing business letters, advertising techniques, conducting meetings, human relations, supervisory techniques and many other leadership skills.

4. Remainder of time distributed according to need:
   The remaining 15% may be used in any area a particular group may need to emphasize.

In developing specific courses to include in the above divisions, many contacts were made with potential employers. They were asked what type of jobs they would have available for technicians and what training they would like for them to have. This information was brought before the advisory committees on a state level and curriculums built on the basis of their recommendations.

Course outlines were developed with the hope that everything taught would be useful to the individual, in later employment. Maintaining this concept in the minds of those doing the teaching has been one of the major problems. Since we are not a part of any college or university we cannot draw upon teaching personnel from these sources. We must rely on those we are able to find in our local area who are willing to teach part time or on those employed full time by the technical school which in Springfield consists of programs in Business Data Processing, Mechanical Engineering and Electrical Engineering, in addition to the two programs in the agricultural related fields. We have been fortunate in locating some very well trained individuals for our program. As needs increase, securing adequate teaching personnel may present a problem. Salaries offered are not attractive enough to encourage people who have had business experience to work with us on a full time basis. Much time will need to be spent in keeping teachers teaching what is meant to be taught. It would seem most desirable for all teachers in these programs to have some agricultural experiences in addition to their formal training.

Since this program is a State Department of Education one, we do not choose students. We only insist they must have graduated from high school, have a farm background, be physically qualified to enter the occupation for which training is offered, and present sufficient evidence of maturity and initiative to profit by the instruction. Each applicant is interviewed before acceptance primarily to be sure he understands the purpose of the program and that his desire for training corresponds to our objectives.

Classes in each area will enroll no more than 25 nor less than 15 in each section and will meet in afternoon and evening sessions. Enrollees are encouraged to accept placement in a field of employment of their choice between the first and second years. There is no "co-op" program; however, field laboratories and observations along with seminars provide an integral association between the school and agricultural businesses. Employers' interest to date would indicate placement after graduation would present no problem for those whose level of achievement in the program is satisfactory. In fact, one of the problems could well be getting enrollees placed too soon, before they have completed the program. An effort is being made to work with businesses using students between the first and second years to see they encourage completion of the program.

Our experiences the first year would indicate it most desirable to have students with much maturity. This does not necessarily mean advanced years. However, we have found those a few years removed from high school graduation are very desirable students, having a definite purpose in attending the program and a sincere desire to accomplish something. Some time may need to be spent in creating such desire in those less mature. Sincerity of purpose is most desirable from the standpoint of succeeding in the program and certainly employers arelooking for that characteristic.

It is my personal opinion that there is a great potential in training programs such as these. First, many young men will be provided with an opportunity to make a contribution to agriculture they would not otherwise enjoy and if the programs are kept employer oriented, many agricultural businesses will be provided with key employees that will prove profitable to them.

Presentation by Mr. Brinkman

I plan to discuss some of the administrative considerations in initiating an agricultural technology program.

Expense of Operation

All technologies require operating expenses that are approximately twice as much as their liberal arts counterparts. Equipment, low pupil-teacher ratios, and staff specialization account for the majority of the higher costs; however, overhead, supplies, extended service, and maintenance can also be expected to be higher than in conventional, general programs. Agricultural technologies are not an exception to this rule.

Fiscal Procedures

Any new program should thoroughly examine the requirements of budget appropriations, reimbursement policies, and existing financial statutes under which it must operate. Old statutes, regulations, and policies may require clarification by an attorney general, a state auditor, or a board of tax appeals....any one of which can cause extended delays in initiating a program that is seemingly simple to operate. New programs and old laws are not necessarily compatible.

Recruiting Competent Teachers

The salary competition from private enterprise and other institutions is recognized as the major problem in recruiting staff. It should not be overlooked, however, that other factors such as facilities, equipment and working conditions are examined carefully by prospective faculty members.

The administrator must recognize the individual differences of his staff and build to its strength. Each teacher must complement the other in response to a common challenge. Recruitment should not overlook this if a balanced staff is to be assembled.

Departmentalization, as an organizational technique, is helpful but is limited where total enrollment cannot justify the expense caused by a very low pupil-teacher ratio. On the other hand, one teacher per section is inadequate for technical curricula. An excessive teacher load and demands for comprehensive excellence in multiple disciplines will neither attract nor retain competent instructors.

Status and Role

The status of liberal arts programs and the lack of understanding of technical curricula programs by students, parents and counselors requires intensive orientation and public relations efforts on the part of administrators of technical education.

Agricultural or any other technical programs beyond high school transcend mere manipulative skill development. They are para-professions requiring no less than the capacities of the average high school graduate and strong motivation. They are not static nor can they become so if they are to meet the needs of their students.

The dynamic role of technical education must be communicated to those it can, should, and does serve.

Initiate and Refine

The advice of experts, the observations of consultants, and the conclusions of studies are helpful in initiating a program of technical education. They will not, however, provide all the answers to all the problems of a specific program. Nothing will be accomplished if all problems must first be overcome before a program is initiated. The administrator must expect to make mistakes and be prepared to make adjustments. Perhaps the biggest mistake of all would be to expect otherwise. Do the best you can....but do it!

Presentation by Mr. Whitney

I noticed that it is hot outside. This means it is summertime in the U.S.A. Summertime in the U.S.A. means it is time for travel--time for travel on roads and by-ways, many of which are new experiences for most of us.

This bit of philosophy can be symbolic of the topic you are here to discuss this week. The development of technician programs in agriculture is a new venture for many. Let's approach this new endeavor with the same enthusiasm that we would the summer vacation trip.

The new program of technical education is a new approach for both you, as educators, and the individual industries you will be serving. Thus, it is that we find two parties on the new highway of experience. Educators will find they must (and should) consult with the industries who will use their students. Industrial people will want to assist in program development so that the students will be valuable to them as employees. At first, both will have fear of the other. Both will have to learn that together they can accomplish much.

There must be a period of acquaintanceship. There must be effort on the part of both parties to accomplish this important step. We must work together. We must know each other's problems. We must recognize that in the valley between us is the secret to success in technical education.

There are challenges for both sides to consider. Educators will find it necessary to keep abreast of the constantly changing industrial picture. The elements of supply and demand, new selling patterns and modern merchandising methods will be constantly challenging teachers and administrators as they outline courses and prepare materials for teachers to use. New management trends will quickly but definitely terminate old theories. The students you will be preparing for productive work will be working in the future. We must give them tomorrow's approach to industry's problems if they are going to be productive in future years.

Businessmen will be challenged to project their needs for the future. This applies particularly to personnel needs. Since these schools will be providing better trained men than they have ever hired before, employers must also realize the need for adequate pay to lure these men to their operations and keep them satisfied as they mature and grow with experience at work. These same businessmen must realize their obligation to help in every way with the training of these young men. They can and must do this with placement training stations, as seminar leaders, and by offering equipment and industrial materials to help the trainees do a good job at the completion of their training.

Properly developed, this program can build the prestige of the educational system. This will be accomplished through actually training men to do a productive job of work upon completion of the school period. This program can help improve the

total community by making better people, people who will be more productive in business as they use the talents they have acquired from a broadened and improved educational system.

Presentation by Mr. Weiler

Technical schools give us a splendid opportunity to involve local people, people from the agricultural industry. They are in an excellent position to advise us in regard to the number of employees who need knowledge and abilities in agriculture and the type and extent of training needed. Furthermore, we hope they will employ our product. Also, they can be of real assistance in recruiting students and in providing training stations, if they are needed in the training program.

Advisory committees for agricultural technician programs may be composed of representatives of cooperatives, feed and grain dealer organizations, livestock dealers, and finance organizations. Representatives of appropriate professional groups and of the college of agriculture also should be included. In Ohio one of the first decisions with which they assisted was the identification of clusters of agricultural occupations for which employees were to be trained. These occupational areas were farm elevators and similar establishments, farm equipment dealerships, horticulturally oriented businesses, agricultural laboratories, resources conservation, and farm management.

Following this the committee assisted with the decision that the first technical school in agriculture would be designed to train employees for farm elevator and/or feed and supply centers. The committee then assisted, as a group and individually, in determining the training program and the staff and equipment needed, and in publicizing the new program for preparing technicians in this area.

Other committees are assisting with plans for technical schools to train employees for farm equipment dealers and food processing concerns. It is highly essential that we work closely with those in the industry as we must have a close working relationship with these leaders.

Unfortunately, the employment opportunities frequently are not to be found in the communities where the students reside. This presents problems in determining how the programs are to be financed. Again, committees can be of help in providing part-time employment for students who cannot commute. Finally, employer representatives are in an excellent position to assist with the evaluation of programs and the agricultural technicians they will employ.

A GUIDE FOR CURRICULUM DEVELOPMENT FOR EDUCATING AGRICULTURAL TECHNICIANS

by
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Walnut, California

Statement of Purpose

The purpose of this paper is to develop a guide for curriculum development for agricultural technicians. This is a rather timely subject because there is much national interest in this type of curriculum. The author has been concerned with the development of such a curriculum at Mt. San Antonio College, Walnut, California, for the past two years. Since it is a new program, there is a definite lack of specific information on the subject. It is hoped that the guide suggested in this paper may be of use to others in agricultural education or in other areas of vocational education.

Limitation of Problem

Curriculum may be defined in many ways. It may be defined as "The total effort of the school to produce desired outcomes" or "A sequence of experiences which have been set up to discipline children and youth in group ways of thinking and acting."[1]

The curriculum proposed in this paper will not cover such problems as staffing, financing, and counseling. They will be mentioned only occasionally, but this does not mean that they are not important. Time and space do not permit their inclusion at this time.

This paper is intended to show the development of the course of study, resource units, and teaching units. It does not include the final step in curriculum development, which is the preparation of individual course outlines and lesson plans by the teaching staff. These can be developed by the teachers who actually use this as a guide or framework.

In the paper, suggestions will be made for determining needs and objectives, and selection and organization of content for technical and general education. Some emphasis will be placed on selection and organization of learning experiences, as the author feels that this is one of the main areas where new thinking is needed by those involved in vocational education. The suggestions on evaluation will tie in with objectives and learning experiences. However, since the technical programs are new, the methods will necessarily be based on theory rather than practice.

What Is a Technician?

Prior to 1963, considerable confusion existed regarding the correct definition of a technician. The term has been used very loosely for many years, and people who were called technicians had a wide range of educational background. This was especially true in the engineering field where men doing technical jobs, but having less than four years of college, were called engineers. Actually, these people were not professional engineers, but were technicians. In other jobs, there are workers with Ph.D.'s who are called technicians.

Some confusion exists in industry because of job titles. Some jobs are given prestige titles which seem to far exceed the educational preparation for the job. For example, a janitor might be called a "sanitary engineer". It appears that one of the jobs of the educator is to help convince society that all work is honorable, no matter how menial the task. The prestige of a job should come from the education needed and the pride of doing the job well, rather than in the title. Some implications for counseling exist here and will be discussed later in the paper.

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[1]Hilda Taba, Curriculum Development (New York: Harcourt, Brace, and World, Inc., 1962), p. 9.

The agricultural technician has been related to technicians in other areas of the labor force. One of the first attempts to define him was done in a study made by Jerry Halterman at Modesto College in California. In his study, he defines the technician as "an individual who through an extended period of specialized training beyond high school, but less than that required for a B.S. degree, in the field of agricultural science and those areas of instruction which support it (training may include, but not be limited to, courses in business education, language arts, mathematics, engineering, physical science, and social science) has acquired the skill and ability to make practical applications of theoretical knowledge in performing specific tasks in the production of goods and services in agriculture."[2]

The agricultural technician must be educated to be able to perform mental (cognitive) skills in such activities as servicing, repairing, maintaining, reporting, building, controlling, supervising, operating, testing, diagnosing, and investigating. He should be able to exercise good judgement and discrimination in making decisions on predetermined standards, do limited organizing and planning, be able to collect, examine, and interpret plans, designs, and data, and determine actions to be taken on the basis of analysis.

In addition, he must be able to perform the manual skills involved in the trade or profession. This involves the use of tools, instruments, and/or special devices to design, illustrate, fabricate, maintain, operate, and test objects, materials, and equipment. This means that he must in reality be able to do the manual skills of the skilled worker in addition to the mental skills mentioned.

The place of the technician in industry, then, is above the skilled worker and below the professional worker. The technician will usually work under the supervision of a professionally trained worker. The need for this type of worker has been pointed out by the National Association of Manufacturers. In their publication on technicians, they point out that "an industry needs an average of between five and seven technicians for every one professional engineer."[3]

Diagnosis of Needs

If the junior college is to be a true community college, the faculty and administration should use all means in an attempt to anticipate, recognize, and serve the educational needs of that community. This may be done in several ways, but one of the best ways to do this in the area of vocational education, is to use a lay advisory committee. The advisory committee for agricultural education should be composed of lay leaders from the various fields of farming and agribusiness represented in the community. The California State Department of Education has published a guide for the establishment and conduct for local advisory committees. They point out that "the committee is only advisory in character, and that its advice is for the board of trustees to accept or reject."[4] Other recommendations for the formation and function of the committees are found in the publication. Perhaps the main thing to remember is that these are lay people and are not professional educators. Therefore, the part the committee should play in curriculum development should be primarily to help determine needs in the community. These leaders, who are working in the various fields of agriculture, can be of great assistance in telling where shortages of labor exist, and the type of education needed for those who are to fill these jobs. If necessary, temporary subcommittees can be formed and other people from industry can be brought in for meetings as the need arises.

After as many meetings as are necessary are held with the advisory committee, a broad idea of needs should be apparent. The committee should have helped determine the areas of occupations that need further study. A plan should then be

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[2]Jerry J. Halterman, "Three Curricula for Training Agricultural Technicians at Modesto Junior College," Agricultural Education Magazine, Vol. XXVI, No. 5, November, 1963), pp. 20-24.

[3]National Association of Manufacturers, Your Opportunities in Industry as a Technician, An Education Aid (New York: National Association of Manufacturers, January, 1957), pp. 7-8.

[4]California State Department of Education, A Guide for Establishment and Conduct of Local Advisory Committees for Vocational Agricultural Departments (Sacramento: State of California, October, 1963), p. 5.

formulated to survey these areas to gain additional detailed information. Several decisions must be made concerning the way in which the survey is to be conducted, such as who will do the work, whether it will be a personal survey, or done by mail, which companies are to be surveyed, and to whom the survey should be addressed. Usually, school personnel do not have time to conduct surveys in addition to their other duties. In some cases, if the survey is not too extensive, it can be done by school personnel with the aid of the advisory committee members. School administrators should be prepared to give released time for faculty and staff to do this type of work. There is much value to the school when these surveys are done properly. Since research by other agencies is lacking, it almost becomes a necessity for the school to complete such surveys on its own. Fortunately, funds will be available to schools to help with this procedure under the new Vocational Education Act.

The author recommends that when a local survey is conducted, that it be done in two parts. The first part should be completed by talking to prospective employers in the selected industries. The employers can furnish valuable information on future trends in employment needs and on the type of individual they wish to employ. Unfortunately, the author has found by personal experience, that employers sometimes tend to be over idealistic in their educational requirements and job analysis. In such a survey, conducted in 1962-63[5], it was found that some employers listed certain jobs as requiring a B.S. degree. Upon further investigation of these jobs, it was found that the actual work performed was not at a level requiring four years of college. In a society where we are short of highly trained professional people, it is unfortunate that people with college degrees are used to perform menial tasks that could be done by a technician.

The second part of the survey should be performed by talking to the employees who are actually doing the jobs which have been defined by employers in the first part. This part of the survey should consist of actual interviews with as many of these people as possible, in order to get an objective analysis of their various duties. An attempt should be made to find out what actual mental and manual skills are used in the daily performance of their jobs. Whenever possible, it is also desirable to list the various equipment used in the performance of these duties. This becomes very helpful in deciding what equipment is needed in the laboratories to train these future employees. The personal interview is recommended rather than a mail survey. In a mail survey, it would be necessary to define "technicians" as used in the study. This is more easily done in a personal interview. By this method, it is easier to get to the proper people to interview. Also, a greater return can be expected from a personal interview than by mail. Finally, the interview helps eliminate preconceived notions or terms by the person preparing the survey. For example, a new term, "agricultural mechanization" resulted from the information gained during a survey by the author. Prior to the survey, the farm equipment mechanics part of the educational program was usually referred to as farm mechanics. It was found that those interviewed considered that the term farm mechanics included food processing machines, and others used off of the farm. Had the term farm mechanics been listed on a mail survey form to be checked by employers, it is doubtful that his interpretation and that of the educator would have been the same. Therefore, the real needs of the industry might not have been reflected in the final curriculum.

Formulation of Objectives

After the completion of the survey, a close analysis of the findings should be made to determine what course of action to follow. Some decisions on objectives will be necessary before the curriculum is established. At this stage of curriculum development, every effort should be made to include the actual teaching faculty in the discussions and planning. If the people who are to do the teaching help develop the objectives, the possibility of them being more realistic and actually accomplished will be enhanced. Also, without well defined objectives, it becomes more difficult to evaluate the results.

On the statement of objectives, one of the first decisions to be made is how broad the program is to be. In the study made at Mt. San Antonio College, over

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[5]G. Allen Sherman, Technicians in Agriculture (Walnut, California: Mt. San Antonio College, 1963), p. 6.

fifty kinds of technicians were identified in the public service alone. The question arises then whether you are going to attempt to develop a curriculum to educate for all of these occupations or for the few that may seem to be in greatest demand. The analysis of the data from the survey may show that there are common areas of knowledge that can be used for several kinds of technicians. If the decision is made to plan a narrow curriculum for certain types of technicians, then will some adjustment by students be possible if plans change or occupational opportunities change?

At Mt. San Antonio College, the broader philosophy has been adopted for the initial program. Perhaps some job competence at the beginning of a career will be sacrificed to give the student a broader base to help him advance on the job later. The broad objective then should clearly spell out what type of behavior is expected. As we recall from the definition of a technician, he will need to know mental and manual skills. The objectives should clearly state whether we are talking about an understanding, competence, knowledge, or appreciation. At Mt. San Antonio College, one of the objectives for the plant science technician was to teach the skill of operating seed separation equipment. Rather than select only one type of machine, we selected four types, each of which operates on a different principle. Students are expected to learn how to use each machine and then are presented with a mixed sample of seed to separate as they decide. The objective here is not just to teach the operation of machines per se, but also to teach principles of seed separation. With the rapid advance of technology, the machines will change and the theory of transfer should operate so that the student can adapt to new situations or machines without requiring retraining in school. The previous example illustrates a second principle of formulating objectives so that the learning experience necessary to achieve them are defined. For many years, we have been primarily concerned with teaching manual skills. The learning experiences here are not necessarily conducive to conceptual thinking or problem solving.

A third principle to consider in formulating objectives is in terms of continuity of growth over a period of time rather than terminal points for a specific grade or activity. By starting with the more general and proceeding to the more specific, the work can become more difficult and education can be given in depth in certain areas. If some natural selection is to take place in the program, all students who attempt it will not succeed. As students advance through the program, the mastery of simple skills should be replaced by the more abstract problems involving critical thinking.

A fourth principle to be considered is that of making the objectives realistic and obtainable. In a two year program in junior college, we cannot expect to have all graduates arrive at the same level of competence. Individual differences will be apparent and students entering the college will come with a wide variety of backgrounds and experiences. Some will have farm backgrounds and some not; some will have had vocational agriculture in high school, and some not. The open door policy in California junior colleges means that anyone can enter who has graduated from high school or is eighteen years of age. This brings up the matter of standards for the program and what type of selection will take place. At Mt. San Antonio College, the staff has been considering the development of some kind of testing program to use as a counseling device. If this is done, then this procedure will have an effect on the objectives that we can expect to attain.

In summarizing the attainment of objectives, the first consideration is the breadth of the program. At Mt. San Antonio College, the decision was made to start with three general types of technician training. These were Plant Science, Animal Science, and Agricultural Engineering. The staff felt that there were common areas of objectives for all three programs and that some core curriculum could be developed which would be common to all three. From this core curriculum, the student can then advance into the area of specific training for the type of occupation that he chooses. Another advantage of this broad approach is that it allows the student some time to make a choice. Most students do not know enough about what jobs are available or what program to follow when they enter as freshmen. The curriculum is being planned to allow students to do project work in the laboratories just as the production majors do on the farm. This will help give individual instruction in depth to those who wish or need it. Our main overall objective of the technician program is to teach the student enough skills (mental and manual) to be able to begin on a job and advance on the job. So far, the objectives of the general education part of the curriculum have not been mentioned. These have purposely been omitted here, as a

section on general education will be covered later in the paper. Once these ultimate general objectives have been established with the help of the teaching staff, then more specific goals can be established by the staff for individual courses as they are planned.

Part of the evaluation process would then be to determine if the individual goals for each course in the curriculum are contributing to the overall objectives of the program.

Selection of Content

After the survey has been completed, then any necessary follow-up should be made by calling in additional people from industry or making calls to the various plants. The results should then be a rather comprehensive list of mental and manual skills which should be included in the curriculum. In addition, there should be some information on concepts and types of problem solving that need to be covered. Course content in this section will deal only with technical education. General education will be discussed under a later section, as will learning experiences.

Some variation will exist in the stages of curriculum development, depending upon whether a whole new program is being established in a new school, or whether the technician program is being added to an existing program. Decisions will have to be made to determine whether existing courses will meet the needs for the technician, and, if not, what changes will be necessary.

Perhaps the best way to demonstrate the selection of course content is to show how it was developed at Mt. San Antonio College following the survey for public service technicians. The procedure shown here will be offered as a guide only, and is not necessarily considered to be the best or only way. The survey showed that in the public service area, there were many types of technicians which could be classified under the general heading of plant science. The following list shows the types of jobs identified and is not necessarily meant to be a complete list:

Agricultural Research Technicians
Biological Laboratory Aide
Soil Conservation Aide
Forestry Aide
Junior Shipping Point Inspector
Laboratory Technician
Gardener
Agricultural Biological Technician
Pest Control Technician
Park Ranger
Park Naturalist
Plant Quarantine Inspector
Plant Pest Control Inspector
Inspector's Aide (raisins)
Processed Fruit and Vegetable Inspector's Aide
Inspector of Economic Poisons and Fertilizer
Seed Inspector
Agricultural Standardization Inspector
Seed Potato Certification Inspector
Sampler - Grain and Commodities
Nursery Inspector
Rodent and Weed Control Assistant
Field Crop Inspector
Field and Orchard Inspector
Standardization Inspector
Rodent and Pest Animal Control
Weed Control
Apiary Inspector
Turf Grass Technician
Quality Control Technician
Agricultural Sales Technician
Agricultural Landscape and Nursery Technician

As you can see, there are thirty-two types of jobs listed here and the list has been enlarged some since the survey. It should become very obvious that a separate curriculum cannot be set up to educate each type of technician. This is why the staff took as its objective the attempt to establish a core curriculum which would include the content which would be similar for several types of technicians.

The next step was to list the various subjects, ideas, skills, concepts, etc. that were suggested during the survey by both employers and employees. These are included in the following list:

Conservation - Soil and Natural Resources
Forestry - Fire Control
Wildlife Management
Agrostology
Agricultural Occupations - job descriptions, opportunities, education required, job interviews
Fruit and Vegetable - variety, identification
Entomology
Pest Control - vertebrate, invertebrate, use of insecticides
Biology
Agricultural Economics
Plant Propagation
Plant Identification - trees, shrubs, groundcovers
Irrigation and Drainage - sprinkler systems, friction losses
Plant Diseases
Weeds and Weed Control
Soil Science
Landscaping
Business Management - human relations, personnel management, record keeping, budgets, labor laws, social security, workman's compensation
Agriculture Inspection - grades, standards
Agricultural Mechanization - two and four cycle engines, turf equipment, value of equipment - costs, food machinery, hydraulics, electric motors, welding, surveying, drafting, blueprint reading, material handling
Bacteriology - sterilization, slide making, identification, staining
Chemistry - manipulative skills, measurement of weights and volume, concentration, density, titrations, acids, bases, ph, specific gravity, use of hydrometer and refractometer and other instruments
Farm Management
Agronomy
Geology
Poultry Husbandry
Agriculture Sales and Service
Fertilizers - costs, rates, proper use, methods of application

Other recommendations were made concerning general education and types of learning experiences. These will be covered later.

As can be seen from the list, the suggestions were many and varied. Some were very specific and some were more general in nature. The next step then is to evaluate the data to see what to include in the curriculum and where to include it. The example shown here only covers the plant science technician program. It should be pointed out, however, that some of the same content is common to the animal science and agricultural engineering curricula, also.

Our first step at Mt. San Antonio College was to hold a staff meeting of the instructors who would be teaching the existing and any new classes. At this meeting, any content suggested in the survey that was already included in an existing course was eliminated, but a note was made as to which technicians would need this course. This step eliminated such suggestions as entomology, agricultural economics, plant propagation, plant identification, irrigation and drainage, plant diseases, weeds, soil science, landscaping, farm management, agronomy, geology, poultry husbandry, agricultural sales and service. These courses were already in the curriculum, but some changes were indicated. Irrigation and drainage, for example, was treated more

from the farm standpoint. The turf grass technician needs to know about sprinkler systems (regular and automatic), and installation of systems, including friction losses in pipe, and the use of clocks and tensiometers. The decision to be made was whether to add a new course or incorporate this material into the existing course by eliminating something. The final decision has not been made by the staff. This will be determined, probably by enrollment. If sufficient enrollment in the turf grass program warrants a new course, it probably will be added. There are other problems in courses such as entomology. The present entomology course has been primarily one in taxonomy. This was deemed inadequate to accomplish the desired objective. A new course has been planned to cover both vertebrate and invertebrate pests and their control. This new course in pest control will deal more with the practical aspect of controlling pests than with mere identification. This course will be offered in addition to entomology.

It should be noted that the list of needed subjects includes some biology, bacteriology, and chemistry. The emphasis here was upon manipulative skills, use of scientific instruments, relationships, and applied science. The transfer student would need the regular courses in these subjects, but the technician does not need the full course. He does not need the theoretical as much as the practical or applied science. For this reason, a two semester course was added, called agricultural science. This course is designed to cover the needs suggested by the survey, and will be one of the core courses for most technician majors.

The survey revealed many areas in agricultural mechanization that are not commonly covered in the traditional courses in farm mechanics. The data indicated that the mechanics part of the curriculum for the technician needed a new approach toward machines used in processing as well as new types of machines used on the farm and in agricultural industry. As a result, a one semester course in farm machinery was dropped, and a new one, titled agricultural mechanization, was added.

The survey indicated a need for some business management. Since Mt. San Antonio College already has a curriculum in agribusiness, it was not necessary to add new courses in this area. Perhaps in some schools these suggested topics could be taught in the business education department, where this seems desirable.

In the past, few junior colleges have offered curricula which included courses in forestry, conservation, and wildlife management. The survey revealed that a need has evolved in this area of work for the two year graduate. This has been brought about by the greatly expanded use of our national forests for recreation purposes, and by the increased use of farms and ranches for recreational purposes. Those interviewed during the survey indicated a definite trend for increases in personnel in these jobs. It was necessary for us to add courses in conservation, forestry and wildlife management.

Some courses had to be dropped in order to add the new ones suggested in this paper. The courses dropped were primarily those in the art of agriculture. These have been replaced with courses which stress applied science in agriculture and, to a lesser degree, the business of agriculture. This approach seems justified in view of the decreasing farm population and the increasing number of jobs in agricultural science and business.

Once the content of the curriculum has been determined, then some thought should be given to sequence of content. This is necessarily tied very closely with the learning experiences planned. There are some problems involved in scheduling that may affect the desired sequence. In a small department, it may be impossible, due to staff limitations, to offer every course each year. Therefore, a curriculum that is established to offer a given sequence for two years will work for students who take it in that sequence. In most junior colleges, however, the new class of freshmen each year outnumbers the sophomores and those entering during the fall of the second year would be coming into the program in reverse order.

In order to make the sequence as desirable as possible, it may therefore be desirable to offer at least the core courses each year and others on alternate years. As will be pointed out later, a balance will be needed between technical and general education work each year. The courses recommended to be offered each year are: agricultural science, soil science, agricultural mathematics, agricultural mechanization, and agricultural sales and service. These were found to be basic to all three technical programs. By offering these courses in the first year, the skills

and principles should be taught also in other classes and in individual project work.

General Education Courses

To this point, the curriculum development can be done primarily by the agricultural staff. However, this does not imply that the counseling and other departments should not be informed of what has been taking place. Other departments and the administration should be kept informed of the planning procedure from the beginning. Their advice and counsel should be sought whenever needed. However, the agricultural staff is qualified and should do the majority of planning of the curriculum which deals with technical education.

At this stage of curriculum development, a curriculum committee representing the college should be called together. The composition of this committee might vary from school to school but a suggested committee might consist of representatives of the following: office of instruction, evening division, library and audio-visual, admissions, registrar, student personnel and counseling. In addition, the chairman of the English, history, psychology, and math departments should be included. At this meeting, problems concerning budgets and new equipment for the addition of new courses should be presented. The librarian is included, as new books and possibly audio-visual equipment will need to be purchased. Evening division personnel will be interested in any short courese, evening or summer courses that may be proposed.

After developing the technical content of the curriculum, the next step is to develop the general education content. In the survey at Mt. San Antonio College, several recommendations were made by both employees and employers regarding general education. One of the most common comments concerned communications. Employers especially want employees who can write and speak effectively. Many of the technicians expressed the need to know how to write a clear, concise report. Mathematics also was mentioned frequently.

Under the discussion of objective, it was stated that the overall objective of the technical program was to educate the student to begin and advance on the job. As we think of additional objectives under general education, we should consider the individual as a member of society. If a good job of technical education is done, the graduate should be able to find employment and perform the necessary skills to be competent. He also needs to be able to get along with his fellow workers and others in our society. He needs to know about our form of government and how it was evolved. Since the work week is continually getting shorter, he needs to learn to employ his leisure time in an intelligent and satisfying manner. These, then, are our objectives of general education. The courses can be planned with these in mind.

Considerable variation exists in the amount of general education required by states or local school boards, and these requirements will undoubtedly have some effect upon curriculum planning. Fifteen units are required by the state and local board at Mt. San Antonio College. These include English 3, History and Political Science 6, Health Education 2, Psychology 2, and Physical Education 2. These are minimum requirements and will vary up to thirty-five units in other schools.

In addition to the courses mentioned, at least one course in mathematics should be required. The successful completion of a math achievement test might be accepted in lieu of this requirement. Some training in speech was definitely indicated in the survey. This can be given in a separate course or could be included in an English course along with written communications. Other courses might be recommended as electives, such as geology, fine arts, geography, marriage and family, or other courses of the student's own choice.

At this point, the curriculum committee needs to do considerable work on selection of course content and teaching personnel. If the teachers of the general education courses do not have a philosophy which is sympathetic toward the terminal student, they can be a real detriment to the program. These teachers should be able to accept realistic objectives with these students and put the emphasis on good teaching. The technical and general education areas are both important to the curriculum, and a good program cannot result unless there is cooperative effort between the two groups.

The general education courses should be distributed throughout the two year program with the technical education. If the general education requirements are fifteen to eighteen units, this would mean about two courses per semester. Satisfaction of the general and technical education requirements would then lead to the Associate in Arts degree.

Selection and Organization of Learning Experiences

In general, the top thirty to forty percent of the students in the junior college will be in the transfer program. Some of this group who do not desire to transfer to a four year college for some reason, will be in the technical classes. However, it is only realistic to plan on having a majority of students in the program who are not the top students in the school as measured by present standards. This fact should not be disheartening. Rather, it presents one of the greatest opportunities in the entire technician program. As educators, we are faced with the challenge of offering these students a more comprehensive technical program than has even been offered in the past. We must be aware that new knowledge and technology is advancing at an ever rapid pace, and our job is to help the students use this knowledge to find their place in society. We are faced with what Benjamin Franklin referred to as dualism in education, when he said, "It would be well if they could be taught everything that is useful, and everything that is ornamental; but art is long and their time is short."[6] We have to teach each student to be a thinking, skilled craftsman and a useful member of society.

We hear a great deal about the gifted student today, but very little about the vocationally talented student. As a result of recent studies, we are starting to hear more about creativity in students and its relationship to I.Q. In one study by Torrance, it was found that "If we were to identify children as gifted on the basis of intelligence tests, we would eliminate from consideration approximately seventy percent of the most creative."[7] We have been influenced by the measurement of I.Q. because we had the tests. We still do not have good tests to identify the vocationally talented student.

In spite of the extensive use of I.Q. tests, "Ideas regarding what intelligence or mental ability is, how it functions, and how it develops are not nearly so clear and precise as one would assume."[8] "Controversies still exist regarding the nature of intelligence on three issues. These are: (1) whether differences of intelligence are hereditary or caused by environmental factors, (2) whether intelligence is constant or modifiable, and (3) whether it is a unitary characteristic or composed of a series of specific abilities."[9] Recent research indicates that intelligence is modifiable and that new patterns of ability can emerge through control and modification of learning experiences and the educative process. New concepts also suggest that intelligence is not a unitary characteristic, but consists of a series of specific functional abilities.

It is not the purpose here to review the research on intelligence, but to suggest that many vocational educators have found students with low I.Q. in class whom they called "overachievers". These students were very vocationally talented in spite of their low I.Q. The author believes it is a vital challenge to vocational educators to stimulate new paths through the brain in an effort to fully utilize these latent abilities which we have failed to recognize for so long.

One of the first considerations in this task is to take a new look at motivation. No matter how fine the laboratory or the equipment, the desire to learn must be present. For this reason, good vocational counseling is important. Students must be kept informed on current occupational information. The sooner the student accepts a goal to work toward, the more he will be motivated. The instructor should endeavor to know the goals for each of his students and should continually relate the subject matter to their goals. Teachers also can motivate students by their

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[6] Jerome S. Bruner, The Process of Education (Cambridge, Mass.: Harvard University Press, 1962), p. 4.

[7] Paul E. Torrance, Guiding Creative Talent (New York: Prentice-Hall, 1961), p. 5.

[8] Taba, op. cit., p. 100.

[9] Ibid.

non-verbal communications. A good teacher motivates his students by his actions as well as his presentation of subject matter. We should not forget that effective motivation is intrinsic.

In the technician program, we are concerned with the teaching of skills and understanding. By doing a good job of teaching skills, we can expect some specific transfer of training where learning one skill helps the learner master a new one which may be similar. An example of this was given previously, concerning the seed separation equipment. By teaching ideas, we can expect some nonspecific transfer to take place where subsequent problems are recognized as special cases of the original idea. By helping students recognize basic fundamental ideas, we can give them greater breadth in applying them to new problems. These ideas need to be found in agriculture and presented to the students so they can learn them. Many of these basic concepts in science can be taught in agricultural science. This should be done in a practical and meaningful way. For example, the principle of specific gravity can be explained and the students taught how to use a hydrometer to determine the density of a liquid. Then the students can be allowed to work on unknowns to determine specific gravity. This knowledge should then be related to its use in industry. This might be done in a juice plant for the determination of sugar content. More study needs to be done to aid teachers in identifying the basic ideas in agriculture.

In his book on learning, Bruner shows four claims for teaching basic structure:

1. Understanding fundamentals makes a subject more comprehensible.
2. Memory is short - unless detail is placed in a structural pattern, it is rapidly forgotten.
3. Understanding of fundamental principles and ideas appears to be the main road to transfer.
4. Fundamental material taught previously should be reexamined periodically and brought up to date.[10]

Spence has classified learning and behavioral situations into six groups:

1. conditioning
2. selective learning
3. verbal or serial learning, which includes rote learning
4. learning of skills, both perceptual and motor
5. symbolic learning, including reasoning and thinking
6. social learning which involves the learning of attitudes, interests, and feelings.[11]

He points out that precise laws are available on only the first three, and only low level theories on the last three. As educators, we give much lip service to objectives in education that involve all of these types of learning. We now need new thinking on how to use all of these types to accomplish our desired objectives.

In summary, it must be remembered that there is much to cover in a short time. Students should be helped to select realistic occupational goals and subject matter should be related to these goals. The students must be taught "how to figure it" or "how to look it up". Skills should not be taught ~~in isolation~~, but related to the job experience wherever possible. The subject must be made worth knowing and facts taught in a structured or connected manner that will be remembered best. Varied teaching methods, such as demonstrations, field trips to industry, guest speakers, and audio visual aids help reach these goals. The use of equipment that is currently used in industry helps the student see the value of learning how to use it. Systematic procedure should be taught with unknowns to key out or identify. When the student has completed his work, he must be expected to write a lab report in clear, concise language and then correct any mistakes.

In the laboratories, extra individual work in depth should be encouraged. Here again, motivation is important, a strong motivation such as there is with animal projects for the production students. A point of view is expressed by Taba when she says, "The most immediate and pressing demands of our age, when analyzed, will turn out to be not those for narrow vocational skills, or for easy 'social adjustment',

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[10] Bruner, op. cit., pp. 23-26.
[11] Taba, op. cit., p. 85.

but for a depth of understanding which will make it possible to apply the accumulated wisdom of the race to new conditions as they arise."[12] This educational task will not be easy--but yet, will not be impossible.

Evaluation of Results

It has been pointed out that some means of evaluation are needed to determine if basic objectives are being met. Several criteria for an evaluation program will be mentioned here and suggestions made for their implementation.

Naturally, the first criteria is that the evaluation should be consistent with the objectives. Those broad objectives stated for the programs at Mt. San Antonio College were to enable the graduates to begin and advance in the occupation of their choice. Perhaps the best way to evaluate such an objective is to keep follow-up records on all graduates to see how many are successful in finding employment in the area for which they were trained. The follow-up should also be continuous in that subsequent studies are conducted in six months, one year, and five years. These later follow-up studies would be to determine if graduates did stay and advance on the job. By talking to employers, the evaluator can gain valuable information about the strong and weak points of the graduates. This information may have practical implications for curriculum improvement. These implications may fall in either the technical or the general education areas.

Another important criteria is to make every effort to assure that the evaluation is comprehensive. Surveying the employers for evaluations will provide the information just mentioned. In addition, the graduates themselves should be surveyed. These former students, if surveyed in a manner that induces a friendly and informal situation, will usually be very frank in their comments and criticisms. This type of information provides a good supplement to what the employer may have stated about the employee.

If a questionnaire is used, more graduates or employers can be reached in less time and with less cost. The main disadvantage of this method may be the percent of returns received, however. Care must be taken when using a questionnaire to see that the questions asked have the proper diagnostic value. Problems arise also from the use of a mere checklist. The checklist may not accomplish the desired results.

Another major criteria for evaluation of the program is to make sure that any testing done is dependable and valid. Effort should be made to use a pre-test, if possible, to determine these factors. If tests are administered and are not fair measurements of the objectives or learning processes used, then they are of little value.

Some of the objectives in citizenship and use of leisure time may be difficult to evaluate in a formal manner. However, when the evaluator knows his community and his graduates, he can encourage them to visit the college from time to time for a social or sports event. These personal contacts will do much to furnish this type of information on a perhaps unscientific basis, but, nevertheless, the knowledge gained is a helpful aid to curriculum improvement.

Summary and Conclusions

In this paper, the author has offered a guide that others might use for curriculum development for educating agricultural technicians. It cannot be a complete job, as curriculum development involves more than could be covered here.

The development of the need for this type of program in the junior college has been shown. These needs may vary in the different areas of the country, or even in schools within the same state. If agricultural education is to keep pace with our changing economy, these needs should be identified and met, in the various communities.

The technician has been defined as a skilled craftsman who also needs to make decisions and judgements on the job, even though he may be working under the

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[12] Ibid., p. 41.

supervision of a professional person. As has been pointed out, the agriculture industry will need from five to seven of these technicians for each professional worker.

The importance of a lay agricultural advisory committee has been shown. Such a committee can be of great value in curriculum planning, if used properly. Suggestions were made on the effective use of such a committee for this purpose.

The survey was discussed as a means of determining educational needs. It was recommended that the survey be done in two parts to gain more accurate information. Employers and employees do not always agree, and good information can be gained from both sources.

The importance of selection of objectives and how to select them has been pointed out. Objectives should not be static, and are subject to change as the program progresses. In order to keep objectives realistic, they should not be too high, nor too numerous at first. The objectives will have to be consistent with the teaching staff, facilities, and needs, as each of these has a bearing on the final accomplishments.

Selection of content is, perhaps, the most important step in curriculum development. It has been shown that new types of courses will need to be offered, and some former content dropped from present courses. With the rapid increase in new knowledge, there will have to be less fragmentation of courses than has been practiced in vocational education. Much thought must be given to common areas of education and development of core curriculum. Subjects that are new to many agricultural programs will need to be offered, such as agrostology, forestry, and wildlife management. If workers need education in these subjects, it seems that the agriculture department is best suited to offer such subjects.

More stress must be placed on the science and business of agriculture in these new programs. Many implications can be drawn by the teacher training institutions as it is decided who will teach these courses and how these teachers should be educated. It is questionable whether any of the four year institutions are now training the type of teachers that are needed. This new curriculum also has implications for programs involving other departments, such as life and physical science, business education, and trade and industrial education.

The importance of the teaching staff having a definite part in curriculum planning cannot be stressed enough. The final step of course outlines and lesson plans are the job of the individual teacher. He can do a much better job in this area if he has been in on the preliminary planning.

The curriculum development discussed was for a full program, including general education, and leading to an Associate in Arts degree. The general education requirements vary from school to school and state to state and may be determined by other people than the agricultural staff. The general education courses should be checked to make sure they also meet the objectives of the curriculum. This can be a problem when other departments have the responsibility for teaching these courses. Here again, it is a definite help if these departments are brought into the planning phase through a curriculum committee. This committee should discuss objectives, course content, and, especially, learning experiences. The agriculture staff must take into consideration that teachers in the area of general education may not have the same philosophy as the vocational educators toward the terminal student.

In the area of selection and organization of learning experiences, there is much to be done. Tests are needed to help identify the vocationally talented student and to find the most effective ways to teach him. The emerging ideas in education concerning the nature of intelligence and the nature of creativity, certainly seem to have implications for these new curricula. The whole area of motivation and keeping the curriculum current and meaningful are important. Vocational educators need to do much research to determine which facts and skills can be eliminated from the curriculum, or how they can be combined and structured to gain maximum transfer of training, both specific and non-specific. To gain education in depth and to teach application, new kinds of work experience programs should be developed for these technicians. Part time job placement during schooling may be desirable.

Finally, some methods of evaluation of the program must be used to determine its effectiveness and to aid in curriculum change and improvement. This evaluation should be consistent with the objectives, comprehensive enough to obtain the desired results, and yet dependable and valid.

It is hoped, then, that the ideas suggested in this paper will be of value to others who are interested in developing a curriculum for agricultural technicians. There is much to be done in the future. The need is real, and the challenge to vocational education today is great.

* * * * *

APPENDIX

Plant Science Technician

Freshman Year

Fall	Units	Spring	Units
Agricultural Mathematics AG91	3	Farm Surveying AE55	3
Soil Science SS50	3	Agricultural Mechanization AE63	3
*Truck Crops CP50	3	Agronomy CP51	3
Introduction to Agricultural Economics AB50	3	Agricultural Sales and Service AB63	3
Applied Psychology 2	2	Agricultural Science AG93B	3
Agricultural Science AG93A	3	Health Education	2
Physical Education	½	Physical Education	½
	17½		17½

Sophomore Year

Fall	Units	Spring	Units
Entomology AG51	4	Weeds and Poisonous Plants PS51	3
Plant Pathology PS50	3	Speech 1A	3
English 50	3	American Institutions 10	3
United States History 27	3	Pest Control AG94	2
*Fruit Crops	2	*Plant Science Elective	3
Agricultural Elective	3	General Education Elective	3
Physical Education	½	Physical Education	½
	18½		17½

*Turf Grass Management, Wildlife Management, Forestry, Irrigation and Drainage or Conservation of Natural Resources may be substituted.

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Animal Science Technician

Freshman Year

Fall	Units	Spring	Units
Feed and Feeding AG51	3	English 50	3
*Swine Production AG54	3	United States History 27	3
Applied Psychology 2	2	Animal Hygiene and Sanitation AH96	2
Soil Science SS50	3	Livestock Judging and Selection AH52	2
Agricultural Science AG93A	3	Agricultural Science AG93B	3
Agricultural Mathematics AG91	3	Agricultural Mechanization AE63	3
Physical Education	½	Physical Education	½
	17½		16½

Sophomore Year

Fall	Units	Spring	Units
*Beef Production AG54	3	Marketing Agricultural Products AB60	3
Livestock Breeding AG94	2	Forage Crops CP52	3
American Institutions 10	3	*Weeds and Poisonous Plants AG51	3
Agricultural Mechanics AE50	2	Health Education 1	2
Ranch Management AG50A	2	Agronomy CP51	3
Introduction to Agricultural Economics AB50	3	Agricultural Mechanics AE51	2
Elective	3	Physical Education	½
Physical Education	½		
	18½		16½

*Entomology, Poultry, Wildlife Management or Pest Control may be substituted.

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Agricultural Engineering Technician

Freshman Year

Fall	Units	Spring	Units
Applied Psychology 2	2	Irrigation and Drainage SS51	3
Ranch Management AG90A	3	Ranch Management AG90B	3
Farm Machinery AE53	2	Agricultural Sales and Service AB63	3
Farm Tractors AE54	2	Agronomy CP51	3
Agricultural Mathematics AG91	3	Agricultural Mechanization AE63	3
Soil Science SS50	3	United States History 27	3
Conference and Project	1	Physical Education	½
Physical Education	½		
	16½		18½

Agricultural Engineering Technician (Continued)

Sophomore Year

Fall	Units	Spring	Units
Ranch Management AG90C	3	Weeds and Poisonous Plants PS51	3
Introduction to Agribusiness AB51	3	Ranch Management AG90D	3
Agricultural Mechanics AS50	2	Agricultural Mechanics AE51	2
English 50	3	Pest Control AG94	2
American Institutions 10	3	Health Education 1	2
Elective	3	Conference and Project	1
Physical Education	½	Elective	3
	17½	Physical Education	½
			16½

EDUCATION OF HIGHLY SKILLED AGRICULTURAL TECHNICIANS

by
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Agriculture is, in every sense, a large and important segment of the American economy. Considered as an industry, it clearly reflects the impact of the successful application of scientific research and the wide adoption of modern production methods including standardization of products, and elimination of burdensome human labor by mechanization of many production operations. Thus, agriculture is deeply involved in the pursuit and application of modern technological research and development.

American agricultural scientific development has included five major forces:

A. Federal and State supported agricultural experiment stations and laboratories devoted to research and development of products and methods; often associated with agricultural colleges or universities.

B. Educational institutions for training agricultural scientists and engineers, and also for educating agricultural teachers and related professional personnel.

C. A system of preparatory vocational education for farm youth in the science and practice of agricultural production; and an extension education program for upgrading and updating the technical knowledge and practice of persons already operating farms.

D. A well developed and highly effective organization of Federal, State, and county agricultural agents who, working with vocational agriculture teachers, serve the purpose of transmitting the new scientific developments perfected in the research areas (experiment stations) to the production department (farms) and initiating their adoption. This is largely an educational effort by professionally trained persons.

E. The development, mass production, and distribution of agricultural machinery, equipment, fertilizers, and to some degree in recent years, hybrid or improved strains of crops or livestock. These developments have been supported to a large extent by private industry, often working in cooperation with agricultural research agencies.

All five of these factors involve the use, in varying degrees, of scientists, engineers, and related technical personnel whose knowledge of the application of science to some phase of agriculture contributes to the greater efficiency of the operation of the industry. This is a continuing effort. The explosion of new knowledge in the area of agricultural science and the economic potentials it represents in further increased efficiency in agricultural production increases the need for larger numbers of more highly trained technical personnel, both in the research and development segments of agriculture and in the production area - the farms.

Highly Skilled Technicians

The highly skilled technician is becoming an increasingly essential part of the scientific and management team in modern research, development, production, and services. The team is comprised of professional scientists, engineers, specially trained technicians, supervisors, and skilled production or laboratory workers. The ratio of technicians to scientists or engineers, at present, is usually less than 1 to 1, but the trend seems to be toward 2 or more to each engineer or professional scientist.

Technicians are commonly trained in the physical science and engineering related fields of electronics, mechanical design and production, instrumentation and control, civil and construction technology, chemistry, and metallurgy; and in the life science field of medical laboratory and dental laboratory technology. Technicians will increasingly be trained in such areas as oceanographic, biological, and agricultural and allied life science technologies.

The explosion of scientific knowledge has caused changes in scientific education so the recently graduated professional scientist or engineer often has had little laboratory experience and functions more as a theoretical scientist than in the past. Thus, there is a vacuum developing in the area of applied laboratory knowledge that the scientist or engineer formerly exercised, and which is being increasingly filled by highly trained technicians.

Technical education programs provide a carefully structured, rigorous study of scientific principles and supporting mathematics, plus an intensive laboratory-oriented program of instruction. This type of program is required to provide (1) the knowledge of applied scientific principles and of the hardware, processes, procedures, techniques, materials, and modern measuring and control devices, and (2) the ability to communicate with the engineer or professional scientist doing research, development, production, or scientific service work, and to be his delegate and assistant. Such programs are generally designed for two years of intensive post high school study.

Types of Schools Offering Technical Education

Several types of schools offer technical and related vocational education -- junior colleges, community colleges, technical institutes, and area vocational-technical schools are the institutions in which the greatest growth is taking place. Technical and comprehensive high schools also offer such programs; and their orientation toward the needs of technical and related vocational education is of great importance since they must prepare students to enter technical education programs either late in high school or upon graduation from high school.

Federal Support to Educate Technicians

The need for educating highly skilled technicians was recognized and supported by Federal legislation under Title VIII of the National Defense Education Act of 1958. Its purpose was to train skilled technicians required for national defense. This was not generally interpreted to include agricultural technicians, but the experience during the five years since 1958 has done much to demonstrate the need for technicians in all fields of applied science including agriculture, and to prepare the way for the initiation of agricultural technicians preparatory programs.

This act provided Federal funds, matched dollar for dollar by the States, for the purchase of the expensive laboratory equipment for training highly skilled technicians, for teacher salaries, and for purchasing materials and providing other services for this type of education. Since 1958, enrollment of full-time students in technical education programs -- most of them post high school -- has grown from fewer than 20,000 to more than 75,000 in 1963. In 1958, some 260 schools provided education of this type for highly skilled technicians under Title VIII, and the number has grown to over 700 by 1963. Many of the new schools have been built primarily to train technicians and other skilled personnel.

In recognition of the growing importance of this type of education, Congress, in the Vocational Education Act of 1963, made permanent the provisions of Title VIII of the National Defense Education Act for training highly skilled technicians. The new act also provided substantially increased funds for vocational and technical education for greater numbers of people of all ages. Under this expanded program, increased technician training for agricultural and all life science technologies is made possible and encouraged.

Several major questions and important areas of inquiry present themselves regarding the education of agricultural technicians. Some of these follow.

What Should Agricultural Technicians Be Taught?

What areas of science and related technical knowledge and skills properly comprise the field of agricultural technician education? The most inclusive answer to this question should be "the areas covered by Agricultural Engineering and the physical and life sciences as they relate to agriculture."

Agricultural technicians work in the following general types of activity:

A. Research and development;

B. Production and related processing;

C. Distribution and service; both of machinery and equipment, and supplies such as seed, feed, fertilizer, feeding or breeding stock, pesticides, and others needed for production by farmers and the marketing of farm products.

The problem of identifying the location, environment, and activities performed by the agricultural research and development scientists and technicians is, in principle, not greatly different from that related to any other industry. They work at their research and development locations.

The nature of the necessary elements of education for the technician in the production area of agriculture is less clearly evident than for most large industrial production plants. In very large farming operations, especially those which involve both producing and processing of the product before marketing, the "scientific team" structure can be justified and its elements identified. In smaller operations the manager and operator of the production unit (farm) could well be (and increasingly should be) a highly trained technician. Here he functions with considerable responsibility on his own, but can obtain the professional scientific direction or consultative services he may require from research and development center personnel, or the county agricultural agent, or from the literature of the various scientific and technical societies where services cover the area of his problems.

Agricultural technicians employed in the distributive and service areas excel because they can perform duties actually identifiable as technical in nature, based on their understanding of scientific and related principles associated with the required service.

Skilled agricultural technician is a specialist in some area in the broad spectrum of applied life science or agricultural or closely allied engineering. He has mastered an intensive and rigorous curriculum, a major part of which is science and laboratory oriented in his specialty. This education gives him the knowledge and competencies which enable him to excel in his area of applied agricultural or life science. Such programs usually devote 10% to 15% of the educational program to social sciences emphasizing economics, business management, and human relations.

When considering programs for educating agricultural technicians, the agricultural or closely related occupational competencies must be identified and made the stated objective of the program. The really challenging area for development of agricultural technician education programs is in agriculture. It is obvious that the workers and many of the technical personnel in a cigar or cigarette factory do not need to have an agricultural background. Similarly, the foundry and other workers employed in making castings for farm machinery do not need to know farming -- they need to know how to produce in a metal working and machinery manufacturing organization. It is also obvious that some person knowledgeable of the agricultural facts relating to the quality and nature of tobacco products in the first case, or to the design, function, and performance of the farm machine in the second case, must be operative in the industries cited above. These are the agricultural engineers, scientists, and technicians who will be few in number compared to the mechanical engineers, chemical or metallurgical engineers, and related scientists and technicians in the organization. Agriculture must look primarily to the really agriculture related occupational content in planning new technical programs related to agriculture if they are to contribute solidly to the advancement of agricultural research, production, or related services, and the capacity of those educated in these programs to serve and grow in the application of agricultural science and the occupation of farming.

What Institutions Should Train Agricultural Technicians?

Since technicians are the product of an intensive, carefully structured and rigorous educational program, usually requiring about two years at the post high

school level, the most likely agencies for agricultural technicians are those related to or a part of 4-year colleges or universities with agricultural engineering and related science programs, technical institutes, community or junior colleges, and area vocational and technical schools. Two-year preparatory programs for technicians in various agricultural technologies are now, and have been, in operation in each of the four types of institutions mentioned above.

Examples:

I. 4-year university - University of Maine, Orono, Maine

A. Two-year agricultural technology program has been in operation over 20 years, and the relative yearly enrollment has kept pace with the State's population.

B. The State University of Pennsylvania offers 2-year technician programs in agriculture and in forestry.

II. Agricultural and Technical Institutes

A. At Farmingdale, New York

B. At Delhi, New York

C. At Alfred, New York

D. At Canton, New York

E. At Cobleskill, New York

F. At Morrisville, New York

G. Thompson School of Agriculture, Durham, New Hampshire

H. Vermont Agriculture and Technical Institute, Randolph Center, Vermont

I. Delaware Valley College of Agriculture & Science, Doylestown, Pennsylvania

III. Junior Colleges

A. Reedley College, Reedley, California

B. Fullerton Junior College, Modesto, California

C. Ventura College, Ventura, California

D. Stockton College, Stockton, California

E. Bakersfield Junior College, Bakersfield, California

F. Orange Coast College, Costa Mesa, California

G. Hines Junior College, Raymond, Mississippi

H. Tyler Junior College, Tyler, Texas

IV. Area Vocational and Technical Schools

Programs are being developed in the education centers in North Carolina.

These are only a few of the many possible examples. A complete directory of such programs is needed. Many exist. They teach a variety of programs. These should be completely cataloged.

What Instructional Materials Are Available for Teaching Agricultural Technologies?

Since the knowledge required by technicians is closely related to that taught to professional engineers and scientists, it is clear that the subject matter to be taught is already in existence. The selection and arrangement of the courses in an agricultural technology curriculum must be made in light of the occupational objectives for which it prepares the student. Instructional materials for a given course may be in a textbook, but usually must be drawn from several sources. Some of the sources of available information are:

A. Books.

The textbooks and references used in educating agricultural engineers, physical scientists, and life science students for the bachelor's degree contain the fundamental materials for educating technicians. Much of this material must be modified to a more highly laboratory oriented or more "applied science" emphasis for technician education courses.

B. U. S. Department of Agriculture Publications.

Research reports.
Agricultural Extension Education Service materials.

C. Colleges and universities teaching agriculture and related subjects, doing agricultural research and development, and providing agricultural extension education programs.

The libraries, publications and services of the staffs of these institutions contain a wealth of material from which may be drawn pertinent content for technician training.

D. Publications and services of scientific and technical societies.

The technicians must have the use of and appreciate the vital importance of the publications, meetings, and other services of scientific and technical societies. Each branch of applied science which is of significance has a well developed scientific or technical society comprised of the leaders in the field, and whose publications represent the most complete and most up-to-date information in the field. The information covers all important aspects from new information developed by research to the latest and most complete applications of the knowledge in the field.

Nearly 50 such national organizations can be identified for agricultural and related technological fields; 10 more devoted to forestry and forest products; and 4 to fisheries and oceanography (see attached lists). Almost all have regular publications. The titles of these national societies give some idea of their diversity and the comprehensive coverage they provide for the field of agricultural and related technology.

E. The experience of those institutions already providing programs doubtless can provide a wealth of pertinent and useful materials, proven by experience.

Other sources of materials are available. More comprehensive listing of these sources should be made of those specially useful for educating agricultural technicians.

Who Should Be Trained as Agricultural Technicians?

High school graduates, particularly those with farming or vocational agriculture school background, comprise the major population from which potential agricultural technicians may be drawn. The interests, educational preparation, and other important

characteristics of this segment of our youth need to be studied for purposes of identifying good potential agricultural technicians and guiding them into such programs.

The following factors might well be considered in such studies:

A. Large numbers of capable graduates of rural and suburban schools have the scholastic ability to succeed in the intensive, post secondary curriculums required to educate agricultural technicians but do not go into such programs. Is this because programs in agricultural technician education are not sufficiently available?

B. Many of these high school graduates want to work in agriculture-related occupations but can't finance a start in farming or aren't employable because of lack of sufficient education to bring useful services to an employer.

C. With the increasing tendency for employers to favor the older and more mature employee, the two-year period after high school might best be used to provide a useful and substantial education to youth interested in agricultural occupations, thus serving the dual purpose of equipping them with salable educational qualifications as well as acceptable maturity for employment.

What Special Agricultural Technologies Should Be Taught?

Past experience will provide some guidance on this question. In all cases the main scientific and related content should be preparatory to work in an agricultural occupational field in which there are employment opportunities, usually a cluster of activities centering around a major field of interest. The major divisions of subject specialization in agricultural engineering or professional agricultural science education should be suggestive of the technological specialities in the field. Some major areas seem to be:

A. Agricultural Engineering and Production

B. Agronomy, and Soil Reclamation and Conservation

C. Animal Husbandry, Science and Pathology

D. Agricultural Biochemistry

E. Agricultural Botany and Plant Pathology

F. Agricultural Entomology and Zoology

G. Dairy Science

H. Poultry Science

I. Forest Culture and Management; Wildlife and Conservation

J. Fisheries and Oceanography

In the development of a curriculum for any of the foregoing major areas, the underlying sciences and related technical study of procedures, processes, techniques, methods, and principles should be the major emphasis. They should be taught with extensive laboratory experience and should be application oriented.

Each such curriculum should provide courses in mathematics to the degree necessary to support the science - in communications and technical reporting - and should include courses which provide pertinent understanding of the applicable principles of economics, business management, and human organizations and relationships.

What Success Have Agricultural Technicians Experienced?

A follow-up study of the agricultural technicians graduated from the University of Maine, the technical institutes in New York, and selected other places should be made. Such studies may already be in existence. Certainly, these programs would not have continued for some 20 years if there had not been evidence of their effectiveness.

Such a study would have meaning in light of the increasingly technical nature of many agricultural operations and processes.

How Many and What Kind of Agricultural Technicians Are Needed?

A comprehensive study of the number of agricultural scientists, engineers, and technicians employed in agricultural school research and development, agricultural experiment stations including desalinization projects, forestry and related research, fisheries and oceanographic research, private industrial agricultural research laboratories, and by all other identifiable employers should be made. This information may already be available but should be consolidated and examined in light of the probable need for technician education programs. If the ratio of technicians to scientists and engineers is found to be less than 1 to 1, there may well be important implications pointing toward greatly increasing the number of agricultural technicians to support the entire agricultural industry.

Why Is a Study of Agricultural Technician Education Important?

The answers to the foregoing and allied questions constitute a major challenge to vocational and technical educators in the field of agriculture and those closely related to it. The programs which should be initiated to meet indicated needs should provide new opportunities and horizons for many of our most able and promising youth who need to develop salable competencies and who want to work in agricultural occupations.

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SCIENTIFIC AND TECHNICAL SOCIETIES PERTINENT TO AGRICULTURAL AND RELATED TECHNOLOGIES

Agricultural Technology

American Society of Agricultural Engineers
Agricultural Research Institute
American Association of Botanical Gardens and Arboretums
American Bryological Society
American Dairy Science Association
American Farm Research Association
American Fern Society, Inc.
American Horticultural Society, Inc.
American Institute of Biological Sciences
American Institute of Park Executives, Inc.
American Phytopathological Society
American Pomological Society
American Society for Horticultural Science
American Society of Agronomy
American Society of Animal Production
American Society of Landscape Architects
American Society of Naturalists
American Society of Parasitologists
American Society of Plant Physiologists
American Society of Plant Taxonomists
American Society of Range Management
Animal Care Panel, Inc.
Animal Nutrition Research Council

Association of American Feed Control Officials, Inc.
Association of American Fertilizer Control Officials
Association of American Pesticide Control Officials, Inc.
Association of Official Agricultural Chemists of North America, Inc.
Association of Official Seed Analysts
Bio-Dynamic Farming and Gardening Association, Inc.
Biometric Society
Botanical Society of America, Inc.
Council for Agricultural and Chemurgic Research
Crop Science Society of America
Ecological Society of America
Entomological Society of America
Grassland Research Foundation, Inc.
Herb Society of America
National Association of Gardeners, Inc.
National Shade Tree Conference
Nature Conservancy
Plant Propagators Society
Potato Association of America
Poultry Science Association
Society of American Bacteriologists
Soil Conservation Society of America, Inc.
Soil Science Society of America
United States Livestock Sanitary Association
United States National Committee, International Commission on Irrigation and Drainage
Weed Society of America

Forestry and Forest Products

American Forestry Association
American Fisheries Society
American Institute of Park Executives, Inc.
American Society of Range Management
Association of Consulting Foresters
Forest Products Research Society
Grassland Research Foundation, Inc.
National Shade Tree Conference
National Wildlife Federation
Natural Resources Council of America
Nature Conservancy
Northeastern Loggers Association, Inc.
Society of American Foresters
Society of Wood Science and Technology
Soil Conservation Society of America, Inc.
Soil Science Society of America
Technical Association of the Pulp and Paper Industry
Wildlife Management Institute

Fisheries and Oceanography

American Fisheries Society
American Institute of Fishery Research Biologists
American Society of Limnology and Oceanography
National Shellfisheries Association

STUDENT SERVICES FOR AGRICULTURAL TECHNICIAN PROGRAMS

by
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My assignment for this presentation is entitled "Student Services" which I find may include a multitude of things depending upon one's interpretation of the term. One layman to whom I mentioned this presentation said, "Oh, you're going to speak on curriculum, aren't you?" I am sure this wasn't exactly what Dr. Taylor had in mind but it does point out that we must be careful with our terminology as we proceed in this new era in vocational education. Certainly it is not unreasonable to assume that the curriculum is a student service even though we may not consider it in that context.

For purposes of this discussion, I plan to deal with the four major areas indicated on the program and a few minor items that also relate to this broad topic of student services. As background information, I would like to outline our agricultural technician program in New Hampshire for you.

Prior to 1900, a two-year program was established as part of the College of Agriculture at the University. This, in a sense, was the beginning of technician training for those who could not or would not enroll in a four-year college program. In 1939, the two-year course became a bona fide vocational agriculture program called the Applied Farming Course. It was designed to serve a group of young men who did not complete their secondary school program as well as those seeking advanced education after high school graduation. Through the years, a trend toward more theory developed and in 1953, the program was reorganized and renamed the Thompson School of Agriculture. Since 1953, more and more emphasis has been placed on the technician phases of agricultural work. Thus this program has served the rural youth of New Hampshire for over 60 years and has adjusted to meet changing times. The school has its own staff of instructors in agricultural subjects, a director and will shortly have a staff covering the academic subjects including communications, science and mathematics. The overall administration is handled by the Dean's Office of the College of Agriculture but the instructional staff is selected according to the school's own standards. Thus, it has, with one technology exception, fully qualified teachers of agriculture on the staff. This we feel has been and continues to be important for these men have the Vocational Agriculture philosophy many professors do not seem to understand or appreciate. I might also say that the two forestry technology instructors who were basically trained as foresters are taking those courses necessary to qualify as agriculture teachers.

This may seem rather remote from the topic at hand but we feel strongly that the philosophy of the staff relates closely to student services. Now to get down to specifics.

First, student selection. What is it we are looking for in a young man or woman, and we must recognize there will be more and more women in our programs who will become our agricultural technicians of tomorrow. The admissions officer will say, "Seek students with top grades and a strong academic training." The farmer says, "He must be physically strong even though we are becoming mechanized." The employer will say, "A mature and dedicated individual," and the class instructor says, "He must be interested in my course and willing to study." Pulling these things all together then, the potential student should be intelligent, physically fit, mature, dedicated, interested, and a willing worker. It is probably safe to say that if any of our teacher educators should hear of this individual just described, he would be swamped with application forms to enter the teacher preparation program. I am sure all of us as supervisors would wish them well. Actually then, it becomes a matter of the ability of the individual as to the actual program that should be undertaken.

How intelligent must he be? We say that he should be a high school graduate, although we do not require it. The high school program should include in addition to the English and social studies, mathematics including algebra I, biology and chemistry. Vocational agriculture is also recommended. In New Hampshire, we have found that the lack of vocational agriculture is not as critical as the lack of science and math in the more technical programs. It is our firm conviction,

however, that the applicant can and should have both vocational agriculture and the academics. It is also quite evident that we do not need the highest achievers in the high school program as required in many four year programs for the interest and motivation factor are often enough to carry the less than the best student through to a successful completion of his program. Thus, we may and do accept students who cannot secure entrance into the four-year college but have the ability to achieve in the technician program.

Physically of course, the applicant should be able to meet the demands of the job for which he is to be trained. As we have seen this week, the types of work we may be training for are many and varied and no definite overall criteria can be established. Let's not be fooled, however, by the rapid trend in mechanization. Many of our technician jobs will be very physically demanding and we owe it to our potential students to make them aware of this fact.

An example of this was brought vividly to our attention this past year. In our forest technician program, much outdoor work is required during the school year. It is amazing what a 3-hour laboratory session in 2 feet of new snow, temperature 5-10° with a fairly strong wind will do to separate the physically fit from those less able or perhaps those less interested.

This brings me to the two criteria of interest and maturity. They are probably as important as any item mentioned. For this reason, it is requested that every applicant and his parents visit the school to have a personal interview with a member of the staff. Here it is possible to explain the program and get the applicant's first hand reaction to the demands that will be made of him as a student.

Why does he want to enroll? Is it parental pressure, personal interest, a true understanding of the vocational opportunity or a misconception of its objective? A lot of applicants show apparent interest in the forest technology program when actually they have their eye on a ranger uniform, a conservation officer's badge, hunting, fishing, but have no concept of the actual work done by forest technicians. If they are not stopped in the selection process, then we as educators have done them a disservice, not a service.

Is he willing to be away from home on a placement program for two summers doing work that is related to the instructional program? This question often times brings out the maturity of the parents as well as the applicant. Are they ready to cut the apron strings?

All of these things and many more relating to his definiteness of purpose, independence, judgment, citizenship characteristics, and maturity can be partially evaluated by the personal interview. Employers often spend large sums of money to arrange for personal contact with prospective employees. Shouldn't we expect prospective students to spend some money, visit the school of their choice, and shouldn't we as educators provide the staff to make the visit possible? We are dealing in higher stakes than the employer for this may be the decision that will make or break the individual for life. There is nothing more disheartening than observing a well qualified young man or woman flunk out of a program for which they were unsuited and withdraw completely from any future formal educational program because of this original failure which in many instances could have been avoided. Perhaps I have dwelt too long on selection but if we do not carry on this service properly, our whole program will likely be unsuccessful. As we secure additional funds, build larger schools, have demands for more teachers than we can provide, then selection is a service we may feel can be delegated to others who actually may not be properly qualified to do the job. Let's not fall into the trap of letting student selection suffer while we devote our efforts to the broadening of curriculum, expansion of facilities or other activities which may at the time seem so vitally important.

Counseling is the second major area for consideration as a student service. As you can see, I have indicated a certain amount of counseling is involved in student selection. Once a student is enrolled it is imperative that he continue to have sufficient contact with the staff to keep him properly oriented. In New Hampshire, we have established a system of faculty advisors for our students. Each student is assigned an advisor within his major area of interest. It is the student's privilege and responsibility to confer frequently with the advisor about his work and to seek help and guidance as it is needed. The advisor is, of course, one of the student's instructors and will have first hand knowledge of the progress being made in his

respective classes. Through this constant contact, a high degree of rapport can be developed between the two.

Some concern has been expressed that instructors cannot adequately advise students because they are not trained in the area of guidance and counseling. This may be a valid criticism in other areas but for years, vocational agriculture has prided itself on the relationship between student and teacher. This same relationship can be developed at the technician level if the instructional staff has the correct philosophy as previously pointed out in this presentation. In those areas where it becomes necessary to deviate from the vocationally trained and oriented staff then caution should be used in making these types of assignments. In no way should this be interpreted to mean that every vocationally trained teacher is a good counselor but the chances for success are considerably greater. This instructor/student relationship permits early diagnosis of any major problems that begin to develop. The Thompson School is located on the University campus and we are fortunate in having the University counseling service available if a major problem should develop. Over the years, a very small number of referrals have had to be made to this service. It is very important that if regular counseling is not done by the staff on an advisor basis then vocationally oriented counselors should be available for the students to confer with. Student counselor ratio is a point of little agreement. Recommendations can be found as low as 1-50 and up to 1-200 depending on needs. The quality of your student body can affect this number quite radically. A student body composed mostly of rural youth in an agricultural program seems to demand less counseling than their urban or city counterparts in the same program.

Again, let me reiterate, we believe that good selection can cut counseling needs and costs substantially.

The third service of placement must be divided into two major areas. First, placement for work experience during the formal education period and second, placement for full time work as a graduate of the program.

We require that our students complete two 4-6 month work experience programs during the two years they are enrolled in the program. School closes the first week in May and reopens in September. In addition, one and two week practicums are required during the regular sessions.

To be of the utmost value summer placement must be carried on under the best educational circumstances possible. In a few instances where outstanding home farms are in operation, the student is allowed to do his placement on the family farm. It is felt, however, that whenever possible, outside placement away from the home, will provide the widest range of experiences giving the student the most value from his placement program.

Before students are allowed to accept employment for placement, a thorough check should be made to see if the job fulfills the necessary qualifications. Is the employer willing to assist in the education of the student by rotating jobs and responsibilities? Does the local county agricultural agent and/or agriculture teacher in the area feel this is a good agricultural operation? Is the operation modern, efficient, and run in a manner that will provide good training? Are the working conditions those that the student will find when he seeks full time employment after graduation? These and many other criteria pertaining to the type of training being given must be met before the student is allowed to accept the position. The student staff advisor should provide him with sufficient information concerning wages, working hours, potential fringe benefits, insurance practices, and other pertinent information before the student makes his final contact with the employer. It is the student's responsibility, however, to settle problems of wages, working hours, housing and all other questions with the employer for this will be his responsibility following graduation. An agreement should be developed, written and signed by the employer, student and the staff advisor outlining the arrangements that have been decided upon. If placement is with the soil conservation service, forestry service, or large commercial company and a standard employee training course is available, it should be used. A written contract is still essential to eliminate any misunderstandings.

Every student should be required to send a weekly report to the school during the placement period indicating work done and any other important information the student or school feels should be brought to the advisor's attention. Failure to

submit these reports weekly can mean suspension from the program as this is an integral part of the course work. The serious weakness in this whole placement program is that the employer must pay the student and thus he must look at the dollar value returned rather than the education being given. Ideally this should be part of the regular course work, graded by the employer and done for credit not salary. In New Hampshire, we have considered the possibility of setting up a pilot program with a few students being placed on a subsidized program. The student would not be paid for his placement program between the first and second year. A scholarship fund would be used to pay the student's college expenses the second year of the program. The employer would act as an instructor following a well developed course outline. It is felt this would provide the student with a better education and more practical experience than the present program. The student would be graded for his placement and receive credit toward graduation. We feel this would allow us to maintain higher educational standards and perhaps result in better trained graduates. Most of our people average $60 per week plus room, board and in many instances overtime pay in excess of 50 hours per week. A subsidization would be very expensive but we hope that such a pilot program may be started in the near future.

Placement for full time work after graduation is literally the least of a school's concern if the program is fulfilling needs of the industry. In New Hampshire, we cannot begin to satisfy the demand for trained technicians in production agriculture or related occupations. We do have an informal placement program in the school and in addition use the regular university placement service as a contact agency. In schools where this type of service is not already available a registration and placement service should be established to give both the graduates and employers a chance to contact each other. One of our problems has been that employers become impatient and will sometimes employ a student after one year of instruction. The majority of employers recognize the bad features of this practice and respect the two-year training period. A sound placement program can help control this problem.

As a follow-up procedure, a record should be made of each graduate's employment and regular contact made to see how he is progressing. An alumni association can be established and by holding at least one meeting each year a large number of alumni can be contacted. In a small state it is relatively easy to keep personal contact with the graduates as members of the staff visit students in their placement programs. Often times, students are placed in businesses operated by former students and close contact is possible through present enrollees. In many instances as graduates feel a need to change employment they will return to the school for suggestions of possible new positions available. Through the follow-up procedure, formal or informal, it is possible to review the successes or failures of the program and make course adjustments accordingly.

These then, selection, counseling, placement and follow-up are the four major services which should be provided by schools offering technician programs. I would like to mention four additional services which should be provided for students. First, let's be honest with the student and provide instruction in those areas or vocations that have real potential. We must analyze the need before starting a new course. In New Hampshire, we carefully studied the demand for forestry technicians in our own and neighboring states and found a real demand for technicians by the industry and the forest services. Industry alone showed a tremendous need yet almost none of our students are being placed in industry. When the technician was available the job was not! Fortunately, we had sufficient need in other areas to take up the slack and we cannot yet fully supply the annual demand. If, however, we had gone strictly on the needs expressed in the industry we would have been doing a great disservice to our future students by starting the course.

Second, let's take the halo off the word technician and be sure our students realize that this may be working with our hands, not just white collar supervision. Too many graduates from our program are becoming "degree conscious" and feel that manual labor was just a part of the program for education purposes but as graduates they are above this type of activity. Sometimes we as educators create this situation as the great advantages of education are expounded upon. Let's serve our students by letting them know where they are going and what they will be doing after graduation.

Third, let's provide a service to our prospective students by informing high school guidance counselors about our programs. Whenever possible, have a member of

the staff visit high schools and become personally acquainted with the guidance counselors. Make at least two mailings to the counselors each year with up-to-date information on courses and vocational opportunities.

Guidance counselor invitational drive-in conferences are excellent means of contacting counselors. Yet, few schools or colleges use this approach. The counselors appreciate the chance to visit the school first hand, be treated as an honored guest, discuss mutual problems and develop new and better understandings. Don't overlook this opportunity.

Fourth, let's not overlook a youth organization for our students. An FFA type program to develop leadership and pull the student body together is most important. We feel this has been a weakness in our New Hampshire program because the students have never fully supported such a program. They are eligible for all university organizations except varsity sports and have, therefore, substituted these activities for a specific youth organization. The staff feels that there is merit in a separate organization and perhaps we should give it some consideration at the national level as revisions to the FFA organization are contemplated.

As indicated in the beginning, these are areas that also merit your consideration. You may want to pursue them further at another time.

To summarize briefly. Select an intelligent, physically fit, mature, motivated student with a respectable educational background. He will not necessarily be at the top of his class, but he may still be a good candidate for the technician program. Give him the proper counseling and guidance that will keep him on the road that best fits his interests and abilities. Above all else, provide him with a placement opportunity as part of his educational program that is meaningful and truly provides learning by doing, under the conditions that he will find exist upon entrance into full-time employment. Follow-up the graduate to rate your success and determine your needs. In addition, provide those other services which will encourage potential students to seek your program as a part of their education.

FACILITIES AND EQUIPMENT FOR AGRICULTURAL TECHNICIAN PROGRAMS

by
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The acquisition of facilities and equipment for preparing agricultural technicians is a difficult task. More difficult perhaps is how to throw some light on this subject in one hour.

First off, in my opinion, there is no substitute for a truly effective teacher. Note that I said "effective" teacher, not just a well prepared teacher. We need more people who understand technical agricultural education and, therefore, we should ever be alert to encourage the right young men in this direction. There was much confusion as to just what an agricultural technician is but I think we, now, have a reasonably well-focused idea of this. Brick and mortar, animals, crops, livestock and machines are great aids but they do not substitute for a good teacher. I have heard some people complain that they did not have proper equipment to teach and then, after getting the equipment, they still could not teach.

Agricultural technician education is not readily supplied by chalk board, textbook and visual aids alone, important as these things are. Surely every good program should have these available but sometimes it is difficult to make people understand that the training of technicians requires a great deal in the way of equipment and facilities and, therefore, is more expensive than other types of education. In the past we have had farm-reared young men available and qualified to fill many of these technician positions. This pool is drying up so we better get busy.

So you will more clearly understand some things to follow, I would like to establish a point of view, whether you agree with me or not. First off, to me, all education is vocational and it is never ending. Once past the elementary grades, the function of education, so it seems to me, is to prepare for earning a living. If a living cannot be earned, all the schooling in the world is useless. Liberal arts education is fine but, in my opinion, it should come with or after learning how to earn a living. (Before this presentation is over, you may see how much I need some liberal arts education.) Thus the agricultural technician has something to sell after graduation and is prepared for the entry job and hard work.

We think of an agricultural technician as a specialist yet he should first be a generalist, in my opinion, to be prepared for specialization. Many employers of agricultural technicians do not have an agricultural background yet they are the first to recognize its need.

A short while ago, the American Metals Climax Company of New York City phoned and wanted a person to do research on potash. Potash being a by-product of their operations, they wanted a person to dig out where and how potash is used, in what quantities, etc.; then after that to go out on the road selling. When I inquired what territory, I was told the United States. By that time, feeling a bit sure of the situation, I said, "Why don't you get an arts college graduate?" The answer was most emphatic that they must have an agricultural person and, sorry to say, I could not locate anyone who would take this opportunity in New York City at $90 per week.

Paramount to providing this unique type of agricultural technician education is a good farm. In our area, most people desiring an agricultural education have had little or no agricultural experience. This agricultural experience we must provide, and usually in two short years. At least we can get them started in this length of time. If you question the feasibility of giving agricultural education to urban students, we can discuss that later.

A farm for educational purposes ought to provide first hand experience in the phases of agriculture common to the area and some experience in additional enterprises. There is a limit to this, however - usually the source of funds.

Where dairy farming predominates, a herd should be of such proportions that students get some real experience learning to care for all ages. Fortunately, a small herd quickly grows in number. At Farmingdale, we have a hard time keeping

the herd under 90. Everyone likes calves so the pressure is on to raise nearly every one. This provides good learning situations. Perhaps it would not be necessary in all parts of the country but, in the northeast, I think every agricultural technician should be able to milk by hand and machine even if he does not get practice enough to become efficient. Forty milking cows gives us about the right number for 100 first year students to get a certain minimum of experience, to provide sufficient milk for processing by food technology students, and to supply our dining hall.

A laying flock of some 2,000 birds, some on the floor and some in cages, plus hatching and rearing 3,000 to 4,000, will provide poultry experience. This can be enhanced with turkeys and other poultry if desired.

Twenty to 30 ewes, 20 beef brood cows, and 10 brood sows with their increase will provide further livestock experience. In some places, a horse enterprise, goats, rabbits or game may be feasible. As you can see, I am speaking as a northeasterner but the principles involved are the same and adjustments can be made.

Buildings for these livestock enterprises vary widely. Some feel that an educational institution should be a show place. Certain taxpayers in our state do not. There can be a happy medium. I am not in favor of building for the ages. If we have a choice in the matter, let us put these buildings up in such a fashion that we can afford new ones or at least remodel ones in 20 years. My grandfather did me no favor by building a great big barn out of heavy timbers, full of knee braces and almost completely unadaptable to present day agriculture. We don't know what changes are coming but we certainly know that they are coming.

Crop land to go with these enterprises can vary but there should be enough land to at least illustrate how the crops are produced and to provide study opportunities for soils and crops courses. The acreage devoted to cash crops can vary but some cash crops typical of the area should be produced.

Perhaps this is a good place to observe that probably some of you are saying that this is vocational agriculture and what is technical about it. To a city-reared youth, it is all very strange and can be made just as technical as faculties wish to make it. Call this productive agriculture if you wish. We know that only a small percentage of our graduates engage in actual crop and livestock production. However, it is my firm conviction that every would-be agricultural technician should have some of this experience in his early years in order to be properly qualified in his specialization. After all, how many at 19 or 20 years of age really know what they are going to do? How many of your knew; how many know now? What part of your agricultural education do you consider a waste of time?

How much farm machinery should be provided? This can run into real money, as you know. However, it is not necessary to have all the latest machinery and it is not necessary for every student to become proficient with every machine. Some machines can be owned, some can be rented or leased, and some can be had on a demonstration basis. Machines can be selected for their educational value, rather than as a farmer would, on the basis of need for his particular acreage. Keep in mind that young people and their education is our product.

One tractor each of as many makes as possible is desirable, possibly changing over the years, particularly as to size. Makes should be those popular in the area. Again, some tractors can be owned, some leased and some use can be made of dealer show rooms, demonstrations, field days, farm auctions, etc.

It may be well to own as many of the soil engaging tools as possible rather than getting them in some other way since wear and breakage is apt to be greater than with other machines. Some of these may be easier to come by than you might expect. I know of a case where a barn burned and the owner said we could have what was left of a John Deere plow. We overhauled and painted it, getting good lab instruction, and owned another plow. In another case, a moldboard, coulter assembly and two new plow shares arrived in quite a heap. Strangely, some of these repairs were fastened to other parts and all went together to make a plow. A tractor was badly burned in an institution fire. Fortunately, bearings were not melted and so, after some time, effort, great quantities of repairs and much instruction, we had a good model S Case tractor. I'll admit that an instructor must be alert to every kind of opportunity and, more than that, willing to work hard and long. If he does

this, he may find this desire and willingness to work rubbing off on his students and they, in turn, will be better prepared to take a job after graduation.

Certain equipment can be leased. Tractors and harvesting equipment are good examples. Some manufacturers have an educational policy of leasing machines at 10% of the purchase price per year. Usually the machine is replaced each year, or every two years. Of course, this is a way to own a machine in ten years but who wants to own an old tractor? Sometimes a piece of equipment can be leased at a fixed price for three years and then owned - a bulk milk tank, for example.

This past spring, for $90, we had a large, current model, shade tree sprayer on campus for a month. It was delivered by the dealer, thoroughly demonstrated and explained, and then students were permitted to use it. Laboratory study use was made of it on rainy days. Cost per student was under $1.00 and we got campus trees sprayed in the bargain. A few cars, too! Possibly one of our graduates being a salesman for the dealer had something to do with the deal - an excellent job, by the way, for an agricultural technician.

A further word at this time on obtaining these facilities. Surely there is no substitute for a generous legislature or some other body with adequate funds. However, farm land and buildings might become available in surprising ways. Eventual ownership is to be desired so changes can be made as needed.

Buildings can be added to or remodeled to some extent through class instruction, and small buildings can be constructed. Portable hog houses and poultry shelters are good class projects when wisely developed. Concrete work can be done. Possibly a campus organization like the Cattle Club can take on a project. Faculty and students can furnish labor on quite a sizable project if properly planned. A well might be driven or water piped; all sorts of things can be done if sparked correctly.

Farm machinery can be purchased through competitive bidding and often comes knocked down, thus providing an opportunity for good teaching. Arrival of these machines can be scheduled to coincide with the instruction program.

Much more could be said on acquiring equipment but do not overlook the possibility of income through the production, grading, packaging and sale of agricultural products after they have served their instructional function. The operation of a market can be profitable as well as educational.

What other facilities are needed? What equipment is a must and what is desirable? As an example, let us take a subject like soil science. The already mentioned farm is highly desirable so students can go to the fields and actually use the crops and study how the soil has been handled and will be handled in the future. Class information can be applied in the field even to soil preparation, compaction, liming, fertilization, irrigation, etc. Checks can be run, which often is hard to do on another's land. Familiarity with the machines used and how to regulate and check the rate of application is vital and technical.

For indoor laboratory work in soil science at Farmingdale, we have the following items, with their approximate cost.

3 pH meters	$1,050	2 solu bridges	$ 170
2 ovens	600	2 centrifuges	200
8 torsion balances	1,500	1 refrigerator	300
8 Harvard balances	160	1 muffle furnace	300
1 triple beam scale	175	1 colorimeter	300
1 scale	80	8 sets Kjeldahl apparatus	400
1 aero relief map	65	1 Wiley mill	300
		Total	$5,600

This, of course, is in addition to the usual run of soil testing equipment, glassware, set-ups, gas, water, electricity, etc. This equipment in the hands of an outstanding teacher will educate some good soil technicians. Probably no one student will use all this equipment on his job but he will use some of it. Should it happen that he uses none of it, he will know something about what can be done and he will have accumulated some knowledge and know-how that he can later apply. We cannot supply the student with experience for everything to come later in life but it is a

function of our educational system, it seems to me, to provide groups of students with a chance to use equipment such as the above. Also available is a movie projector, slide and film strip projectors and, on occasion, an overhead projector.

Time does not permit going through this same procedure for chemistry, microbiology, zoology, botany, meat amd meat products, arboriculture, entomology, physiology, genetics, food processing and other courses.

Perhaps here is a good time to point out that the inclusion of more science courses like these represents one of the big differences between so called vocational and technical education. True, some of this is included in vocational education but not to the same depth and, of course, many of these do not go to the same depth as at a four-year college or university.

More mathematics, as such, is included in most agricultural technician programs and some say there should be more. High schools are doing a better job with math and so students will be prepared to handle more. Included in this is the problem of balance; that is, how much general education to how much technical. At Farmingdale, the curriculum is approximately 1/3 technical agriculture; 1/3 general education like English, math, science, sociology, psychology, etc.; and 1/3 related to both. Some alumni several years after graduation wish they had more English. I have not taken time on facilities for English, math, etc., assuming that these are well understood by all, being much simpler and cheaper to provide than the equipment and facilities for technical education.

How about sharing equipment with other areas? This is a good theory but in agriculture there are not too many machines to share. We have exchanged the use of a concrete mixer, power plant and a few other things but not many. We tried it with a hydraulic press, only to find that when we wanted it back, the press had been painted and bolted to the floor.

Some facilities can be developed. In agriculture and horticulture, we deal with growing things so increase can be made. Livestock, fruit crops, trees, shrubs, plants, gardens, turf areas, etc., can be easily increased to meet instruction needs, if land is available.

Let me tell you how to get some additional dairy cattle. At the cow barn one day, I asked a small group of seniors if our dairy cattle instruction would be improved with some other breeds besides Holsteins. They said, "Yes." A little later, one of them asked me if we would accept some Ayrshire calves if given to us. I said, "Sure," thinking he was joking. At 10 P.M. a few Sunday nights later, this same student appeared at the cow barn with a U-Haul behind his car and 8 calves gathered from various breeders around New York State. One of our graduates, an Ayrshire breeder, heard of this and sent us 2 more calves. Now we have some fine Ayrshires coming into milk. One has made 6,230 pounds of milk and 276 pounds of fat in 181 days and another 5,116 pounds of milk and 212 pounds of fat in 149 days. Right now I'm looking for a place to trade some Aberdeen Angus or Holsteins for some Brown Swiss and Jerseys.

I urge the development of a market. Many positions for agricultural technicians are in the area of distribution and marketing and surely all of agriculture needs technicians here. A market can provide real zest to instruction in harvesting, grading, packaging and selling. One student learned a great deal from a rubber band he lost showing up in a professor's TV dinner. Food technology students at Farmingdale rotate at 4 to 5 P.M. two days per week selling class prepared food items to campus personnel. If you can retain control of these receipts it helps in many ways.

How can facilities be kept current and up to date? Another way of putting it is, how can we keep up to date? Agriculture is changing so rapidly I find it most difficult. Where a rental system is followed, farm machinery will be of the current model. Companies like to have their new machines seen and used by students. Loaned machines usually are not allowed to get old. A branch manager was on our campus and saw two red tractor engines being torn down and put back together by students. Whereupon he asked if we would like one of his. Naturally I said yes and we got an Oliver on the same basis, diesel no less, the next week.

Develop good contacts with all dealers and equipment will come easier and be easier to keep up to date. Dealers and manufacturers cannot help if they do not know

the need. This will aid in job placement, too. Faculty members should attend demonstrations, field days, farm auctions and other affairs locally and on the state level in an attempt to keep up to date. At least one new thing can be learned at each such affair. Keeping in close touch with experiment stations, the state college, research farms, etc., will help. Salesmen can take up a lot of time but they also can bring you much new information regarding equipment.

Good records should be kept and proper depreciation taken annually so new models can be obtained. Quite often this can be done in such a way that some new equipment arrives every year and some old machines are retired. Getting such records started can be quite a job but, once under way, this is a big help in justifying the need for a new piece of equipment. If it is a new program, keep records from the start. Naturally there has to be some budget to work with and agreement on how long a piece of equipment must last. I question very much the feasibility of instructing with equipment that is too old. This means very careful justification when making requests. Saying an item is "badly needed" doesn't cut much mustard with most administrators. Managing in some way to have a fairly generous budget for repairs will help greatly in keeping equipment up to date.

A picture is no substitute for the real thing but is a satisfactory substitute when the real thing is not available. Therefore, the development of a movie, film strip and slide library is a most valuable facility. I like slides best of all for then I can provide my own sound. Rerunning a movie without the commentary and providing your own sound sometimes is a good technique. With some planning, effort and a little money, much can be done in a year or two. Be careful, though, not ot use these things as a crutch and use them too long. Throw them away when they become obsolete, or save them for historical reasons.

Dr. Taylor very generously asked me to dream a little and this I am going to do as I conclude.

Will we stick with the term "agricultural technician" too long? True, it is a new term yet but watch out that we don't use it too long instead of inventing a new one. Perhaps it is not even accurate now! Is the manager of a feed store a technician? The sales manager for frozen foods? Supervisor of a duck processing plant? Merchandising representative for United Fruit? Buyer for a garden center chain? Inspector for the State Department of Agriculture? Nursery salesman? Owner of a landscape service? Assistant purchasing agent? Produce broker? And now hang onto your seat - a cosmetic sanitarian? One of our food technology graduates is in quality control work for Revlon, because so many dairy products are used in cosmetics. I'm satisfied he's a technician but not so sure it is agricultural. The Avon people are after our graduates now.

Some people are worried about the population increase. I'm concerned, of course, but not worried. Food may well be a problem but we don't know what we can produce if we really have to. If we can just operate under a free private enterprise system, the farmers of this country will produce if there is profit in so doing. A few months ago, some people were squawking because lettuce was 30¢ per head. Last week I couldn't get potatoes at my house because they cost 10¢ per pound. We've been blessed with abundance and cheap food for a long time. This may not always be so. We better get ready! We better gird ourselves to produce a lot more agricultural technicians and we had better produce better ones. In my opinion, we are just emerging on the greatest era of agricultural education we have seen since the Smith-Hughes days. I don't mean just this 88-210 money but the long range haul. One hundred years ago when 85% of our people were on farms, to now with the reverse, we are running out of people that absorbed great agricultural know-how by osmosis because they grew up with it. We've got to provide this know-how in other ways. We are putting out what we call technicians, for want of a better term, with know-how and ability to work. We better continue by doing a better job.

We'll face fantastic changes. We have already. The agricultural changes in the last 25 years are greater than the previous 200. Rest assured this will continue. The good farms will have their own inseminators, their own bookkeepers and money managers, their own secretaries, their own salesman, their own buyers and sellers. A duck farmer on Long Island already has hired a Ph.D. to plan his breeding! A New York poultryman has a man to run his IBM machines for pedigree work. There are lots of things to be done in agriculture and we'll be right in the middle of it. But, we better get some manpower ready - some agricultural technicians, if

you will. Could these ag technician jobs become so good we would take three years to train?

I have said things not new to some of you. I would like to hope that I have brought out at least one thing new, different or usable to each of you. We have a great area in which to work; what can be greater than agriculture and young people? What a combination! Money will come - it is coming, we know. Let's work on this preparation of young people as we've never worked before. Let's get the equipment and facilities!

At the 54th Annual Professional Improvement Conference of the Association of Teachers of Agriculture of New York held last month, a patriarch of ag teachers retired. I would like to close with part of the story he used. If you don't believe you live in the best country in the world, go to that country; if you don't think you live in the best state in that country, go to that state; if you don't think you live in the best community in that state, go to that community; if you don't think you have the best job in your community, get that job. Gentlemen, we have the best job in the best country, in the best state, with the best young people and I hope our best efforts are good enough.

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FACILITIES AND EQUIPMENT FOR AGRICULTURAL TECHNICIAN PROGRAMS AT STATE UNIVERSITY AGRICULTURAL AND TECHNICAL INSTITUTE FARMINGDALE, NEW YORK

The Farm

130 acres crops
20 acres fruits and vegetables
12 acres pasture, paddocks, poultry range

The Dairy Herd

44 cows
44 head of young stock

Year	Herd Average Lbs. Milk	Lbs. Butterfat
1960	14,074	531
1961	15,572	597
1962	14,839	568
1963	15,679	600

Beef

18 brood cows
1 bull
10 heifers
13 steers
16 calves

Sheep

20 ewes
1 ram
20 lambs

Swine

5 gilts
15 shoats
10 brood sows
2 boars
25 pigs

Poultry

2000 layers
pullets
meat birds
turkeys
7500 lbs. chicken and turkey meat
20000 doz. eggs sold annually

Buildings to House the Above Livestock

4 upright silos
Portable hog and poultry shelters
Meat and Meat Products laboratory including:
- Slaughter room
- Cutting room
- Walk-in refrigerator

Granery
Fertilizer and pesticide storage building
Machinery storage sheds

Ornamental Horticulture

20,000 sq. ft. of glass
4 acres nursery
6 acres instructional gardens and flowers
1 acre pinetum and shrub collection
Campus

Classrooms

Approximately 20 of conventional type
5 with tables
1 drafting room

Laboratories

1 Soil Science
1 Botany
3 Farm machinery and mechanics
5 Food Technology
1 Microbiology
1 Chemistry
1 Combination Botany and Zoology
1 Poultry killing room
1 Poultry evisceration and processing
1 Microtechnique
1 Flower arrangement
1 Propagating
1 Potting
1 Fruit grading and packing

Farm Machinery

12 tractors
4 plows
4 disc harrows
1 spike tooth harrow
1 potato planter
2 corn planters
3 grain drills
1 cultipacker
3 tractor cultivators
1 row crop sprayer
1 orchard sprayer
Several small sprayers and dusters
3 mowing machines
2 side delivery rakes
1 baler
1 field chopper with 3 heads
2 chopped feed wagons
2 silage blowers
1 potato grader
1 apple grader
1 livestock scale
1 feed grinder
2 silo unloaders
2 elevators
3 trucks
Several 2-wheel trailers
" 4 " "

Other Equipment

Roo washer
Blancher
Exhaust box
Retorts
Mixers
Stoves
Incubators
Poultry picker
Automatic feeder
Bulk tank
Milking machines
Gutter cleaner
Multiplate freezer
6 freezers
Plate pasteurizer
Tank pasteurizer
Homogenizer
Bottle washer
Bottler
Sweet water tank
Cooler
Milk pump
Ice cream freezer
Walk-in freezer
Large walk-in refrigerator
2000 bu. apple cold storage
Root cellar
Electric and gas welder
Microscopes
Blue printer
Drafting tables
pH meters
Ovens
Balances
Maps
Centrifuges
Colorimeter
Wiley Mill
Autoclaves
Chemical apparatus
Microbiology apparatus
Botany apparatus

Other Equipment (Continued)

Holding tank	Projectors and screens	Zoology equipment
Dynamometer		Majonnier tester

1963-64 Sales

Dairy and livestock products	$56,812
Eggs and poultry meat	12,375
Fruits and vegetables	15,300
Flowers, plants, shrubs, etc.	10,000

AGRICULTURAL TECHNICIAN PROGRAMS AND THE FARM EQUIPMENT INDUSTRY

by
Merritt D. Hill
President, J. I. Case Company
and
President, Farm Equipment Institute

Just two weeks ago the chairman of the board of the Pillsbury Company, Mr. P. W. Pillsbury, addressed a vocational agriculture teachers breakfast in Minneapolis.

In his brief, but very interesting talk, he included some informative statistics which speak well for vo-ag training and the vo-ag educators of this country.

According to Mr. Pillsbury's figures, a total of 2,758 vo-ag students graduated from Minnesota high schools in 1963. Six months later, 40% of these students had either entered the armed forces or had gone on to further their education. About one-fourth of these young people were enrolled in agricultural colleges or were taking agriculture-vocational courses.

And a little over 50% of the balance of the graduates were actively engaged in farming or closely related businesses. Thus, approximately 60% of these farm youths were engaged directly in agriculture, agri-business, or were attending ag schools. It can be assumed that those in ag schools intend to make some form of agricultural activity their life work.

Again I say this speaks well for vo-ag training and the fine work that is being done by the teachers who are devoting their lives to this worthy cause.

Even more encouraging in Mr. Pillsbury's figures was the fact that only slightly more than 1% of the vo-ag students were unemployed six months after graduation. Compared with the national unemployment average of 15-18% for this age group, I believe this is a wonderful testimonial. It indicates that there is a place for our agriculturally trained people in this country and it shows, too, that such people are eagerly being sought by employers. If this is true for those with only a high school education, imagine the demand for technicians who acquire another year, two, or three of specialized training.

And that is what we are here to examine today. At least for the next hour or so let's look at the relationship of the agricultural technician and the farm equipment industry.

Briefly, what exactly is the farm equipment industry? There are two distinct, but related, divisions to this business. One, of course, is the manufacturing end -- the other is distribution. Each needs the other. Together they comprise the farm equipment industry as we see it today. And because each is so vital to the other I'll attempt to cover them both here today.

Next, exactly what is an agricultural technician in the eyes of the farm equipment industry? Actually I believe he can be anyone who has had some specialized training in a technical area and is applying that training in a practical way. Now a technician can be such in varying degrees. He may be a person who mechanically checks out operations of a machine, follows a test, or performs some other function to which he is assigned. Or he may be engaged in some action which has a greater degree of responsibility but somewhat less than that assigned to the fully qualified engineer. In other words, a technician can have varying degrees of responsibility dependent upon his abilities and training.

In the farm equipment industry, like in others, technicians are employed in a wide variety of jobs, directly or indirectly supporting the work of all types of engineers or other specialists, under close supervision or with relative independence. They may perform relatively routine tasks or they may perform complex work involving intricate or delicate instruments or apparatus.

By the performance of such assigned duties the technician thus relieves the engineer or scientist or executive of the more routine aspects of their responsibilities. These men thus free themselves for the more important parts of their job to take advantage of their more advanced knowledge and training.

At the same time, through diligent and thorough performance of his tasks the technician may advance to a full professional status, particularly if he supplements his on-the-job experience with additional study and acquisition of theoretical knowledge.

Specifically, how many technicians are there in the farm equipment industry? I'm afraid that is rather difficult to answer. It would require a wild guess which I won't hazard. Perhaps there are sources of such information. I haven't located a complete and accurate one.

A government report[1] recently released shows results of a survey made in 1961. This report indicates that there were approximately 5,500 technicians in the farm equipment industry and that this figure worked out to 79 technicians for every 100 engineers and scientists in the industry. Also the report indicated a 5% increase during the previous year.

I heard of one survey recently that indicated the need in the State of Iowa alone for 1,000 additional dealer service technicians. If Iowa dealers can absorb that many, what about the rest of the country? And what about those needed by the many manufacturers in this business?

Part of the reason for the inability to accurately determine the number of technicians required lies, of course, in that the title of technician is applied to varying types of jobs. There is, as far as I can determine, almost no standardization of titles between firms. And even less agreement exists as to what qualifies an individual as a technician. To narrow it down to agricultural technician throws up another set of standards and qualifications.

You might also ask -- Is there a growing need for technicians in the farm equipment business? To this I'd have to answer with a definite "Yes".

Ours is different than other industries in some ways, similar in others. Perhaps because of the nature of the "beast", our industry does not require the highly automated procedures found in industries supplying consumer goods in countless numbers. Our production, although automotive in nature, needs nowhere near the automatic methods employed in manufacturing automobiles. Actually this is a matter of economics based on the lower production volume.

Even so, we are advancing technologically. Ten years ago a computer was unheard of in this business. Today each of our plants has a highly developed computer system and the largest plants have complex computers which perform many and varied tasks. All of this, therefore, requires technicians for operation of the computers and related equipment as well as other modern machines. This is only one example.

Incidentally, these technological advances have not eliminated employees. Actually today our company, for one, is near its highest peak of peacetime employment and I'd guess the same probably may be true industry-wide.

You are well aware of the trend to fewer farms and larger ones. The need for technicians on such larger farms has probably been discussed, or will be, during the course of your program. This trend forces changes in the operations of the farm equipment industry, too. And affects favorably the employment and utilization of technicians.

Our engineers are constantly under pressure to come up with the type of machinery necessary to meet the modern needs of food and fibre production. The technician, again, as the engineer's helpmate plays an important part in this development.

I can say for almost a certainty that this industry as a whole would prefer to hire people who have an agricultural background rather than those without this experience. For whatever job you might name, if a person has been reared on a farm he has the knowledge of the situations and problems which exist there. This gives him an inside track.

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[1]U. S. Department of Labor, Bureau of Labor Statistics, "Scientific and Technical Personnel in Industry in 1961 -- NSF 63-62." Prepared for the National Science Foundation.

I can't say it is an automatic or magic phrase for being hired to say, "I was born and brought up on a farm." Many -- probably most -- of our engineers or employees in any area never lived or ever worked on a farm. But I do believe it generally helps to have had that experience.

Not only is the experience helpful but also we find that the farm-reared young person often has good work habits and greater stability and character than the urban youngster. Now I do not mean this to sound like a hard and fast rule. But the farm youth -- even today -- is not exposed to the many diversions of interest the city boy or girl is. Also, the farm youth usually directs his activity in farm-related directions through 4-H or FFA work. Add to this the fact that the farm family is a more closely knit unit than the average city family and you have the reason for a larger percentage of farm youth growing up as stable citizens as compared with city young people.

For this reason we in the farm equipment industry look to the farm for a supply of recruits to join our ranks. Although this supply is dwindling it will ever be there because all the young people born on the farm definitely cannot be used on the farm and eventually must seek other pursuits. We hope to interest a good percentage of them in becoming associated with the manufacturers of farm equipment.

Well, now that I've put in the classified ad for help wanted, I should get back to the subject being discussed. Perhaps we should explore it now in a more specific nature.

The farm equipment manufacturer's business consists of these broad categories of activity:

Product planning
Engineering
Materials management
Manufacturing
Marketing
Finance
Corporate relations

Every one of these areas definitely has need for, and actually employs, technicians. However, all do not specifically need technicians who are agriculturally oriented, whereas, others can use the specially trained agricultural technician to tood advantage.

Let's look at these areas one at a time.

Product Planning, as its name implies, is the forward looking area which anticipates the needs of the farmer several years ahead of time. Obviously here is a division where a thorough knowledge of agriculture is a prime requisite. Added to this is the need for technical engineering training as well as a need for foresightedness and imagination. These people need the kind of ingenuity exhibited by men like John Deere and Leonard Andrus who developed the first steel plow; like Cyrus McCormick who produced the first reaper; and like Jerome Increase Case who visualized and then produced a far more effective threshing machine than the groundhog threshers he first used and sold to mid-western frontier farmers way back in 1842.

A very important technical function in the area of product planning is that of research -- product and market.

Those in charge of the product planning function certainly need technicians to whom they can turn with embryonic ideas for further development before referring them to the engineering department for a more practical review and actual design.

This, then, brings us to Engineering -- the area where more technicians are used than any other as far as industry is concerned.

I mentioned a survey earlier which indicated there were 79 technicians in this industry for every 100 engineers. Although the survey was not explicit I believe they intended to indicate that these technicians were in the engineering area -- not spread throughout the balance of the industry where technicians most certainly are used.

Here are just a few of the technician type positions which are a part of this industry in the engineering area. Positions for which there are great needs:

Research & development technician
Systems test technician
Production supervisor
Field engineering assistant
Testing technician
Design technician
Fluid power technician
Diesel engine specialist

And the list could go on and on. At any rate, engineering offers tremendous opportunities for the technical-minded individual who for some reason did not acquire a degree in engineering and yet is capable of and willing to go beyond high school in his training. And, as previously stated, a technician's position is a stepping stone to higher places for the ambitious individual.

A fairly new concept in industry is known as materials management. I perhaps can best define this by comparing the director of that function with a company controller. As you know, the controller is a financial officer who is fully aware of and controls those areas of a company's operations relating to money -- both the income and out-go.

So it is with the individual directing materials management. He supervises the movement and handling of materials within a company. They may be raw materials, work in process, or finished goods.

This type of operation calls for technicians in some areas. Again, agricultural training is not essential but is desirable. For instance, value analysis is a very vital part of this work. This activity calls for people who recognize the balance between design, cost, and operating needs. An example would be of a person who can look at a part and determine whether it can be made better for less money.

Although part of this talent might be intuitive a great deal of the ability comes from training, experience, and environment -- in our case with agricultural surroundings.

Procurement, or purchasing, is a major area of materials management. This type of work calls for people with a definite type of training to perform their specific tasks. They must be creative thinkers, not in the development of great long range projects, but more so in meeting everyday problems and situations which arise.

Now let's take a look at the manufacturing area of the farm equipment industry. When you come right down to it we can't claim that this area is seeking agriculturally trained people diligently. The manufacture of an agricultural tractor or a plow is not much different than the production of a refrigerator or a motorcycle.

The same manufacturing processes are used. Parts are made and assembled. Except for interest, on the part of the technician, agricultural background would not contribute much.

On the other hand, the farm boy looking for a job in industry could certainly find it here and the one looking for a job in the technician area might find it among these:

Quality control co-ordinator for testing machinery off the assembly line
Quality control co-ordinators for checking on vendor supplied components and materials and to determine if suppliers are initially qualified and continue to be qualified to furnish materials
Quality control statisticians to watch for tooling deficiencies and other such items
Field technicians who observe equipment in operation and look for manufacturing deficiencies that might show up only in field use
Junior manufacturing engineers for tool design work
Shop supervisors, including foremen and general foremen positions are ideal objectives for technicians

Laboratory technicians, such as for the chemistry lab, to test steel, paint, etc.
Paint technicians are needed to keep a constant watch on cleaning and degreasing procedures, consistency of paint, proper application, depth of paint, and other such details
Foundry technicians who must constantly test sand, watch cupolas for charge and proper melting characteristics, plus other factors in producing quality castings
Gauge technicians who watch specifications and standards
Production control technicians who serve as dispatchers -- a vital, responsible position
Time study experts improve production efficiency
Data processing programmers and tab operators are truly technicians in modern manufacturing processes

So I say again, there are many jobs in the farm equipment manufacturing business for farm youth although little of it requires their specific background. What it does require -- as in all technician positions -- is interest in the job, leadership qualities, good judgement, and training and experience in the particular field of endeavor.

Once the product is built it must be sold. This is the function of the marketing division. Right now I'd like to discuss this from the standpoint of the manufacturer in selling to dealers -- later I'll cover the dealer's part in this subject.

In marketing the specialists are not referred to as technicians but certainly they qualify as such. For instance, the salesmen -- often referred to as blockmen, territory supervisors, district managers, and by other such terms. These men of almost positive necessity should have agricultural roots. Training is usually in the company's own organization but courses in salesmanship, psychology, and other similar subjects are helpful.

And a step or two upward from this are positions like sales promotion manager, sales manager, and branch manager. These are all field positions in the branch in addition to specialty jobs like parts manager, service manager, machinery supervisor, etc. -- all requiring special training and all best filled by agricultural specialists -- technicians, if you will.

Marketing also includes such positions as product education specialists -- the people who design the programs for informing both field people and dealers about new products, as well as standard items. Real technicians, these.

And advertising -- here, too, is a place for agriculturally trained people who are in addition, trained as writers, promoters, and in other ways.

You may not think this too important, but when you put something into print that will be read by a potential audience of several million farmers you just can't take a chance on looking ridiculous. One obviously amateurish statement or an impossible illustration could put a questionable stamp on your capabilities.

Or how about the artist's illustration that showed a two-row cultivator on a tractor but three rows were revealed being cultivated behind the tractor?

Then there was the fence company which showed their product but also in the picture was a harrow hitched to a tractor. A couple of children were standing on the harrow and someone was at the tractor controls. This illustrated poor safety practices. A farm equipment manufacturer can't condone that.

Yes, we must be careful of such errors as well as those that appear in copy. The advertising technician who knows his agricultural subject can prevent them.

One particular marketing position which really classifies as a technician's job is one sometimes referred to as product manager. What I mean is a man who spends most of his time in the field watching his company's product in action as well as the products of competitors. These men must know their product and that of the other company's. They watch for trends in new machinery. They help introduce new products. They are the liaison between the sales department and the farmer himself. These men

are so specialized they are assigned to a particular line -- such as tractors only, or tillage tools only.

The service department in the farm equipment manufacturer's operation is full of agricultural technicians and more and more are needed. Here is definitely a place where agricultural specialists are sought and with farm equipment becoming more complex better trained people are required.

It is no longer possible to jump from high school into such a job. Several years of specialized education and training are necessary. In hiring a young man to enter the field service section of our company -- and I'm sure I speak for the industry -- we look for a farm-bred youth who has completed high school and gone on to college for at least a year or two, or has taken specialized courses at college or in vocational schools. He must have leadership qualities and good judgment besides a thorough knowledge of farm equipment. We may even find him in a retail dealership.

After we hire him he goes through intensive training in our own organization both at home office and at branch level. And he is constantly kept up-to-date with refresher courses.

The service technician must be able to diagnose troubles as well as repair equipment. Although we don't expect our company service people to perform the actual repair work they must be able to do it if required. In addition, they must be capable of conducting meetings and service schools for dealers as well as determine whether warranty adjustments are justified or not.

In other words, the service man of the manufacturer is not a "grease monkey"; he is really a manager.

It is such positions as these which are really technician positions and which do not show up in statistics. Thus the real opportunity for technicians in this business is far greater than any statistical survey might show.

I listed two other areas in the farm equipment business requiring technicians but since these, like manufacturing, seldom require agricultural specialists we can dismiss them quickly. Not that they are not important, because they are. And they, too, welcome farm youth -- but don't put that down as a prime requisite. I refer to the financial area and that of corporate relations.

Each of these areas has its technical specialists who need not have college degrees -- accountants, computer operators, personnel specialists, labor experts, etc.

Now here is an area you probably may never have given a second thought to as a location for agricultural technicians. That is in the field of credit. Several of the full-line manufacturers have their own credit corporations. Others work closely with independent credit companies. In every case, however, the manufacturer -- particularly in his field credit people -- wants people knowledgeable in agricultural activities. Just like the rural area banker, the manufacturer is aware of the value of the credit man who knows how the farmer thinks, works, and lives. The farmer will trust and have confidence in someone who "talks his language" far more than someone who is completely unfamiliar with agricultural pursuits.

Therefore, the credit man who helps arrange the loan as well as the collector should be agriculturally-oriented.

This has been a quick review of some of the technical positions in the farm equipment industry -- but sufficient for our purpose here today.

One of the questions posed to be discussed here was, "What should these agricultural technicians know and be able to do?" Obviously, to answer this would require taking each particular technician position separately and analyze it. Since we do not have that much time, suffice it to say that each has its particular specialized requirements. In some cases there are schools to convey this information -- especially in the general areas rather than the specialized agricultural areas. But most of the training comes right on the job. And as stated before, preference is exhibited for those people who have farm background.

Another question suggested was -- "What kind of working relationships should be developed between the educators responsible for technician training programs and the farm equipment industry?"

First of all, I must say with certainty that there are too few such programs; that is, too few agriculturally-oriented school programs.

The typical engineering technician course, computer technician course, and specialized training courses in many areas are available in almost every community throughout the country. Cities of 25,000 people have them. The vocational schools in large municipalities have them. Colleges and universities everywhere have them.

I would like to talk for a few moments about a school for the training of what you might call technicians for business; that is, for business in general, including agri-business. To my knowledge there is no other educational institution exactly like this one.

I refer to the Northwood Institute[2] which was founded in Alma, Michigan, in 1959, and now located at Midland, Michigan. This school is actually a preparatory college for people entering the business profession. It is a two-year course which provides a practical bridge to business.

The philosophy of the school which is impressed upon its students may be summed up somewhat as follows:

> "Learn what you can contribute to the American system of free enterprise and you won't have to be concerned with the compensation you will receive."

This school attempts to inculcate in its students all of the American ideals of the various "freedoms" plus the well-known American heritage of "work".

This school teaches courses in practically every phase of business and during its five years of existence has the enviable record of placing every single one of its graduates. American business certainly needs additional training grounds of this type. Those of us in the many areas of agri-business certainly could utilize graduates from this type of school and as I have said before, if they were agriculturally oriented they would be of additional value to our type of work.

There is a definite consciousness for the need for technicians with less than four-year college training. And these needs are being met. The main problem seems to be that there are insufficient candidates. But more of that later. As for school programs with agricultural emphasis, they are few and far between. True, there are short courses to prepare better trained farm operators and there are courses for farm equipment dealers -- which I also want to go into detail about later -- but for technician training for the farm equipment industry specifically, this is virtually nonexistent.

Perhaps this is partly the fault of the industry itself. We may not have sufficiently encouraged this type of course in the schools.

Wherever the fault may lie it is a fact that such schools would be of great help. And industry would help in their establishment and continuity. The management of farm equipment firms would gladly work closely with schools in this activity. The larger companies would be best equipped to assist in this. The smaller companies, merely because of lack of personnel, might find themselves hard-pressed to be of much help but surely those in very specialized phases, I'm sure, would do what they could to help educate youth in the modern methods of agricultural production.

Industry has a fine reputation for working closely with the schools, with the vo-ag instructors in developing courses, furnishing materials and equipment, supplying lecturers, offering assistance in many ways. In fact, some of the larger manufacturers have people assigned to the work of college and university relations. These people would be especially helpful in developing technician courses.

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[2]For information contact: Henry Little, Campbell-Ewald Company, 3044 West Grand Boulevard, General Motors Building, Detroit, Michigan 48202.

Another way in which industry could -- and is willing to help -- is through cooperative work-study programs. Presently most of the full-line companies do just this in working with agricultural colleges. Students may attend college for a quarter or two, then work for a quarter or two. The combination of school and work differs in various courses and various colleges but is mutually worked out.

There is no reason at all why on a technician program of, say, 18 months the student could not attend school for six months, work six months, attend school six months. The combination of theory and practice would produce a well-rounded technician.

As stated previously, the manufacturers would gladly supply people to assist in advising how to organize courses as well as to lecture to classes. However, it cannot be expected that they would provide a sabbatical leave to key personnel to teach or otherwise assist in such programs. This is a bit too much to expect. However, should the program be considered worthy of cooperation to such an extent it is possible this could occur. Each request for assistance from schools is considered individually by all manufacturers.

But this is a two-way street. Educators should come to industry for advice as to what kind of people are necessary now and in the future, and what kind of training is suggested to qualify prospects for jobs in industry. This should be a continual contact so that schools are constantly up-to-date on the needs of industry.

In addition, industry should further the practice some companies engage in and that is the providing of scholarships for specific areas of study.

Now I would like to review in detail for a few minutes a program of agricultural technician training which has fairly widespread recognition. This is in the area of dealer operations.

One of the world's great contemporary salesmen -- "Red" Motley -- has often said, "Nothing happens until someone sells something."

How true. We can engineer and manufacture and distribute a product to a dealer. But unless that dealer sells that product to a customer who puts it to use nothing really happens.

The farm equipment industry relies upon the dealer organization to sell its wares. Of course, the manufacturers help the dealers in every way they can but the dealer still has to sell the product, service them, supply parts for them.

And the dealer has to perform those functions in the most efficient and profitable manner. It is, therefore, gratifying to note the way in which dealers, dealer associations, and colleges and vocational schools are cooperating and collaborating on technician training programs.

I don't wish to offend any schools by failing to recognize them for their courses so I won't refer directly to any of them. Most of them, however, are operated in close cooperation with their respective state dealer associations.

A study of the programs offered by these various schools shows some similarities -- some wide differences. To generalize one might do it this way. Those courses given on college or university campuses lean slightly or heavily toward the business management side, whereas, those taught at the vocational school level seem to concentrate on the training of servicemen as better mechanics.

Now there are exceptions. For instance, a vocational technical school in Minnesota has a fine course for dealer partsman training which has heavy emphasis on management operations such as merchandising and salesmanship, accounting practice and inventory control systems, and clerical work, in addition to farm equipment assembly and disassembly. In fact, the course is about 55% on the business area and 45% mechanical.

Nor do these courses shirk the associated knowledge which is so necessary for good dealership operation. For example, most universities include such courses as soil science, drainage and irrigation, rural electrification, and similar subjects to give the trainee well-rounded agricultural knowledge.

In most cases these schools also incorporate classes in speaking and writing and social graces. This type of course is most important.

The farm equipment industry is favorably impressed with these attempts to improve dealership operations through the training of specialized technicians in service, parts, and dealer management. However, most full-line companies provide their own assists in these areas, too. The branch houses, as well as home offices, constantly provide training and assistance for both parts and service men. We are aware of excellent training schools offered by most manufacturers to dealer people. These are not intended to substitute for the courses set up by the schools but to supplement them. The manufacturer's courses concentrate on their own brands primarily. The dealer mechanic must know all types of equipment. This he can be taught at the general school level and through on-the-job experience.

Also, the manufacturers provide management training courses to assist their dealers. By already having such facilities the manufacturers are ready, willing, and able to assist schools in providing the right kind of basic training for beginners in this field.

You may be interested in some comments from educators relative to these programs -- their success, their shortcomings.

In general, reports from the schools reveal that there are more jobs available than there are qualified people to fill them. The schools report that it is difficult to find enough people to take their technician training courses. They see it this way -- most people go into four-year courses because of today's demands for degrees. Also because farm equipment and farm business is so complex today it requires more training than heretofore to accomplish the tasks. Thus the two-year course may lack depth, some teachers claim.

Another deterent, as the schools see it, is wages. It is their claim that dealers do not pay a high enough starting salary and yet expect a lot from the new trainee. They would recommend consideration of a starting salary based on potential, not lack of experience, and at the same time realize that the new man must take a few months to become adjusted. They feel this will pay off rich rewards in time.

Another problem facing the schools is that too many farm boys are still leaving the farm to go into other pursuits. Educators feel that the farm image is still not as inviting as it could be. Publications circulating in agricultural areas lure the farm youth into electronic, aircraft, and other areas of more romantic sounding futures. No inducement is given to stay on the farm or in agri-business.

One school reported that of 97 graduates from its farm equipment service and sales program, over a period of six years, 43% were employed by farm equipment dealerships and 17% in farming or in other agri-businesses. The remaining 40% went into automotive, construction, or other industry, plus the armed forces, or continued on with school.

The school spokesmen are highly complimentary regarding the cooperation received from agri-business firms in the operation of the schools.

Today we are faced with another situation. Actually, it produces sort of a paradox.

We hear so much of unemployment due to loss of jobs through waning industries such as mining. Or the claim that automation has replaced certain skilled or unskilled people. Or that people are leaving the farm in droves. To help combat this the federal government has instituted the Manpower Development and Training Act.

If, as has been reported, there are just not enough good farm mechanics and partsmen to go around, this should provide a fine source of employment for retrained people. Some of the people currently unemployed according to government surveys are farmers who have turned from farming. They would be naturals for retraining. However, to my knowledge, little has been done in this direction.

Three such retraining facilities have come to our attention. One is at Higginsville, Missouri, and was started by the Western Retail Implement and Hardware

Association of Kansas City. Another -- a special 48-week course at Milford, Nebraska's vocational technical school which already had a course for farm mechanics in operation. The third is being readied in Wausau, Wisconsin. I presume there may be others.

The Farm Equipment Institute through its educational policy task committee is working with the U. S. Department of Health, Education, and Welfare on this problem. In fact, on this very day this committee is in Washington discussing the various ways in which the farm equipment industry can cooperate in retraining people to fill jobs that are ready and waiting with people who have the aptitude for them and are trained to fill them satisfactorily.

Among the aspects this group is exploring are the true employment opportunities available, the purpose for the training, the educational level at which is should be conducted, and the relation to programs now in existence.

The Farm Equipment Institute, of which I currently have the privilege of being president, is a trade association of most of the manufacturers in this business. Although definitely competitive in the conduct of business, this group unites strongly for universal beneficial action not only for the industry itself but for dealers, and in many ways which save the farmer money and improve his operations. So it can be with this latest activity -- coordination of effort to obtain trained people for the dealers and the manufacturers while at the same time supporting the government MDTA program.

We have spent some time covering the highlights of the topic at hand. I'm sure it is obvious that this subject alone could easily develop into a full week's seminar.

I'd like to summarize briefly:

1. Many technician positions await the trained and qualified person in the farm equipment industry.

2. The individual seeking training in this area should have interest in it, ambition to succeed, preferably some agricultural background or experience, and leadership qualities.

3. The farm equipment industry stands ready to share its know-how and contribute in any way it can with personnel, equipment, study aids, and the like, to help institute and operate such programs.

4. While learning the trainee can pick up experience and some of his expenses through a cooperative work program.

5. Finally, the industry also will help in any practical way it can to promote the Manpower Development and Training Program.

In closing, I would like to repeat my plea to you to work closely with industry in developing the right kind of people in the right kind of way for all phases of agri-business. Encourage farm youth to investigate first the advantages of remaining in this area -- his chances of advancement are probably better here than elsewhere.

And finally, keep up the good work of molding the character of our farm youth. We're proud of the job you are doing.

Mr. Merritt D. Hill, President of the J. I. Case Company and President of the National Farm Equipment Institute, is shown visiting with Dr. Walter M. Arnold, Assistant Commissioner for Vocational and Technical Education, U. S. Office of Education, and Dr. Robert E. Taylor, Director of the Center, following his presentation at a luncheon meeting.

One of the stimulating features of the seminar was the "table talk" following the presentations of consultants. A table group is shown discussing questions to be raised with the consultant. Members of the discussion group are (left to right): Robert Hodges, Oklahoma; L. C. Dalton, New Mexico; Windol Wyatt, Iowa; F. E. Kirkley, South Carolina; Floyd Johnson, South Carolina; Jesse Taft, Massachusetts; Neal D. Andrew, New Hampshire; and Robert E. Taylor, Director of the Center (standing).

PANEL:
DEVELOPING EFFECTIVE RELATIONSHIPS BETWEEN AGRICULTURAL TECHNICIAN PROGRAMS AND OTHER AGENCIES, ORGANIZATIONS, AND INSTITUTIONS

Moderator: Roy M. Kottman
Dean, College of Agriculture and Home Economics
The Ohio State University

LaVern R. Freeh
Head, Department of Agricultural Short Courses
University of Minnesota

George G. Greenleaf
Executive Vice President
Ohio Grain & Feed Dealers Association, Inc.

Robert M. Knoebel
Director, Technical Education Branch
U. S. Office of Education

Introduction by Dean Kottman

The mission of our panel here this morning is to offer direction to a discussion involving the development of effective relationships between agricultural technician training programs and the several organizations represented by the members of this panel. These men represent (in alphabetical order) the Head of the Department of Agricultural Short Courses at the University of Minnesota; the Executive Vice President of the Ohio Grain and Feed Dealers Association; and the Director of the Technical Education Branch in the United States Office of Education. When my own background in the areas of undergraduate instruction, research and extension is added to the specialized backgrounds of these men, it would seem to me that we have the potential for our coming up with a rather wide range of relationship potentials as they might relate to our respective organizations and the agricultural technician training programs which are the subject of this seminar.

At this time, I should like to present each member of the panel so that you will know a bit more about the person speaking to you. I will then ask each individual to make a brief statement. When all four of us have completed our formal presentations we hope that there will be a considerable amount of discussion among the four panelists as well as questions and comments from you folks who are the participants in this seminar. We hope that each one of you will respond freely in terms of questions and discussion.

Presentation by Dr. Freeh

I believe that the basis for effective and efficient relationships between agricultural technician training programs and organizations, agencies, and institutions is understanding.

I believe this understanding must begin with each of the various agencies, units, and institutions concerned with, or responsible for agricultural education, recognizing that the other units and agencies exist--and that what each unit is doing is important--and exerts an influence on all units and institutions in agricultural education.

Beyond recognizing the existence of the various units and agencies, we must develop a clearer understanding of each other: How we are organized; what we are attempting to do--and why--and let's do this because we want to, not because we have to (although I'm not sure that we aren't rapidly approaching the point where the latter is the case).

As a coordinated body (all units, agencies, and institutions), let's analyze the environment and situation in which we find ourselves--in which we are moving to develop technician training programs. Then, let's pool our available resources and determine what needs to be done--why it needs to be done--how and where it might be done.

Let's push all of the chips into the center of the table and then use them in the most effective and efficient manner possible.

How do we develop more effective and efficient relationships? I would offer these suggestions:

1. Let's begin by taking the initiative--all units and agencies involved. Let's divest ourselves of any "defensive," "standoffish," or "lack of time" attitude and invite people to sit with us--and advise us as we develop our programs and policies--and let's not wait for the other unit or institution to take the initiative. Let's do it ourselves.

2. Let's give of ourselves and our resources. By word and by deed, let's make it be known that we are interested in working in close coordination with all other units and institutions in developing not only the technical training program, but all other agricultural education programs--at all levels.

3. Let's take some time to redefine our roles, responsibilities, resources, and competencies--as we see them--and let's ask the other units and institutions to do the same. Then, let's get together and hold discussions. With this as a base, let's come up with a state plan which encompasses agricultural education programs at all levels--and in all areas--subject matter as well as geographical. If we need to be a gadfly to get the job done, let's be a gadfly.

4. Let's communicate--let's not operate in isolation to the extent that we sneak up on each other or surprise each other (knowingly or otherwise)--and in this manner lay the foundation for rumor, misunderstanding, and inefficient and ineffective relationships.

If it seems I am overstating the case, just reflect on how many times you have heard people say, "What we need to do is to involve more people in our discussions and in our planning in order to be truly successful," but--and here is the key statement--too often these same people go on to say, "We didn't do this too well when we developed such and such program (because of lack of time, urgency of developing the program, etc.), but it should be done."

It would seem that we need to establish some new priorities for the use of our time--and possibly on the top of this list we should place the development of more effective and efficient relationships.

Where does one begin? I would say--

Why not begin with a two- or three-day state seminar involving all units and institutions responsible for, or concerned with agricultural education--and I include business and industry? I would see the objectives of this seminar to be--to develop a better understanding of each other--our roles, our responsibilities--and our plans for the future.

As an outgrowth of this seminar--I would see the establishment of a state coordinating-advisory committee for agricultural education--with representation from all units and institutions involved. This committee (in an advisory capacity) would have responsibility for developing a state plan for agricultural education which outlines such things as:

1. The needs for agriculturally trained workers;

2. Type and level of training and education the various types of workers require (including technician training programs);

3. A description of the various units, agencies, and institutions which might be involved in the various types and levels of agricultural education;

4. Some guidelines for developing and carrying out the various programs.

Perhaps this sounds trite and a waste of time--but is there a better basis for developing effective and efficient relationships?

Beyond developing a state plan, I believe the state advisory committee should have responsibility for:

1. Promoting and coordinating research;

2. Stimulating and developing more effective communications.

I am not advocating that every time a unit or institution wishes to plan or do something it should assemble the committee. Nor am I advocating that the committee serve as a state governing body for agricultural education. I am advocating, however, that such a committee set some guidelines for the future development of agricultural education at all levels in the state.

Once these guidelines have been developed, in order to maintain effective relationships, I believe that the committee should meet periodically during the year. In addition, I believe that an annual two- or three-day seminar should be held involving broad representation from all units and institutions involved (the National Center idea on a state level--and who's to say this week hasn't been well spent?).

And why not a state publication for agricultural education, published at least quarterly, which contains information on happenings, developments, plans, and projections as related to all agricultural education programs at all levels. I offer it as an idea.

Tying my remarks back to my own area of responsibility, university short courses, brings us to the inevitable question--where do university short courses and short course units fit into all of this?

Before I give you my answer to this question, let me attempt to clarify the term "short courses". I do this because a national study we conducted last year indicates that while there is a great deal of similarity between short courses and short course units around the country, there is also a great deal of difference. In fact, the only similarity in some cases is the title.

The term "short course units" as I shall use it today refers to those units which have responsibilities for post-high school, non-degree, or less than B.S. degree programs offered by colleges of agriculture or their equivalent at our land-grant institutions. These programs can be classified as:

1. Collegiate or post-collegiate (two years or less in length);

2. Non-collegiate programs (one to two years in length or less than one-year in length);

3. Specialized short courses;

4. Conferences and workshops.

A more detailed description can be found in the national report. Only one institution offers programs in each of these areas, while quite a number offer programs in two or more areas.

Some basic characteristics of short course units are:

1. They have a broad range and variety of resources at their disposal.

2. They possess mobility and flexibility in their programming.

3. They are in a position to react quickly to problems and situations.

4. They are not, for the most part, tied as closely to tradition, regulations, established practices, curricula, or time schedules as other units concerned with agricultural education.

What is the role of short course units in developing more effective and efficient relationships? I will answer the question in this manner. Many short course units have for years been carrying out the types of programs we have been discussing this week. In doing this, they have met and overcome some of the problems we are concerned with. They have developed technician training programs; they have trained people for technical occupations; they have placed people in technician positions. They have a close tie with university faculty, with business and industry, with employers, with teacher educators, with state supervisors, with vocational agriculture instructors, parents, and others who influence prospective students, and they have built a following in many walks of life.

Because of this, they are in a position to offer an abundance of information and advice. They are in a position to offer assistance, and they are in a position to coordinate.

In their unique position--with one foot in the university, one foot in business and industry--working closely with all units responsible for or concerned with agricultural education, they can serve as a most effective means or basis for developing effective and efficient relationships. I believe short course units have an inescapable responsibility for doing all they can in this regard and I believe other units have a responsibility for making sure that they do it.

Thank you.

Presentation by Mr. Greenleaf

I feel sincerely honored to have this opportunity of speaking to you for a few minutes this morning as a part of this panel interested in the relationships of the agricultural technician training programs to other agencies and groups. I believe our panel is also singularly honored by the presence here today of such a large number of outstanding leaders in agricultural education, including several who have technical programs of quality and depth already in operation. These following remarks are to serve as a stimulant for your questions in the discussion period that is to follow.

The topics that you have discussed at this National Seminar during the past three days have been of particular interest to me. The need for technicians in agriculture, the curricular content, staffing, and the other topics are all of the utmost importance, but let us be candid with each other -- at their best they do not produce a quality program of vocational education without strong, friendly, helpful, and challenging relationships between the technical program and the user groups or other educational institutions. My remarks primarily concern the relationships with trade associations, agricultural organizations, and prospective employers.

The technological explosion in all of agriculture, plus the rapid expansion of the off-farm phase of the agricultural enterprise, has brought about an increasing need for semi-professional workers -- agricultural technicians. In most areas of agricultural endeavor, the trade associations or agricultural organizations recognized the need several years ago. Most of them are busy, in their own way, in developing and training these technicians for their particular area of agricultural service.

Our Association, The Ohio Grain & Feed Dealers, serves a membership of about 800 country elevators, some feed mills and grain terminals, including both the independent and cooperative industries. It occurred to me that you might be interested in the relationships that our own association has developed in the search for ways and means to obtain technically-trained personnel for our industry. We have encouraged and assisted in the development of a technical program in agri-business in a nearby city school system. We helped in the recruitment of students, in the development of a program of instruction, and plan to assist in the placement of these young men for

training. We are in our second year of arranging on-the-job training for degree program students from Ohio State's College of Agriculture. The student must complete a marketing textbook and write a critical paper on his placement experience. Stress is placed on the learning experience -- the after-work conferences with the manager, etc., instead of a lucrative wage incentive. Much more use of this practical training tool could be helpful in building industry-education relations.

Our industry is proud of the basic management development program that we have built with the assistance and cooperation of the Ohio Cooperative Agriculture Extension Service and Ohio State University's College of Agriculture. In the four years of its operation we have graduated 67 managers from this 15-day educational program. In addition, we have about 200 more managers in the program with 3 to 12 days of work already completed. We have recently finalized plans for a "graduate" program for those that complete the basic program.

Our Association's Education Committee has always developed and planned educational programs with the leadership and assistance of representatives from educational institutions. In fact, as of last year, the relationship had been so strong, frank, and friendly, that three educators were included on our 17-member education committee. One representative is the coordinator of the technical school, one from the Agricultural Economics marketing area, and one from the College of Agriculture -- the administrative assistant to the Dean. We must plan these relationships -- work to create situations for joint working relationships. In addition, much help can be given the educational institutions through use of trade leaders as advisors and consultants for testing your new programs and ideas. This is working well with both the College of Agriculture and our Vocational Education Section of the Ohio Department of Education. Necessarily, the relationships between a technical program and a group will vary with the management, personality, and organization of the respective agencies or groups.

Never lose sight of the constant need to keep others informed of your program and plans. Frequent use of the telephone, luncheons, a golf date, etc., will bring about the close personal ties that allow people to confide in each other freely and with confidence. It can be one of the most important ingredients of your technical training program.

I would like to spend a few minutes in the area of problems that seem important if we are to be both effective and efficient in developing and maintaining adequate relationships between industry and the educational institutions in the promotion of a technical level education in agriculture.

1. Leadership -- it may take some nerve to stress this factor to you, the leaders of many fine educational institutions. However, I honestly believe that responsible, daring, creative leadership is needed -- both in your ranks, as well as in the industries of agriculture, of which I am a part.

2. Appreciation -- by educators, of the worth and value of technically-trained people in agriculture. Time will not permit me to adequately spell out the thrills that have been mine in leading frustrated, young high school students into a role of leadership in some agricultural business.

3. Appreciation -- by educators, of the role of agri-business in this complex agriculture of today. Your teachers need to have a first-hand appreciation of the role of service organizations to farmers.

4. Recognition -- by industry, that the educational institution can train technicians for their industry. Many of you have stressed advanced work to the detriment of technically-trained agricultural people, and this ground will be hard to develop.

5. Communication -- both industry and our educational institutions often fail to do the necessary and easy work in communications. To accomplish this will take communicators and listeners on both sides.

6. Scholarships -- industry is interested in being sold and when it is once sold will give thousands of dollars to young people as scholarship

grants if the product of your technical program can serve the industry.

It has been suggested that perhaps some specific suggestions to educators might act as a summation to this short paper. I would like to list these seven suggestions as follows:

1. Gather an advisory group from agriculture -- examine your critical technician needs.

2. Sell the idea -- to administrators, industry, staff, and other institutions.

3. Develop the program -- keeping a technically-trained person and the industry in the foreground.

4. Pull all stops -- to work the plan you and industry have made.

5. Develop aid or scholarship programs to boost student morale.

6. Keep staff sold -- use industry for recognition.

7. Improve program constantly with industry's help.

In closing, I sincerely challenge you to get out on the frontier of education -- develop and work with your agricultural industry on an agricultural technical program for the benefit of your farm people and our youth of the 60's.

Presentation by Dr. Knoebel

I am going to try not to duplicate what has been said by Mr. Greenleaf and Professor Freeh. Their presentations have been excellent and they have indicated the direction essential for effective relationships between agricultural technician programs and agencies, organizations, and institutions. I would like to use a few minutes to describe to you some of the relations of the Technical Education Branch with agencies, institutions, organizations and societies, particularly as the relations have been developed in the preparation of suggested curriculum guides.

Some of you have had an opportunity to examine the suggested curriculum guides that have been prepared as a result of the efforts of our staff during the past several years. Included were guides in electrical, electronic and mechanical technologies, and electronic data processing. It should be mentioned that these have been received eagerly by educators and employers throughout the nation. In fact, there is a great demand for material of this type.

It was through the requests from interested persons in the States that the preparation of suggested guides was initiated. This actually was quite an innovation for the U. S. Office of Education. As you might expect, there has been some criticism from certain persons who say that curriculum development should not be the work of the U. S. Office of Education. It should be made very clear that the curriculums developed have not been standard curriculum guides. They are guides for certain curriculum standards, but they are not standard guides. We can say without reservation that there is not a school in the United States in which you will find in use one of the curriculums exactly as it has been published. Then you may say of what value are they? The real value has been in providing assistance to school administrators in planning for technical programs. Also, they have been of special value to advisory committees working on the development of technical education programs within States and within communities. As a result of the many requests for the guides and the many expressions of appreciation received from the users, we are quite confident that the guides are serving a significant purpose in the development of quality technical education programs.

As previously mentioned, four guides have been developed--electrical, mechanical, electronic, and electronic data processing (programming and business application analysis). At the present time, we have three underway--one in civil technology,

another in instrumentation technology, and one in chemical technology. Also, plans are underway for the preparation of a scientific data processing programming curriculum guide. Monday of next week, we will be having a review group very carefully go over the civil technology guide which will be the final review prior to publication. We are interested in what might be done in the development of suggested curriculum guides in other areas, particularly in health and in agriculture. It is hoped that before we are finished with our discussion here, you will offer suggestions as to what you believe the U. S. Office of Education might be able to contribute to your efforts for the development of sound agricultural technology programs throughout the country. We are looking for your guidance, your direction.

Now to the relations with agencies, organizations, and institutions. To illustrate, it may be helpful to quickly take you through the steps that have been followed in the development of the instrumentation technology guide that will be available in late September or early October.

Several years ago, the Instrumentation Society of America, which represents approximately 15,000 manufacturers and users of instrumentation equipment, conducted a survey among their membership to determine needs for technicians in the instrumentation field. The results of their survey indicated a great need for persons to assist engineers and to perform duties requiring the practical application of scientific and mathematical principles. It was concluded that a technician-type person could fill these positions.

As a result of our working relations with various national groups, including the Instrumentation Society, we learned of the special need for instrumentation technicians as revealed by the study. We found that the officers of the society were very much interested in doing what they could to help develop a suggested curriculum guide that might be used in educational institutions for the preparation of instrumentation technicians. As a result, a contract between the U. S. Office of Education and the Instrumentation Society of America was developed for the preparation of a guide.

The Instrumentation Society did not have people on its own staff who were capable of doing the educational aspects of this particular project. They went to a long established technical institute with an outstanding record to employ as a consultant an individual who had many years of experience in developing technicians in the field of instrumentation. This person was employed for a year as a consultant. The school was willing to release him and he was willing to serve with the Instrumentation Society for this period.

Following the preparation of a tentative draft of a curriculum, the consultant traveled east and west -- north and south to visit many industries to get their viewpoint of a tentative curriculum. Not only did he visit industries, but he visited numerous institutions throughout the country, both 4-year institutions and 2-year institutions that have successfully provided technical education programs.

Digressing for a moment and thinking of this seminar, we have in attendance people who have had a rich experience in agricultural technology and who could provide significant assistance as consultants in the development of suggested curriculum guides for use in the planning, development, and operation of needed agricultural technician programs.

The consultant compiled suggestions and information he obtained as a result of his visit into a second draft. This second draft was then submitted to additional institutions, societies, agencies, and employers for what might be called a second review. The suggestions and comments gathered on the second go-round were carefully reviewed and a third draft of the guide was prepared for our office.

At this point, we carefully selected other agencies, organizations, and institutions from whom we might be able to obtain suggestions for further refinement and evaluation of the document. I'll mention some of these agencies, organizations, and institutions in a few moments. After obtaining comments and suggestions regarding the third draft from representatives of agencies and institutions, we compiled a draft for final review. For the fourth and final review, we brought to Washington another group of people representing employers, educational institutions, and societies to critically review, page by page, the suggested curriculum guide. Each of the several review groups was representative of different agencies, institutions, and organizations.

When the final review is finished, we prepare the copy for editorial review by the publications branch. Following the editorial review, it is printed and distributed to appropriate vocational and technical education personnel in the States, to interested local school personnel, and to interested employers of technicians.

Whom do we work with? As you have heard in the process of curriculum development, we have occasion to work with many agencies, organizations, and institutions. All of the work of our Branch is facilitated as a result of such relations. I would like to mention some of the agencies, organizations, and institutions that have had a part in the various efforts of the Technical Education Branch.

We have worked with representatives of Argonne National Laboratories. They have been very helpful in determining need for technicians with the preparation of suggested curriculum guides. Representatives of Armstrong Cork Company have assisted with the development of the mechanical technology guide. Persons from Allied Chemical Company, Eastman Kodak, American Chemical Society, the Chemical Manufacturer's Association, Data Processing Management Association, IBM, UNIVAC, Burroughs, and other manufacturers and associations have provided advice and guidance regarding technical education.

Then, too, we have sought counsel from organized labor. It is possible that you may not need to solicit the assistance of organized labor in relation to agricultural technology. However, you may find it very helpful to take into consideration any thoughts they may have regarding the development of agricultural technologies. We have worked with representatives of the National Association of Plumbing Contractors; United Association of Plumbing and Pipe Fitters; Metal Trades Department, AFL-CIO; International Brotherhood of Electrical Workers; and International Association of Machinists. In brief, we have found it has been helpful to work with the national labor organizations.

Also, we are working with representatives of National Aeronautics and Space Administration, Department of Commerce, National Science Foundation, Division of Water Supply and Pollution, American Vocational Association, National Education Association, American Association of Junior Colleges, and American Society for Engineering Education.

Various consultants have been brought to our office on short time assignments to assist us. At the present time, we have from a 4-year institution of higher education, where 2-year technical education programs are conducted, a consultant who will be assisting us in the further development of plans for the promotion, organization, administration, and evaluation of high quality technical education programs in our nation. We are hoping this is a two-way street -- while the consultant is helping us to provide a more complete service to the technical education personnel in the States, we hope we will help him to take back to his institution and also to the agencies and organizations he represents, a national picture of technical education needs, some of the problems of providing quality technical education, and what the U. S. Office of Education is doing to help the States meet these needs and to solve the problems.

I would like to just briefly mention the types of contracts we have had for the guides that have been developed. The electronic and the electrical -- we worked with Oklahoma State University where they already had on-going programs in these technologies. In the case of mechanical, we worked with the State Board for Vocational Education in Wisconsin who had Milwaukee Institute of Technology develop the guide. The Institute has a strong program in mechanical technology. In the case of the chemical technology, we contracted with the State of Connecticut where they had a person aboard as a consultant who was available for this service. The civil technology was developed by the Engineering Department, University of Illinois. They have prepared the draft that will be finally reviewed on Monday.

You will recall that I mentioned electronic data processing. This is a new field. Where do you get information and assistance that will be the outcome of experience? Orange Coast College in California had one of the first educational programs in this field. We entered into a contract with the California State Board for Vocational Education for the work to be done by Orange Coast College. The preparation of the guide by Orange Coast College went through the process that was previously mentioned. Again, many employers, organizations, societies, and agencies gave assistance in the preparation of the curriculum guide.

As a result of the relationships with agencies, organizations, societies, and employers, the guides are not something that has been pulled from the top of the heads of a few people, but rather they represent a rather valid concensus of people throughout the nation who are qualified to determine what should be in technical education curriculums.

In brief, I believe that in your State, institution, or local situation, you have a somewhat comparable opportunity for using assistance similar to that just described. You do have advisory committees. You do have State and local chapters of societies, and representatives of agencies. You do have employers in your area. It is important, as has been pointed out by the panel today, that you use all of these for assistance in determining the type of program that will be most suitable for your particular State or your particular area. So I would urge you to go back and do everything you possibly can to make full use of resources available in agencies, societies, institutions, and employer groups, so that you may have an effective, efficient, and high quality technical education program. Such efforts will provide programs that challenge capable youth, are acceptable to the people engaged in education, and will meet the needs of the employers of your product.

I hope you will feel free to let us have your suggestions as to what you believe we can do in the Vocational and Technical Education Division of the U. S. Office of Education to assist you with the development of high quality agricultural technologies.

Thank you.

Presentation by Dean Kottman

I am confident that there is substantial agreement among staff members in our colleges of agriculture across the nation that we want to do whatever we can best do with respect to meeting the needs of society for technicians and sub-professional specialists. I believe we accept the fact, almost universally, that technicians are becoming increasingly important to our society. The central problem is one of finding ways in which our university personnel can be of greatest assistance in the development of institutions and curricula which will meet the needs of those members of our society who must be educated beyond high school but who, for one reason or another, will not be educated to what has been described as a "full professional education."

Some of the best reasons I have come upon as to why our universities should be concerned about this facet of their responsibilities stem from data included in an address delivered at a dinner meeting sponsored by the Federal Reserve Bank of Cleveland right here in Columbus. Speaking at this dinner on November 7, 1962, Dr. John C. Warner,[1] President of the Carnegie Institute of Technology, quoted from a Bureau of Labor Statistics study made in 1959 with which I am sure all of you are familiar. You may recall that in this study predictions were made that by 1970:

> There will be no more jobs for unskilled workers than now.
> Jobs for semi-skilled workers will increase 25 percent.
> Jobs for professional and skilled technical people will increase by 60 percent.
> There will be 25 percent more 'white collar' than 'blue collar' jobs (in 1910 there were twice as many 'blue collar' as 'white collar' jobs).

Dr. Warner made this comment which is indeed worthy of note. (I quote)

> It is significant that at the same time that we have a worrisome unemployment rate among the civilian labor force, we have acute shortages in almost every profession and skilled vocation. We

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[1]Dr. John C. Warner, "Related Unsolved Problems - U.S.A.," Address presented at the Federal Reserve Bank Dinner, Columbus, Ohio, November 7, 1962. Dr. Warner is President of Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

> have many unemployed, but there is a crying need for trained people as shown by the vast volume of advertising in all metropolitan newspapers and professional magazines by employers seeking all manner of people possessing an almost infinite variety of professional competencies in vocational and technical skills. I believe it is beginning to be pretty clear that economic growth alone in a free society which must compete in world markets with lower-labor-cost industrialized countries is not enough to solve our unemployment problem. We can help solve it in some cases by finding schemes for increasing the mobility of labor, but in the main, it is a problem to be solved by education and training -- by seeing to it that everyone coming into the labor force is prepared to do professional, skilled, or semi-skilled work useful to our society; and by seeing to it that everyone by self education, adult education or vocational education keeps abreast of the rapid rate at which new science, new technologies and new methods are being discovered and applied. Obsolete skills must be replaced by new skills.

Dr. Warner's conclusion that "In the main, it is a problem to be solved by education and training -- by seeing to it that everyone coming into the labor force is prepared to do professional, skilled or semi-skilled work useful to our society"--is very much in keeping with my own philosophy concerning the need for our nation to take steps which will fill what has been and is to a considerable extent at the present time a void in vocational education in this country. Further, I believe that our universities have a responsibility to see that these needs of our society for vocational education and training are met. I am of the opinion that we have gone through somewhat of a cycle with respect to our attitudes concerning vocational education. At the height of World War I when the Smith-Hughes legislation came into being, the United States, as a nation, and at least a limited number of universities, embraced the concept that higher education did have a responsibility for assisting in the preparation of certain members of our society for skilled or semi-skilled employment. I believe it safe to say that this concept was never fully accepted by our American universities and I dare say that even in those institutions offering vocational teacher training, many sectors of the universities concerned were unhappy that they should be, in any way, identified with vocational programs. Criticisms of vocationally oriented university programs, though sporadic, was nonetheless in evidence throughout the decades of the '20s and the '30s. The fact that our universities had failed to provide wholehearted and courageous leadership in training for skilled and semi-skilled employment was pretty well camouflaged by the temporary freedom from world competition which characterized the periods surrounding World War II and the Korean conflict. During the last 10 years, however, with world competition becoming increasingly troublesome, and with our universities doing an ever better job in the areas of "full professional education" it has become increasingly evident that although we have created a society in which the professional man or scholar now occupies an important new position, we have failed to provide adequately with respect to both the needs of and the opportunities for education of skilled and semi-skilled workers.

To a very considerable extent, the technical aid needed in underdeveloped countries is being provided by our universities. It seems ironic that we should have been so keenly aware of our capabilities for developing skills among people of the underdeveloped nations yet remained until recently almost totally insensitive to the growing needs for vocational education in our own country. Fortunately, there are many signs on the horizon that our universities are becoming concerned about assisting in the development of technical training programs. Increasingly, there is evidence that the talents of at least some of our university staff members are being utilized in helping with the organization and establishment of technical endeavors designed to serve the 60 percent of our United States college-age population who will not enroll in institutions of higher education. This awareness on the part of our universities concerning an unsatisfied need of our society has resulted apparently from developments during the last 10 years wherein this nation has experienced a truly alarming increase in unemployment.

At this point I would hasten to make clear that I am not suggesting that vocational training programs for semi-skilled and skilled technical workers should necessarily be set up within our universities. Nor am I saying that funds appropriated to the universities should be allocated for these tasks. Neither am I saying that it is either possible or desirable for university staff members to attempt to utilize their talents for teaching both those students who will become semi-skilled and skilled

technical people as well as those who are destined for baccalaureate degrees. What I am saying is that our universities must accept a sizable share of the responsibility for giving leadership which will result in the establishment of institutions which will meet the needs of our society for semi-skilled and skilled technical workers. Further, our universities must share the responsibility for insuring that programs of instruction in both newly established as well as ongoing technical training programs are well-designed and provide for something beyond the purely "how-to-do-it" aspects of education. It would seem to me that the several disciplines most likely to be called on for help face a most interesting challenge in this respect in that concepts and skills for teaching university students, most of whom possess at least some background for such studies, will almost certainly have to be dramatically altered before the teachers in technical training programs can develop meaningful courses for the large group of students who must be educated in vocational and technical schools.

Over the past two or three years, we have worked very closely with members of the Ohio Department of Education and especially with Dr. Byrl R. Shoemaker, Director of Vocational Education, and Mr. Warren G. Weiler, Supervisor for Vocational Agriculture. We have attempted to bring to our discussions with all of these folks a point of view to the effect that we are in contact with the total agricultural industry of Ohio and insofar as the needs of the various segments of that industry have been reflected to us, we want to share that information with the various staff members charged with the responsibility for the various programs of vocational education in Ohio. In setting up the technical training program over at Springfield, Warren Weiler and his staff involved quite a number of our College of Agriculture and Home Economics personnel in discussions relative to all aspects of the curriculum. We have not yet added any courses to our offerings in the Department of Agricultural Education which would have direct application to the preparation of teachers for this type of technical training program. We would certainly be willing to do this if it seems desirable to move in this direction and would be willing to try to work out courses for the pre-service education of undergraduates as well as for in-service training of those teachers already in the field who might wish to move in the direction of teaching in one or another technical training program.

In still another area, we have been working closely with Mr. Weiler and his staff relative to the amount and kind of training in mechanics that should be offered both to our undergraduate students preparing to teach vocational agriculture as well as to the teachers who will be working in the technical training programs in agriculture. More recently, our committee on food technology programs has been meeting with Mr. Weiler and his staff to determine the amount and kind of training needed by students enrolled in technical training programs prior to entry upon jobs involved in one of the 3200 business firms in Ohio that are processing agricultural products.

I am sure that all of you in your respective states have moved forward much the same as we have here in Ohio relative to establishing effective relationships between both the ongoing and developing agricultural technician training programs. I am sure that there is no one best way of developing these relationships but I am convinced that they must be developed and that we in the universities must play a significant role in the organization and establishment of technical training programs that will serve the 60 percent of our United States college-age population who will not enroll in our institutions of higher learning. The kind of world in which we live demands that we all get our shoulders to the wheel on this enormous task. It is a very big job but we can whittle it down to size if we will work together. We in the College of Agriculture and Home Economics here at Ohio State have found that it is a very great challenge to assist as best we can in these endeavors. We do like the opportunity of helping and we look forward to the privilege of being called upon increasingly for whatever assistance we can provide and for such mutual efforts as I believe we must expend if we are to be truly responsive to the needs of our society. Certainly, that is the mission of our land-grant institutions. If we don't have that kind of response in our type of institution, then I don't believe it can be anticipated as coming from anywhere else in the entire complex of higher educational institutions in this country. Actually, I believe that the approach which involves not only the land-grant universities but the business and industry representatives as well, working hand-in-hand with our vocational education staff members, is the best, if not the only, logical way in which to tackle the big job which lies ahead. I personally feel that it is a very great privilege for our universities to be called upon to bring knowledge from the very forefront of research and development to not only our university classrooms and laboratories but in such a manner and in such

forms as it may have application to the training of technicians. This is certainly a mission of our College of Agriculture and Home Economics here at The Ohio State University as I see it and we are pleased to have been given this opportunity to express that point of view to you folks assembled here for this National Seminar.

Thank you.

SEMINAR SYNTHESIS AND SUMMARY

by
Robert M. Knoebel
Director, Technical Education Branch
U. S. Office of Education
and
Jerry J. Halterman
Instructor, Agricultural Engineering
Modesto Junior College
California

Presentation by Dr. Knoebel

Needs

I think it has been very evident as we come to a close of the seminar that there is a feeling of definite need for agricultural technology programs. This has been evident as a result of the presentations we have had from the various persons. We think particularly of the presentation of Mr. Merritt D. Hill, Wednesday noon. We think of the report we have from Dr. Phipps. We think of statements regarding demands for graduates from people who have been operating agricultural technology programs for some time. All of these, I think, are indicative of a need throughout the country for this type of program.

I feel that we can go back with a definite understanding that there is a need for certain types of agricultural technology programs throughout the country. What do we do when we get back to our various assignments? Do we just wait for someone else to do something? We should be inspired and challenged to exert every effort to assist with the development of agricultural technology programs. As we return to our States, our responsibilities and our role will probably differ. Surely we will need to check within our own States to determine what the specific needs may be and this isn't easily done. As you work with advisory committees and representatives of appropriate agencies, societies, institutions and organizations you will be able to get some very definite guide lines as to what the specific needs may be in your locality. It appears, too, that you may need to conduct some studies, or to carefully review other studies that have been completed. We have heard emphasized the need for studies of various kinds. There are studies that have been made in other States that may be very helpful, but for psychological reasons, it may be necessary to make certain studies within our States. At the same time, all of us recognize there are certain limitations to studies and that we cannot depend solely upon this source as an indicator by which we should direct our efforts.

Then, too, there is the employment service that has been mentioned a number of times during the sessions. We need to make full use of their services upon our return and this isn't true only for the technical education program but it is true for all of our vocational type programs, too. It is important for us to keep the vocational and technical education offerings in line with employment opportunities. Our cooperation with the employment service will assist in keeping our programs in tune with the demands of the labor market.

Likewise, much help can be obtained by visiting programs that are on-going and that have been very successful. This is one of the ways of helping to determine the needs and also to determine the details of how these needs can be met. We would encourage all of you who possibly can to visit on-going programs as part of your effort to meet the needs within your locality.

It is appropriate to again urge you to work closely with representatives of societies, associations, institutions, and agencies. They can help you. Use their services.

State supervisors need to think of what can be done to provide seminars comparable to this one, on a State level. This is your responsibility. Such seminars can be a real means of helping to impress upon your people the significance of agricultural technology. Teacher educators have a real responsibility when returning to their institutions to provide programs that will recognize agricultural technology

needs and will incorporate within the in-service and pre-service program information as to how needs are determined; what the needs may be; the activities that should be carried on by people at the local level or at the "firing line"; and organize programs that will assure the development of the knowledge and skills essential for personnel engaged in agricultural technology to provide quality programs.

Something else was mentioned that should be re-emphasized. Each of you can have a part in developing within your state a master plan for meeting the total state needs. Certainly you can get into great difficulty if you fail to look at the total state situation. Wasteful duplication and inefficiency is likely to result. It is important to look beyond state borders. A neighboring state may be doing an outstanding job in meeting certain needs in agricultural technology. It would be foolish to try to duplicate the same program within your state if needs are already being met by a school or schools in another state. So we need to look not only to our state but need to think of what is being done nationally.

We have talked at some length during the week regarding the preparatory 2-year post-secondary technical education program. It should be mentioned that we should not confine our efforts to preparatory curriculums. There is a tremendous need in the area of updating and upgrading people who are already employed. You may call them short-unit programs or courses. We have only scratched the surface in meeting the needs for such extension or supplementary courses. We have found this to be true in the industrial technical education programs under Title VIII of NDEA.

Actually, under the National Defense Education Act, about 50% more people participated in the so-called upgrading or updating courses than participated in the preparatory curriculums. This is a real service that is needed in the work-a-day world today and the need will continue to grow.

I am sure there are many people in your State who need and would profit by pursuing technical agricultural courses for upgrading and updating. You should not neglect meeting the need. Furthermore, it is representative of a significant effort that really encourages the cooperative spirit we like to have with employers and workers.

Staff

It would seem appropriate to make a comment regarding the reports of the various study groups. It seems to me that we have a wealth of material that has been prepared and presented in the reports. Actually they are a rather good summary. Also, they are almost an order as to what should be done when you get back to your State.

How to adequately meet the staffing demands. Dr. Arnold has spoken of this problem. We have referred to it time and again throughout the week. If there is a No. 1 problem, it seems to me that this is it. The staffing problem isn't limited to the State level or to supervisory, administrative functions. Certainly the agricultural technology teacher supply is going to be one of the crucial problems. We should recognize there are some things we need to do when we get back to our State to help solve the problem of qualified staff.

We should encourage maximum flexibility in those sections of the State plan relating to qualifications, certification, travel, sabbatical leave, internship, pre-service and in-service professional training programs for all technical education staff members, State and local. Don't fence yourself in with a State plan requirement that prohibits you from moving in as many directions as necessary to obtain qualified staff members. You still have an opportunity to do something about this. Don't neglect it.

Let me give you an illustration. When we were reviewing the instrumentation curriculum guide recently, one of the representatives of industry who was a member of the review group, raised a question as to where one could obtain a teacher for the curriculum. Of course, we admit it isn't an easy job. Likewise, it isn't going to be easy to get teachers for some of the agricultural programs that we have been talking about. We reversed the question and asked what industry could do to assist with the teacher problem. It was further indicated that we believed industry should assist with the recruitment, preparation, and updating of technical teachers.

This led us to the matter of internship. It was suggested that industry could assist with the upgrading and updating of technical teachers. Certainly this is going to be a major need in the agricultural technology program. Reference was made to a teacher education program that is underway in one of the States where they are establishing 3-month internship programs. The representative from industry said three months was too short -- he indicated the internship should be at least one year in length in order to be of maximum value to the teacher and of some value to the industry.

If you would expect to provide such experience for in-service teachers, you will need to have flexibility in your State plan and in your teacher employment procedures so you can assist teachers who may need and can profit from this sort of experience. The assistance may be through sabbatical leave; it may be some other type of leave; it may be for full or partial salary; or some other appropriate arrangement. I repeat, don't fence yourself in with your State plan, regulations or policies that prevent you from moving in the direction needed to provide well qualified teachers and other personnel. It is much easier to provide the flexibility needed as the State plan is being written rather than to amend the plan later.

You should think of plans for recruiting essential State and local personnel. Seek out potential leaders in the ranks today and prepare them for leadership and greater responsibility. People who appear to have potential as teachers, administrators, supervisors, or researchers -- let's look for them. They are urgently needed now and will continue to be urgently needed in the foreseeable future.

Another suggestion, encourage 12-month contracts for your teachers, if you do not already have that arrangement. This provides some of the flexibility that you need to have for these people to get essential experiences necessary for updating and upgrading in a rapidly changing technological climate.

Finance

Indirectly, and to some extent directly, suggestions have been made regarding procedures for financing technical programs of education. Mr. Foote made some excellent suggestions regarding means for obtaining certain items for use in programs. Various references to tuition charges have been made by other speakers.

A review of the report of the finance study group reveals that there are many plans in use for financing programs. All sorts of combinations of Federal, State, and local funds are being used to meet the financial needs of successful programs. In addition to the financing procedures already mentioned, gifts and grants may have a part in the program.

What should be your action regarding finances upon your return? If your State has already provided essential finances, you have few worries. Otherwise, you should carefully study your State needs and investigate the procedures used successfully in States most nearly paralleling conditions in your State. Then exercise all of your energy and initiative in helping to provide the necessary finances.

A Few General Comments

The spirit of the seminar has been excellent. Problems have been identified and priorities have been established. The group reports are significant.

Upon your return to your State, make a thorough study of needs, clearly identify areas to be served and develop high quality programs to meet the needs. Carefully title curriculums so that the technologies may be clearly identified -- do not splinter and fragment curriculums.

There are two remarks I would like to make in closing. The first one -- if you have any objection to the U. S. Office of Education actively engaging in or helping to develop materials for agricultural technology, please let us know. Otherwise, we will assume that you are in favor of our efforts to provide suggested curriculum guides and other materials in the field of agricultural technology.

The other comment is personal. As a representative of the Vocational and Technical Education Division of the U. S. Office of Education, I certainly want to say thanks to Dr. Taylor, Jerry Halterman, and their associates for inviting me to participate in this seminar. Certainly, it has been a wonderful opportunity for me to learn from you. I am certain that I have gained much more than I have been able to share with you in return. It should be emphasized that a major objective of the Division of Vocational and Technical Education staff is to furnish any service that may be of assistance to the States in developing quality programs in agricultural technology and if we can be of any service, we hope that you will call upon us.

Best wishes for outstanding success in your efforts to develop agricultural technology programs.

Presentation by Mr. Halterman

We have been concerned these past four days with various facets of technical education in the field of agriculture. This has been done according to plan. But now, at the outset in my summary proceedings, I would like to take the liberty to suggest that we should review, at least in passing, the backdrop of our educational heritage on the American scene. For this review, I have gone back to a national conference on technical education which was held in Washington, D. C., in 1957. I deem it appropriate to consider the following:

> We must realize that beyond technology are significant factors that have made the United States great--far reaching principles that have made us the kind of Nation we are:
>
> 1. The Judaeo-Christian concept of spiritual beliefs and practices.
> 2. Our free enterprise system, with its strengths and its faults.
> 3. The Bill of Rights granting freedom as individuals in our complex modern society.
> 4. Local autonomy, with its fundamental recognition of local rights and local control.
>
> Our free system of public education has been built and lives by these principles, and if America has contributed to the culture of the world, it is because our public schools give meaning and purpose to these precepts.

General Areas of Concern

As review is made of the seminar proceedings, four main areas of concern come to mind. These may be posed in as many questions. (1) Who was involved in the seminar? (2) What was our interest in meeting? (3) What was accomplished? (4) What should be done now?

Let's take a quick look at who was here and what the assemblage was. Recap of the list of seminar participants shows that some 31 persons in supervisory positions, 29 persons in teacher education, 32 institutional representatives, and 14 consultants from all parts of the nation have been gathered here during the past few days to share an interest and concern with each other over developments in the area of technical education in agriculture. Representatives of the United States Office of Education, state vocational education directors, national leaders of industry and education have been called upon to indicate and relate to us pertinent information regarding the technical manpower force in agriculture.

Next, what was attempted at the seminar? What was our interest in joining together at this time? The primary purpose of the seminar was to assist agricultural

education leaders in identifying and clarifying their leadership role in the initiation, conduct, and evaluation of agricultural technician programs in their respective states.

A number of specific areas were identified for seminar discussion and detailed examination to aid state leaders in providing effective assistance to agricultural technician programs. We may say, then, the central purpose of this seminar effort was one associated with providing leadership for technical education programs in agriculture.

I'm sure it can be said with little fear of contradiction that the tremendous effort to assemble some of the nation's best consultative staff members available in technical education in agriculture was highly successful and that the more than twenty hours of formal presentation and seven to eight hours of task force group work have proven a rich and satisfying experience for all.

How well did we do? What was accomplished? Five days of working together, with sessions each day, task force group conferences regularly convened, informal discussions between groups and individuals, review and study of materials available, and consultations with resource persons and Office of Education personnel have indeed been a most ambitious conference endeavor. A summary of the events of such a strenuous schedule might be anti-climatic to an average conferee. But you have not been and are not a group of average conferees. From the outset there has been evidence of a great interest and enthusiasm; of renewed vision and determination; of professional dedication to the tasks which rest on vocational educators in helping meet out manpower needs for agricultural technicians.

My observation is that we have done well here at Columbus -- my faith is that we shall do well back home, if we accept the mantle of leadership which has been entrusted to our hands and if we will move out and labor willingly and move ahead courageously with creativity and imagination in meeting what has been pointed out to us as "a bright future not entirely without obstacles".

A number of accomplishments appear to have been realized at the seminar:

1. A concensus was reached concerning major points regarding technical education.

2. Study and review were given to major aspects of technical education programs, the preparation of technicians, and the role of the technician in the agricultural manpower force.

3. A concensus was obtained concerning a working definition of an agricultural technician.

4. The major areas of concern, problems and issues, and trends of technical education were identified and discussed.

5. Identification was made of certain areas of common agreement in technical education.

6. Review was made of efforts being made in technical education in agriculture in various parts of the nation.

7. Stimulus was received for the further development of technical education in agriculture.

8. As a group, we have become sensitized to some of the tasks that are ahead in technical education in agriculture.

9. The forces which brought about the need for technical workers in agriculture have been examined carefully. Some understanding of the need to plug the educational gap between high school and college and university level work has been realized.

10. Relationships have been improved among the various agencies responsible for vocational, technical, and professional education in agriculture as well as between vocational agriculture and the other vocational services.

Broad General Characteristics of Technical Education

A number of characteristics common to technical education as they have been discussed here in the seminar are as follows:

1. It is technical level in contrast to skilled trade and professional levels.

2. Emphasis is upon technical and cognitive skill in contrast to manipulative skill.

3. Emphasis is upon skill and ability to make practical applications of theoretical knowledge in performing specific tasks in a specialized field.

4. Emphasis is upon occupational competency.

5. Analysis is made of occupations to determine curriculum content.

6. Technical education characteristically is:

   a. Terminal in nature.
   b. Less than baccalaureate degree level.
   c. A full time program.
   d. Post high school
   e. Specific preparation for employment.

7. Proper balance among general education, technical education, and related education subjects is maintained.

8. Preparation is made for occupational proficiency in families or clusters of jobs.

9. Technically qualified teachers with field experience are required.

10. The technician is distinguished by his distinctive abilities, his competence in performing his work, and by his specialized training.

Problems Ahead

Time limitations in the task force groups restricted our study of the problems, issues, and trends of technical education in agriculture to a few of the most apparent ones. I think we realize that we have examined rather superficially many of the areas that bear importantly upon technical education, such as accreditation and licensing. No doubt, one of the most striking attributes of the seminar has to be the professional manner in which the participants came to grips with the task at hand. The amount of agreement and concensus which was evident concerning the areas which were discussed reflects the interest and devotion of dedicated leaders. Hopefully, a base of sufficient breadth has been developed to enable each member of the seminar to provide forceful and effective leadership upon his return to his particular assignment.

A number of areas, problems, issues, and trends associated with technical education in agriculture remain for each state staff to study and examine carefully as they plan to move ahead in their field. Some of these have been considered briefly here this week. Without attempting to suggest any degree of importance or rank order, the following items appear especially significant:

1. Attainment of technical level education.

   With the probability that many programs will be developed and established utilizing facilities, equipment, and manpower resources which have long been associated with high school vocational agriculture programs, it appears that one of the most critical concerns would be how we can assure that technical level education will be realized. I think, too, that this concern should be held by those who have had post-high school programs. Would it not be a serious mistake to presume or give the impression that our present post-high school two-year programs are predominantly technical level? The place of standards and accreditation in technical education in agriculture is of utmost importance and will require additional study.

2. Nomenclature

Specialization within the field of agriculture and occupations related to it has brought about the need to identify and study the various occupational endeavors engaged in by workers in these fields. Heretofore, these occupations have most often been classified simply as agricultural. We, in agriculture, are faced with the necessity of analyzing titles and of writing descriptions for occupational positions for the entire agricultural complex. This will require classification guides for workers at all levels on the level-of-preparation continuum. The use of standards also presumes the adoption of a characteristic nomenclature common to the field.

3. Status

The problem of achieving status and prestige both by vocational and technical education programs and by students enrolled in these programs continues to be serious and poses one of the most consequential issues in the field of education. It appears that the ultimate success of technical education depends upon the attainment realized in having the proper educational role accorded to it by the public, industry, and other levels of education. Some progress has been made. A great deal more is needed.

4. The involvement of the federal government in technical education

The federal government has been involved in vocational education in agriculture for many years. As the national program of defense, area redevelopment, manpower training, and poverty are further implemented, greater involvement of government into education will be seen. The Department of Labor and associated employment offices have been assigned important roles in moving these programs ahead in cooperation with the Department of Health, Education, and Welfare. It can be expected that state and local technical education programs in agriculture will be affected by the role of government in these educational endeavors.

5. The role of the high school in technical education in agriculture

The part which high school vocational agriculture programs should have in technical education is not well known. Admittedly, most of the prospective students will come from these secondary schools, but little has been done to study what should be attempted to support post-high school technical education. It can be reasoned that some pre-technical preparation should be attempted in the high schools.

6. The role of industry in technical education

Inherent in the task of vocational-technical education in agriculture is the involvement of persons who direct the efforts of agricultural production and related industries. The extent of this involvement appears to be the critical concern. One of the perplexing problems in this area has to do with the most efficient use of human resources. What can be done by both industry and education to bring about a more effective deployment and utilization of resources in order that personnel will be employed in occupational endeavors more nearly fitting to their training and preparation? This is particularly relevant to professional and technical workers. Another problem in this area has to do with the most effective involvement of industry in cooperative work programs both in terms of the use of facilities and equipment and in the use of personnel of the firm in order to realize optimum educational returns.

What now? What course of action is to be taken?

Regardless of our position and regardless of whether or not we are supervisory, teacher education, or institutional representative personnel, as leaders in agricultural education it is now incumbent upon each of us to carry the spirit of this seminar to our colleagues and subordinates and see to it that a program of action results. In determining how best to adapt the material of this study session to various local settings, consider the following general guidelines as they apply to master planning for both short and long range planning.

1. Establish priorities - dare to put first things first.

2. Clarify relationships - place all things in proper perspective.

3. Allocate resources - don't try to do a man's job with a child's toy.

4. Spell out and define roles of persons, groups, agencies and institutions - a house of order is a house of strength.

5. Articulate efforts with others - many roads lead to Rome; we don't need to travel them all.

6. Correlate techniques and procedures to the total educational program - no man (or program) should be an island unto himself (itself).

Leadership

As we plan ahead, we should be cognizant of the changes which have recently come about in society, in education, and in agriculture. We should study the forces which have brought these changes about, recognizing that most of these pressures will continue to be operative and if they are properly understood, manipulation can be made of many of them that will help bring about desired change.

As we are concerned with curricula development for technical education programs in agriculture and related occupations, it is well to draw upon valid occupational, educational, and interest surveys conducted in the appropriate local setting. Advisory committees of lay membership should be used in making surveys and in determining types of curricula to offer. Technical curricula are occupation centered and planned toward occupational competence. Preparation should be made for clusters of related technical occupations. A balance between technical supporting content and class-laboratory experiences is essential for learning concepts and principles and their application. The curriculum should be flexible enough to be easily revised as needed in advance of changing competence of the technician. Let us keep foremost in our minds that the task of education is for professionally qualified personnel and that while we as educators must work cooperatively with others who have an interest in the product of educational programs, the ultimate responsibility for the program lies with the profession.

One of the major objectives of this National Center is the development of leadership in the field of agricultural education. Certainly the one major strand which has been interwoven throughout the proceedings of this seminar has been the challenge to our leadership potential to move ahead in our sphere of responsibility. As we give direction and stimulus to program planning, research and development, establishment and maintenance of programs in technical education in agriculture, it is well to reflect upon the preachments of this seminar concerning leadership:

1. True leadership will not allow <u>operational</u> involvement.

2. The leadership position which each of us possesses has a <u>functional</u> aspect because through exercising the role behavior inherent in this position, identity is made of the significance of the role of agricultural education in our nation.

3. The leadership position each of us possesses has a <u>symbolical</u> aspect because through exercising the role behavior inherent in this position, meaning is given agricultural education by the manner and by the spirit in which our task is performed.

4. Leadership begets leadership in an upward spiral.

5. The cycle of success in leadership development programs inevitably leads to the destruction of the finest product - "leadership" - if the ruinous forces which lead to this destruction are not recognized and treated accordingly. Some of these forces are complacency, indifference, callousness, self-seeking pride, vain ambition, blindness and indolence.

6. If we are not the kind of a leader we would be, we can find encouragement in the realization that many important traits of leadership are developmental.

7. Educational leaders will be required to work cooperatively with leaders of industry in the development of educational programs to prepare the kind of technical worker needed by industry.

In summary, Dr. Taylor indicated at the beginning of this study period that we had the factors of success for the seminar at hand--we had a task, well definied; a concern; experience to draw on; a staff of consultants; a favorable climate and an appropriate setting. As these factors have been amalgamated and emulsified, I'm sure you will agree with me, the product has been a most satisfying, productive, and stimulating professional experience.

It is appropriate to conclude this seminar activity with the remarks of President Johnson upon signing the National Vocational Education Act of 1963 --

> Education is the key to our social and economic and technological and moral progress....Modern demands upon labor and industry require new skills and an upgrading of old skills, require more education and greater knowledge....Education is the cornerstone of our freedom.

Developing effective relationships between agricultural technician programs and other agencies, organizations, and institutions was one of the vital topics discussed by this panel moderated by Dean Roy M. Kottman, of the College of Agriculture and Home Economics, The Ohio State University (second from left). Other panel members (left to right) include LaVern R. Freeh, Head, Department of Short Courses, University of Minnesota; Robert M. Knoebel, Director, Technical Education Branch, U. S. Office of Education; and George Greenleaf, Executive Vice President, Grain and Feed Dealers Association of Ohio.

Much of the value of the seminar was derived from participation in task force discussion and activities. This task force subgroup is shown working with Dr. Robert M. Knoebel, Director, Technical Education Branch, U. S. Office of Education, Seminar Consultant, on problems in financing agricultural technician programs.

PART III

TASK FORCE REPORTS

Editor's Note: In presenting these task force reports, the following points are set forth for the reader's consideration:

1. Time limitations precluded the development of complete studies by each task force group.

2. No attempt was made to order in importance the areas of concern, problems and issues, or trends in terms of their importance to technical education in agriculture. All are important to some extent but resource and time limitations restricted the amount of treatment possible.

3. Material contained in these reports should not be construed to be policy of the National Center or of the seminar itself. The reports were accepted by consensus and their content is not binding on any person, agency, or institution.

4. Because of the diversity of the administrative framework within which technical education can be pursued, each state needs to identify priorities for further study.

TASK FORCE NO. 1

DETERMINING NEEDS FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

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TASK FORCE NO. 1

DETERMINING NEEDS FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

I. Possible Areas of Consideration by the Task Force

Surveys and studies
Data gathering
Sources of data
Other methods to determine need
Advisory committee use
Demands for technicians
Geographic location
Data and information needed
Correlation
Articulation
Consultants
Time and financial budgets for making surveys
Analysis of survey findings

II. Problems and Issues

A. Should there be a statewide master plan for technical education?

B. What kind of occupational surveys are to be used to determine needs?

C. What are the educational needs of agricultural technicians?

D. Where are agricultural technicians needed?

E. What is the geographical need for technical programs in agriculture?

F. What have previous studies shown to be the educational needs of technical workers in agriculture?

G. What should state and local educational leaders (administrative, supervisory, instructional personnel) do to determine the needs for agricultural technician programs?

H. Who, in addition to educational leaders, should be involved in studying the need for technician training programs?

I. What research is being done to establish patterns and procedures that will be of assistance to educational leaders in identifying needs for agricultural technician training programs?

J. What resources are currently available for use in determining technician needs?

K. What are the major problems encountered in the development, establishment, and maintenance of technical training programs that might be clarified in a survey?

L. How can persons in agriculture and industry work with educational leaders in order that highly qualified personnel may be most profitably utilized in the task facing both groups of identifying and satisfying technical education needs?

M. ?

III. Trends

A. Adult education (post-high, pre-service, and in-service) is being accepted by more and more people as a public responsibility.

B. A closer integration with industry is being realized.

C. There is an increased demand for technicians.

D. The increased need for technicians is spreading geographically, occupationally, and institutionally.

E. Generally speaking, the supply of trained technicians is not meeting the demand.

F. Pre-service education will remain important but the biggest development is toward in-service programs.

G. Efforts are being made to locate post-high school educational centers in places readily accessible to most residents of the state.

H. Most states are conducting one or more studies to determine needs for technical education programs in agriculture.

I. ?

IV. Study of a Selected Problem by the Task Force Group

A. The Problem

Any program which utilizes public funds and which has a continuing effect upon the present and future of an individual must be built upon a firm and broad foundation. This is especially true of a program designed to prepare individuals for a vocation.

This foundation must be built on facts, not assumptions. One of the major problems faced by an administrator who is considering the establishment of a technical education program is to secure the facts necessary to make sound and defensible judgments.

This report is designed to guide individuals who are searching for facts and at the same time develop rapport, assistance, and understandings from many individuals, organizations, and businesses related to agricultural technician programs.

B. Possible Courses of Action

In order to initiate successful plans for determining needs for developing agricultural technician education programs, it is assumed that state and local administrators, vocational education supervisory personnel, teacher educators, vocational teachers, guidance counselors, lay citizens, and those concerned with agricultural industries and businesses must be genuinely interested in thoroughly exploring the possibilities for developing technician training programs. All identified above must be involved in this process in order to successfully determine needs and, also, to gain enthusiastic support of programs that may develop.

Each state has a different organizational structure and setting, which dictate the order of procedures as well as the depth of study. The steps outlined in this report are, therefore, not necessarily in the order in which they need to be performed. Some steps may also have been omitted.

Steps to Follow in Determining Needs	How to Accomplish These Steps
1. Review existing data.	1. Both state and local groups review data. Contact employment service.
2. Conduct occupational surveys. a. State level b. Local level	2. Contact employment service. Contact state department of agriculture. Contact state sales tax department to identify agricultural businesses. Contact economic development commissions. Check telephone directories.
3. Solicit support and involve state or local agriculturally oriented associations, businesses, and industrial concerns.	3. Determine occupations for which agricultural education is required or desired. Determine the level of training needed for specific occupational "families". Determine rate of turnover. Determine future needs. Determine what training is the responsibility of industry and education. Determine whether the program is needed for retraining, upgrading, or entry training. Determine salary schedule. Determine agricultural knowledge and skills needed by the job and by the instructor. Determine the opportunities for on-the-job training. Determine legal implications.
4. Solicit support of and involve professional agricultural people.	4. Determine job opportunities. Determine staff needs. Determine course content and training requirement needs. Help in recruitment and placement.
5. Organize and work with state and local advisory committees.	5. Advise in formulating philosophy and policy.
6. Analyze existing data.	6. Determine extent and success of existing programs.
7. Study geographical location of students and their interests.	7. Utilize local, county, and area surveys to determine job opportunities of potential enrollees.
8. Study the occupational interests and agricultural education needs of students.	8. Involve parents, guidance counselors, high school principals, vocational agriculture teachers, and students.
9. Determine the curriculum and the number of centers in which each is offered.	9. Evaluate preceding steps. a. Determine job clusters and curriculum. b. Determine level of training needed. c. Determine how many students (by areas) are interested in the curriculum offered.
10. Conduct pilot programs.	10. Determine location, curriculum, students, facilities, organization, and operation of the pilot program. Maintain continuous evaluation by all concerned, including students.

Steps to Follow in Determining Needs	How to Accomplish These Steps
11. Develop state master plan for technical education and continuous system of evaluation.	11. Analyze preceding data, identify principles, develop a philosophy, plan an action program. Develop an action program in agricultural education that meets the occupational training needs of all levels below the baccalaureate degree. Coordinate the plan for agricultural technical education with other agricultural education programs.

TASK FORCE NO. 2

CURRICULAR CONSIDERATIONS FOR AGRICULTURAL TECHNICIAN TRAINING

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TASK FORCE NO. 2

CURRICULAR CONSIDERATIONS FOR AGRICULTURAL TECHNICIAN TRAINING

I. Possible Areas of Consideration by the Task Force

Orientation
Agricultural and industrial correlation
    Job analysis
    Job requirements
Content, balance between general and technical education (core elements)
Accreditation
Licensing
Certification
Diplomas
Credentials
Cooperative education
Occupational experiences
Occupational classifications
Research and evaluation
Teaching materials
Instructional aids and devices
Pre-service technical education
Upgrading of employed technicians

II. Problems and Issues

A. How can high quality instructional programs be established and maintained at the technical level?

B. Should technician curricular offerings be broadened?

C. Are standardized technical curricula desirable?

D. What research is needed to guide the expansion and improvement of agricultural technician programs?

E. Are pre-service technical and upgrading programs for technicians compatible in the same institution?

F. How can occupational experience programs become integral, effective, and supportive to the formal education effort?

G. What influence should existing technology programs have on the development and establishment of new ones?

H. Typically, what technical curricula have been offered?

I. Are there cores of knowledge and skill common to various kinds of technician programs?

J. What balance between general and special education should there be in the technicians' curriculum?

K. What can be done to relate special education to specific job requirements?

L. What effort should be made to attempt transfer of credits from technical schools to four-year colleges and universities?

M. Should agricultural technician training programs be structured as "field" oriented or as "job" oriented?

N. What arrangements are needed with cooperating agencies and firms to assure an effective educational experience is obtained in work experience programs?

O. What procedures and regulations of accreditation, licensing, and certification are needed to assure adherence to minimum acceptable standards of technical education and to protect graduates of bona fide programs?

P. ?

III. Trends

A. A standardization of level of post-high-school level work--neither trade nor professional.

B. The amount and quality of general education in the technical curricula are increasing.

C. Accreditation and licensing procedures will serve to assure adherence to acceptable standards by technical training institutions.

D. There is a trend to standardize curricula.

E. State and local surveys of employers are being made as the basis for program development.

F. The range of offerings in the technical education field is increasing to include many new areas.

G. The number of pre-employment programs is increasing markedly.

H. Accreditation by national bodies is expanding slowly; certificates are being issued for completion.

I. The Associate of Arts degree is gradually becoming recognized as the technical certificate.

J. Certification or licensing of technicians will expand.

K. ?

IV. Study of Selected Problems by the Task Force Group

A. Problem 1

1. Problem

Develop a guide for establishing a curriculum for agricultural technician training programs. This problem presumes the program to be post-high school, two-year, and at the technical level.

2. Suggested Course of Action

Consider adopting the following broad curriculum content guide:

I. General Education ---------- 20-30%

A. Communication Skills
B. Social Science, Economics, Human Relations

II. Math and Science ---------- 10-20%

A. Basic
B. Applied

III. Agriculture Business or Other Auxiliary Services -- 10-20%

A. Marketing
B. Accounting
C. Economics

IV. Technical Agriculture ---------- 30-40%

A. Specialty Areas

V. Electives ---------- 0-10%

B. Problem 2

1. Problem

Develop a procedure for program planning and course development.

2. Suggested Course of Action

Consider adopting the following outline to guide program curriculum development:

I. Determination of Needs -- Involve lay advisory committee

II. Program Development -- Include administration and staff

A. Curriculum
B. Student Services
C. Finances
D. Staffing
E. Other

III. Course Development and Implementation -- Have instructional staff direct

A. Course Content
B. Instructional Materials
C. Instructional Coordination (internal and external)
D. Evaluation

IV. Follow-up and Program Evaluation

C. Problem 3

1. Problem

Develop a relationship in cooperative education to provide for occupational experiences.

2. Suggested Course of Action

Work (learning) experience is desirable. This experience should be adaptable to the industry. It should be for credit and it should be supervised in cooperation with the employer. Responsibilities, liabilities, and insurance are critical considerations.

D. Problem 4

1. Problem

Should provisions be made for upgrading of employed technicians?

2. Suggested Course of Action

A continuing education service of short, intensive courses for the upgrading of technicians should be included as part of the technician training program.

TASK FORCE NO. 3

STAFFING AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

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TASK FORCE NO. 3

STAFFING AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

I. Possible Areas of Consideration by the Task Force

Administrative personnel
Supervisory personnel
Instructional personnel
Industrial specialists
Educational consultants
Recruitment
Qualifications
Leadership responsibilities
Teacher education
  Pre-service
  In-service

II. Problems and Issues

A. What technical and professional qualifications are desirable for teachers in technical education programs?

B. What is the leadership role of state staffs in technical education in agriculture?

C. Should teachers be recruited from the agricultural industry and prepared professionally to teach or should teacher trainees attempt to become occupationally competent through on-the-job training in industry?

D. What role should supervisors have in technical education in agriculture?

E. How can teacher education programs prepare and upgrade present vocational teachers for the task of instructing in technical education programs?

F. What staffing patterns and procedures have been used successfully by other technical education areas?

G. What shifts in staffing will be necessary in our present agricultural education programs to provide for effective technical education?

H. Can teacher education programs meet the need for technical instructors, supervisors, and administrators?

I. ?

III. Trends

A. Professional, highly technically qualified men from industry, many with teacher education background, are returning to the classrooms of technical schools on a part-time basis.

B. Technical education staffs are being appointed to direct state efforts in this field.

C. Qualified teachers, supervisors, and administrative personnel are in short supply.

D. Teacher training programs for preparing teachers and supervisors in technical education are being developed.

E. ?

IV. Study of Selected Problems by the Task Force Group

A. Problem 1

1. Problem

What professional and technical qualifications are desirable in technical education programs?

2. Suggested Course of Action

Consider the following suggested standards:

I. General Qualifications

A. Demonstrated competence through experience in the agricultural occupation

B. Interest in the program

C. Desirable physical and personal traits

II. Specific Qualifications

A. Master of Science degree in field of specialization plus one or more years of experience in the field, including X credits of professional education (methods, etc.).

B. Bachelor of Science in Agricultural Education plus Master of Science in specialty field

C. Bachelor of Science in special field plus Master of Science in Agricultural Education or Education

III. Alternate or Equivalent

A. X years of experience or X level of achievement in competency examinations, plus continuous in-service professional and technical (college level or trade equivalent) courses leading to "B" above.

B. Problem 2

1. Problem

Who has the leadership role in technical education in agriculture?

2. Suggested Course of Action

a. All agencies concerned should meet to gain understanding of member role and to coordinate a statewide technical education program.

b. In preparation of revised state plans, all public institutions concerned should be involved.

c. Initiative for developing statewide programs may arise from any interested source; however, such offices as state superintendent of public instruction, state supervisor of agriculture, and teacher education are looked to for initiating leadership action.

C. Problem 3

1. Problem

What local leadership is needed in technical education programs?

2. Suggested Course of Action

Professional staff members in those institutions which have been offering technical agriculture programs for years indicate that it is very important that a staff member be designated as coordinator or division head for each field of specialization and possess the following qualifications:

a. Competence in his field

b. Knowledge of the industry and with status of agriculture

c. Demonstrated ability in administration, supervision, and human relations

d. Master's degree plus experience in his specialized field.

D. Problem 4

1. Problem

What is the role of the state staff in technical education programs?

2. Suggested Course of Action

Consider the following outline as a guide:

I. State Supervisory Staff Responsibilities

A. See that needs of technical education in agriculture are determined.

B. Analyze and assess the ways in which needs might be met.

C. Stimulate, promote, and assist in the development of the program.

D. See that resources are made available.

E. Coordinate the program with other elements of agricultural education.

F. Conduct continual evaluation (including research).

II. Teacher Education Responsibilities

A. Cooperate with state staff in providing the needed teachers.

B. Provide the opportunity for graduate programs of professional education for those prospective technician teachers who have baccalaureate degrees in a specialized subject matter area.

C. Provide appropriate in-service education for increasing the professional competence of teachers of technician education.

D. Exercise leadership in developing needed research in the area of technician training.

TASK FORCE NO. 4

FACILITIES AND EQUIPMENT FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

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TASK FORCE NO. 4

FACILITIES AND EQUIPMENT FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

I. Possible Areas of Consideration by the Task Force

Classrooms
Shops
Laboratories
Agricultural production resources
Tools
Machinery
Equipment
Industrial resources

II. Problems and Issues

A. What facilities and equipment are needed for various technical education programs?

B. How do these differ from those used in trade-vocational schools and in professional programs?

C. How can technical schools assure themselves of keeping current and up-to-date in terms of facilities and equipment?

D. How can facilities and equipment be utilized to the greatest extent possible considering the total technical school needs? How can the program be most flexible and adaptable in this regard?

E. Is it feasible for vocational, technical, and pre-professional student groups to use the same facilities and equipment?

F. Are there lists of recommended facilities and equipment available for various technical training programs?

G. What expenditures can be anticipated for various facilities and different equipment necessary for technical training programs?

H. What cooperative arrangements are possible with industry for use of facilities and equipment, especially in periods of low industrial use?

I. ?

III. Trends

A. Educational administrators and planners are recognizing the specialized needs of technical education programs for facilities and equipment.

B. Industrial leaders are accepting a greater share of the educational endeavor and are giving support to technical programs by extending financial assistance, cooperating in work experience programs, serving on advisory committees, and making facilities and equipment available for use.

C. Lease arrangements are being used on equipment for educational purposes.

D. ?

IV. Study of a Selected Problem by the Task Force Group

A. The Problem

How to effectively match the facilities and equipment required with the program of instruction planned or offered so that instruction will be properly supported.

B. Suggested Course of Action

Each state promptly initiate action to establish recommended policies relative to facilities and equipment for the type of program to be offered. Concurrent with the development of policies, each state should develop lists of equipment and set basic standards for facilities.

1. Suggested Guidelines for the Establishment of Basic Policy

a. In attaining the objectives for training agricultural technicians, facilities and equipment must be of such nature and quantity as to encourage effective implementation of the instructional program which has been designed to develop the desired technical competencies.

b. Every effort should be expended to secure high quality, necessary equipment and facilities.

c. Maximum and efficient use should be made of all existing facilities and equipment which are appropriate to technical education.

2. Facilities

Specific guidelines need to be developed by each state.

a. Classrooms - Should be of adequate size and number for the program(s)

b. Laboratories - Sufficient in size and number to serve each subject matter area, such as soil science, horticulture (greenhouse), animal science, etc.

c. Shops - Agricultural and mechanical

d. Land laboratory - Adequate for curriculum content; can vary from a few acres to a large farm

e. Industrial facilities - The possibility of using this type of facility should be explored; examples, food processing (canning, freezing), seed cleaning, meat packing

3. Equipment

a. The equipment necessary to fully utilize the facilities which are needed for the programs of instruction should be provided.

b. Equipment should be comparable, insofar as possible, to that used in industry.

c. All sources of supply for equipment should be thoroughly explored. Some sources are:

(1) Donations - Gifts from individuals and/or business concerns

(2) Loans - Specialized equipment which may be borrowed by school for a specified period of time or a specific unit of instruction

(3) Rent or Lease - This may be an especially important source of supply for expensive equipment or equipment which tends to early obsolescence.

(4) Purchase

d. Extreme care should be exercised to avoid overbuying of equipment.

4. Special Considerations

a. Sharing of facilities should be approached with caution. This does not preclude the sharing of facilities, but such sharing should be carefully organized and coordinated at all administrative levels.

b. All facilities should be designed to assure maximum flexibility and adaptability.

TASK FORCE NO. 5

STUDENT SERVICES FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

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TASK FORCE NO. 5

STUDENT SERVICES FOR AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

I. Possible Areas of Consideration by the Task Force

Recruitment
Selection
Admission
Counseling
Guidance
Remedial services
Extra-curricular activities
Student organizations and other leadership activities
Student records
Library
Resident facilities
Financial aid
Transportation
Placement
Follow-up

II. Problems and Issues

A. How can an effective recruitment program be developed to attract competent students?

B. What criteria are most effective for use in student selection and admission to technical education programs?

C. Should institutions offering technical training serve remedial needs of persons not meeting prerequisite standards?

D. What is the responsibility of the training institution for job placement and follow-up?

E. Should counseling and guidance be the responsibility of the technical staff or should general student service personnel provide this service?

F. How can education assist industry in effectively deploying and utilizing persons who are trained and prepared at various levels of occupational preparation?

G. ?

III. Trends

A. Technical education is realizing larger total enrollments and a larger percentage of all students enrolled in post-high school education.

B. Recruiting continues to be a major problem.

C. The need for selectivity is being recognized in student recruitment.

D. More emphasis is being placed on guidance and counseling.

E. Placement after graduation and follow-up continue to be measures of success of the program.

F. The addition of more and higher quality student services is exhibited as schools grow and additional funds are made available.

G. ?

IV. Study of Selected Problems by the Task Force Group

A. Problem 1

1. Problem

How can an effective recruitment program be developed to attract competent students? Evidence from this seminar would indicate that opportunity exists for agricultural technicians with post-high school training; however, since neither prospective students nor prospective employers always recognize this need, effective recruitment procedures are paramount to the successful initiation of a program.

2. Suggested Courses of Action

a. Develop only programs that are needed, with the services of a carefully selected advisory committee.

b. Publicize the program through established news media.

c. Print brochures of the program, indicating employment opportunities, curriculum, cost to the student, and other pertinent information and then distribute to prospective students, employers, and others who might be in contact with potential enrollees.

d. Make personal contacts with:

(1) Vocational agriculture instructors

(2) Guidance and other school personnel at state and local levels

(3) County agricultural agents

(4) Other interested professional and business people

(5) Prospective students and their parents

(6) Prospective employers, including their trade associations.

e. Appear before:

(1) Civic groups, P.T.A., etc.

(2) High school career day programs

(3) State and local association meetings, such as co-ops, etc.

(4) Any other meeting which might reach potential students.

f. Conduct special events at training institutions, such as open house, career days, etc.

B. Problem 2

1. Problem

For technical programs in agriculture, what devices may be used to complement existing admission tools? In general, educators have utilized standardized tests and academic records for admission and placement. Emphasis has been on the selection of students for four-year college programs. Tests have not been extensively developed to measure aptitudes of students for technical training.

2. Suggested Courses of Action

a. Study effectiveness of devices commonly used for college admissions:

(1) Tests, e.g., General Scholastic Aptitude, American College Testing Program, etc.

(2) High school academic records.

b. Select students who have interest in and aptitudes for specific technical programs, utilizing the following:

(1) High school records

(2) Recommendations from high school teachers

(3) Personal interviews by instructors in selected technical programs

(4) Tests that will measure aptitudes needed for success in technical areas of agriculture.

C. Problem 3

1. Problem

There is need for continuous leadership training through a student organization and activity program in institutions offering technical education. This is needed to:

a. Fulfill a continuing need for organizational activities between high school and entry into adult organizations

b. Provide organized leadership training outside the classroom

c. Provide participation experiences in and develop a feeling of responsibility for organizational activities that may be carried on in the community

d. Supplement the instructional program.

2. Suggested Courses of Action

a. Develop with the entire school staff an overall program of activities suitable to the institution.

b. Have members of the staff assume responsibility for advising and counseling student activities. Staff members should assume initiative in developing student leadership for specific activities, including such functions as programming, scheduling, etc.

c. Build on students' experiences resulting from earlier activities in Scouts, 4-H, FFA, and other organizations.

d. Correlate activities with the instructional program.

e. Encourage affiliation with appropriate service clubs or trade associations.

f. Develop appropriate athletic and recreational activities.

g. Survey activities being conducted by similar institutions in the area.

h. Evaluate activities continually to determine their value in the overall program. Use student leaders as a "sounding board" for program changes.

i. Conduct research to determine organizations and activities being operated successfully throughout the country.

TASK FORCE NO. 6

FINANCING OF AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

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	J. H. Copenhaver, Virginia

TASK FORCE NO. 6

FINANCING OF AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

I. Possible Areas of Consideration by the Task Force

- Financial support
- Budgeting
- Accounting
- Sources of funds
- Cost control
- Operating costs
  - Salaries
  - Supplies
  - Instructional materials
- Capital outlay
- Relative proportion of support
  - Federal
  - State
  - Local
  - Student

II. Problems and Issues

A. Who should bear the costs of technician training?

B. What should federal, state, and local participation be in financing technical education programs?

C. Should local school districts bear the financial burden of training out-of-district students or should the area of residence share the cost?

D. Should students bear a considerable part of the expense of post-high school technical education or should it be supported as secondary schools are supported?

E. What is included in the costs of training?

F. What are typical expenditures for various kinds of technical programs and for various phases within a given technical program?

G. What can be done by districts on a reciprocal basis to share the high costs of specialized programs?

H. ?

III. Trends

A. Public support is increasing financially and in the acceptance of technical workers.

B. Costs of technical education continue to rise.

C. The earning power of workers prepared in technical training is increasing proportionately to earnings of other workers.

D. ?

IV. Study of a Selected Problem by the Task Force Group

A. The Problem

The financing of a post-high school technical education program in agriculture has developed amid a diversity of laws and policies within the various states. There has been increased support for technical education in agriculture in several states and on the part of the federal government. In many cases, funds have been made available or will become available in the immediate future. Moreover, the whole educational climate is more receptive to technical education. In substance, then, the problems of financing are matters of organizing or arranging a financial pattern within the structure of the various states.

Proposed legislation gives encouragement to a comprehensive program of technical education. How these funds can be wisely or fairly used to make the program available to all interested youth challenges vocational agriculture leadership. Non-farm employment opportunities are frequently not found in communities where these youth reside. Furthermore, technical schools cannot be established in all communities. Therefore, it is difficult to determine the proper share that the student, the local community, the state, or the federal government should provide.

B. Suggested Courses of Action

1. Examples of procedures followed in each of several states for financing two-year preparatory programs in agricultural technology are as follows:

a. "Currently, all programs are given at the State University.

Student fees: $175 in state, $350 out-of-state, per ten-week term

50% student funds - 50% state funds"

b. "Approximation of share of total expenses:
Federal and state -- 65%
Local ---------- 20%
Student ---------- 15%

The general procedure in the past has been for the county (local) to pay for building and land.

A state appropriation of $187,000 was made available to develop programs in agricultural technology. These programs now exist in ten institutes across the state."

c. "100% financed from State University funds and $400 student tuition."

d. "Student fees per year -- $212

Instructional staff and materials from University budget.

Coordinators of each program:
25% of salary and in-state travel from vocational education funds
75% University budget"

e. "Financed by the College of Agriculture with state funds and student tuition."

f. "When initiating or expanding programs:

First Year	-- 100%	Federal funds
Second Year	-- 100%	
Third Year	-- 75%	Balance 50% net maintenance from state and local funds
Fourth Year	-- 50%	
Fifth Year	-- 25%	

For continuing an established program:
50% net maintenance
100% for travel and expenses

All post-secondary programs are free to residents of the state. No tuition charge is made to students except for out-of-district students ($500). In such cases the town of residence is required to pay the entire amount of tuition of which 50% will be reimbursed by the state."

g. "Local property tax ---------- 75%
State income (based on average daily attendance) --- 25%

No in-state tuition

Out-of-state tuition: $10 per unit; maximum, $150 per student"

h. "State University supported. No vocational funds used."

i. "Operating expenses reimbursed 50% from federal funds, balance from state funds.

Travel reimbursed 50% from federal funds, balance from state funds.

Buildings, facilities, and all other expenses are contributed by the State University.

Student tuition: $380 in-state
$925 out-of-state"

j. "Federal funds: $7,500 per course for equipment
100% of personnel costs until course starts
66 2/3% of instructional costs
75% of travel and subsistence for instructors
100% of subsistence for workshops, etc.

Student fees: $375 within district (approximately one-third of instructional costs)
$407 out-of-district (includes $75 for books and laboratory fees)

Local community furnishes facilities."

2. Suggested patterns for establishment (future):

a. Apply new funds only for post-high school and adult education on the basis of 66 2/3 per cent reimbursement for operation of program as long as funds are available.

b. Finance teacher's salaries as follows:

	Federal Funds	State Funds	Local Funds
First Year ---	100%	-----	-----
Second Year ---	100%	-----	-----
Third Year ---	75%	12.5%	12.5%
Fourth Year ---	50%	25.0%	25.0%
Fifth Year ---	25%	37.5%	37.5%

Travel and expenses:
50% from federal and state funds
50% from local funds

c. 75% of operational costs from state and federal funds except for non-technical teachers
$ 7 per semester hour for each student, reimbursed from state funds
$90 tuition per year

3. Funds under the Vocational Education Act of 1963 (P.L. 88-210)

a. Construction

The Vocational Education Act of 1963 authorizes federal funds for vocational and technical education, which may be used for the construction of new buildings, including initial equipment and expansion, remodeling, and alteration of existing buildings. Site grading and improvement and architect fees are also included. Federal funds may be used for up to one-half of the eligible cost. Public Law 88-210, Section 4 (a) (5) and Section 8 (2) should be consulted for additional information.

b. Matching requirements and purposes

When the regulations for the new act are finalized, careful study should be made of those sections relating to amounts required, sources of matching funds, basis for matching, and matching purposes. Interested educators making such studies should be able to obtain information that will enable them to achieve maximum use of local and state funds for matching purposes in agricultural technology programs.

PART IV

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BIBLIOGRAPHY

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The Role of Distributive Teacher Educators in Adult Education

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FOREWORD

The Council for Distributive Teacher Education was organized and its constitution adopted at the annual meeting of the American Vocational Association on December 5, 1961. Membership in the Council is composed of teacher educators for distributive education and other professional education personnel interested in the preparation of teachers of distribution.

This series of professional bulletins summarizes pertinent research and other types of investigations relating to distributive teacher education. In doing so, the series implements some of the aims of the Council, among them "... to stimulate the production and use of research..." and "... to encourage the development and improvement of standards..."

This study is a summary of the activities of institutional educators as they reported them, and no attempt is made to evaluate or criticize, although some recommendations emerge as an end-product. It is hoped it may lead to a critical examination of the activities, intentions, and functions of teacher educators for distributive education so that evaluation may determine guidelines for program improvement.

This bulletin is a report of an investigation conducted by Fairchild H. Carter of Indiana University, and edited by Peter G. Haines, President, Council for Distributive Teacher Education.

INTRODUCTION

The discipline of distribution is a relative newcomer in the subject matter areas. Teacher education for such a new body of knowledge is likewise young. It must borrow from experience in other areas, experiment, adapt, reject, revise, and develop as dynamic a system as possible within realistic limits of time and money in order to serve best the function it is designed to perform.

Historically, in the comparatively short span of its existence, distributive education has become a robust program in many areas and must exchange information concerning practices, successes, and failures to continue to develop nationally.

Teacher educators in the field of distributive education appear to be uniquely agreeable to such cooperative efforts, evidenced by the interest and responses in studies such as this.

DEFINITION OF TERMS

Adult Distributive Education - instruction offered to adults or out-of-school youth over sixteen years of age who are employed in distributive occupations. It is chiefly of an upgrading nature, offered on a part-time basis.

Consultant - a recognized expert in a specialized field, not vested with administrative authority, whose advice is sought by the organization in the improvement of its operation and/or facilities.

PROCEDURES

During the past few years, at regional and national meetings and conferences, it became apparent that there were many divergent patterns of operation employed by the teacher educators for distributive education located in various institutions operating teacher education programs. Anticipating that an investigation into the various *modus operandi* might be valuable as well as illuminating, the leadership of CDTE decided to collect and report the practices of distributive teacher educators for adult education.

A letter (Appendix A) was sent to each teacher educator listed in the Directory of Teacher Educators for Distributive Education furnished by the Distributive Education Branch of the United States Office of Education. It was requested that each teacher educator list any function he performed in

adult education during the last two years. Responses were received from 25 institutions in 23 states.

The items listed in the responses to the query were listed and grouped in areas of similarity. An inquiry form (Appendix B) was developed and submitted to the same group with another letter (Appendix C). Responses to the final questionnaire were received from 22 institutions in 20 states. Because the number of persons involved was small, the percentages could be changed materially with a slight change in actival responses.

FINDINGS

The responses were arbitrarily divided into five groups for purposes of analysis and discussion. There is bound to be overlapping in performance. The divisions were:

I. Organizational patterns, including administration, supervision, evaluation, financing, sponsorship, and time allocation.

II. Services performed for business organizations or groups, including courses presented.

III. Services performed for teachers and local school systems.

IV. Services performed for both business and school organizations.

V. Professional affiliations, organizations, research, comments, and suggestions.

PART I

Organizational patterns, including administration, supervision, evaluation, financing, sponsorship, and time allocations.

Line and staff relationships within the institutions surveyed show no identical patterns. Most of the respondents, however, did show themselves as faculty in the school of education. Some of the distributive teacher educators were located in the business education section of a school of business. Some operate as a part of the extension division. A small percentage were responsible to the dean of arts and sciences. In some institutions, the teacher educator is responsible to different deans for various functions.

Responsibility of Institutional Teacher Educators for Function Performed

	Dean School of Education	Other Dean	State	Extension Division	Local School
Adult conferences and noncredit classes	Head, Voc. Ed. Dept. 5	3	5	2	1
Itinerant instruction	3	1	6		1
Total teacher education program	Head, Voc. Ed. Dept. 11	Bus. Sch. 2	2		

Some teacher educators have no itinerant instructor function and some respondents admitted no responsibility for a total teacher education program.

About 30 per cent of the teacher educators supervise field instruction, two thirds are involved in occasional teaching of employed adults and 75 per cent will render assistance to local school personnel in the development of programs.

Budget provisions. With reference to the budgeting for the costs of the adult education activity, 50 per cent included them as a part of the teacher education budget. Almost 25 per cent did not respond and slightly over one fourth did not differentiate between the costs incurred in formal teacher education and activities for adult education. Some specific comments of note were expressed. One of the respondents noted that all income for the adult education program was secured from the participant's fees. Another said the budget made no provision for adult education. A third said he performed his adult education services under a separate budget provided by state funds to the institution's continuing education service. Another institution had an account for itinerant instruction which acted as a revolving fund financing deficit costs and receiving fees paid by the students.

Sources of funds. Approximately one third of the respondents did not respond to the query concerning sources of funds. Slightly less than one third identified state funds as the source of reimbursement, while one third used both state and federal funds. One institution uses federal funds only for matching their funds in the adult education budget.

Fees charged by the institution for consultative services.

One seventh of the respondents noted that their institution charged fees for their services as consultants. Over 50 per cent perform consultative functions as a service without fees, and no information was furnished by one third of the respondents. In some cases, no responses could be interpreted to mean that no consultative services were performed.

Fees for consultative services by the teacher educator as an individual.

More than 50 per cent of the teacher educators who responded are allowed under the policy of their employers to charge for consultative services as an individual. Less than one fourth are definitely prohibited from receiving consultants' fees according to the policies of their institution. No response to this item was received from approximately 30 per cent of the respondents and it was suggested that the item was not a matter of consideration for some of them.

Evaluation activities of teacher educators in adult education.

Less than 50 per cent of the teacher educators noted any evaluation activities of any kind. Those who did respond expressed a great deal of range in personal participation in such activities and listed such items as:

Evaluation at end of each workshop
Visit graduation exercises
Use follow-up questionnaires
Visit student teachers
Weak and strong points discussed
Use training profile and guide
Use evaluation forms

The amount of time devoted to evaluation by those who designated such an activity varied from one fourth of one per cent to 5 per cent. Minnesota returned the evaluation form they are currently using for adult education evaluation. It is Appendix item D.

Amount of time allocated to adult education.

The institutional teacher educators who have responsibility for some functions in adult education spend from 5 per cent to 100 per cent of their time in such assignments. A majority of the respondents, however, estimated they devoted about 20 to 25 per cent of their time to adult education activities.

Use of local distributive education personnel in planning and promoting institution-sponsored programs.

Less than 30 per cent of the teacher educators employed local distributive education personnel to assist them in planning and promoting institution-sponsored programs. Some of the respondents who do not use local personnel for such functions mentioned they do not sponsor programs directly in which they could use such persons. Less than half the institutions sponsor noncredit adult distributive education courses directly.

PART II

Services performed for business organizations or groups, including course presentation.

Approximately half the teacher educators taught adult classes for personnel employed in the distributive occupations in the areas of development of supervisory personnel, sales, foreign trade, recruitment, management, sales promotion, and public relations. About 40 per cent do not perform any functions in field instruction, and the remainder only do such work occasionally. Those who do listed specific organizations and activities as:

Organization	Courses
Hotel Association	Hotel Management
Sales Executive Club	Sales Development Series
Chamber of Commerce	Export Seminar
Chamber of Commerce	Tourist Club
	Foreign Trade Course
Rotary Club	Small Business Management Clinic
Local Banks	Small Business Management Clinic
Restaurant Association	Food Sales Development
Paint Dealers Association	Sales
Grocers Association	Personnel Development
Lumber Dealers	Consultative
American Collectors Association	Procedures
Tourist Resort Association	Promotion
Wholesalers	Supervisory Clinic
Retail Association	Supervisory Clinic
Oak Ridge Chamber of Commerce	SBA Clinic
National Tool and Die	Institute
State Highway	Job Instruction Training
Cosmetology Association	Institute
Society of Architecture	Institute
Social Security Association	District Officer Training
Transportation Association	Supervisory
Petroleum	Retail Gas
Pharmacists	Sales Personnel Training
Hardware Association	Personnel Recruitment
Pharmacists	Public Relations

Other courses listed as being taught were:

Sources of Aid and Information
Principles of Salesmanship (for route driver salesmen)
Municipal Management
Learning the Tourist Needs
National Institute for Audio-Visual Selling
Short Course in Restaurant Management
Dining Room Management
Display
Retail Advertising Clinic
Better Business Communications
Conference Leadership
The Corrective Interview

PART III

Services performed for teachers and local school systems by distributive teacher educators.

The performing of services by the teacher educators for local school systems and teachers was mentioned in Part I of Findings when functions and assignments were discussed.

They assist the local systems by supervision of field instruction, by actually teaching the adult classes in some instance, and by performing staff functions for the local coordinators by assisting in promotion, program development, and furnishing of instructional outlines for the offerings in adult education.

Slightly over one half of the teacher educators visit the local schools for these purposes. Those who do, make from one to forty visits a year in total. Some visit only upon request and some spend as much as 25 per cent of their time in such work.

PART IV

Services performed by distributive teacher educators which assist both business organizations or groups and schools.

Less than 30 per cent of the respondents had offered noncredit courses for contingent or occasional teachers during the last two years. Those who did presented courses in teacher education for telephone sales personnel trainers, waitress instructors, and local or statewide itinerant call staff personnel.

Approximately two thirds of the institutional teacher educators for distributive education worked with steering and advisory committees of business people and local educators in planning and developing adult programs for trade groups. Specifically mentioned were:

American Hotel Institute
State Hotel Association
American Collectors Association
Automotive Wholesalers
Retail Merchants Association
General Telephone Company

Restaurant Association
State Tourist and Resort Service
Wholesalers Association
Lumber Dealers' Association
Retail Division of Chamber of Commerce
Wholesale Furniture Association
Salesman Association
Architectural Hardware Association
Cosmetology Institute
Statewide Advertising Committee
Local Dairy Association
Greater State Association

Less than 30 per cent of the teacher educators did actual promotion of classes. Those who did mentioned:

Hotel Supervisory Development
Cosmetology Institute
Supervisory Communications Conference Teaching
Tourist Information
Small Business Management Clinics
Retail Merchants Association Classes
Supervisory Personnel Training

Almost 40 per cent of the teacher educators remarked that they reviewed and revised course outlines in cooperation with the actual developers of the materials and with the instructors who presented the materials to the adult classes. Titles mentioned were:

Merchandising the Smaller Store
Supervising Human Relations
Wholesale Management
Personnel Development Programs
Architectural Hardware
Cosmetology Institute
Restaurant Management
Salesmanship
Food Service
Sales Clinics

Almost 60 per cent of the respondents assisted in business seminars and conferences during the two-year period covered in the reports.

PART V

Professional organization affiliations, research, comments, suggestions.

The professional affiliations listed by the respondents included the entire gamut of professional organizations for specific and allied fields of vocational education, as well as general education groups. Some honorary fraternities were mentioned, and a few identified themselves as members of trade and business associations. The following were identified:

Council for Distributive Teacher Education
National Association State Supervisors Adult Education
National Retail Merchants Association
Sales and Marketing Executives

Training Directors
Delta Pi Epsilon
Phi Delta Kappa
American Vocational Association
State Education Association
National Education Association
Local Teachers Association
State Vocational Association
National Association of Distributive Education Teachers
National Association of State Supervisors of D. E.
Council for Adult Education
State Distributive Education Association

Less than 30 per cent of the educators identified any research in adult education in the period covered by the questionnaire. Those who did mentioned such items as a review of the projects, surveys, and studies conducted by field instructors, an analysis of attendance reports, and surveys of service performed for the staff and institution.

About two thirds of the respondents had suggestions for changes in current practices in their institutions, and included in the composite list were such items as:

Train more instructors and coordinators
Secure more funds
Have person available to travel state
Employ research person
Add to state staff
Provide more courses in adult education at graduate level
Prepare better qualified teachers
Obtain longer training time
Emphasize local coordinator's responsibility for development program

SUMMARY AND CONCLUSIONS

The findings of the study demonstrate the freedom of decision for operational patterns and the lack of rigid structuring in the varied state patterns of activities of distributive teacher educators for adult education.

There appears to be a tendency to identify the programs with the school of education in the institutions rather than other divisions, and it appears that teacher educators perform in some states what are considered state staff functions in others.

The differences which occur in budget provisions for adult education may be due to differences in the flexibility of institutional budgets compared to the rigidity of state department budgets or vice versa.

Sources and proportions of funds are as varied as operational policies and depend upon such vagaries as political affiliation and philosophies about federal aid to education.

The charging of fees is virtually on an individual basis.

Evaluation activities of the teacher educators for adult education appear to be arrayed along a continuum from minutely detailed to non-existent.

Time allocations and working arrangements with other-than-institutional personnel, too, seem to have no pattern.

The findings concerning the services offered to the schools, to business, and to the combination seemed to have more consistent patterns of response than did the operational patterns of the various institutions and states concerned with the instruction. It would appear that comparable groups are served in similar ways in the several states.

Membership in professional and business organizations was very common but demonstrated few identical patterns.

Generally, the teacher educators expressed an interest in research but less than one third had any underway at the time of the survey.

The suggestions for change, of course, emphasized more funds and more and better prepared personnel.

Very obviously, there is a great deal of diversity in practice because of differences in state plans, personnel, institutional leadership, precedent, patterns of support, and philosophies.

There is a great deal of interest and similarity in the two problems of more adequate financial support and better prepared personnel.

RECOMMENDATIONS

1. Conduct program evaluation in terms of others' patterns of operation.

2. Develop a study comparing the actual functions performed by teacher educators with their expressed intentions and philosophies.

3. It would be interesting to have available a study comparing the stated functions of the teacher educator with the functions that the state supervisors believe are the duties of the teacher educator.

APPENDIX A

The Council for Distributive Teacher Education is interested in ascertaining the responsibilities of teacher educators in the field of adult education. It appears the assignments are so nebulous as to be indefinable, but we will appreciate it if you will send a list of the functions you have performed over the last two years in adult education.

We will arrange them into categories and re-submit them to all the teacher educators listed in the Directory from the Distributive Education Branch of the United States Office of Education. The findings will be reported and distributed to all the participants and other interested parties.

Very truly yours,

Fairchild H. Carter

FHC:llf

This letter was sent to all teacher educators listed in the Directory of the Distributive Education Branch of the United States Office of Education.

APPENDIX B

Practices of Distributive Teacher
Educators for Adult Education
Two-year period beginning Fall Term 1960,
Ending Summer Term 1962

1. List workshops, institutes, and conferences held on or off campus during the last two years for local educators who direct and organize adult courses.

Title	Offered (session)

2. List adult education (noncredit) classes or courses taught by teacher educators during the last two years.

Title	Offered (session)	Time by hours	Off or on Campus

If on campus, what per cent of professional load was allocated to this activity? Assume 15 hours as a normal load. _____

3. List noncredit courses for teacher education for contingent or occasional teachers offered by the institution during the last two years.

Title	For Whom	Length of Class

4. List activities with steering and advisory committees of business people working with trade groups in planning adult programs.

Groups	No. of Meetings	Hours Spent in Meetings

5. List promotion of adult education courses.

Name of Class	What did you do? Talk, Flyer, etc.?

6. Consultative visits to local schools for the purpose of advising concerning adult education.

Number	Extent of Service

7. Show line and staff arrangements, assignments and responsibilities with which the institutional teacher education program is related. Please diagram on back of page using broken lines for staff and solid lines for authority.

e.g. Business Department
Education Dean or Department
Extension
Special Services
Other

8. Is the adult education activity in which the teacher educator is involved included as part of the teacher education budget?

Yes_____ No_____ Exceptions_____

_____

What type of reimbursement is used? State_____ Federal_____

9. Does your institution charge for consultative services? Yes_____ No_____

10. Can you charge for consultative services as an extra-institutional function? Yes_____ No_____

11. List activities involved in preparation and revision of topical outlines, instructional units, courses and instructional aids for adult education.

Title of Course	Aids	Outlines

What per cent of your time is devoted in this?_____%

12. List evaluation activities concerning adult classes and presentations in which the teacher educator is involved.

Evaluation_____

Criticism_____

Instruments used_____

% of time allocated to this?_____

13. What professional affiliation do you have in groups such as American Adult Education Association, SME, etc.?

Please list:

14. List activities of the teacher educator for research in the field of adult distributive education.

15. How should the practices be changed in order to facilitate development of programs of adult distributive education in your state or institution?

16. List the TE in your institutions and the per cent of time of full load they spend in adult education.

17. Have you ever employed local DE personnel part time in planning and promoting adult classes sponsored by your institution?

18. Who is your direct superior for:

	Dean Sch. of Education	Other Dean	State	Extension	Local Sch.
a. Adult conference and non-credit classes					
b. As an itinerant instructor					
c. Your total TE program					

19. Do you offer noncredit Adult DE courses through your institution?

Yes_____ No_____

20. How are you involved with the overall Adult DE program? (Check applicable items.)

_____ supervision of field instructor (s)

_____ occasional instruction

_____ assistance to local coordinators

Comments: _____

_____

_____

21. Have you been working with business organizations or trade associations in offering adult classes?
Yes_____ No_____

Please list the organizations contacted and briefly describe the activities undertaken:

ORGANIZATION	ACTIVITY

Comments: _____

_____

_____

_____

_____

_____

22. Do you assist in offering business seminars or conferences? Yes_____ No_____

Please list some of your recent conferences and briefly mention your involvement.

_____

_____

_____

_____

Comments: _____

_____

_____

General Comments:

Check here if you would like to receive a report of preliminary findings based on these questionnaires. Yes_____ No_____

Name_____

Position_____

School_____

Address_____

THANK YOU

ss

APPENDIX C

October 15, 1962

Practices of distributive teacher educators for adult education vary from state to state and institution to institution. In order to appraise the actual functions of the teacher educators in this area of their work, the Council of Distributive Teacher Educators is surveying for practices now currently operating in the institutions listed in the Directory of Teacher Educators for Distributive Education as published by the Distributive Education Branch of the Division of Vocational Education in the Office of Education of the U. S. Department of Health, Education, and Welfare, Washington, D. C.

Please complete the enclosed form as completely as possible and return in the enclosed envelope.

Specific case illustrations would be helpful where possible. It is hoped that the information may be ready for distribution by the time of AVA Convention in Milwaukee the first week in December.

Please do not confuse this with the research being done by Ed Scannell as we hope to have the results from both studies.

Write on the backs of the pages for more space if necessary. We will send each member a copy of the findings.

Very truly yours,

Fairchild Carter

FC/ss

Enclosed envelopes

This letter was sent to all teacher educators listed in the Directory of the Distributive Education Branch of the United States Office of Education.

APPENDIX D

SCALE FOR EVALUATING ADULT EDUCATION STUDENT TEACHING EXPERIENCES

Student _____
Supervising Teacher _____

University of Minnesota
Distributive Education
Date _____

	Circle One *					
I. COMPETENCIES						
A. Appraising Adult Instruction						
1. Ability to appraise adult instruction methods	*5	4	3	2	1	n.a.
2. Ability to appraise student teacher relationships	5	4	3	2	1	n.a.
3. Ability to appraise classroom management	5	4	3	2	1	n.a.
B. Administrative Procedures						
1. Understanding of federal, state, and local regulations	5	4	3	2	1	n.a.
2. Knows how to determine course offerings	5	4	3	2	1	n.a.
3. Ability in enrollment procedures	5	4	3	2	1	n.a.
4. " to keep attendance records	5	4	3	2	1	n.a.
5. " to keep student records	5	4	3	2	1	n.a.
6. " in caring for library, A-V materials, equipment	5	4	3	2	1	n.a.
7. " to counsel adult students	5	4	3	2	1	n.a.
8. Understanding of advisory committee procedure	5	4	3	2	1	n.a.
9. " the selection of new teachers	5	4	3	2	1	n.a.
C. Public Relations Techniques						
1. Ability to write flyers, news articles, brochures	5	4	3	2	1	n.a.
2. " to conduct a follow-up program (telephone)	5	4	3	2	1	n.a.
3. " to solicit class members individually	5	4	3	2	1	n.a.
4. Understanding of how to set up a course	5	4	3	2	1	n.a.
D. Skill in Instruction						
1. Skill in instructional planning	5	4	3	2	1	n.a.
2. " in using instructional methods	5	4	3	2	1	n.a.
3. " in classroom management	5	4	3	2	1	n.a.
4. " in classroom leadership	5	4	3	2	1	n.a.
E. Teacher Education of Adult Instructors						
1. Understanding of induction training	5	4	3	2	1	n.a.
2. " of in-service training	5	4	3	2	1	n.a.
3. " how to teach instructional planning	5	4	3	2	1	n.a.
4. Knowledge of available literature in adult teacher education	5	4	3	2	1	n.a.
II. BEHAVIOR CONTROLS						
A. Knowledges						
1. Understanding of adult learners	5	4	3	2	1	n.a.
2. " of principles of learning	5	4	3	2	1	n.a.
B. Interests, Attitudes, Ideals						
1. Professional attitude toward his work	5	4	3	2	1	n.a.
2. Attitude toward criticism	5	4	3	2	1	n.a.
3. Open-mindedness	5	4	3	2	1	n.a.
C. Generalized Skills						
1. Voice, expressiveness, and use of English	5	4	3	2	1	n.a.
2. Ability to meet people	5	4	3	2	1	n.a.

III. ESSENTIAL QUALITIES

1.	Intelligence (including personal and professional judgment)	5	4	3	2	1	n. a.
2.	Emotional stability (poise)	5	4	3	2	1	n. a.
3.	Reliability (dependability, responsibility, promptness)	5	4	3	2	1	n. a.
4.	Leadership (forcefulness)	5	4	3	2	1	n. a.
5.	Adaptability	5	4	3	2	1	n. a.
6.	Attractiveness (appearance, dress)	5	4	3	2	1	n. a.
7.	Consideratenesss (courtesy, tact, and sympathy)	5	4	3	2	1	n. a.
8.	Initiative (originality, resourcefulness)	5	4	3	2	1	n. a.
9.	Enthusiasm, energy, drive	5	4	3	2	1	n. a.
10.	Sense of humor	5	4	3	2	1	n. a.

Sum of items scored_____ No. of items scored_____ Average score_____

Average Score	Grade
4.5-5.0	A
3.5-4.4	B
2.5-3.4	C
1.5-2.4	D

Letter Grade_____

STATEMENT CONCERNING ESTIMATE OF PROBABLE SUCCESS

(Include reasons for any trait rating of 2 or less, strong points, and weaknesses.)

*5--Superior, 4--Good, 3--Average, 2--Poor, 1--Very Poor, n. a. --Not applicable

APPENDIX E

At the time this summary was made, responses had been received and recorded from:

Richmond Professional Institute
University of Georgia
Colorado State College
State College of Iowa
University of Kentucky
State University of New York College of Education
Arizona State College
The University of North Carolina
Virginia Polytechnic Institute
University of Idaho
Michigan State University
University of Alabama
The University of Tennessee
Western Michigan University
Temple University
University of Minnesota
Ohio State University
University of North Dakota
Colorado State University
Missouri Department of Public Instruction
Indiana University
California Bureau of Junior College Education

ED013338

Training Needs in Central Kentucky

Skilled ▪ Clerical ▪ Technical

SPINDLETOP RESEARCH

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Report B-121

TRAINING NEEDS IN CENTRAL KENTUCKY

by

John D. Leslie
and
Gary R. Gates

Prepared for

Kentucky Departments of
Education and Commerce
Frankfort, Kentucky

31 March 1966

Approved:

W. W. Wilkinson, Manager
Behavioral Sciences Division

SPINDLETOP RESEARCH
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I. INTRODUCTION

BACKGROUND

The recent rapid influx of industry into Central Kentucky is expected to continue, probably at an increased rate. This growth has created a strong demand for trained skilled, clerical, and technical workers. To aid in meeting this demand, the Lexington Chamber of Commerce, the Lexington and Fayette County School Boards, a committee of interested citizens (ACTIVE COMMITTEE), and the State Bureau of Vocational Education worked together to purchase a site and secure approval of funds to build a vocational-technical school facility to serve Central Kentucky.

To insure that the product of this facility--trained skilled, clerical, and technical (SCT) workers--would possess the knowledge and skills necessary to meet area employers' needs, the Kentucky Departments of Education and Commerce jointly contracted with Spindletop Research to conduct the study described in this report. They asked Spindletop Research to provide:

- Information to help school administrators determine which vocational training programs and courses should be included in the curriculum of the new facility.

- Information concerning the instructional facilities and equipment required to teach the needed knowledge and skills.

STUDY OBJECTIVE

The primary objective of this study was to provide information concerning the character and extent of the needs of Central Kentucky's businesses and industries for skilled, clerical, and technical workers over the next five-year period. To achieve this objective, study elements were designed to provide:

- A forecast of Central Kentucky's most probable mix of industries and businesses and their employment in 1970 and 1975.

- A forecast of the additional SCT workers required for the period 1965 to 1970 and a prediction of the increase in level of SCT employment by 1970.

- The skill and knowledge requirement mix of the SCT occupations for which employers anticipate openings.

- Information with respect to the core courses, instructional facilities, and equipment required for teaching the necessary mix of knowledge and skills.

STUDY AREA

For the purposes of this study, Central Kentucky was defined as the twenty counties identified in Figure 1-1 and listed below:

Anderson	Franklin	Mercer
Bath	Garrard	Montgomery
Bourbon	Harrison	Nicholas
Boyle	Jessamine	Powell
Clark	Lincoln	Scott
Estill	Madison	Woodford
Fayette	Menifee	

Figure 1-1. Location of 20-county study area.

TRAINING NEED DETERMINATION

It is only in recent years that the terms "job obsolescence," "retraining," and "skill conversion" entered our lexicon. In fact, from the beginning of time until the middle of the 20th

century, it was the usual course of events for a young person to learn one skill and spend a lifetime working at it.

The fact that the occupational world is changing greatly complicates the task of training need determination. Not only are the numbers of workers needed within any one occupational classification changing, but also the particular requirements within that occupation are changing. Thus, any training need determination must be divided into two major components: quantity of need and character of need.

Seemingly, the magnitude question is easily resolved. However, because of the large numbers of different occupational classifications within the skilled, clerical, and technical categories and because of the lack of a standard nomenclature usage by business and industry, even this task becomes "unclean," to say the least.

The task of determining what training is needed, in other words the character of the training, is even more involved. In this dimension, opinion, tradition, precedent, and other subjective factors influence any data gathering designed to seek an objective base for decision making. Furthermore, SCT occupations can and are found in one-man firms, in five-man firms, in 10,000-man firms. They are found in firms engaging in almost every employment sector from farming, one of man's oldest occupations, to the newest occupations in the space-age industry.

Because of the complexity of the numerous variables involved, and because of the relative newness of the state of the art of training need determination, it is not possible to make a rigorous determination of training needs in a thoroughly scientific manner. It is possible, however, to use judgment in selecting aspects which are amenable to analysis, and to make inferences from these analyses which can be used as a guide by vocational-technical school administrators in the design of a curriculum and the selection of courses. A curriculum so designed, while not perfect, can reasonably be said to meet the needs of the time and the area.

METHODOLOGY

The study is broad in scope in that it considers the economics of the area; future skilled, clerical, and technical employment opportunities; training requirements for skilled, clerical, and technical occupations; the potential availability of students;

the vocational interest patterns of current high school students; the mechanisms for acquainting students with vocational opportunities; and ways to keep the curriculum of the school responsive to the needs of business and industry. This breadth of coverage required several methodologies to be used in the course of the study. Each methodology is discussed in the body of the report within the context of the study element for which it was used.

Both original and existing data were used in the course of this study. The economic growth analysis was based on existing data secured from a number of primary and secondary sources. The data for the remainder of the study was collected by means of a survey conducted by Spindletop Research. Surveyed were a proportional random sample of area employers and all Central Kentucky high school students, guidance counselors, and principals.

ACKNOWLEDGEMENTS

This project was conducted under the general direction of Dr. William W. Wilkinson, Manager of Behavioral Sciences Research.

Project Manager for the study was Mr. J. D. Leslie, Manager of Manpower Utilization Services, assisted by Mr. Donald C. Mitchum, Survey Coordinator; Mr. William L. K. Schwarz, Manager, Program Development; Mrs. Darlene Drake, Mrs. Rosemary Lichtman, Mr. William Hall and Mr. Edwar Seidman, Research Assistants; Mrs. Marcia Taylor, Miss Linda Moran, Secretaries; and 18 consultants under contract as interviewers. Dr. Gary Gates, assisted by Mr. Morris Gildemeister, Economic Geographer and Mrs. Linda Taylor, Research Assistant, conducted the economic analysis.

Special acknowledgement of advice and counsel is due Mr. E. P. Hilton, Assistant Superintendent for Vocational Education, and the Steering Committee which he appointed to work with Spindletop Research on the study. The Steering Committee was comprised of representatives of several departments of Kentucky State Government and the ACTIVE Committee, headed by Dr. Carl F. Lamar, who holds a joint appointment with the University of Kentucky and the Department of Vocational Education.

The steering committee consisted of:

C. F. Lamar--Director, Kentucky Research Coordinating Unit, Department of Vocational Education

D. Harrison--Executive Assistant, Kentucky Department of Commerce

D. E. Elswick--Director of Research, Kentucky Department of Education

R. W. McDonald--Prinicpal Statistician, Kentucky Department of Economic Security

C. V. Youmans--Chairman, ACTIVE Committee and Manager of Education and Training, IBM

J. D. Leslie--Project Manager, Spindletop Research

II. SUMMARY AND CONCLUSIONS

PROJECTED KENTUCKY EMPLOMENT DISTRIBUTION IN 1970 AND 1975

The economic study showed that Central Kentucky is characterized by rapid growth tied to an expansion of industry. In the past fifteen years, it has been an island of opportunity with strong in-migrations, especially from eastern and southcentral Kentucky. Thus, population growth has been, primarily, the result of new employment opportunities in Central Kentucky, rather than the result of industrial growth responding to an existing labor force.

Although there is a wide variation in income, growth tendency, and resources in the 20 counties studied, nearly all have fair to excellent prospects for future growth now that the dominant negative factor--declining agricultural employment--is nearing stablization. A better balance between agriculture and other industrial sectors has decreased the degree of regional specialization and forms the basis for continued growth prospects in all sectors except agriculture. The area's most outstanding resources are the excellent system of limited-access highways and its pleasant setting which helps attract high quality industry (including services) and human resources. Employment growth has been steady in the machinery, metal products, and equipment categories--growing from fewer than 1,000 jobs in 1950 to nearly 10,000 in 1964, with substantial gains occuring every year.

Figure 2-1 shows the anticipated changes in employment in goods-producing industries (manufacturing, construction and mining), service-producing industries, and agriculture; and anticipated changes in unemployment and the nonemployed. Anticipated total population is also given. Between 1965 and 1975 a total of 41,000 new jobs should be expected in the Central Kentucky area (not counting replacements), and the nonfarm sector can be expected to provide 15.8% more jobs by 1970. The population should increase by 84,000 to 520,000 by 1975. Based on past trends and prospects for future growth, the largest gains in employment are anticipated in the following Standard Industrial Classification (SIC) groups:

Goods Producing Industries		Service-Producing Industries	
SIC	Manufacturing	70 to 89	Services
34	Fabricated metals	--	Government
35	Nonelectrical machinery	50 to 59	Trade
36	Electrical machinery		
15 to 17	Construction		
20	Food and beverages		
23	Apparel		

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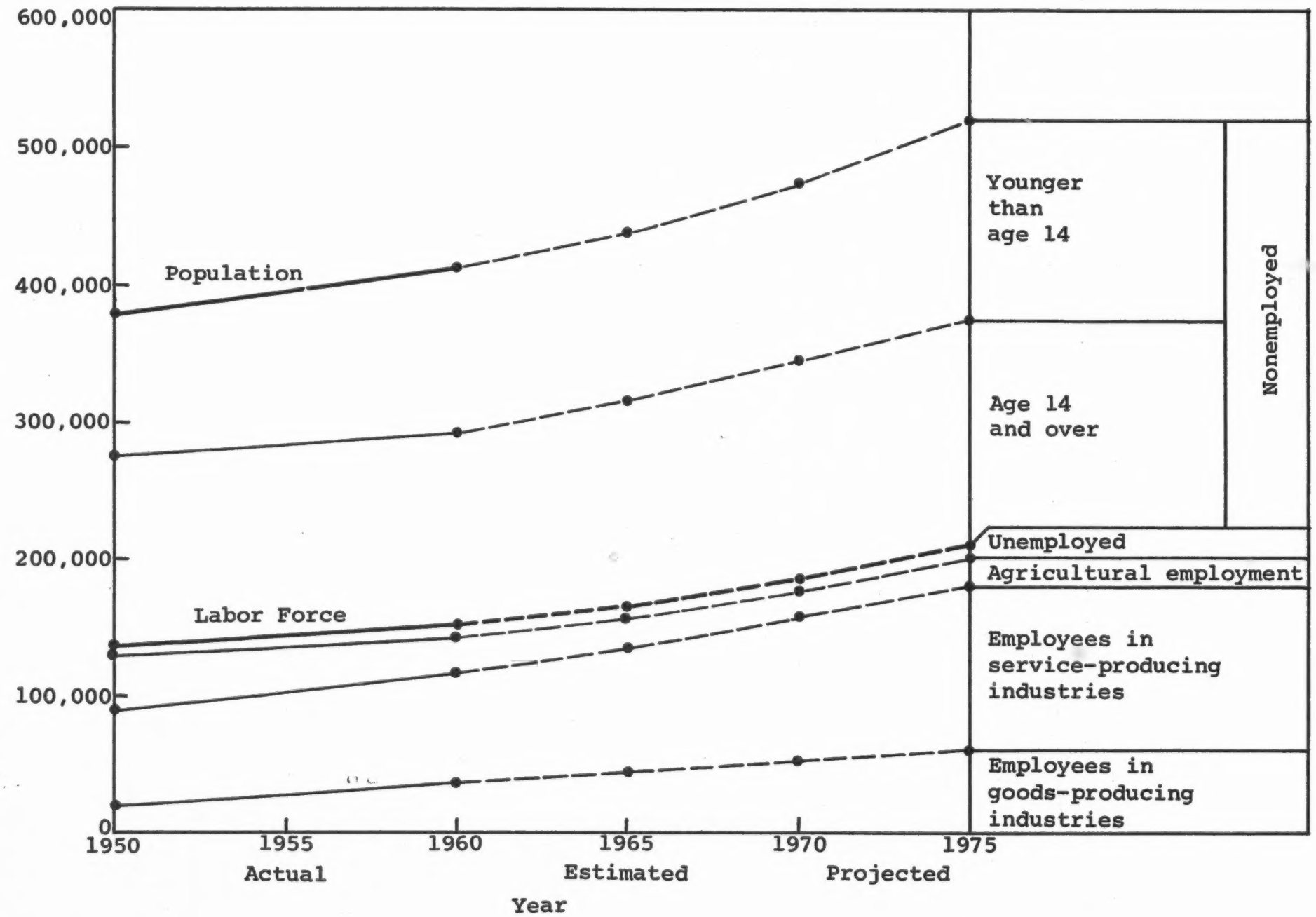

Figure 2-1. Growth Trends and Projections for Central Kentucky.

ESTIMATED FIVE-YEAR SCT EMPLOYMENT OPPORTUNITIES

The 6,240 Central Kentucky firms in the private, nonfarm employment sector which participate in the Kentucky Unemployment Insurance Program were selected as the study population. These firms employ 76,277 workers and have an average size of 12.2 employees per firm. The largest employment sector is manufacturing, which employs 28.8% of the Central Kentucky workers covered by unemployment insurance. Wholesale and Retail Trade; Construction; Transportation, Utilities and Communications; Finance and Insurance; and Mining and Agri-business account for succeedingly smaller shares of the total. This distribution is shown graphically in Figure 2-2.

Four-hundred-seventy-three of these firms were selected randomly on a basis proportional to their employment to participate in a Spindletop Research survey to determine the current occupational composition and anticipated needs of the skilled, clerical, and technical categories of the Central Kentucky work force. The 343 responding firms accounted for 72.5% of those sampled and

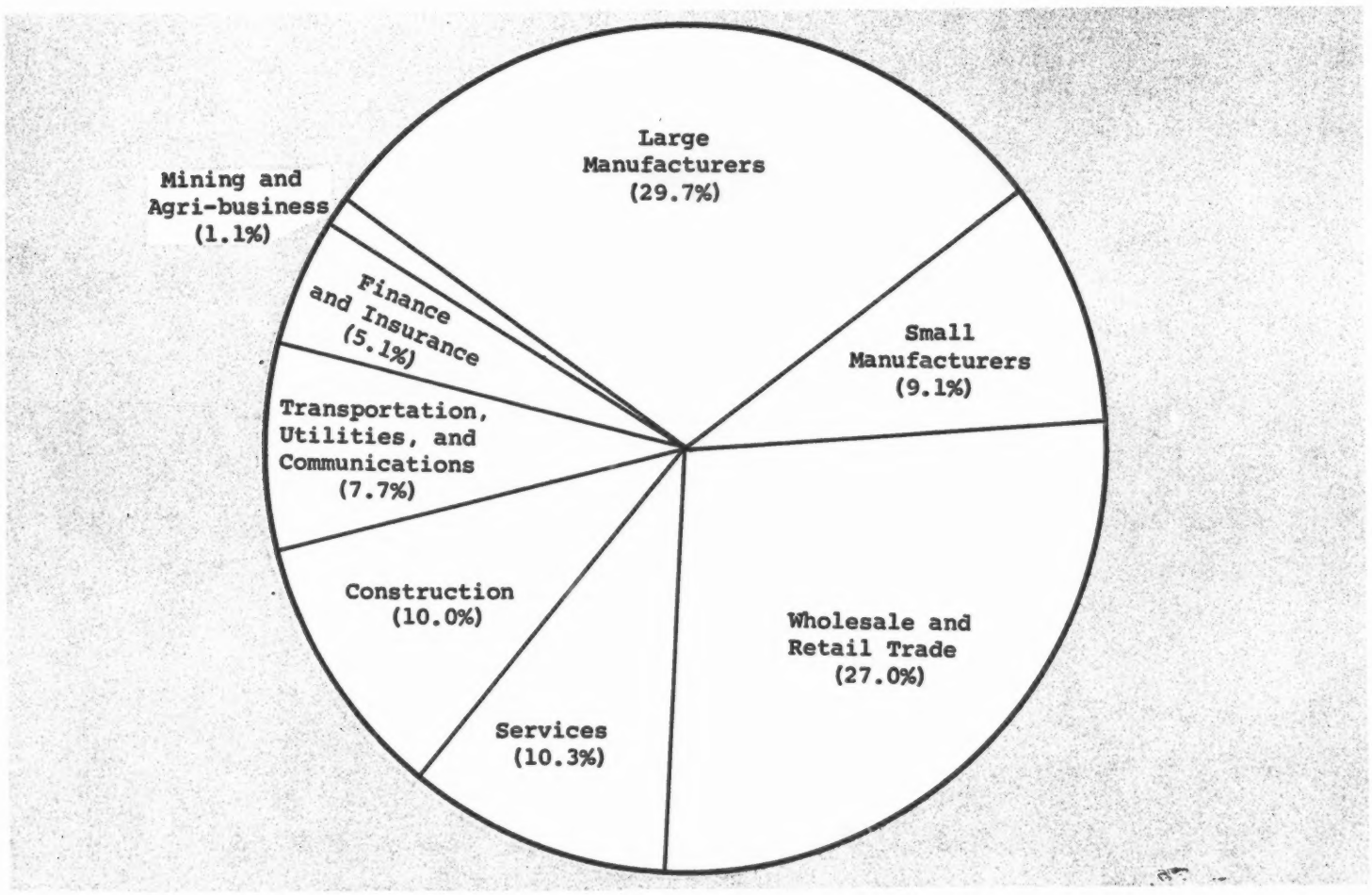

Figure 2-2. Distribution of study population employment.

employ 39.2% (29,937) of the area's covered employment. Responses from these firms were used to prepare the 1965 SCT employment distribution estimates and the five-year estimates of need for additional SCT workers. Figure 2-3 shows the distribution of the 1965 SCT employment of 32,630 within the overall covered employment of 76,277. Of those employed in SCT occupations, 17,850 are estimated to be employed in skilled occupations, 9,060 in clerical occupations, and 5,720 in occupations classified as technical.

The survey respondents' five-year SCT employment needs (replacement as well as expansion) were scaled up to study population level through the use of three values--all conservative--of the weighting factors. As shown in Figure 2-4, the minimum estimate of five-year needs is 5,183 additional SCT workers, and the maximum estimate is 14,529 workers. The figure of 11,030 additional SCT workers needed in the 1965-70 period results from the use of what is termed the "medium" weighting factor.

The estimated five-year need for additional SCT workers is based on and refer only to that portion of the work force covered by

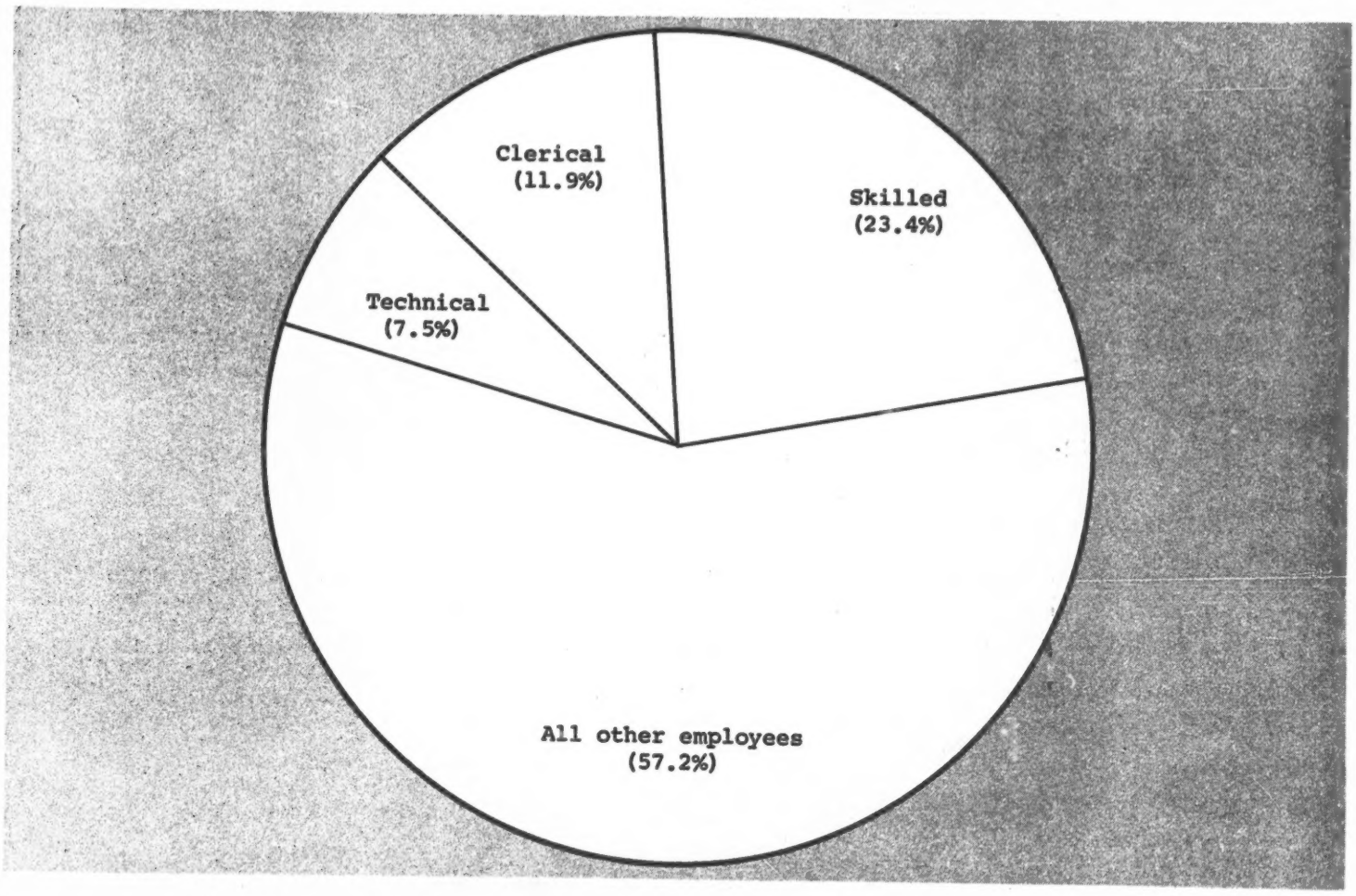

Figure 2-3. Estimated 1965 SCT employment.

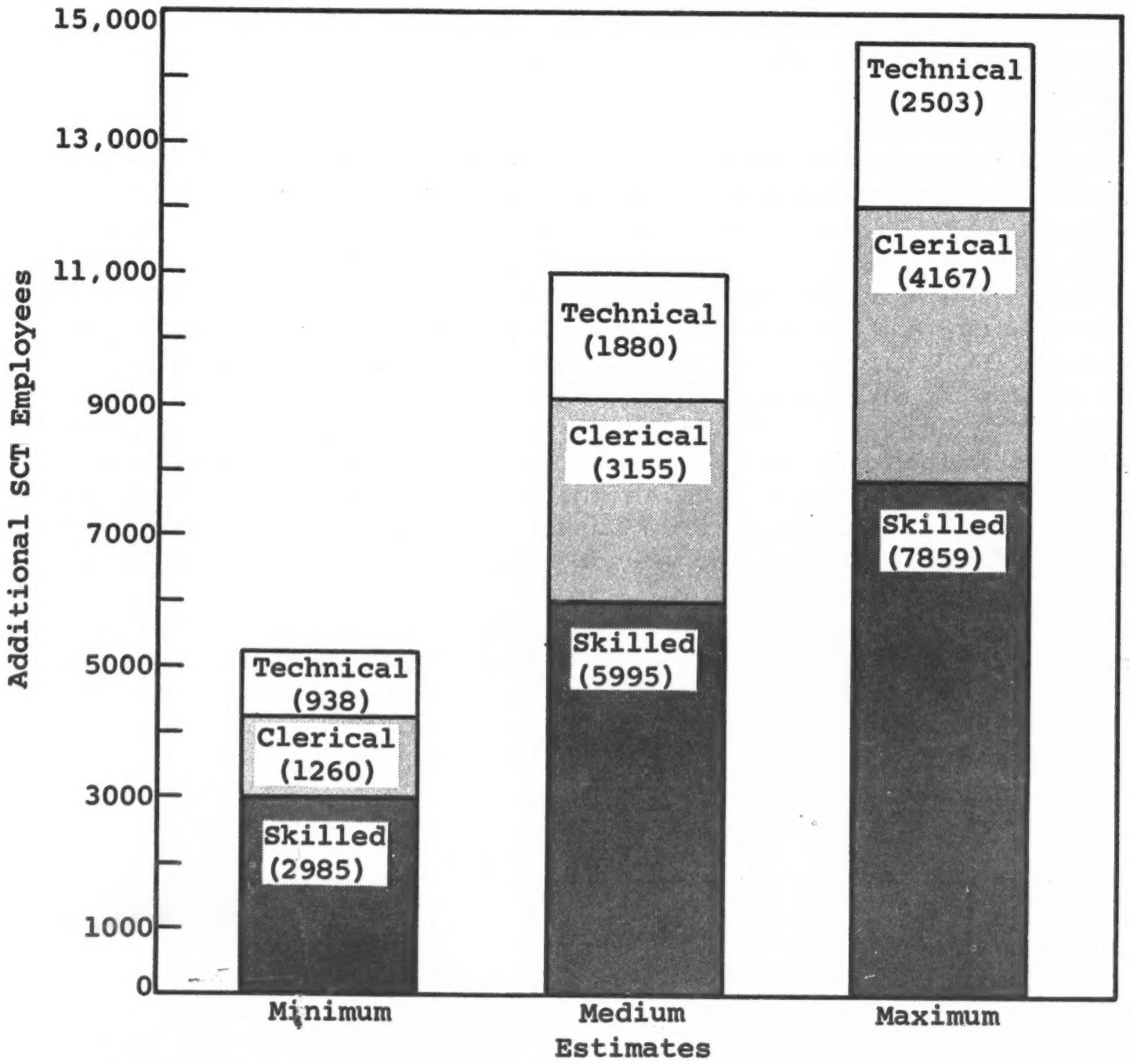

Figure 2-4. Distribution of five-year estimated need for additional SCT employees.

Kentucky Unemployment Insurance. Excluded from coverage are employees of firms employing less than four workers and all government workers--local, state and federal; no data are available for making quantitative comment on the distribution of the SCT needs of these employers. It can be observed that the governmental sector's SCT needs will be principally in the clerical and technical categories and it is probable that the very small employer's needs will be largely for "jack of all trades" type of employees rather than for specific types of SCT workers. If the SCT complement of these employers is conservatively assumed

sumed to be one-fourth of that of the covered employment sector, the 11,030 figure could increase to at least 14,000.

One other indicator of the magnitude of the five-year need can be derived from the number of SCT employees hired last year by the firms participating in the survey. They reported that 2,440 workers were hired to fill SCT openings in the 12-month period proceeding the survey (September 64 to September 65). If this number is scaled up to the study population, adjusted to cover five years, and increased to include the employment sector not covered by unemployment insurance, a five-year SCT need estimate of nearly 30,000 results.

With estimates of five-year SCT recruitment needs ranging from an obviously too low 5,000 to an unrealistically high 30,000, the 11,000 estimate derived from survey data appears to be the most solidly based. It is recommended that this figure be used for planning purposes.

Figure 2-5 shows the percentage increase in the skilled, clerical, and technical work force estimated to occur by 1970. These estimates are based on employers' reported expansion needs only and were derived by use of the "medium" weighting factor. The 23.7% increase predicted for the combined SCT work force contrasts with the 15.8% increase in total Central Kentucky nonfarm

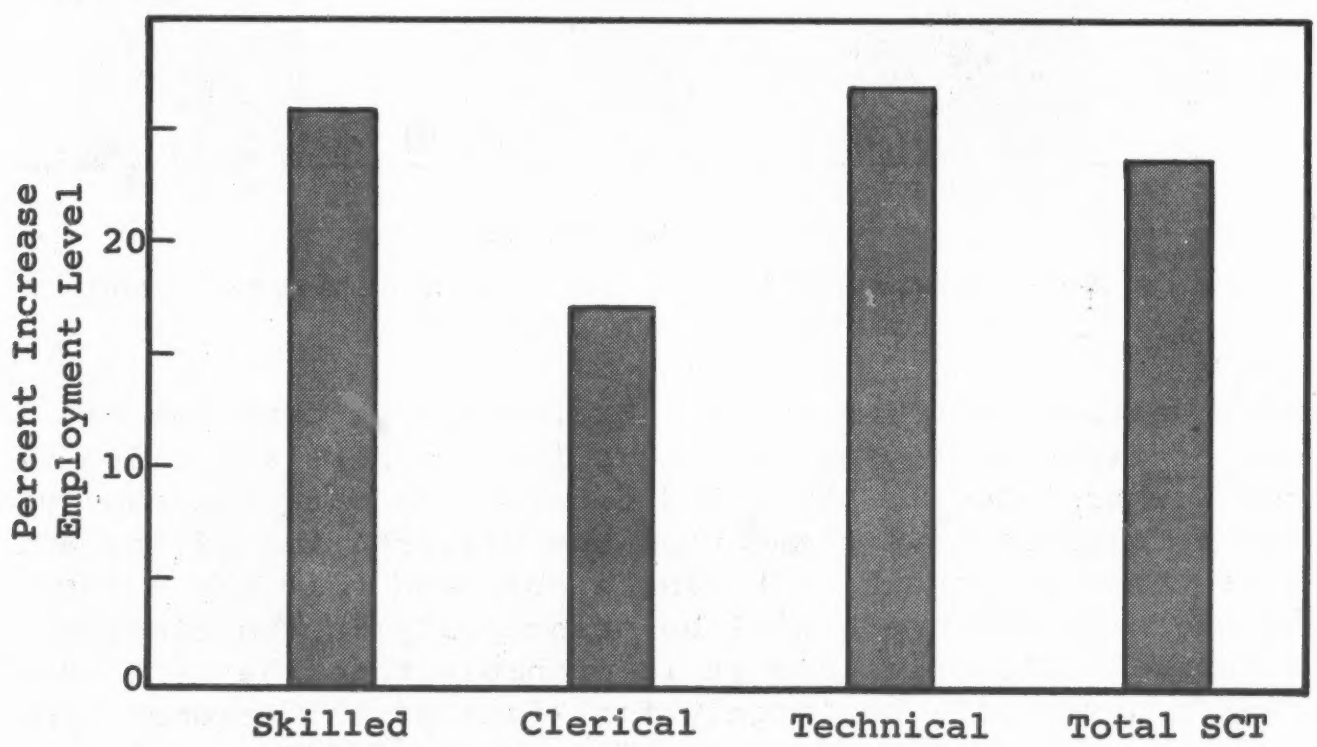

Figure 2-5. Distribution of increase in estimated SCT employment level--1965-1970.

employment level shown in Figure 2-1. While the difference could be due to differences in methodology, it is more likely that it represents the recognized trend in which the SCT portion of the work force is growing while the semiskilled and unskilled sectors are declining.

According to information obtained from the survey respondents, the 11,000 SCT openings estimated to occur in Central Kentucky by 1970 will be spread over 217 different occupations. Two-thirds of these occupations were included in those reported by the large manufacturing respondents and for which detailed knowledge and skill requirement data were obtained.

Figure 2-6 shows the total number of different occupations identified in the survey, the number for which openings were forecasted by respondents, and the number for which detailed knowledge and skill data were obtained. Knowledge and skill data coverage is widest in clerical occupations where requirement data on 81.5% of the different jobs with five-year needs were obtained. Sixty-three and four-tenths percent (63.4%) of the

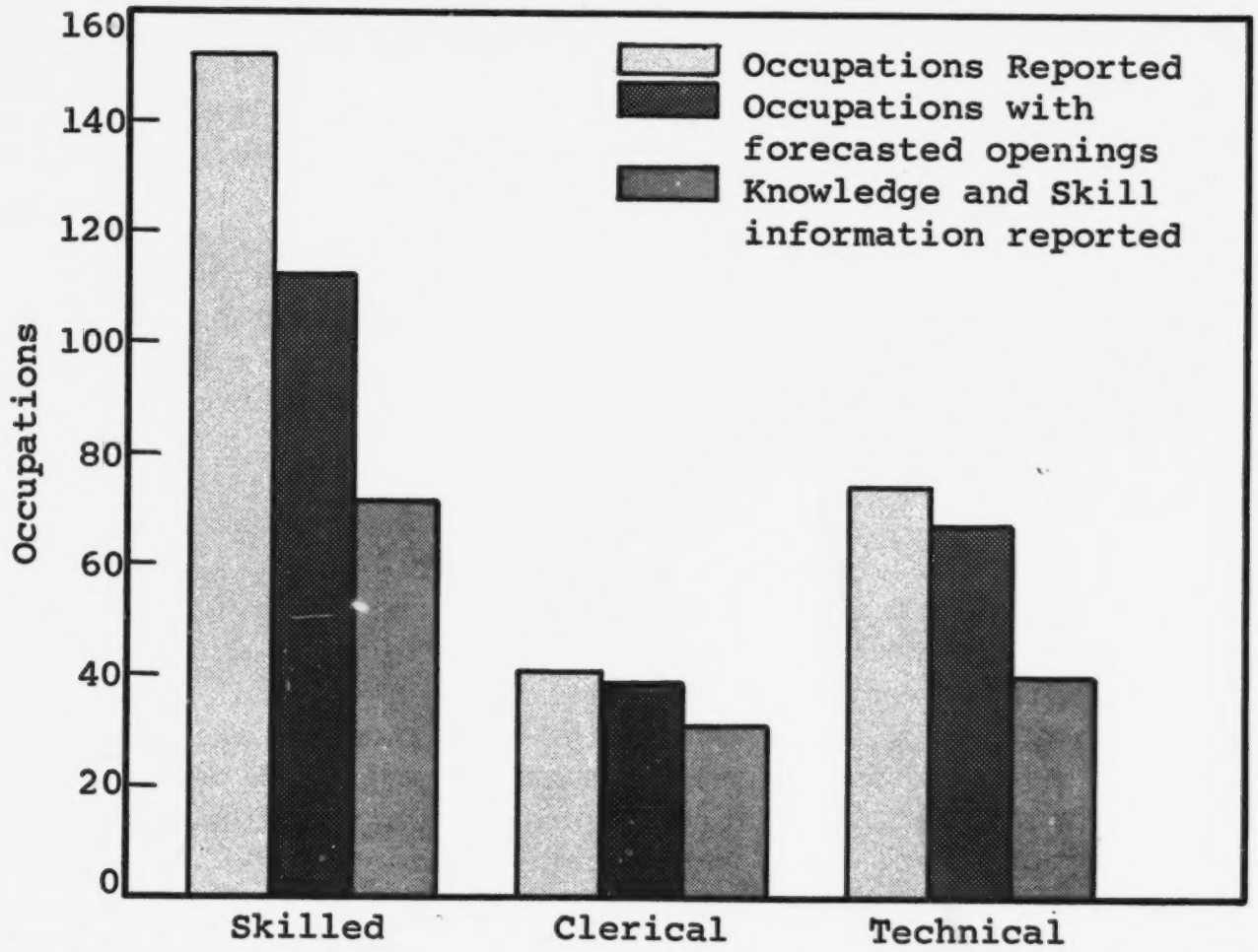

Figure 2-6. Occupational coverage of knowledge and skill data.

skilled and 59.5% of the technical occupations with five-year needs anticipated were described in terms of knowledge and skill requirements by respondents.

MEETING CENTRAL KENTUCKY'S TRAINING NEEDS

In view of the large number and variety of different jobs reported by employers, it would not be feasible to set up individual courses for each job. Rather, it would seem that an approach based on a combination of the "occupational family" and cafeteria style" curriculum concepts could provide the basis for meeting the widest range of needs. The "occupational family" concept recognizes that in many cases different jobs have a large common component of knowledge and skill requirements and that the differentiating components make up only a fraction of the total requirements. Under this concept, core courses can be taught to meet the common requirements, and specialized courses or on-the-job training can be utilized to meet special training requirements.

"Cafeteria style" course offerings are not new to education. In a vocational-technical school, "cafeteria style" offering of core elements provides maximum flexibility in curriculum design. This approach does present scheduling difficulties, however, and for efficient operation depends on a large student population.

Combining the occupational family and cafeteria-style curriculum concepts is feasible if the individual courses are designed within the context of the nature of the industries and businesses located in the area and on the basis of the composite knowledge and skill requirements of the occupational classification to be served.

Core Courses Required

Figure 2-7 shows the composite knowledge and skill requirements which the respondents identified as being required for their SCT jobs with openings anticipated by 1970. The percentages can be said to be indicators of the proportional enrollment in each field if all subjects required by the respondents were taught and if students' occupational interests and enrollment matched the potential job openings. This technique allows the identification of those subject areas with the broadest base of demand so that core courses can be designed to meet the broadest need.

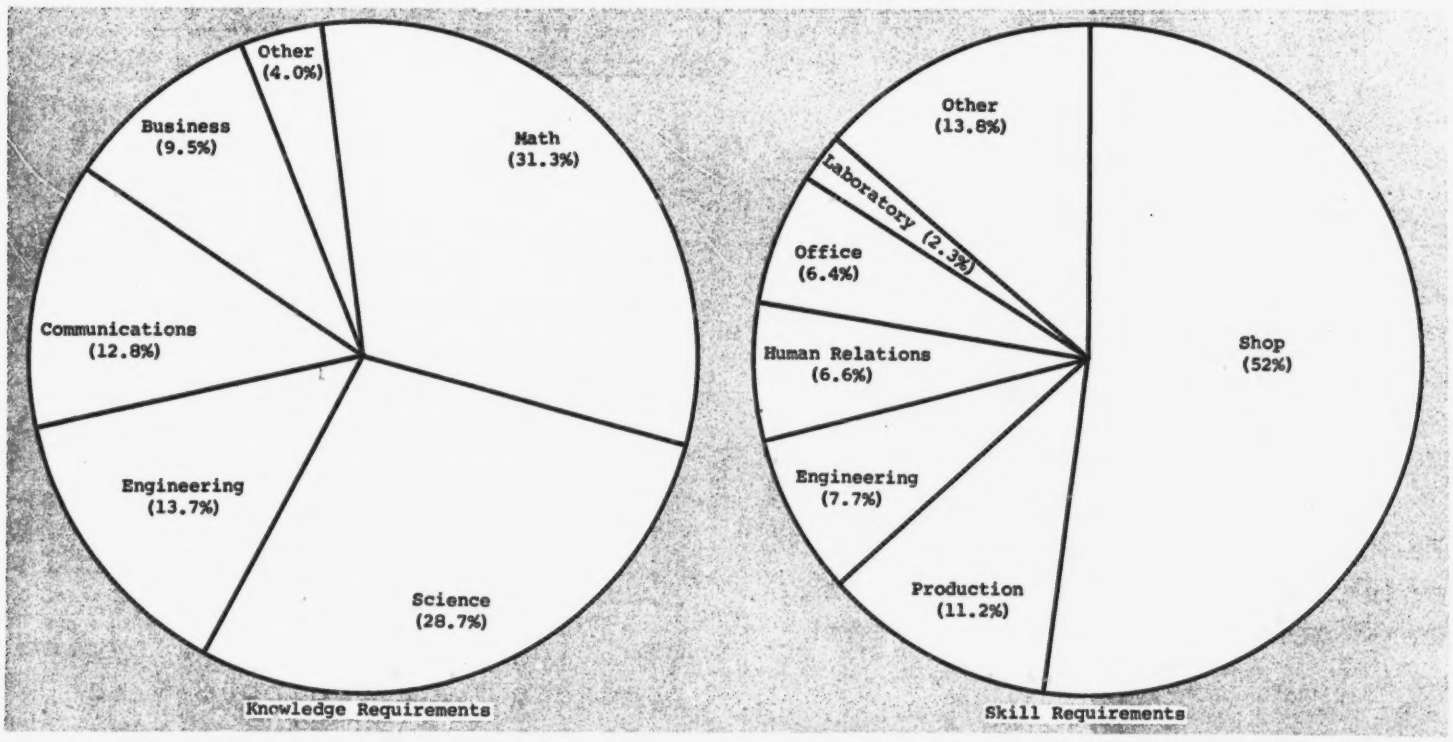

Figure 2-7. Knowledge and skill requirements of SCT training needs.

Figure 2-8 shows the relative emphasis between knowledge transfer and skill training required to prepare workers for the skilled, clerical, and technical occupational categories. As would be expected, technical occupations lead in the proportion of knowledge to skill requirements and skilled occupations in proportion of skill to knowledge requirements. The high proportion of knowledge transfer required for skilled occupations may be of surprise to some, however. It should also be noted that 25% of the knowledge requirements specified by the respondents for their technical occupations were to be at the college level.

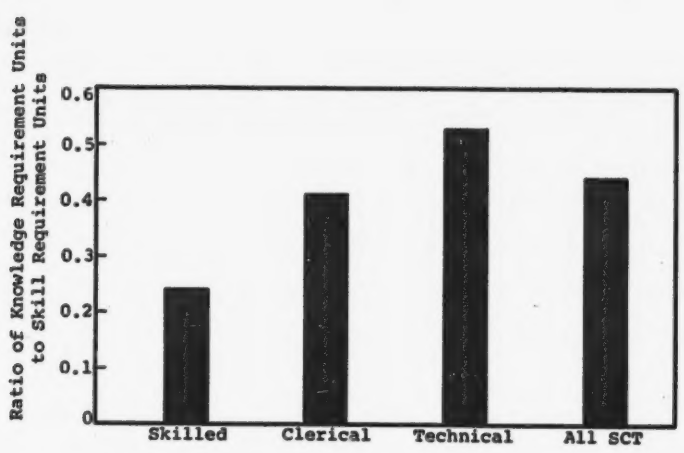

Figure 2-8. Ratio of knowledge to skill requirements of SCT training needs.

Figure 2-9 shows the percentage of openings for which no specific knowledge or skill requirements other than a general high school education were specified by the respondents. More than 40% of the clerical openings anticipated by the respondents can be filled by general high school graduates. This contrasts with only 4% of technical and 20% of anticipated skilled openings which require no special training.

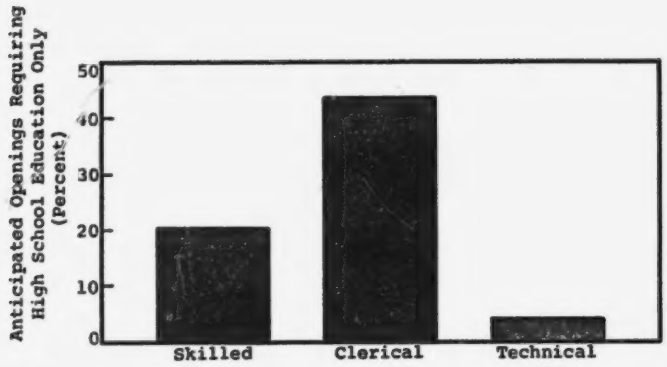

Figure 2-9. Percentage of SCT anticipated openings requiring only general high school background.

Instructional Facilities Required

The instructional facilities required to teach the knowledge subjects identified by the respondents as being required for their SCT occupations include standard classrooms with chalk boards and provisions for using conventional visual aids; physics and chemistry laboratories of the type found in modern high schools; a drafting room equipped with conventional drafting devices; and a typing practice room equipped with modern electric typewriters.

The nature of the instructional facilities required to offer skill courses is a function of the nature of the skill and the context of its application; functional skills cannot be successfully taught out of the context of their application. On the other hand, too narrow an application will result in a different course being required for each occupation.

The occupational family concept provides a basis for establishing vocational courses realistically geared to the occupational world of work. The nature of the occupational family, the individual job titles within families, and the industries and businesses in which they occur provide the basis for determining skill course content and the type of instructional facilities and equipment which should be provided.

In the Central Kentucky area, light manufacturing industries (metals, plastic, glass, tobacco, food, clothing, and beverages), printing, wholesale and retail trade, utilities, health institutions, banking, insurance, and personal services are the primary covered employers. Instructional equipment should be chosen so that a direct relationship can easily be seen between the course and the world of work in Central Kentucky.

The types of instructional facilities needed to teach the skills identified by the respondents as being required for their SCT occupations include: A comprehensive modern machine shop to

teach machine operation skills; a metal fabrication shop; a machine repair shop to teach machinery maintenance and repair skills such as inspection, welding, electrical installation and repair, carpentering, etc; and a laboratory-type shop for electronics and instrument work.

Other types of facilities required to teach the skills identified include a small but comprehensive modern printing facility; and a business type of laboratory for data processing equipment, bookkeeping machines and other types of modern business machines.

OTHER CENTRAL KENTUCKY TRAINING NEEDS

Of the 72 occupations reported for which knowledge and skill data were not obtained, few had significant anticipated needs. Most occupations having sufficient needs to warrant further study occurred in the Food Preparation, Health, and Banking and Insurance employment sectors. The food preparation employment sector is difficult to analyze for training needs since it is made up of many "small" employers who have no recognized common approach to training. Clearly, however, Central Kentucky with new restaurants and motels opening almost monthly has, at least, a temporary need and perhaps a continuing need for a multilevel training program covering the knowledge and skills involved in restaurant, hotel, and motel management and operation.

Cornell University in Ithaca, New York, has an excellent reputation for training in this field. To provide the necessary skill training, they have complete kitchen and dining room facilities set up especially for training purposes. If it is decided to give serious consideration to training in these fields, it is suggested that schools such as Cornell be contacted for further information.

Since most banking and insurance clerical occupations had counterparts in manufacturing industry from which knowledge and skill requirement data were obtained, these occupations are included in the training requirement analysis. On the other hand, since the banking and insurance employers were not sent the detailed training needs questionnaire, knowledge and skill data were not obtained for their specialized technical level occupations. It may be that banking and insurance employers prefer to "grow their own" technical level specialists. It is suggested that they be contacted before giving serious consideration to providing technical training programs in these fields.

Employment in health occupations in Central Kentucky has increased significantly. Training for these occupations requires special facilities and equipment as well as an opportunity for the trainees to have practical experience. It would seem that to provide this combination would involve a cooperative effort with either a hospital or the Medical School. If it is decided to provide training and health occupations, one possible approach might be to work out a cooperative effort with the Veterans Administration Hospital, which is adjacent to the new vocational-technical school.

III. ECONOMIC ANALYSIS OF THE CENTRAL KENTUCKY REGION

INTRODUCTION

This section of the report (1) describes the regional economic, population, and urbanization characteristics and resource availability within the 20-county study area; (2) describes industrial growth patterns in the study area; and (3) makes employment projections for 1970 and 1975. Consideration of the regional characteristics and resources is necessary to fully appreciate the growth opportunities that will prevail in coming years. In relatively small areas such as the one under study, past trends may be unreliable indicators of specific opportunities for industrialization and business development in the area, because in underdeveloped regions having substantial potentials, totally new economic prospects are not always indicated by the statistical trends established in previous years. This is particularly true where development programs are instigated to stimulate the growth of new sectors within a region to replace declining sectors, such as agriculture or mining. For example, intensive promotion of light manufacturing industries was responsible for attracting a number of high quality industries to Lexington in recent years.*

To make realistic regional appraisals, it is necessary to combine the interpreted significance of past trends with the postulated new opportunities that can be anticipated from considerations of underdeveloped or partially developed resources.

POPULATION AND URBANIZATION

The study region is vitally dependent upon employment opportunities for population growth. Unlike some regions in which the population expands and employment opportunities develop in later phases to take advantage of the increased labor supply (such as Arizona and Florida, for example), population migration for most of Kentucky is a function of the number of job openings available in urban or industrial areas. The parts of Kentucky and adjacent areas that rely on such declining sectors as agriculture and mining are in most cases characterized by an outmigration to Lexington, Louisville, and Cincinnati as well as smaller outlying communities, such as Winchester and Richmond.

---

*Square D Company, Dixie Cup, Mengel Co., Vogue Rattan Co., Trane Co., and Westinghouse Air Brake have recently located within the Lexington-Fayette County Industrial Foundation industrial district.

Table 3-1 shows the relationship of population changes for urban areas and rural farm areas for the 20-county area. Rural farm population is decreasing because of increased farm productivity, and mining employment has declined substantially in the past years, resulting in a large number of underemployed and unemployed workers. A propensity for people to emigrate from south-central and eastern Kentucky makes the number of prospective workers available for employment within the study area much higher than indicated by the 20-county population. Therefore, a major characteristic of this region is that a large labor force is readily available to take advantage of new job opportunities. Because population growth is expected to be dependent upon the number of available employment opportunities, it is necessary that the probable ranges of new employment opportunities be determined to reliably project population for the study area.

A national trend toward urbanization is also reflected in the study area. Table 3-1 shows that the increase in urban population was 39.3% between 1950 and 1960, whereas each of the 20 counties lost rural farm population during the same period.

ECONOMIC CHARACTERISTICS

The 20-county study area is slowly changing from dependency upon a livestock and tobacco specialization and trade to a more bal-

Table 3-1
County Population--1950-1960

County	1960 Population	Percent of 20-County Total	Percent Change 1950-1960 in Total Population	1960 Urban Population	Percent Urban Population of County Total	Percent Change 1950-1960 in Urban Population	1960 Rural Farm Population	Net Loss in Rural Farm Population 1950-1960
Anderson	8,618	2.1	(4.1)	2,523	29.3	--	3,204	1,377
Bath	9,114	2.2	(12.4)	0	0.0	0.0	3,536	3,267
Bourbon	18,178	4.4	2.4	7,791	42.9	12.7	5,161	1,689
Boyle	21,257	5.2	3.5	9,010	42.4	3.7	3,159	2,031
Clark	21,075	5.1	11.5	10,187	48.3	10.4	4,230	1,866
Estill	12,466	3.0	(15.1)	2,955	23.7	(9.3)	3,436	3,846
Fayette	131,906	32.0	30.9	111,940	84.9	48.6	5,709	897
Franklin	29,421	7.2	13.5	18,365	62.4	5.4	3,731	1,540
Garrard	9,747	2.4	(11.6)	3,021	31.0	--	4,794	2,581
Harrison	13,704	3.3	(0.2)	5,641	41.2	16.4	5,554	1,668
Jessamine	13,625	3.3	9.4	7,048	51.7	106.9	3,682	778
Lincoln	16,503	4.0	(11.6)	0	0.0	0.0	7,982	2,999
Madison	33,482	8.1	7.4	16,470	49.2	20.7	8,819	2,852
Menifee	4,276	1.0	(10.9)	0	0.0	0.0	2,550	1,131
Mercer	14,596	3.6	(0.3)	6,061	41.5	15.2	4,833	2,309
Montgomery	13,461	3.3	3.3	5,370	39.9	1.4	4,205	832
Nicholas	6,677	1.6	(11.4)	0	0.0	0.0	3,398	1,516
Powell	6,674	1.6	(2.0)	0	0.0	0.0	2,036	1,372
Scott	15,376	3.7	1.6	6,986	45.4	26.6	4,735	2,707
Woodford	11,913	2.9	6.3	4,060	34.1	47.1	3,632	704
Total	412,069	100.0	9.0	217,428	52.8	39.3	88,386	37,962

Source: U.S. Bureau of Census

Table 3-2
1960 Per Capita Income
for Counties in the
Study Area

County	1960 Per Capita Income
Anderson	$1,473
Bath	1,018
Bourbon	1,751
Boyle	1,316
Clark	1,752
Estill	660
Fayette	2,167
Franklin	1,981
Garrard	1,263
Harrison	1,681
Jessamine	1,474
Lincoln	834
Madison	1,392
Menifee	612
Mercer	1,466
Montgomery	1,214
Nicholas	1,229
Powell	676
Scott	1,535
Woodford	1,989

Source: U.S. Department of Commerce

anced industrial base that still includes a substantial agricultural element. The new manufacturing and non-agriculturally oriented services industries are the most rapidly growing sectors in the local economy.

Table 3-2 lists the 1960 per capita income for each county in the study area. The wide variation (from $612 per capita in Menifee to $2,167 in Fayette) shows the diversity of the region. The three counties with incomes less than $1000 per capita are in the rugged terrain along the edge of the Appalachian plateau, whereas the gently rolling "Inner Bluegrass" area is characterized by higher incomes.

Table 3-3 lists the percentage distribution of nonfarm employment by industry for the 20-county study area, for Kentucky, and for the nation. The state and nation are similar in many respects, but the study area has a much higher percentage in services and relatively fewer in manufacturing and government.

Table 3-4 summarizes the numbers of employees in various industries, agriculture, business, and government for each county for the years 1950 and 1960. The remarkable growth in manufacturing employment and the decline in agricultural employment are the dominant trends in the overall 1950 to 1960 change for the 20 counties.

RESOURCES

Relative to other regions surrounding the study area, a number of assets exist that will contribute substantially to the ability of the study area to grow in job-creating industries and businesses. The most noteworthy resource of the study area is the confluence of several limited access highways which cross and meet in the area.

Figure 3-1 shows the distribution of interstate highways and the Mountain and Bluegrass Parkways which serve the area. That these types of highways greatly stimulate trade and industry is of little doubt. The anticipated total impact that these highways will have on the immediate and long-range growth of the study area has not been determined, but these assets are expected to add significantly to the regional prosperity.

Although a number of cities of large population are also served by limited access highways, very few smaller cities such as Lexington are this fortunate. Because of the advantages offered by small cities for certain types of industrial activities, the impact of better access will probably be substantially greater on the Lexington area than on larger cities that have similar highway development.

Eastern Kentucky is part of a region characterized by the highest rural population density in the United States. Few large cities are found in Eastern Kentucky; consequently, services and many items of trade must be purchased in adjacent regions.

Table 3-3
Percentage Distribution of Nonfarm Employment for the Study Area, Kentucky, and the U.S.

Industry	20-County Study Area 1960	Kentucky 1960	Kentucky 1963	United States 1960	United States 1963
Mining	0.6	5.2	4.3	1.3	1.1
Construction	9.3	5.5	6.0	5.3	5.3
Manufacturing	20.9	26.2	26.1	30.9	29.8
Transportation and Utilities	6.7	8.0	7.5	7.4	6.8
Trade	21.3	21.4	20.7	20.9	20.8
Finance, Insurance and Real Estate	3.5	3.8	3.9	4.9	5.0
Services and Miscellaneous	30.5	13.0	13.6	13.6	14.5
Government	7.0	13.0	17.9	15.7	16.7

Source: U.S. Department of Labor

Table 3-4
Summary of Employees in Agriculture, Industry, Business and Government in the 20-County Study Area

County	AGRICULTURE 1960	Change from 1950	Percent Change 1950-60	MINING 1960	Change from 1950	Percent Change 1950-60	CONSTRUCTION 1960	Change from 1950	Percent Change 1950-60	MANUFACTURING 1960	Change from 1950	Percent Change 1950-60	TRANSPORTATION AND UTILITIES 1960	Change from 1950	Percent Change 1950-60
Anderson	873	(582)	(40.0)	32	3	1.0	207	21	11.2	661	124	23.1	200	32	19.0
Bath	1,336	(755)	(36.1)	4	3	300.0	142	(10)	(6.6)	370	208	128.4	133	30	29.1
Bourbon	1,873	(666)	(26.2)	16	(1)	(5.9)	342	19	5.9	1,155	524	83.0	289	(23)	(7.4)
Boyle	1,071	(588)	(35.4)	16	0	0.0	605	157	35.0	1,205	494	69.5	678	(120)	(15.0)
Clark	1,508	(615)	(29.0)	56	35	166.7	593	46	8.4	1,460	874	149.1	600	102	20.5
Estill	579	(955)	(62.3)	150	38	33.9	336	140	71.4	613	100	19.5	452	(263)	(36.8)
Fayette	2,938	(616)	(17.3)	137	28	25.7	3,679	602	19.6	7,538	4,826	177.9	2,992	400	15.4
Franklin	866	(774)	(47.2)	28	(15)	(34.9)	1,277	167	15.0	2,513	187	8.0	370	(87)	(19.0)
Garrard	1,554	(761)	(32.9)	25	22	733.3	237	96	68.1	585	322	122.4	115	24	26.4
Harrison	1,649	(760)	(31.5)	4	(12)	(75.0)	270	(8)	(2.9)	990	761	332.3	285	45	18.8
Jessamine	1,158	(646)	(35.8)	27	(3)	(1.0)	522	188	56.3	555	391	238.4	145	(16)	(9.9)
Lincoln	1,837	(1,300)	(41.4)	26	3	13.1	284	(5)	(1.7)	882	488	123.9	175	(130)	(42.6)
Madison	2,240	(1,378)	(38.1)	20	(7)	(25.9)	714	93	15.0	1,514	812	115.7	408	(15)	(3.5)
Menifee	482	(392)	(44.9)	17	6	54.5	49	5	11.4	142	57	67.1	40	(16)	(28.6)
Mercer	1,492	(801)	(34.9)	34	12	54.5	316	(44)	(12.2)	1,015	451	80.0	264	(22)	(7.7)
Montgomery	1,229	(579)	(32.0)	23	8	53.3	400	106	36.1	536	147	37.8	178	(39)	(18.0)
Nicholas	1,118	(521)	(31.8)	8	3	60.0	116	10	9.4	411	271	193.6	50	(1)	(2.0)
Powell	371	(287)	(43.6)	60	9	17.7	189	53	39.0	352	125	55.1	135	35	35.0
Scott	1,514	(813)	(34.9)	26	6	30.0	276	(12)	(4.2)	1,118	817	271.4	223	23	11.5
Woodford	1,254	(498)	(28.4)	4	2	100.0	329	(12)	(3.5)	940	588	167.0	145	18	14.2
Totals	26,942	(14,287)	(34.6)	713	140	24.4	10,833	1,612	1.7	24,555	12,567	104.8	7,877	23	0.3

County	TRADE 1960	Change from 1950	Percent Change 1950-60	FINANCE, INSURANCE AND REAL ESTATE 1960	Change from 1950	Percent Change 1950-60	SERVICES 1960	Change from 1950	Percent Change 1950-60	GOVERNMENT 1960	Change from 1950	Percent Change 1950-60
Anderson	380	264	227.6	42	6	16.7	476	249	109.7	149	60	67.4
Bath	299	34	12.8	50	17	51.5	389	72	22.7	52	(1)	(1.9)
Bourbon	1,117	310	38.4	160	53	49.5	1,229	129	11.7	399	135	51.1
Boyle	1,173	152	14.9	224	113	101.8	1,852	327	21.4	210	78	59.1
Clark	1,282	238	22.8	197	67	51.5	1,362	268	24.5	488	169	53.0
Estill	422	51	13.7	30	(1)	(3.2)	418	20	5.0	241	(4)	(1.6)
Fayette	10,401	1,708	19.6	2,152	837	63.7	15,543	3,207	26.0	2,547	618	32.0
Franklin	1,676	313	23.0	238	14	6.2	2,507	568	29.3	1,979	787	66.0
Garrard	555	201	56.8	81	49	153.1	483	151	45.5	86	11	14.7
Harrison	790	137	21.0	102	14	15.9	757	49	6.9	141	31	28.2
Jessamine	896	438	95.6	121	53	77.9	1,421	747	110.8	155	60	63.2
Lincoln	607	8	1.3	44	(13)	(22.8)	728	3	0.4	117	16	15.8
Madison	2,105	659	45.6	227	92	68.1	3,597	588	19.5	754	(176)	(18.9)
Menifee	102	45	78.9	0	0	0.0	209	100	91.7	53	22	71.0
Mercer	623	27	4.5	91	36	65.6	1,163	259	28.6	137	19	16.1
Montgomery	904	171	23.3	72	(4)	(5.3)	879	100	12.8	148	79	114.5
Nicholas	255	39	18.1	28	(7)	(20.0)	324	28	9.5	68	0	0.0
Powell	146	6	(3.9)	27	13	92.9	217	44	25.4	54	2	3.8
Scott	771	110	16.6	176	71	67.6	1,354	208	18.1	279	61	28.0
Woodford	543	153	39.2	94	58	161.1	955	186	24.2	153	32	26.4
Totals	25,047	5,052	25.3	4,156	1,468	54.6	35,863	7,303	25.6	8,210	1,999	32.2

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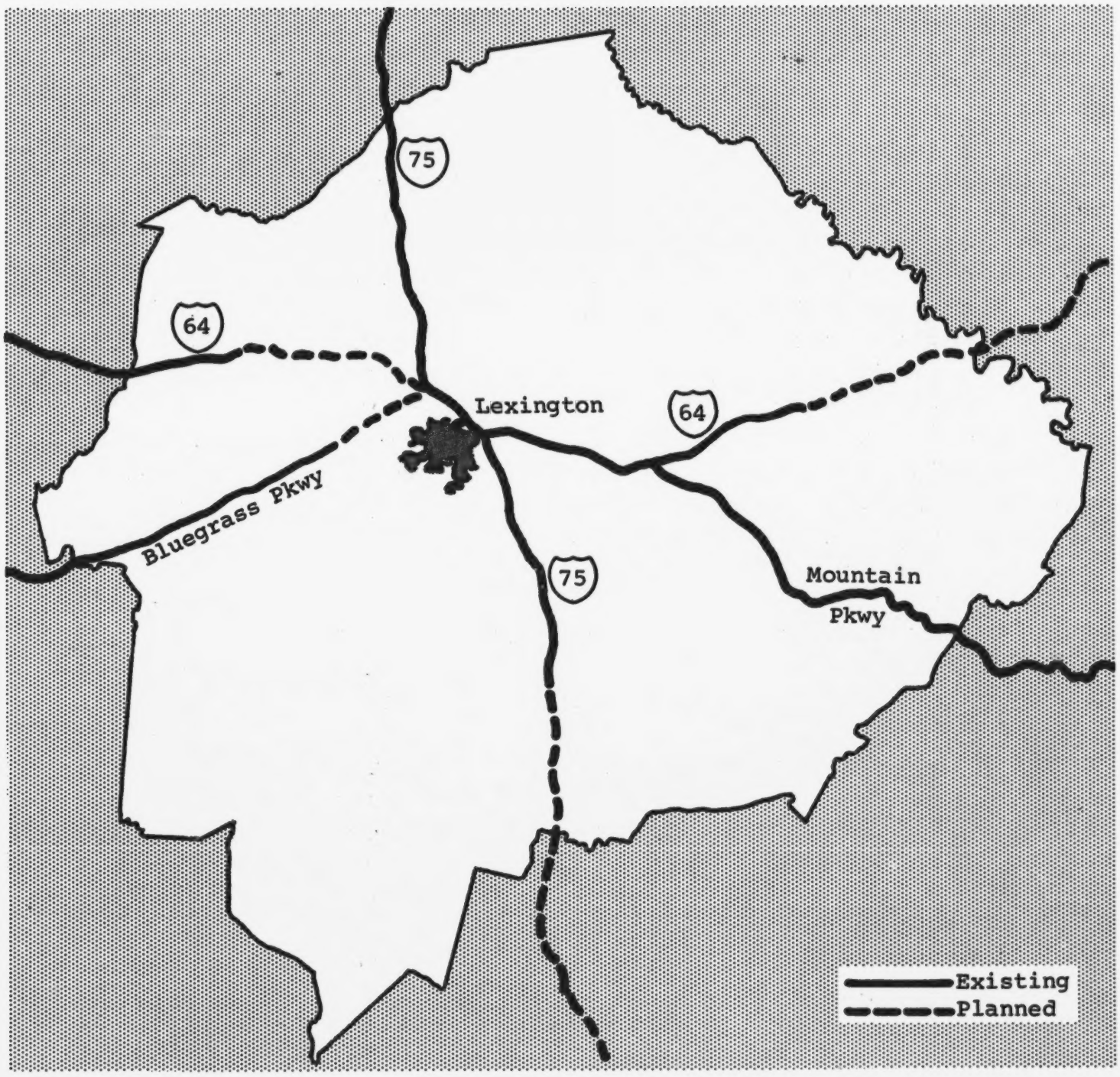

Figure 3-1. Limited access highways serving Central Kentucky.

Additional highway construction in eastern Kentucky will provide greater access to and from the 20-county area, thus contributing to its services and trade potential.

Another asset of considerable significance is the aesthetic appeal of the "Bluegrass" setting which helps to attract industries and business to the area. This appeal is a result of the natural beauty and cultural history of the region. The scenic farms located on a gently rolling plain, surrounded by partially wooded hills makes an appealing environment for living and working. The climate is ideal in many respects, characterized by moderate seasonal variations, a mildness of temperature and moderate precipitation, which contribute to comfortable living.

The human resources of the area include not only the residents now living in the 20 counties but also the people available from surrounding regions who are migrating from their homes to find new jobs. Many of these people are available for employment and can be readily trained to make productive employees in a variety of businesses. However, highly trained people are typically in short supply in this area. Currently, there are some apparent existing shortages of professionals, sales persons for fields such as insurance, and managerial workers.

The study area has long been a major service center for much of Kentucky. This historical relationship to other areas is partly due to the presence of the state capitol and the University of Kentucky. Also, however, Lexington has been a cultural leader in the Commonwealth. Not only are business services available in good supply relative to the size of the population, but also available are a number of other types of services in the entertainment field, including philharmonic orchestras, organized concerts and lectures, theatrical groups, and a wide variety of sporting events. Outdoor recreational opportunities are available in many types of activities. Thus, the availability of all types of services from real estate and financial to recreational and entertainment are well developed in the study area.

It has been shown in other regions that the pressure of universities assists in the growth and development of localities in which they are located. The study area has a number of colleges as well as the University of Kentucky located within its boundaries. These educational resources contribute to the growth and development potentials.

In spite of all of the assets displayed by the study area, a number of limiting factors also are present that restrict development possibilities. For example, water supplies and waste disposal capabilities of this region are not as favorable as in adjacent areas (notably along the Ohio River) for accommodating such heavy industries as chemicals and primary metals. The high cost of some land in favorable locations may also restrict the base of development in certain areas. Poor planning and design of some facilities, such as shopping centers, will not contribute to the trade within their service areas. Some cities within the study region have poor access to downtown areas with traffic problems resulting from inadequate street systems and traffic control. Successful programs to alleviate some of these problems would contribute to the pace of development.

GROWTH PATTERNS

Three recently completed studies can be used to partially outline the types of opportunities that will be available for industrial growth within the study area during the coming years. (Appendix A summarizes the results of two of these studies and presents data on the existing industries classified on the basis of numbers of employees.) The conclusions reached in these previous studies are based not only upon the ability of the area to produce the goods but also on the national growth and mobilities of the various industries and the relative cost of producing and distributing goods and services compared with other areas.

Not all of the industries that have potential in the 20-county area will be attracted. Many will go elsewhere or expand at existing locations because of more favorable or better promoted locations. The number of employees that each industrial possibility would create is impossible to estimate. However, by projecting broad categories of industry, it is possible to arrive at employment expected in future years within the 20-county study area. Figure 3-2 is a graph of various manufacturing employment groupings based upon information supplied by the Kentucky Economic Security Division which includes all workers covered by Unemployment Compensation Insurance. Figure 3-2 shows the remarkable growth in employment in machinery and metal products and equipment. Only moderate growth has occurred in most other categories of manufacturing in the 20 counties. In terms of number of new manufacturing establishments for the period between 1957 and 1964, fabricated metals have increased by 17, and nonelectrical machinery by 14, in the 20 counties as shown in Figure 3-3. In terms

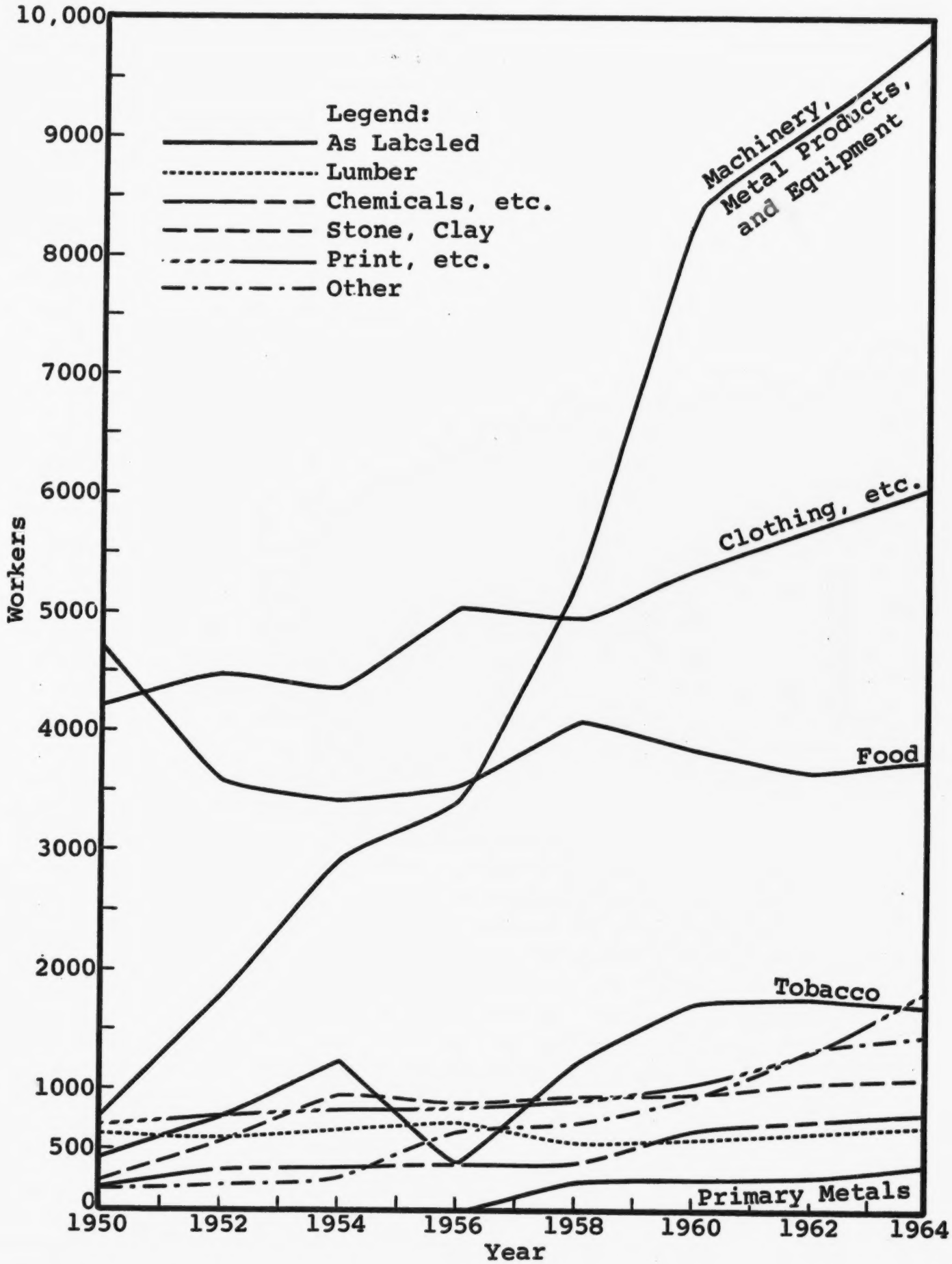

Figure 3-2. Manufacturing employment--20 county totals.

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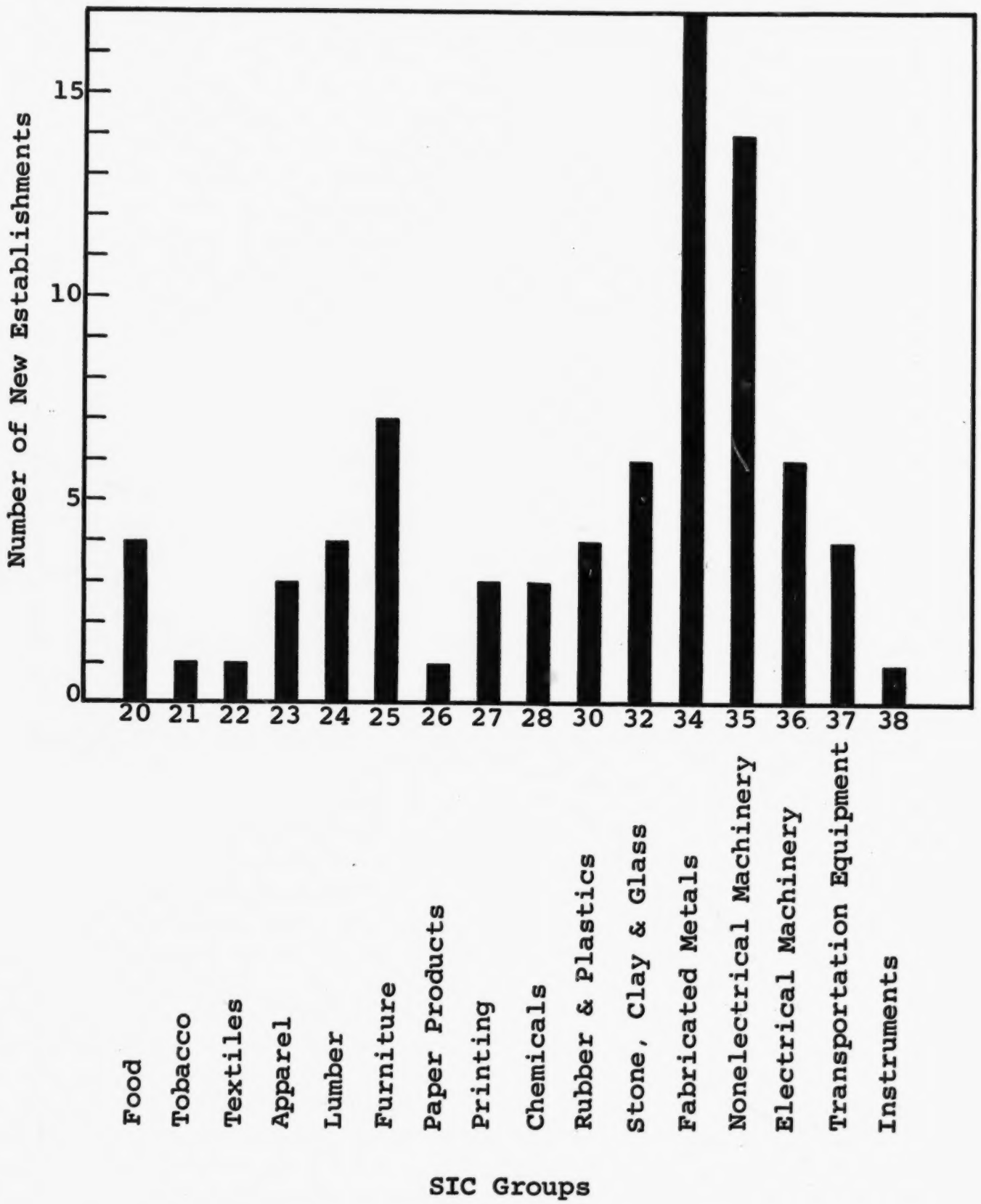

Figure 3-3. Number of new manufacturing establishments by SIC, 1957-1964.

of expansions of manufacturing establishments (Figure 3-4), food and fabricated metals had 11 expansions each during this period, and apparel and electricial machinery had 10 each. Appendix B lists the name, product, and other data for each new expanded manufacturing plant in the 20-county area during the period 1957-1964.

Most of the new and expanded plants were in the larger communities--especially Lexington--but there was some growth in smaller outlying communities also. Table 3-5 shows that 21 new and 22 expanded manufacturing plants were located at Lexington during the period 1957 to 1964, for a total of 43 additions in productive capacity. Georgetown, Versailles, Frankfort, and Winchester each enjoyed more than ten new and expanded plants during this period; and Cynthiana, Danville, Mt. Sterling, and Richmond had notable increases also. The annual increase in number of new and expanded plants located in the 20-county study area has improved from 12 in 1957 to 35 in 1964. Figure 3-5 is a plot of the announced new and expanded plants during this period. Based on the same data, the 20-county study region has received slightly more than 20% of new employment in new and expanded plants as compared with the entire state of Kentucky. This high percentage of new jobs is in spite of the fact that very few heavy industries are attracted to the region, and most of the employment is in high quality light manufacturing establishments.

Table 3-5
Major Locations of New and Expanded Plants
1957-1964

Rank	City	New	Expansions	Total
1	Lexington	21	22	43
2	Georgetown	8	8	16
3	Versailles	5	7	12
4	Frankfort	6	4	10
4	Winchester	4	6	10
5	Cynthiana	4	4	8
5	Danville	3	5	8
6	Mt. Sterling	3	4	7
7	Richmond	4	2	6

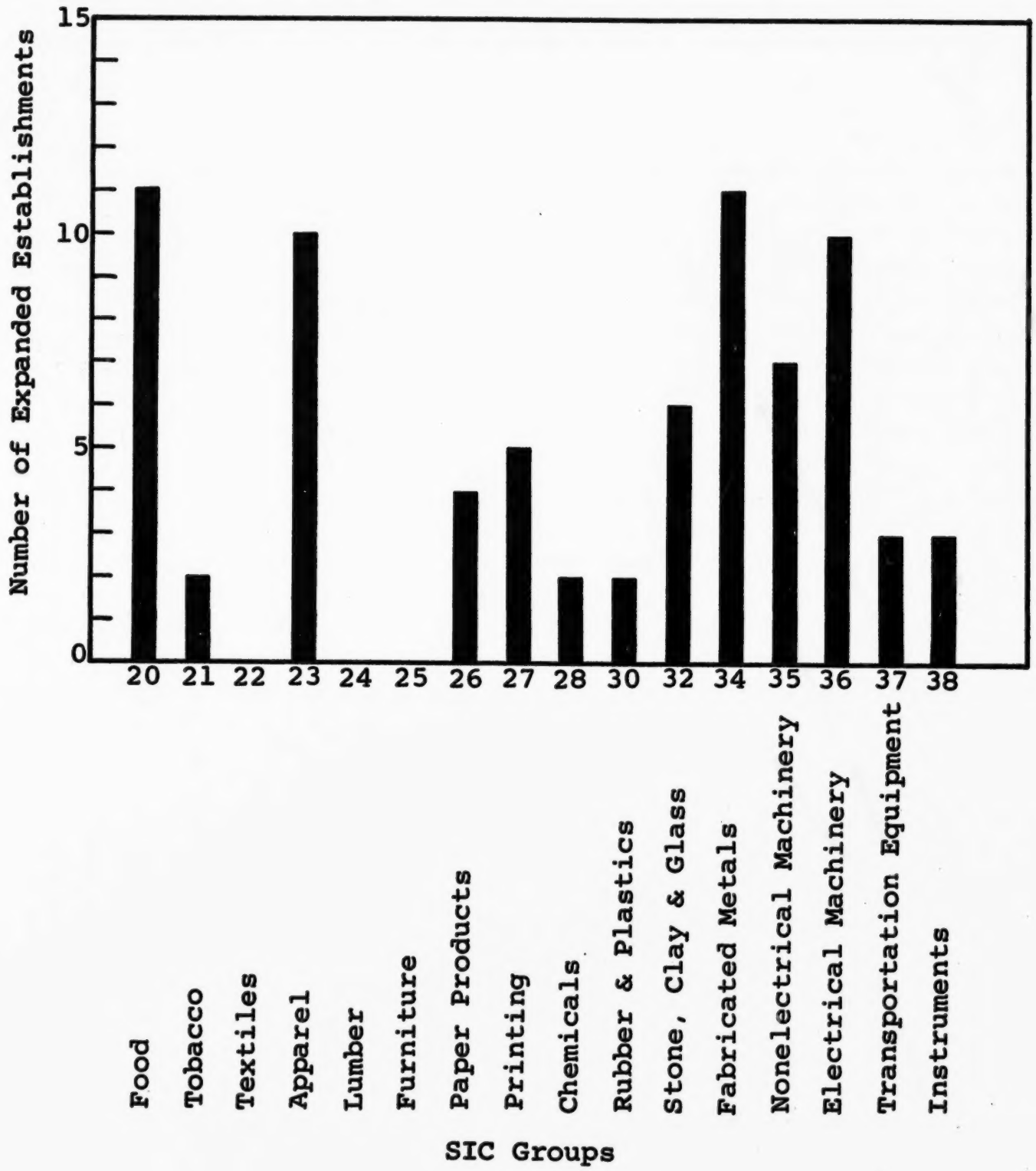

Figure 3-4. Number of expanded manufacturing establishments by SIC, 1957-1964.

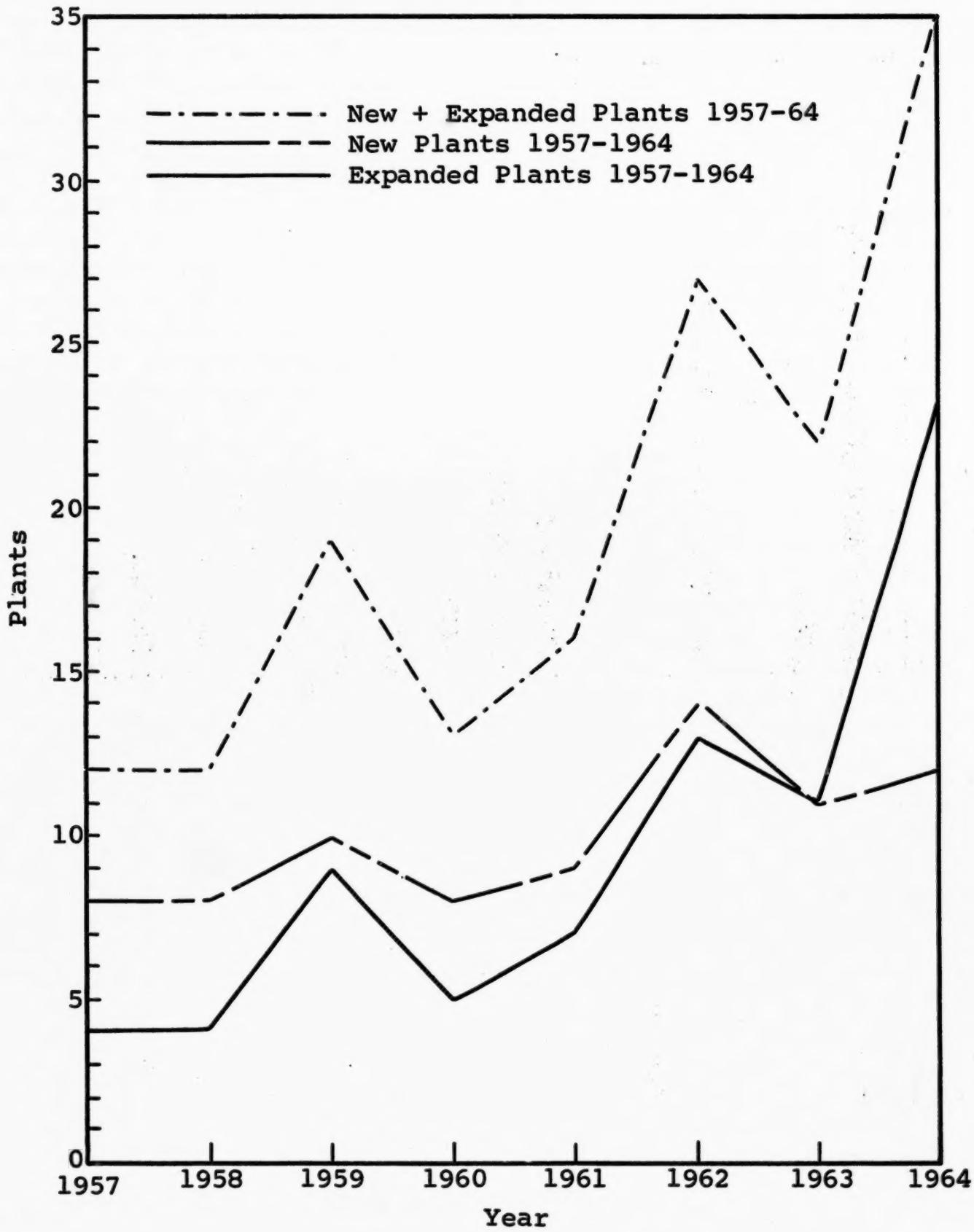

Figure 3-5. New and expanded plants in 20-county region, 1957-1964.

SPINDLETOP RESEARCH

The only completed study that projects employment for a small region including Central Kentucky is the Arthur D. Little study* prepared for the U.S. Army Corps of Engineers. Subregion M of this study includes the 20 counties currently under study and an additional 20 counties extending into eastern Kentucky to the Virginia state line (Figure 3-6). This study, which was based on detailed consideration of output and interindustry relationships, shows that only about 10,480 new jobs will be created in the entire 40 counties between the period of 1960 and 1970, compared to an increase of about 12,000 new jobs that were created in the ten-year period between 1950 and 1960 for the 20 counties in the current study. More than 6,000 jobs already have been created in the 20 counties in the three-year period between 1961 and 1964, according to Kentucky Department of Commerce figures. Thus, it seems probable that the Arthur D. Little estimates are too conservative.

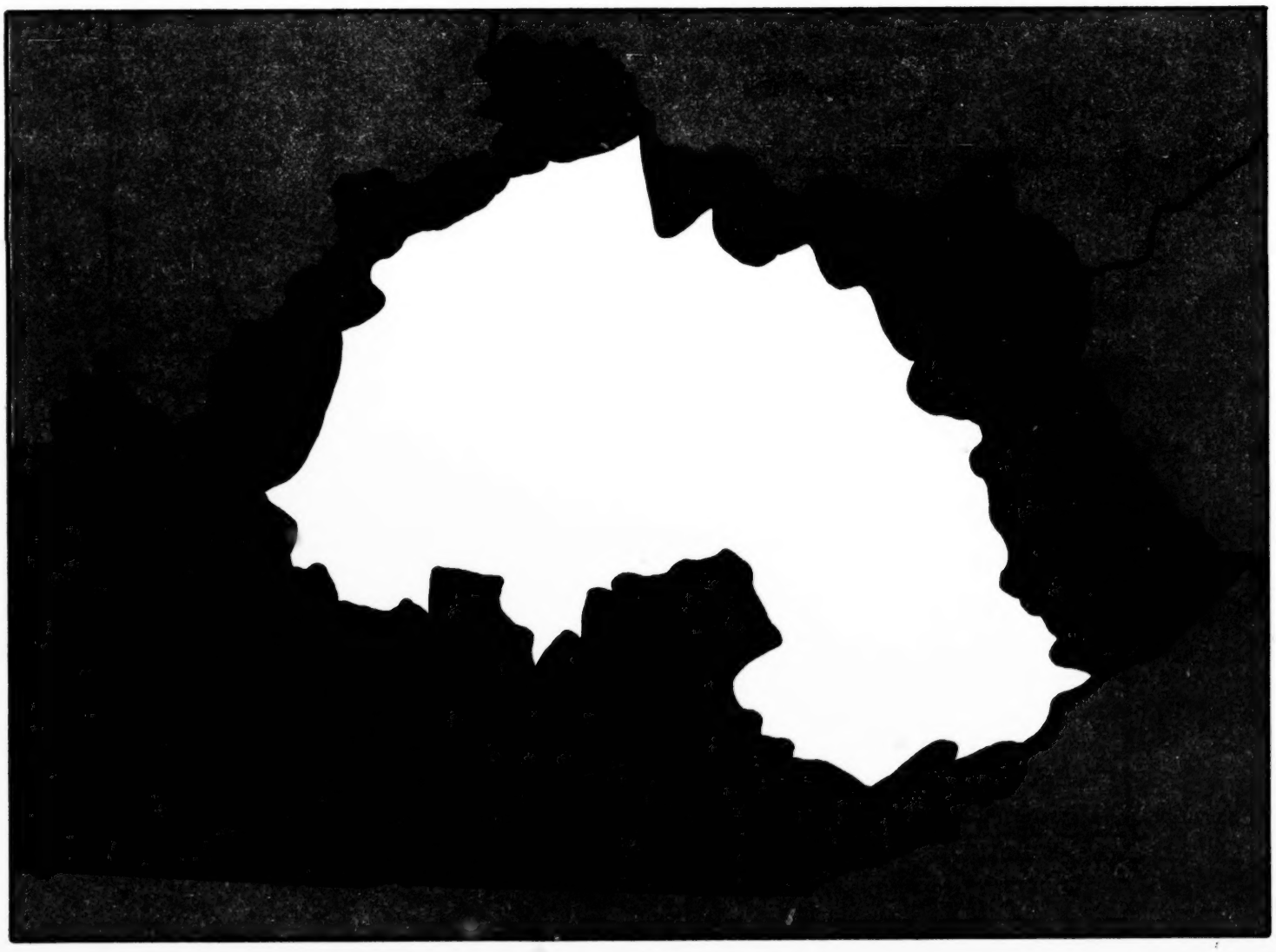

Figure 3-6. A.D. Little Region "M".

* Projective Economic Study of the Ohio River Basin, Arthur D. Little, Inc., U.S. Government Printing Office. August, 1964.

The 20-county study area has had a remarkable period of growth in the last few years. Even though the nation's manufacturers are spending only about $2.7 billion of $22.5 billion for expansion at new locations (slightly more is spent for expansion than for new plants in Kentucky--for example, $67 million versus $51 million in 1964, and $32 million versus $20 million in 1963), the study region has enjoyed consistently greater investment in new plants. Twice or even greater proportions of spending for new plants relative to spending for expanded plants has occurred often in recent years. If these trends and tendencies continue for another five or ten years, a substantail industrial base will have been built in the study area, which will, in turn, generate additional services and other industries. One of the main reasons for expecting continued expansion by new and existing industries is the excellent interstate highway system that will serve these industries. Growth during the last fifteen years has been remarkable considering the high degree of agricultural specialization of the region in 1950 compared to today.

It can be concluded that substantial opportunities for growth of industry, particularly manufacturing concerns of the light manufacturing type, will continue and that substantial numbers of high quality employment opportunities will be created as a result. The actual numbers of employment openings is very difficult to measure. However, for planning purposes, attempts are made to forecast the levels of employment by various industrial categories.

EMPLOYMENT PROJECTIONS

Projections of manufacturing employment anticipated for the 20-county study area in the years 1970 and 1975 are used in this study as a basis for forecasting service-type jobs and population. The forecasted population is used, in turn, to estimate the number of training-age youths--mainly in the 16-20-year-old group. This methodology is appropriate for the study area because of the high in-migration of nearby residents in response to manufacturing and service employment opportunities. The projection methodology, a technique referred to as "from the bottom up," is considered more appropriate for use in the study area than methods that rely more heavily upon allocating the proportionate growth expected from national and statewide growth levels.

The basic assumption for the projections is that manufacturing employment controls the level of population growth within the

area, and that this growth, in turn, will generate further increases in service-related jobs, once a proper balance is reached.

Figure 3-7 shows the trend lines for the 1950 and 1960 census of population totals of manufacturing employment as compared to the 1954-58 census of manufacturing employment. Also plotted on Figure 3-7 is the number of manufacturing employees based on the first quarter 1962 County Business Patterns series.* The data from the three sources of manufacturing employment are not comparable, because they were based on different forms of surveys. However, the rate of growth is approximately 1500 new jobs annually for the 20-county area. At this rate, the number of new jobs between 1965 and 1975 in manufacturing would be 15,000. If the previous trends (as illustrated in Figure 3-2) hold true, most of these jobs will be in machinery, metal products, and equipment with some growth in the clothing, textiles, and leather category. However, because of the wide variety of other possibilities (listed in Appendix A), substantial numbers of these employees may be expected in other industries as well. Agricultural employment has declined 14,287 jobs during the period 1950 to 1960 in the 20-county study area (Table 3-4, page 3-5). Substantial losses in agricultural employment were experienced in all counties in the study area; Madison and Lincoln had losses of

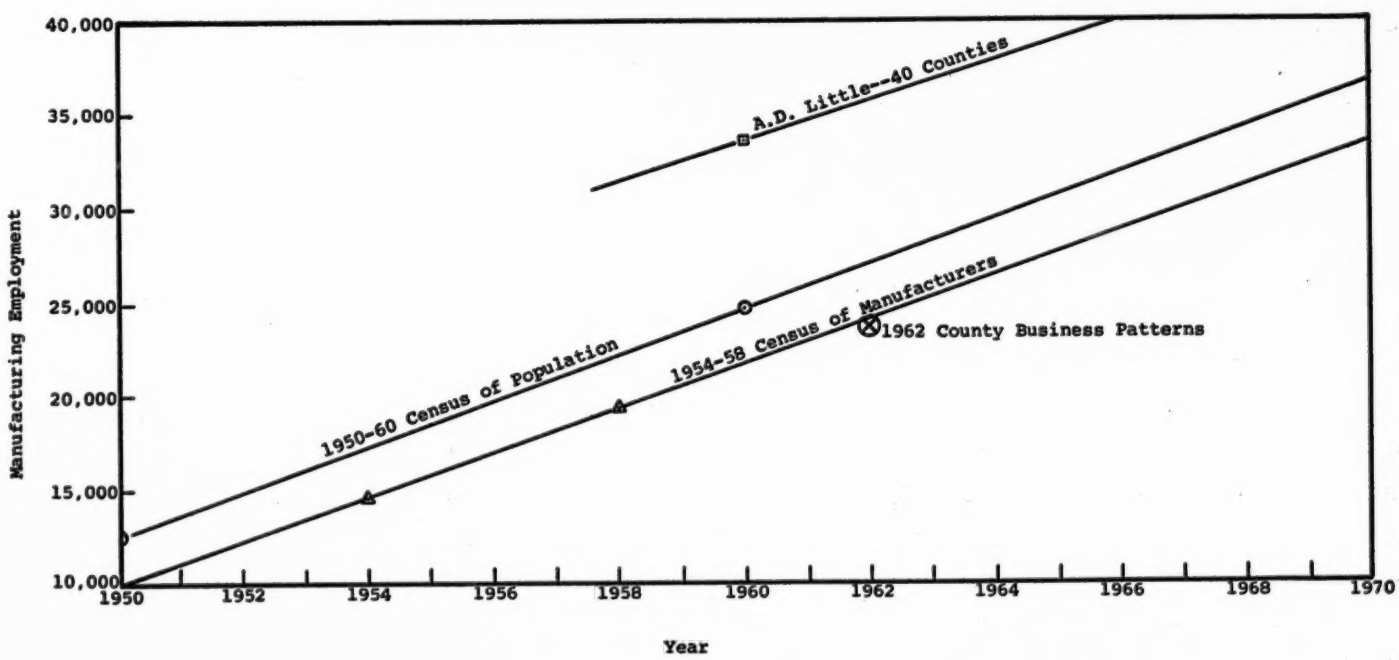

Figure 3-7. Trends in manufacturing employment in 20-county area--1950, 1960, and 1962.

* Published by U.S. Department of Commerce every three years.

1300 or more, and Powell County lost the fewest--287 workers. The decline was 34.6% during the decade with some counties having very high percentage losses (43.6% for Powell County and 47.2% for Franklin County) whereas, others experienced moderately low losses; Fayette County had a decline of 17.3%, for example. The loss in agricultural employment (14,287) was greater than the corresponding gain in manufacturing employment (12,567).

The high rate of decline in agricultural employment (from 41,229 in 1950 to 26,942 in 1960) is not anticipated to continue because of the tendency toward an adequate balance between number of farm workers and technological requirements. At any rate, 13,000 decline during the next ten years would be too great a loss of farm workers to keep production at current levels. With lower rates of outmigration from farms, fewer potential employees will be available within the study area for manufacturing positions, and greater inmigration from outlying areas will be possible. Eastern Kentucky has a low farm population and high unemployment rates, and many desire positions in Central Kentucky. As new jobs become available and cannot be filled by existing residents, eastern Kentuckians and others will migrate into the study area.

The 20-county study area is characterized by relatively high proportion of employees in the services and miscellaneous category and relatively low in the manufacturing category, as shown in Table 3-3. The nation and Kentucky as a whole have much lower percentages in services and higher percentages in manufacturing. However, with the high rate of growth in the 20-county study area, it is anticipated that this gap will be narrowed and that the 20-county study area will be substantially the same as the state or the nation in the near future.

The ratio of new jobs in service-producing industries compared to goods-producing industries is only about 1.20 for the 20-county study area as compared to more than 3.0 for the nation as a whole. In other words, many more jobs in services are created for each manufacturing job in most areas, whereas only 1.2 jobs are created in the study area. However, it is estimated that the rapid growth in manufacturing will cause a regeneration of services demand and that this ratio will increase to about 1.5 by 1970 and to about 1.8 by 1975. The ratio may get as high as 3.0 in this period, if manufacturing growth declines substantially while growth in service-producing industries maintains the current pace. However, all present indications are that manufacturing growth will continue at a high rate and that although it might be out-

paced slightly by service-producing industries, only gradual change will occur in the ratio.

Table 3-6 shows the number of service-producing industry jobs that would correspond to manufacturing jobs if a schedule of 1500 new jobs in manufacturing per year is assumed. From Table 3-6, total new employment for each five-year period, excluding replacements, can be calculated for the 20-county study area. Replacements will also provide employment opportunities and contribute to the population growth of the area.

SPECIFIC EMPLOYMENT OPPORTUNITIES

A continuation of the trends established in the years 1957 through 1964 is anticipated for the 20-county study area. Thus, the largest gains in employment should be made in SIC groups 34 (fabricated metals), 35 (nonelectrical machinery), 36 (electrical machinery), 20 (food and beverages), and 23 (apparel). Figures 3-3 and 3-4 show the number of new and expanded establishments attracted to the area during this period.

According to the 1965-1968 plans for capital spending as reported by the McGraw-Hill Department of Economics, plans by manufacturers call for spending about $2.7 billion at new locations in the year 1965. Of this amount, $1.2 billion is in machinery, electrical machinery, autos and parts, fabricated metals and instruments, food and beverages, and miscellaneous manufacturing, all of which can be attracted to the 20-county study area. These industries represent 46% of the amount planned for capital spending at new locations during 1965.

For the period 1965 to 1968, McGraw-Hill reports plans for spending about $83 billion by manufacturers for expansions and modernization at both new and old locations. Of this, $353 billion is in the machinery, electrical machinery, autos and parts, fabricated metals and instruments, food and beverages, and miscellaneous manufacturing categories. Thus, 42.5% of the total for modernization and expansion is in this group of six manufacturing categories that can be favorably attracted to the study area.

In other goods producing industries, gains are anticipated in heavy construction with a stabilization of light construction. Mining is anticipated to stay near current levels.

Table 3-6
Summary of Growth in Employment and Population for Central Kentucky

	Actual		Estimated	Projected	
	1950	1960	1965	1970	1975
Manufacturing Employment	11,988	24,555	32,000	39,500	47,000
Mining and Construction Employment	9,844	11,596	12,500	13,500	14,500
Jobs in Goods-Producing Industries	21,832	36,151	44,500	53,000	61,500
Jobs in Service-Producing Industries	65,354	81,153	92,000	105,000	120,000
Total Goods and Service Industries	87,186	117,304	136,500	158,000	181,500
Agricultural Employment	41,229	26,942	23,000	20,000	19,000
Unemployment	5,800	6,500	7,200	8,000	9,200
Labor Force	134,000	150,500	166,500	186,000	209,500
Population, Age 14 and over	276,000	292,000	314,000	341,000	374,000
Total Population	378,165	412,069	436,000	474,000	520,000
Factors Used:					
Ratio: Employment in Service Industries / Employment in Goods Industries		1.10	1.30	1.50	1.80
Unemployment (%)	4.5	4.5	4.5	4.5	4.5
Population under 14 Years Old (%)	27.0	29.0	28.0	28.0	28.0
Labor Force of Population 14 and Over (%)	48.5	51.5	53.0	54.5	56.0

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In the service-producing industries, a trend away from agricultural services is anticipated, and a substantial growth in service-producing jobs will result from the industrial base that is rapidly developing within the study region. A high demand for technicians and professionals should result.

Based on national averages for the demand for service-producing industry personnel, a change of 61% is anticipated between 1960 and 1975 in the service and miscellaneous category; 51% in government; 44% in finance, insurance, and real estate; and 37% in wholesale and retail trade; and about 13% expected for transportation and public utilities--an average of 44% change in all service-producing industries. Because of the already high "services and miscellaneous" category (about 30% in the study area versus about 21% for Kentucky or the nation as a whole), lower percentages in services and miscellaneous may be expected with correspondingly higher increases in government and the finance, insurance, and real estate category.

One particularly noteworthy factor is "a large part of the increased employment in trade is expected to be among part-time workers, including many women and younger workers. The development of suburban shopping centers and the trend toward keeping stores open during evening hours is creating a demand for large numbers of part-time workers, who are available from nearby residential areas. Wholesale and retail trade will also continue to provide many opportunities for self-employment. According to the 1960 census, almost 60% of all self-employed, nonfarm proprietors were in this industry division."*

Table 3-7 shows the actual and projected major occupational groups and percent change anticipated for the nation between 1960 and 1975. These projections are from the Bureau of Labor Statistics, and corresponding county data are not available. However, they do tend to show the changes anticipated on a national basis which can be compared to Fulmer's † data for Kentucky which have similar

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* Employment Projections, by Industry and Occupation, 1960-1975. United States Department of Labor, Bureau of Labor Statistics, March, 1964.

\+ Kentucky Occupational Trends from 1950 to 1960 with Projections to 1975, University of Kentucky Bureau of Business Research, 1965.

tendencies. Utilizing the overall projections of goods-producing and service-producing industries and the total population, numerical requirements for various occupational groups can be estimated by considering the gross changes in industrialization.

Table 3-7
Actual and Projected Major Occupational Groups
in the United States
(in millions of employees)

National Employment	1950	1960	1963	1970	1975	1960-1975 Percent Change
Mining	0.9	0.7	0.6	0.7	0.7	
Construction	2.3	2.8	3.0	4.0	4.4	52
Manufacturing	15.2	16.8	17.0	19.2	20.3	21
Goods-producing industries	18.4	20.3	20.6	24.0	25.4	25
Transportation	4.0	4.0	3.9	4.4	4.5	13
Wholesale and retail trade	9.4	11.4	11.9	14.0	15.6	37
Finance, Insurance and Real Estate	1.9	2.7	2.9	3.5	3.9	44
Service and Miscellaneous	5.4	7.4	8.3	10.2	11.9	51
Government	6.0	8.5	9.5	11.5	12.8	51
Service-producing industries	26.7	34.0	36.5	43.7	48.8	44
TOTAL	45.2	54.3	57.1	67.7	74.2	37

NOTE: Individual items may not add to totals because of rounding.
SOURCE: U.S. Department of Labor

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IV. SKILLED, CLERICAL AND TECHNICAL EMPLOYMENT OPPORTUNITIES

INTRODUCTION

A proportional random sample of firms whose employees are covered by Kentucky Unemployment Insurance was surveyed to:

- Verify the overall growth forecasted by the economic analyses presented in Section III.
- Obtain detailed information relating to the needs of industry and business for trained, skilled, clerical and technical (SCT) employees.

Two questionnaires were developed to obtain the desired information. The first, hereafter referred to as the "short form," was a relatively simple instrument. It was designed to obtain only the most essential quantitative data relating to employment opportunities in businesses and in manufacturing firms employing fewer than 100 employees. The data were requested by occupation in the skilled, clerical, and technical categories and by broad classifications (i.e., professional, semiskilled, and unskilled) for the remainder of the occupational spectrum. A letter of explanation concerning the purpose of the study was mailed with each short form.

The second type of questionnaire used in this portion of the study was lengthy and required considerable time and effort to complete. This instrument, referred to as the "long form," was sent to Central Kentucky manufacturing firms employing 100 or more persons. In addition to the quantitative employment opportunity data requested on the short form, the long form was designed to obtain detailed information concerning the nature of the training needs for each type of job in the SCT occupational categories. The information obtained from the long form relating to training needs is presented in Section V.

THE STUDY POPULATION

In Kentucky, employees are covered by unemployment insurance after they have worked 20 weeks for a firm employing four or more workers. Both criteria have relevance to the purpose of this

study and led to the selection of firms having covered employees as the study population from which the sample was drawn.

Table 4-1 shows the distribution of the study population by number of firms and by covered employees* for each employment sector of the private nonfarm economy of Central Kentucky. Firms in the manufacturing sector account for over 38% of the total 76,277 covered employment but account for only 8.2% of the 6,240 firms in the study population. The next largest employer is the wholesale and retail trade sector with 27% of the total employment. This sector also has the largest number of firms in the study population, accounting for 44% of the total. Of the remainder of the sectors, only the finance and insurance and the construction sectors each account for as much as 10% of the total covered employment.

Table 4-1
Distribution of Employees Covered by
Unemployment Insurance in Central Kentucky

Employment sector	Number of firms	Percent of total firms	Number of covered employees	Percent of covered employees	Average number of covered employees
Manufacturing					
Less than 100 employees	456	7.3	6,980	9.1	15.3
100 or more employees	57	0.9	22,638	29.7	397.0
Total	513	8.2	29,618	38.8	57.7
Other					
Mining	54	0.9	495	0.6	9.2
Construction	1144	18.3	7,600	10.0	6.6
Transportation, communication, and utilities	313	5.0	5,843	7.7	18.7
Wholesale and retail trade	2748	44.0	20,632	27.0	7.5
Finance and insurance	522	8.4	3,855	5.1	7.4
Services	905	14.5	7,888	10.3	8.7
Agriculture business	41	0.7	346	0.5	8.4
Total	5727	91.8	46,659	61.2	8.1
Industry and business total	6240	100	76,277	100	12.2

Source: Kentucky Department of Economic Security. 1965 data for 20-county study area.

*"Covered employees" is used throughout this report to refer to employees covered by Kentucky Unemployment Insurance.

In terms of number of employees per firm, the manufacturing sector leads with an average of 57.7. This contrasts with an overall average of 12.2 covered employees per firm and 8.1 per firm for the nonmanufacturing sector.

THE SAMPLE

The sample was designed to give each of the 76,277 jobs held by covered employees an equal chance of being included in the survey. By sampling on the basis of the number of jobs rather than the number of firms, the larger the firm, the higher the probability of the firm being included in the sample.

Table 4-2 contrasts the distribution of the study population and the sample in terms of number of firms, number of employees, and average number of employees for each employment sector. The higher average number of employees per sampled firm shows the effect of the proportional sampling design used.

It will be noted that the data for manufacturing firms employing 100 or more covered workers was listed as a separate line item. This was done because these employers were selected as the group to be asked, by means of the long form questionnaire, detailed questions concerning their training needs.

THE RESPONDENTS

More than 72% of the firms surveyed cooperated with the study by completing questionnaires. The responding firms employ over 74% of the workers included in the sample and nearly 40% of the workers in the total study population.

Two employment sectors, small manufacturing and mining, reported a greater current employment than was shown by Unemployment Insurance data. The magnitude of the increase was not great in relation to either the sample or the study population. In the case of the small manufacturing sector, where the increase was 146 from a base of 2881, the addition of a second shift, a plant expansion, or small increases in employment in several of the 76 firms involved could account for the difference. The increase in mining sector of from 13 to 49 employees with only two out of the three involved firms reporting is of little significance because of the small numbers involved and because of the characteristics of the industry.

Table 4-3 contrasts the survey respondents, the sample, and the study population in terms of number of firms and employment by employment sector.

The 15,669 employees reported by large manufacturers constitute over 52% of the employment of all respondents. Wholesale and retail trade employers who responded constituted the next largest group with a reported employment of 4,081. Small manufacturers; transportation, communication, and utilities; and services employers reported 3,027, and 2,408 employees, respectively.

Table 4-2
Distribution of Firms and Employment
in the Study Population and the Sample

	EMPLOYMENT						
	Study population			Sample			
Employment sector	Number of covered employees	Average number of employees per firm	Percent of total employees	Number of employees	Percent of employment sector	Percent of sample	Average number of employees per firm
Manufacturing							
Less than 100 employees	6,980	15.3	9.1	2,881	41.3	7.2	29.8
100 or more employees	22,638	398.0	29.7	22,638	100.0	56.2	397.0
Total	29,618	57.8	38.8	25,519	86.2	63.4	166.0
Other							
Mining	495	9.2	0.6	13	2.6	0.0	4.1
Construction	7,600	6.6	10.0	1,646	21.7	4.1	29.5
Transportation, communication, and utilities	5,843	18.6	7.7	3,380	57.8	8.4	10.5
Wholesale and retail trade	20,632	7.5	27.0	5,287	25.6	13.1	36.9
Finance and insurance	3,855	7.2	5.1	1,419	36.8	3.5	52.6
Services	7,888	8.7	10.3	2,763	35.0	6.9	53.1
Agricultural business	346	8.4	0.5	236	68.2	0.6	39.4
Total	46,659	8.9	61.2	14,744	31.6	36.6	46.1
Industry and business total	76,277	12.2	100.0	40,263	52.8	100.0	85.0

	FIRMS				
	Study population		Sample		
Employment sector	Number of firms	Percent of total firms	Number of firms	Percent of firms	Percent of total sample firms
Manufacturing					
Less than 100 employees	456	7.3	97	21.3	20.6
100 or more employees	53	0.9	57	100.0	12.0
Total	513	8.2	154	30.0	32.6
Other					
Mining	54	0.9	3	5.6	0.6
Construction	1144	18.3	56	4.9	11.8
Transportation, communication, and utilities	313	5.0	32	10.2	6.8
Wholesale and retail trade	2748	44.0	143	5.2	30.2
Finance and insurance	522	8.4	27	5.2	5.7
Services	905	14.5	52	5.7	11.0
Agricultural business	41	0.7	6	14.6	1.3
Total	5727	91.8	319	5.6	67.4
Industry and business total	6240	100.0	473	7.6	100.0

WEIGHTING FACTORS

Estimates of the magnitude of the overall needs for trained workers in the selected occupational categories during the next five-year period by Central Kentucky employers requires the use of weighting factors to scale data from respondents up to the study population level. Several conservative weighting factors were derived to avoid over estimating. These weighting factors involved two basic considerations:

- The proportion of the study population represented by the respondents
- Assumptions regarding the degree of representativeness of the respondents.

Percent of Study Population

For estimating purposes, the respondents were divided into three employment sectors; small manufacturers, large manufacturers, and nonmanufacturers. Responding small manufacturers accounted for 43.4% of the employment in the manufacturing sector of the study population; large manufactueres accounted for 69.2% and nonmanufacturers for 24.1%. Table 4-4 presents the basis for these per-

Table 4-3
Distribution of Firms and Employment in the Study Population, Sample, and Survey Responses

	STUDY POPULATION		SAMPLE		RESPONDENTS			
					Firms		Employees	
Employment sector	Number of firms	Number employed	Percent of type of firm	Percent of number employed	Number of firms	Percent of study population	Number of employees	Percent of study population
Manufacturing								
Less than 100 employees	456	6,980	21.3	41.3	76	16.7	3,027	43.4
100 or more employees	57	22,638	100.0	100.0	37	64.9	15,669	69.2
Total	513	29,618	30.0	86.2	113	22.0	18,696	63.1
Other								
Mining	54	495	5.6	2.6	2	3.7	49	9.9
Construction	1144	7,600	4.9	21.7	27	2.4	1,213	16.0
Transportation, communication, and utilities	313	5,843	10.2	57.8	23	7.3	2,557	43.8
Wholesale and retail trade	2748	20,632	5.2	25.6	101	3.7	4,081	19.8
Finance and insurance	522	3,855	5.2	36.8	21	4.0	760	19.7
Services	905	7,888	5.7	35.0	52	5.7	2,408	30.5
Agricultural business	41	346	14.6	68.2	4	9.8	173	50.0
Total	5727	46,659	5.6	31.7	230	4.0	11,241	24.1
Industry and business total	6240	76,277	7.6	52.8	343	5.5	29,937	39.2

Table 4-4
Raw Weighting Factors

Employment sector	Number employees in study population	Number employed by responding firms	Sector of population accounted for by respondents (percent)	Raw weighting factor
Manufacturers				
Small	6,980	3,027	43.4	2.31
Large	22,638	15,669	69.2	1.45
Nonmanufacturers	46,659	11,241	24.1	4.15
Total	76,277	29,937	39.2	2.55

centages and the resulting "raw" weighting factors derived fro each sector. The raw weighting factor is the reciprocal of the proportion of the study population accounted for by respondents for each employment sector and is the multiplier for translating number of responses to raw study population equivalents.

Assumptions of Respondents' Representativeness

Since it is a basic presumption of this study that the employer is in the best position to forecast the extent of his own future needs for employees, weighting factor considerations were limited to possible sampling biases. Two extreme assumptions were first considered, and finally a middle-ground assumption was selected. In regard to how representative the respondents are of the nonrespondents, the most conservative possible assumption is that they are totally unrepresentative. While highly unlikely, it is a remote possibility that the proportional sampling technique, in emphasizing the larger employers, selected only those firms having skilled, clerical, and technical workers as the firms to be surveyed. Furthermore, if it is assumed that nonresponders had no needs, the needs reported by the respondents are the absolute maximum needs of Central Kentucky employers. Clearly, an overall forecast based on these assumptions presents much too conservative an outlook.

On the other end of the spectrum, it can be assumed that the sample accurately represents the population in all aspects under study and that the nonresponding firms have the same characteristics as the respondents. Using these assumptions, the respondents' needs can be scaled up to the total study population by means of the raw weighting factor previously explained. Since it seems resonable to assume that some firms did not respond because they foresaw no needs for additional workers, the aggregate need forecasted on this basis would probably be on the high side, other factors being constant.

An assumption that would seem to predict a need level slightly on the low side of the middle involves considering the sample to be

representative but all nonresponders to have no need for additional SCT employees. In this case, the weighting factor would be the reciprocal of the proportion of the sample in each employment sector. Table 4-5 presents the weighting factors derived on the basis of these assumptions.

Table 4-5
Respondent Weighting Factors by Employment Sector

Employment sector	Number employees in study population	Number employees in sample	Number employees respondent firms	Percent of population in sample	Maximum weighting factor	Moderate weighting factor	Minimum weighting factor
Manufacturing							
Small	6,980	2,881	3,027	41.3	2.31	2.31	1
Large	22,638	22,638	15,669	69.2	1.45	1.0	1
Nonmanufacturers	46,659	14,744	11,241	31.7	4.15	3.15	1
Total	76,277	40,263	29,937	39.2	--	--	--

Replacement Need Weighting Factor

A special weighting factor is necessary in order to aggregate the separately stated replacement needs of the respondent firms. For example, assuming that ten contractors each have ten carpenters, that one carpenter retires leaving an opening, that his replacement was hired from one of the other local contractors, and that he in turn "pirated" another firm to fill his vacancy and so on until nine carpenters out of the 100 changed the contracting firms for which they worked, it is only the last contractor in the chain who hires the new carpenter. Just looking at replacement data would indicate that ten carpenters were needed when actually the need was for only one carpenter. Although a chain of ten moves per addition is high, it is not infrequent. A more usual figure from the author's experience is 3 to 1. On the basis of this reasoning, only one-third of the respondents' replacement needs are included in the total need base.

CURRENT EMPLOYMENT ESTIMATES FOR SCT OCCUPATIONS

Each employer surveyed was asked to list the number of current employees, the number hired last year, and the number of additional employees estimated to be needed by 1970 for each SCT oc-

cupation in his work force. Examples were provided to illustrate the types of occupations which should be included.

The following list of examples was given in the instructions for completing the long form questionnaire:

Example Occupations

Semiprofessional:

- Technicians
  - Chemical
  - Electronics
  - Instrumentation
  - Engineering Aide
  - Laboratory
  - Tool Designer
  - Draftsmen
  - Process Engineering
- Production Administration
  - Production Supervisors
  - Production Planners
  - Quality Control Technicians
- Office Administration
  - Junior Accountants
  - Data Processing Programmers

Skilled:

- Craftsmen
  - Electricians
  - Machinists
  - Pipe and Steam Fitters
  - Welders
  - Maintenance Men
  - Cabinet Makers
  - Upholsterers
  - Tailors
  - Millwrights
  - Cutters
  - Sheet Metal Workers
  - Shoe Cobblers

Operators
- Offset Press Operators
- Cigarette-Making Machine Adjusters
- Shoe Fitter
- Liquor Blender
- Miller
- Baker
- Cigarette Blender
- Pasteurizer
- Photolithographer

Office Occupations
- Stenographers
- Office Machine Operators
- Computer Operators

Eight lists of examples, each appropriate for the employment sector involved, were developed for the short form questionnaires. This involved the use of eight versions of the short form, each with a different list of examples.

Each job title listed on the respondents' questionnaires was coded in accordance with the classification system described in the U.S. Department of Labor's 1965 edition of the Dictionary of Occupational Titles (DOT). Appendix C lists by DOT code all jobs reported by the responding firms. In some cases a DOT code covers more than one job title; in others, minor variations in job title as reported were dropped and a combination DOT job title was used.

The DOT coding provided the basis for the SCT occupational category breakdown which greatly reduced the number of judgment decisions required.

It should be pointed out that the "technical" occupational category was referred to in the questionnaire and instructions as "semiprofessional." This was done because it was found in test interviews that employers often were unfamiliar with the use of "technical" as a designation of an occupational category. They seemed to readily understand that "semiprofessional" jobs required less than a college degree but more than a high school diploma; that usually some kind of specialized knowledge was required; and that, although often a high degree of skill was required, it was the knowledge dimension that separated these occupations from those considered to be skilled.

Table 4-6 lists the number of SCT employees reported by the respondents and shows the percentage of the study population accounted for by each when the "raw weighting factor" is used to scale the data up to the study population.

ESTIMATES OF FIVE-YEAR NEED FOR TRAINED SCT EMPLOYEES

Table 4-7 shows the reported and estimated five-year needs of Central Kentucky business and industry for trained workers in

Table 4-6
Estimated 1965 SCT Employment

Occupational categories by employment sector	Number employed by reporting firms	Raw weighting factor	Estimated 1965 Central Kentucky employment
Skilled occupations			
Manufacturing			
Less than 100 employees	691	2.31	1,600
100 or more employees	4,509	1.45	6,550
Total	5,200	--	8,150
Nonmanufacturing firms	2,332	4.15	9,700
Total skilled	7,532	--	17,850
Clerical occupations			
Manufacturing			
Less than 100 employees	201	2.31	460
100 or more employees	797	1.45	1,500
Total	998	--	1,960
Nonmanufacturing firms	1,704	4.19	7,100
Total clerical	2,702	--	9,060
Technical occupations			
Manufacturing			
Less than 100 employees	83	2.31	190
100 or more employees	637	1.45	930
Total	720	--	1,120
Nonmanufacturing	1,111	4.15	4,600
Total technical	1,831	--	5,720
Total SCT	12,065	--	32,630
Total employment	29,937	--	76,277

Table 4-7
Skilled, Clerical, and Technical Five-Year Need Estimates

Occupational categories by employment sector	Respondents' needs for replacement	Five-Year expansion	One-Third of respondents' replacement needs	Adjusted five-year needs	Minimum weighting factor	Minimum estimated five-year needs	Maximum weighting factor	Maximum estimated five-year needs	Medium weighting factor	Medium estimated five-year needs
Skilled occupations										
Manufacturing										
Less than 100 employees	147	299	49	348	1.00	348	2.31	804	2.31	804
100 or more employees	1373	991	458	1449	1.00	1449	1.45	2101	1.00	1449
Total	1520	1290	507	1797	--	1797	--	2905	--	2253
Nonmanufacturing firms	756	936	252	1188	1.00	1188	4.17	4954	3.15	3742
Total skilled	2276	2226	759	2985	--	2985	--	7859	--	5995
Clerical occupations										
Manufacturing										
Less than 100 employees	46	56	15	71	1.00	71	2.31	164	2.31	164
100 or more employees	268	262	89	351	1.00	351	1.45	509	1.00	351
Total	314	318	104	422	--	422	--	673	--	515
Nonmanufacturing	1405	370	468	838	1.00	838	4.17	3494	3.15	2640
Total clerical	1719	688	572	1260	--	1260	--	4167	--	3155
Technical occupations										
Manufacturing										
Less than 100 employees	16	56	5	61	1.00	61	2.31	141	2.31	141
100 or more employees	304	375	101	476	1.00	476	1.45	690	1.00	476
Total	320	431	106	537	--	537	--	831	--	617
Nonmanufacturing firms	215	329	72	401	1.00	401	4.17	1672	3.15	1263
Total technical	535	760	178	938	--	938	--	2503	--	1880
Total SCT	4530	3674	1509	5183	--	5183	--	14529	--	11030

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the SCT occupational categories. The estimated five-year needs vary from 5,183 to 14,529; with the mean of the extremes being 9,865, the estimate of needs based on the medium weighting factor is 11,030. The average of the three estimates is 10,247. With the mean of the extremes and the average of the estimates closely bracketing 10,000, this figure would seem to represent the best available estimate of the total five-year need for trained SCT workers.

Table 4-8 shows that the percentage of total five-year estimated needs for each occupational category holds reasonably constant.

Table 4-8
Distribution of Five-Year Estimated Need

Occupational category	Minimum		Maximum		Medium	
	Estimated five-year needs	Percent of total	Estimated five-year needs	Percent of total	Estimated five-year needs	Percent of total
Skilled	2,985	57.6	7,859	54.1	5,995	54.3
Clerical	1,260	24.3	4,167	28.6	3,155	28.6
Technical	938	18.1	2,503	17.3	1,880	17.1
Total	5,183	100.0	14,529	100.0	11,030	100.0

ESTIMATED FIVE-YEAR SCT EMPLOYMENT INCREASE

The estimated increase in SCT employment was calculated by weighting just the respondents' five-year expansion needs. The calculated increase of 7,736 employees represents a 23.7% increase over present employment in SCT occupations. This compares with the 15.8% overall increase in Central Kentucky nonfarm employment forecasted for 1970 by the economic analysis in Section III.

Table 4-9 shows the distribution of the estimated five-year increases among the SCT occupational categories.

Table 4-9
Distribution of Estimated Five-Year Employment Increase among SCT Occupational Categories

	1965 estimated employment of study population	Estimated five-year increase	Percent increase
Skilled	17,850	4,630	25.9
Clerical	9,060	1,566	17.2
Technical	5,720	1,540	26.9
Total	32,630	7,736	23.7

V. SKILLED, CLERICAL, AND TECHNICAL TRAINING NEEDS

INTRODUCTION

The employment projections based on Central Kentucky's employment trends and economic growth patterns and the forecasts developed from survey data submitted by Central Kentucky employers predict a significant increase in the number of new positions in the skilled, clerical, and technical (SCT) occupational categories by 1970. This section of the report presents:

- A general discussion on determining training needs
- A detailed analysis of the training needs of large manufacturing firms in Central Kentucky
- A discussion of the SCT training needs of small manufacturers and other businesses
- A conceptual framework for curriculum design
- A discussion of core courses and instructional facilities for the new Central Kentucky Vocational-Technical School.

TRAINING NEED DETERMINATION

The end of change in the world of work does not appear to be in sight. It is only in recent years that the terms "job obsolescence," "retraining," and "skill conversion" entered our lexicon. In fact, from the beginning of time until the middle of the 20th century, it was the usual course of events for a young person to learn one skill and spend a lifetime working at it. In many cases, families were engaged in one occupation for generation after generation; many family names today bear the occupational designation of their ancestors.

Not only does the occupational base change, but also the technology within occupations has been changing drastically, particularly since World War II. Thus, even in the established industrial centers of the Northeast, training and retraining has become a necessity as job obsolescence has reached progressively higher skill levels.

The fact that the occupational world is changing greatly complicates the task of training need determination. Not only are the numbers of workers needed within any one occupational classification changing, but also the particular requirements within that occupation are changing. Thus, any training need determination must be divided into two major components: quantity of need and character of need.

Seemingly, the magnitude question is easily resolved. However, because of the large numbers of different occupational classifications within the skilled, clerical, and technical categories and because of the lack of a standard nomenclature usage by business and industry, even this task becomes "unclean," to say the least.

The task of determining what training is needed, in other words the character of the training, is even more involved. In this dimension, opinion, tradition, precedent, and other subjective factors influence any data gathering designed to seek an objective base for decision making. Furthermore, SCT occupations can and are found in one-man firms, in five-man firms, in 10,000-man firms. They are found in firms engaging in almost every employment sector from farming, one of man's oldest occupations, to the newest occupations in the space-age industry.

Because of the complexity of the numerous variables involved, and because of the relative newness of the state of the art of training need determination, it is not possible to make a rigorous determination of training needs in a thoroughly scientific manner. It is possible, however, to use judgment in selecting aspects which are amenable to analysis, and to make inferences from these analyses which can be used as a guide by vocational-technical school administrators in the design of a curriculum and the selection of courses. A curriculum so designed, while not perfect, can reasonably be said to meet the needs of the time and the area.

The approach used in this study was based on two assumptions:

- The basic skill and knowledge requirements of a given occupation do not vary significantly between the various employment sectors in which the job is found.

- A majority of the SCT occupations found in Central Kentucky will be found in large manufacturing firms.

On the basis of these assumptions, detailed training requirement data were sought from the large manufacturing firms in Central Kentucky. These data were analyzed to determine the composite skill and knowledge requirements for the skilled, clerical, and technical occupational categories, as well as for each SCT occupation reported. Those occupations found in small manufacturing firms and other businesses but not in the large manufacturers were identified and their training needs treated separately.

SCT TRAINING NEEDS OF LARGE MANUFACTURERS

Introduction

Central Kentucky manufacturing firms employing 100 or more workers were surveyed to:

- identify the sources from which they usually recruit employees for their SCT occupations, obtain an indication of the urgency of their needs for SCT training, determine what they are currently doing in the way of training for SCT occupations, and learn their feelings regarding the need for outside training versus company training.

- obtain detailed information relative to the nature as well as the extent of the training needs for each of their SCT occupations.

The survey results verified the assumption regarding the overlap of occupations between large manufacturing and the remainder of the study population. (Table 5-1 compares large manufacturing SCT employment with the study population, and Table 5-2 shows the overlap in occupations.) More than 65% of the different SCT occupations for which openings were forecasted by all survey respondents were found to be represented in the large manufacturers work force; therefore, skill and knowledge requirements data were received for about two-thirds of the different occupations for which openings were forecasted to occur between now and 1970 in Central Kentucky.

General Findings

The large manufacturers were asked several broadly-stated questions relating to training for SCT occupations to gain additional insights into their needs. A presentation of these findings follows.

SCT Recruitment Sources. Table 5-3 shows the sources from which the large manufacturers reported they recruit candidates for SCT openings. They say that about one-third of their SCT openings are filled by recruitment directly from high schools. The next most frequent source of candidates for the skilled category is

Table 5-1
Comparison of Distribution of SCT Occupations
Between Responding Large Manufacturers
and the Study Population

	Study population		Responding large manufacturers	
Occupational category	Estimated 1965 employment	Percent of total	Reported number of employees	Percent of total reported
Skilled	17,850	23.4	4,509	28.8
Clerical	9,060	11.9	797	5.1
Technical	5,720	7.5	637	4.1
Subtotal	32,630	42.3	5,943	38.0
All other	43,647	57.7	9,726	62.0
Total	76,277	100.0	15,669	100.0

Table 5-2
Reported and Forecasted Occupations

		Occupations with openings by 1970		
			Large mfg. only	
Occupational category	Total number of occupations reported	Total with forecasted openings	Number of openings	Percent of forecasted
Skilled	152	112	71	63.4
Clerical	41	38	31	81.5
Technical	74	67	40	59.8
Total	267	217	142	65.5

other industry, 15.4%, followed by vocational high schools, 7.5%, trade schools, 6.9%. Clerical employees are also heavily recruited from other firms. Two-year technical schools and junior colleges are the source of 11.9% of the recruits for technical occupations with other industry, 10.4%, and college dropouts, 9.3%, following closely.

Table 5-3
SCT Recruitment Source Summary Sheet

Source	Skilled Occupations (%)	Clerical Occupations (%)	Technical Occupations (%)
High School	25.6	16.6	3.0
Vocational High School	7.5	5.6	3.1
Trade School	6.9	5.2	4.3
Two-year Technical School or Junior College	4.8	9.5	11.9
College Dropout	.3	8.8	9.3
Military Service School	1.2	1.2	6.3
Other Industry	15.4	12.9	10.4
Promote from within	34.1	34.4	41.0
Other	4.2	5.8	10.7
Total	100.0	100.0	100.0

Need for Training Courses. The large manufacturers were asked how badly they needed training courses for their SCT occupations. They were also asked to indicate their preference for company versus outside courses. Table 5-4 summarizes their responses concerning the need for company sponsored and outside training courses.

The large manufacturers indicated an average to great need for training in 85% of the skilled 75.4% of the clerical and 97.3% of the technical occupations in which openings were anticipated by 1970. They said they preferred outside (not company courses) for slightly over half of their skilled training needs, 38% of their clerical, and 48% of their technical training needs.

Table 5-4
Large Manufacturers' Need for Training Courses
Related to Occupations with Forecasted Openings

Need and source of training	Occupational Category: Skilled percent of course openings	Clerical percent of course openings	Technical percent of course openings
Little or no need	14.2	24.6	2.7
Great or average need			
Company training preferred	23.9	36.9	52.6
Outside training preferred	51.9	38.5	44.7
Total great or average need	85.8	75.4	97.3
Total	100.0	100.0	100.0

Company Sponsored Training Courses. While on-the-job training is a way of life in every company, formal training courses are usually established only when the need is great. Table 5-5 summarizes the SCT training activities reported by the large manufacturers for the period January 1964 to July 1965. Appendix D lists the course, enrollment, course duration, and the offeror of the course and provides additional clues regarding the fields in which SCT occupational training is needed.

Table 5-5
SCT Training Activities Reported By Large Manufacturers
(January 1964-July 1965)

Course Taught By	Number Different Courses	Number Students Completing Courses
Company	32	1499
Contractor	8	24
University of Kentucky	1	15
Lafayette Vocational	3	46
High School	3	98
Total	47	1682

SCT Knowledge and Skill Requirements

Two items designed to determine the skill and knowledge requirements of forecasted openings were included in the long form questions sent the large manufacturers. These employers were asked to "select (from the list reproduced below) those areas of academic/technical knowledge which you feel are necessary for successful performance in each occupation listed. Enter them in the column headed academic requirements using the proper code number. If a college level course is required, indicate by adding a c to that knowledge code."

Code	Course	Code	Course
	Math		Engineering
1	Algebra	15	Drafting
2	Plane Geometry	16	Tool Design
3	Trigonometry	17	Time and Motion Study
4	Calculus	18	Strength of Materials
5	Business Math	19	Instrumentation
6	Accounting	20	Light and Sound
7	Statistics		
			Communications
	Physics	21	Public Speaking
8	Physics	22	Business Letters
9	Electricity	23	Report Writing
10	Hydraulics	24	Stenography
11	Mechanics		
			Other
	Other Sciences	25	No special academic requirements beyond general high school
12	Chemistry		
13	Economics		
14	Psychology	26	No academic requirements

To aid the respondents in completing this item, they were given the following example:

> "We feel our engineering aides should have an academic knowledge of physics (8c), electricity (9c), and chemistry (12c) at the college level. Our knowledge requirement for algebra (1), trigonometry (3), drafting (15) and report writing (23) is taught at the high school level."

The next item asked the employer to indicate the job requirements in terms of skills. The following list of skills was included in the item:

Code	Skill
	Shop Skills
1	Use hand tools
2	Use machine tools
3	Repair machinery
4	Set up machinery
5	Lay out projects
6	Operate machinery
7	Other
	Production Skills
8	Interpret work procedure
9	Determine work procedure
10	Supervise work
11	Other
	Engineering Skills
12	Use slide rule
13	Use drafting instruments
14	Read and use blueprints
15	Design tools, instruments or equipment
16	Plan projects
17	Program equipment
18	Perform routine engineering functions
19	Other
	Office Skills
20	Operate business machines
21	Write reports
22	Other
	Laboratory Skills
23	Perform tests
24	Use testing equipment and instruments
25	Evaluate test results
26	Perform experimental projects
27	Assemble experimental lab equipment
28	Other
	Human Relations
29	Maintain harmonious relations among groups of workers
30	Handle people
31	Liaison between engineers or scientists and skilled workers
32	Other
	Other Skills
33	Communicate ideas verbally

The following example was given to aid in completing this item on the questionnaire:

> "The skills which our engineering aides should have are ability to use the slide rule (12), use drafting instruments (13), read and use blueprints (14), perform routine engineering functions (18), write reports (21), use testing equipment and instruments (24), coordinate between engineers or scientists and skilled workers (31), and communicate ideas verbally (33)."

The knowledge and skill requirements of each occupation for which openings were forecasted within the next five years were weighted by the number of such openings. The resulting products are expressed in terms of skill units or knowledge units. Skill units or knowledge units were calculated for each SCT occupation and totaled (1) for each individual skill or knowledge requirement and (2) for each occupation. The ratio of units for each requirement to the sum of units for all requirements describes the composite skill and knowledge mix for occupations in the SCT occupational categories.

Table 5-6 shows the percentage of total skill units and knowledge units required by each of the three major occupational categories. These data indicate that about 30% of the emphasis should be devoted to knowledge transfer and 70% in skill training. Appendix C presents the composite skill and knowledge requirements for each occupation as designated by the larger manufacturing employers.

Tables 5-7, 5-8 and 5-9 show the composite knowledge and skill mix that the large manufacturers reported as being required by their skilled, clerical, and technical jobs, respectively. The lists are rank ordered on the basis of the frequency with which each particular requirement was chosen. The "other" category was made up of a wide variety of specialized requirements none of which accounted for as much as one percent of the total. Only those openings were included for which knowledge or skill requirements were specified; i.e., openings for which high school was the only requirement were excluded.

Table 5-6
Percentage Distribution of Skill and Knowledge Requirements Within Occupational Categories

Occupational categories	Percent of total units required for: Knowledge transfer	Skill training	Total	Percent of Total openings requiring no special training beyond high school
Skilled	19.1	80.9	100	20.1
Clerical	29.1	70.9	100	43.7
Technical	43.0	57.0	100	4.0
Total	30.5	69.5	100	

Table 5-7
Distribution of Knowledge and Skill Units for Technical Occupations Surveyed

Code	Knowledge	Requirement percentage	Code	Skill	Requirement percentage
11	Mechanics	14.6	06	Operate machinery	23.0
01	Algebra	13.0	01	Use hand tools	16.7
02	Plane Geometry	11.0	14	Read and use blueprints	11.3
03	Trigonometry	9.9	04	Set up machinery	10.9
08	Physics	9.6	08	Interpret work procedure	10.0
09	Electricity	9.6	02	Use machine tools	8.8
10	Hydraulics	8.4	03	Repair machinery	4.4
27	Other	8.4	05	Lay out projects	3.0
18	Strength of materials	4.6	33	Communicate ideas verbally	2.2
15	Drafting	3.5			
16	Tool design	2.8	29	Maintain harmonious relations among workers	1.4
19	Instrumentation	1.2	10	Supervise work	1.0
05	Business math	1.1		Other	7.3
	Other	10.7			

Table 5-8
Distributions of Knowledge and Skill Units for Clerical Occupations Surveyed

Code	Knowledge	Requirement percentage	Code	Skill	Requirement percentage
24	Stenography	57.9	20	Operate business machines	17.1
05	Business math	22.5	--	Other	16.3
22	Business letters	10.3	21	Write reports	15.8
23	Report writing	6.5	33	Communicate ideas verbally	12.7
06	Accounting	4.8	08	Interpret work procedure	11.0
21	Public speaking	3.6	14	Read and use blueprints	6.4
07	Statistics	3.2	30	Handle people	5.8
	Other	1.2	31	Liaison-engineering or scientists and skilled workers	5.1
			29	Maintain harmonious relations among workers	3.6
			04	Set up machinery	3.4
				Other	2.8

Table 5-9
Distribution of Knowledge and Skill Units for Technical Occupations Surveyed

Knowledge code		Requirement percentage
01	Algebra	11.1
03	Trigonometry	10.2
02	Plane Geometry	9.6
15	Drafting	9.3
08	Physics	7.5
09	Electricity	6.7
11	Mechanics	6.2
23	Report writing	5.9
05	Business math	3.7
12	Chemistry	3.6
18	Strength of materials	3.4
07	Statistics	2.8
06	Accounting	2.6
10	Hydraulics	2.5
04	Calculus	2.4
22	Business letters	1.5
13	Economics	1.4
14	Psychology	1.3
16	Tool design	1.2
17	Time and motion study	1.0
	Other	3.3

Skill code		Requirement percentage
14	Read and use blueprints	11.0
12	Use slide rule	9.0
13	Use drafting instruments	8.1
21	Write reports	6.7
08	Interpret work procedure	4.9
15	Design tools, instruments, or equipment	4.9
33	Communicate ideas verbally	4.7
01	Use hand tools	4.4
18	Perform routine engineering functions	4.1
31	Liaison-engineers or scientists and skilled workers	3.8
29	Maintain harmonious relations among workers	3.7
24	Use test equipment and instruments	3.3
05	Lay out projects	3.2
23	Perform tests	3.1
09	Determine work procedure	2.8
10	Supervise work	2.5
02	Use machine tools	2.4
16	Plan projects	2.4
26	Perform experimental proje projects	2.2
27	Assemble experimental lab equipment	2.1
25	Evaluate test results	1.8
20	Operate business machines	1.7
04	Set up machinery	1.5
06	Operate machinery	1.0
30	Handle people	1.0
	Other	3.7

TRAINING NEEDS OF SMALL MANUFACTURERS AND OTHER BUSINESSES

Two-thirds of the different occupations forecasted by the respondents to need employees by 1970 were included in the preceeding job knowledge and skill analysis. The remaining one-third, those occupations in small manufacturing and other businesses which were not found to also exist in large manufacturing, are shown in Table 5-10.

Skilled Occupations

Forty-one different skilled occupations or 36.6% of the total skilled occupation identified in the study were not included in the knowledge and skill requirement analysis. Of these 41 only 13 were reported to have a five-year need in excess of ten. Those occupations in which the respondents anticipated more than ten openings to occur in the next five years are discussed below:

Those occupations marked with an asterisk would seem to be sufficiently related to those included in the skill and knowledge analysis to provide reasonable assurance that the occupations will be adequately supported by core courses.

Those marked with a double asterisk are already being offered in vocational training programs in the area. The remainder require further study if it is decided to include preparation for them in the vocational training program.

316 Meat Cutter--112 reported openings anticipated by 1970. While some may dispute the propriety of classifying this occupations as skilled, it is certainly at least a semiskilled job of some degree of specialization. None of the other occupations for which data are available provide guidance for determining the training needs of this occupation. If a restaurant management/chef training program is included in the curriculum, meat cutting would be a subskill, and this could be made available on a short-course basis.

615 Punch Press Operator--42 openings anticipated by 1970. Probably a semiskilled occupation for which on-the-job training is adequate.

**720 Radio and TV Service--13 openings anticipated by 1970. Lafayette Vocational has a program in operation to teach the knowledges and skills required.

Table 5-10
Skilled Occupations Not Included
in Knowledge and Skill Analysis

DOT code		Number of openings anticipated by respondents by 1970
312	Bartender	10
316	Meat Cutter	112
529	Livestock Grader	3
603	Buffing Machine Operator	3
614	Chanel Machine Operator	4
615	Punch Press Operator	42
630	Master Mechanic	1
639	Servicemen	10
637	Refrigeration	2
650	Printers-Compositors	26
651	Proof Machine Operator	37
667	Wood Sawyer	2
683	Weaver	3
690	Heat Sealing Operator	16
706	Assemblers	29
710	Instrument Servicemen	29
713	Opticians	4
720	Radio and TV Service	13
723	Appliance Service	3
741	Spray Painters	3
781	Carpet Installer	2
781	Pattern Cutter	1
785	Seamsters	18
787	Drapery and Slipcover Makers	7
801	Structural Iron Work	6
804	Sheetmetal Workers	44
807	Auto/Truck Body Men	21
813	Spot Welder Operator	3
822	Lineman	451
822	Communication and Sound Specialist	3
844	Cement Masons	2
850	Heavy Equipment Operators	6
863	Asbestos Workers	6
866	Roofers	2
869	Fence Erectors	7
919	Ticket Agents	10
930	Plug and Feather Drillers	3
931	Blasters	1
950	Operating Engineers	95
952	Turbine Operator	4
	Sub-station Operator	8

785 Seamstress--18 openings. A specialized occupation not elsewhere covered.

804 Sheet Metal Workers--44 openings anticipated by 1970. No information was developed in the survey relative to their occupation. It is a standard vocational course however and information is readily available to develop a program if desired.

**807 Auto/Truck Body Men--21 openings anticipated by 1970. A standard Kentucky vocational course has been developed for this occupation.

822 Linemen--451 openings anticipated. A specialized need of electric utility and telephone companies. Respondents' data probably inclue virtually all needs in Central Ken tucky.

*650 Printers-Compositors--26 openings anticipated by 1970. (See other DOT 650 occupations.) If a printing curriculum is offered, this particular need could be readily included.

*651 Proof Machine Operator--37 openings anticipated by 1970. (See DOT 650.)

690 Heat Sealing Operator--16 openings anticipated by 1970. Industry representatives indicate that on-the-job training is adequate for this occupation.

*706 Assemblers--29 openings anticipated by 1970. Where higher skills are required, see DOT 760, Assembly Adjuster for training needs. Lower skills require only on-the-job training.

*710 Instrument Service Men--29 openings anticipated by 1970. (See DOT 706, assembly adjusters and DOT 003 instrument technician for requirements.)

*950 Operating Engineers--95 openings anticipated by 1970. (Simular to DOT 951.)

Clerical Occupations

Table 5-11 lists those clerical occupations which are not included in the skill and knowledge analysis.

It would appear that a standard business training program, excluding specialized insurance and banking details which can be supplied on the job, would include the knowledge and skill training necessary to prepare for these occupations. The knowledge and skill analysis considers jobs sufficiently related to provide the necessary overall curriculum.

Table 5-11
Clerical Occupations Not Included
in the Skill and Knowledge Analysis

DOT code	Occupation	Number of openings anticipated by respondents by 1970
203	Policy Writer	3
215	Bookkeeping Machine Operator	60
219	Medical Voucher Clerk	3
219	Insurance Clerk and Checker	2
219	Mortgage Clerk	2
239	Electric Sorter-Reader Operator	3
240	Collection Clerk	19

Technical Occupations.

Those technical occupations for which no skill or knowledge requirement data were reported are listed in Table 5-12. The bulk of the occupations with any significant number of technical category openings anticipated in the next five years fall in the health field. Training for practical nurses, a significant need, is included in the vocational training program currently being offered in the area. The other significant needs are in the banking and insurance businesses.

Table 5-12
Technical Occupations Not Included
in the Skill and Knowledge Analysis

DOT Code	Occupation	Number of openings anticipated by respondants by 1970
006	Materials Technician	2
018	Surveyors	14
075	Nurses-General	162
075	Psychiatric	4
075	Pediatric	4
078	Orthotist	4
078	Operating Room Technician	6
078	Oxygen Equipment Technician	3
078	X-Ray Technician	10
078	Lab Technician	18
078	Medical Technician	23
132	News Writer	1
142	Designer Decorator	4
159	Radio-TV Announcers	4
160	Auditors	4
161	Loan Reviewers	39
	Account Analysists	4
168	Auto Loans Credit Men	14
	Adjusters and Inspectors	2
169	Insurance Underwriters	5
352	Head Waiters	2
354	Practical Nurses	142
406	Nursery Technicians	1
869	Construction Inspectors	7

CURRICULUM DESIGN PLANNING CONCEPTS

In view of the large number and variety of different jobs reported by employers, Table 5-13, it does not seem feasible to set up individual courses for each job or even for just those with the highest forecasted need. Rather, it would seem that an approach based on a combination of the "occupational family" and "cafeteria style" curriculum concepts could provide the basis for successfully handling the problem. The "occupational family" concept recognizes that in many cases different jobs have a large common component of knowledge and skill requirements and that the differentiating componenets make up only a fraction of the total requirements. Under this concept, core courses can be taught to meet the common requirements, and specialized courses or on-the-job training can be utilized to meet special training requirements.

"Cafeteria style" course offerings are not new to education. Most college courses are offered "cafeteria style," i.e., the student and his advisor select from a long list of courses those which come closest to meeting the student's need. In a vocational-technical school, "cafeteria style" offerings provide maximum flexibility in curriculum design. This approach does present scheduling difficulties, however, and for efficient operation depends on a large student population.

Combining the occupational family and cafeteria-style curriculum concepts becomes feasible if the individual courses are designed within the context of the nature of the industries and businesses located in the area and on the basis of the composite knowledge and skill requirements of the occupational classifications to be served.

Table 5-14 shows the composite skill and knowledge requirements when the data from large manufacturers for their SCT occupations are aggregated. It is this data configuration that can provide the basis for decisions with respect to which knowledges and skills should be included in the core courses.

Table 5-13
SCT Occupations Reported by Firms Surveyed Grouped by DOT Division

Skilled Occupations Reported by Firms Surveyed

DOT Code	Occupational Division	Number of Different Jobs	Current Employment
31	Food & beverage preparations	3	345
50	Metal processing	1	49
52	Food, tobacco, etc., processing	12	181
54	Processing, non-metallic minerals	8	37
59	Processing, NEC	1	34
60	Metal machining	21	2808
61	Metalworking occupations	7	67
62	Mechanics and machinery	--	--
63	Repair	7	493
64	Paperworking occupations	1	28
65	Printing occupations	7	304
66	Wood machining occupations	2	3
67	Machining, nonmetallic minerals	2	85
68	Textile occupations	2	19
69	Machine work	1	14
70	Fabrication assembly and repair of metal producers	5	551
71	Fabrication & repair of scientific, medical, optical & measuring equipment	2	154
72	Assembly & repair of electrical equipment	2	46
74	Painting and decorating	2	23
76	Fabrication and repair of wood products	1	3
77	Fabrication and repair of sand, stone, and clay products	5	44
78	Fabrication and repair of textile, leather	9	466
80	Metal fabricating, NEC	4	120
81	Welding, flame cutting	4	90
82	Electrical assembling, installing, repairing	5	491
84	Painting, plastering, waterproofing, cementing	2	28
85	Excavating, grading, paving	2	10
86	Construction work, NEC	8	286
89	Structural work, NEC	5	378
91	Transportation, NEC	2	42
93	Extraction of minerals	3	9
95	Production and distribution of utilities	11	296
96	Amusement, recreation and motion pictures	1	2
97	Graphic art work	4	26
	Total Skilled	152	7532

Clerical Occupations Reported by Firms Surveyed

DOT Code	Occupational Division	Number of Different Jobs	Current Employment
20	Steno, typing, filing	10	1140
21	Computing and accounts receivable	13	907
22	Material and production recording	10	154
23	Information and message distribution	5	340
24	Miscellaneous clerical	3	161
	Total Clerical	41	2702

Technical Occupations Reported by Firms Surveyed

DOT Code	Occupational Division	Number of Different Jobs	Current Employment
003	Electrical	2	21
006	Ceramic	1	2
007	Mechanical	3	84
008	Chemical	1	11
012	Industrial	8	234
017	Drafting	6	297
018	Surveying	1	16
019	General engineering	5	198
020	Math	1	31
022	Chemistry	1	4
023	Physics	1	0
029	Physical sciences	1	96
075	Registered nursing	3	173
078	Medical technicians	8	95
130	Writing	4	14
140	Art work	2	12
150	Entertainment and recreation	2	7
160	Administrative specialties	17	259
300	Service occupations	3	152
400	Plant farming	2	19
800	Structural work	1	23
900	Miscellaneous work	1	83
	Total Technical	74	1831

Table 5-14
Distribution of Knowledge and Skill Units
for all Occupations Surveyed

Knowledge code		Requirement percentage
01	Algebra	10.6
02	Plane geometry	9.9
03	Trigonometry	9.1
11	Mechanics	8.0
08	Physics	7.4
09	Electricity	6.9
15	Drafting	6.7
24	Stenography	6.5
05	Business math	4.4
23	Report writing	4.4
10	Hydraulics	4.0
18	Strength of materials	3.4
12	Chemistry	2.4
19	Instrumentation	2.1
06	Accounting	2.1
07	Statistics	2.0
22	Business letters	1.9
04	Calculus	1.7
16	Tool design	1.5
13	Economics	1.0
27	Other	4.0
		100.0

Skill code		Requirement percentage
06	Operate machinery	12.8
14	Read & use blueprints	10.7
01	Use hand tools	10.6
08	Interpret work procedure	8.3
04	Set up machinery	6.8
02	Use machine tools	5.6
33	Communicate ideas verbally	4.1
21	Write reports	4.0
12	Use slide rule	3.6
13	Use drafting instruments	3.0
05	Lay out projects	2.8
03	Repair machinery	2.7
20	Operate business machines	2.4
29	Maintain harmonious relations among workers	2.4
31	Liaison-engineering or scientists & skilled workers	2.2
15	Design tools, inst. or equip.	2.2
09	Determine work procedure	1.5
18	Perform routine eng. functions	1.5
10	Supervise work	1.4
30	Handle people	1.4
24	Use test equipment & instruments	1.2
16	Plan projects	1.1
23	Perform tests	1.1
	Other	6.6
		100.0

SPINDLETOP RESEARCH

CORE COURSES AND INSTRUCTIONAL FACILITIES

The pattern of knowledge and skills identified by the survey respondents as requirements for employment in their SCT occupations were presented in Table 5-14. The remainder of this section is devoted to providing additional information relating to the knowledge and skill mix for use by school officials in designing the curriculum and planning the instructional facilities for the new Central Kentucky Vocational-Technical School.

Knowledge Courses and Associated Instructional Facilities

Table 5-15 presents the core knowledge requirements for SCT occupations grouped by field of study and rank ordered by degree of need within the different fields of study. The fields chosen for grouping the knowledge requirements are:

- Mathematics
- Science
- Engineering
- Communications
- Business

In addition, in this table each knowledge requirement is coded to indicate the type of instructional facility conventionally used in teaching that subject. Thus, to teach the knowledge subjects the respondents said were necessary, the architects-planners should provide the following facilities:

- Standard classrooms with chalk boards and provisions for using conventional visual aids.
- Physics and chemistry laboratories of the type found in modern high schools.
- A drafting room equipped with conventional drafting devices.
- A typing practice room equipped with modern electric typewriters.

The subject matter in the math, engineering, and science fields should include material beyond the high school level since 25% of those knowledge requirements for technical occupations were specified to be at the college level. In keeping with the "cafeteria" concept, however, subject coverage can be divided into increments, the upper limit of each increment being terminal for a given group of occupations.

Table 5-15
Core Knowledge Requirements* for All SCT Occupations

Math†	Total Knowledge Units (%)	Science‡	Total Knowledge Units (%)
Algebra	10.6	Mechanics	8.0
Plane geometry	9.9	Physics	7.4
Trigonometry	9.1	Electricity	6.9
Calculus	1.7	Hydraulics	4.0
		Chemistry	2.4

Engineering	Total Knowledge Units (%)	Communications	Total Knowledge Units (%)
Drafting§	6.7	Stenography**	6.5
Strength of materials‡	3.4	Report writing†	4.4
Instrumentation‡	2.1	Business letters†	1.9
Tool design§	1.5		

Business†	Total Knowledge Units (%)
Math	4.4
Accounting	2.1
Statistics	2.0
Economics	1.0

* Includes all knowledge requirements which accounted for 1% or more of the total knowledge units reported.
† Require classroom with blackboard.
‡ Require science-type laboratory facilities.
§ Require drafting tables.
** Require typing facilities.

Skill Courses and Associated Instructional Facilities

Table 5-16 presents the core skill requirements grouped by area of application and rank ordered within the area. Obviously, functional skills cannot be successfully taught out of the context of their application. On the other hand, too narrow of an application will result in a different course being required for each occupation. The "occupational family" concept provides a basis for establishing vocational courses realistically geared to the occupational world of work.

Table 5-16
Core Skill Requirements* for All SCT Occupations

Shop	Total Knowledge Units (%)
Operate machinery	12.8
Read & use blueprints	10.7
Use hand tools	10.6
Set up machinery	6.8
Use machine tools	5.6
Layout projects	2.8
Repair machinery	2.7

Office	Total Knowledge Units (%)
Write reports	4.0
Operate business machines	2.4

Human Relations	Total Knowledge Units (%)
Maintain harmonious relations between workers	2.4
Liaison between engineers or scientists and skilled workers	2.2
Handle people	1.4

Production	Total Knowledge Units (%)
Interpret work procedure	8.3
Determine work procedure	1.5
Supervise work	1.4

Engineering	Total Knowledge Units (%)
Use slide rule	3.6
Use drafting instruments	3.0
Plan projects	1.1

Laboratory	Total Knowledge Units (%)
Use test equipment and instruments	1.2
Perform tests	1.1

* Includes all knowledge requirements which in aggregate constituted 1% or more of the total skill units reported.

The DOT classification system used in this study to code and group occupations for analysis also provides a useful basis for delineating occupational families. While the one-digit level of the DOT system is too broad for defining meaningful occupational families, the two-digit level is fine enough in most cases. In Table 5-17, the SCT occupations reported are grouped by two-digit division classifications and the number of different jobs; the 1965 employment and the raw number of additional employees needed for expansion and replacement as forecasted by all respondents for the next five years are shown for each division.

With the exception of two divisions, the nomenclature of the system is sufficiently descriptive to provide meaning for the purpose of this study. DOT 86, entitled Construction NEC, includes carpenters, plumbers, roofers, etc., and DOT 89, Structural NEC, contains occupations such as multiple skilled maintenance men. (The job titles and related information for all occupations in each family are given in Appendix C.)

By rank ordering the occupational families (two-digit DOT divisions) on the basis of the number of openings forecasted by 1970 for each by the respondents, a hierarchy of occupational training needs can be established. Table 5-18 shows by rank order all occupational families having anticipated needs of 15 or more openings by 1970.

The title of the occupational family, the individual job titles within families, and the industries and businesses in which they occur provide the basis for determining skill course content and the type of instructional facilities and equipment which should be provided.

In the Central Kentucky area, light manufacturing industries (metals, plastic, glass, tobacco, food, clothing, and beverages), printing, wholesale and retail trade, utilities, health institutions, banking, insurance, and personal services are the primary covered employers. Instructional equipment should be chosen so that a direct relationship can easily be seen between the course and the world of work in Central Kentucky.

Table 5-17
DOT Occupational Families

Occupational Family		Number of different jobs	Current employment	Hired last year	Five-year Opening Forecasted by Respondents	
DOT Code	Skilled Occupations				Total	Small mfg. and other businesses only
300	Service					
	Food and beverage preparation	3	345	93	287	283
500	Processing					
50	Metal	1	49	-0-	23	-0-
52	Food, tobacco, etc.	12	181	49	38	9
57	Stone, clay, glass, etc.	8	37	-0-	13	-0-
59	Processing NEC*	1	34	12	30	-0-
	Total 500's	22	301	61	104	9
600	Machine Trades					
60	Metal machining	21	2808	522	1728	255
61	Metal working	7	67	19	47	46
62-3	Mechanics machine repair	7	493	62	229	132
64	Paperworking	1	28	-0-	10	-0-
65	Printing	7	304	80	302	98
66	Wood machining	2	3	2	2	2
67	Stone, clay, glass, etc.	2	85	11	72	-0-
68	Textiles	2	19	1	3	3
69	Machine work NEC	1	14	6	16	16
	Total 600's	50	3821	703	2409	552
700	Bench Work					
70	Metal fabrication and repair	5	551	34	202	29
71	Scientific and measuring equipment	2	154	9	33	32
72	Electrical equipment assy. and rep.	2	46	9	16	16
74	Painting and decorating	2	23	5	8	3
75	Wood fabrication and repair	1	3	-0-	-0-	-0-
77	Stone, clay, and glass fab. and rep.	5	44	9	37	-0-
78	Textile, leather, etc. fab. and rep.	9	466	59	96	29
	Total 700's	26	1287	125	392	109
800	Structural					
80	Metal fabrication NEC	4	120	23	71	71
81	Welding, etc.	4	90	24	63	47
82	Electrical	5	491	94	502	478
84	Painting, plastering, cementing	2	28	43	21	21
85	Excavating, grading, etc.	2	10	-0-	6	6
86	Construction NEC	8	286	48	204	198
89	Structural NEC	5	378	55	302	239
	Total 800's	30	1403	287	1169	1060
900	Miscellaneous Skilled					
91	Transportation NEC	2	42	3	10	10
93	Mineral extraction	3	9	4	4	4
95	Production-distribution of utilities	11	296	39	117	111
96	Amusement	1	2	1	-0-	-0-
97	Graphic art	4	26	3	10	-0-
	Total 900's	21	375	50	141	125
	Total Skilled	152	7532	1319	4502	2138

*Not elsewhere classified.

Table 5-17 (cont'd)
DOT Occupational Families

Occupational Family: DOT Code	Clerical Occupations	Number of different jobs	Current employment	Hired last year	Five-year Opening Forecasted by Respondents: Total	Small mfg. and other businesses only
200	Clerical					
20	Stenography, typing, filing, etc.	10	1140	261	839	547
21	Computing	13	907	240	511	462
22	Recording	10	154	10	59	-0-
23	Information distribution	5	340	239	906	822
24	Miscellaneous	3	161	33	92	46
	Total 200's	41	2702	783	2407	1877

Occupational Family: DOT Code	Technical Occupations	Number of different jobs	Current employment	Hired last year	Five-year Opening Forecasted by Respondents: Total	Small mfg. and other businesses only
000	Engineering technicians					
003	Electrical	2	21	4	27	11
006	Ceramics	1	2	-0-	2	2
007	Mechanical	3	84	16	64	-0-
008	Chemical	1	11	-0-	-0-	-0-
012	Industrial	8	234	24	161	17
017	Drafting	6	297	85	212	37
018	Surveying	1	16	8	14	14
019	General engineering	5	198	34	135	19
	Total 000's	27	863	171	615	95
020	Mathematics and Scientific technicians					
020	Mathematics	1	31	5	34	17
022	Chemistry	1	4	1	1	-0-
023	Physics	1	-0-	-0-	1	-0-
029	General laboratory	1	96	5	23	-0-
	Total 020's	4	131	11	59	17
070	Health					
075	Nurses	3	173	34	173	170
078	Technicians	8	95	23	69	64
	Total 070's	11	268	57	242	234
	Miscellaneous technical					
130	Writing	4	14	7	11	2
140	Art work	2	12	1	7	6
150	Entertainment	2	7	2	4	4
160	Administrative specialists	17	259	47	180	102
300	Service occupations	3	152	30	144	144
400	Plant farming	2	19	2	5	5
800	Structural	1	23	4	7	7
900	Miscellaneous	1	83	6	21	-0-
	Total miscellaneous technical	32	569	99	379	270
	Total Technical	74	1831	338	1295	616

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Table 5-18
Occupational Families Ranked by Number of Forecasted Openings

DOT Code	Occupational Family	Five-Year Openings Anticipated by Respondents: Total need	Small mfg. and other business only
SKILLED OCCUPATIONS			
60	Metal machining	1728	255
82	Electrical assembling, installing and repairing	502	478
89	Structural NEC (multiple skill maintenance	302	239
65	Printing	302	98
301	Food and beverage preparation	287	283
62-3	Mechanics and machine repair	229	132
86	Construction NEC (plumbers and carpenters)	204	198
70	Metal fabrication and repair	202	29
95	Production and distribution of utilities	117	111
78	Textile and leather fabrication and repair	96	29
67	Glass machining	72	0
80	Metal fabrication (tinsmith, etc.)	71	71
81	Welding	63	47
61	Metal working (pressing, forging)	47	46
52	Food, tobacco and related processing	38	9
77	Glass fabrication and repair	37	0
71	Scientific and measuring equipment repair	33	32
50	Metal processing	23	0
84	Painting, plastering, cementing	21	21
69	Machine work NEC	16	16
72	Electrical and electronic equipment assembly and repair	16	16

Table 5-18 (cont'd)

DOT Code	Occupational Family	Five-Year Openings Anticipated by Respondents: Total need	Small mfg. and other business only
CLERICAL OCCUPATIONS			
23	Information distribution	906	822
20	Stenography, typing, filing, etc.	839	547
21	Computing	511	462
24	Miscellaneous	92	46
22	Recording	59	0
TECHNICAL OCCUPATIONS			
017	Drafting	212	37
160	Administrative specialists	180	102
075	Nurses	173	170
012	Industrial technicians	161	17
300	Service occupations	144	144
019	Engineering technicians - general	135	19
078	Health technicians	69	64
007	Mechanical technicians	64	0
020	Math technicians	34	17
003	Electrical and electronic technicians	27	11
029	Lab technicians (physical sciences)	23	0
900	Miscellaneous technical	21	0

Instructional Facilities and Equipment for Skill Training in Skilled Occupations

The following discussion provides a generalized description of the instructional facilities and equipment needed to provide vocational-technical training oriented to application in Central Kentucky industry and business for each skilled occupation family. Those occupations for which employers indicated training was urgently needed are marked with an asterisk. The numbers of openings listed as anticipated are the raw figures reported by survey respondents.

DOT 60 Metal Machining - 1728 openings anticipated by 1970.

Includes occupations such as machine operator*, lathe operator*, machinist*, and tool and die maker*.

Facility: Shop-type

Equipment: Typical modern machine tools for turning, grinding, shaping, honing and milling small parts. (See Lafayette Vocational.)

DOT 82 Electrical Assembling, Installing and Repairing - 502 openings anticipated by 1970.

Includes occupations such as electrician*, lineman, installer, cable splicer, etc.

Facility: Shop-type facility with provision for 110/220/440 volts AC.

Equipment: Industrial, commercial, and household electrical apparatus such as motors, controllers, switchgear and electric utility equipment, etc.

DOT 89 Multiple Skill Maintenance - 302 openings anticipated by 1970.

Includes occupations such as troublemen, multiple skill maintenance men, maintenance men, etc.

Facility: Shop-type

Equipment: No special equipment required. The equipment and facilities of the entire school can serve as the training aids.

DOT 65 Printing - 302 openings anticipated by 1970.

Includes occupations such as printers-pressmen, offset operators*, assistant press operators*, linotype operators*, binding operators*, photolithographers*.

Facility: Small printing shop.

Equipment: Typical of that found in a comprehensive modern print shop, to provide experience in typesetting, make-up, press operation (offset and letter), binding, photolithography, etc.

DOT 301 Food and Beverage Preparation - 287 openings anticipated by 1970.

Includes bartenders, cooks, chefs, meat cutters, etc.

Should be approached comprehensively, if at all.

DOT 62 and 63 Mechanics and Machine Repair - 229 openings anticipated by 1970.

Includes occupations such as machine repair*, auto mechanics, special machine repair*, master mechanics, millwrights*, etc.

Facility: Shop-type

Equipment: See Lafayette Vocational for auto mechanics. In addition, several types of special purpose machinery typical in Central Kentucky manufacturing should be available for disassembly, modification, and repair. Local manufacturers may be willing to donate old equipment for teaching purposes.

DOT 86 Construction NEC - 204 openings anticipated by 1970.

Occupations include carpenter, tile setters, pipe fitters, roofers, etc.

Facility: Shop-type

Equipment: Hand and power tools typical of those used in carpentry and cabinet making; typical plumbing shop equipment.

DOT 70 Metal Products Fabrication and Repair - 204 openings anticipated by 1970.

Occupations include tool and cutter grinder, assembly*, layout inspectors, inspectors*.

Facility: Shop-type

Equipment: Benches, gauges, sample jigs and fixtures. On-the-job training required for specific assembly details.

DOT 95 Production and Distribution of Utilities - 202 openings anticipated by 1970.

Occupations include power and heating engineers, operating engineers, boiler operators, substation operator.

Facilities and Equipment: A specially installed small power plant for instructional purposes would be quite expensive. A steam heating plant for the school could be specially designed for use in instruction at not too great an additional cost.

DOT 78 Textile Fabrication and Repair - 96 openings anticipated by 1970.

Includes occupations such as pattern maker, pattern cutter, wool cutter*, seamstress, tailor*, sewing machine operator*, etc.

Facility: Clean shop-type

Equipment: Production sewing machines and layout tables.

DOT 52 Food, Tobacco, and Related - 81 openings anticipated by 1970.

Occupations include blender assistant, distilling operator, new production operator, feed mixer, bakers, pasteurizers, etc.

Employers generally prefer on-the-job training.

DOT 67 Glass Machining - 72 openings anticipated by 1970.

Occupations include wire saw operator and finishing machine operator.

Employers generally prefer on-the-job training.

DOT 80 Metal Fabrication - 71 openings anticipated by 1970.

Occupations include structural iron work, tinsmith, sheet metal workers*, auto/truck body men.

Facility: Shop-type

Equipment: Auto/truck body repair. (See Lafayette Vocational.) Tinsmith - brakes, shears, and other sheet metal forming equipment. Insufficient need for structural iron workers to warrant special equipment.

DOT 81 Welding - 63 openings anticipated by 1970.

Occupations include welders*, maintenance welders, cutting torch operator, spot welder.

Facility: Welding shop

Equipment: Electric, flame welding, other specialized equipment as required.

DOT 61 Metal Working - 47 openings anticipated by 1970.

Occupations include blacksmith, die setter, punch press operator, iron shear operator, etc.

Principle need is for punch press operator; skill for this occupation can be developed on the job.

DOT 77 Glass Fabrication and Repair - 37 openings anticipated by 1970.

Occupations include radiation window finisher, automatic press operator, radiation shield assembler.

Principle need is for automatic press operators. On-the-job training is generally preferred.

DOT 71 Scientific & Measuring Instrument Fabrication and Repair - 33 openings anticipated by 1970.

Occupations include instrument service men and opticians.

Facilities: Laboratory-type

Equipment: Electric, electric hydraulic and pneumatic instruments typical of those used with automatic machine and process control systems in distilling, printing, manufacturing, heating and air conditioning.

DOT 50 Metal Processing - 23 openings anticipated by 1970.

Occupations include metal finishing.

Facilities and Equipment: No urgent training needs reported and employers generally indicate on-the-job training preferred. Therefore, no special facilities need be provided for training in these occupations.

DOT 84 Painting, Plastering, Cementing, etc. - 21 openings anticipated by 1970.

Occupations include painters and cement masons.

Facilities and Equipment: None required since on-the-job training is adequate.

DOT 69 Machine Work NEC - 16 openings anticipated by 1970.

Occupations include heat sealing operator.

Facilities and Equipment: None needed since on-the-job training is generally judged to be adequate.

DOT 72 Electrical and Electronic Equipment Assembly and Repair - 16 openings anticipated by 1970.

Occupations include radio and TV service, and appliance service.

Facilities: Electronic laboratory and general shop.

Equipment: See Lafayette Vocational School.

Instructional Facilities and Equipment for Skill Training for Clerical Occupations

Vocational training for clerical occupations is now available in area high schools and business schools, as well as at the college level. Furthermore, the respondents indicated that more than 43.7% of their clerical openings (not occupations) could be filled by high school graduates without special skills or training. Nonetheless, it is clear from the survey that additional training in clerical skills is desired by area employers.

The clerical occupations reported in the study were classified into five DOT divisions or occupational families. They are:

- Stenography
- Computing
- Recording
- Information transmission
- Miscellaneous

The types of facilities and equipment for training in stenographic skills needs no further amplication here since they are well known and were covered generally in the comments on knowledge courses in the business area.

The computing occupations reported include those involving the operation of equipment such as key punches, comptometers, adding machines, bookkeeping machines, and accounting machines, as well as other more sophisticated data processing equipment. It should be noted that programmers are classified as technical and not clerical, and training to meet these needs will be discussed later in this section.

Since operating procedures as well as operating skill is involved in computing occupations, facilities which provide practice on one or two types of modern bookkeeping and accounting machines would seem desirable. Straight operating skill training requires practice rooms equipped with typical business machines; for example, key punch units, calculators, adding machines, and comptometers.

Recording occupations reported include bookkeepers, bank tellers, cost clerks, storekeepers, etc. In addition to hand posting, various business machines are used in the modern office for this purpose. The equipment and facilities provided for computing occupations could be used, where needed, for training in these occupations.

The needs in the information transfer family of clerical occupations is primarily for switchboard and telephone operators. Traditionally, on-the-job training of high school graduates has been found to be adequate for these types of occupations.

Instructional Facilities and Equipment for Skill Training for Technical Occupations

Generally, technical training programs assume a high school background and thus, in effect, constitute a post-high school training operation. In most cases, technical training programs are of two years duration, constituting, in effect, the 13th and 14th years of schooling. On the other hand, it is not uncommon for individual courses of an overall technical training program to be taken in their "free time" by fully employed persons. These special students, while adding to total enrollment, bring with them no special requirements for instructional facilities or equipment as a general rule and, therefore, are not being considered separately in this study.

Survey respondents reported a total employment of 1,831 in 74 different jobs classified within the technical occupational category. As was shown in Table 5-18, those in which 15 or more openings are anticipated by the respondents by 1970 can be divided into 12 different DOT divisions or occupational families. Ranked in order of number of anticipated openings, they are:

- Drafting*
- Administrative specialist*
- Nurses*
- Industrial technicians*
- Service occupations
- Engineering technicians - general*

- Health technicians
- Mechanical technicians*
- Math technicians*
- Electrical and electronic technicians*
- Lab technicians (physical sciences)*
- Miscellaneous technical*

Thos occupational families marked with an asterisk included occupations for which employers indicated training was urgently needed. The two not marked included no occupations in large manufacturing; therefore, the respondents who reported these occupations were not asked detailed training need questions. Clearly, however, they also have urgent raining needs.

In the following discussion, the instructional facility and equipment needs of each technical occupational family will be briefly reviewed. The comments are derived from survey data, Central Kentucky industry and business characteristics, and general knowledge gained through industrial training experience as well as in the course of the study. The numbers of openings listed as anticipated are the raw figures reported by survey respondents.

DOT 017 Drafting - 212 openings anticipated by 1970.

Occupations included are design draftsmen, product designer, cartographer, draftsmen, etc.

Instructional Facilities: Large well-lighted drafting room.

Equipment: Modern drafting equipment.

DOT 160 Administrative Specialist - 180 openings anticipated by 1970.

Occupations include cost accountants, junior accountants, estimators, loan reviewers, buyers, personnel assistants, etc.

Instructional Facilities: Classroom with blackboard.

Equipment: Business machines listed under clerical computing occupations can be used where required.

DOT 075 Nurses - 173 openings anticipated by 1970.

Occupations include registered nurses for psychiatric, pediatric, and general practice.

Instructional Facilities: Hospital facilities.

Equipment: Hospital type.

DOT 012 Industrial Technicians - 161 openings anticipated by 1970.

Occupations include manufacturing technicians, facilities technicians, quality control technicians, production planners, methods technicians, etc.

Instructional Equipment & Facilities: Classrooms with blackboards. Shop facilities set up for skill training in skilled occupations can be used where needed, and the business machines set up for clerical computing training can also be used.

DOT 300 Service Occupations - 144 openings anticipated by 1970.

Occupations reported include embalmers, head waiters, practical nurses, etc. (Practically all of the need reported was for practical nurses.)

Instructional Facilities & Equipment: See Lafayette Vocational School.

DOT 019 Engineering Technicians-General - 135 openings anticipated by 1970.

Occupations include engineering assistant, analyst, technician, systems technicians, etc.

Instructional Facilities & Equipment: Classrooms and laboratories associated with core knowledge courses.

DOT 078 Health Technicians - 69 openings anticipated by 1970.

Occupations include x-ray technicians, laboratory technicians, physical therapists, dental technicians, etc.

Instructional Facilities & Equipment: Medical laboratory, hospital and dental equipment and facilities.

DOT 007 Mechanical Technicians - 64 openings anticipated by 1970.

Occupations include tooling specialist and tool designer.

Instructional Facilities & Equipment: Drafting room and a classroom.

DOT 020 Math Technicians - 34 openings anticipated by 1970.

Occupations include programmers and data processing programmers.

Instructional Facilities & Equipment: Classroom and computer facilities including auxiliary equipment.

DOT 003 Electrical & Electronic Technicians - 27 openings anticipated by 1970.

Occupations include electrical technicians, electronics technicians, and instrument technicians.

Instructional Facilities & Equipment: Classroom, laboratories, and shop. Test equipment and typical control equipment for process operation control and manufacturing control.

DOT 009 Miscellaneous Technicians - 21 openings anticipated by 1970.

Occupations include printers.

Instructional Facilities: Same as printing occupation (see Instructional Facilities & Equipment comments with respect to DOT 65 under Skilled Occupations).

General Comments on Core Courses and Instructional Facilities

Central Kentucky has four employment sectors concerned with services which warrant separate consideration because of the special nature of some or all of their training needs. These sectors are:

- Banking and Insurance
- Food Preparation
- Health
- Printing

Banking and insurance, both large employers of clerical workers, have traditionally filled their technical level openings by promotion from within. High school and business school graduates learn while working on the job; as their knowledge and skills develop, they are promoted into higher level jobs.

Since most banking and insurance clerical occupations had counterparts in manufacturing industry from which knowledge and skill requirement data were obtained, these occupations are included in the training requirement analysis. On the other hand, since the banking and insurance employers were not sent the detailed training needs questionnaire, knowledge and skill data were not obtained for their specialized technical level occupations.

It may be that banking and insurance employers prefer to "grow their own" technical level specialists. It is suggested that they be contacted before giving serious consideration to providing technical training programs in these fields.

The food preparation employment sector is difficult to analyze for training needs since it is made up of many "small" employers who have no recognized common approach to training. Clearly, however, Central Kentucky with new restaurants and motels opening almost monthly has at the least a temporary need and perhaps a continuing need for a multilevel training program covering the knowledge and skills involved in restaurant, hotel, and motel management operations.

Cornell University in Ithaca, New York, and the New York State Technical Institute in Brooklyn, New York, are two schools that have excellent reputations for training in this field. To provide

the necessary skill training, they have complete kitchen and dining room facilities set up especially for training purposes. If it is decided to give serious consideration to training in these fields, it is suggested that either or both of these schools be contacted for further information.

Employment in health occupations in Central Kentucky has increased significantly since the advent of the University of Kentucky Medical Center. Training for these occupations requires special facilities and equipment as well as an opportunity for the trainees to have practical experience. It would seem that to provide this combination would involve a cooperative effort with either a hospital or the Medical School. If it is decided to provide training and health occupations, one possible approach might be to work out a cooperative effort with the Veterans Administration Hospital, which is adjacent to the new vocational technical school.

The printing sector has grown and promises to grow more in Central Kentucky. Since training for printing occupations is also difficult to approach piecemeal, it is recommended that a comprehensive approach be taken. If it is desired to include a printing occupations training program in the new school, it is suggested that the management of Rand-McNally in Versailles be contacted relative to their experience in training an entire work force when they established their new plant in Central Kentucky.

Appendix A

Industrial Potential of Central Kentucky

INDUSTRIAL POTENTIAL OF CENTRAL KENTUCKY

Occupations	County[1] 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Food Products																				
Meat packing	BI	B	B		A		I	I		I	I		B				I		I	I
Butter												A			A					
Cheese	B			I					I			AI			AI					
Ice Cream	I		I				I	I		I	I	A	A		A		I		I	I
Salad Dressing	I		I				I	I		I	I						I		I	I
Meat Sauce	I		I		I	I	I	I		I	I		I				I	I		I
Milling Products												B								B
Pickles and Sauces				I	I	I			I			I	I		I			I		
Frozen foods				I					I			I			I					
Beverages	I		BI		B		I	I		I	I		B				I		I	I
Biscuits, crackers, pretzels	I		I		I	I	I	I		I	I		I				I	I	I	I
Potato and corn chips	I		I		BI	I	I	I		I	I		I				I	I	I	I
Tobacco			A																	
Bakery products				I					I			I	B		I					
Whiskey	A							A		A									B	
Textile Mill Products																				
Seamless Nylon Hose	I	I	I				I	I		I	I			I		I	I		I	I
Knit Underwear				I					I			I			I		A			
Knit Outerwear	I	I	I	I			I	I	I	I	I	I		I	I	I	AI		I	I
Non-rubber coated fabric				I					I			I			I					
Nylon carpets	I	I	I	I			I	I	I	I	I	I		I	I	I	I		I	I
Small rugs, placemats	I	I	I	I			I	I	I	I	I	I		I	I	I	I		I	I

[1]County code: 1 Anderson; 2 Bath; 3 Bourbon; 4 Boyle; 5 Clark; 6 Estill; 7 Fayette; 8 Franklin; 9 Garrard; 10 Harrison; 11 Jessamine; 12 Lincoln; 13 Madison; 14 Menifee; 15 Mercer; 16 Montgomery; 17 Nicholas; 18 Powell; 19 Scott; 20 Woodford.

Symbols: A Existing--employs more than 50; B Existing--employs less than 50; I Bramlett potentials; II Fantus potentials

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Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Apparel and Related Products										II							II			
Men's, Boys' Underwear	I	I	AI	I	I	I	I	AI	I	AI	I	I	I	I	I	I	I	I	I	I
Men's Shirts, Pajamas	I	I	I	I	AI	I	I	I	I	I	I	AI	I	I	I	I	I	I	I	I
Men's Suits, Coats, Jackets				AI	A				I			AI			I					
Work Clothes, Uniforms	I	I	I	I	I	BI	I	I	I	I	I	AI	I	I	AI	AI	I	I	I	I
Fabric, dress and work gloves				I					I			I			I					
Cloth hats and caps				I					I			I			I					
Women's Dresses				I					I			I			AI					
Women's Casual Wear	I	I	I	I	I	I	I	I	I	AI	I	I	I	I	AI	I	I	I	I	I
Women's Blouses, shirts				I	A				I			I			I					B
Children's Coats				I					I			I			I					
Children's Dresses				I					I			I			I					
Children's Sportswear				I					I			I			I					
Raincoats, Hats	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Separate Trousers	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Treated Curtains, Drapes	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Parachutes							A													
Miscellaneous House Furnishings				I					I			I			I					
Lumber & Wood Products		B			B	B								B				B	B	
Veneer & Plywood				I					I			I			I					
Oak Flooring				I					I			I			I					
Wood Handles, Blanks		I			I	I							I	I		I		I		
Hardwood Doors				I					I			I			I					
Hardwood Dimension Stock				I		II			I			I		II	I			II		

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Furniture Parts		I			I	I,II							I	I,II		I		I,II		
Wood Pallets		I			I	I							I	I		I		I		
Playpens								A												
Slat Fencing						II								II				II		
Charcoal		I			I	I		I					I	I		I		I		
Furniture and Fixtures																				
Prefabricated Furniture, Fixtures	B		B	AI					I			BI			I					
Church Furniture						II								II				II		
Bathroom Cabinets, Fixtures										II							II			
Kitchen Cabinets	I	I	I		BI	I	I	I		I	I		I	I		I	I	I	I	I
Upholstered Wood Furniture	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Furniture Frames		I			I	I,II							I	I,II		I		I,II		
Mattress, Springs		I		I	A				I			I		I	I	I				
Partitions, Lockers	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Paper and Allied Products										II							II			
Fabricated Paper Products				I					I			I			I					
Folding Boxes, Stationery	I		I				I	I		I	I						I		I	I
Plastic or Cellophane Lined Paper Bags				I					I			I			I					
Fabricated Cardboard Products				I					I			I			I					
Food Containers	I		I				AI	I		I	I						I		I	AI
Paper Coating and Glazing				I					I			I			I					
Wrapping Paper						II								II				II		

SPINDLETOP RESEARCH

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Printing and Publishing	II		II		B,II		II	II			II		II			II			II	II
Business Forms	I		I	AI	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Newspaper			B		B							B	B							B
Maps, Globes																				A
Commercial Printing	I		I	I			I	I	I	I	I	I			I		I		I	AI
Blank Books, Loose-leaf Binders	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Printing on Labels, Wrappings	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Chemicals										II							II			
Putty, Caulking Compounds	I		I				I	I		I	I						I		I	I
Pharmaceutical Preparations	I,II		I,II		I,II		I,II	I,II		I	I,II		II			II	I		I,II	I,II
Biological Products	I		I		B		I	I		I	I						I		I	I
Animal Serums	I		I				I	I		I	I						I		I	I
Fungicides	I		I				I	I		I	I						I		I	I
Cosmetics, Toiletries		I		I				I	I		I	I					I		I	I
Rubber, Plastic Products																				
Fabricated Rubber	I	I	I	I	I	I,II	AI	I	I	I	I	I	AI	I,II	I	I	I	I,II	I	I
Tires				II					II			II			II					
Fabricated Plastic	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Leather, Related Products										II							II			
Industrial Belting, Packing				I					I			I			I					
Casual, Work Shoes	I	I	I	AI	I	I	I	AI	I	I	I	I	I	I	I	I	I	I	I	I
Houseslippers	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Shoe Parts	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Stone, Clay, Glass Products																				
Fabricated Glass Products				I					I			I			AI					
Textile Glass Fibers	I		I	I			I	I	I	I	I	I			I		I		I	I

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Lighting, Electronic Glass	I		I				I	I		I	I						I		I	I
Gaskets	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Cement, Concrete, Brick			B		B							B	B					B		
Primary Metals																				
Nonferrous Rolling Mill Products					A					II							II			
Aluminum Castings				I					I			I			I					
Nonferrous Wire	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Powder Metallurgy				II					II			II			II					
Fabricated Metal Products	II		II		II		II	II			II		II			II			II	II
Hand and Edge Tools	I	I	I	I	I	I	AI	I	I	AI	I	I	I	I	I	I	I	I	I	I
Molded Metal Parts, Trim	I	I	I		I	I	I	AI		I	I		I	I		I	I	I	I	I
Transportation Equipment Parts	I	I	I	I	I	I	AI	I	I	I	I	I	I	I	I	I	I	I	I	I
Builders Hardware	I	I	I	I	I	I	I	I	I	I,II	I	I	I	I	I	I	I,II	I	I	BI
Sliding Glass Doors, shower stalls	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Screw Machine Products	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	BI
Metal Stampings			B				A	A		A			B							
Steel Springs	I		I	I			I	I	I	I	I	I			I		I		AI	I
Valves, Fittings										A										
Collapsible Tubes				I					I			I			I					
Nonelectrical Machinery																				
Small Gas Engines	I		I				I	I		I	I						I		I	I
Mining Equipment			B																	
Aluminum Conveyors	I		I				I	I		I	I						I		I	I
Hydraulic Valves, Cylinders							A													
Power Transmission Equipment				I					I			I			I					

SPINDLETOP RESEARCH

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Power Lawn Mowers, Small Farm Implements				I	B				I			I			I					
Floor Polishers				I					I			I			I					
Vacuum Cleaners				I					I			I			I					
Food Mixers	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Metal Pipe, Tubing	I	I	I	I	AI	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Ball, Roller Bearings	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Office Machines	I		I				AI	I		I	I						I		I	I
Electrical Machinery																				
Small Electric Appliances	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	AI	I
House Cooking Equipment	I		I	I	I	I	I	I	I	I	I	I	I		I		I	I	I	I
Heating Equipment	II		II	I	II		AII	II	I		II	I	II		I	II			II	II
Lighting Fixtures	I		I		A		I	I		I	I		A				I		I	I
Wiring Devices						II	A							II				II	A	B
Fluorescent Lamps				AI					I			I			I					A
Appliance Wire, Cord	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Electric Testing Equipment	I		I				I	I		I	I						I		I	I
Electronic Components	I	I	I	I,II	I	I,II	I	I	I,II	I	I	I,II	I	I,II	I,II	I	I	I,II	I	I
Receiving Tubes				I					I			I			I					
Switch Gear				I					I			I			I					
Radios				I					I			I			I					
Automotive Electrical Equipment	I		I				I	I		I	I						I		I	I
Batteries				I,II		I			I,II			I,II			I					
Electric Motors, Generators, Alternators				I					I			I			I					
Welding Equipment	I		I				I	I		I	I		I			I			I	I

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Transportation Equipment																				
Automotive Parts and Equipment			A	I					I			I			I					
Shock Absorbers	I	I	I				I	I		I	I			I		I	I		I	I
Seat Belts	I	I	I		I	I	AI	I		I	I		I	I		I	I	I	I	I
Windshield Washers	I		I		I	I	I	I		I	I		I				I	I	I	I
Brake Units, Linings	I		I				I	I		I	I		A				I		I	I
Oil, Air Filters	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Ignition Wire Assembly	I		I		I	I	I	I		I	I		I				I	I	I	I
Aluminum, Plastic Trim	I		I				I	I		I	I						I		I	I
Trailer Balls, Hitches	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Power Brake, Steering	I		I				I	I		I	I						I		I	I
Instruments	II		II		II		II	II			II		II			II			II	II
Mechanical Measuring Device	I		I				I	I		I	I		A				I		I	I
Automatic Temperature Controls	I,II		I,II		II		I,II	I,II		I	I,II		II			II	I		I,II	AI,II
Photographic Equipment	I		I				I	I		I	I						I		I	I
Timing Devices	I		I	I			I	I	I	I	I	I			I		I		I	I
Medical or Surgical Equipment	I		I				I	I		I	I						AI		I	I
Dental Equipment	I		I				I	I		I	I						I		I	I
Laboratory Equipment	II		II		II		II	II			II		II			II			II	II
Miscellaneous Products																				
Sporting Equipment	I		I		I	I	I	I		I	I		I				I	I	I	I
Needles, Pins, Fasteners	A	I		I	I	I			I			I	I	I	I	I		I		
Neon, Plastic, Metal Signs	I		I				I	I		I	I						I		I	I
Games, Toys, Dolls	I		I				I	I		I	I						I		I	I

SPINDLETOP RESEARCH

Occupations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Marking Devices	I	I	I		I	I	I	I		I	I		I	I		I	I	I	I	I
Writing Instruments	I		I		I	I,II	I	I		I	I		I	II			I	I,II	I	I
Brooms, Brushes				I					I			I			I					
Caskets									A			B								

Appendix B

New and Expanded Plants in 20-County Study Area
1957-1964

New Plants-1957

Company	Employ-ment*	Invest-ment*	Product
Danville			
Boyle Packing Co., Inc.	12	50,000	Poultry processing
Arthur J. Gavrin Press, Inc.	40	150,000	Business forms
Georgetown			
Hydro-Plastic Co.	60	100,000	Typewriter keys & parts
Junction City			
Pratt Food Co.	10	30,000	Animal health products
Lexington			
Dixie Cup Co.	2,000	3,000,000	Cups & containers
Nicholasville			
Dalton & Daenzer Corp.	30	44,000	Tools & dies
Faulkner Cabinet Co., Inc.	12	7,000	Store fixtures
Winchester			
Codell Brothers	15		Wood products

Expanded Plants-1957

Berea			
Berea Rubber Co.	0	225,000	Rubber O-rings
Harrodsburg			
Cricketeer, Inc.	225		Men's clothing
Winchester			
Loma Mfg. Co.	100	15,000	Women's clothing
Stanton			
Sipple Brick Co.	6	65,000	Brick & tile

*Manufacturing Developments in Kentucky, Kentucky Department of Commerce, Frankfort, Kentucky, Annual.

SPINDLETOP RESEARCH

New Plants-1958

Company	Employ-ment*	Invest-ment*	Product
Berea			
Mountain Forestry Co.	10	8,500	Posts & poles
Lexington			
Holloway Ready Mix Co.	14	37,000	Ready-mix concrete
Kentucky Prestress Concrete Co.	14	138,000	Concrete products
Wesson Metal Corp.	35	500,000	Research lab for metals & alloys for missiles
Nicholasville			
Irving Air Chute Co.	48	50,000	Air supported buildings, geodesic domes
Paris			
Electric Steam Radiator Corp.	70	250,000	Plastic molded parts
Stanford			
Cowden Mfg. Co.	300	275,000	Work clothing
Versailles			
International Paper Co.	100	500,000	Milk cartons

Expanded Plants-1958

Frankfort			
National Distillers Products Corp.		100,000	Whiskey
Lexington			
Sutton Electronic Co., Inc.	75	275,000	Electronic equipment
Versailles			
Metals & Controls Corp.	50-60	185,000	Thermostats
Winchester			
Sylvania Electric Products, Inc.	65-90		Lamp operation

New Plants-1959

Company	Employ-ment*	Invest-ment*	Product
Cynthiana			
Cynthiana Metal Finishing Co.	20	17,000	Metal plating, buffing & deburring
Frankfort			
Custom Kitchen Corp.	10	10,000	Kitchen cabinets
Georgetown			
Georgetown Metal Stamping Co.	20		Small metal parts
Kentucky Die Casting Corp.	35	100,000	Aluminum die castings
Scott County Aluminum Co.,Inc.	50-75		Aluminum doors & windows
Lexington			
Lexington Tool & Die Co., Inc.	15	20,000	Special tools, wrenches, gages, fixtures, etc.
Ohio Fabricating Co.	50	400,000	Precision tools & light stamping machines
Parker Seal Co.	300	250,000	Oil, fuel & hydraulic system seals
E. H. Straus Co.	10-15	75,000	Fabricated structural steel
Richmond			
Kitchen Planning Corp.	4	10,000	Kitchen cabinets

Expanded Plants-1959

Danville			
Arthur J. Gavrin Press of Ky., Inc.	30	50,000	Business forms
Swiss Sanitary Milk Co.		30,000	Ice cream
Georgetown			
Carbide Products, Inc.	30	125,000	Carbide cutting tools
Hydro Plastics, Inc.			Plastic parts

SPINDLETOP RESEARCH

Company	Employ-ment*	Invest-ment*	Product
Lawrenceburg			
Universal Button Co.	12	45,000	Trouser hooks and eyes
Lexington			
Nic Nac Foods, Inc.		20,000	Potato chips
Square D Co.	100	710,000	Electrical busways
Paris			
Hinkle Contracting Co.		150,000	Bituminous concrete
Versailles			
Texas Instruments, Inc., Metals & Controls Div.	75-100	80,000	Thermostats

New Plants-1960

Berea	
Manning, Maxwell & Moore, Inc.	Precision pressure gauges
Frankfort	
General Controls Co.	Automatic controls, electronic equipment
Thomco, Inc.	Aluminum windows
Georgetown	
Hoover Ball & Bearing Co.	Automotive parts
Lancaster	
Fair Hardwood Lumber Co.	Baseball billets, hockey blades, furniture squares
Lexington	
East Lex Machine Corp.	Special machines
Mt. Sterling	
Trojan, Inc.	Hollywood bed frames
Richmond	
Robinson Machine & Tool Co.	Dies, jigs, fixtures, gages

Company	Employment*	Investment*	Product
Expanded Plants-1960			
Frankfort			
H. K. Porter Co., Inc.			Automobile & appliance trim
Georgetown			
Kentucky Die Casting Co.			Fabricate aluminum die castings
Lexington			
Dixie Cup Co.			Cups and containers
Semicon Associates, Inc.			Dispenser cathodes, tungsten parts
Star Tool & Die Co., Inc.			Metal stampings & forms
New Plants-1961			
Frankfort			
Varland Metal Services, Inc.	25	80,000	Electroplating
Junction City			
Fram Corp.	185	100,000	Carburetor air cleaner cartridges
Lawrenceburg			
Kraft Foods Co.			Whey
Lexington			
American Technical Machinery Corp.	25	45,000	Christmas artificial trees & decorations, machine parts
Mt. Sterling			
Knoxville Glove Co.	20	25,000	Cotton work gloves
Richmond			
Builders' Concrete Block Co., Inc.	11	150,000	Concrete block

SPINDLETOP RESEARCH

Company	Employment*	Investment*	Product
Stanford			
Louvers & Dampers, Inc.	20	42,000	Louvers and dampers
Precision Cabinet Shop	10	5,000	Cherry kitchen cabinets
Winchester			
Georgia-Pacific Corp.	40	150,000	Hardwood components for commercial trailers
Expanded Plants-1961			
Cynthiana			
American Tobacco Co.	40	30,000	Tobacco processing
Lexington			
Brown & Williamson Tobacco Co.		650,000	Tobacco redrying
Square D Co.	150	1,000,000	Electrical distribution equipment
Mt. Sterling			
Trojan, Inc.	8	95,000	Link fabrics
Stanford			
Stanford Creamery Co.	10	280,000	Packaged cheese
Versailles			
Woodford Mfg. Co.		150,000	Hermetic electrical terminals
Winchester			
Leggett & Platt, Inc.	40		Bedsprings
New Plants-1962			
Burgin			
Mercer Dress Corp.	350-400	392,000	Women's dresses
Georgetown			
Cable Products Co.	35	63,000	Electronic cable & Harn.
Stiohn Products	22	38,000	Tool & die work

Company	Employment*	Investment*	Product
Irvine			
Jackson Charcoal & Wood Co.	7	20,000	Charcoal
Lexington			
B & H Industrial Services, Inc.	60	17,500	Parts for IBM
Blue Grass Tool Company	50	25,000	Electrical typewriter parts-for IBM
Key Tool & Die Co.	20	90,000	Dies, jigs, metal stamp.
Scher Manufacturing Co.	4	10,000	Cast veneer stone
Trane Co.	250	3,000,000	Air conditioning equip.
Owingsville			
Kentucky Packing Co.	15	32,500	Meat packing
Versailles			
Eastside Screw Products, Inc.	30	75,250	Automatic screw machine products
Lighting Products, Division of Sylvania Products, Inc.	200		Fluorescent lamps
Rand McNally & Co.	200	3,600,000	Printing, books
Winchester			
Scotty's Food Products Co.	10	10,000	Potato chips

Expanded Plants-1962

Cynthiana			
Weber Sausage Co.	8	100,000	Sausage
Georgetown			
Electric Parts Corporation	200	500,000	Electric blankets and bedcoverings
Irvine			
Jackson Charcoal & Wood Co.	14	31,645	Charcoal
Lawrenceburg			
Universal Button Co.	10-15	80,000	Metal buttons, snaps, hooks & eyes

SPINDLETOP RESEARCH

Company	Employment*	Investment*	Product
Lexington			
International Business Machines		1,500,000	Electric typewriters
Star Tool & Die co.	10	35,000	Stamped metal typewriter parts, dies, jigs, fixtures
Wesson Metal Corp.		65,000	Carbide tips for tools
Mt. Sterling			
Giffin Sportswear, Inc.	90	17,000	Sanitary belts & supporters
Richmond			
Robinson Tool & Die Co.	25	60,000	Tool & die work
Versailles			
Metals & Controls, Inc.			Testing laboratory
Wilmore			
Barret Wilmore, Inc.	125	68,000	Ladies' blouses
Winchester			
Browning Turkey Farms, Inc.	60		Turkey processing
Leggett & Platt, Inc.	125	205,000	Bed springs, box springs, bed frames

New Plants-1963

Burgin			
KIM Products	10	40,000	Welding equipment parts, pressure gauges, flow regulators
Danville			
Bluegrass Luggage & Specialty Corp.	7		Simulated leather goods
Frankfort			
Frankfort Metal Craft, Inc.		2,000	Sheet steel smoke oven
Irvine			
Winston Wood Products	13	30,000	Kitchen cabinets

Company	Employment*	Investment*	Product
Lexington			
Brandeis Machinery & Supply Co.	6	60,000	Heavy equipment distribution
Lexington Redryers, Inc.	650	100,000	Leaf tobacco processing
Industrial Products Division, Westinghouse Air Brake Co.	300	1,000,000	Pneumatic & Hydraulic fluid control components & systems
Nicholasville			
Energy Conversion Co., Inc.	20	10,000	Radio, television conversion assemblies
Paris			
A. Brandt Company	50	15,000	Redwood furniture
Richmond			
H. K. Porter Co.	300	2,000,000	Valve & brake linings
Winchester			
Springfield-London Mfg. Co.	25		Metal burial vaults

Expanded Plants-1963

Danville			
Corning Glass Works	20-30		Incandescent lamp blanks & photoflash bulbs, glass tubing for electronic uses
Frankfort			
Geo. W. Gayle & Son	3	62,000	Machine airplane parts
Georgetown			
Electric Parts Corp.	150	100,000	Electric blankets, sheets and wiring
Lexington			
Broughton's Farm Dairy		25,000	Fluid milk, dairy products and ice cream
Elm Hill Meats, Inc.	20		Sausage products, cured & smoked meats

SPINDLETOP RESEARCH

Company	Employment*	Investment*	Product
Lexington (continued)			
Standard Products Co.	130	130,000	Auto weatherstrip
Sun-Ray Feed Mills	3		Supplement feed for horses
Richmond			
Rogers Country Sausage	80		Meat products
Versailles			
Barrett Versailles	12	8,000	Ladies' blouses
Metals & Controls	40	300,000	Commercial controls
Wilmore			
Barrett Midway, Inc.			
New Plants--1964			
Cynthiana			
Best Tool & Die Co., Inc.	15	42,000	Tools, dies, jigs, fixtures
Bundy Tubing Co.	50	1,250,000	Steel tubing
Production Plating Co.	8		Plating
Frankfort			
Frank F. Taylor Co.	200	1,300,000	Strollers, playpens, high chairs
Georgetown			
Watco Precision Tooling Co.	7	7,500	Tools & dies, light production
Irvine			
Even-Glo Charcoal Co., Inc.	300	750,000	Charcoal briquettes
Lancaster			
National Casket Co., Inc.	165	1,000,000	Caskets
Lexington			
Aqua Vault, Inc.		6,000	Concrete tile
Lexington Steel Bodies	20	25,000	Truck bodies
Qwik Tool & Die Co.	10	18,500	Tools, dies, jigs, fixtures

Company	Employ-ment*	Invest-ment*	Product
Mt. Sterling			
A. O. Smith Corp.	200	2,500,000	Hermetic motors
Versailles			
Falls City Ready Mix	20	303,000	Ready-mixed concrete
Expanded Plants-1964			
Carlisle			
Blue Grass Industries, Inc.	300	120,000	Men's shorts, children's play clothing
Cynthiana			
Blue Grass Plant Foods, Inc.		50,000	Chemical fertilizer
Cynthiana Publishing Co.		87,000	Newspaper, job printing
Danville			
Corning Glass Works	47		Fluorescent tubing
Palm Beach Co.	40	310,000	Men's suits
Frankfort			
H. K. Porter Co.		1,000,000	Steel & Aluminum mouldings
Georgetown			
Preferred Stamping, Inc.	20	9,800	Stampings
Stiohn Products Corp.	12	36,000	Tools & dies
Universal Wire Spring Div., Hoover Ball & Bearing Co.	75	1,000,000	Upholstery springs
Lexington			
Cloud Concrete Products, Inc.		54,000	Pre-cast concrete
W. T. Congleton Concrete Co.	5	150,000	Ready-mixed concrete
Dixie Cup Div., American Can Co.	100		Paper cups & containers
Kentucky Concrete Pipe Co.		200,000	Concrete
Lexington Herald-Leader Co.		250,000	Newspaper
Pepsi-Cola Bottling Co.		50,000	Bottled soft drinks
Transylvania Printing Co.		45,000	Printing

Company	Employ-ment*	Invest-ment*	Product
Millersburg			
The W. R. Stamler Corp.		32,000	Hydraulic mine car spotters & automatic controls.
Mt. Sterling			
Blue Grass Industries	50		Men's shirts, children's play clothing
Trojan, Inc.	50		Helical armor, link springs
Paris			
Paris Daily Enterprise	19	95,000	Newspaper, job printing
Stanford			
Cowden Mfg. Co.	35	150,000	Men's and boys' clothing
Versailles			
International Paper Co.	5	250,000	Paper milk cartons
Winchester			
Winchester Sun	2	87,000	Newspaper

Appendix C

DOT Occupational Classifications of Jobs Reported by Responding Firms

NOTES FOR USE OF APPENDIX C

The occupations are listed by the DOT occupational classification, and the DOT code prefacing each occupational division, group, or single occupation describes its place in the system. Volume I of the Dictionary of Occupational Titles, published by the U.S. Department of Labor, contains brief descriptions of all jobs which have been coded. The Introductions to Volumes I and II describe the system and provide other related information.

Abbreviations

CE-- Current Employment. The number given is the number of skilled, clerical and technical employees reported by the respondents as being on their payroll at the time the questionnaire was completed. All questionnaires were completed during September, October and November of 1965.

HLY-- Hired Last Year. The number of employees hired in the previous 12 months is reported.

TN-- Total Needs. The number given is the total number of SCT job openings which all respondents anticipate by 1970. Both replacement and expansion openings are included.

( )-- The number in parentheses is the number of openings which the "small manufacturers and other business" anticipate by 1970 because of expansion and replacement.

*-- Occupational data from small manufacturers and other businesses only.

NN-- No five-year needs reported.

NS-- None specified.

Knowledge and Skill Code Explanations

Knowledge and Skill Codes. These are the codes by which large manufacturers described the knowledge and skill requirements of their SCT occupations. They are reproduced below:

Knowledge Codes

Code	Skill
	Math
1	Algebra
2	Plane Geometry
3	Trigonometry
4	Calculus
5	Business Math
6	Accounting
7	Statistics
	Physics
8	Physics
9	Electricity
10	Hydraulics
11	Mechanics
	Other Sciences
12	Chemistry
13	Economics
14	Psychology
	Engineering
15	Drafting
16	Tool Design
17	Time and motion study
18	Strength of material
19	Instrumentation
20	Light and Sound
	Communications
21	Public Speaking
22	Business Letters
23	Report Writing
24	Stenography
	Other
25	No special academic requirements beyond general high school
26	No academic requirements
27	Other
28	Other

Skill Codes

Code	Skill
	Shop Skills
1	Use hand tools
2	Use machine tools
3	Repair machinery
4	Set up machinery
5	Lay out projects
6	Operate machinery
7	Other
	Production Skills
8	Interpret work procedure
9	Determine work procedure
10	Supervise work
11	Other
	Office Skills
20	Operate business machines
21	Write reports
22	Other
	Laboratory Skills
23	Perform tests
24	Use testing equipment and instruments
25	Evaluate test results
26	Perform experimental projects
27	Assemble experimental lab equipment
28	Other

Code	Skill
	Engineering Skills
12	Use slide rule
13	Use drafting instruments
14	Read and use blueprints
15	Design tools, instruments or equipment
16	Plan projects
17	Program equipment
18	Perform routine engineering functions
19	Other

Code	Skill
	Human Relations
29	Maintain harmonious relations among groups of workers
30	Handle people
31	Liaison between engineers or scientists and skilled workers
32	Other
	Other Skills
33	Communicate ideas verbally
34	Other
35	Other

Percentage Knowledge or Skill. This is the percentage of all knowledge or skill units for a given occupation which were accounted for by the particular knowledge or skill. Where "c" is used following the number indicates college level course work was required.

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
001-019 Technical Occupations-Engineering							
003 Electrical							
Electronics technician	8	3	21(11)	(1)	41.7	(1)	11.1
				(3)	41.7	(2)	11.1
				(8)	4.2c	(5)	11.1
				(9)	4.2c	(12)	11.1
				(11)	4.2c	(13)	11.1
				(23)	4.2c	(14)	11.1
						(15)	11.1
						(29)	11.1
						(33)	11.1
Instrument technician	13	1	6(0)	(1)	7.0	(1)	13.6
				(2)	7.0	(2)	13.6
				(3)	7.0	(3)	2.3
				(8)	7.0/14.1c	(4)	2.3
				(9)	7.0/14.1c	(5)	2.3
				(12)	14.1	(6)	2.3
				(15)	7.0	(8)	2.3
				(19)	7.0	(9)	2.3
				(23)	7.0	(10)	2.3
				(25)	1.4	(14)	11.4
						(21)	11.4
						(24)	11.4
						(25)	11.4
						(27)	11.4
Total DOT 003	21	4	27(11)				
006 Ceramic							
Materials technician	2	0	2(2)	*	--	*	--
007 Mechanical							
Tooling specialist	54	5	15(0)	(27)	100.0	(8)	9.1
						(9)	9.1
						(10)	9.1
						(12)	9.1
						(13)	9.1
						(14)	9.1
						(15)	9.1
						(16)	9.1
						(18)	9.1
						(21)	9.1
						(31)	9.1
Tool designer	29	11	49(0)	(1)	5.0/2.8c	(1)	3.9
				(2)	5.3/2.8c	(2)	3.9
				(3)	2.8/5.3c	(3)	1.8
				(4)	0.4/5.3c	(4)	1.8
				(5)	0.4/2.1c	(5)	5.7
				(6)	2.1c	(6)	1.8
				(7)	2.1c	(8)	1.8
				(8)	2.1/4.6c	(9)	1.8
				(9)	2.8/4.6c	(10)	1.8
				(10)	3.2/4.6c	(12)	12.7
				(11)	3.5/4.6c	(13)	12.7
				(12)	2.5c	(14)	12.7
				(15)	6.0/2.1c	(15)	12.7
				(16)	3.5/2.1c	(16)	3.9
				(17)	2.1	(17)	1.8
				(18)	3.5/4.6c	(18)	3.9
				(27)	6.7	(21)	4.8
						(29)	3.6
						(31)	1.8
						(33)	4.8
Seat belt technician	1	0	0(0)	NN	--	NN	--
Total DOT 007	84	16	64(0)				
008 Chemical							
Process technician	11	0	0(0)	NN	--	NN	--

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
001-019 Technical Occupations-Engineering (cont'd)							
012 Industrial							
Manufacturing technician	43	5	24(0)	(1)	7.1c	(4)	9.0
				(2)	7.1c	(5)	11.4
				(3)	7.1c	(7)	2.3
				(4)	7.1c	(8)	11.4
				(9)	7.1	(10)	2.3
				(10)	7.1	(12)	2.3
				(11)	7.1	(13)	2.3
				(16)	7.1	(14)	11.4
				(17)	7.1	(16)	2.3
				(23)	7.1	(17)	2.3
				(25)	28.6	(29)	11.4
						(31)	11.4
						(32)	9.0
						(33)	11.4
Facility technician	27	0	11(0)	(5)	5.3	(1)	8.5
				(9)	5.3	(2)	8.5
				(10)	5.3	(3)	8.5
				(11)	10.6	(4)	9.6
				(15)	5.3	(5)	6.4
				(16)	5.3	(6)	12.8
				(25)	57.9	(9)	5.3
				(27)	5.3	(10)	1.1
						(12)	1.1
						(13)	5.3
						(14)	13.8
						(15)	1.1
						(16)	1.1
						(29)	1.1
						(30)	1.1
						(31)	5.3
						(32)	4.3
						(33)	5.3
Quality control technician	70	6	57(12)	(1)	1.4/6.7c	(1)	3.2
				(2)	1.1/6.7c	(2)	2.1
				(3)	1.4/6.7c	(4)	1.1
				(4)	6.7c	(8)	9.9
				(5)	0.3/6.7c	(9)	7.8
				(6)	6.7c	(10)	6.7
				(7)	1.1/6.7c	(12)	1.3
				(8)	1.1/7.0c	(14)	11.2
				(9)	8.1	(15)	1.3
				(10)	1.4	(17)	1.3
				(11)	1.4/6.7c	(18)	6.4
				(12)	7.0c	(21)	7.8
				(13)	0.3c	(23)	11.5
				(14)	6.7c	(24)	11.2
				(15)	0.3	(25)	10.2
				(18)	0.3	(26)	1.6
				(19)	1.4	(27)	1.6
				(23)	2.8	(29)	0.3
				(25)	2.2	(30)	0.3
				(27)	1.1	(31)	2.7
						(33)	0.5
Production planner	22	1	11(5)	(1)	5.0	(8)	18.6
				(3)	5.0	(9)	18.6
				(5)	25.0	(10)	2.3
				(7)	10.0	(12)	4.6
				(13)	5.0	(13)	2.3
				(14)	5.0	(16)	4.6
				(17)	5.0	(17)	4.6
				(21)	5.0	(18)	2.3
				(23)	20.0	(20)	2.3
				(25)	15.0	(21)	7.0
						(25)	7.0
						(29)	2.3
						(30)	2.3
						(31)	9.2
						(33)	11.6

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
001-019 Technical Occupations-Engineering (cont'd)							
Production control clerk	16	10	15(0)	(1)	5.9	(10)	11.1
				(5)	5.9	(12)	11.1
				(6)	5.9	(14)	11.1
				(7)	5.9	(16)	11.1
				(13)	5.9	(17)	11.1
				(14)	5.9	(20)	11.1
				(15)	5.9	(21)	11.1
				(16)	5.9	(29)	11.1
				(21)	5.9	(30)	11.1
				(22)	5.9	(33)	11.1
				(23)	5.9		
				(25)	35.3		
Time study man	2	0	3(0)	(1)	14.3/7.1c	(5)	9.1
				(4)	7.1c	(8)	13.6
				(7)	14.3/7.1c	(9)	9.1
				(17)	14.3/7.1c	(10)	4.5
				(18)	7.1c	(12)	9.1
				(21)	7.1c	(13)	4.5
				(23)	7.1/7.1c	(14)	4.5
						(18)	4.5
						(20)	4.5
						(21)	9.1
						(23)	4.5
						(29)	9.1
						(30)	4.5
						(31)	4.5
						(33)	4.5
Methods engineer	41	2	33(0)	(27)	100.0	(8)	9.0
						(9)	9.0
						(10)	9.0
						(12)	9.0
						(13)	9.0
						(14)	9.0
						(15)	9.0
						(16)	9.0
						(18)	9.0
						(21)	9.0
						(31)	9.0
Suggestion investigator	13	0	7(0)	NS	--	(14)	20.0
						(21)	20.0
						(29)	20.0
						(31)	20.0
						(32)	20.0
Total DOT 012	234	24	161(17)				
017 Drafting							
Product design	50	10	28(0)	(1)	9.1c	(12)	12.5
				(2)	9.1c	(13)	12.5
				(3)	9.1c	(14)	12.5
				(4)	9.1c	(16)	12.5
				(8)	9.1c	(18)	12.5
				(9)	9.1c	(25)	12.5
				(11)	9.1c	(31)	12.5
				(12)	9.1c	(33)	12.5
				(15)	9.1c		
				(18)	9.1c		
				(23)	9.1c		
Design draftsman	30	7	29(0)	(1)	25.0	(12)	23.0
				(2)	25.0	(13)	23.0
				(3)	25.0	(14)	23.0
				(15)	25.0	(15)	23.0
						(18)	8.2
Draftsman	179	48	132(37)	(1)	14.5	(8)	3.9
				(2)	14.5	(12)	19.4
				(3)	14.3	(13)	23.3
				(4)	0.6	(14)	19.4
				(8)	5.9	(15)	3.1
				(9)	5.9	(16)	2.1

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
001-019 Technical Occupations-Engineering (cont'd)							
Draftsman (cont'd)				(10)	2.0	(18)	8.4
				(11)	6.5	(19)	0.5
				(12)	0.6	(21)	5.5
				(13)	0.6	(23)	0.8
				(14)	0.6	(24)	0.8
				(15)	17.7	(25)	0.8
				(16)	2.2	(26)	0.8
				(18)	6.5	(27)	0.8
				(19)	2.2	(29)	2.1
				(20)	0.6	(31)	0.8
				(23)	4.7	(33)	7.6
Junior draftsman	4	3	6(0)	(15)	100.0	(13)	30.0
						(14)	30.0
						(15)	10.0
						(18)	30.0
Cartographer	31	16	15(0)	(15)	50.0	(1)	33.3
				(25)	50.0	(8)	33.3
						(13)	33.3
Technical artist	3	1	2(0)	(10)	33.3	(12)	20.0
				(15)	33.3	(13)	20.0
				(27)	33.3	(14)	20.0
						(15)	20.0
						(32)	20.0
Total DOT 017	297	85	212(37)				
018 Surveying							
Surveyor	16	8	14(14)	*	--	*	--
019 General engineering							
Engineering assistant	118	24	77(14)	(1)	13.6	(1)	9.6
				(2)	9.7	(2)	9.6
				(3)	3.2/7.2c	(3)	1.3
				(4)	9.0c	(4)	1.3
				(5)	0.4	(5)	11.2
				(6)	0.4	(6)	0.3
				(7)	0.7	(8)	1.0
				(8)	0.4/9.3c	(9)	0.3
				(9)	1.4/9.3c	(10)	0.3
				(10)	2.9c	(12)	11.6
				(11)	1.4/2.9c	(13)	9.2
				(12)	7.5c	(14)	9.9
				(15)	8.2	(15)	8.6
				(16)	0.4	(16)	0.3
				(17)	2.5	(17)	0.3
				(18)	7.5c	(18)	2.6
				(20)	0.4	(21)	1.3
				(23)	1.4	(24)	0.7
				(25)	0.4	(26)	0.3
						(29)	8.3
						(30)	2.3
						(31)	0.3
						(33)	9.2
Analyst-technician	58	10	51(0)	(1)	11.3	(1)	12.5
				(2)	11.3	(5)	0.7
				(3)	11.3	(8)	0.7
				(7)	0.7	(9)	0.7
				(8)	11.3	(12)	12.5
				(9)	10.6	(14)	12.5
				(11)	10.6	(21)	12.5
				(15)	10.6	(23)	11.8
				(17)	0.7	(24)	12.5
				(19)	10.6	(26)	11.8
				(23)	10.6	(27)	11.8
				(27)	0.7		

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Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
001-019 Technical Occupations-Engineering (cont'd)							
Systems technician	4	0	1(0)	(3)	16.7	(5)	12.5
				(5)	16.7	(9)	12.5
				(6)	16.7	(17)	12.5
				(7)	16.7	(20)	12.5
				(13)	16.7	(21)	12.5
				(23)	16.7	(29)	12.5
						(32)	12.5
						(33)	12.5
Technical service	14	0	5(0)	(1)	7.2	(1)	5.5
				(2)	7.2	(2)	5.5
				(3)	13.3	(5)	5.5
				(8)	13.3	(8)	5.5
				(9)	6.0	(12)	6.6
				(12)	13.3	(13)	6.6
				(15)	7.2	(14)	12.1
				(18)	13.3	(15)	6.6
				(19)	13.3	(16)	6.6
				(23)	6.0	(18)	6.6
						(21)	5.5
						(24)	5.5
						(25)	5.5
						(26)	5.5
						(31)	5.5
						(32)	5.5
Accident prevention technician	4	0	1(0)	(25)	100.0	(9)	3.6
						(21)	3.6
						(23)	21.4
						(24)	21.4
						(26)	21.4
						(27)	21.4
						(32)	3.6
						(33)	3.6
Total DOT 019	198	34	135(19)				
Total Technical Engineering	863	171	615(95)				
020-029 Technical Occupations-Math & Physical Sciences							
020 Math							
Data processing programmer	31	5	34(17)	(1)	13.1	(5)	11.6
				(2)	13.1	(9)	11.6
				(3)	13.1	(17)	11.6
				(5)	14.8	(20)	16.2
				(6)	1.6	(21)	14.0
				(7)	13.1	(23)	2.3
				(13)	8.2	(29)	11.6
				(23)	13.1	(31)	2.3
				(25)	1.6	(32)	11.6
				(27)	6.6/1.6c	(33)	4.6
022 Chemistry							
Chemical technician	4	1	1(0)	(1)	4.3	(12)	2.8
				(2)	4.3	(21)	2.8
				(3)	4.3	(23)	22.2
				(4)	4.3	(24)	22.2
				(5)	4.3	(25)	22.2
				(7)	4.3	(26)	22.2
				(8)	30.4	(27)	5.5
				(9)	4.3		
				(12)	4.3/30.4c		
				(23)	4.3		
023 Physics							
Physics technician	0	0	1(0)	(1)	11.1	(12)	12.5
				(2)	11.1	(13)	12.5
				(3)	11.1	(14)	12.5
				(4)	11.1	(21)	12.5
				(7)	11.1	(23)	12.5
				(8)	11.1	(27)	12.5
				(9)	11.1	(31)	12.5
				(11)	11.1	(33)	12.5
				(12)	11.1		

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
020-029 Technical Occupations-Math & Physical Sciences							
029 Physical sciences							
Lab technician	96	5	23(0)	(1)	10.9	(1)	7.8
				(2)	7.6	(8)	7.8
				(3)	7.6	(9)	2.3
				(4)	1.7	(12)	9.4
				(8)	8.4	(13)	1.6
				(9)	7.6	(14)	7.0
				(10)	4.2	(20)	2.3
				(11)	10.1	(21)	7.8
				(12)	10.9	(23)	11.7
				(13)	2.5	(24)	8.6
				(15)	5.9	(25)	8.6
				(17)	2.5	(26)	8.6
				(19)	5.9	(27)	10.2
				(22)	2.5	(28)	0.8
				(23)	10.9	(29)	2.3
				(25)	0.8	(31)	1.6
						(33)	1.6
Total Math & Physical Sciences	131	11	59(17)				
075-079 Technical Occupations-Medicine & Health							
075 Registered nursing							
Nurses - general	173	34	165(162)	*	--	*	--
Nurses - psychiatric	0	0	4(4)	*	--	*	--
Nurses - pediatric	0	0	4(4)	*	--	*	--
Total DOT 75	173	34	173(170)				
078 Medical technicians							
Orthotist	4	2	4(4)	*	--	*	--
Electrocardiograph operator	1	0	0(0)	NN	--	NN	--
Operating room technician	3	2	6(6)	*	--	*	--
Oxygen equipment technician	6	2	3(3)	*	--	*	--
X-ray technician	23	2	10(10)	*	--	*	--
Lab technician	27	9	18(18)	*	--	*	--
Medical technician	30	6	28(23)	*	--	*	--
Physical therapist	1	0	0(0)	*	--	*	--
Total DOT 78	95	23	69(64)				
Total Medicine & Health	268	57	242(234)				
130-973 Technical Occupations in Miscellaneous Fields							
130 Writing							
131 Continuity writer	1	1	1(1)	*	--	*	--
132 Editor	2	0	1(0)	(25)	100.0	NS	--
Editorial assistant	9	5	8(0)	(22)	50.0	(20)	33.3
				(23)	50.0	(21)	33.3
						(34)	33.3
News writer	2	1	1(1)	*	--	*	--
Total DOT 13	14	7	11(2)				
140 Art work							
142 Designer & decorator	4	0	4(4)	*	--	*	--
143 Photographer	8	1	3(2)	(8)	50.0	(35)	100.0
				(12)	50.0		
Total DOT 14	12	1	7(6)				

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Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
130-973 Technical Occupations in Miscellaneous Fields							
150 Entertainment and recreation							
153 Golf professional	1	0	0(0)	NN	--	NN	--
159 Announcer	6	2	4(4)	*	--	*	--
Total DOT 15	7	2	4(4)				
160 Administrative specialties							
160 Auditors	19	0	6(6)	*	--	*	--
Cost accountant	37	0	23(0)	(5)	21.1	(8)	8.4
				(6)	21.1	(10)	6.3
				(7)	10.1	(20)	7.1
				(13)	8.2	(21)	16.1
				(21)	0.9	(29)	14.7
				(22)	19.3	(30)	6.3
				(23)	19.3	(31)	8.4
						(32)	8.4
						(33)	16.1
						(34)	8.4
Junior accountant	69	18	64(32)	(1)	9.3	(12)	12.7
				(5)	14.4/1.7c	(20)	19.0
				(6)	15.3/1.7c	(21)	21.5
				(7)	11.0/0.8c	(29)	15.2
				(13)	10.2/1.7c	(30)	15.2
				(14)	5.1	(33)	16.5
				(17)	3.4		
				(21)	8.5		
				(22)	8.5		
				(23)	4.2/0.8c		
				(24)	3.4		
161 Estimator	1	0	1(0)	(1)	50.0	(8)	25.0
				(7)	50.0	(14)	25.0
						(20)	25.0
						(21)	25.0
Loan reviewer	47	21	39(39)	*	--	*	--
Account analyst	2	0	4(4)	*	--	*	--
162 Buyer-purchasing agent	31	5	13(0)	(1)	6.5	(8)	9.0
				(2)	4.4	(10)	3.8
				(3)	4.4	(12)	2.6
				(5)	6.5	(13)	2.6
				(6)	6.5	(14)	12.8
				(7)	6.5	(15)	2.6
				(11)	4.4	(20)	3.8
				(13)	6.5	(21)	12.8
				(14)	6.5	(29)	12.8
				(15)	4.4	(30)	3.8
				(16)	4.4	(31)	10.3
				(18)	4.3	(32)	9.0
				(21)	4.3	(33)	12.8
				(22)	6.5		
				(23)	6.5		
				(25)	17.4		
163 Pricing & quotation specialist	1	1	1(0)	(5)	100.0	NS	--
Market administrators	3	0	0(0)	NN	--	NN	--
166 Personnel assistants	5	0	2(0)	(1)	16.7	(29)	25.0
				(13)	16.7c	(30)	25.0
				(14)	16.7c	(31)	25.0
				(21)	16.7c	(33)	25.0
				(22)	16.6		
				(23)	16.6		
168 Auto loans creditman	20	2	14(14)	*	--	*	--
Adjustor and inspector	2	0	2(2)	*	--	*	--

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
130-973 Technical Occupations in Miscellaneous Fields (cont'd)							
169 Sales correspondent	2	0	1(0)	NS	--	NS	--
Production coordinator	1	0	0(0)	NN	--	NN	--
Insurance underwriter	6	0	5(5)	*	--	*	--
Export & cylinder inter.	2	0	2(0)	(25)	100.0	(33)	100.0
R & S representative	11	0	3(0)	NS	--	(29)	33.3
						(30)	33.3
						(31)	33.3
Total DOT 16	259	47	180(102)				
300 Service Occupations							
338 Embalmer	10	1	0(0)	NN	--	NN	--
352 Head waiter	4	2	2(2)	*	--	*	--
354 Practical nurse	138	27	142(142)	*	--	*	--
Total DOT 300	152	30	144(144)				
400 Plant farming							
406 Nurseryman	15	2	4(4)	*	--	*	--
Nursery technician	4	0	1(1)	*	--	*	--
Total DOT 400	19	2	5(5)				
800 Structural work							
869 Construction inspector	23	4	7(7)	*	--	*	--
900 Miscellaneous work							
973 Printer	83	6	21(0)	(8)	32.2	(1)	14.3
				(10)	32.2	(2)	14.3
				(11)	32.2	(3)	14.3
				(25)	3.4	(4)	14.3
						(5)	14.3
						(6)	14.3
						(20)	14.2
Grand Total-Technical Occupations	1831	339	1295(616)				

SPINDLETOP RESEARCH

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
200 Clerical Occupations							
20 Steno, typing, filing, etc.							
201 Secretary	481	73	246(170)	(5)	21.2	(20)	17.5
				(6)	3.8	(21)	2.5
				(7)	3.8	(30)	15.0
				(20)	5.8	(36)	12.5
				(21)	5.8	(37)	52.5
				(22)	9.6		
				(24)	21.2		
				(25)	25.0		
202 Stenographer	178	63	188(158)	(5)	13.1	(8)	2.9
				(7)	6.0	(20)	27.9
				(22)	25.0	(21)	25.0
				(23)	9.5	(29)	5.8
				(24)	34.5	(30)	13.5
				(25)	11.9	(33)	17.3
						(37)	7.7
203 Policy writer	0	0	3(3)	*	--	*	--
Teletype operator	2	0	4(0)	NS	--	(30)	25.0
						(36)	25.0
						(37)	25.0
						(38)	25.0
205 Industrial relations clerk	1	0	0(0)				
208 Office machine operator	263	73	242 (148)	(5)	23.9	(20)	31.7
				(6)	6.5	(21)	26.8
				(7)	6.5	(29)	9.8
				(22)	15.2	(31)	8.6
				(23)	15.2	(33)	11.4
				(24)	15.2	(36)	5.8
				(25)	17.4	(39)	5.8
209 Proofreaders	15	12	32(0)	(25)	100.0	(34)	100.0
General clerical	144	26	68(68)	(5)	3.5	(8)	19.7
				(21)	12.2	(20)	1.7
				(22)	12.2	(21)	19.7
				(23)	12.2	(31)	19.7
				(24)	12.2	(32)	19.7
				(25)	47.8	(33)	19.7
Advertising clerks	13	5	27(0)	(25)	100.0	(20)	25.0
						(21)	25.0
						(29)	25.0
						(30)	25.0
203 Typist	43	9	29(0)	(5)	24.2	(12)	4.0
				(7)	3.0	(20)	32.0
				(13)	3.0	(21)	4.0
				(22)	3.0	(29)	4.0
				(23)	3.0	(37)	56.0
				(24)	24.2		
				(25)	19.7		
Total DOT 20	1140	261	839(547)				
21 Computing & Accounts Receivable							
210 Cost & accounting clerk	258	62	138(109)	(5)	39.6	(20)	64.7
				(6)	27.1/6.3c	(37)	35.3
				(24)	4.2		
				(25)	16.7		
				(27)	12.5		
Bookkeepers	260	53	98(97)	(5)	33.3	(20)	100.0
				(6)	33.3		
				(7)	33.3		
212 Bank tellers	115	27	59(59)		--		--
213 Tab. machine operator	19	8	24(24)	(5)	50.0	(20)	35.7
				(25)	50.0	(33)	14.3
						(36)	14.3
						(37)	35.7
Key punch operator	54	24	86(75)	(5)	63.6	(20)	30.8
				(25)	36.4	(33)	7.7
						(36)	7.7
						(37)	53.8

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
200 Clerical Occupations (cont'd)							
Computer operator	26	4	24(16)	(25)	100.0	(4)	16.7
						(5)	16.7
						(6)	16.7
						(8)	16.7
						(9)	16.7
						(20)	16.7
215 Bookkeeping machine operator	114	45	60(60)	*	--	*	--
219 Payroll clerk	3	0	1(1)	(5)	33.3	(20)	100.0
				(6)	33.3		
				(7)	33.3		
Rate clerk	40	3	2(2)	(5)	100.0		
Billing clerk	8	12	12(12)	(5)	100.0	(20)	40.0
						(36)	20.0
						(37)	40.0
Medical voucher clerk	4	2	3(3)	*	--	*	--
Insurance clerk & checker	3	0	2(2)	*	--	*	--
Mortgage clerk	3	0	2(2)	*	--	*	--
Total DOT 21	907	240	511(462)				
22 Material & production recording							
221 Production analysis & exp.	58	0	27(0)	(25)	100.0	(8)	25.0
						(14)	25.0
						(21)	25.0
						(32)	25.0
Control clerk	1	0	3(0)	(5)	100.0	NS	--
Eng. release-change analysis	27	0	10(0)	(25)	100.0	(8)	25.0
						(9)	25.0
						(21)	25.0
						(31)	25.0
Production scheduler control	10	1	7(0)	(11)	16.7	(11)	16.7
				(25)	83.3	(14)	83.3
222 Bottling stamp room clerk	7	0	0(0)	NN	--	NN	--
						NS	--
Shipping and receiving clerk	34	3	9(0)	NS	--	(20)	33.3
						(29)	33.3
						(37)	33.3
223 Storekeepers	5	0	0(0)	NN	--	NN	--
Supplies inspector	1	1	2(0)	NS	--	NS	--
Warehouse inspector & reducer	6	0	1(0)	(25)	100.0	(8)	100.0
224 Weighmen	5	5	0(0)	NN	--	NN	--
Total DOT 22	154	10	59(0)				
23 Information & Message Dist.							
235 Switchboard operator	224	222	810(804)	(25)	100.0	(6)	20.0
						(21)	20.0
						(30)	20.0
						(33)	40.0
236 TTS operator	8	8	22(0)	(24)	100.0	(20)	100.0
239 Dispatch clerk	103	6	66(15)	(25)	100.0	(4)	15.4
						(8)	15.4
						(14)	15.4
						(20)	5.8
						(21)	5.8
						(32)	15.3
						(33)	21.1
						(34)	5.8

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
200 Clerical Occupations (cont'd)							
Drawing service clerk	1	1	5(0)	(25)	100.0	(20)	100.0
Elec. sorter-reader operator	4	2	3(3)	*	--	*	--
Total DOT 23	340	239	906(822)				
24 Miscellaneous clerical							
240 Collection clerk	12	4	19(19)	*	--	*	--
249 Order service coordinator	2	0	2(0)	(20)	90.9	(20)	25.0
				(25)	9.1	(21)	25.0
						(30)	25.0
						(33)	25.0
Clerk	147	29	71(27)	(25)	100.0	(6)	33.3
						(20)	33.3
						(21)	33.3
Total DOT 24	161	33	92(46)				
Grand Total- Clerical Occupations	2702	783	2407(1877)				

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
300 Service Occupations							
31 Food and Beverage Preparations							
312 Bartender	15	4	10(10)	*	--	*	--
314 Cook/Chef	120	64	165(161)	(25)	100.0	(35)	100.0
316 Meat cutter	210	25	112(112)	*	--	*	--
Total DOT 31	345	93	287(283)				
500 Processing Occupations							
50 Metal Processing							
505 Metal finishing	49	0	23(0)	(25)	100.0	(6)	50.0
						(11)	50.0
52 Food, tobacco, etc. Processing							
520 Blender assistant	3	1	1(0)	(25)	100.0	(6)	100.0
Sausage maker	1	0	0(0)	NN	--	NN	--
Poultry feed mixer	2	1	0(0)	NN	--	NN	--
Feed mill operator	2	1	0(0)	NN	--	NN	--
522 Dry House operator	12	0	1(0)	(25)	100.0	(6)	100.0
Distilling operator	50	16	7(5)	(25)	100.0	(6)	100.0
New production operator	62	0	10(0)	(25)	100.0	(8)	50.0
						(11)	50.0
Filler operator	4	0	0(0)	NN	--	NN	--
Pasteurizer	3	0	1(0)	NS	--	NS	--
525 Slaughter butcher	11	0	1(1)	*	--		--
526 Baker	23	12	14(0)	(25)	100.0	(6)	100.0
529 Livestock grader	8	18	3(3)	*	--	*	--
Total DOT 52	181	49	38(9)				
57 Processing Nonmetallic minerals, related							
570 Optical glass batch mix	4	0	2(0)	NS	--	NS	--
572 Melting operator	8	0	4(0)	NS	--	NS	--
Tank main. man and asst.	4	0	4(0)	NS	--	NS	--
Skilled tank man	1	0	0(0)	NN	--	NN	--
573 Lehr operator	4	0	0(0)	NN	--	NN	--
Heat treater	1	0	0(0)		--	NN	--
574 Meter window plater	1	0	0(0)	NN	--	NN	--
575 Set-up man--finishing	14	0	3(0)	NS	--	NS	--
Total DOT 57	37	0	13(0)				
59 Processing, NEC							
599 Process control inspector	34	12	30(0)	(25)	100.0	NS	--
Total DOT 500	301	61	104(9)				
600 Machine Trades Occupations							
60 Metal Machining							
600 Machinists*	210	45	172(120)	(1)	11.5	(1)	13.3
				(2)	14.2	(2)	13.7
				(3)	6.6	(3)	8.2
				(5)	2.7	(4)	11.6
				(8)	11.5	(5)	6.9
				(9)	8.7	(6)	12.4
				(10)	12.0	(8)	1.7
				(11)	15.3	(9)	3.4
				(15)	1.6	(10)	3.4
				(16)	5.5	(12)	1.3
				(18)	5.5	(13)	1.3
				(25)	4.9	(14)	11.6
						(15)	3.4
						(16)	2.6
						(31)	1.3
						(33)	3.9

SPINDLETOP RESEARCH

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
600 Machine Trades Occupations (Cont'd)							
Machinist apprentice	21	13	18(0)	(2)	16.7	(1)	7.8
				(5)	16.7	(2)	7.8
				(8)	16.7	(3)	7.8
				(9)	16.7	(4)	7.8
				(10)	16.7	(5)	7.8
				(11)	16.7	(6)	7.8
						(9)	7.8
						(10)	17.2
						(14)	7.8
						(15)	7.8
						(24)	4.7
						(33)	7.8
601 Tool & die maker*	116	15	5(13)	(1)	12.2	(1)	13.7
				(2)	12.2	(2)	13.7
				(3)	14.7	(3)	10.0
				(4)	2.7	(4)	11.9
				(8)	2.5	(5)	12.4
				(9)	1.0	(6)	12.4
				(10)	2.7	(8)	0.5
				(11)	8.2	(12)	3.3
				(15)	6.0	(13)	1.2
				(16)	7.7	(14)	12.3
				(18)	8.5	(15)	3.6
				(19)	1.7	(17)	0.4
				(25)	2.5	(29)	0.4
				(27)	17.4	(30)	0.4
						(31)	2.1
						(33)	1.5
Tool & mold maker*	115	2	71(0)	(3)	33.3	(1)	20.0
				(25)	66.7	(2)	20.0
						(4)	20.0
						(6)	20.0
						(33)	20.0
603 Prod. grinder operator, hone & centerless grinder operator	3	1	6(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Buffing machine operator	8	4	3(3)	*	--	*	--
604 Lathe operator*	22	5	42(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Auto. chucker operator*	3	1	6(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Auto. screw machine operator	2	0	4(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
605 Milling machine operator	3	1	6(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Jig mill operator*	2	1	4(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Cushion bench drill	2	0	4(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
600 Machine Trades Occupations (Cont'd)							
606 Tape drill operator	2	0	4(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Boremetic operator	1	1	2(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Multi-spindle drill operator	1	1	2(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Radial drill operator	5	0	10(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Drill press operator	174	41	156(34)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
607 Power saw operator	1	1	1(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
609 Head forming operator	8	0	2(0)	NS	--	NS	--
Panel block maker	3	2	6(0)	(25)	100.0	(1)	20.0
						(2)	20.0
						(4)	20.0
						(6)	20.0
						(14)	20.0
Machine operator*	2106	388	1134(85)	(25)	99.7	(1)	21.3
				(26)	0.3	(2)	3.3
						(3)	0.1
						(4)	10.7
						(5)	0.1
						(6)	36.5
						(7)	3.2
						(8)	16.7
						(9)	0.1
						(10)	0.1
						(14)	9.2
						(16)	0.1
						(21)	0.1
						(29)	0.1
						(30)	0.2
						(33)	0.3
Total 60	2808	522	1728(255)				
61 Metalworking Occupations							
610 Blacksmith	1	0	0(0)	NN	--	NN	--
612 Diesetter	1	0	0(0)	NN	--	NN	--
614 Chanel machine operator	4	0	4(4)	*	--	*	--
615 Brake & shear operator	2	0	0(0)	NN	--	NN	--
Punch press operator	54	19	42(42)	*	--	*	--
Iron shear operator	1	0	0(0)	NN	--	NN	--
619 Set up & open multi-slide	4	0	1(0)	(25)	100.0	(1)	16.7
						(2)	16.7
						(4)	16.7
						(6)	16.7
						(14)	16.7
						(33)	16.7
Total 61	67	19	47(46)				
62 & 63 Mechanics & Machinery Repair							
620 Auto/truck mechanics	117	31	86(84)	(25)	100.0	(1)	50.0
						(2)	50.0

SPINDLETOP RESEARCH

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
600 Machine Trades Occupations (Cont'd)							
630 Master mechanic	4	0	1(1)	*	--	*	--
				*		*	
637 Servicemen	36	2	10(10)	*	--	*	--
Refrigeration	1	0	2(2)		--		--
638 Millwrights*	22	2	19(10)	(1)	12.5	(1)	14.3
				(2)	12.5	(2)	14.3
				(3)	12.5	(3)	7.1
				(8)	12.5	(4)	14.3
				(9)	12.5	(5)	7.1
				(11)	12.5	(6)	14.3
				(18)	12.5	(14)	14.3
				(25)	12.5	(16)	7.1
						(33)	7.1
639 Mechanics & machine repair*	300	25	106(22)	(1)	11.9	(1)	17.9
				(2)	11.9	(2)	15.4
				(3)	12.6	(3)	17.9
				(8)	11.9	(4)	9.0
				(9)	12.9	(5)	5.1
				(10)	11.9	(6)	15.4
				(11)	12.9	(14)	10.3
				(25)	1.9	(30)	5.1
				(27)	11.9	(33)	3.8
Special machine repair*	13	2	5(3)	(26)	100.0	(3)	16.7
						(4)	16.7
						(21)	16.7
						(29)	16.7
						(30)	16.7
						(33)	16.7
Total 62 & 63	493	62	229(132)				
64 Paperworking Occupations							
643 Bindery operator	28	0	10(0)	(1)	50.0	(1)	11.1
				(11)	50.0	(2)	11.1
						(3)	11.1
						(4)	11.1
						(6)	11.1
						(10)	11.1
						(29)	11.1
						(30)	11.1
						(33)	11.1
Total 64	28	0	10(0)				
65 Printing Occupations							
650 Printer--Compositor	12	9	26(26)	*	--	*	--
651 Printer--Pressman	31	11	20(15)	(8)	33.3	(1)	16.7
				(10)	33.3	(2)	16.7
				(11)	33.3	(3)	16.7
						(4)	16.7
						(5)	16.7
						(6)	16.7
Offset press operator*	199	41	205(12)	(1)	18.8	(1)	11.1
				(8)	18.8	(3)	11.1
				(9)	18.8	(4)	11.1
				(11)	18.8	(6)	11.1
				(12)	18.8	(9)	11.1
				(25)	6.3	(10)	11.1
						(29)	11.1
						(30)	11.1
						(33)	11.1
Assistant press operator*	15	0	5(0)	(1)	20.0	(1)	11.1
				(8)	20.0	(3)	11.1
				(9)	20.0	(4)	11.1
				(11)	20.0	(6)	11.1
				(12)	20.0	(9)	11.1
						(10)	11.1
						(29)	11.1
						(30)	11.1
						(33)	11.1
Flexigraphic conv. operator	4	0	0(0)	NN	--	NN	--

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
600 Machine Trades Occupations (Cont'd)							
Proof machine operators	30	14	37(37)	*	--	*	--
654 Linotype operator*	13	5	9(8)	(25)	100.0	*	--
Total 65	304	80	302(98)				
66 Wood Machining Occupations							
667 Sawyer	2	1	2(2)	*	--	*	--
669 Lumber grader	1	1	0(0)	NN	--	NN	--
Total 66	3	2	2(2)				
67 Machining, Nonmetallic minerals							
670 Wire saw operator	3	1	2(0)	NS	--	NS	--
673 Glass mfg. & finishing machine	82	10	70(0)	(25)	100.0	(6) (8)	50.0 50.0
Total 67	85	11	72(0)				
68 Textile Occupations							
683 Weaver	13	1	3(3)	*	--	*	--
689 Textile machinery operator	6	0	0(0)	NN	--	NN	--
Total 68	19	1	3(3)				
69 Machine Work (NEC)							
690 Heat sealing operator	14	6	16(16)	*	--	*	--
Total 69	14	6	16(16)				
Total DOT 600	3821	703	2409(552)				
700 Bench Work Occupations							
70 Fabrication Assembly and Repair of Metal Products							
701 Tool and cutter grinder	7	0	8(0)	(25)	100.0	(1) (2) (4) (6) (14)	14.3 28.6 28.6 14.3 14.3
706 Assembly adjuster*	169	0	81(0)	(25)	100.0	(1) (4) (6) (8) (14)	20.0 20.0 20.0 20.0 20.0
Assembler*	142	5	29(29)	*	--	*	--
709 Layout inspectors	2	0	2(0)	NS	--	NS	--
Inspector*	231	29	82(0)	(1) (2) (3) (11) (25)	6.0 6.0 6.0 6.0 76.0	(1) (2) (8) (14) (19) (32)	18.8 18.8 18.8 21.9 3.1 18.8
Total 70	551	34	202(29)				
71 Fabrication and repair of Scientific, Medical, Optical and Measuring Equipment							
710 Instrument servicemen	144	7	29(28)	NS	--	NS	--
713 Opticians	10	2	4(4)	*	--	*	--
Total 71	154	9	33(32)				
72 Assembly and Repair of Electrical equipment							
720 Radio and TV service	26	7	13(13)	*	--	*	--
723 Appliance service	20	2	3(3)	*	--	*	--
Total 72	46	9	16(16)				

SPINDLETOP RESEARCH

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
700 Bench Work Occupations (Cont'd)							
74 Painting and Decorating							
740 Painter (brush)	16	1	5(0)	(8)	44.4	(1)	18.2
				(25)	55.6	(2)	3.0
						(4)	3.0
						(5)	18.2
						(8)	15.2
						(9)	15.2
						(14)	15.2
741 Painter (spray)	7	4	3(3)	*	--	*	--
Total 74	23	5	8(3)				
76 Fabrication and Repair of Wood Products							
764 Cooper	3	0	0(0)	NN	--	NN	--
Total 76	3	0	0(0)	NN		NN	
77 Fabrication and Repair of Sand, Stone and Clay Products							
772 Automatic press operation	34	8	34(0)	NS	--	NS	--
775 Radiation window finisher	2	0	1(0)	NS	--	NS	--
777 Head mold repairmen	5	0	2(0)	NS	--	NS	--
Mold measurer	1	0	0(0)	NN	--	NN	--
779 Radiation shield assembler	2	1	0(0)	NN	--	NN	--
Total 77	44	9	37(0)				
78 Fabrication and Repair of Textile, Leather							
781 Carpet installer	3	1	2(2)	*	--	*	--
Pattern maker	1	0	0(0)	NN	--	NN	--
Pattern cutter	2	0	1(1)	*	--	*	--
Shoe cutter	13	0	0(0)	NN	--	NN	--
Wool cutter*	10	2	6(0)	(25)	100.0	(6)	100.0
785 Tailors*	6	1	2(1)	(25)	100.0	(29)	100.0
Seamstresses	61	14	18(18)	*	--	*	--
786 Sewing machine operator*	365	40	60(0)	(26)	100.0	(6)	33.3
						(29)	33.3
						(33)	33.3
787 Drapery & slip cover makers	5	1	7(7)	*	--	*	--
Total 78	466	59	96(29)				
Total DOT 700	1287	125	392(109)				
800 Structural Work							
80 Metal Fabricating, NEC							
801 Structural iron work	7	0	6(6)	*	--	*	--
804 Tinsmith	1	0	0(0)	NN	--	NN	--
Sheetmetal worker*	84	16	44(44)	*	--	*	--
807 Auto/truck body man	28	7	21(21)	*	--	*	--
Total 80	120	23	71(71)				
81 Welding, Flame Cutting, related							
813 Spot welder operator	10	2	3(3)	*	--	*	--
816 Cutting torch operator	4	0	0(0)	NN	--	NN	--
819 Maintenance welder	1	1	0(0)	NN	--	NN	--
Welder*	75	21	60(44)	(1)	33.3	(1)	10.9
				(2)	33.3	(2)	2.2
				(3)	33.3	(3)	8.7
						(4)	15.2
						(5)	6.5
						(6)	10.9
						(7)	4.3
						(8)	19.6
						(14)	10.9
						(16)	6.5
						(33)	4.3

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
800 Structural Work (Cont'd)							
Total 81	90	24	63(47)				
82 Electrical Assembling, Installing, Repairing							
822 Lineman	244	80	451(451)	*	--	*	--
Installer, repairman	112	4	0(0)	NN	--	NN	--
Communication & sound spec.	3	0	3(3)	*	--	*	--
829 Electrician*	98	10	48(24)	(1)	15.1	(1)	18.2
				(2)	4.1	(2)	4.6
				(3)	4.1	(3)	13.6
				(8)	12.3	(4)	3.4
				(9)	23.3	(5)	11.4
				(10)	5.5	(6)	9.2
				(11)	11.0	(8)	2.3
				(15)	4.1	(10)	1.1
				(19)	8.2	(12)	1.1
				(25)	8.2	(14)	14.8
				(27)	4.1	(15)	1.1
						(16)	5.7
						(18)	1.1
						(23)	1.1
						(24)	1.1
						(30)	1.1
						(31)	3.4
						(33)	5.7
Cable splicer	34	0	0(0)	NN	--	NN	--
Total 82	491	94	502(478)				
84 Painting, Plastering, Waterproofing, Cementing, related							
840 Painters	21	41	19(19)	See DOT 740			
844 Cement masons	7	2	2(2)	*	--	*	--
Total 84	28	43	21(21)				
85 Excavating, Grading, Paving, related							
850 Grader operator	1	0	0(0)	NN	--	NN	--
Heavy equipment operator	9	0	6(6)	*	--	*	--
Total 85	10	0	6(6)				
86 Construction Work, NEC							
860 Carpenter*	160	36	183(180)	(1)	16.7	(1)	12.5
				(2)	16.7	(2)	12.5
				(3)	16.7	(5)	12.5
				(8)	16.7	(8)	12.5
				(18)	16.6	(9)	12.5
				(25)	16.6	(12)	12.5
						(14)	12.5
						(16)	12.5
861 Tile setter	0	1	0(0)	NN	--	NN	--
862 Pipe fitter and plumber	108	6	6(3)	(25)	16.6	(1)	25.0
						(2)	25.0
						(8)	25.0
						(14)	25.0
863 Asbestos worker	3	2	6(6)	*	--	*	--
866 Roofer	3	1	2(2)	*	--	*	--
869 Fence erector	8	2	7(7)	*	--	*	--
Furnace repairman	4	0	0(0)	NN	--	NN	--
Total 86	286	48	204(198)				
89 Structural work, NEC							
892 Crane & locomotive	8	0	0(0)	NN	--	NN	--
899 Maintenance tradesman*	28	0	13(0)	(25)	100.0	(1)	22.6
						(2)	22.6
						(3)	19.5
						(7)	15.8
						(8)	3.2
						(14)	16.3

SPINDLETOP RESEARCH

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
800 Structural Workers (Cont'd)							
Maintenance man*	327	55	289(239)	(1)	12.4	(1)	14.8
				(2)	5.6	(2)	12.9
				(6)	3.1	(3)	14.2
				(8)	6.7	(4)	11.1
				(9)	14.4	(5)	2.8
				(10)	11.9	(6)	11.4
				(11)	19.6	(8)	6.0
				(13)	3.1	(9)	3.2
				(15)	10.8	(10)	5.4
				(18)	6.7	(14)	10.7
				(19)	2.1	(24)	0.6
				(25)	3.6	(30)	4.1
						(31)	2.5
						(33)	0.3
Trouble man	14	0	0(0)	NN	--	NN	--
Multiple skilled pers.	1	0	0(0)	NN	--	NN	--
Total 89	378	55	302(239)				
Total DOT 800	1403	287	1169(1060)				
900 Miscellaneous Occupations							
91 Transportation, NEC							
910 Switchman	29	1	0(0)	NN	--	NN	--
				*		*	
919 Ticket agent	13	2	10(10)		--		--
Total 91	42	3	10(10)				
93 Extraction of Minerals							
930 Plug & feather driller	5	3	3(3)	*	--	*	--
931 Blaster	3	1	1(1)	*	--	*	--
933 Crusher control operator	1	0	0(0)	NN	--	NN	--
Total 93	9	4	4(4)				
95 Production & Distribution of Utilities							
950 Power & heating engineer	10	0	3(0)	(11)	33.3	(2)	16.7
				(23)	33.3	(3)	16.7
				(25)	33.3	(4)	16.7
						(7)	16.6
						(9)	16.6
						(15)	16.7
Compressor room attendant	1	0	0(0)	NN	--	NN	--
Operating engineer	165	19	95(95)	*	--	*	--
951 Water tender	5	0	0(0)	NN	--	NN	--
Power & heat fireman	7	0	2(0)	(11)	33.3	(2)	16.7
				(23)	33.3	(3)	16.7
				(25)	33.3	(4)	16.7
						(7)	16.7
						(9)	16.6
						(15)	16.6
Boiler operator	40	7	5(4)	(8)	33.3	(2)	20.0
				(19)	33.3	(7)	20.0
				(25)	33.3	(24)	20.0
						(25)	20.0
						(34)	20.0
Boiler fireman	4	1	0(0)	NN	--	NN	--
952 Substation operator	20	8	8(8)	*	--	*	--
Turbine operator	35	4	4(4)	*	--	*	--
953 Propane plant operator	1	0	0(0)	NN	--	NN	--
954 Pumper	8	0	0(0)	NN	--	NN	--
Total 95	296	39	117(111)				

Occupation	CE	HLY	TN	Requirements: Knowledge Code	Knowledge Percentage	Skill Code	Skill Percentage
900 Miscellaneous Occupations (Cont'd)							
96 Amusement, Recreation & Motion Picture							
960 Motion picture projectionists	2	1	0(0)	NN	--	NN	--
Total 96	2	1	0(0)	NN	--	NN	--
97 Graphic art work							
970 Sign painter	2	1	0(0)	NN	--	NN	--
971 Engraving	11	0	5(0)	(25)	100.0	(2)	33.3
						(4)	33.3
						(6)	33.3
972 Photo lithographer	2	0	1(0)	(1)	33.3	(1)	11.1
				(8)	33.3	(4)	11.2
				(12)	33.3	(5)	11.1
						(6)	11.1
						(8)	11.1
						(9)	11.1
						(10)	11.1
						(13)	11.1
						(33)	11.1
975 Stereotyper	11	2	4(0)	(8)	33.3	(1)	16.7
				(10)	33.3	(2)	16.7
				(11)	33.3	(3)	16.7
						(4)	16.7
						(5)	16.6
						(6)	16.6
Total 97	26	3	10(0)				
Total Miscellaneous Occup.	375	50	141(125)				
Grand Total- Skilled Occupations	7532	1319	4502(2138)				

SPINDLETOP RESEARCH

Appendix D

Existing Formal Training Programs for Skilled and Semiprofessional Occupations

Course name	Conducted by	Completed by (number of students)	Hours to complete
Machinists	Company	3	120
Office Machine Operators	Contractor	1	30
TTS Operators	Contractor	3	40
Dupont Industrial Library	Contractor	4	2 yrs
Basic Systems (N.Y.)	Contractor	4	2 yrs
International Correspondence Schools	Contractor	4	2 yrs
Computer Programming	Contractor	2	80
Business Management	Contractor	1	120
Power Machine Operators	Company	--	--
Maintenance Tradesman	Company		varies
Human Relations	Company	25	12
Effective Supervision	University of Kentucky	15	32
Basic Mathematics	High School	16	20
Chemistry of Lithography	High School	24	24
Physics of Lithography	High School	12	24
General Lithography	Company	50	16
Cartography I	Company	26	120
Cartography II	Company	20	24
General Bindery	Company	12	32
Miehle Offset Press	Company	36	20
Supervision	Company	15	20
LFT Offset Press I	Company	15	20
Electricity	Company	5	20
Basic Electricity	Lafayette Vocational	28	30
Blueprint Reading	Lafayette Vocational	15	42
Master Standard Data	Company	17	40
Foremanship	Company	27	2
Job Instructions--Methods	Company	27	2
Electroplating	Company	29	24
Supervisor Policy Review	Company	51	4
Inventory Control	Company	18	2
Waste Control	Company	27	1
Job Organization	Company	27	3
Budget Control	Company	19	1
Operational Variance	Company	27	2
Quality Control	Company	27	1
Improve Tool Rm. Eff.	Company	42	3
Rigging & Moving Equipment	Company	15	1
Hydro-Welders	Company	12	1
Tool & Die Apprenticeship	Lafayette Vocational	3	576
Supervisory	Contractor	5	80
Foreman Training	Company	10	20
Tool & Die Making	Company	6	6400
Apprentice Programs	Company	--	--
Work Simplification	Company	634	15
Theory & Adjustment	Company	148	14
Systems Programming	Company	67	6
Purchasing	Company	50	32
Accounting	Company	39	18

Source: Data obtained from answers to Question 9 of Spindletop Questionnaire.

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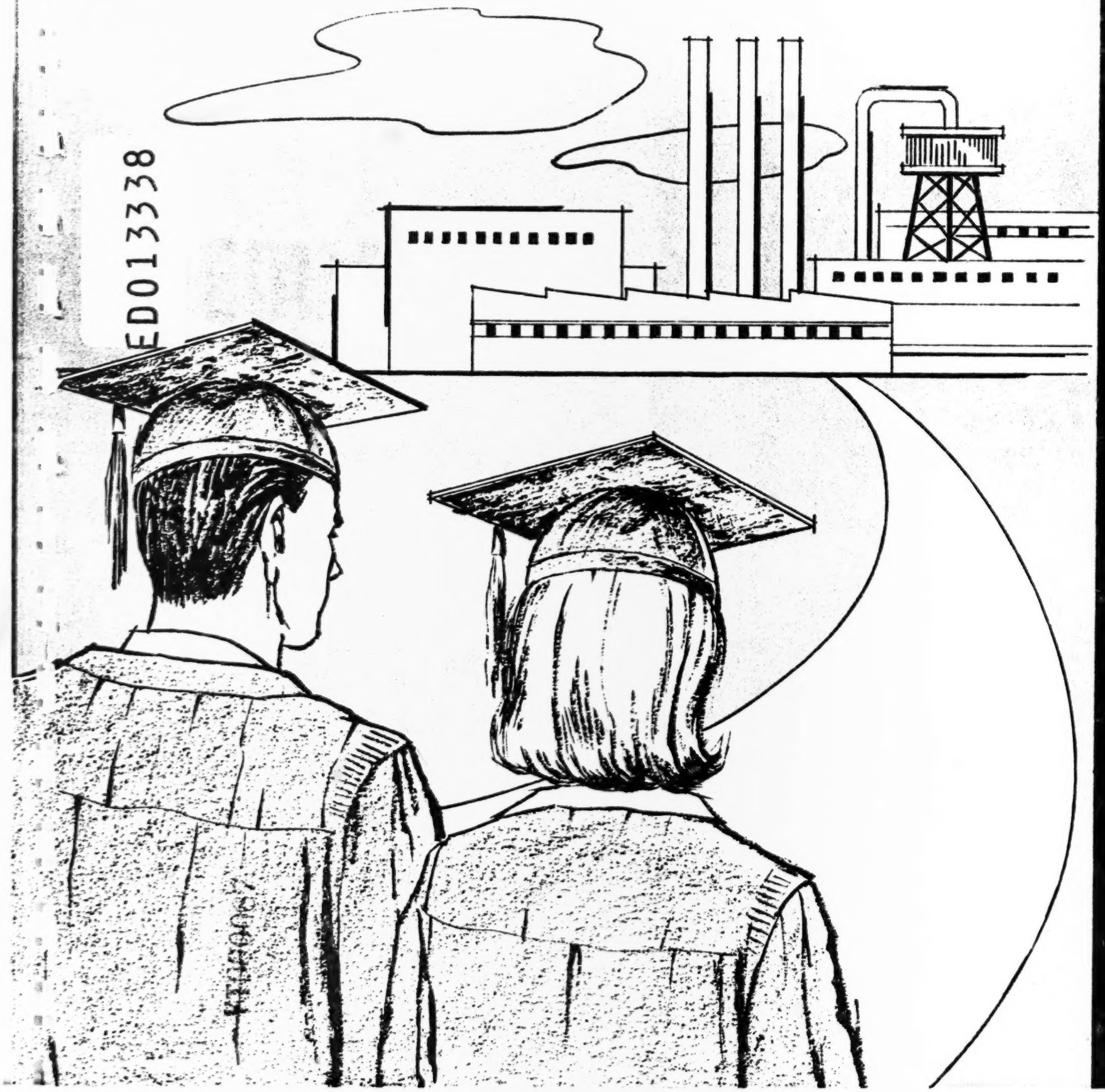

EDUCATION AND INDUSTRY IN KENTUCKY

EMPLOYMENT NEEDS AND OPPORTUNITIES
AND
GENERAL APPRAISAL OF PRESENT EDUCATION AND TRAINING PROGRAMS
AS OBTAINED FROM A
SURVEY OF
OPINIONS OF PERSONNEL IN INDUSTRY
IN A
TWELVE-COUNTY AREA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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AND
DEPARTMENT OF COMMERCE
FRANKFORT, KENTUCKY
OCTOBER, 1965

EDUCATION .....

The purpose of Education in a democratic society - the kind of society in which we live, both in and out of school - is to develop in each individual the knowledge, interests, ideals, habits, and powers so that he may find his place in society and use that place to benefit both himself and society.

Revolutionary changes are occurring in American education. We are facing a challenging new era brought on by an explosion of knowledge, a burst of technological and economic advancement, and an unparalleled demand for more and better education.

Planning educational programs to meet the needs of the present era must be a cooperative effort of school leaders and the public. General education and vocational and technical education are necessary in preparing an individual for a happy life and for earning a living. Close ties of communication between education and business and industry are essential.

I am sure that, with the cooperation of all, Kentucky will move forward with its educational program in the preparation of all students for useful careers. Kentucky's future economic course depends upon the manner in which education is adjusted to the needs of the individual and to the society in which he lives. With new approaches to its educational problems and with joint planning on the part of school people and the public, Kentucky will progress in the education of its youth and adults.

HARRY M. SPARKS,
Superintendent of Public Instruction

..... AND INDUSTRY

The Key to Kentucky's economic growth is the quality of work force. Educated, skilled, and intelligent labor is a major factor in the decision of industry to locate or expand. This is increasingly true as industrial processes become more complex and sophisticated.

Education and economic growth are completely interwoven. We must be sure that our educational programs at all levels are attuned to the needs of business and industry. It is essential that our schools train for the occupations of today as well as to plan soundly for the occupations of tomorrow. This makes it imperative that there be effective channels of communication between the schools and the business world at all times. Progress is definitely being made in this direction, but our educational system - particularly vocational and technical - needs additional study to structure its program. Invaluable assistance along these lines can be provided by business leaders.

I am sure that members of the business community will cooperate in informing the educational system as to their needs - both present and future. They can foresee more clearly than any other group the occupational demands that are being generated by the rapidly changing technology of industry. They can assist our schools to respond to these needs by advice and leadership in educational improvement. I am equally sure that the schools will respond in full measure.

We in the Department of Commerce work daily with many industrial firms. Their need for properly trained workers is apparent. The necessity to meet this need is clear. Studies such as this will be guide posts in guiding our educational programs to serve the society of tomorrow.

The industrialists who furnished information for this study are to be complimented for their interest in Kentucky's educational programs. All persons working in development and education extend their deepest appreciation for this cooperation.

KATHERINE PEDEN, Commissioner
Department of Commerce

FOREWORD

The Department of Commerce and the Bureau of Vocational Education in the State Department of Education have jointly sponsored the survey conducted by Mrs. Mary Alta Hood to determine what education and training industry would like to have of the persons being employed directly from our schools. Through this survey, it is hoped that the schools, business, and industry can be brought closer together. The schools can adjust their educational program to meet the needs of industry, and industry can make known to the schools what these needs are. The information obtained through this study should be helpful to both industry and the schools.

E. P. HILTON, Assistant Superintendent
Bureau of Vocational Education
Department of Education

ACKNOWLEDGEMENTS

Appreciation is expressed to all those who assisted in making possible the survey and report of this pilot project.

To Dr. Kearney Campbell, Director of the Division of Guidance Services, who guided the planning and conduct of the survey and the drafting of the report, the writer is deeply grateful. Thanks are extended to the Staff of the Division of Guidance Services for their assistance and encouragement.

The writer is indebted to Mr. E. P. Hilton, Assistant Superintendent, Bureau of Vocational Education, and his fine Staff who cooperated with suggestions and information.

Miss Katherine Peden, Commissioner, Department of Commerce, and the members of her Staff, deserve special recognition and gratitude for their contribution of materials and information.

Sincere appreciation is expressed to the personnel of industries visited for their gracious hospitality and cooperation in the survey.

To the Administrators, Vocational School Officials, College Officials, and Guidance Personnel the writer is indebted.

Special thanks are extended to Miss Sue Martin for her efficient clerical work in the compilation of the materials.

To all who assisted in any way in the survey and the report, the writer wishes to acknowledge a deep gratitude.

MARY ALTA HOOD, Consultant
Vocational Guidance
Division of Guidance Services

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INTRODUCTION

Kentucky, in its bid for an industrial economy, is faced with many problems in the changing patterns of educational needs. The influx of industry into the state presents new problems, new needs, and new responsibilities.

The lack of adequate rapport between industry and education suggests that better cooperation and understanding between industrial leaders and leaders in education, as well as with State government officials, will, in a measure, determine the trend of Kentucky's future. A joint understanding of the value of human resources is considered a necessity for updating and extending vocational and technical training.

Since only two out of every ten of the nation's high school graduates are completing college degrees, it may be concluded that there is a need for concern about the kinds of experiences presently afforded the youth by existing educational programs. Are these programs enabling the young people to make informed choices concerning a career?

The educational and training programs need provisions for frequent review, evaluation, upgrading, and redirection, never becoming static and routine, but developing and implementing new ideas. The progress of vocational education and guidance is handicapped by a lack of knowledge of the existing resources and needs of industry within the state. Curriculum areas should be under continuous study, evaluation, and periodic review.

Kentucky State officials are aware of the value of a close relationship between the industrialists who employ and the educators who train. Governor Breathitt emphasized this point in addressing more than 1600 students of the Trigg County High School at Cadiz, Kentucky, in October, 1964. His third point in a four-point program to combat school dropouts was: "School and community organizations should develop programs which associate school instruction with the job world and its requirements."

PURPOSE OF REPORT

The Bureau of Vocational Education and the Division of Guidance Services of the Kentucky Department of Education have expressed the need for a survey of opinions from industrialists and businessmen relative to the education and training programs of the public schools, colleges, and vocational schools. This report is for use by administrators, vocational teachers, and counselors. The purpose of the survey is to obtain such data as may be beneficial to finding ways for improving and maintaining an adequate labor market and for upgrading educational and training programs.

Four objectives were set up:

1. To promote cooperative efforts among school and and industrial leaders in the areas of communication, training, employment, follow-up, and evaluation of education.

2. To determine opinions of industrialists as to the types of education, preparation, and training which new employees should possess in order to meet the current and future needs of industry.

3. To determine the opportunities available in industry.

4. To interpret to school administrators, counselors, and vocational teachers the current needs of industry in terms of kinds of people to be employed, types of training required, and probable number needed.

The writer has completed a survey of opinions of industrialists in a 12-county area of the state. The findings are contained in the report that follows.

SCOPE OF SURVEY AND PROCEDURES

To help determine the types of training needed to meet the current and future needs of certain industries, it was necessary to consult with representatives in those industries. Interviews were arranged with 69 industries in the twelve counties served by the Western Area Vocational-Technical School at Bowling Green. These counties were Allen, Barren, Butler, Edmonson, Grayson, Green, Hart, Logan, Metcalfe, Monroe, Simpson, and Warren. The locations of the classified industries of this area are shown on the map on the following page.

Table I (Appendix A) shows the number and percent of classified industries and the number and percent of employees in the 12-county area.

Using the U. S. Standard Industrial Classification (1957), a cross-section of the industries within this area was chosen. The industries selected for the gathering of information represented 34% of the 204 industries and 80% of the 14, 213 employees of the area. Table II (Appendix A) gives the number and percent of classified industries interviewed and the number and percent of employees in the industries interviewed in this area. Table III (Appendix A) shows the number and percent of classified industries interviewed and the number and percent of employees in the industries interviewed in each of the 12 counties.

The information was obtained from personnel managers, company presidents, plant managers, and others in the industries who handle employment problems.

At the end of the first interview, Form A (Appendix B), a check-list for industries relating to employment, training needs, and evaluation of schools, was left with the industry, to be filled out and returned to the Division of Guidance Services of the Kentucky Department of Education.

INDUSTRIES IN SURVEY

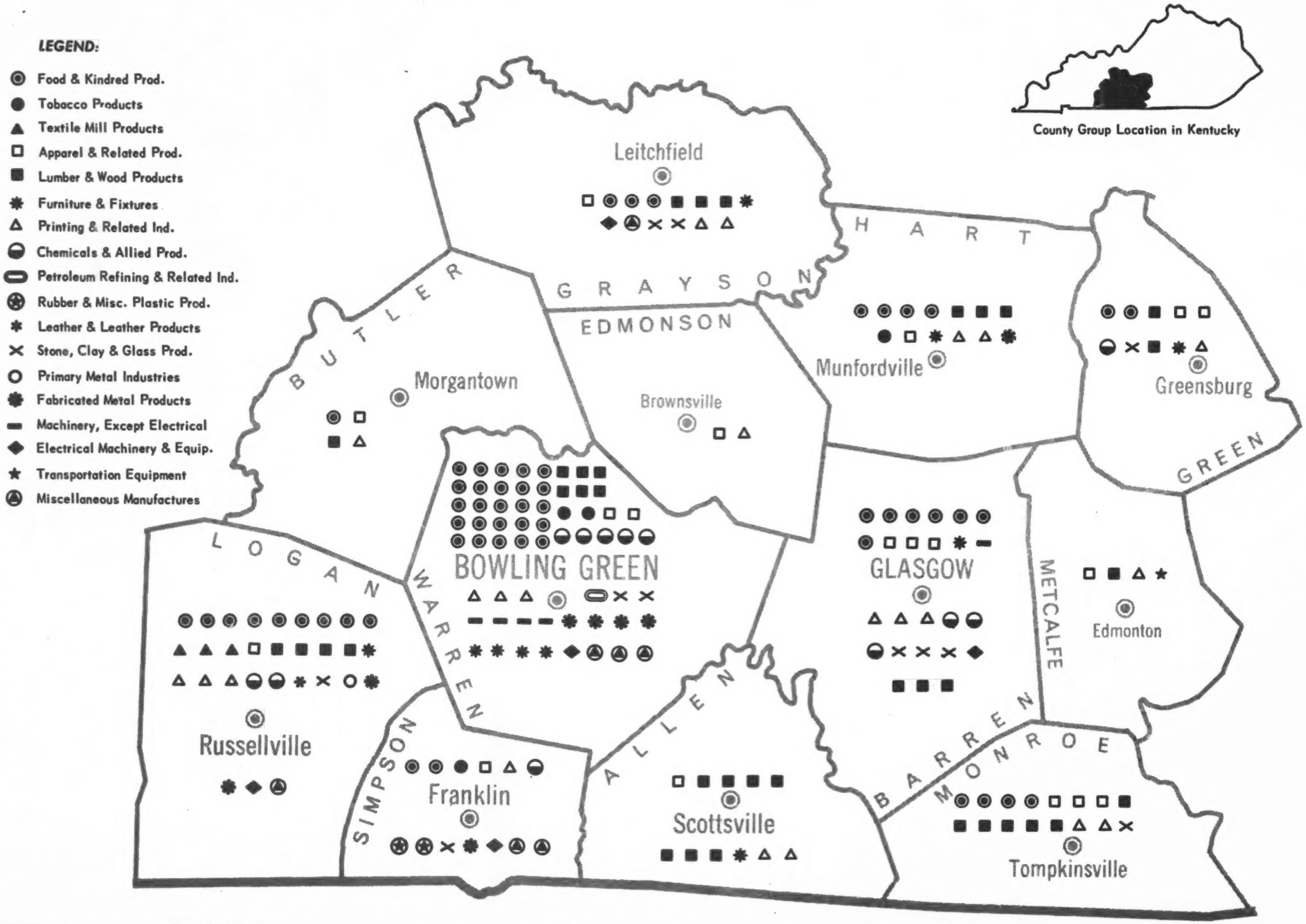

Table IV (Appendix A) shows the number and percent of classified industries returning Form A. Eighty-one percent of the industries interviewed returned Form A.

Form B (Appendix B), a checklist for industries relative to current employment, vacancies, and number of additional job openings anticipated in the next two years, was then sent to each of the industries previously interviewed.

The impossibility of listing all of the many job occupations which were to be found in the varied industries made it necessary to leave spaces on the original forms so that other occupations could be listed.

Table IV (Appendix A) shows the number and percent of classified industries returning Form B. Ninety-one percent of the industries interviewed returned Form B.

OPINIONS OF PERSONNEL IN INDUSTRY RELATIVE TO THE EMPLOYMENT NEEDS AND OPPORTUNITIES AND GENERAL APPRAISAL OF PRESENT EDUCATION AND TRAINING PROGRAMS

More visibly and effectively each year, industry is becoming both the willing and welcome ally of education. It follows that each must assume responsibility to the other for support and understanding.

Industry has a responsibility for maintaining a continuous open house to education and for making its hospitality evident and sincere. It has an equally strong responsibility for bringing information regarding the results of inventions and discoveries to the attention of the schools.

Kentucky officials are aware of the fact that, by stepping up the rate of economic growth with the aim of creating an evergrowing number of jobs, the needs of a growing labor force may be satisfied to a greater degree. It becomes apparent that a close liaison between education and industry is a forceful necessity if training is to keep abreast of innovations and new developments.

It is the opinion of the writer, from the interviews conducted, that people in industry are eager to assume their responsibility in action programs for the furtherance of progressive educational and training programs. Industrial leaders take their places in civic participation to build better communities in which their families and employees live. Educational and training programs are a very important part of their lives.

Industrialists are very receptive to the ideas and plans of the local and state educators. They are interested, not solely in their own problems, but in those of their neighboring industries which share similar problems. They exhibit a spirit of willingness to cooperate with any programs which would produce a better labor market for the area.

What does industry expect of the public schools in the way of preparation for the world of work?

OPINIONS OF INDUSTRIAL PERSONNEL RELATIVE TO THE ROLE OF THE PUBLIC SCHOOLS IN THE PREPARATION OF YOUTH FOR THE WORLD OF WORK

To understand the opinions as expressed by the industrialists in the 12 counties of the survey, Table V (Appendix A) was prepared in order to indicate the number and types of high schools and the number or equivalent of counselors in each school for the school year 1964-65. These are the schools and the counselors serving the families of the people in the working world of this area.

From Table V it may be observed that in the 12 counties of the area there is 1 Comprehensive High School; 11 are Standard High Schools; there are 23 Provisional High Schools; and there are 2 Provisional Emergency and 1 Temporary Emergency High Schools.

Data A (Appendix C) shows the appraisal of the public schools, colleges, and vocational schools by the 56 industrialists who returned Form A (Appendix B) to the Division of Guidance Services office. It will be seen that 26 people in industry felt that the public schools were adequate; 17 expressed the opinion that they were inadequate; and 13 were unable to appraise the work of the schools because they had very little connection with them.

More and more the industries in this area are requiring a high school education for employment. Without a high school diploma, most of the workers can progress only to jobs of janitor, bottle washer, or some truck drivers.

Data B (Appendix C) shows the number of industries indicating the

educational level of a number of their employees.

The industrialists who were interviewed freely expressed their opinions of the public schools and their ideas and suggestions as to improvements that would help in the upgrading of the education and training of future employees.

All representatives of industry are asking that the public schools provide good basic training in the fields of English and Business Education. Spelling, phrasing, punctuation, composition, typing, shorthand, bookkeeping, and general office work are the areas which are pointed out as having the greatest deficiencies. Personnel directors in three of the counties expressed satisfaction with the clerical workers that they hired directly from high school or with some training from a commercial college. But good clerical help is difficult to obtain in most of the counties. It is usually lacking in areas served by small high schools with limited curricula and incompetent teachers.

Reading was another field often mentioned by industrialists as being of supreme importance. They feel that if an employee can read with understanding and likes to read and will read that he is trainable and will make a satisfactory employee who can move into places of leadership within the company. Remedial reading received a point of emphasis.

Much stress was put upon the need for people with good basic education in the fields requiring computation, use of decimals and fractions, working with precision instruments, reading of blue prints, drafting, and practical shop math. Employees who can read a ruler to the fraction of an inch are needed, especially in woodworking plants.

More emphasis on up-to-date Physics, Chemistry, and Mathamatics was requested. One interviewee who is president of the company suggested that a technical high school in the area would be of benefit to the industries.

An employer in a wood products company was complimentary of the employees he had been able to obtain from the Industrial Arts Department of one of his local high schools. Two others suggested that more emphasis be put on the industrial requirements for woodworking rather than on the exploratory type of programs. Practical training in woodworking is very important to this group of industrialists who will need at least 280 cabinetmakers, carpenters, furniture finishers, and general woodworkers in the next two years in this 12-county area. (Tables VII-D & E-Appendix A)

These employers are of the opinion that it is the responsibility of the public schools, from kindergarten through high school, to teach, not only basic education in the academic fields, but right attitudes in living in a world of work. Personal habits, work habits, social adjustment, and being able to solve the problems of home life are of great importance. Table VI (Appendix A) indicates the number of industrialists marking on Form A (Appendix B) the skills, habits, and attitudes which they deemed necessary for their employees.

It was felt that school subjects can relate to vocations and that school subjects can prepare the child for life in a world of work.

Knowledge of how to apply for work makes a deep impression on the employer. Although the work in the plant may be dirty work, grooming is very important when applying for the job. As one plant manager brought out in the interview, "When a young man comes in to apply for work, I expect him to be clean and neat and with his hair cut. I do not want him to ask me what I will pay him as he walks in the door. Though I sometimes put my feet upon the desk, I expect him not to do so. In other words, he should have 'good country manners'". Teaching young people how to fill out application forms should be included in the high school curriculum.

Knowing how to hold the job after it is obtained can be taught throughout a child's public school life. Pride in finding the thing that he can do well and pride in achievement can become a carry-over into his adult life in his vocation.

Loyalty to the company for which he works, responsibility, and reliability are qualities that employers look for in the selection of their employees. Being able to interpret instructions, to apply their previously gained knowledge, and to reason are skills needed for employment. Ambition and willingness to work are attributes sought for in an employee.

Being able to meet the public is considered by many people in industry to be a necessary trait of the employee. Whether he is loading fertilizer on a farmer's truck or serving as driver-salesman for a bottling company, the employee should be able to talk with the people with whom he comes in contact. Many industrial leaders were pleased with the FFA training in speaking that their employees had received in high school. Some thought that speech should be a requirement in high school to develop self-confidence.

Industrialists in this area feel that guidance is a most important part of school work, and they insist on more and better guidance along vocational lines. Further discussion will be found in the section on Opinions of Industrial Personnel Relative to the Role of Guidance in the Preparation of Youth and Adults for the World of Work.

The consolidation of small high schools into large ones was brought up by employers in many of the interviews. They feel that a much better labor force can be achieved with enrichment and expansion of the curriculum which is possible only in the larger schools.

Kindergartens are a necessity according to industrial leaders in every section of the area. Preschool training is needed to help children enter the first grade on somewhat of a par.

The grouping of children so that they may move along at their own rate of speed in the learning process was approved by the interviewees. In one school system this had been applied for one year and met with the approval of the industrial leaders in that area, but it was abandoned at the end of the first

year because of the hearty disapproval of some of the people of the community.

Manufacturers feel that public education, from kindergarten through high school, should prepare its pupils to meet the challenges of the present-day world of work.

OPINIONS OF INDUSTRIAL PERSONNEL RELATIVE TO THE ROLE OF THE COLLEGES IN THE PREPARATION OF YOUTH AND ADULTS FOR THE WORLD OF WORK

Industrialists are demanding a good labor market. They feel that good employees can be obtained only from the public schools that have the best teachers. Thus the colleges are met with the challenge of producing these efficient teachers. Teacher education becomes a potent factor in the development of good labor markets.

Especially is this true in producing efficient guidance people and a sufficient number of them. Counselor educators are faced with the problem of providing the public schools with well-trained guidance personnel.

With the implementation of the Vocational Act of 1963, vocational guidance personnel in the vocational schools becomes a possibility and a necessity. The primary responsibility of providing these vocational guidance persons falls upon the counselor educators in the college's Department of Education.

Industrial Personnel directors are asking that the colleges devise curricula that would produce potential personnel in upper management, engineers, and other degree people. Suggestions were made that the college curricula contain such courses as Personnel Management, Quality Control, Industrial Psychology, Production Methods, and Mechanical, Electrical, and Industrial Engineering.

There is a need for Agriculture Majors, especially Agronomists.

In Business Administration the need is for Salesmen, Personnel Supervisors, and Quality Control men. Journalists are needed for newspapers and publishing industries.

Western Kentucky State College serves this area. The people in the industries of this area are pleased with the cooperation they have received from the college officials. They have been able to participate in cooperative programs. Both college officials and industrial leaders seem eager to help the other. More communication between the two agencies will be of benefit.

Western officials are cooperating with the Western Area Vocational School in the expansion of educational opportunities. Closer contact between College and State Department officials is badly needed. An understanding of the problems and the ideas of each is necessary if vocational and technical training is to progress at the rate demanded by this age.

Western confers the Associate of Arts Degree upon candidates who complete the institutional requirements in some two-year degree programs. At the present time the fields are Industrial Technology, Small Business Management, Agriculture Technology and Management, and Secretarial Science.

The program of Industrial Technology provides a specialized training in skills, technical information and related subjects in designing and drafting. As facilities become available and the need for added curricula is determined, Western plans expansion in training in other fields of technology.

Small Business Management is a program designed to meet the needs of persons whose career aim is the operation of a small business and to provide training for employees of large concerns.

The program of Agriculture Technology and Management can qualify a person for various jobs in the field of Agriculture.

The Secretarial Science program prepares a person for any secretarial position including those of a very technical nature. Western also confers a certificate upon candidates who complete the institutional requirements in the one-year program in Secretarial Science. Data Processing has been added to the curriculum.

General Education and Continuing Education courses are offered to enable persons to work toward degrees, to develop skills, or to increase knowledge in a particular field of interest.

The curricula of the Community College offered in the fall of 1964 included courses in Agriculture, Art, Business, Economics, English, Foreign Language, Geography and Geology, Government, Industrial Arts, Library Science, Music, Psychology, and Sociology. These courses are offered in the late evening, at night, or on Saturday.

The Community College should aim at the goal of developing the 2 to 4 trained technicians (those not requiring a 4-year college education) needed for each engineer or scientist trained at the professional level.

By 1970 the nation will need 1, 484, 000 engineers which is a 90% increase over the 1959 figure. Western, in its forward look, now is offering graduate degrees in Engineering Physics.

Western officials desire to work closely with the Vocational School in the sharing of facilities, instructors, and curricula. They feel that there are some college students that need certain types of Vocational training; there are some vocational students who have the background and I. Q. to make good college students; and there should be some cooperative program whereby vocational students could get college credit and where college students could get credit for some vocational work.

These are problems for the entire State Department of Education

to study and understand.

Data A (Appendix C) shows that 22 industrialists felt that the colleges are doing an adequate job; 10 felt that they are inadequate; and 24 were unable to appraise the work of the colleges because they had no contact with them.

OPINIONS OF INDUSTRIAL PERSONNEL RELATIVE TO THE ROLE OF THE VOCATIONAL SCHOOLS IN THE PREPARATION OF YOUTH AND ADULTS FOR THE WORLD OF WORK

The Area Vocational School serves an area much larger than the Public School, offering training for many employment opportunities.

Western Area Vocational School is a State agency controlled by regulations of the State Department of Vocational Education, and it serves the 12-county area of this survey. Its function is the operation of a Vocational and Distributive occupation program to meet the needs of High School Youth, Out-of-School Youth, and Adults in the areas served by the school. Training is offered in specialized fields to provide the necessary education to bridge the gap between broad educational backgrounds and the practical industrial world of today. Emphasis is placed on basic techniques and skills, which apply specifically to the training needs of the occupation.

This School of Technical Training makes it possible to enter that area of industry lying between the semi-skilled crafts and the highly scientific professions. The Western Area Vocational School has numerous requests from industry for its graduates.

The courses presently offered at Western Area Vocational School are: Air Conditioning and Refrigeration, Apprenticeship Training, Auto Mechanics, Building Trades, Drafting, Electricity, Electronic Circuits,

Machine Shop, Tool and Die Making and Metallurgy, Office Machine Repair, Technical Drafting, Fireman Training, and Practical Nurse Training. Related training (Shop Math, Blue Print, Theory, etc.) is included as part of each course.

Of the 56 industries returning Form A (Appendix B), only 12 indicated that they had communication with the vocational teachers. Yet they showed a need for draftsmen, machine tool operators, machinists, welders, sheet metal workers, cabinetmakers and general woodworkers, and 1375 sewing machine operators in the next two years. (Table VII-E-Appendix A)

Vocational Education must meet the needs of the area which it serves. Swanson and Kramer write, "To meet the needs of workers for retraining or upgrading, it is of primary importance to develop and to establish short, intensive programs at once. These programs will need to be sensitive to the current needs of both industry and workers. The consideration of organizational placement of such a program in the school structure is of secondary importance."*

It would seem that the short, intensive courses in the operation of commercial sewing machines as suggested by those industrialists in the Apparel and Related industries should be taken into immediate consideration. Since these industries employ the largest percentage of employees in this area (33.1%-Table I-Appendix A), and since they have the greatest need for such employees in the next two years (1375 - Table VII - E - Appendix A), these employers have offered to cooperate in keeping a trained labor force in the field of sewing machine operators. Suggestions have been made as to how these people could be trained in a four or six weeks course. The industrialists have offered the use

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* J. Chester Swanson and Ernest G. Kramer, "Vocational Education Beyond the High School" in Vocational Education, p. 183. Sixty-fourth Yearbook of the National Society of Education, Part I. Chicago: Distributed by the University of Chicago Press, 1965.

of equipment, materials, and instructor personnel. The 17 industrialists interviewed in the field of Apparel and Related Products expressed strong desires for such a training program.

The training of sewing machine repairmen under the Manpower Training program produced a few repairmen who were hired in the areal industries, and about 50% were termed satisfactory by the employers who hired them. It was found that many of these repairmen were hired in surrounding areas and other states.

Western Area Vocational School gives training to high school students from 18 high schools of the following school systems: Warren County, Bowling Green Independent, Franklin-Simpson, Edmonson County, Metcalfe County, Cumberland County, Barren County, and Glasgow Independent.

There is a demand for more units, but, due to the lack of space, equipment, and instructors, it is impossible to expand the offerings to others who need it desperately.

Many of the industrialists in the area are taking advantage of the opportunities offered by the Western Area Vocational School for the upgrading of their employees' skills by making it possible for them to attend classes for Out-of-School workers. Two employers suggested that less theory and more practical training be given. One desired more theory in the classes with the thought that the practical training would be received in their plant.

The writer found that there was a very close working relationship between most of the industrialists and the administrators of the vocational school. Also the communication between the Vocational School and Western College seemed to be of the best.

It was suggested by one industrialist that an Industrial Advisory Committee be set up to work with the Vocational School, the College, and other

educators in the area to assist in the upgrading of the educational and training programs throughout the area. Another personnel director suggested that a Seminar for industrialists and educators be held in order to bring the problems of each to light.

Although most all industries must do some on-the-job training, basic training is of great help to them and cuts down on training expense. Nearly all have some type of apprenticeship training. Some have cooperative programs. A few are participating in the adult education program. Most foremen, group leaders, and others in middle management advance from the ranks, but they must be trainable when initially hired. Many say that stress on the blue collar job has been neglected in the public schools and other educational institutions.

Western Area Vocational School has grown from a small beginning in 1945 until the present when lack of space and facilities cannot begin to meet the demands for its services. Insufficient funds and restrictive Federal legislation have inhibited development of certain types of programs.

Industrialists and educators expressed desires for vocational schools in their own communities. These schools, to provide training for the citizens of their district to meet the demands of the industries within their boundaries, would cut down on transportation expenses and relieve some of the pressure on Western Vocational School. At the same time, it would build a labor market to meet the occupational needs of potential employees and those of the industries within the area.

New directions for vocational education were brought into being with the Vocational Act of 1963. This bill, introduced by Democrat Carl D. Perkins of Kentucky, retains farm training and home economics, but broadens the scope to include training that will lead to related occupational training in these fields. At least 25% of the money provided for in the bill goes to area vocational schools which must be well-equipped centers offering modern skills to anyone.

Table VII (Appendix A), a report of 63 industries relative to the

number of workers currently employed, number of current job vacancies, and the estimated number of job opportunities in the next two years, contains a compilation of information obtained from Form B (Appendix B). The number of people needed within the next two years in the jobs classified by the Dictionary of Occupational Titles gives an idea of the types of training needed to meet the demands of industry within the area. Form B (Appendix B) was filled out by the industrialists to the best of their ability to foresee their needs for the next two years.

From Data A (Appendix C) it is found that 18 industries felt that the vocational schools are doing an adequate job; that 22 thought that they are inadequate; and 16 were unable to express an opinion because they had no communication with the vocational schools.

OPINIONS OF INDUSTRIAL PERSONNEL RELATIVE TO THE ROLE OF GUIDANCE IN THE PREPARATION OF YOUTH AND ADULTS FOR THE WORLD OF WORK

William C. Menninger presents a logical introduction for a discussion of Guidance when he writes, "The success or failure of youth or man on the job, particularly as he chooses a new job, is determined in no small degree today by school counselors and by personnel workers in colleges, industries, public employment offices, rehabilitation centers, and social work agencies. All who serve in these capacities and in these settings hold awesome responsibility for assisting maturing youth and adults with their problems of vocational planning and with their search for a satisfying adjustment to occupational life."*

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* William C. Menninger, "The Meaning of Work in Western Society", Introduction, Man In a World of Work, ed. by Henry Borow, p. XVII, Boston: Houghton Mifflin, 1964.

All the industrialists interviewed were in agreement that a closer working relationship between themselves and the counselors would help much in producing a better labor market. Each industrialist seemed much interested in the individual welfare of his employees. They seemed to realize that finding the right person for the right job was important. Employers are looking for well integrated and committed people who can become wholesomely involved in their work. They are interested in the employee as a worker, as a family member, as a consumer, and as a citizen. They also expressed their opinions as to the important roles played by every teacher, administrator, and especially the school counselor and college personnel worker in the development of a good labor market. Two industrialists went so far as to say that the guidance person is the most important of all school personnel.

Yet, of the 56 industrialists who returned Form A (Appendix B), only 6 indicated that they had any communication with the counselors in their area.

Employers place great responsibility on guidance personnel in educating youth for receptivity to change. They expect the counselor to re-educate himself constantly to the revolutionary changes around him, to keep abreast of the job opportunities in his area, and to keep at hand all occupational information.

Each personnel director in industry emphasized the importance of elementary guidance. From kindergarten to the years of occupational exploration the child may discuss various occupations, becoming acquainted with many of them and developing an awareness of the problems of selecting and preparing for their future employment. It was pointed out by the industrialists that right attitudes toward work and achievement are best developed in the elementary schools. Personal habits of work and social adjustment are problems that need the attention of the elementary counselor. Wholesome attitudes toward all useful work must be developed in the child's early school life.

The junior high school counselor has the very important task and opportunity of helping the child to find himself in providing occupational information, by testing and keeping cumulative records, and by using interviews. The junior high school should provide the child with exploratory courses in Industrial Arts, Home Economics, Agriculture, and others relative to the job opportunities of his particular area. Here the child begins to work, with aid of the counselor, toward making tentative plans and choices as to the types of training needed to enter certain occupations. The counselor must have a knowledge of cummunity resources and must be able to relate them to the needs and aptitudes of the individual.

The secondary school counselor must stay in close contact with the industrialists and businessmen of his area in order to be of help to the student in making his choice of occupation and training. In helping the student to understand himself, to make decisions, and to plan for his future, the counselor works with him individually or in groups, administers and interprets tests, and guides him in the selection of types of vocational and academic courses. Through his knowledge of local occupational opportunities and training needed, the counselor should be consulted on the building of the curriculum in the high school. Consultations with parents, representatives of business and industry, community and social agents in the area, as well as with the students and staff members should provide the service that is needed in carrying out the basic functions of guidance.

The administrators of the vocational schools in Kentucky express a great need for guidance directors within their schools. The students attending these schools have personal problems as well as those of vocational nature. The officials of the vocational schools must assist the student with these problems. A guidance director would relieve this pressure, thus freeing the administrators for other activities which would improve their schools.

SUMMARY

The survey of opinions of the industrialists representing 69 of the 204 industries in the 12-county area served by Western Area Vocational Technical School at Bowling Green, Kentucky, revealed an inadequacy of communication between the personnel who are responsible for educating and training the labor force and those who employ persons from that labor force.

The importance of rapport between these groups is emphasized by Barlow in his writings, "Closer working relationships between schools and other agencies will provide new understanding of the human factors involved in educating persons for work in a changing technological society."*

A study of the compilation of information obtained from the 56 Forms A (Appendix B) which were returned shows very little communication between industry and education:

Ten (17.9%) had some communication with Administrators.
Twelve (21.4%) had some communication with Vocational teachers.
Six (10.7%) had some communication with Counselors.
Seven (12.5%) had some communication with School Boards.
Six (10.7%) had some communication with Pupils.
Seven (12.5%) participated in cooperative programs.
Fourteen (25.0%) had had tours of their plants.
Ten (17.9%) had participated in Career Days.
Two (3.6%) participated in the Distributive Education Program.
Seven (12.5%) had visited their schools.

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* Melvin L. Barlow, "A Platform for Vocational Education in the Future" in Vocational Education, p. 289, Sixty-fourth Yearbook of the National Society for the Study of Education, Part I. Chicago: Distributed by University of Chicago Press, 1965.

Since school personnel is interested in the welfare of the high school graduate and the employer is also interested in progress of the same individual, it would seem that the school people and the personnel of industry could well profit by a close communication concerning their common problems.

Ginzberg writes, "Implicit-----is the need for much closer co-relation among the different sectors of society that have a direct concern with one or another facet of vocational education. There should be a closer liaison among the several levels of government - federal, state, and local - as well as in industry, -----; in education , among high schools, junior and community colleges, state education departments, and United States Office of Education". *

Responsibility for the establishment of such communication rests upon all personnel concerned with the training, education, and employment of the labor force. The educators and the employers have seemed reluctant to make the initial move. Yet each seems eager that such a liaison be established. Each has the power to help the other in improving the quality of the labor market.

Some constructive suggestions were made by the industrialists:

1. The teaching of right attitudes toward the world of work - from kindergarten through vocational school.

2. The teaching of how to obtain a job and the attitudes needed to hold the job and be happy in the world of work.

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*Eli Ginzberg, "School and Economic Trends" in Vocational Education, p. 38. Sixty-fourth Yearbook of the National Society for the Study of Education, Part I. Chicago: Distributed by University of Chicago Press, 1965.

3. The teaching of speech, self-confidence, and how to meet the public.

4. More and better guidance along vocational lines.

5. The institution of guidance in the elementary schools.

6. Guidance in the vocational schools.

7. More and better guidance in the colleges.

8. Counselors keeping abreast of job opportunities and training needs in his local community.

9. The establishment of kindergartens in areas where there are none.

10. Grouping.

11. A high school education for all.

12. The consolidation of small schools.

13. The training of professional people in the colleges.

14. The training of more draftsmen, machine tool operators, sheet metal workers, cabinetmakers, general woodworkers, and sewing machine operators.

15. Vocational schools in local communities.

16. The establishment of a technical high school in the area.

17. The creation of an Industrial Advisory Committee.

18. Seminars for educators and industrialists.

These suggestions are indicative of the opinions of the industrialists about the public schools - from kindergarten through college. Some of the people interviewed are newcomers to the community and many of them new to Kentucky. They are interested in the educational opportunities available for their children and those of their employees. Many of those interviewed are native Kentuckians and are in long-established industries.

If the suggestions are worthy of note, a close working relationship between the educators and industrialists would stimulate action in these areas. If there is a conflict of opinion, then there should be a way to dissolve these differences. Only through communication can this be achieved.

APPENDIX A

Table I - Number and Percent of Classified Industries and Number and Percent of Employees in the 12-County Area.

Table II - Number and Percent of Classified Industries Interviewed and Number and Percent of Employees in Industries Interviewed in the 12-County Area.

Table III - Number and Percent of Classified Industries Interviewed and Number and Percent of Employees in Industries Interviewed in Each of the 12 Counties.

Table IV - Number and Percent of Classified Industries Returning Form A and Form B.

Table V - Names and Types of High Schools in the 12-County Area and Number or Equivalent of Counselors in Each School for the School Year 1964-65.

Table VI - Number of Industrialists Marking Skills, Habits, and Attitudes Deemed Necessary for their Employees in the 12-County Area.

Table VII - Report of 63 Industries Relative to Number of Workers Currently Employed, Number of Current Job Vacancies, and Estimated Number of Job Opportunities in Next Two Years in Various Occupations.

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES
AND NUMBER AND PERCENT OF EMPLOYEES
IN THE 12-COUNTY AREA

TABLE 1

Industrial Classification	Area Industries		Area Employees	
	Number	Percent	Number	Percent
Food & Kindred Products	57	28.0	1234	8.7
Tobacco Products	4	2.0	1144	8.1
Textile Mill Products	3	1.0	297	2.1
Apparel & Related Products	18	9.0	4704	33.1
Lumber & Wood Products	36	18.0	1001	7.0
Furniture & Fixtures	10	5.0	359	2.5
Printing & Related Industries	22	11.0	188	1.3
Chemicals & Allied Products	12	6.0	185	1.3
Petroleum Refining & Related Industries	1	0.5	19	0.1
Rubber & Miscellaneous Plastic Products	2	1.0	547	3.8
Leather & Leather Products	1	0.5	80	0.6
Stone, Clay & Glass Products	11	5.0	103	0.7
Primary Metal Industries	1	0.5	274	1.9
Fabricated Metal Products	8	4.0	284	2.0
Machinery Except Electrical	5	2.5	1194	8.4
Electrical Machinery & Equipment	5	2.5	2354	16.6
Transportation Equipment	1	0.5	7	0.1
Miscellaneous Manufactures	7	3.0	239	1.7
Totals	204	100.0	14,213	100.0

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN THE 12-COUNTY AREA

TRIES INTERVIEWED IN INDUSTRIES

TABLE 2

Industrial Classification	No. of Industries Visited	No. of Industries in Area	Percent of Industries Visited	No. of Workers in Industries Visited	No. of Workers in Industries in Area	Percent of Workers in Industries Visited
Food & Kindred Products	11	57	19	504	1234	41
Tobacco Products	2	4	50	265	1144	23
Textile Mill Products	3	3	100	297	297	100
Apparel & Related Products	17	18	94	4554	4704	97
Lumber & Wood Products	7	36	19	434	1001	43
Furniture & Fixtures	4	10	40	333	359	90
Printing & Related Industries	4	22	18	96	188	51
Chemicals & Allied Products	3	12	25	123	185	66
Petroleum Refining & Related Ind.	0	1	0	0	19	0
Rubber & Misc. Plastic Products	1	2	50	487	547	89
Leather & Leather Products	1	1	100	80	80	100
Stone, Clay & Glass Products	0	11	0	0	103	0
Primary Metal Industries	1	1	100	274	274	100
Fabricated Metal Products	5	8	63	243	284	86
Machinery Except Electrical	3	5	60	1175	1194	98
Electrical Machinery & Equip.	5	5	100	2354	2354	100
Transportation Equipment	0	1	0	0	7	0
Miscellaneous Manufactures	2	7	29	214	239	90
Totals	69	204	34	11,433	14,213	80

TABLE 3

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

	ALLEN						BARREN					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products							0	7	0	0	166	0
Tobacco Products												
Textile Mill Products												
Apparel & Related Products	1	1	100	400	400	100	3	3	100	1093	1093	100
Lumber & Wood Products	2	7	29	100	209	48	0	3	0	0	75	0
Furniture & Fixtures	1	1	100	240	240	100	1	1	100	20	20	100
Printing & Related Industries	0	2	0	0	9	0	1	3	33	32	54	59
Chemicals & Allied Products							0	3	0	0	32	0
Petroleum Refining & Related Industs.												
Rubber & Misc. Plastic Products												
Leather & Leather Products												
Stone, Clay & Glass Products							0	3	0	0	26	0
Primary Metal Industries												
Fabricated Metal Products												
Machinery Except Electrical							1	1	100	60	60	100
Electrical Machinery & Equipment							1	1	100	200	200	100
Transportation Equipment												
Miscellaneous Manufactures												
Totals	4	11	36	740	858	86	7	25	28	1405	1726	81

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

TABLE 3

continued

	BUTLER						EDMONSON					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products	0	1	0	0	6	0						
Tobacco Products												
Textile Mill Products												
Apparel & Related Products	1	1	100	165	165	100	1	1	100	341	341	100
Lumber & Wood Products	0	1	0	0	14	0						
Furniture & Fixtures												
Printing & Related Industries	0	1	0	0	6	0	0	1	0	0	1	0
Chemicals & Allied Products												
Petroleum Refining & Related Industs.												
Rubber & Misc. Plastic Products												
Leather & Leather Products												
Stone, Clay & Glass Products												
Primary Metal Industries												
Fabricated Metal Products												
Machinery Except Electrical												
Electrical Machinery & Equipment												
Transportation Equipment												
Miscellaneous Manufactures												
Totals	1	4	25	165	191	86	1	2	50	341	342	99

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

TABLE 3

continued

	GRAYSON						GREEN					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products	1	3	33	24	33	73	1	2	50	25	31	81
Tobacco Products												
Textile Mill Products												
Apparel & Related Products	1	1	100	285	285	100	2	2	100	147	147	100
Lumber & Wood Products	0	3	0	0	54	0	1	2	50	70	73	96
Furniture & Fixtures	0	1	0	0	7	0	1	1	100	32	32	100
Printing & Related Industries	0	2	0	0	10	0	0	1	0	0	3	0
Chemicals & Allied Products							1	1	100	65	65	100
Petroleum Refining & Related Industs.												
Rubber & Misc. Plastic Products												
Leather & Leather Products												
Stone, Clay & Glass Products	0	2	0	0	32	0	0	1	0	0	5	0
Primary Metal Industries												
Fabricated Metal Products												
Machinery Except Electrical												
Electrical Machinery & Equipment	1	1	100	110	110	100						
Transportation Equipment												
Miscellaneous Manufactures	0	1	0	0	12	0						
Totals	3	14	21	419	543	77	6	10	60	339	356	95

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

TABLE 3

continued

	HART						LOGAN					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products	1	4	25	34	46	74	3	9	33	61	141	43
Tobacco Products	0	1	0	0	74	0						
Textile Mill Products							3	3	100	297	297	100
Apparel & Related Products	1	1	100	93	93	100	1	1	100	315	315	100
Lumber & Wood Products	0	3	0	0	28	0	1	4	25	42	159	26
Furniture & Fixtures	0	1	0	0	1	0	0	1	0	0	4	0
Printing & Related Industries	1	2	50	5	7	71	0	3	0	0	19	0
Chemicals & Allied Products							2	2	100	58	58	100
Petroleum Refining & Related Industs.												
Rubber & Misc. Plastic Products												
Leather & Leather Products							1	1	100	80	80	100
Stone, Clay & Glass Products							0	1	0	0	15	0
Primary Metal Industries							1	1	100	274	274	100
Fabricated Metal Products	1	1	100	10	10	100	1	2	50	74	105	70
Machinery Except Electrical												
Electrical Machinery & Equipment							1	1	100	700	700	100
Transportation Equipment												
Miscellaneous Manufactures							0	1	0	0	3	0
Totals	4	13	31	142	259	55	14	30	47	1901	2170	88

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

TABLE 3

continued

	METCALFE						MONROE					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products							0	4	0	0	41	0
Tobacco Products												
Textile Mill Products												
Apparel & Related Products	1	1	100	200	200	100	2	3	67	449	599	75
Lumber & Wood Products	0	1	0	0	2	0	0	6	0	0	127	0
Furniture & Fixtures												
Printing & Related Industries	0	1	0	0	1	0	0	2	0	0	10	0
Chemicals & Allied Products												
Petroleum Refining & Related Industs.												
Rubber & Misc. Plastic Products												
Leather & Leather Products												
Stone, Clay & Glass Products							0	1	0	0	4	0
Primary Metal Industries												
Fabricated Metal Products												
Machinery Except Electrical												
Electrical Machinery & Equipment												
Transportation Equipment	0	1	0	0	7	0						
Miscellaneous Manufactures												
Totals	1	4	25	200	210	95	2	16	13	449	781	57

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES INTERVIEWED AND NUMBER AND PERCENT OF EMPLOYEES IN INDUSTRIES INTERVIEWED IN EACH OF THE 12-COUNTIES

TABLE 3
continued

	SIMPSON						WARREN					
	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed	Number of Industries Interviewed	Number of Industries in County	Percent of Industries Interviewed	Number of Employees in Industries Interviewed	Number of Employees in Industries in County	Percent of Employees in Industries Interviewed
Food & Kindred Products	0	2	0	0	13	0	5	25	20	360	757	48
Tobacco Products	1	1	100	165	165	100	1	2	50	100	905	11
Textile Mill Products												
Apparel & Related Products	1	1	100	175	175	100	2	2	100	891	891	100
Lumber & Wood Products							3	6	50	222	260	85
Furniture & Fixtures							1	4	25	41	55	75
Printing & Related Industries	1	1	100	11	11	100	1	3	33	48	57	84
Chemicals & Allied Products	0	1	0	0	7	0	0	5	0	0	23	0
Petroleum Refining & Related Industs.							0	1	0	0	19	0
Rubber & Misc. Plastic Products	1	2	50	487	547	80						
Leather & Leather Products												
Stone, Clay & Glass Products	0	1	0	0	8	0	0	2	0	0	13	0
Primary Metal Industries												
Fabricated Metal Products	1	1	100	42	42	100	2	4	50	117	127	92
Machinery Except Electrical	1	1	100	594	594	100	2	4	50	1115	1134	98
Electrical Machinery & Equipment	1	1	100	594	594	100	1	1	100	750	750	100
Transportation Equipment												
Miscellaneous Manufactures	2	2	100	214	214	100	0	3	0	0	10	0
Totals	8	13	62	1688	1776	95	18	62	29	3644	5001	73

NUMBER AND PERCENT OF CLASSIFIED INDUSTRIES
RETURNING FORM A AND FORM B

TABLE 4

	Industries Interviewed (Number)	Industries Returning Form A		Industries Returning Form B	
		Number	Percent	Number	Percent
Food & Kindred Products	11	8	73	10	91
Tobacco Products	2	1	50	2	100
Textile Mill Products	3	3	100	3	100
Apparel & Related Products	17	16	94	16	94
Lumber & Wood Products	7	6	86	7	100
Furniture & Fixtures	4	3	75	3	75
Printing & Related Industries	4	2	50	4	100
Chemicals & Allied Products	3	3	100	3	100
Petroleum Refining & Related Industries					
Rubber & Miscelleanous Plastic Products	1	1	100	1	100
Leather & Leather Products	1	1	100	1	100
Stone, Clay & Glass Products					
Primary Metal Industries	1	1	100	1	100
Fabricated Metal Products	5	4	80	5	100
Machinery Except Electrical	3	1	33	1	33
Electrical Machinery & Equipment	5	4	80	4	80
Transportation Equipment					
Miscelleanous Manufactures	2	2	100	2	100
Total	69	56	81	63	91

NAMES AND TYPES OF HIGH SCHOOLS IN THE 12-COUNTY AREA AND NUMBER OR EQUIVALENT OF COUNSELORS IN EACH SCHOOL FOR THE SCHOOL YEAR 1964-1965

TABLE 5

County	High Schools	Types of High Schools	No. of Counselors (equivalents)
Allen	Allen Co.	Standard	1.00
	Scottsville Ind.	Provisional	0.16
Barren	Austin Tracy	Provisional	0.50
	Hiseville	Provisional	0.50
	Park City	Provisional	0.50
	Temple Hill	Provisional	0.50
	Caverna Ind.	Provisional	
	Glasgow Ind.	Standard	1.00
	Ralph Bunch Jr. High	Provisional	
Butler	Butler Co.	Standard	1.00
Edmonson	Edmonson Co.	Standard	1.00
Grayson	Caneyville	Provisional	0.00
	Clarkson	Provisional	0.00
	Leitchfield Ind.	Standard	0.00
	Grayson Catholic	Temporary Emergency	0.00
Green	Greensburg	Standard	1.00
Hart	Cub Run	Provisional	
	Memorial	Provisional	0.50
	Munfordville	Provisional	0.50
Logan	Adairville	Provisional	0.00
	Auburn	Provisional	0.50
	Chandler's Chapel	Provisional Emergency	0.00
	Lewisburg	Provisional	0.00
	Olmstead	Provisional	0.50
	Russellville Ind.	Standard	0.50
Metcalfe	Metcalfe Co.	Provisional	1.00
Monroe	Gamaliel	Provisional	0.50
	Tompkinsville	Provisional	1.00
Simpson	Franklin-Simpson	Standard	0.00
	Lincoln	Provisional	0.00
Warren	Alvaton	Provisional	0.50
	Bristow	Provisional Emergency	0.50
	North Warren	Provisional	0.50
	Richardsville	Provisional	0.50
	Warren Co.	Standard	1.00
	Bowling Green Ind.	Comprehensive	2.00
	High St.	Standard	1.00
	W. Kentucky Trg. (College)	Standard	0.50

NUMBER OF INDUSTRIALISTS MARKING SKILLS, HABITS, AND ATTITUDES DEEMED NECESSARY FOR THEIR EMPLOYEES IN THE 12-COUNTY AREA

TABLE 6

	Reasoning	Speaking	Computation	Interpretation	Clerical	Mechanical	Dexterity	Application	Accuracy	Creativity	Inquiry	Independence	Managerial	Professional	Attitudes	Values	Personal Habits	Work Habits	Grooming	Social Adjustment	Home Life
Food and Kindred Products	3	2	5	2	5	6	2	2	6	3	2		2		5		4	5	5	1	1
Tobacco Products	1		1	1	1	1	1	1	1			1	1		1	1	1	1	1		1
Textile Mill Products	1				1																
Apparel and Related Products	11	3	1	5	8	9	11	8	11	4	3	3	5		10	5	6	7	9	3	6
Lumber and Wood Products	5	2	3	3	3	5	4	3	5	2	1	2			5	3	2	5	1	2	1
Furniture and Fixtures	7	3	2	3	3	4	5	5	5	3	1	1	4	2	6	3	3	6	2	2	3
Printing and Related Industries	1		1	1	1	2	2	2	2	2	2	1	1	1	2	1	1	2	1	2	1
Chemicals and Allied Products	3	3	2	2	3	3	1	3	3				2	2	3	3	3	3	3	2	3
Rubber and Misc. Plastic Products	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Leather and Leather Products	1	1	1		1	1	1		1	1			1	1	1	1	1	1		1	
Primary Metal Industries	1				1	1	1						1								
Fabricated Metal Industries	5	4	2	3	2	3	4	5	5	4	2	3	3	2	4	2	3	5	1	1	2
Machinery, Except Electrical	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2	1	1	2	1		1
Electrical Machinery and Equipment	2	2	2	2	4	3	3	1	2	1	1	1	3	1	3		2	4	1	1	1
Transportation Equipment	1					1	1	1	1						1		1	1			
Miscellaneous Mfgrs.	1	1	1	1	1	2	1	1	2		1				2	1		2		1	
Totals	46	23	24	26	37	44	40	35	47	23	16	14	26	12	46	22	29	45	26	17	21

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN UNSKILLED OCCUPATIONS

TABLE 7A

PROFESSIONAL OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
Chemical Engineers	9	2	1	3	6
Electrical Engineers	4			1	1
Electronics Technicians	4	1			1
Industrial Engineers	15		1	7	8
Mechanical Engineers	22	2		2	4
Metallurgical Engineers	1				
Project Engineers	1				
Accountants	14			2	2
Newspaper Reporters	10			1	1
Editors	1				
Personnel Managers	26	1	1	6	8
Nurses	2				
Salaried Staff and Supervisory Personnel	50	3			3
SEMIPROFESSIONAL OCCUPATIONS					
Lab Technicians	5			1	1
Draftsmen	25	3	2	11	16
MANAGERICAL AND OFFICIAL OCCUPATIONS					
Buyers	9				
Livestock Buyers	1				
Managers	2				
Sales Managers	2				
Office Managers	1				

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN SKILLED OCCUPATIONS

TABLE 7B

CLERICAL AND SALES OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
CLERICAL AND KINDRED OCCUPATIONS					
Stenographers	38	1	5	8	14
Typists	59		8	13	21
Secretaries	45	2	6	10	18
Bookkeepers	69		8	4	12
Shipping-Receiving Clerks	72	2	1	9	12
Office Machine Operators	29		2	4	6
Billing Clerks	1				
General Office Workers	13		2	2	4
Shipping-Packing Clerks	52		2	1	3
Markers	4				
Checkers	4		1		1
Cost Department Personnel	3				
Schedulers	1				
Payroll Clerks	4				
Personnel Clerks	3				
Receptionists	2				
Adjusters	50				
Tool Crib Clerks	2				
Order Pickers	5				
Inventory Control Clerks	2			3	3
SALES AND KINDRED OCCUPATIONS					
Salesmen	41	1		10	11
Advertising Salesmen	1				

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN SKILLED OCCUPATIONS

TABLE 7C

SERVICE OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
PERSONAL SERVICE OCCUPATIONS					
Practical Nurses	4	1			1
Maids and Matrons	3				
PROTECTIVE SERVICE OCCUPATIONS					
Nightwatchmen	3				
BUILDING SERVICE WORKERS AND PORTERS					
Janitors	14				

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN SEMISKILLED OCCUPATIONS

TABLE 7D

SKILLED OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
Cheese Makers	2				
Millers	2				
Seamless Machine Fixers	30		10		10
Pattern Makers	1			1	1
Upholsterers	4		2		2
Menders	2				
Stockmen	11				
Graders	4				
Furniture Finishers	11			5	5
Box Spring Makers	2				
Pressmen	2				
Compositors	1				
Job Printers	2				
Platers	1				
Printers	6	1			1
Linotype Operators	7				
Cabinetmakers	7	4		10	14
Welders	81	4	7	9	20
Layout Men	12				
Machine Tool Operators	37		15	15	30
Tool and Die Makers	35	4	1	2	7
Machinists	33	3	4	4	11
Maintenance Electricians	17			1	1
Mechanics and Repairmen	31	1	1	1	3
General Maintenance Mechanics	66		1	8	9
Automobile Mechanics	3			1	1
Refrigeration Mechanics	4				
Setup Men	66			6	6
Sheet Metal Workers	97		4	22	26
Carpenters	17			3	3
Sewing Machine Repairmen	36	5	7	4	16
Inspectors	189	5			5

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN SERVICE OCCUPATIONS

TABLE 7 D

continued

SKILLED OCCUPATIONS (Cont'd)	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
Foreladies	16				
Foremen	17				
Group Leaders	25				
Supervisors	40				

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN CLERICAL AND SALES OCCUPATIONS

TABLE 7E

SEMISKILLED OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
General Woodworkers	307	5	61	192	258
Sewing Machine Operators	3080	140	479	756	1375
Pressers	188	2	9	19	30
Driver Salesmen	15				
Truck Drivers	18			2	2
Bottlers	9				
Machine Operators-Firemen	2				
Scale Operators	3				
Forklife Operators	7			5	5
Assemblers	490	8	8	65	81
Stemmers	25				
Rollers	36				
Box Machine Operators	3				
Cloth Cutters	20			2	2
Spreaders	17				
Glue Crew	6			10	10
Mattress Fillers	2				
Tape Edge Operators	1				
Felt Machine Operators	3				
Wire Formers	7				
Granulator Operators	3		1		1
Pay Load Operators	6		1		1
Hourly Production Laborers	321		60		60
Forming Roll Operators	1				
Punch Press Operators	5				
Hand Winders	1				
Vacuum Equipment Operators	2				
Automatic Screw Machine Operators	3				
Stencil Cutters	1				
Vacuum Form & Oven Operators	2				
Painters (Spray)	1				

REPORT OF 63 INDUSTRIES RELATIVE TO NUMBER OF WORKERS CURRENTLY EMPLOYED, NUMBER OF CURRENT JOB VACANCIES, AND ESTIMATED NUMBER OF JOB OPPORTUNITIES IN NEXT TWO YEARS IN PROFESSIONAL AND MANAGERIAL OCCUPATIONS

TABLE 7F

UNSKILLED OCCUPATIONS	No. of Workers Currently Employed	Current Job Vacancies	No. of Additional Job Openings: To replace present employees in next 2 years	No. of Additional Job Openings: To fill expansion requirements in next 2 years	Total No. of Workers Needed in Next 2 Years
Flour and Meal Packers	4				
Flour and Meal Mixers	2				
Folders	54				
Bundle Boys	9				
Stampers	3				
Wood Handlers	15				
Baggers	2				
Material Handlers	1	1			1
Power Press Operators	22				
Automatic Winders	14				
Coil Finishers	55				
Boxers	10				
Warehousemen	14			7	7
Classers	6				
Production Laborers	1205	15	417	40	472
Laborers	186		18	6	24

APPENDIX B

Form A - A Checklist for Industries Relating to Employment, Training Needs, and Evaluation of Schools.

Form A was devised to obtain information on skills and personality traits of the applicants which the industrialists considered to be of importance. It produced some information on the education and training of the present employees. Future job opportunities and requirements and present training needs were discussed in the interviews and listed on Form A.

The evaluation of present education and training as obtained in the public schools, the colleges, and the vocational schools were the opinions of the people interviewed. Since some of the industrialists had no connection with one or more of these educational institutions, they could not mark this section.

The section on communication was inserted to learn what communication there was between industrialists and educators, where industry participated in cooperative programs and Distributive Education, whether they visited the schools or had tours of their plants, and if they participated in Career Days.

A compilation and summary of the suggestions and comments is recorded in the various divisions of this report as they concern the different educational institutions.

Form B - Data Obtained from Industries Interviewed Relative to Current Employment, Vacancies, and Number of Additional Job Openings in Next Two Years.

FORM A

A CHECKLIST FOR INDUSTRIES RELATING TO EMPLOYMENT, TRAINING NEEDS, AND EVALUATION OF SCHOOLS

	EMPLOYMENT		TRAINING NEEDS		EVALUATION	
C O D E:	Skills needed for employment in your industry (check)		Present Training Needs		Present Education and Training	
Name of Industry:	Reasoning		Skilled		Public Adequate	
_____	Speaking		Technical		Schools: Inadeq.	
	Computation		Clerical			
	Interpretation		Managerial		Colleges: Adeq.	
_____	Clerical		Professional		Inadeq.	
	Mechanical					
	Dexterity				Vocational Adeq.	
	Application				Schools: Inadeq.	
	Accuracy					
Address:	Creativity					
	Inquiry					
_____	Independence					
	Managerial					
_____	Professional					
	Personality Traits of Applicants		Probable Future Require. (write in)		COMMUNICATION	
Representative Interviewed:	Attitudes				Administrators	
	Values				Voc. Teachers	
	Habits (Personal)				Counselors	
	Habits (Work)				Pupils	
_____	Grooming				School Board	
	Social Adjust.				Distributive Ed.	
_____	Home Life				Cooperative Prog.	
Date:					Visit Schools	
					Tours	
_____					Career Days	
	Present Employees' Education or Train.		Suggestions:		Comments:	
	4th Grade					
Product:	8th Grade					
	10th Grade					
	12th Grade					
_____	College					
_____	Vocational - Tech.					
Number Employed:	Future Job Opport. in Your Co. (No.)					
	Unskilled					
	Semi-skilled					
	Highly skilled					
	2 - year College					
	4 - year College					
	M.A.					
	Ph. D.					

FORM B

DATA OBTAINED FROM INDUSTRIES INTERVIEWED RELATIVE TO CURRENT EMPLOYMENT, VACANCIES, AND NUMBER OF ADDITIONAL JOB OPENINGS IN NEXT TWO YEARS

INDUSTRY: _____

LOCATION: _____

OCCUPATION	No. of Workers Currently Employed	Current Job Vacancies	NO. OF ADDITIONAL JOB OPENINGS					
			To replace present employees			To fill expansion requirements		
			In next year	In next 2 years	Total	In next year	In next 2 years	Total
Stenographers								
Typists								
Secretaries								
Bookkeepers								
Shipping-Receiving Clerks								
Office Machine Operators								
Mechanics and Repairmen								
Industrial Machine Repairmen								
Gen. Maintenance Mechanics								
Electronic Technicians								
Automobile Mechanics								
Maintenance Electricians								
Refrigeration Mechanics								
Business Machine Servicemen								
Machinists								
Tool and Die Makers								
Machine Tool Operators								
Layout Men								
Setup Men								
Sheet Metal Workers								
Draftsmen								
Welders								
Woodworkers (General)								
Carpenters								
Cabinetmakers								
Printers								
Linotype Operators								
Lithographic Pressmen								
Offset Pressmen								
Sewing Machine Operators								
Sewing Machine Repairmen								
Pressers								
Practical Nurses								
Cooks								
Plumbers								
Engineers								
Chemical Engineers								
Electrical Engineers								
Industrial Engineers								
Mechanical Engineers								
Metallurgical Engineers								
Accountants								
Newspaper Reporters								
Personnel Workers								
Nurses								

Information obtained from this inventory to be used by State Dept. of Ed., Frankfort Ky.

APPENDIX C

Data A - Appraisal of Public Schools, Colleges, and Vocational Schools by 56 Industrialists in the 12-County Area.

Data B - Number of Industries Indicating Educational Level of Number of Employees

DATA A
APPRAISAL OF PUBLIC SCHOOLS, COLLEGES, AND VOCATIONAL SCHOOLS BY 56 INDUSTRIALISTS IN THE 12-COUNTY AREA

	Number of Industries Appraising Adequate	Number of Industries Appraising Inadequate	Number of Industries Unable to Appraise
Public Schools	26	17	13
Colleges	22	10	24
Vocational Schools	18	22	16

DATA B
NUMBER OF INDUSTRIES INDICATING EDUCATIONAL LEVEL OF NUMBER OF EMPLOYEES

No. of Industries	No. of employees having educational level of:					
	4th Grade	8th Grade	10th Grade	12th Grade	College	Voc. Tech.
11	142					
17		740				
18			777			
19				920		
16					196	
8						40
8		(Ave.)				
12			(Ave.)			
9				(Ave.)		

ED013338

RESEARCH PROJECT ORD.2155

ATTITUDES AND BELIEFS ABOUT HOMEMAKING AND/OR HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOLS

Department of Secondary
Education and Curriculum
College of Education
Michigan State University
East Lansing, Michigan

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Research Project ORD 2155

Attitudes and Beliefs about Homemaking and/or Home Economics Education in Michigan Secondary Schools

Meta Vossbrink, Associate Professor
Home Economics Education

Sponsored by the Division of Vocational Education
Department of Education
State of Michigan

Educational Publication Services
College of Education
Michigan State University
East Lansing, Michigan

February 1966

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Meta Vossbrink

College of Education
Michigan State University
February, 1966

SCHOOLS PARTICIPATING IN THE STUDY

Homemaking or Home Economics Education teachers from the schools marked (*) participated in this study.

Class A - Vocational Home Economics Program

*Bay City	Central High School
Dearborn	Handy High School
*Escanaba	Escanaba Area High School
Flint	Southwestern High School
*Grand Ledge	Grand Ledge High School
*Lapeer	Lapeer High School
*Mt. Pleasant	Mt. Pleasant High School
Pontiac	Central High School
*Saginaw	Saginaw High School
*Traverse City	Traverse City High School
*Warren	Warren High School

Class A - General Home Economics Program

*Berkley	Berkley High School
Dearborn Heights	Robichaud High School
*Detroit	Mumford High School
*Detroit	Pershing High School
*Detroit	Redford High School
*Detroit	Western High School
*Flint	Ainsworth High School
*Grand Rapids	South High School
*Hastings	Hastings High School
*Kalamazoo	Loy Norrix High School
Livonia	Bentley High School
Muskegon	Mona Shores High School
Rochester	Rochester High School
*Southfield	Southfield High School
*Temperance	Bedford High School

Class B - Vocational Home Economics Program

Auburn Heights	Avondale High School
Berrien Springs	Berrien Springs High School
*Bronson	Central High School
*Cass City	Cass City High School
Chelsea	Chelsea High School
Croswell	Croswell-Lexington High School
*Durand	Durand High School
Flat Rock	Flat Rock High School
Fraser	Fraser High School
*Grand Rapids	Forest Hills High School
*Holly	Holly Area High School
Iron Mountain	Iron Mountain High School

*Kingsford	Kingsford High School
Manistique	Central High School
*Michigan Center	Michigan Center High School
Muskegon	Reeths-Puffer High School
*Northville	Northville High School
Parchment	Parchment High School
*Pinconning	Pinconning Area High School
*Rogers City	Rogers City High School
*St. Clair	Ward-Cottrell High School
Shelby	Shelby High School
Sturgis	Sturgis High School
Troy	Troy High School
Whitehall	Whitehall Senior High School

Class B - General Home Economics Programs

*Calumet	Calumet High School
*Comstock	Comstock High School
*Erie	Mason Consolidated High School
Grand Rapids	Kentwood High School
*Ishpeming	Ishpeming High School
*Lowell	Lowell High School
*Mt. Clemens	Chippewa Valley High School
*Orchard Lake	West Bloomfield High School
Saginaw	Buena Vista High School
*Wayne	John Glenn High School

Class C - Vocational Home Economics Program

*Beaverton	Beaverton High School
Brooklyn	Brooklyn High School
Clinton	Clinton High School
*Crystal Falls	Crystal Falls High School
Eau Claire	Eau Claire High School
Fennville	Fennville High School
*Gaylord	Gaylord Community High School
Hemlock	Hemlock High School
Imlay City	Imlay City Community High School
*Kent City	Kent City High School
Marlette	Marlette Community High School
*Middleville	Thornapple Kellogg High School
*Napoleon	Napoleon High School
Ontonagon	Ontonagon High School
*Pewamo	Pewamo-Westphalia High School
Reading	Reading High School
St. Charles	St. Charles High School
*Shepherd	Shepherd High School
Three Oaks	Three Oaks High School
White Cloud	White Cloud High School
*Yale	Yale High School

Class C - General Home Ecnomics Program

*Byron	Byron Area High School
*Freeland	Freeland High School
Hancock	Hancock Central High School
*Holton	Holton High School
*Lincoln	Alcona High School
*Ortonville	Brandon Schools High School

Class D - Vocational Home Economics Program

Bloomingdale	Bloomingdale High School
*Camden	Camden-Frontier High School
*Chassell	Chassell High School
Fairview	Fairview High School
*Hillman	Hillman High School
LeRoy	LeRoy Community High School
*Marcellus	Marcellus High School
*Mesick	Mesick Consolidated High School
*New Troy	New Troy High School
*Owendale	Owendale-Gagetown High School
Potterville	Potterville High School
*Webberville	Webberville Community High School

Class D - General Home Economics Program

Athens	Athens Area High School
Bergland	Bergland High School
*Central Lake	Central Lake High School
Dryden	Dryden High School
*Ewen	Ewen High School
*Harris	Bark River-Harris High School
*Lawton	Lawton High School
Mass	Mass High School
*North Adams	North Adams High School
Rapid River	Rapid River High School
*Schoolcraft	Schoolcraft High School
*Walkerville	Walkerville High School

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CHAPTER I

INTRODUCTION

New sensitivity to social and community reality, to problems of youth, to dynamics of change, to new organization and accent upon wage earning opportunities and employability must bring forward looking new content in homemaking and/or home economics education. If home economics teacher education has new procedures and programs to propose, the question remains, will the local schools and their administration accept these? Will the local school programs in homemaking education change at the same pace that the schools for the 60's propose? Only through a concentrated look at present practices and a study of the feelings of administrators who are responsible for changes, will these questions be resolved.

This study is a descriptive analysis of the attitudes and beliefs of administrative school personnel in Michigan secondary schools toward homemaking and/or home economics education as it is a part of the school's educational program. Feelings about purposes, organization, content and status will open new vistas in program development if the present teaching-learning situation is far removed from contemporary school organization and social living. Decisions calling for clear thinking and fundamental understandings are inevitable. Only from reliable sources should come the facts necessary in making these decisions.

Sound opinions and realistic practices in current educational systems are reliable sources for examining the learnings and outcomes in the high school of today. No better resources were available for study than the responses from superintendents, principals and counselors who exert major influence on course offerings and organization in the secondary school system.

Home Economics has been conceived as subject matter content such as food, clothing, housing and the like. Since the emphasis was placed on subject matter, the academic program at the college level was identified as Home Economics. Specific courses were listed as food, clothing and other content areas. For illustration, offerings in the food content were termed Food and Nutrition, Food Buying; those in clothing as Textiles and Clothing, Clothing Consumption and others. Homemaking was the title which usually represented the offerings at the secondary school level. Homemaking education meant the experiences and learnings involved as a part of the family function and responsibilities and jobs pertaining to the home. In recent years, some secondary school teachers have given preference to the title of home economics education indicating that referral to the original subject matter content gave dignity to the program. For this reason both meanings are used in the problem description of the study.

Specifically the task set forth within the proposal is to:

1. Examine the attitudes expressed by school personnel in administrative positions who are responsible for the decisions about program purposes and organization of local secondary school programs.

2. Apply the findings to program organization if changes are to be realized as a result of the expressed attitudes toward homemaking and/or home economics education.

3. Explore new ways of organizing the homemaking and/or home economics education program to include new emphases and innovations.

Background of the Study

The quickening pace of technological change and newer innovations in vocational education have stepped up the demand for programs which have seemingly, moved to the problems-of-people approach. Home economics education, along with other disciplines, needs to accept the challenge of helping individuals accept and live with change.

The development and the success and maintenance of a functional program in high school are dependent upon many factors. Some of the more outstanding are the point of view or philosophy of the instructors and leaders directing the program, long-time plans including guidance as an integral part of all phases of the work, social conditions in the locality, the placement and success of graduates on the job, as well as other factors.

Importance of the Study

The image of home economics which has come into focus offers little satisfaction to members of the profession. Beginning with the space age and the rivalry for scientific achievement, the public pointed to education as a factor which hindered progress and was the cause of some humiliation. With the support of press, radio and television, schools were charged with wasting the talents of youth on "frill" subjects instead of fundamentals. In the process, home economics was equated with courses responsible for undermining educational standards. Home economists have contributed most ably to technical assistance programs in underdeveloped countries in areas of nutrition, sanitation and child care. Yet the benefits from these contributions have been dismissed and home economics considered as unimportant. Attitudes such as these should not come as a complete surprise to thoughtful members of the profession. As a relatively new discipline, home economics is unfamiliar to much of the general public and often viewed with some suspicion by traditionalists among educators.

One cause of confusion is the status of high school home economics. Some counselors prefer to recommend solid or academic subjects for the college-bound student. Often home economics is suggested for a college major and only to students who show proficiency in high school courses in the same field.

Home economics is among the more vigorous and dynamic of the newer professional fields. What should be of deep concern is the failure of the public generally to appreciate this fact. To the extent that the public image is a distortion, some means should be taken to correct it. To the extent that the image reflects actual shortcomings within the profession, this study has been one means of making a candid evaluation for exploring necessary therapeutic measures. In other words, it is the intent to discover the less glamorous attitudes and practices along with the professional and scientific ones. With the assistance of selective administrative personnel in the secondary school programs such discoveries are possible.

Are there shortcomings within the profession which have contributed to this unfavorable public image? Some soul searching on the part of leaders in the profession will surely provide answers to pertinent questions about the subject.

Objectives of the Study

The objectives of the study were categorized as primary and related. These consisted of the following:

1. The primary objective is to describe and analyze the feelings about homemaking and/or home economics education in Michigan secondary schools.

2. The related objectives are:

   a) To determine and analyze the attitudes toward homemaking and/or home economics education in the local schools with reference to purpose, organization, content and status,

   b) To determine and analyze the practices of homemaking and/or home economics education in the local schools with reference to purpose, organization, content and status.

The facts will be used to better understand home economics education and as means for suggesting changes in the present program. Although each of the objectives has been realized to some degree, the basic assessments of major problems and issues were limited. Perhaps in another study, contacts with students and parents would provide information about the full realization and application of home economics practices in the secondary school program and discover additional shortcomings which have contributed to the unfavorable public image.

CHAPTER II

PROCEDURES OF THE STUDY

Overview

The need for more information about practices in the field of home economics education for improving the effectiveness of the program is evidently general throughout the profession.

This investigation was planned to utilize the judgment of many persons in order that realistic crucial issues and procedures would be studied, that the interpretation of the findings would be unbiased and that the type of assistance offered to local school administrators and teacher educators would be of genuine value to them.

The best assurance of a satisfactory school program in home economics education is to develop it on the basis of actual needs and sound basic concepts. A first step, therefore, was to explore the major ideas which would serve as guidelines in curriculum building and provide for the furtherance of learning. A wide review of the literature and research studies was attempted to discover the concepts basic for guiding local schools in their endeavors to improve the present program. The concepts, likewise, were used for designing the format of the questionnaires.

To arrive at ways and means for improving the curriculum, a study of practices and attitudes toward certain aspects of the home economics program would be desirable. Hence, the second step was to construct appropriate instruments for identifying present practices and for determining the relationship between these practices and the concepts. The questionnaire method was used to obtain information and reactions from administrators in the Michigan secondary schools with respect to the purposes, organization, content and status of the home economics education program in Michigan.

The study of attitudes and practices had three distinct phases. The first consisted of the development of instruments, the second the selection of the population and third an analysis of the findings with suggestions for possible changes. The entire project was planned, designed and executed on the simple premise that unified responsibility increases efficiency. Involvement teams were utilized at the very beginning, consisting of teachers in graduate classes, teacher educators and supervisors of home economics education and administrators in secondary schools.

The Instruments - Selection and Organization

An analysis of the literature and research studies revealed major ideas in the areas of purposes, organizational patterns, content and outcomes. An interview sheet containing information about certain aspects of the home economics program was prepared and used by members of two graduate classes conducted by the writer.

Approximately fifty persons participated in the interview process through contacts with local administrators in the respective schools where they were employed as teachers. A skeleton instrument was developed using the ideas from the literature and suggestions from administrators, teacher educators and teachers. In brief, the concepts used for studying the practices and attitudes are stated as follows:

1. The homemaking and/or home economics program is planned and developed to:

   a) Prepare students for homemaking responsibilities and activities to achieve family well-being.

   b) Help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources.

   c) Fit persons for useful employment and develop competent workers.

2. The homemaking and/or home economics program meets the following conditions:

   a) The program is planned as an integral part of the total school program.

   b) There is a comprehensive program serving the needs of individuals and groups in the community.

   c) The local program centers instruction on the needs, interests, problems or concerns of individuals and families in the local situation and the field of home economics in relation to these needs and interests.

3. The homemaking and/or home economics program includes the following provisions:

   a) Most phases of homemaking are included at the high school level of instruction.

   b) Opportunities are provided for students to learn by doing, involving actual experiences with real materials and/or persons in all areas of family living.

4. The program in homemaking and/or home economics education has gained the support of local groups and individuals because its value in the school curriculum has been established.

During the fall 1964 "follow-up program" at which time graduates from Michigan State University serving as teachers in Michigan secondary schools were contacted in their first teaching position, the writer interviewed the superintendent, principal and/or counselor in each of the schools visited. The interviewed group consisted of approximately seventy-five administrators in forty-three schools. This phase of the study was extremely valuable in that the suggestions offered by the administrators provided substantial evidence for utilizing the proposed basic concepts. For illustration in the section on "Status," ten suggestions made by the administrators became statements which defined the nature of the status of the program. Therefore, in all sections of the questionnaire, the concepts were supported by concrete illustrations of application and evidence for recording the achievement and

degree of practice. A four point measuring device was proposed during the interview procedure which assisted the respondents with recording the degree of practice evident in the specific local school program. All ideas received from administrators were incorporated in the questionnaire. The data gathering instruments were used with a sampling of twelve persons including superintendents, principals and counselors at the time of the spring 1965 follow-up visits and changes were made at the recommendations of the administrators. The revised instrument was sent to superintendents, principals and counselors in each of the schools in the population sample.

A second questionnaire was prepared for the home economics teacher who was likewise a member in the selected population sample. Four persons within the school were, in many instances, providing information about the home economics education program. The questionnaire to teachers consisted mainly of information about the content and organization but similar items on attitudes contained in the instrument to administrators were also included. Copies of the questionnaires are found in Appendix I.

The Population - Stratification and Sampling

The population was defined as the secondary schools in Michigan and a random sampling of schools provided the data. The selection aimed to reflect variation in type of school (Class A, B, C, and D), the curriculum (vocational and general), and administrative personnel (superintendents, principals and counselors in guidance).

Each of the schools selected maintained a home economics department at the secondary level and these were listed in the Directory of Home Economics Education Personnel in Michigan for 1964-65. In addition to the required listing of a home economics program, the school needed to be classified according to the Michigan High School Directory 1964-65 school year as to Class A, B, C or D. The directory is a publication of the Michigan High School Athletic Association and is titled the Michigan High School Association Bulletin. The directory includes the name of the high school, the class, the name of superintendent and principal. Table 1 illustrates the classification limits.

TABLE 1

CLASSIFICATION LIMITS MICHIGAN SECONDARY SCHOOLS[1]

Class School	School Population
A	1,100 or more
B	450 - 1,099
C	250 - 449
D	Less than 250

A third source of information required in the selection process was the Michigan News-Letter Guidance, Counseling and Testing. The publication comprises a Counselor Directory which lists the names of guidance directors in the Michigan secondary schools.

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[1]Michigan High School Athletic Association, Michigan High School Directory, Vol. XLI, No. 4-S (Lansing: Department of Public Instruction, 1964), p. 237.

With the aid of three directories, publications of the Michigan State Department of Education, an authentic sampling was assured.

The first step in determining the population was to calculate the total possible number from which the choices would be made. According to the Directory in Home Economics Education, four hundred seventy-eight towns met the qualifications. A home economics program was reported in at least one local secondary school and the school was classified in the Athletic Bulletin. Nine towns containing programs in home economics, however, were not usable because no rating had been reported in the Bulletin. Thus, four hundred seventy-eight towns and cities constituted the total population. In selecting the sample one-third of this number or one hundred fifty-nine towns and cities was considered an acceptable number and cooperation was requested from the administrator in charge of the secondary school program. One hundred nine towns accepted the invitation to assist with the study while fifty towns or cities did not reply to the request. One hundred twelve Home Economics programs--sixty-nine vocational and forty-three general--were existent in the sampling. The respondents supplying data totaled two hundred seventy-seven with ninety-eight superintendents, one hundred three principals and seventy-six counselors. The sampling of sixty-eight home economics teachers with thirty-seven vocational and thirty-one from general programs was in addition to the administrative personnel. Thus, the total number of respondents supplying information for the study consisted of three hundred forty-five persons from Michigan Secondary School programs. Tables 2, 3, 4, 5 and 6 found in Appendix II explain the distribution of responses.

Analysis of the Findings - Suggestions for Change

The data were organized according to the major issues explored in the survey--purposes of the program, organization and content, and status. A second plan for studying the responses was to classify the answers as to size schools, namely A, B, C and D. Finally, the responses were arranged in categories noting types of programs in home economics education, such as reimbursed or vocational and general.

A quantitative analysis was attempted to discover the number of responses in each program area studied and relating these to size school and type program. The findings were presented numerically in Tables and Figures using percentages as means to report and explain the specifics of the responses. The totals do not equal one hundred per cent because of the "no replies" to items in the questionnaires. A second analysis showing relationships within certain aspects of the home economics program was presented graphically. The relationships considered were:

1. The attitudes and practices reported by superintendents, principals and counselors as these pertained to purposes, status and program organization.

2. The attitudes and practices reported by superintendents, principals and counselors in vocational and general education programs.

3. The attitudes and practices reported by superintendents, principals and counselors in Class A, B, C and D schools.

CHAPTER III

HOME ECONOMICS EDUCATION IN THE SECONDARY SCHOOLS

Introduction

Increasing numbers of boys and girls in the United States are now receiving a secondary school education. Educators, therefore, are concerned that the secondary school curriculum meets the needs of these youths. They are studying reasons why students drop out or remain in school and identifying ways and means to improve and accelerate learning. In the United States, there is general agreement that a realistic secondary school education should prepare a boy and girl for work, for citizenship and for satisfying home and family life.

Preparing youth for satisfying personal, family and community life is the combined task of teachers of every subject in the secondary school. There is one field of subject matter, however, in which attention is primarily devoted to preparation for home and family living, and that is home economics and/or homemaking education. Teachers of the subject are especially trained to deal with home and family problems in their teaching. It is natural, then, that much responsibility falls on them for the development of the overall program of home and family life education in the secondary school.

Home economics education is a synthesizer of new knowledge for use by the family. It has been likened to a catalytic agent for continuous improvement of life within the home, beginning with the youngest member and inclusive of the entire family cycle. The rich productivity of the sciences and of technology is transferred into family living. One tends to believe that one's own subject has unique opportunities and in the case of Home Economics this claim can readily be substantiated.

The title by which the subject is called has been widely discussed. Is it homemaking, home economics, personal living, home arts, domestic science, food, clothing, family living? It is difficult to define and still more arduous to confine it as being an art or a science. It is a field of knowledge which is a blending of the arts and sciences and leading to further understanding of both. Home Economics borrows much from both groups of knowledge, but it is also capable of contributing far more to them than has been realized. Coon[2] found that the term "Home Economics" preferred by the Lake Placid group was one of the two most frequently used in public secondary schools while "Homemaking" was a title for more courses than "Home Economics" and in more vocational than nonvocational courses. "Family Living" was found to be the third highest of vocational courses while "Clothing" and "Food" were third and fourth in order of frequency for the nonvocational courses.

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[2]Beulah I. Coon, Home Economics in the Public Secondary Schools, U.S. Department of Health, Education, and Welfare OE - 83010, Circular No. 661 (Washington: Government Printing Office, 1962), p. 75.

Coon[3] mentioned that some degree of relationship between the sciences and their application to home and family was apparent upon reviewing the emphasis placed on Home Economics during the Lake Placid conference in the early 1900's and that reflected in the committee report on Philosophy and Objectives of the American Home Economics Association in 1959. However, with the changing nature of the society and the impact of the environment on the family and home, the focus has shifted more conspiciously to the individual and family and encompasses to a greater degree the consumer and relationship aspects in Home Economics.

Van Horn[4] reported that home economists in education are facing the greatest challenge ever presented to them. That challenge is to education for home and family living in a way that has not been done before. She praised the excellent accomplishments in the past years but life today is quite different from that when the first vocational education act was legalized. When the law was passed the society was predominately rural; homes were charged with a major function of production of goods and services for the family. Today the society is urban with two-thirds of the national population living in cities or urban communities. Today teaching of home economics is not from the point of view of production but from the primary premise of consumption. When the Smith Hughes Act was passed and the policies for administering this act were formulated; it was decided that Home Economics as one of the vocational fields would be a non-wage earning vocation. It has been difficult during these years to clarify the concept that a vocation does not of necessity involve wage earning. Home Economics is a vocational field, but not one of the fields which has placed emphasis on preparing people to earn. The result is that one of the major challenges confronting Home Economics is the challenge of tradition. The tradition has been accepted in home economics education and the administrators find it difficult to believe that this field should assume any responsibility to train girls and women for wage earning in home or community service occupations. The only way to face the challenge of tradition is to review and analyze the situation in which families now operate and move away from living in a world nearly fifty years ago. Possibly a more positive point of view would be to accept the "challenge of change." If the subject is to continue as a vital part in American education, it must remain alert to the changes in our society. This is particularly evident as the role of women continues to be altered. Our concern for the roles of women and the implications for the home economics curriculum is well accepted. It is imperative that this area of study develop an awareness of the importance of maintaining the stability and solidarity of the home while filling a dual role and to help youth effectively assume responsibilities as members of families and wage earners. This can be accomplished only if we recognize that the homemakers role is changing, and Home Economics will have to change with it.

No single part of the school's program will insure education for a satisfactory family life. To make certain that this type of education is available, the local school program should provide opportunities for improving the lives of family members. A broad curriculum is, therefore, built around activities, needs and interests of all phases of family living. It considers, too, many varieties of family life represented in America. The environment best adapted to learning about family life is the home.

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[3]Beulah I. Coon, Home Economics Instruction in the Secondary Schools (Washington, D.C.: The Center for Applied Research in Education, Inc., 1964), p. 3.

[4]Rua Van Horn, Address, presented before meeting of American Vocational Association, Home Economics Section, Atlantic City, December 11, 1963.

Purposes of Home Economics and/or Homemaking Education

Basic to the building of a sound program for the secondary school is the need to understand the purposes which education in homemaking may serve. Home economics education today is as much involved with the social development of the student as with the development of particular skills and the acquisition of knowledge. The school program is focused on learning to develop abilities needed in the home and in family life today. These abilities imply understandings basic to making decisions which involve the wise use of human and material resources as well as the application of science and art principles in everyday living in the home.

The program is planned to help boys and girls gain some homemaking skills and an understanding of human relationships which will help them to achieve more satisfying home living in their families today and later as they establish homes of their own. An assumption basic to the teaching of homemaking in the secondary schools is that education can assist students to discover better ways of meeting the situation in which they find themselves. This is consistent with the attitude in this country that it is important to accept those changes which contribute to a better way of living. When this kind of philosophy prevails in a country where new ideas, new products, and new processes are constantly being introduced, each new generation lives in homes which are quite different from those of their parents and grandparents. Education which aids young people to recognize and place value upon aspects of home and family living amid the rapid changes is vital in such a country. It is regarded a responsibility of both the home and school in the United States. Vocational programs are designed to prepare for homemaking and have an important part in secondary education. These programs usually give major attention to human relationships, child development and the management aspects.

The effective homemaking and/or home economics program is realistic in recognizing the conditions under which families are living today. Changes occurring in society are reflected in homes, often increasing the pressures there and bringing new problems which did not exist a few years ago. More married women are working, more women are carrying community responsibilities, more young people are involved in organizational activities. The age of marriage is decreasing so that many high school and college students are married and having children. There are more aged today than formerly, bringing new situations to be faced. There are more goods and services available and greater pressures to buy. The population is increasing rapidly and every year a large proportion of families move their residence.

Decisions calling for clear thinking and fundamental understandings are numerous and varied. Family problems of significance are concerned with healthy growth and development of children; structuring a home environment that satisfies members with different interests and abilities; meeting responsibilities in feeding, clothing and housing; judging services to buy with the resources available and maintaining satisfying relations within the home and between the home and community.

Some secondary schools are providing vocational preparation in home economics education. However, the extent to which this is done depends upon several factors -- the number of jobs available within the area for trained persons, the interests of students in a particular speciality, whether the school can best give the training needed, and the resources a school has to prepare for wage earning. There is some question if secondary schools can afford to provide specific preparation for wage earning in areas related to home economics. Yet, all schools with home economics programs can make use of the opportunities within home economics to increase the student's general employability and job satisfaction and assist in giving vocational guidance.

Although the primary purpose of home economics education in secondary schools is to prepare students for satisfying home and family living[5]; some attention may be given to related wage earning opportunities if persons who have certain homemaking skills are in demand in a particular community. Emphasis upon wage earning has never been given to the exclusion of preparation for homemaking activities in one's own present or future home.

Organization of Home Economics and/or Homemaking Education

Homemaking education in the secondary school is generally offered to girls. However, many schools today provide courses for boys. There has been wider recognition that men and women are partners in homemaking and both need assistance with the preparation for home and family life. The offerings may be special classes for boys alone or for boys and girls together. Some schools provide courses in Home Economics for boys and girls which deal with problems of social and personal development. Home and Family Living, an advanced course given at the eleventh or twelfth grades, is generally composed of mixed groups and considered an important aspect of the secondary school program. Here the curriculum recognizes the problems of young adults spending, marriages, young parents and women working outside the home and gives emphasis to home management, family finance, child development and family relations.

A review of the literature and results from research show that the organization of the home economics program has been patterned in several ways and these usually reflect the form of the school organization. Some of the more common plans include: junior and senior high school programs, vocational and general programs, programs by grade levels, elective and required courses, and common learnings and basic programs. That the school provides a variety of opportunities to include Home Economics in the educational program was discovered by Coon[6] in the Report of a National Study -- Home Economics in the Public Secondary Schools.

The organization of the program is often dependent on the size of the community and related to the form of the school organization itself. Home Economics is included in at least three types of school organizations -- the junior high, the junior-senior high and the senior high schools. In some instances, it is scheduled in the four-year high school program. The junior high schools usually are the kinds that have seventh and eighth grades. However, in the larger community a three-year program which includes the ninth grade is organized in the junior high school. For the junior-senior high school seventh and eighth grade programs are existent and three or four years of home economics in grades nine through twelve. When the form of organization in the senior high school is inclusive of grades ten through twelve, courses are offered at each of the years included in the educational program.

The organizational pattern in Home Economics also includes both vocational and general programs. The fourteen year age requirements for students in vocational programs is closely related to the type of program offered. Because of the age of the students, few of the vocational programs are found in the junior high schools.

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[5]Dorothy S. Lawson, "Education for Improved Family," The Bulletin of the National Association of Secondary School Principals, Vol. 48, No. 296 (Washington, D.C.: 1964), pp. 15-22.

[6]Beulah Coon, Home Economics in the Public Secondary Schools (Washington, 1962), pp. 5-20.

If the ninth grade is a part of the junior high organization, a vocational program is included at this grade level. Often schools have a vocational program in the ninth grade and above, but a general program in the seventh and eighth grades. A few schools offer certain courses in the advanced grades in which both students in vocational programs and those in general programs are enrolled. When a school has both types of programs, it is referred to as a "combination" school. The vocational programs are most obvious in the senior high school and in a majority of cases offer three years of study.

Home Economics is organized by grade levels. The number of courses varies and the number per school ranges from a single course in a small school to twelve or more semester courses in the large school. The largest number and proportion of courses appear in the ninth grade with the second highest in the tenth grade. A lesser number of offerings are found in the eleventh and twelfth grades and in the combination of the two grades. There has been a tendency for the ninth and tenth grade courses to become greater as the community becomes smaller. One may ask, "Is this also the situation in other sizes of communities because they reach more students in grades nine and ten?" If an appreciable proportion of the offerings appear in the eleventh and twelfth grades in both small size communities as well as large ones, does this reflect the opportunity for many of the mature students to profit from the courses as well as the less mature in the ninth and twelfth grades?

With many mothers working outside the home and an increase in early marriages, it may be important to have Home Economics in the early years of the secondary school so that students can participate more intelligently in home responsibilities and in making decisions.

The practice of requiring courses is found more frequently in the junior-senior high school organization with emphasis on grades seven, eight and nine. Most seventh and eighth grade courses are required but those in grades nine through twelve largely elective.

Finally, Home Economics has been organized in some secondary schools as a part of the core or common learnings program. If this plan is used, all students have contact with the field of study. An organization built on a two-year basic program with additional offerings in the form of enrichments has been the most frequent form of organization. The additional courses are generally arranged in a sequential pattern and accelerated in difficulty of content and experience. Students tend to select the enrichments in terms of their interests. The several patterns for designing courses have comprised semester, yearly and integrative offerings. Most of the vocational programs are organized on a yearly basis and the general on the semester plan.

Since Home Economics is a blending of the arts and sciences, it is important that the program is representative of the art and science aspects and the teacher is competent in each of the phases. This implies that the program has both depth and breadth at the secondary school level. Broad programs should direct attention to the basic aspects of homemaking and home living. These include:

1. Selection and purchases of goods and services for the home; consumer responsibility.
2. Maintenance of satisfactory personal and family relationships.
3. Selection, purchase, care, renovation and construction of clothing.
4. Selection, purchase, preparation, serving, conservation and storage of food for the family.
5. Care and guidance of children.
6. Selection and care of the house and of its furnishings; choosing, using and caring for home equipment.

7. Maintenance of health and home safety; home care of the sick and first aid.

8. Management of the home, the conservation and wise use of energy, time and money by family members.

Amount of emphasis given to the subject matter areas is flexible. The time spent on each aspect of homemaking is regulated by the teacher according to the concerns of the students and the organizational plan of homemaking offerings in the school. Teaching-learning situations in the school are considered most effective when the environment is conducive to learning. The furnishings, equipment and learning resources need to be in keeping with standards attainable in the community. It is desirable that furnishings and arrangements in the department represent effective teaching and learning.

A significant factor in the success and improvement of the homemaking program is a comprehensive plan for evaluation. The functional and realistic secondary school evaluates the effectiveness of its program, not in terms of ground covered, but the values which give it direction. Evaluation is based upon a clear definition of the goals to be attained and requires many types of evidence--quantitative, qualitative and descriptive--upon which the degree of attainment may be judged. Education is a process of growth in which the behavior of individuals, namely, their ways of thinking, feeling and acting is changed.[7]

New types of tests are developed and available which indicate changes in the behavior of students in the direction of ability to solve problems, attitudes of cooperativeness and social sensitivity, growth in physical and emotional adjustment and the like. Since it has long been recognized that the nature of the testing program largely determines the curriculum, this needs to become a significant forward step in home economics education; for if the programs, with enlightened leadership, are to promote democracy, they must evaluate their product in terms of the opportunities for helping to realize the goal of optimal development of all.

Content of Home Economics and/or Homemaking Curriculum

A school that sees education for home and family living as one of the major goals will include in the homemaking and other offerings, experiences in all areas of family living. A comprehensive program in home economics education is inclusive of all phases of homemaking. In 1934 Helen Atwater, editor of the Journal of Home Economics and Adelaide S. Baylor, Chief of Home Economics Education Service, U.S. Office of Education prepared a statement describing a functional program in home economics. They wrote:

> Its central concept is the home as the setting for personal development and family relationships, and it tends more and more to present as functions of the home rather than as isolated subjects or skills, the care of children; family economics; household management; the selection preparation, utilization, and care of food and clothing; and family relationships. Which of the elements are to receive emphasis under given conditions is held to depend upon the real interests and needs of the

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[7]Ralph W. Tyler, Basic Principles of Curriculum and Instruction (Chicago: The University of Chicago Press, 1950), pp. 44-53.

individuals and families to be reached. Both content and emphasis have varied with the development of our knowledge of the underlying sciences that contribute to home and family life, with the improvement of educational procedures for different education levels, and with the changing needs of our changing social and economic order.[8]

Thus, the content of homemaking courses in the schools is based upon findings of study, research and experimentation as well as practices of good homemakers. As new research is completed, curriculums and methods of instruction in homemaking education are reviewed and revised in light of research findings. Emphasis given to up-to-date content and teaching methods based on research has helped to make Home Economics a subject accepted by laymen and educators in both the secondary schools and colleges of the United States.

Some aspects of Home Economics may appear as a separate area of study, some interwoven with others. The content or parts related to skills have usually been represented by food and clothing. The importance of relationships, management and consumer competence in modern living has given focus to goals and learning experiences in these directions.[9] The inclusion of child development has been evident for a number of years in the more comprehensive secondary school programs. Courses enrolling boys usually include the study of family economics, housing and home furnishings, child care and development, relationships of teenage students to each other and to their parents, personal appearance, selection and care of clothing, food and how it affects health and human relations and other topics of interest to both men and women.

Numerous outcomes in home economics education in the secondary school program will reveal the development of attitudes, interests and appreciations while others will reflect increased intelligent use of resources, wiser decisions and more realistic and functional assistance to the family.[10]

With careful planning, the homemaking curriculum can provide such experiences which contribute to personal growth, initiative leadership, self-confidence and cooperation of able students. When the community is informed about the homemaking program and the school makes certain that the offerings are rightfully interpreted to the school clientele, a deeper appreciation of the program's service to them and their children will result.

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[8]U. S. Department of Health, Education, and Welfare, Education for Homemaking in the Secondary Schools of the United States, Special Series No. 4 (Washington: Government Printing Office, 1955), pp. 2-3.

[9]The Committee on Philosophy and Objectives of Home Economics, Home Economics New Directions (Washington, D.C.: American Home Economics Association, 1959, pp. 4-5.

[10]Beulah Coon, Home Economics Instruction in the Secondary Schools, (Washington, D.C.: 1964), p. 3.

CHAPTER IV

FINDINGS OF THE STUDY

The need to critically examine the purposes, approaches and outcomes of homemaking and/or home economics education in the local schools appeared increasingly urgent. Persons in a unique directive position in the Michigan secondary schools were considered valid and reliable resources for supplying basic information about the program. If the responses reflected weaknesses in home economics education, a plan of action focused on sound structure and wise decisions could readily bring forth effective revisions. A first step in the direction of change is the approval by those in authority to sanction and encourage the change. Thus, attitudes of administrative leaders toward home economics education and observed practices in the secondary school program were regarded as influential means for recommending revisions in the program.

It was believed that some clarification of the present situation and information about the homemaking program might explain more fully the responses from administrators and reinforce the reasons for their choices. A limited description of the present program precedes the information on attitudes and practices and was submitted by sixty-eight homemaking teachers in the schools selected for the sample.

Program Content: Description of Home Economics Education in Michigan

Course Offerings

Thirty-seven vocational and thirty-one general or a total of sixty-eight schools were studied to determine the nature of the Home Economics offerings. Regardless of class size, the name by which the subject was best identified, "Homemaking" ranked first. Thirty-two of the sixty-eight schools reporting mentioned this title. Other names included Home Economics and Home and Family Living. Table 7, Appendix II shows the titles which were used to describe the present program.

Grade Levels

A second observation revealed that in most cases Home Economics I, Homemaking I and Home Economics 9 were designed as ninth grade offerings. In a few instances there appeared to be a combination of grades. For illustration, Homemaking I and Home Economics I drew from both grades nine and ten, Homemaking II and Home Economics II included grades ten with some additions from grades nine and eleven. The third sequence or Homemaking III and Home Economics III consisted of students from grades eleven and twelve with a few students from the tenth grade. Homemaking IV, Home Economics IV, or Home Economics 12 were generally represented by twelfth grade students.

If other grades appeared, these were limited in number. Home and Family Living usually included students from the twelfth grade.

As the grades tend to be advanced, specifically in the eleventh and twelfth years, the offerings were identified as subject matter content. For illustration, the courses mentioned frequently in the area of housing were Household Design, Home Furnishings, Home Decoration, Interior Design and Housing. The food content was organized into courses referred to as Experiences in Foods, Foods III and IV, Restaurant Management, and Job Training. The area of clothing was most widely represented in a variety of titles. Such courses as Needlecraft, Experiences in Clothing, Clothing III, IV, V and VI were reported as offerings at the more advanced levels in the home economics program.

Frequently, grades were combined to form a course. This practice occurred in grades eleven and twelve and was basic in developing Homemaking IV and Advanced Home Economics. Combination of grades were reported in ten vocational programs as follows: five in Class A schools, two in Class B schools, two in Class C schools and one in Class D schools and five in general programs as follows: three in Class B schools and two in Class D schools making a total of fifteen schools. A combination of grades nine and ten was likewise common in structuring the beginning courses of the home economics and/or homemaking program.

Organization Pattern

Time plan.--The offerings in home economics education were organized on a year basis in all cases with the exception of two vocational and six general programs. The latter were structured on a semester plan. When organizing the program, the sequence plan was predominant except in the cases of general programs in Class A schools where 63.6 per cent reported the courses on an individual selective basis. One-half of the general programs in Class B schools and 40 per cent of the general programs in Class C schools mentioned similar arrangements.

Elective course.--Home economics education was not a required course in a majority of the schools. The following responses indicated that the program was elective: 88 per cent vocational and 100 per cent general in Class A schools; 90 per cent vocational and 100 per cent general in Class B schools; 77 per cent vocational and 80 per cent general in Class C schools; and 75 per cent vocational and 71 per cent general in Class D schools.

Enrollees.--The programs were designed, particularly, for girls with the only course Home and Family Living composed of mixed groups. One-half of the general Class A schools, three-fourths of the general Class B schools, 60 per cent of the general Class C schools, and 57 per cent of the general Class D schools reported Home and Family Living courses as a part of the local school home economics education program. The enrollees were boys and girls. However, two years of Home Economics were required of the girls in order to enroll in the course.

Content.--The subject area most widely represented in the home economics education program was clothing. This situation existed regardless of class size, school and type of program--vocational or general. Clothing as a subject for study ranked high at the ninth, tenth, and eleventh grade levels. There tended to be less experiences in clothing at the twelfth grade in comparison with the high percentage mentioned in the lower grade levels. The food content appeared important at all grade levels and in all class schools. A high percentage of instruction in food was noticeable at the ninth and tenth grades with less emphasis at the eleventh and twelfth grade levels. However, in the above illustrations, the offerings in clothing and

food were considerably higher than the other subject content reported.

The areas of home economics included less extensively were maintenance of satisfactory relationships, management, personal and family finances, and home furnishings. The responses from teachers indicated that the offerings in the present program were broad in scope and inclusive of a variety of content areas. Data on the content offerings are explained in Tables 8 through 16, Appendix II.

Program Practices: Practices in Home Economics Education in Michigan

Program Purposes

From the literature and official documents, three statements were selected as purposes of the home economics local school program. In consultation with administrators during the follow-up visits to Michigan schools, these were reviewed and accepted. Component parts were defined and clarified in terms of descriptive items. The three purposes and definitive items were responded to by the three groups of participants in the four classes of schools.

Preparation for homemaking.--The typical wording of this purpose was, "Prepare students for homemaking responsibilities and activities to achieve family well-being." In all situations, there was positive agreement between administrators in all class schools that this purpose was basic and applied to a considerable degree in the schools they represented. This means that all items defining the purpose have been used to a considerable extent in formulating the program. There was major emphasis given to Item 3 "acquire some skills to assume responsibilities in the home" and the application ranged from considerable to high achievement.

In describing Item 2 "work cooperatively in worthwhile groups and community activities as suited to maturity" not much recognition was given to the practice in preparing for homemaking.

Responses from superintendents in vocational and general programs showed less agreement in the degree of application of Item 1 "meet personal and social problems of living in the home, school, community"; Item 4 "understand and appreciate the home as a basic unit of society"; Item 6 "provide a laboratory situation where students have an opportunity to practice democratic processes"; and Item 7 "communicate ideas and recognize and use good standards." There were minor differences apparent in the responses from principals and counselors. However, it was evident that there was a lesser degree of application of these than the items pertaining to skills.

Principals in vocational and general programs were not agreed as to the extent of application of Item 4 "understand and appreciate the home as a basic unit of society." The item was assessed to a higher degree in most cases by administrators in vocational programs. Figure 1, Appendix III describes in detail the differences among administrators. Table 17, Appendix II shows numerically the responses from the administrative group in A, B, C, and D schools and in vocational and general home economics education programs.

In general, it appeared that superintendents reported higher usage of the seven items which defined the purpose "preparation for homemaking" and that counselors were cognizant of the application of a majority of items but to a lesser degree. There was a realistic view among all administrators that a major emphasis in home

economics education was the acquisition of skills in order to assume home responsibilities.

Use of resources.--The second purpose accepted as a directive for home economics education was stated more completely, "Help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources."

Much agreement existed among the respondents regardless of class schools and vocational or general programs upon the importance of the health concept and the considerable emphasis given to the subject in designing the home economics program. The high percentage of positive responses reported on Item 1 "develop growth toward personal, mental and physical health" and Item 5 "show intelligent use of accepted health practices and wise action on health problems" illustrate the agreement among the respondents in assessing the concept.

In the case of Item 4 "become a more intelligent and economically literate consumer," Class A schools regarded the practice to a considerable degree while in the remaining schools the respondents checked application to a higher extent. There was agreement among superintendents and principals in both vocational and general programs that home economics education must be charged with the consumer assignment. The counselors reported that the consumer aspects were not applied to any great degree and questioned whether the instruction belonged to Home Economics or another discipline.

The replies pertaining to relationships, Item 2 "experience satisfying relationships in family and group living" and Item 3 "acquire knowledge and develop attitudes basic to satisfying living" showed differences of opinions among administrators. In this instance, the application of practice ranged from limited to considerable degrees. A majority of the administrative leaders in all class schools agreed to moderate application. Only in a few cases, differences were observed in the replies from the respondents in vocational and general programs. A slightly lower practice was reported by the principals and counselors while a higher application was mentioned by superintendents.

In general, the five items defining this purpose appeared to have moderate application in the secondary school programs. The health concept was recognized to a high degree in improving the quality of home life with moderate emphasis given to the consumer education aspects of home economics. Table 18, Appendix II and Figure 2, Appendix III explain in detail the responses from the administrative personnel.

Occupational competencies.--The third purpose of home economics education was described more fully as "Fit persons for useful employment and develop competent workers." With the legalizing of the Vocational Act of 1963, much publicity has been given to the subject of wage earning as a directive for home economics education and the acceptance of this purpose for the secondary school program.

Although there has been discussion of the issue, no reliable information is available to determine the feelings of school administrators or the extent of application in present programs. If changes are forthcoming, what emphasis is needed in the area of useful employment as it becomes a directive in the present school program? Table 19, Appendix II and Figure 3, Appendix III explain the responses from the superintendents, principals and counselors in Michigan secondary schools.

In all instances, there was evidence that the items defining the wage earning purpose were less widely practiced than the purposes relating to preparation for homemaking responsibilities and improvement of home life. The recognition of this purpose

was expressed in terms of limited and considerable degrees of practice. An analysis of Item 1 "see some possibilities for individual jobs which can grow out of homemaking" showed that superintendents, principals and counselors assess the practice to a moderate degree in the secondary school program. Little differences existed in the responses of administrators representing vocational and general programs. An examination of Item 4 "prepare to make intelligent choice of life work" revealed high agreement among the respondents in all class schools that a limited amount of practice was evident in the home economics education program to achieve this goal. An examination of Item 3 "become a more efficient worker through actual work experience," showed a particularly high response in each of the degree columns. The replies ranged from no provision of application to high degree of practice. Apparently, the use of work experiences or the emphasis placed upon experience in achieving the preparation for useful employment, have not been widely accepted practices. It was obvious that the wage earning purpose had been recognized to a lesser degree as a directive for the home economics education program and the limited to moderate application of the items defining the purpose gave support to this conclusion.

In general, the purposes selected for the study were practiced to a considerable and high degree as reported by the administrative leaders in all class schools and in both vocational and general programs. The greatest emphasis was placed on the preparation of students for homemaking responsibilities and for improvement of home life. Of lesser importance was the preparation for useful employment. It may be inferred from the replies, that the purposes of home economics education in the secondary schools have been fairly adequate and that the program rests on a substantially sound foundation.

Program Organization

Three major ideas were considered in exploring the basic understandings of organization. These included: (1) the program is planned as an integral part of the total school-community program; (2) there is a comprehensive program serving the needs of individuals and groups in the community; (3) the local program centers instruction on the needs, interests, problems or concerns of individuals and families in the local situation and the field of home economics in relation to these needs and interests.

Integral part of school program.--It was very evident that the administrators were in agreement as they responded to the several items defining this issue. Goals and activities in home economics education contributed to the objectives of the total school educational program and application of the practice ranged from considerable to high degree. Agreement was evident among leaders in all class schools. Only in a few cases the judgments by superintendents in general programs and principals in vocational programs, Class A schools, varied as to degree of application. Responses from Class B, C and D schools indicated that goals and activities in home economics education contribute extensively to the secondary program.

A second observation revealed that the activities were interrelated in the life and program of the school. The respondents reported the application of this practice at a fairly high degree. Administrators from all class schools agreed positively to the extent of practice. A study of Item 3 "parents and community leaders participate in planning and developing various phases of the program" and Item 4 "students participate in planning and developing various phases of the program" showed that these practices were obvious to some extent and the involvement of students, parents and teachers was partially realized. Although the responses do not indicate action to a high degree, the column representing practice to a considerable extent was fairly consistently marked by the administrative groups. Table 20,

Appendix II and Figure 4, Appendix III reveal the degree to which the home economics program is an integral part of secondary education.

Comprehensive program.--The home economics program has been based upon "home and family life needs" and the respondents mentioned the application of this practice to a considerable degree. Table 21, Appendix II and Figure 4, Appendix III illustrate the consistency of responses from the administrators. It was obvious that all class schools and both vocational and general programs recognize the practice but to a moderate degree.

All respondents agreed positively and to a high degree as they assessed "the suitability and effectiveness of the physical facilities" in the instruction of home economics education. Respondents from Class C and D schools valued the facilities to a lesser degree than did the personnel in Class A and B schools. The "learning aids" appeared to be fairly adequate for the teaching of homemaking. The respondents in assessing the suitability and effectiveness of learning aids gave the impression that Class C and D schools ranked the effectiveness of the resources lower than the administrators from Class A and B schools.

Replies showed fairly high agreement between administrators that the faculty in home economics education was adequately prepared for the instructional task. Only in Class D schools, superintendents and principals in both vocational and general programs ranked the practice to a higher degree while the counselors mentioned the application of practice to a moderate degree.

An examination of Item 4 "provision is made for continuous evaluation of the homemaking program" showed the practice was assessed with some reservation. In all cases, the replies were placed in at least two categories: considerable and high degree practice in Class A schools; little and considerable degree application in Class B, C and D schools. The lack of agreement among administrators and the rather low level of application of evaluation seemed to reflect inadequacy of a significant part of a comprehensive program.

Centers on individuals and families.--An analysis of the organizational goals and learning experiences, Table 22, Appendix II showed that in all items defining the situation, respondents mentioned some degree of application. However, the extent to which the practice was used ranged from limited to high degree. Generally, the application was reported more frequently to a moderate extent. In a few cases, age level as a determinant was more obvious in the selection of experiences than concerns, family tasks and ability levels. There was high agreement between administrators and in both vocational and general programs that selection of experiences based upon the family cycle and patterns of family living were less frequently a practice than that of age groupings. The responses seemed to show application to a moderate degree. It has been a generally accepted practice in home economics education to place emphasis and focus on the family. In this study the point of emphasis appeared to be upon the individual and the specifics within an age level.

A critical review of the eleven items which described the instructional features of home economics education, Table 23, Appendix II revealed several limitations. Utilizing the local situation as a basis for the organization of learning experiences, interrelating home experiences with class work, providing practical application in learning through use of work experiences were among the most conspicuous minority practices. The replies showed limited practice in other aspects of the program such as, visits to homes, community agencies and commercial firms in order to personalize the learning, student club experiences as a part of the instructional program, and the provision of scheduled time in which students and teacher meet in individual or group conferences. There was consistent agreement among administrators that the

practices in the above areas received limited to moderate degree of application.

In summary, there was a degree of consistency in the responses from superintendents, principals and counselors. The replies seemed to show a degree of reservation on the part of the administrators in placing value on instructional features which particularly related to experiences outside of the classroom environment. Little differences existed among respondents in vocational and general programs.

A complete study of Tables 20 through 24, Appendix II supported the conclusion that superintendents assessed application of practices somewhat higher than did principals and counselors. The responses revealed a higher degree of practice than did those from counselors. Generally, the replies from administrators in vocational programs mentioned somewhat higher values than those in general programs.

Program Content

Information about the home economics education program content was obtained by examining two major ideas: (1) most phases of homemaking are included at the high school level and (2) opportunities are provided for students to learn by doing and involve actual experiences with real materials and/or other persons in all areas of family living. It was believed that the general nature and scope of the program would be more clearly visualized if titems describing the content were directed to subject matter and experience opportunity.

Varied phases of home economics.--An analysis of Table 25, Appendix II showed that the food area of study was checked by all respondents as being applied to a high degree in the secondary program. There was consistent agreement between the administrative personnel and in all class schools as well as vocational and general programs that the food content was of major importance. A similar situation existed when the clothing content was reviewed. Much importance was attached to the acquisition of skills to assume responsibilities in the home. Food and clothing areas of study were regarded as valuable aspects of the program and received high recognition from the respondents. Upon examining the housing content which included furnishings and equipment for the home, there appeared to be agreement among the respondents that this area was emphasized to a considerable degree in the home economics education offerings. The replies from Class A school administrators indicated that the subject of housing was applied to a more extensive degree than the administrative leaders in Class B, C and D schools.

Items relating to "improving manners," "understanding one's self," and "personal grooming" appeared similar in importance and recognized to a fairly high degree in the program. The improvement of the individual learner was assessed at high level of application in all class schools and regarded important by both vocational and general program administrators. The replies ranged from considerable degree of application to high degree. Table 26, Appendix II explains more specifically the responses from the administrators.

In appraising the extent of practice in the areas of child development and family relationships, there was less application evident in the school program. Table 27, Appendix II showed that the respondents tended to assess the practices in the two areas of study at moderate to high degrees. Home economics teachers are agreed that the content is more abstract in organization and often the emphasis on actual experience more difficult to pursue.

As the schools advanced in size, the courses became more specialized in nature. This situation was particularly evident in the areas of housing, family living and child development. Class A and B school programs reported the practice of specialization to a fairly high degree. Counselors tended to see the application of child development and family relationships content areas to a little extent more frequently than to a high degree.

Opportunities for experiencing.--A study of the opportunities for students to learn by doing and which involve actual experiences indicated that the respondents reported three levels of application: (1) to a little degree, (2) to a considerable degree and (3) to a high degree. In several cases the "little degree" column was checked more frequently than the "high degree" category.

An analysis of the responses relating to "attitudes toward homemaking," "use of community projects" and "use of laymen in classroom activities" is found in Table 29, Appendix II. These items which described the experiencing procedures within the content area were practiced to a fairly low degree. When the items involved teaching-learning processes, such as "develop learning skills as surveys, interviews"; "use of directed study"; "use of student committees"; "pertinent group discussions"; "frequent opportunities for oral and written expressions by students," there was a tendency to recognize the practices to a considerable degree and less frequently to a high degree. Table 28, Appendix II showed rather high agreement in the replies from superintendents, principals and counselors. What was designated as a practice to a considerable degree in Class A schools also was true in Class B, C and D schools.

Table 30, Appendix II shows the responses which focus on "the development of leadership" (Item 5) and the "source of problems for study" (Item 10). In assessing the degree of application of these items, it was interesting to observe that several levels were mentioned by the administrators. Respondents reported application to a limited degree and more frequently to a considerable degree. However, the high degree application of the Items 5 and 10 was reported less frequently than the little and moderate degrees. Although all class schools conceived the practice as applied to a considerable degree, Class A and B schools mentioned application to a slightly higher degree than the Class C and D schools. There was greater agreement in the Class B schools between the superintendents, principals and counselors. This was true, likewise, in the responses of administrators from vocational and general programs.

In summary, the practices mentioned in the home economics education content revealed a fairly well balanced choice of offerings ranging from high selections in food and clothing to less recognition of relationships and personal improvement. When the program was advanced in years, more selective offerings appeared in home economics education and these generally were specialized in nature. Although the family is the central focus of home economics education, learnings about the individual as a family member and the living with children do not appear to be predominant features of the program.

Seemingly, the image of home economics education reflected in the content section of this study was that of food, clothing and housing. The classroom as a learning environment for resolving community problems was not a widely applied practice. Opportunities for students to learn though actual experiences with real materials and/or persons in all areas of family living were limited and application reported at a fairly low degree. Apparently this concept is an underdeveloped part of the secondary school education program.

Program Status

Administrative leaders in the secondary schools appeared quite conservative in estimating the status of the home economics program. Figures 6 through 10, Appendix III compare the responses of superintendents, principals and counselors in vocational and general programs in Classes A, B, C and D schools. A second comparative analysis is evident in Figure 11 which reports the total responses of all superintendents, principals and counselors. Tables 24 and 31, Appendix II show the percentage distribution of responses from administrators on the status of the program.

Support from community.--The local community has a reasonable understanding of the home economics secondary school program. The principals reported the application of this item more frequently than superintendents. This was true for both vocational and general programs. The responses from counselors in vocational programs indicated application of the item to a fairly high degree.

Some disagreement among administrators existed in the assessment of the concept "local groups expect the program to be broad in scope rather than limited in content." In all class schools, the replies were spread among the four categories describing the extent of application--none, little, considerable and to a high degree. Higher appraisal was recognized from responses of principals and counselors particularly in general programs. However, major emphasis was placed on application at "little and considerable" degrees. It is probable that the local community conceives the home economics program as one reasonably broad in content, with additional offerings beyond food and clothing. Items 1, 2 and 3 revealed that the program in the secondary school was locally approved and supported and the practice was evident to a moderate degree. Table 24, Appendix II describes in detail the extent of support received from the community.

Improved practices in living.--Most respondents agreed that "education for effective homemaking in today's world is needed--persons are not innately good homemakers." Table 31, Appendix II, Item 5 shows a moderately high value placed on the concept and administrators mentioned the practice at moderate to high degree. The respondents expressed varying positions in examining and discussing the idea that "homemaking education has potential value for all students." Principals in both vocational and general programs in all class schools considered the practice to a limited degree. The replies showed 63.63 per cent in Class A schools; 56 per cent in Class B schools; 41.18 per cent in Class C schools and 54.44 per cent in Class D schools with vocational programs. The principals in general programs replied similarly but at a lower estimate ranging from 30 to 44.44 per cent.

Upon examining Item 3 "local groups believe the program should be adjusted to local conditions and to changes which have taken place," wide differences of opinions were evident. The replies were more frequently in the "limited" and "considerable" extent columns. There was consistently high agreement among superintendents in all class schools as they reported the application in their respective schools--45.45 per cent in Class A schools; 58.33 per cent in Class B schools; 62.50 per cent in Class C schools and 70 per cent in Class D schools. A similar situation existed in the replies of principals in vocational programs as relatively high percentages of practice were expressed. Only minimum differences were evident in the responses from administrators in vocational and general programs. However, the extent of practice was slightly lower in general programs.

A study of Item 4 "teaching is geared to present day realities in the subject matter areas" and Item 6 "program utilizes specific aspects of many subject fields with a focus on the home and family" showed that the respondents regarded rather con-

sistently the value of home economics education in improving family living. Practices were reported more frequently in the moderate and high categories. There were differences in the replies from persons in vocational and general programs but in general a rather consistent degree of similarity between superintendents, principals and counselors. All class schools tended to place like values on the application. Table 31, Appendix II provides specific information from the respondents and a basis for the conclusions.

A study of Table 24, Appendix II, Item b provides some evidence that improved practices in family living resulted from the program in home economics education. The administrators appraised the application at limited to moderate degrees. This rank was similar in all class schools and fairly consistent among superintendents, principals and counselors. There was a tendency for superintendents to regard the practice at a higher level of application than the other administrators. Representatives from vocational programs mentioned a higher degree of application.

Improved practices in family living were realized through the program offerings and considerably strengthened the position of home economics education.

Changes in students.--In considering the personal growth of individuals reached by the program all class schools reported considerable extent of practice. A similarity of estimates of application from superintendents in both vocational and general programs was obvious in the following: Class A - 90.91 per cent vocational and 54.56 per cent general; Class B - 58.33 per cent vocational and 77.78 per cent general; Class C - 50 per cent vocational and 83.33 general and Class D - 50 per cent vocational and 63.64 per cent general. A study of Item a, Table 24, Appendix II showed that the respondents tended to appraise the practice as limited to moderate degree of application.

As administrators referred to evidences of desirable changes in students, replies were frequently recorded in the limited and moderate degree categories. More similar values appeared among superintendents and principals who reported the application to a moderate degree. Differences were evident in the responses from superintendents and principals in vocational and general programs. No set pattern was apparent in that the appraisal from respondents in Class A schools representing vocational programs was higher while assessment in Class B, C and D schools was higher in general programs. More consistency was evident in the replies from principals who tended to report similar values in both vocational and general programs. Examination of Item d, Table 24, Appendix II gave support to this conclusion.

An analysis of Item 7 "program contributes to general education of individuals," Item 8, "homemaking education has potential values for all students," and Item 9 "homemaking is intellectually stimulating," Table 31, Appendix II revealed consistent agreement among all administrators that home economics education contributed to the local school program and changes in behavior of students resulted from instruction. The appraisal was made at a considerably high degree and the practices reported in all class schools were assessed moderately high in bringing about changes in students.

In response to Item 9 "homemaking is intellectually stimulating," superintendents and principals representing vocational programs were in agreement that the offerings were regarded intellectual to a considerable degree. However, the assessments were made at a rather high degree estimate. For example, the replies revealed the following: (1) class A schools with vocational programs - superintendents 45.45 per cent and principals 90.91 per cent; (2) Class B schools with vocational programs - superintendents 54.17 per cent and principals 80 per cent; (3) Class C schools with vocational programs - superintendents 68.75 per cent and principals 52.94 per cent and

(4) Class D schools with vocational programs - superintendents 60 per cent and principals 63.64 per cent.

That "Home economics is a matter of training people to do things--to perform" (Item 10) was recognized by the administrators to a moderate degree. It was interesting to observe wide ranges in the estimates from the respondents. Table 32 reviews the positive replies presented by the administrative personnel.

TABLE 32

"HOME ECONOMICS IS A MATTER OF TRAINING PEOPLE TO DO THINGS."

Class and Type School	Percentage "Yes" Replies		
	Superintendents	Principals	Counselors
Class A school			
Vocational	45.45	63.63	50.00
General	54.55	33.33	46.67
Class B school			
Vocational	75.00	60.00	47.62
General	33.33	50.56	50.00
Class C school			
Vocational	43.75	58.82	70.00
General	66.67	60.00	33.33
Class D school			
Vocational	80.00	45.45	-----
General	54.55	40.00	75.00

That the program brings about changes in students was ranked at the considerable extent level. Some replies appeared in the "little" extent column and the large percentage of response does cause some concern about the program. Figure 6, Appendix III and Tables 22, 23 and 24, Appendix II report the specifics mentioned by the administrators.

An analysis of the ten items in Table 31, Appendix II which define the status of the program reveals that in a majority of cases, the assessments remained within "considerable to high" degree practice. Some differences existed between the administrators but only to a small extent.

Reaches large numbers.--An analysis of Item c, Table 24, Appendix II showed that in all class schools, there was fairly consistent agreement among the respondents as to moderate and limited application of the practice. In a majority of cases, greater agreement was apparent as the respondents checked the limited degree column. However, a higher percentage of responses was recorded in the moderate extent category. Administrators appeared relatively certain that a large number of persons who could benefit by the program in home economics education were being reached.

Some mixed feelings were apparent in the responses from administrators as Item e, Table 24, Appendix II was studied. Differences in values were revealed between representatives from vocational and general programs as well as among superintendents, principals and counselors as an appraisal of the issue "the program is understood and participated in by the students in the high school and the people in the community" was attempted. In only one segment of the appraisal was there some degree of consistency. All persons reported the practice at a moderate to limited extent in their respective schools. The appraisal appeared most frequently in the moderate degree category but not consistently by the three groups of respondents.

The administrators reported that the program was needed in bringing about "effective homemaking in today's world." In general, the responses were checked in the considerable to high degree columns. Table 31, Appendix II summarizes items which support the program and make it available to community groups.

Program Attitudes: Attitudes and Beliefs About Home Economics Education in Michigan

Certain aspects of home economics education were explored in the study. Twelve items were presented in the form of questions. Administrators were asked to reply positively, negatively, or with some uncertainty to each of the questions.

An analysis of the responses served to indicate their beliefs about these various parts of the program. Table 33, Appendix II shows the replies from the three groups of administrators.

Some Specific Attitudes

Grade levels.--There was agreement among the superintendents, principals and counselors both in general and vocational programs and in all classes of schools that home economics education was desirable for all grades, nine through twelve. However, the largest percentage of positive responses favored the subject as ninth and twelfth grade offerings in the school curriculum. Less emphasis was placed on the subject in the second and third years.

Enrollees.--There was high agreement that home economics education was a "sure subject" for girls and that the female secondary school population tends to be so directed. That the subject has a place for mixed groups was also recognized from the replies. Particularly were the responses pointed to mixed groups as members of home and family living classes. There was some indication that the subject is not highly acceptable as a course for boys. Information of another type tended to support this belief. During the 1964-65 school year, the Home Economics Division of the State Department of Education in Michigan reported 427 schools in 355 school districts having vocational home economics programs, grades nine through twelve. In the 427 schools there were 55,443 students with 3,757 boys and 51,686 girls.[11]

Considering the ability level of the home economics student, the average ability student was the most obvious member of the classes. The slow learner was a runner up and the higher ability level student was third in rank order. This belief was more

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[11]Statement by Mrs. Rex Todd Withers, Chief of Home Economics Education, State Department of Education, Lansing, Michigan at Eighteenth Annual State Conference for Home Economics Teachers, November 12, 1965, Pantlind Hotel, Grand Rapids, Michigan.

apparent from the respondents of Class A and B schools and from the replies of principals and counselors. The responses also indicated that majority of members enrolled in the courses were from the middle socio-economic class. However, the replies showed some students from lower and higher levels but in a smaller proportion.

Some Questions About Beliefs

A number of questions were focused on program emphasis, resource materials and expectations of students. An analysis of the replies afforded an opportunity to explore the thinking of administrative personnel in the secondary school programs in Michigan.

Question 1. Should there be a state guide for home economics education?

In all cases, the responses seemed to favor a guide but with some reservation. The replies from Class C and D schools were more receptive to this type of instructional and resource material. Principals and counselors tended to give a negative reply more frequently than superintendents. The "uncertain" replies appeared to be a rather large item and more frequent among superintendents and principals.

Question 2. In view of the requirements for graduation from high school, would a course in general homemaking at 10th or 12th grades (above the 9th) have value for potential dropouts?

There was high agreement among all administrators in all class schools that a course in general homemaking would have value for potential dropouts. Although the respondents placed greatest emphasis in home economics education at the ninth grade, a course at the tenth grade was fairly well received by the administrators regardless of class schools and vocational and general programs. The counselors appeared to give greatest support to the idea.

Question 3. Does home economics education have value for students who graduate?

The replies seemed to reveal that the subject was desirable for high school graduates. The superintendents from all class schools gave considerable support to home economics education.

Question 4. Is home economics education overemphasizing the secondary school program and underemphasizing the young adult program?

Question 5. Is home economics education being underemphasized at the secondary level?

There was a strong consensus of opinion that the program was quite satisfactory and the emphasis placed on the subject was adequate. In response to question 4, 66.67 per cent of the counselors in vocational programs, Class D schools, reported "yes" while 75 per cent in the general programs indicated "no." The counselors, 40 per cent in general programs, Class A schools indicated a feeling of overemphasis. Finally, 47.06 per cent of the principals in vocational programs, Class C schools reported "uncertain" and 35.29 per cent in general programs answered "no."

An analysis of question 5 where the issue was one of underemphasis of the program, the replies showed some disagreement among respondents that home economics education was underemphasized in the secondary school. The "no" responses may be summarized as follows: superintendents Class A schools, vocational 63.64 per cent and general 54.55 per cent; Class B schools, vocational 58.33 per cent and general 55.56 per cent; Class C schools, vocational 68.75 per cent and general 83.33 per cent; Class D schools, vocational 90 per cent and general 72.72 per cent. The replies from principals include: Class A schools, vocational 54.44 per cent and general 53.33 per cent; Class B schools, vocational 56 per cent and general 44.44 per cent (no) and 55.56 per cent (yes); Class C schools, vocational 47.06 per cent and general 80 per cent; Class D schools, vocational 45.45 per cent and general 80 per cent. In the case of counselors the responses were: Class A schools, vocational 70 per cent (yes) and general 60 per cent (yes); Class B schools, vocational 61.90 per cent (yes) and general 50 per cent (yes); Class C schools, vocational 50 per cent (no) and general 66.67 per cent (no); Class D schools, vocational 66.67 per cent (no) and general 75 per cent (uncertain). The differences expressed in question 5 were less obvious than the replies mentioned in question 4.

Question 6. Do demands for skills necessitate a change in objectives in home economics education?

It was quite apparent from the replies that the present objectives were quite adequate as they provide direction for the home economics education program. The responses showed no changes in objectives were necessary. In all cases, 50 per cent or more of the informants checked the "no column" for the reply.

Question 7. Should home economics education be offered at the junior school level?

The replies were particularly interesting because of the high degree of positive support given to the junior high school program. Table 34 shows the replies from the administrators.

TABLE 34

RESPONSES SHOWING NEED FOR HOME ECONOMICS IN JUNIOR HIGH SCHOOL

School Class and Program Type	Percentage "Yes" Replies		
	Superintendents	Principals	Counselors
Class A school			
Vocational	81.81	90.90	100.00
General	100.00	100.00	100.00
Class B school			
Vocational	87.47	80.00	85.70
General	100.00	88.89	100.00
Class C school			
Vocational	81.25	88.23	80.00
General	100.00	80.00	66.47
Class D school			
Vocational	80.00	54.54	33.33
General	81.81	70.00	75.00

Question 8. Is maximum use being made of resource material in the organization and teaching of the subject?

An analysis of the responses indicated mixed feeling about the maximum use of resources. The replies with the highest numerical count are described in the following table.

TABLE 35

USE OF RESOURCE MATERIAL IN ORGANIZATION AND TEACHING

School Class and Program Type	Percentage of Responses		
	Superintendents	Principals	Counselors
Class A school			
Vocational	45.45 y	63.63 y	50.00 n
General	45.45 n	53.33 y	33.33 n
Class B school			
Vocational	37.49 n	40.00 n	52.37 n
General	55.56 n	66.67 n	50.00 n
Class C school			
Vocational	62.50 y	58.82 n	60.00 n
General	66.64 y	60.00 y	33.33 n
Class D school			
Vocational	60.00 y	55.54 n	66.67 y
General	63.63 y	50.00 y	75.00 n

y = Yes
n = No

The number analysis seems to show that maximum use was not being made of resource material in the organization and teaching of home economics education in the secondary school.

Question 9. Does home economics education make a contribution to job opportunities and competence for the high school student?

Although numerically the percentage is varied, the replies are positive. They seem to reveal that home economics education does make some contribution to job opportunities and competence. Table 36, page 32 summarizes the highest responses.

Question 10. Would you prefer the curriculum in home economics education directed to home and family living?

The replies showed mixed feelings about a curriculum directed to home and family living. Although the majority of responses indicated a positive attitude, the percentage representation was not large enough to show a strong positive position and a high degree of preference. Table 37, page 32 shows the highest percentage of response.

TABLE 36

CONTRIBUTIONS OF HOME ECONOMICS TO JOB OPPORTUNITIES FOR HIGH SCHOOL STUDENTS

School Class and Program Type	Percentage of "Yes" Responses		
	Superintendents	Principals	Counselors
Class A school			
Vocational	90.90	90.90	90.00
General	54.55	53.33	66.66
Class B school			
Vocational	74.99	60.00	71.42
General	88.89	55.56	80.00
Class C school			
Vocational	87.50	64.70	70.00
General	83.30	60.00	66.67
Class D school			
Vocational	70.00	54.54	66.67
General	45.45	60.00	*100.00

* = Uncertain responses

TABLE 37

SHOULD THE CURRICULUM BE DIRECTED TO HOME AND FAMILY LIVING?

School Class and Program Type	Percentage of Responses		
	Superintendents	Principals	Counselors
Class A school			
Vocational	45.45 n	45.45 n	50.00 n
General	54.55 y	40.00 u	79.99 n
Class B school			
Vocational	70.82 n	40.00 y	71.42 y
General	44.44 y	55.56 y	50.00 y
Class C school			
Vocational	37.50 u	64.70 y	60.00 y
General	49.98 u	60.00 y	33.33 y
Class D school			
Vocational	50.00 y	45.45 y	66.67 n
General	72.72 y	40.00 y	50.00 y

y = Yes responses
n = No responses
u = Uncertain responses

Question 11. Should the home economics program be designed for both boys and girls?

As was mentioned previously in the study, the administrators were rather positive in their responses that home economics was for girls but mixed classes were acceptable in advanced courses such as "home and family living" in grade twelve. The beliefs seemed to show that the subject is acceptable for both boys and girls. Summarizing the highest percentage of replies, a positive view was expressed.

TABLE 38

HOME ECONOMICS PROGRAM FOR BOYS AND GIRLS

School Class and Program Type	Percentage of "Yes" Responses		
	Superintendents	Principals	Counselors
Class A school			
Vocational	90.90	90.90	90.90
General	54.55	73.33	66.66
Class B school			
Vocational	62.49	60.00	76.18
General	44.44	66.67	90.00
Class C school			
Vocational	75.00	58.42	80.00
General	66.64	80.00	66.67
Class D school			
Vocational	80.00	63.63	*66.67
General	72.72	40.00	50.00

* = No responses

Question 12. Are facilities and resource materials being evaluated as a part of the teaching-learning situation and being adjusted to curriculum improvement?

An analysis of the responses showed that facilities and resource materials are being evaluated as a part of the teaching-learning situation and likewise adjusted to curriculum improvement. Previously in the study, limited to moderate use of resource materials in the organization and teaching of home economics education was reported. However, facilities are strongly considered as an important part of the curriculum and attempts were being made to appraise the facilities. Additional comments seemed to infer that changes are made as a result of the appraisal. The replies showed that superintendents in all class schools and representing both vocational and general programs assessed the practice to a considerably high degree with percentages ranging from 72.72 per cent to 91.65 per cent. High application was reported by principals with replies ranging from 60 per cent to 100 per cent. Counselors reported a positive application with degrees ranging from 40 per cent to 100 per cent. The counselors in Class D schools and representing vocational programs reported 66.67 per cent "no" response. In all other cases the replies showed that facilities were adjusted to curriculum improvement.

Question 13. Should there be measurement of students' understanding in various areas of home economics (child development, clothing, etc.) at the several grade levels?

(a) before and after instruction

(b) with various types of devices related to the objectives

The replies from administrators revealed interesting beliefs and concerns about the role of measurement in home economics education. A positive attitude existed among all the respondents that appraisal of objectives and the degree of learning that had taken place was highly important in the development of an effective home economics education program. This was shown by the high percentage and consistency of "yes" responses among the three groups.

In summary, the attitudes and beliefs about four of the twelve aspects of the program were strongly supported by the superintendents, principals and counselors. Specifically, they accepted the purposes of the home economics program including the objective of occupational training for high school students and programs for both boys and girls. They believed measurement and evaluation of achievement of the objectives were highly important in the home economics program. In general, superintendents, principals and counselors recognized rather consistently the importance of these four aspects in developing an effective program for the secondary school.

CHAPTER V

SUMMARY OF RESULTS AND IMPLICATIONS

Many changes in the culture and economy are affecting the home and family life in our country and state alike. Moving from a production to a consumer economy has brought many problems to the family and altered the roles of family members. Technology has introduced new resources and materials which now are in need of explanation to family members in order to be of functional value to them. The accelerated pace in accumulation of knowledge, the need for specialization, the changes in focus and emphsis in education, all influence the curriculum content of Home Economics. Of the new and exciting resources and research findings, it seems difficult to judge which is most significant for home economics as a field of learning in the secondary school program. Selecting the areas of study that are needed by students becomes a real problem to teachers and planning groups in home economics education. To provide learning for students that has breadth and depth becomes a vital concern of teacher educators in the colleges and administrative staff in the local schools. Possibly the greatest challenge of our time is to change the image of the subject so that Home Economics will reach out in new directions and ventures.

In specifying the most essential abilities of today's successful homemaker, a majority of women in a nation wide survey placed good management of time at the top of a list of suggested attributes. Good management of money ranked second and positive attitudes toward homemaking was in third place. The ability to gain cooperation in the family ranked next with skills in housekeeping, food preparation and serving far down on the list.[12] Other research studies have attempted to answer questions about the status of home economics teaching but new questions concerning program content and emphases have been raised.

The subject of attitudes toward home economics education has been of interest to educators for many years. With the great impetus on improving the teaching-learning programs in the secondary school, a look at the status of the subject and attitudes of administrative personnel seemed warranted. A study of these would assist in defining the subject and suggesting changes if these were in evidence. Thus, the practices existent in present secondary school programs in Michigan and attitudes of school personnel toward the subject would provide answers to significant questions about purposes, organizational patterns and content of home economics education.

Practices in Home Economics Education

Program Purposes

The three purposes selected for the study were those most frequently reviewed

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[12] A. Kurtz King, "Needs for Homemaking Education," Practical Home Economics, October, 1962, pp. 7-19.

in the literature. These included: (1) prepare students for homemaking responsibilities and activities to achieve family well-being; (2) help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources; (3) fit persons for useful employment and develop competent workers.

Preparation for home responsibilities.--There was a positive agreement between administrators in all class schools (A, B, C, D) that preparation for homemaking responsibilities and family life was an important one. The responses indicated that this purpose was practiced to a considerable degree in the schools reporting. There was major emphasis given to the acquisition of skills to assume responsibilities in the home. The importance of the practice ranged from considerable to high achievement. It was apparent that the larger the school, a higher assessment was made of practices which defined the purpose. The responses showed that preparation for homemaking was realized to a greater degree by superintendents as they reported application in their respective schools to a higher extent. Counselors accepted the purpose but reported application to a lesser degree.

Use of resources.--An analysis of the use of human and material resources to improve the quality of home life showed considerable emphasis being placed on the health concept in designing the program. There was agreement among the respondents regardless of class school or vocational and general program. In the area of consumer education as a means for improving home life, there was less agreement among the respondents as to the degree of practice within the schools they represented. Reports from Class A schools showed application to a considerable degree while in the smaller size schools, the extent of practice was rated at a higher degree. There was agreement among superintendents and principals in both vocational and general programs that the home economics education program be responsible for the teaching of consumer economics as a means to improve family life. Counselors tended to question the "consumer" assignment in home economics education. This feeling was evident among counselors of the several class schools as well as in the vocational and general programs. Apparently the question is whether consumer economics is functionally a part of the home economics education program or belongs to another discipline.

Responses referring to the area of relationships indicated differences of opinions among the administrators. A slightly lower practice was reported on the items in "relationships" by principals and counselors than those expressed by superintendents. More difficulty was evident among the respondents regardless of class schools and type of program in determining the extent of practice in the area of satisfying relationships in family and group living. The range of practice reported in the relationship area of study consisted of application to a limited degree or to a moderate degree. Only in a few cases was the relationship area applied to a high degree in the home economics education program. The items defining the use of resources to improve the quality of family life appeared to be practiced to a considerable degree in the local school program.

Preparation for useful employment.--The items defining this purpose were less widely practiced than those describing the other two directives. Only to a limited degree or to a considerable degree was application of the purpose reported. Little differences existed between the responses of administrators in vocational and general programs. There was fairly high agreement among the three administrative groups in all class schools that a limited amount of practice was evident in the homemaking program to achieve the wage earning purpose.

In general, the purposes selected for the study were practiced to considerable and high degrees as reported by the respondents. This was evidenced in all class schools and in both vocational and general programs. It may be inferred from the replies that the purposes of home economics education in the secondary schools have given fairly adequate direction to the education of youth and that the program rests on a fairly sound foundation.

Organization of the Program

Three major ideas were basic in discovering the practices related to structure of the program. These included: (1) program is planned as an integral part of the total school-community program; (2) a comprehensive program serves the needs of individuals and groups in the community; (3) the local program centers instruction on the needs, interests, problems or concerns of individuals and families in the local situation and the field of home economics in relation to these needs and interests.

Integral part of the school.--Goals and activities contributed to the objective of the total education program. Positive replies came from all administrative personnel that the practice was applied to a high degree. Class B, C and D schools reported application to an extensive degree while superintendents from Class A schools in general programs and principals in vocational programs indicated the practice applied to a lesser degree.

The activities were interrelated in the community life and program of the school. The administrators from all class schools agreed that the activities were in keeping with the total educational programs. This was, likewise, true in the responses representing vocational and general programs.

The offerings are planned cooperatively to some extent and the involvement of students, parents and teachers is partially realized. The responses showed that in all class schools, parents and students participated only to a slightly moderate extent in program planning. There was a tendency to report the practice as rather limited in both vocational and general programs.

Comprehensive program.--There was evidence that the program is based upon home and family life needs, however, the extent of practice was limited. Administrators recognized the practice as significant but applied in the schools to a moderate degree.

The physical facilities were assessed at a high degree and replies indicated suitability of the facilities in developing an effective instructional program. The resource materials appeared to be fairly adequate for the teaching of homemaking. There was more agreement among respondents in Class C and D schools on the considerable application of practice and more consistent agreement among administrators in Class A and B schools as to more extensive application.

All respondents in all class schools and in vocational and general programs regarded the faculty as adequately prepared and chosen for the instructional task. Superintendents and principals in both vocational and general programs in Class D schools considered the practice of maintaining adequately prepared faculty to a higher degree than did the counselors who checked the practice to a considerable degree.

The respondents were more hesitant in assessing the practice of evaluation. The replies were placed in at least two categories, practiced to "considerable and high degrees" in Class A schools; "little and considerable degrees" in Class B, C and D schools.

Local centered program.--The goals and learning experiences were related more frequently when age groupings are considered. Goals that focused on the family were mentioned to a lesser degree and the practice of using such goals was reported to a considerable degree and in some cases to a limited extent. The point of emphasis seemed to be upon the individual and the age level he represents.

The organizational pattern in which instruction reaches all individuals and groups was limited and practices were less extensive as these pertained to home visits, student club experiences and the work experience program. In a majority of the items defining the instructional program a moderate degree of application was reported.

Finally, responses revealed that the support of the program by local groups was fairly adequate. The items defining the status of homemaking education were applied to a moderate degree. Evidence of improved family living was recognized by the respondents only to little and considerable degrees.

In assessing the practice of reaching large numbers, the responses ranged from little to considerable degrees. There was consistent agreement among all administrators representing both vocational and general programs and in Class A, B, C and D schools as to the moderate application.

As the replies are studied, there is some evidence that superintendents tend to assess the application of practices somewhat higher than do principals and counselors. Likewise, the replies from principals revealed a higher degree of practice than those from counselors. Generally, the responses from administrators in vocational programs regarded the practices in operation to a somewhat higher degree than those in general programs.

Content of the Program

Varied content.--The practices reported in the content aspect of the home economics education program point to a fairly well balanced choice of offerings ranging from high selections in "food and clothing" to the lesser chosen "relationships and personal improvement" emphases. When the program is advanced and upper grades are included, more selective offerings appear in the program and these generally are specialized in nature. Although the family is the central focus of the home economics education program, learnings about the individual as a family member and the living with children do not appear as predominant features of the program. The responses frequently indicated application to considerable and high extents, however, numerous replies appeared in the little extent practice column. Apparently, the image of home economics is one of "content" and the emphases most evident are "food and clothing."

Opportunities for experiencing.--The use of the classroom as a learning environment for resolving community problems was not a widely reported practice. Opportunities for students to learn through actual experience with real materials and human resources in all areas of family living were limited and the practices applied to only a moderate degree. It appeared that the concepts of work experiences and utilizing human and material resources are underdeveloped or have not been accepted fully by administrative personnel.

Attitudes toward Home Economics Education

Some ideas and beliefs appeared significant as the replies from administrators were analyzed.

1. There was consistent agreement among superintendents, principals and counselors in both vocational and general programs and in all class schools that Home Economics was desirable for all grades, nine through twelve. However, the largest number of this group favored the subject as ninth and twelfth grade offerings in the curriculum. The subject would be valuable for school dropouts and the most acceptable place for this type of offering would be the tenth grade.

2. There were mixed feelings about the enrollees. High agreement was evident that the subject was of particular value to girls and of lesser importance for boys. If mixed groups were considered, these were placed in special classes which dealt with problems of social and personal development or in home and family living courses. The home economics education enrollee usually represented the average ability level learner with the slow learner following and the higher ability level student third in rank order. As a member of the middle socio-economic class, the home economics student has precedence.

3. A state guide was considered a favorable contribution to home economics education. However, principals and counselors viewed the instructional guide with some hesitancy. A degree of indifference was expressed among the administrators, particularly those from Class A and B schools. Perhaps a reason for this feeling might be that school or city guides are already being utilized as instructional resources. However, Class C and D schools were more receptive to the guide and this was true among all administrative personnel in both vocational and general programs.

4. The community conceives the program as reasonably broad in content with additional offerings beyond food and clothing. There was a high regard for the "food and clothing" content in the curriculum.

5. There was high agreement among all respondents that the present purposes were satisfactory and an acceptable attitude toward retaining these as directives for the program. They approved the objective of occupational training for high school students. A strong opinion was evident that home economics education was receiving adequate and effective emphasis in the secondary school program.

6. Mixed feelings were reported about a curriculum directed to home and family living. Although the majority responses showed an acceptable attitude, the percentage representation was not large enough to indicate a strong positive position and preference.

7. Facilities were considered as an important part of the program and attempts are made to appraise these in light of curriculum improvement. However, according to reported practices, maximum use was not being made of human and material resources in the organization and teaching of home economics education in the secondary school program.

8. A positive attitude was apparent as administrators reported the contribution of the subject to job opportunities. Although the practices of training for wage earning were applied to a small degree, the respondents valued Home Economics as a subject for developing competence in preparation for employment. The replies show rather high agreement among the informants.

9. Evaluation was considered an important part of the home economics program. The role of evaluation needed to be strengthened in order to bring about revisions in the program and changes in the individual. Measurement before and after instruction was regarded valuable and its use highly recommended.

It was certain that positive attitudes existed among the administrators about issues such as, the need for junior high school programs; the contribution of home economics education to job opportunities; the advisability of a course in general homemaking at the tenth grade for dropouts and measurement as a valuable aspect of home economics education.

Some mixed feelings existed within the group of participants on items such as, use of resource materials; the teaching-learning environment; and a curriculum directed to home and family living.

The responses showed rather definitely that some problems do exist in the home economics secondary school program and additional study and appraisal are needed to arrive at more effective directions, designs and outcomes.

Some Suggestions for the Future

What will the home economics education program at the secondary level be like in the future? It is becoming increasingly difficult to select from the vast reservoir of knowledge that which is most significant for the program. One factor is certain and that is the need for improved articulation among grade levels as well as among areas of home economics. Planning a sequence for home economics education requires consideration of personal and family situations on various levels if we are to succeed in fostering more mature ways of meeting home and family problems. Planning for the forseeable future requires thinking ahead to what may be and to what may be desirable.

The findings from this study should have value for those who may define more precisely the field of home economics. The teacher educator and supervisor of home economics education concerned with the development of effective programs will envision strengths and weaknesses as new ventures in curriculum are attempted and more effective ways to improve the teaching-learning environment explored. The results from the study should have significant meaning for professional personnel at the higher institutions charged with the responsibility of guidance and direction in the training of teachers. Competence and security are in great demand as faculty establish a climate in the classroom conducive to the development of creative traits and intellectual curiosity of students. Assurance and skill are recognized factors for faculty in their approaches to modern programs requiring experimentation and imagination and based on needs of youth.

The local school administrators and teachers may see the results as worthy procedures in the creation and maintenance of high intellectual teaching-learning opportunities and experiences for youth in a contemporary situation. To gain full support from groups in the local community and the utilization of personal and material resources within the community, an interpretation to lay and professional groups might be a rewarding experience as the contributions of home economics education to the preparation of employment, family stability and self-realization are made known. With a full comprehension of the training in home economics education and its accomplishments in the educational program, the local community will be in a better position to enrich the educational opportunities for students and family members. Wider experiences in training and broadening the horizons of community members will be further evidenced when these groups share in the development and accomplishment of the local education program.

A few ideas are reviewed and presented in this study with the hope that a creative focus and a realistic program in home economics education shall result.

1. The program should reach in many directions and serve various groups in our American society. Its expansion is seen in programs for boys and girls alike and an extension upward with the inclusion of more effective adult programs. Men and women are partners in homemaking and need assistance with the preparation for home and family life. Programs for special groups of individuals such as the gifted, retarded and deprived are envisioned as the home economics program reaches out and serves many individuals and groups not being included at the present time.

Cooperation with other areas of education will be a major consideration as the program tends to be more expansive in organization. The involvement of lay and professional groups and effective use of human and material resources in the community will reflect a functional and realistic program. It is imperative that the program is adequately interpreted to the community members so that their services are volunteered willingly in the building of curriculums and in providing creative resources and experiences for the homemaking program.

Departments of vocational education need to work together in order to use the best thinking, practices and human and material resources in building sound curriculums. A cooperative program will be a way to make increased understandings and realistic activities possible. The several departments in the comprehensive high school will need to carry on cooperative projects as the school attempts to further the learning for youth and help students to gain skills of value both to improve family living and the job.

2. The home economics education program must accept the "Challenge of Change." If the subject is to remain forceful and be kept a vital part of educational programs as it has for these last fifty years, it must constantly be alert to the changes in our society.

The objectives which now guide the program appear to have value but these need to be redefined and expanded. The preparation for improved individual and family life has been one of the traditional purposes and brought stability and solidarity to the home. There is evidence that this objective needs to be retained but with revisions. With the changing roles of women in the society and the increased emphasis on wage earning education, new directives in home economics education are inevitable. It is certain that the program must provide new experiences in the management of resources to help youth effectively assume responsibilities as members of families and wage earners. Learnings must reflect the importance of maintaining the stability and solidarity of the home while filling a dual role. Students must be given an opportunity to gain skills of value both to homemaking and job. Education for employment in the secondary school is imperative and Home Economics has a contribution to make in accomplishing this purpose.

The content in home economics education must be reinterpreted in the same way that objectives have been redefined. Increased emphasis in the areas of relationships and management is a way for the program in the future to provide functional and active education. Decision making, use of resources, relationships of family members, community members and even world neighbors will mean provision for adequate instruction in these important areas. Experiences for students need to be provided so that they realize the characteristics of the labor market employing youthful workers and to know the availability, extent and requirements of these jobs and their effect on individuals, families and communities. The approaches to home economics education will vary among teachers and schools, but it is certain that the content must be inclusive of subject matter and experiences which prepare for dual roles--homemaking and employment.

3. Sound home economics education in the future should place emphasis on research and experimentation and a vigorous conception of these is essential if we are to continue our efforts in the total educational program. Changes in practices, attitudes and values of people reflect deep convictions about the problems of people and the described efforts to make life better. A study of new and different patterns of home economics with an opportunity to experiment on special aspects of the study will give support to realistic changes. It would seem desirable to provide students with summer work experiences which include self-evaluation of economic competence and management ability. Identifying potential dropouts and the use of the subject as one means of making contact with the learner has promise for the secondary education program.

In addition, it must increase the usefulness of research findings by making the results available to the profession and to community groups. While continuing to search out new knowledge, it is necessary to extend research related to social conditions and needs--all which grow in importance in an age of constant and rapid change.

Considering next steps in curriculum, we must concern ourselves with individual students and with effective evaluation.[13] When appraisal is made in terms of values which give the program direction, it becomes a significant part of education. The program must reflect the youths for whom it is planned as well as the social realities of the contemporary culture. Approaches based on these premises will be a significant step forward toward a more functional program of evaluation. Since interdisciplinary cooperative research is increasingly used and needed to solve many problems of family living, home economics education must contribute its services as a member of a team of specialists.

In summary, home economics education belongs in the program of a comprehensive secondary school. There will be variations in the depth of study and the school time given to the student who elects this type of training. Effective homemaking instruction gleans knowledge from many sources and applies them to better living. Knowledge, skills, and attitudes that are essential for all boys and girls as they participate concurrently and also prepare for future roles in home and family living should be identified previous to the planning of the curriculum. The program should illustrate widespread benefits and not be limited to skills per se in a narrow content area. Skills or techniques must not be regarded as ends in themselves. Realistically, no students can reject the instruction because it offers no benefits. No community which is concerned with the real needs of its youth and adults will want to be without the benefits of a good program of homemaking.

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[13] Robert S. Fleming, "Next Steps in Curriculum Development," American Vocational Journal, Vol. 39, No. 2 (February, 1964), pp. 23-25.

APPENDICES

APPENDIX I. INSTRUMENTS

Name of Interviewer _____

Name of School _____

A FOCUSED INTERVIEW

Some Beliefs About Home Economics Education in Michigan Secondary Schools

1. What is the purpose of homemaking and/or home economics education in your local secondary school program?

   Get a statement from the superintendent, principal, a teacher, a student and yourself.

2. What place does homemaking and/or home economics education have in the total school program?

   required for whom, elective by whom:

   one year, two year, three year programs:

   activity program or academic program:

   meets requirement for graduation, college preparation, etc.:

3. Who influences the student to take homemaking and/or home economics education in your school?

   Who is responsible for placement of students in classes?

4. What is your reaction to the new emphasis on wage earning in homemaking and/or home economics education in the local school secondary program?

   Get a statement from the superintendent, principal, a teacher, a student and yourself.

5. Would this type of program have a place in your school?

   If yes, why?

   If no, why not?

6. What has homemaking and/or home economics education accomplished in the local school program in your school?

   Get a statement from the superintendent, principal, a teacher, a student and yourself.

MICHIGAN STATE UNIVERSITY EAST LANSING

COLLEGE OF EDUCATION • DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM

Dear Superintendent:

A study is being made of home economics education in the high schools in Michigan. For some time a look at the attitude of administrators toward the home economics program in the local school curriculum has been desired and in 1964-65, funds were allocated for this purpose. We are selecting a sample of Class A, B, C and D schools in which home economics education is a part of the total school program and are asking your school to become one of the cooperating schools.

Inasmuch as several persons are concerned with the administration of the school curriculum we are writing the superintendent, principal and counselor of the secondary school to take part in the study. With your assistance, we hope that some specific feelings about the subject will be revealed from the responses of these persons in administrative positions. Each of you play an important role in developing and maintaining an effective local school program.

Will you kindly complete the questionnaire and return to me by Thursday, May 6. Your responses will be kept confidential but will be summarized along with the replies from the other persons being invited to participate. If you wish to have a copy of the final report, it will be necessary for you to sign your name on the title page.

Thank you very much. It will mean a great deal to home economics education, not only in Michigan but for future plans in other states. We need so much to have each of your opinions about the part that home economics shares in the education of the secondary school student.

Sincerely,

Meta Vossbrink
Associate Professor
Home Economics Education

MV:bc

Enclosure

MICHIGAN STATE UNIVERSITY EAST LANSING

COLLEGE OF EDUCATION • DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM

Dear Principal:

A study is being made of home economics education in the high schools in Michigan. For some time a look at the attitude of administrators toward the home economics program in the local school curriculum has been desired and in 1964-65, funds were allocated for this purpose. We are selecting a sample of Class A, B, C and D schools in which home economics education is a part of the total school program and are asking your school to become one of the cooperating schools.

Inasmuch as several persons are concerned with the administration of the school curriculum we are writing the superintendent, principal and counselor of the secondary school to take part in the study. With your assistance, we hope that some specific feelings about the subject will be revealed from the responses of these persons in administrative positions. Each of you play an important role in developing and maintaining an effective local school program.

Will you kindly complete the questionnaire and return to me by Thursday, May 6. Your responses will be kept confidential but will be summarized along with the replies from the other persons being invited to participate. If you wish to have a copy of the final report, it will be necessary for you to sign your name on the title page.

Thank you very much. It will mean a great deal to home economics education, not only in Michigan but for future plans in other states. We need so much to have each of your opinions about the part that home economics shares in the education of the secondary school student.

Sincerely,

Meta Vossbrink
Associate Professor
Home Economics Education

MV:bc

Enclosure

MICHIGAN STATE UNIVERSITY EAST LANSING

COLLEGE OF EDUCATION • DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM

Dear Counselor:

A study is being made of home economics education in the high schools in Michigan. For some time a look at the attitude of administrators toward the home economics program in the local school curriculum has been desired and in 1964-65, funds were allocated for this purpose. We are selecting a sample of Class A, B, C and D schools in which home economics education is a part of the total school program and are asking your school to become one of the cooperating schools.

Inasmuch as several persons are concerned with the administration of the school curriculum we are writing the superintendent, principal and counselor of the secondary school to take part in the study. With your assistance, we hope that some specific feelings about the subject will be revealed from the responses of these persons in administrative positions. Each of you play an important role in developing and maintaining an effective local school program.

Will you kindly complete the questionnaire and return to me by Thrusday, May 6. Your responses will be kept confidential but will be summarized along with the replies from the other persons being invited to participate. If you wish to have a copy of the final report, it will be necessary for you to sign your name on the title page.

Thank you very much. It will mean a great deal to home economics education, not only in Michigan but for future plans in other states. We need so much to have each of your opinions about the part that home economics shares in the education of the secondary school student.

Sincerely,

Meta Vossbrink
Associate Professor
Home Economics Education

MV:bc

Enclosure

MICHIGAN STATE UNIVERSITY EAST LANSING

COLLEGE OF EDUCATION • DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM

Dear Homemaking Teacher:

The content of the home economics education program in the Michigan Secondary school has been of interest to me for some time. In the fall of 1964, I received some financial assistance to study this facotr of our program.

Originally, I had planned to visit a number of schools and consult with you personally about the home economics program but due to recent illness, I have not been able to use my car as I had hoped. Therefore, I need to visit with you by letter and I do hope this way of working will not be too distasteful to you.

I have tried to simplify the responses as much as possible so that you will not need to take much of your time to answer the questions. Your help is very much needed if we are to get a true picture of the present practices in our Michigan schools. Knowing you as I do, I am certain you will help me and I am relying much on your responses. I shall inform you of the outcome of the study if you wish to have some of the facts.

Will you return this information in the self-addressed envelope which I have enclosed in this letter by May 24 or sooner? Thank you very kindly for your assistance.

Sincerely,

Meta Vossbrink
Associate Professor
Home Economics Education

MV:bc

Enclosure

SURVEY OF ATTITUDES AND PRACTICES
Home Economics Education

Michigan State University
Research Project No. ORD2155

Meta Vossbrink
1964-65

DIRECTIONS: **Underline**

Your position in the school: **Superintendent, Principal, Counselor**

Class school you represent: **Class A, Class B, Class C, Class D**

The type of home economics program in the school: **Vocational, General**

Name of school: _____

CHECK LIST ON PROVISIONS FOR HOME ECONOMICS EDUCATION IN A LOCAL SCHOOL

Foreward

We are interested in securing your opinion or best judgment about the purposes, approaches, and outcomes of homemaking programs in the local schools. The quickening pace of technological change and newer innovations in vocational education have stepped up the demand for programs which have seemingly moved to the problems of people approach. Home economics education, along with other disciplines, needs to accept the challenge of helping individuals adjust to and live with change. Everything you share with us will be kept strictly confidential and will be used only in compiling a summary which may be helpful in continued development of the local school program in home economics education.

It is our intent to describe and analyze the feelings about homemaking and/or home economics education in Michigan Secondary Schools.

"You Begin Checking Here"

Place a check mark for each question as it applies to your school, in the appropriate column according to the following scale:

3. Provided or applies to a high degree.

2. Provided or applies to such an extent that it has considerable effect on practice.

1. Applies to a limited degree, has only a slight effect on practice.

0. No provision.

PART I

	0	1	2	3
EDUCATIONAL PURPOSES: The homemaking and/or home economics program is planned and developed to:				
A. Prepare students for homemaking responsibilities and activities to achieve family well-being.				
1. Meet personal and social problems of living in the home, school, community.				
2. Work cooperatively in worthwhile groups and community activities as suited to maturity.				
3. Acquire some skills to assume responsibilities in the home.				
4. Understand and appreciate home as basic unit of society.				
5. Bring facts, principles, and techniques into focus in solving problems of family members.				
6. Provide a laboratory situation where students have an opportunity to practice democratic processes.				
7. Communicate ideas and recognize and use good standards.				

	0	1	2	3
B. Help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources.				
1. Develop growth toward personal, mental, and physical health or improve and maintain physical health.				
2. Experience satisfying relationships in family and group living.				
3. Acquire knowledge and develop attitudes basic to satisfying living, e.g. comfortable and artistic housing; money management; efficient home management.				
4. Become a more intelligent and economically literate consumer.				
5. Show intelligent use of accepted health practices and wise action on health problems.				
C. Fit persons for useful employment and develop competent workers.				
1. See some possibilities for individual jobs which can grow out of homemaking.				
2. Prepare for the vocation of homemaking and for related professional fields.				
3. Become a more efficient worker through actual work experience.				
4. Prepare to make intelligent choice of life work.				
5. Reveal personal understandings and characteristics of the good citizen.				
6. Improve study habits, study skills, and other work habits.				

THE PROGRAM: The homemaking and/or home economics program meets the following conditions:

A. The program is planned as an integral part of the total school-community program.

	0	1	2	3
1. The goals and activities of homemaking education contribute to the objectives of the total schools.				
2. The activities are interrelated in the life and program of the school.				
3. Parents and community leaders participate in planning and developing the various phases of the homemaking program.				
4. Students participate in planning and developing the various phases of the homemaking program.				
B. There is a comprehensive program serving the needs of individuals and groups in the community.				
1. The needs of the families and individuals in the community have been recognized and the program has been based upon home and family life needs.				
2. Physical facilities which are especially suitable and effective in the instruction of homemaking are provided and utilized.				
3. Those learning aids which are especially suitable and effective in the instruction of homemaking are provided and utilized.				
4. Provision is made for continuous evaluation of the homemaking program.				
5. Adequately qualified instructional personnel is provided for the homemaking education program.				
C. The local program centers instruction on the needs, interests, problems or concerns of individuals and families in the local situation and the field of home economics in relation to these needs and interests.				
1. Goals and learning experiences are related to:				
a. Developmental tasks of each age level.				
b. Interests, abilities, problems of specific individuals and groups concerned.				

	0	1	2	3
c. Problems, concerns, resources, values and patterns of living of families in the local community.				
d. Tasks of families throughout life cycle.				
e. Various age groups and different sexes in the school and in the community.				
2. Program is so organized as to provide instruction which reaches all individuals and groups:				
a. The local situation is recognized and utilized as a basis for determining the organization of learning experiences.				
b. Skills, facts and basic principles are used as tools for solving problems which students recognize in meeting new situations in family living and wage earning.				
c. Students carefully plan and carry out variety of worthwhile home experiences interrelated with class work.				
d. Student surveys are sometimes made to arrive at problems and concerns of the individuals and groups.				
e. Learning experiences are related to the home and social environment.				
f. Work experiences are sometimes utilized to give practical application to learning.				
g. Community persons sometimes brought into class to contribute to solution of problems.				
h. Visits to homes, community agencies, commercial firms, and/or other appropriate places frequently made.				
i. An active chapter of an organization for appropriate age group is part of the program.				

	0	1	2	3
j. Students and teacher have adequate time definitely scheduled and used for individual or small group conferences.				
k. Teacher visits homes of students and cooperates with family members in supervision of home and community experiences of students.				
3. The program has gained the support of local groups and individuals because its value in the school curriculum has been established.				
a. There are evidences of personal growth of individuals reached by the program.				
b. There are evidences of improved practices in family living.				
c. A large number of persons who could benefit by the program are being reached.				
d. There are evidences of desirable changes in behavior of pupils.				
e. The program is understood and participated in by the students in the high school and the people in the community.				
f. The department presents a desirable standard for the community (size, attractive learning, adequate library and teaching material.)				
CONTENT OF THE PROGRAM: The homemaking and/or home economics program includes the following provisions:				
A. Most phases of homemaking are included at the high school level of instruction:				
1. School, home and community experiences in planning, preparing and serving meals.				
2. Selecting, taking care of, and making clothes.				

	0	1	2	3
3. Understanding and living with children.				
4. Improving one's manners.				
5. Understanding one's self.				
6. Improving one's personal grooming.				
7. Understanding families and living in one's own home.				
8. Understanding housing including furnishing and equipment for homes.				
B. Opportunities for students to learn by doing, involving actual experiences with real materials and/or other persons in all areas of family living.				
1. Develop important learning skills, e.g. interviews, surveys.				
2. Develop proper attitudes towards homemaking.				
3. Effective use of directed study.				
4. Effective use of student committees.				
5. Opportunities for more than a few students to exercise or develop leadership qualities.				
6. Pertinent and meaningful group discussions in which more than a few participate.				
7. Frequent opportunities for both oral and written expression by students.				
8. Effective use of community and civic projects.				
9. Use of laymen to talk to classes.				
10. Bring community problems into classroom for discussion and study.				

STATUS OF THE PROGRAM: The homemaking and/or home economics program satisfies the following conditions:

	0	1	2	3
1. Local community understands the home economics program.				
2. Local groups expect the program to be broad in scope rather than limited in content.				
3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place in home and families.				
4. Teaching is geared to present day realities in the several subject matter areas.				
5. Education for effective homemaking in today's world is needed -- persons are not innately good homemakers.				
6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.				
7. Program contributes to general education of individuals.				
8. Homemaking education has potential values for all students.				
9. Homemaking education is intellectually stimulating.				
10. Home economics is a matter of training people to do things -- to perform.				

PART II

What beliefs do you have on the following ideas about homemaking and/or home economics education in your local school? Record your response by checking Yes, No, or Uncertain.

	Yes	No	Uncertain
1. Should there be a state guide for home economics education?			
2. In view of the requirements for graduation from high school, would a course in general homemaking at 10th or 12th grade (above 9th) have value for potential dropouts?			
3. Would a course in general homemaking at 10th or 12th grade have value for students who graduate?			
4. Is home economics education overemphasizing the secondary school program and underemphasizing the young adult program?			
5. Is home economics education being underemphasized at the secondary level?			
6. Do demands of parents for skills necessitate a change in objectives in home economics education?			
7. Should home economics education be offered at the junior high school level?			
8. Is maximum use being made of resource material in the organization and teaching of the subject?			
9. Does home economics education make a contribution to job opportunities and competence for the high school student?			
10. Would you prefer the curriculum in home economics education directed to home and family living?			
11. Should the home economics program be designed for both boys and girls?			
12. Are facilities and resource materials being evaluated as a part of the teaching-learning situation and adjusted to curriculum improvement?			

	Yes	No	Uncertain
13. Should there be measurement of students' understanding in various areas of home economics and at the several grade levels? (a) before and after instruction. (b) with various types of devices to measure thinking, problem-solving, etc.			

14. For whom is the home economics program at the secondary level intended?
Check your feelings as to:

Grade Level	9___ 10___ 11___ 12___
Sex	boys___ girls___ mixed groups___
Ability Level	slow learner___ average___ gifted___
Socio-economic	lower level___ middle level___ higher level___

15. If home economics education is offered at the junior high school, should it take the organization of an activity subject?

SURVEY OF ATTITUDES AND PRACTICES
Home Economics Education

Michigan State University
Research Project No. ORD2155

Meta Vossbrink
1964-65

DIRECTIONS: Underline

Class school you represent: Class A, Class B, Class C, Class D

Type of home economics program in the school: Vocational, General

Name of school: _____

Name of teacher: _____

PART I

HOME ECONOMICS EDUCATION IN SECONDARY SCHOOLS OF MICHIGAN

Directions: Content areas usually included in the home economics programs in the secondary schools of Michigan are listed below. To the right are levels of instruction where home economics is offered in the Michigan program. Will you check the content areas which are provided at the various grade levels in your school?

Content Areas in Home Economics	Grade Levels of Home Economics Offerings			
	9th	10th	11th	12th
1. Care and guidance of children.				
2. Home care of the sick, including first aid.				
3. Maintenance of health and personal well-being.				
4. Maintenance of satisfactory family relationships.				
5. Management of human and material resources available to the home.				
6. Personal and family finances, including consumer education.				
7. Selection, care, renovation, and construction of clothing.				
8. Selection and care of the home and of its furnishings.				
9. Selection, preparation, serving, conservation, and storage of food for the family.				
10. Add others				

PART II

UNDERLINE the practices in your school.

1. How is the program organized? Year basis, Semester basis

2. (a) Is the program required? Yes, No

   (b) If yes, at what instructional levels? 9th 10th 11th 12th

3. Is a sequence used in planning the offerings as: 9th 10th 11th 12th or are courses on a purely selective basis?

4. Is the program for: girls, boys, mixed groups?

5. (a) Do you have a home and family living course? Yes, No

   (b) Is the course offered to: boys, girls, mixed groups?

   (c) Does the course have a prerequisite? Yes, No

   (d) If yes, what is the prerequisite?

6. By what title is the program known in each grade level? (9th grade: Home Economics I, Homemaking I, Home and Family Living I, Food I, etc.).

   9th:

   10th:

   11th:

   12th:

APPENDIX II. TABLES

TABLE 2

NUMBER OF TOWNS WITH HOME ECONOMICS PROGRAMS 1964-65

Class School	Number of Towns	Number of Departments	Types of Departments	
			Vocational	General
A	56	134	58	76
B	142	182	128	54
C	134	140	106	34
D	123	125	61	64
*Mixed	23			
Total	478	581	353	228

*More than one class (Secondary School) is reported in town or city.

TABLE 3

DISTRIBUTION OF RESPONSES ACCORDING TO NUMBER OF SCHOOLS WITH HOME ECONOMICS PROGRAMS

Secondary School	Number of Home Economics Depts. 1964-65		Total	Number of Schools With Departments Contacted		Total	Number of Schools With Departments Responding		Total
	Voc.	Gen.		Voc.	Gen.		Voc.	Gen.	
Class A	58	76	134	19	25	44	11	15	26
Class B	128	54	182	43	18	61	25	10	35
Class C	106	34	140	35	11	46	21	6	27
Class D	61	64	125	20	21	41	12	12	24
Total	353	228	581	117	75	192	69	40	112

TABLE 4

DISTRIBUTION OF RESPONSES FROM ADMINISTRATORS IN SECONDARY SCHOOLS WITH HOME ECONOMICS PROGRAM

	Possible Sample			Responses			Superintendent			Principals			Counselors		
	Voc.	Gen.	Total	Voc.	Gen.	Total	Voc.	Gen.	Total	Voc.	Gen.	Total	Voc.	Gen.	Total
Class A	58	76	134	32	41	73	11	11	22	11	15	26	10	15	25
Class B	128	54	182	70	28	98	24	9	33	25	9	34	21	10	31
Class C	106	34	140	43	14	57	16	6	22	17	5	22	10	3	13
Class D	61	64	125	24	25	49	10	11	21	11	10	21	3	4	7
Total	353	228	581	169	108	277	61	37	98	64	39	103	44	32	76

TABLE 5

DISTRIBUTION OF RESPONSES ACCORDING TO TOWNS AND CITIES

Class Schools in Majority	Number of Towns 1964-65		Total	Number of Towns Contacted		Total	Number of Towns Responding		Total
	Voc.	Gen.		Voc.	Gen.		Voc.	Gen.	
Towns - Identified with A Programs	29	27	56	15	14	29	11	12	23
Towns - Identified with B Programs	111	31	142	55	16	71	25	10	35
Towns - Identified with C Programs	102	32	134	51	16	67	21	6	27
Towns - Identified with D Programs	61	62	123	30	31	61	12	12	24
Miscellaneous (Towns with several class schools)			23						
Total	303	152	478	151	77	228	69	40	109

TABLE 6

DISTRIBUTION OF QUESTIONNAIRES ACCORDING TO ADMINISTRATORS IN SECONDARY SCHOOLS WITH HOME ECONOMICS EDUCATION PROGRAM

Home Economics programs and Respondents	Distribution of Questionnaires					
	Sent	Total	Received	Total	No Return	Total
Class A schools - 134						
Superintendents		44		22		22
Vocational	19		11		8	
General	25		11		14	
Principals		44		26		18
Vocational	19		11		8	
General	25		15		10	
Counselors		44		25		19
Vocational	19		10		9	
General	25		15		10	
Class B schools - 182						
Superintendents		61		33		28
Vocational	43		24		19	
General	18		9		9	
Principals		61		34		27
Vocational	43		25		18	
General	18		9		9	
Counselors		61		31		30
Vocational	43		21		22	
General	18		10		8	
Class C schools --140						
Superintendents		46		22		24
Vocational	35		16		19	
General	11		6		5	
Principals		46		22		24
Vocational	35		17		18	
General	11		5		6	
Counselors		46		13		33
Vocational	35		10		25	
General	11		3		8	
Class D schools - 125						
Superintendents		41		21		20
Vocational	20		10		10	
General	21		11		10	
Principals		41		21		20
Vocational	20		11		9	
General	21		10		11	
Counselors		41		7		34
Vocational	20		3		17	
General	21		4		17	

TABLE 7

TITLES OF HOME ECONOMICS EDUCATION COURSES IN MICHIGAN SECONDARY SCHOOL PROGRAMS
37 VOCATIONAL AND 31 GENERAL

Course Titles	Class A		Class B		Class C		Class D		Total	
	Voc. 9	Gen. 11	Voc. 11	Gen. 8	Voc. 9	Gen. 5	Voc. 8	Gen. 7	Voc. 37	Gen. 31
Home Economics										
I- 9th..	4	1	4	4	2	5	...	...	10	10
-10th..	...	1	...	...	...	...	...	...	...	1
II-10th..	4	1	4	4	2	5	...	...	10	10
-11th..	...	...	...	1	...	...	...	...	...	1
III-11th..	3	1	1	4	2	4	...	...	6	9
-12th..	...	...	...	1	...	...	...	...	...	1
IV-11th..	...	...	...	...	...	1	...	...	...	1
-12th..	...	...	...	3	2	3	...	...	2	8
Homemaking										
I- 9th..	2	1	6	2	7	...	7	5	22	8
-10th..	2	...	...	...	...	...	...	...	2	...
II- 9th..	...	...	...	...	...	...	1	...	1	...
-10th..	3	1	7	2	7	...	6	5	23	8
III-10th..	...	...	...	...	1	...	...	...	1	...
-11th..	1	1	6	1	5	...	4	...	16	2
IV-12th..	...	1	4	...	2	...	2	...	8	1
V-VI-11th..	...	...	...	...	...	2	...	...	...	2
-12th..	1	...	...	...	...	...	...	...	1	...
VII-VIII-12th..	...	...	...	2	...	...	...	...	...	2
Home Economics 9										
- 9th..	...	...	...	...	...	...	...	1	...	1
-10th..	...	...	...	...	...	...	...	1	...	1
Home Economics 10										
-10th..	...	...	...	...	...	...	...	1	...	1
Home Economics 11										
-11th..	...	...	...	...	...	...	...	1	...	1
Home Economics 12										
-12th..	...	...	...	...	...	...	...	1	...	1
Personal and Family Living										
-12th..	...	...	1	...	1	...	...	...	2	...
Home and Family Living										
-11th..	...	...	...	...	...	...	1	...	1	...
-12th..	3	6	...	2	2	1	3	1	8	10

TABLE 8

PERCENTAGE DISTRIBUTION OF PRACTICES IN "CARE AND GUIDANCE OF CHILDREN" AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	77.77	81.81	88.88	87.50
General	80.00	50.00	40.00	71.42
10th				
Vocational	44.44	63.63	37.50	62.50
General	18.18	28.57	40.00	.....
11th				
Vocational	44.44	55.55	62.50	66.66
General	54.54	42.85	60.00	40.00
12th				
Vocational	55.55	63.63	87.50	100.00
General	30.00	57.14	50.00	83.33

TABLE 9

PERCENTAGE DISTRIBUTION OF PRACTICES IN "HOME CARE OF SICK" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	22.22	54.54	11.11	62.50
General	40.00	25.00	20.00	42.85
10th				
Vocational	55.55	36.36	50.00	62.50
General	27.27	42.85	60.00	50.00
11th				
Vocational	11.11	11.11	37.50	33.33
General	36.36	14.28	40.00	60.00
12th				
Vocational	11.11	25.00	50.00	.....
General	20.00	14.28	25.00	50.00

TABLE 10

PERCENTAGE DISTRIBUTION OF PRACTICES IN "MAINTENANCE OF HEALTH" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	88.88	90.90	88.88	100.00
General	100.00	62.50	80.00	100.00
10th				
Vocational	88.88	63.63	75.00	100.00
General	36.36	42.85	60.00	83.33
11th				
Vocational	77.77	63.63	62.50	83.33
General	36.36	42.85	80.00	60.00
12th				
Vocational	88.88	63.63	50.00	83.33
General	30.00	42.85	50.00	100.00

TABLE 11

PERCENTAGE DISTRIBUTION OF PRACTICES IN "MAINTENANCE OF SATISFACTORY FAMILY RELATIONSHIPS" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	77.77	90.90	77.77	87.50
General	20.00	62.50	60.00	71.42
10th				
Vocational	55.55	72.72	75.00	100.00
General	36.36	42.85	20.00	66.00
11th				
Vocational	88.88	77.77	62.50	83.33
General	27.27	71.42	20.00	80.00
12th				
Vocational	77.77	86.25	100.00	83.33
General	60.00	85.72	50.00	100.00

TABLE 12

PERCENTAGE DISTRIBUTION OF PRACTICES IN "MANAGEMENT" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	55.55	72.72	44.44	75.00
General	.....	37.50	.....	42.85
10th				
Vocational	66.66	81.81	62.50	75.00
General	36.36	57.14	20.00	66.66
11th				
Vocational	99.99	88.81	75.00	100.00
General	54.54	85.72	60.00	80.00
12th				
Vocational	88.88	75.00	62.50	100.00
General	70.00	71.42	100.00	100.00

TABLE 13

PERCENTAGE DISTRIBUTION OF PRACTICES IN "PERSONAL AND FAMILY FINANCES" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	55.55	63.63	55.55	75.00
General	.....	37.50	20.00	71.42
10th				
Vocational	66.66	72.72	62.50	75.00
General	63.63	42.85	40.00	66.66
11th				
Vocational	100.00	100.00	100.00	100.00
General	81.81	71.42	40.00	80.00
12th				
Vocational	88.88	63.63	87.50	100.00
General	60.00	85.72	50.00	83.33

TABLE 14

PERCENTAGE DISTRIBUTION OF PRACTICES IN "CLOTHING" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	99.99	100.00	100.00	100.00
General	100.00	100.00	80.00	85.72
10th				
Vocational	99.99	100.00	100.00	100.00
General	90.90	100.00	60.00	100.00
11th				
Vocational	99.99	81.81	100.00	100.00
General	90.90	71.42	80.00	100.00
12th				
Vocational	88.88	63.63	62.50	50.00
General	70.00	57.14	100.00	100.00

TABLE 15

PERCENTAGE DISTRIBUTION OF PRACTICES IN "HOME AND FURNISHINGS" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	44.44	54.54	55.55	37.50
General	20.00	12.50	20.00	57.14
10th				
Vocational	44.44	63.63	100.00	62.50
General	18.18	28.57	20.00	50.00
11th				
Vocational	77.77	72.72	100.00	100.00
General	63.63	100.00	60.00	60.00
12th				
Vocational	88.88	87.50	62.50	83.33
General	90.00	71.42	100.00	83.33

TABLE 16

PERCENTAGE DISTRIBUTION OF PRACTICES IN "FOOD FOR THE FAMILY" CONTENT AS PRESENTED BY HOMEMAKING TEACHERS

Grade in School	Classes of Schools			
	A	B	C	D
9th				
Vocational	99.99	100.00	100.00	100.00
General	80.00	75.00	80.00	85.72
10th				
Vocational	99.99	100.00	100.00	100.00
General	90.90	100.00	40.00	100.00
11th				
Vocational	99.99	100.00	100.00	83.33
General	63.63	71.42	60.00	100.00
12th				
Vocational	88.88	100.00	62.50	33.33
General	50.00	71.42	75.00	83.33

TABLE 17

PURPOSES OF THE HOME ECONOMICS SECONDARY EDUCATION PROGRAM BY CLASS SCHOOLS, 1964-65

Purpose A: Prepare students for home-making responsibilities and activities to achieve family well-being.	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. Meet personal and social problems of living in the home, school, community.																
Superintendent - Vocational	45.45	54.44	.....	.....	41.67	50.00	4.17	.....	68.75	31.25	.....	.....	50.00	50.00	.....	.....
General	27.27	63.64	.....	9.09	33.33	33.33	22.22	.....	.....	100.00	.....	.....	36.36	54.55	9.09	.....
Principal - Vocational	9.09	54.55	36.36	.....	28.00	60.00	12.00	.....	52.94	47.06	.....	.....	45.45	45.45	9.09	.....
General	60.00	40.00	.....	.....	22.22	66.67	11.11	.....	.....	100.00	.....	.....	20.00	70.00	10.00	.....
Counselor - Vocational	20.00	60.00	20.00	.....	47.62	28.57	19.05	.....	10.00	60.00	30.00	.....	.....	100.00	.....	.....
General	33.33	66.67	.....	.....	20.00	40.00	40.00	.....	33.33	33.33	33.33	.....	25.00	75.00	.....	.....
Item 2. Work cooperatively in worthwhile groups and community activities as suited to maturity.																
Superintendent - Vocational	36.36	63.64	.....	.....	20.83	54.17	25.00	.....	18.75	56.25	25.00	.....	20.00	40.00	40.00	.....
General	.....	27.27	63.64	9.09	22.22	55.56	11.11	11.11	16.67	50.00	16.67	16.67	18.18	72.73	9.09	.....
Principal - Vocational	.....	27.27	45.45	27.27	32.00	44.00	20.00	4.00	29.41	41.18	17.65	5.88	18.18	45.45	36.36	.....
General	.....	66.67	33.33	.....	.....	44.44	55.56	.....	.....	80.00	20.00	.....	20.00	40.00	30.00	10.00
Counselor - Vocational	10.00	50.00	4.00	.....	19.05	42.85	33.33	.....	10.00	60.00	20.00	10.00	.....	100.00	.....	.....
General	.....	60.00	20.00	13.33	.....	40.00	60.00	.....	33.33	.....	66.67	.....	25.00	50.00	25.00	.....
Item 3. Acquire some skills to assume responsibilities in the home.																
Superintendent - Vocational	63.64	36.36	.....	.....	79.17	20.83	.....	.....	75.00	25.00	.....	.....	70.00	30.00	.....	.....
General	72.73	27.27	.....	.....	66.67	33.33	.....	.....	66.67	33.33	.....	.....	81.82	18.18	.....	.....
Principal - Vocational	72.73	18.18	9.09	.....	52.00	40.00	4.00	4.00	52.94	47.06	.....	.....	63.64	36.36	.....	.....
General	66.67	33.33	.....	.....	55.56	44.44	.....	.....	40.00	40.00	20.00	.....	50.00	50.00	.....	.....
Counselor - Vocational	50.00	50.00	.....	.....	61.90	33.33	.....	.....	40.00	50.00	10.00	.....	.....	100.00	.....	.....
General	66.67	33.33	.....	.....	70.00	30.00	.....	.....	66.67	33.33	.....	.....	25.00	75.00	.....	.....
Item 4. Understand and appreciate home as basic unit of society.																
Superintendent - Vocational	45.45	54.55	.....	.....	70.83	25.00	4.17	.....	50.00	50.00	.....	.....	80.00	20.00	.....	.....
General	54.55	45.45	.....	.....	33.33	44.44	22.22	.....	33.33	66.67	.....	.....	54.55	45.45	.....	.....
Principal - Vocational	27.27	45.45	27.27	.....	40.00	40.00	8.00	.....	52.94	47.06	.....	.....	63.64	27.27	9.09	.....
General	60.00	40.00	.....	.....	33.33	55.56	11.11	.....	20.00	60.00	20.00	.....	60.00	20.00	20.00	.....
Counselor - Vocational	50.00	50.00	.....	.....	47.62	47.12	.....	.....	50.00	10.00	40.00	.....	.....	100.00	.....	.....
General	40.00	53.33	6.67	.....	20.00	60.00	20.00	.....	33.33	66.67	.....	.....	.....	100.00	.....	.....

TABLE 17--Continued

Purpose A: Prepare students for home-making responsibilities and activities to achieve family well-being.	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 5. Bring facts, principles, and techniques into focus in solving problems of family members.																
Superintendent - Vocational	45.45	45.45	9.09	.....	50.00	33.33	16.67	.....	31.25	56.25	12.50	.....	20.00	70.00	10.00	.....
General	27.27	72.73	.....	.....	33.33	44.44	22.22	.....	50.00	.....	50.00	.....	45.45	45.45	9.09	.....
Principal - Vocational	27.22	54.55	18.18	.....	24.00	60.00	16.00	.....	35.29	41.18	23.53	.....	45.45	54.55	.....	.....
General	20.00	73.33	6.67	.....	11.11	66.67	22.22	.....	.....	60.00	40.00	.....	20.00	60.00	20.00	.....
Counselor - Vocational	40.00	40.00	10.00	10.00	28.57	47.62	19.05	.....	.....	70.00	30.00	.....	.....	100.00	.....	.....
General	20.00	53.33	20.00	6.67	10.00	50.00	40.00	.....	.....	33.33	66.67	.....	.....	25.00	75.00	.....
Item 6. Provide a laboratory situation where students have an opportunity to practice democratic processes.																
Superintendent - Vocational	45.45	54.55	.....	.....	37.50	45.83	16.67	.....	37.50	43.75	18.75	.....	40.00	60.00	.....	.....
General	45.45	45.45	9.09	.....	22.22	55.56	22.22	.....	66.67	33.33	.....	.....	27.27	45.45	27.27	.....
Principal - Vocational	54.55	45.45	.....	.....	48.00	28.00	24.00	.....	52.94	23.53	23.53	.....	36.36	36.36	27.27	.....
General	40.00	60.00	.....	.....	44.44	33.33	22.22	.....	20.00	40.00	40.00	.....	30.00	30.00	30.00	10.00
Counselor - Vocational	30.00	50.00	20.00	.....	47.62	33.33	9.52	4.76	.....	60.00	30.00	10.00	.....	100.00	.....	.....
General	26.67	46.67	26.67	.....	20.00	70.00	.....	10.00	33.33	33.33	33.33	.....	.....	75.00	25.00	.....
Item 7. Communicate ideas and recognize and use good standards.																
Superintendent - Vocational	54.55	45.45	.....	.....	37.50	54.17	8.33	.....	37.50	62.50	.....	.....	30.00	60.00	10.00	.....
General	45.45	54.55	.....	.....	44.44	44.44	11.11	.....	66.67	33.33	.....	.....	72.73	18.18	9.09	.....
Principal - Vocational	45.45	54.55	.....	.....	40.00	52.00	4.00	.....	47.06	47.06	5.88	.....	54.55	36.36	9.09	.....
General	33.33	66.67	.....	.....	33.33	66.67	.....	.....	20.00	80.00	.....	.....	40.00	40.00	20.00	.....
Counselor - Vocational	50.00	40.00	10.00	.....	38.10	47.62	9.52	.....	30.00	60.00	10.00	.....	.....	100.00	.....	.....
General	40.00	46.67	13.33	.....	50.00	40.00	10.00	.....	66.67	33.33	.....	.....	50.00	50.00	.....	.....

TABLE 18

PURPOSES OF THE HOME ECONOMICS SECONDARY EDUCATION PROGRAM BY CLASS SCHOOLS, 1964-65

Purpose B: Help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources.	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. Develop growth toward personal, mental and physical health or improve and maintain physical health.																
Superintendent - Vocational	45.45	45.45	9.09	.....	41.67	38.33	.....	.....	56.25	43.75	.....	.....	10.00	70.00	20.00	.....
General	45.45	45.45	9.09	.....	22.22	66.67	11.11	.....	16.67	50.00	16.67	.....	27.27	63.64	9.09	.....
Principal - Vocational	18.18	72.73	9.09	.....	12.00	88.00	.....	.....	47.06	35.29	17.65	.....	36.36	45.45	18.18	.....
General	40.00	60.00	.....	.....	22.22	66.67	11.11	.....	.....	60.00	40.00	.....	30.00	50.00	20.00	.....
Counselor - Vocational	50.00	40.00	10.00	.....	23.81	57.14	14.29	.....	20.00	50.00	30.00	.....	.....	100.00	.....	.....
General	13.33	40.00	33.33	.....	40.00	40.00	10.00	.....	33.33	33.33	33.33	.....	.....	100.00	.....	.....
Item 2. Experience satisfying relationships in family and group living.																
Superintendent - Vocational	45.45	45.45	9.09	.....	29.17	54.17	16.67	.....	37.50	50.00	12.50	.....	20.00	40.00	40.00	.....
General	27.27	54.55	18.18	.....	11.11	44.44	44.44	.....	.....	50.00	16.67	.....	18.18	81.82	.....	.....
Principal - Vocational	27.27	45.45	18.18	9.09	16.00	80.00	.....	.....	23.53	64.71	11.76	.....	18.18	54.55	18.18	9.09
General	20.00	66.67	13.33	.....	11.11	77.78	11.11	.....	.....	60.00	40.00	.....	20.00	50.00	30.00	.....
Counselor - Vocational	20.00	50.00	20.00	10.00	33.33	47.62	14.29	.....	.....	30.00	60.00	10.00	.....	100.00	.....	.....
General	13.33	33.33	40.00	.....	20.00	40.00	20.00	10.00	33.33	.....	66.67	.....	.....	75.00	25.00	.....
Item 3. Acquire knowledge and develop attitudes basic to satisfying living, e.g. comfortable and artistic housing; money management; efficient home management.																
Superintendent - Vocational	45.45	54.55	.....	.....	58.33	41.67	.....	.....	68.75	31.25	.....	.....	30.00	50.00	20.00	.....
General	36.36	63.64	.....	.....	44.44	44.44	11.11	.....	33.33	33.33	.....	16.67	81.82	9.09	9.09	.....
Principal - Vocational	54.55	45.45	.....	.....	52.00	28.00	20.00	.....	47.06	47.06	5.88	.....	63.64	27.27	9.09	.....
General	46.67	46.67	6.67	.....	44.44	44.44	11.11	.....	20.00	40.00	40.00	.....	40.00	30.00	30.00	.....
Counselor - Vocational	50.00	50.00	.....	.....	28.57	42.85	23.81	.....	20.00	30.00	50.00	.....	.....	100.00	.....	.....
General	33.33	46.67	13.33	.....	50.00	30.00	10.00	.....	33.33	66.67	.....	.....	.....	75.00	25.00	.....
Item 4. Become a more intelligent and economically literate consumer.																
Superintendent - Vocational	45.45	54.55	.....	.....	70.83	29.17	.....	.....	56.25	43.75	.....	.....	40.00	50.00	.....	.....
General	45.45	54.55	.....	.....	55.56	33.33	11.11	.....	33.33	16.67	33.33	.....	81.82	9.09	9.09	.....
Principal - Vocational	45.45	45.45	9.09	.....	52.00	40.00	28.00	.....	47.06	47.06	5.88	.....	63.64	18.18	9.09	.....
General	53.33	33.33	13.33	.....	33.33	55.56	11.11	.....	40.00	40.00	20.00	.....	50.00	40.00	10.00	.....
Counselor - Vocational	40.00	50.00	10.00	.....	52.30	23.81	19.05	.....	10.00	70.00	20.00	.....	.....	100.00	.....	.....
General	6.67	66.67	13.33	.....	60.00	30.00	.....	.....	66.67	33.33	.....	.....	.....	100.00	.....	.....
Item 5. Show intelligent use of accepted health practices and wise action on health problems.																
Superintendent - Vocational	45.45	45.45	9.09	.....	37.50	45.83	16.67	.....	31.25	56.25	12.50	.....	10.00	80.00	10.00	.....
General	54.55	36.36	9.09	.....	33.33	55.56	11.11	.....	33.33	16.67	16.67	.....	54.55	36.36	9.09	.....
Principal - Vocational	.....	72.73	27.27	.....	20.00	56.00	20.00	.....	41.18	47.06	11.76	.....	54.55	36.36	9.09	.....
General	46.67	46.67	6.67	.....	33.33	22.22	44.44	.....	40.00	40.00	20.00	.....	40.00	30.00	20.00	.....
Counselor - Vocational	20.00	40.00	30.00	10.00	38.10	42.85	14.29	.....	20.00	40.00	40.00	.....	.....	100.00	.....	.....
General	13.33	40.00	33.33	.....	30.00	20.00	40.00	.....	33.33	66.67	.....	.....	25.00	75.00	.....	.....

TABLE 19

PURPOSES OF THE HOME ECONOMICS SECONDARY EDUCATION PROGRAM BY CLASS SCHOOLS, 1964-65

Purpose C. Fit persons for useful employment and develop competent workers.		Class A				Class B				Class C				Class D			
		Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
		3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. See some possibilities for individual jobs which can grow out of homemaking.																	
Superintendent	- Vocational	18.18	63.64	18.18	.....	12.50	50.00	37.50	.....	.....	75.00	25.00	.....	.....	50.00	50.00	.....
	General	36.36	27.27	36.36	.....	11.11	55.56	33.33	.....	.....	50.00	16.67	16.67	27.27	36.36	36.36	.....
Principal	- Vocational	18.18	63.64	18.18	.....	12.00	60.00	16.00	12.00	5.88	41.18	52.94	.....	9.09	54.55	36.36	.....
	General	33.33	33.33	33.33	.....	11.11	33.33	55.56	.....	.....	20.00	80.00	.....	50.00	10.00	40.00	.....
Counselor	- Vocational	40.00	50.00	10.00	.....	23.81	47.62	23.81	.....	10.00	50.00	30.00	10.00	.....	.....	100.00	.....
	General	.....	13.33	66.67	6.67	.....	30.00	60.00	.....	33.33	33.33	33.33	.....	.....	25.00	75.00	.....
Item 2. Prepare for the vocation of homemaking and for related professional fields.																	
Superintendent	- Vocational	27.27	63.64	9.09	.....	20.83	45.83	29.17	4.17	25.00	50.00	18.75	6.25	10.00	50.00	30.00	.....
	General	18.18	45.45	36.36	.....	22.22	11.11	55.56	11.11	.....	.....	66.67	16.67	.....	63.64	36.36	.....
Principal	- Vocational	9.09	63.64	18.18	9.09	8.00	44.00	40.00	4.00	11.76	58.82	23.53	5.88	18.18	36.36	45.45	.....
	General	33.33	33.33	33.33	.....	11.11	55.56	33.33	.....	.....	40.00	60.00	.....	40.00	20.00	40.00	.....
Counselor	- Vocational	30.00	50.00	20.00	.....	23.81	47.62	19.05	4.76	10.00	70.00	20.00	.....	.....	.....	100.00	.....
	General	6.67	26.67	40.00	6.67	10.00	50.00	30.00	.....	.....	66.67	33.33	.....	.....	50.00	50.00	.....
Item 3. Become a more efficient worker through actual work experience.																	
Superintendent	- Vocational	18.18	27.27	45.45	9.09	12.50	50.00	29.17	8.33	31.25	43.75	25.00	.....	.....	70.00	30.00	.....
	General	45.45	18.18	27.27	9.09	22.22	33.33	33.33	11.11	.....	33.33	16.67	33.33	18.18	45.45	36.36	.....
Principal	- Vocational	.....	54.55	45.45	.....	28.00	32.00	28.00	12.00	.....	70.59	23.53	5.88	18.18	72.73	9.09	.....
	General	33.33	33.33	26.67	6.67	11.11	66.67	11.11	11.11	20.00	60.00	20.00	.....	40.00	40.00	20.00	.....
Counselor	- Vocational	30.00	50.00	20.00	.....	23.81	38.10	23.81	9.52	.....	60.00	20.00	20.00	.....	100.00	.....	.....
	General	.....	33.33	33.33	20.00	10.00	40.00	20.00	20.00	33.33	66.67	.....	.....	25.00	50.00	25.00	.....
Item 4. Prepare to make intelligent choice of life work.																	
Superintendent	- Vocational	18.18	27.27	54.55	.....	8.33	62.50	25.00	4.17	.....	62.50	37.50	.....	.....	80.00	20.00	.....
	General	45.45	18.18	27.27	9.09	.....	55.56	33.33	11.11	.....	.....	66.67	16.67	9.09	45.45	45.45	.....
Principal	- Vocational	.....	18.18	63.64	18.18	8.00	48.00	40.00	4.00	5.88	52.94	41.18	.....	18.18	63.14	9.09	9.09
	General	33.33	40.00	13.33	13.33	.....	44.44	55.56	.....	.....	60.00	40.00	.....	30.00	20.00	50.00	.....
Counselor	- Vocational	10.00	50.00	40.00	.....	9.52	47.62	28.57	4.76	.....	50.00	40.00	10.00	.....	.....	100.00	.....
	General	.....	.....	80.00	13.33	.....	20.00	70.00	.....	.....	33.33	66.67	.....	25.00	25.00	50.00	.....
Item 5. Reveal personal understandings and characteristics of the good citizen.																	
Superintendent	- Vocational	45.45	45.45	9.09	.....	37.50	62.50	.....	.....	37.50	37.50	25.00	.....	30.00	70.00	.....	.....
	General	36.36	63.64	.....	.....	55.56	22.22	22.22	.....	.....	50.00	16.67	16.67	18.18	63.64	18.18	.....
Principal	- Vocational	.....	54.55	45.45	.....	24.00	60.00	12.00	4.00	29.41	64.71	5.88	.....	36.36	54.55	.....	9.09
	General	33.33	60.00	6.67	.....	33.33	55.56	11.11	.....	.....	60.00	40.00	.....	20.00	50.00	30.00	.....
Counselor	- Vocational	10.00	70.00	20.00	.....	19.05	61.90	14.29	.....	.....	50.00	50.00	.....	.....	100.00	.....	.....
	General	13.33	46.67	33.33	.....	20.00	50.00	20.00	.....	.....	66.67	33.33	.....	25.00	50.00	25.00	.....
Item 6. Improve study habits, study skills and other work habits.																	
Superintendent	- Vocational	18.18	72.73	9.09	.....	16.67	62.50	20.83	.....	31.25	43.75	25.00	.....	20.00	50.00	30.00	.....
	General	45.45	36.36	18.18	.....	44.44	44.44	11.11	.....	.....	50.00	16.67	16.67	18.18	63.64	18.18	.....
Principal	- Vocational	9.09	45.45	45.45	.....	24.00	44.00	28.00	14.00	23.53	64.71	11.76	.....	18.18	45.45	27.27	9.09
	General	26.67	40.00	33.33	.....	11.11	66.67	22.22	.....	.....	60.00	40.00	.....	10.00	30.00	50.00	10.00
Counselor	- Vocational	10.00	50.00	40.00	.....	14.29	38.10	33.33	9.52	10.00	30.00	40.00	20.00	.....	.....	100.00	.....
	General	.....	26.67	66.67	.....	.....	90.00	.....	.....	.....	66.67	33.33	.....	25.00	50.00	25.00	.....

TABLE 20

HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOL PROGRAM, 1964-65

A. The program is planned as an intregal part of the total school-community program.

Practices	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. The goal and activities of homemaking education contribute to the objectives of the total school.																
Superintendent - Vocational	45.45	54.55	.....	.....	58.33	33.33	8.33	.....	62.50	37.50	.....	.....	40.00	60.00	.....	.....
General	63.64	18.18	18.18	.....	55.56	33.33	11.11	.....	33.33	16.67	16.67	.....	45.45	54.55	.....	.....
Principal - Vocational	18.18	63.64	9.09	9.09	48.00	40.00	8.00	4.00	52.94	41.18	5.88	.....	45.45	45.45	9.09	.....
General	40.00	40.00	20.00	.....	33.33	44.44	22.22	.....	20.00	60.00	20.00	.....	40.00	45.45	10.00	.....
Counselor - Vocational	20.00	70.00	10.00	.....	42.86	47.62	4.76	.....	30.00	40.00	20.00	10.00	.....	100.00	.....	.....
General	40.00	40.00	6.67	.....	30.00	40.00	20.00	.....	33.33	33.33	33.33	.....	25.00	50.00	25.00	.....
Item 2. The activities are interrelated in the life and program of the school.																
Superintendent - Vocational	45.45	45.45	9.09	.....	54.17	29.17	16.67	.....	56.25	37.50	6.25	.....	40.00	60.00	.....	.....
General	27.27	63.64	9.09	.....	33.33	44.44	22.22	.....	33.33	33.33	.....	.....	45.45	45.45	9.09	.....
Principal - Vocational	18.18	36.36	36.36	9.09	28.00	60.00	4.00	4.00	47.06	47.06	5.88	.....	36.36	54.55	9.09	.....
General	20.00	46.67	33.33	.....	33.33	33.33	22.22	.....	20.00	60.00	20.00	.....	30.00	60.00	10.00	.....
Counselor - Vocational	.....	50.00	50.00	.....	38.10	52.38	4.76	.....	40.00	20.00	30.00	10.00	.....	100.00	.....	.....
General	33.33	33.33	20.00	.....	40.00	40.00	10.00	.....	33.33	33.33	33.33	.....	25.00	25.00	25.00	.....
Item 3. Parents and community leaders participate in planning and developing the various phases of the homemaking program.																
Superintendent - Vocational	.....	54.55	36.36	9.09	.....	33.33	54.17	12.50	.....	43.75	43.75	12.50	20.00	40.00	20.00	20.00
General	.....	18.18	81.82	.....	.....	22.22	33.33	44.44	.....	33.33	33.33	33.33	.....	36.36	63.64	.....
Principal - Vocational	9.09	9.09	18.18	63.64	4.00	28.00	52.00	12.00	17.65	11.76	47.06	23.53	18.18	.....	45.45	36.36
General	26.67	13.33	40.00	20.00	.....	.....	55.56	33.33	.....	40.00	20.00	40.00	.....	.....	80.00	20.00
Counselor - Vocational	.....	20.00	50.00	30.00	.....	14.29	52.38	33.33	.....	10.00	10.00	70.00	.....	.....	100.00	.....
General	.....	13.33	33.33	46.67	.....	10.00	20.00	70.00	33.33	.....	66.67	.....	.....	.....	75.00	25.00
Item 4. Students participate in planning and developing the various phases of the homemaking program.																
Superintendent - Vocational	36.36	45.45	18.18	.....	25.00	62.50	12.50	.....	37.50	43.75	18.75	.....	20.00	70.00	10.00	.....
General	27.27	45.45	27.27	.....	22.22	33.33	33.33	11.11	33.33	33.33	33.33	.....	27.27	45.45	27.27	.....
Principal - Vocational	.....	45.45	45.45	.....	12.00	44.00	24.00	12.00	17.65	52.94	29.41	.....	27.27	27.27	27.27	18.18
General	20.00	40.00	33.33	.....	22.22	22.22	55.56	.....	20.00	40.00	20.00	20.00	10.00	50.00	30.00	10.00
Counselor - Vocational	20.00	20.00	50.00	10.00	19.05	33.33	38.10	9.52	.....	40.00	10.00	40.00	.....	100.00	.....	.....
General	13.33	26.67	40.00	13.33	40.00	10.00	40.00	10.00	.....	33.33	66.67	.....	.....	50.00	50.00	.....

TABLE 21

HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOL PROGRAM, 1964-65

B. There is a comprehensive program serving the needs of individuals and groups in the community.

Practices		Class A				Class B				Class C				Class D			
		Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
		3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. The needs of the families and individuals in the community have been recognized and the program has been based upon home and family life needs.																	
Superintendent	- Vocational	45.45	36.36	18.18	.....	25.00	62.50	12.50	.....	31.25	43.75	25.00	.....	30.00	40.00	30.00	.....
	General	45.45	45.45	9.09	.....	33.33	33.33	33.33	.....	.....	50.00	50.00	.....	27.27	54.55	18.18	.....
Principal	- Vocational	.....	45.45	45.45	9.09	12.00	64.00	20.00	.....	11.76	70.59	17.65	.....	18.18	72.73	.....	9.09
	General	40.00	40.00	13.33	6.67	11.11	55.56	33.33	.....	.....	60.00	40.00	.....	30.00	40.00	10.00	20.00
Counselor	- Vocational	20.00	50.00	30.00	.....	23.81	47.62	23.81	4.76	.....	30.00	40.00	20.00	.....	100.00	.....	.....
	General	20.00	46.67	13.33	13.33	10.00	60.00	30.00	.....	33.33	33.33	33.33	.....	25.00	50.00	.....	25.00
Item 2. Physical facilities which are especially suitable and effective in the instruction of homemaking are provided and utilized.																	
Superintendent	- Vocational	63.64	27.27	9.09	.....	50.00	41.67	8.33	.....	56.25	43.75	.....	.....	40.00	50.00	10.00	.....
	General	72.73	18.18	9.09	.....	66.67	22.22	11.11	.....	16.67	83.33	.....	.....	45.45	54.55	.....	.....
Principal	- Vocational	27.27	45.45	27.27	.....	32.00	52.00	8.00	4.00	35.29	47.06	17.65	.....	9.09	54.55	36.36	.....
	General	66.67	6.67	26.67	.....	55.56	11.11	33.33	.....	20.00	60.00	20.00	.....	30.00	60.00	10.00	.....
Counselor	- Vocational	50.00	50.00	.....	.....	38.10	57.14	4.76	.....	60.00	.....	30.00	.....	.....	100.00	.....	.....
	General	46.67	26.67	13.33	6.67	60.00	40.00	.....	.....	.....	66.67	33.33	.....	50.00	25.00	25.00	.....
Item 3. Those learning aids which are especially suitable and effective in the instruction of homemaking are provided and utilized.																	
Superintendent	- Vocational	54.56	36.36	9.09	.....	41.67	45.83	12.50	.....	62.50	37.50	.....	.....	30.00	60.00	10.00	.....
	General	54.56	45.45	.....	.....	66.67	22.22	11.11	.....	33.33	66.67	.....	.....	45.45	45.45	9.09	.....
Principal	- Vocational	45.45	45.45	9.09	.....	24.00	60.00	12.00	.....	35.29	47.06	17.65	.....	18.18	63.64	9.09	.....
	General	60.00	40.00	.....	.....	66.67	22.22	11.11	.....	40.00	60.00	.....	.....	20.00	60.00	20.00	.....
Counselor	- Vocational	50.00	50.00	.....	.....	28.57	61.90	9.52	.....	40.00	50.00	.....	.....	.....	100.00	.....	.....
	General	46.67	33.33	13.33	.....	90.00	10.00	.....	.....	.....	100.00	.....	.....	25.00	50.00	25.00	.....
Item 4. Provision is made for continuous evaluations of the homemaking program.																	
Superintendent	- Vocational	45.45	36.36	18.18	.....	25.00	45.83	25.00	4.17	12.50	50.00	31.25	6.25	30.00	60.00	10.00	.....
	General	36.36	45.45	18.18	.....	33.33	33.33	22.22	11.11	.....	50.00	50.00	.....	.....	72.73	27.27	.....
Principal	- Vocational	18.18	27.27	45.45	.....	4.00	64.00	24.00	.....	29.41	23.53	47.06	.....	18.18	36.36	36.36	9.09
	General	66.67	33.33	.....	.....	33.33	33.33	33.33	.....	20.00	40.00	40.00	.....	10.00	30.00	50.00	10.00
Counselor	- Vocational	20.00	50.00	30.00	.....	14.29	47.62	14.29	19.05	.....	40.00	20.00	30.00	.....	.....	100.00	.....
	General	26.67	33.33	33.33	.....	10.00	60.00	30.00	.....	66.67	.....	33.33	.....	.....	50.00	50.00	.....
Item 5. Adequately qualified instructional personnel is provided for the homemaking education program.																	
Superintendent	- Vocational	63.64	36.36	.....	.....	87.50	8.33	.....	.....	87.50	12.50	.....	.....	60.00	40.00	.....	.....
	General	90.91	.....	9.09	.....	77.78	22.22	.....	.....	50.00	50.00	.....	.....	63.64	27.27	9.09	.....
Principal	- Vocational	90.91	.....	.....	.....	52.00	28.00	8.00	4.00	76.47	23.53	.....	.....	63.64	36.36	.....	.....
	General	66.67	33.33	.....	.....	55.56	44.44	.....	.....	20.00	80.00	.....	.....	40.00	40.00	20.00	.....
Counselor	- Vocational	70.00	30.00	.....	.....	71.43	19.05	4.76	4.76	60.00	30.00	.....	.....	.....	100.00	.....	.....
	General	66.67	26.67	.....	.....	90.00	10.00	.....	.....	66.67	33.33	.....	.....	.....	100.00	.....	.....

TABLE 22

HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOL PROGRAM, 1964-65

C. The local program centers instruction on the needs, interests, problems or concerns of individuals and families in the local situation and the field of home economics in relation to these needs and interests.

C_1. Goals and learning experiences are related to:		Class A				Class B				Class C				Class D			
		Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
		3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item a. Developmental tasks of each age level.																	
Superintendent	- Vocational	36.36	45.45	9.09	9.09	37.50	62.50	.....	.....	31.25	56.25	12.50	.....	30.00	70.00	.....	.....
	General	54.56	45.45	.....	.....	33.33	55.56	.....	.....	.....	50.00	50.00	.....	27.27	54.55	18.18	.....
Principal	- Vocational	45.45	45.45	.....	.....	28.00	52.00	12.00	4.00	41.25	52.94	5.88	.....	45.45	45.45	9.09	.....
	General	53.33	33.33	13.33	.....	33.33	44.44	22.22	.....	.....	60.00	40.00	.....	40.00	60.00	.....	.....
Counselor	- Vocational	30.00	50.00	10.00	.....	38.10	38.10	19.05	.....	.....	80.00	.....	10.00	.....	.....	100.00	.....
	General	46.67	13.33	33.33	.....	60.00	20.00	20.00	.....	33.33	52.94	33.33	.....	25.00	75.00	.....	.....
Item b. Interests, abilities, problems of specific individuals and groups concerned.																	
Superintendent	- Vocational	36.36	54.56	9.09	.....	33.33	54.17	12.50	.....	62.50	37.50	.....	.....	40.00	40.00	20.00	.....
	General	54.56	36.36	9.09	.....	55.56	22.22	22.22	.....	50.00	50.00	.....	.....	27.27	72.73	.....	.....
Principal	- Vocational	45.45	54.56	.....	.....	16.00	72.00	4.00	4.00	47.06	52.94	.....	.....	36.36	54.55	.....	9.09
	General	40.00	33.33	26.67	.....	44.44	33.33	22.22	.....	.....	80.00	20.00	.....	20.00	50.00	20.00	.....
Counselor	- Vocational	30.00	60.00	10.00	.....	33.33	33.33	33.33	.....	20.00	30.00	30.00	10.00	.....	.....	100.00	.....
	General	26.67	46.67	20.00	.....	50.00	50.00	.....	.....	33.33	33.33	33.33	.....	50.00	25.00	25.00	.....
Item c. Problems, concerns, resources, values and patterns of living of families in the local community.																	
Superintendent	- Vocational	27.27	45.45	27.27	.....	25.00	62.50	12.50	.....	43.75	50.00	6.25	.....	30.00	70.00	.....	.....
	General	36.36	45.45	18.18	.....	44.44	33.33	22.22	.....	.....	83.33	16.67	.....	27.27	63.64	9.09	.....
Principal	- Vocational	18.18	63.64	.....	9.09	20.00	68.00	4.00	4.00	35.29	52.94	11.76	.....	36.36	54.55	.....	9.09
	General	26.67	60.00	13.33	.....	22.22	55.56	22.22	.....	.....	80.00	20.00	.....	30.00	50.00	10.00	10.00
Counselor	- Vocational	20.00	50.00	30.00	.....	33.33	28.57	33.33	4.76	.....	40.00	40.00	10.00	.....	100.00	.....	.....
	General	33.33	33.33	20.00	6.67	20.00	50.00	30.00	.....	.....	66.67	33.33	.....	25.00	50.00	25.00	.....
Item d. Tasks of families throughout life cycle.																	
Superintendent	- Vocational	27.27	54.56	18.18	.....	20.83	58.33	20.83	.....	12.50	75.00	12.50	.....	30.00	30.00	40.00	.....
	General	18.18	63.64	18.18	.....	22.22	44.44	33.33	.....	.....	83.33	16.67	.....	18.18	72.73	9.09	.....
Principal	- Vocational	18.18	63.64	.....	9.09	8.00	64.00	20.00	.....	17.65	70.59	11.76	.....	18.18	54.55	9.09	9.09
	General	20.00	73.33	6.67	.....	22.22	55.56	22.22	.....	.....	40.00	60.00	.....	10.00	60.00	30.00	.....
Counselor	- Vocational	20.00	50.00	30.00	.....	28.57	47.62	23.81	.....	.....	40.00	50.00	.....	.....	.....	100.00	.....
	General	40.00	26.67	20.00	6.67	30.00	40.00	30.00	.....	.....	33.33	33.33	.....	.....	50.00	50.00	.....
Item e. Various age groups and different sexes in the school and in the community.																	
Superintendent	- Vocational	18.18	63.64	18.18	.....	4.17	45.83	45.83	4.17	18.75	56.25	12.50	12.50	30.00	40.00	30.00	.....
	General	.....	54.56	18.18	27.27	11.11	33.33	44.44	11.11	.....	83.33	16.67	.....	27.27	54.55	18.18	.....
Principal	- Vocational	9.09	54.56	27.27	9.09	8.00	40.00	32.00	12.00	23.53	47.06	29.41	.....	27.27	45.45	18.18	9.09
	General	6.67	66.67	20.00	6.67	33.33	33.33	22.22	11.11	.....	60.00	40.00	.....	.....	60.00	30.00	10.00
Counselor	- Vocational	20.00	50.00	30.00	.....	9.52	47.62	28.57	14.29	.....	30.00	40.00	20.00	.....	.....	100.00	.....
	General	27.67	13.33	33.33	20.00	30.00	40.00	10.00	20.00	.....	33.33	33.33	33.33	.....	25.00	75.00	.....

TABLE 23

HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOL PROGRAM, 1964-65

C_2. Program is so organized as to provide instruction which reaches all individuals and groups:	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item a. The local situation is recognized and utilized as a basis for determining the organization of learning experiences.																
Superintendent - Vocational	36.36	63.64	.....	.....	16.67	35.17	20.83	4.17	37.50	43.75	12.50	.....	20.00	80.00	.....	.....
General	36.36	45.45	18.18	.....	55.56	11.11	22.22	.....	.....	50.00	33.33	16.67	18.18	63.64	18.18	.....
Principal - Vocational	27.27	18.18	45.45	.....	20.00	68.00	12.00	.....	23.53	58.82	17.65	.....	18.18	72.73	.....	9.09
General	33.33	46.67	20.00	.....	11.11	55.56	33.33	.....	.....	60.00	20.00	.....	10.00	60.00	20.00	10.00
Counselor - Vocational	10.00	70.00	20.00	.....	14.29	47.62	33.33	.....	.....	40.00	40.00	20.00	.....	.....	.....	.....
General	6.67	46.67	40.00	6.67	10.00	50.00	30.00	.....	.....	66.67	.....	.....	25.00	25.00	50.00	.....
Item b. Skills, facts and basic principles are used as tools for solving problems which students recognize in meeting new situations in family living and wage earning.																
Superintendent - Vocational	36.36	45.45	18.18	.....	29.17	45.83	20.83	.....	37.50	56.25	12.50	.....	30.00	40.00	30.00	.....
General	45.45	45.45	9.09	.....	44.44	44.44	11.11	.....	.....	83.33	16.67	.....	18.18	89.82	.....	.....
Principal - Vocational	.....	81.82	18.18	.....	20.00	60.00	16.00	.....	23.53	64.71	5.88	.....	9.09	72.73	18.18	.....
General	46.67	46.67	6.67	.....	33.33	55.56	11.11	.....	.....	80.00	.....	.....	20.00	40.00	40.00	.....
Counselor - Vocational	10.00	70.00	20.00	.....	19.05	52.38	28.57	.....	20.00	40.00	40.00	.....	.....	100.00	.....	.....
General	20.00	46.67	33.33	.....	10.00	50.00	30.00	.....	33.33	33.33	33.33	.....	.....	75.00	25.00	.....
Item c. Students carefully plan and carry out variety of worthwhile home experiences interrelated with class work.																
Superintendent - Vocational	27.27	45.45	18.18	.....	29.17	54.17	12.50	.....	62.50	31.25	6.25	.....	30.00	50.00	20.00	.....
General	9.09	63.64	27.27	.....	33.33	55.56	11.11	.....	50.00	50.00	.....	.....	27.27	63.64	9.09	.....
Principal - Vocational	9.09	45.45	18.18	27.27	32.00	48.00	20.00	.....	35.29	52.94	11.76	.....	45.45	45.45	.....	9.09
General	13.33	66.67	13.33	6.67	33.33	33.33	11.11	22.22	20.00	20.00	40.00	.....	.....	60.00	30.00	10.00
Counselor - Vocational	10.00	50.00	30.00	10.00	33.33	47.62	14.29	4.76	10.00	40.00	40.00	10.00	.....	100.00	.....	.....
General	40.00	33.33	26.67	.....	10.00	30.00	50.00	.....	.....	33.33	66.67	.....	.....	50.00	50.00	.....
Item d. Student surveys are sometimes made to arrive at problems and concerns of the individuals and groups.																
Superintendent - Vocational	.....	81.82	9.09	.....	16.67	45.83	29.17	.....	18.75	37.50	37.50	6.25	10.00	30.00	40.00	20.00
General	18.18	27.27	45.45	9.09	11.11	11.11	66.67	.....	.....	.....	66.67	33.33	.....	27.27	54.55	18.18
Principal - Vocational	18.18	45.45	18.18	18.18	8.00	36.00	40.00	12.00	17.65	35.29	47.06	.....	18.18	36.36	27.27	18.18
General	40.00	46.67	13.13	.....	11.11	33.33	11.11	44.44	.....	20.00	40.00	20.00	.....	30.00	50.00	20.00
Counselor - Vocational	10.00	50.00	20.00	20.00	4.76	33.33	23.81	33.33	20.00	10.00	30.00	40.00	.....	.....	.....	100.00
General	6.67	53.33	33.33	6.67	10.00	10.00	20.00	50.00	.....	.....	10.00	.....	.....	25.00	50.00	25.00

TABLE 23--Continued

C_2. Program is so organized as to provide instruction which reaches all individuals and groups:	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item g. Community persons sometimes brought into class to contribute to solutions of problems.																
Superintendent - Vocational	36.36	45.45	18.18	.....	29.17	41.67	16.67	4.17	18.75	50.00	25.00	6.25	30.00	50.00	10.00	.....
General	18.18	45.45	36.26	.....	.....	44.44	55.56	.....	16.67	33.33	33.33	16.67	9.09	27.27	54.55	9.09
Principal - Vocational	54.56	27.27	18.18	.....	24.00	44.00	20.00	12.00	35.29	23.53	35.29	5.88	45.45	36.36	9.09	9.09
General	26.67	33.33	33.33	6.67	22.22	44.44	22.22	11.11	.....	40.00	40.00	.....	20.00	.....	70.00	10.00
Counselor - Vocational	20.00	40.00	20.00	20.00	23.81	33.33	33.33	9.52	30.00	20.00	30.00	20.00	.....	.....	100.00	.....
General	33.33	26.67	33.33	6.67	.....	40.00	50.00	.....	66.67	.....	33.33	.....	25.00	25.00	25.00	25.00
Item h. Visits to homes, community agencies, commercial firms, and/or other appropriate places frequently made.																
Superintendent - Vocational	18.18	45.45	18.18	9.09	16.67	33.33	41.67	4.17	50.00	18.75	25.00	6.25	20.00	40.00	40.00	.....
General	27.27	18.18	36.36	18.18	.....	11.11	77.78	11.11	.....	33.33	33.33	33.33	.....	27.27	54.55	18.18
Principal - Vocational	18.18	45.45	27.27	9.09	20.00	36.00	32.00	12.00	35.29	17.65	35.29	11.76	36.36	18.18	36.36	9.09
General	6.67	40.00	40.00	13.33	.....	22.22	44.44	33.33	.....	40.00	40.00	.....	10.00	10.00	50.00	30.00
Counselor - Vocational	20.00	30.00	30.00	20.00	19.05	28.57	42.86	9.52	.....	30.00	40.00	30.00	.....	.....	100.00	.....
General	6.67	26.67	53.33	13.33	.....	10.00	40.00	40.00	33.33	33.33	33.33	.....	.....	25.00	.....	75.00
Item e. Learning experiences are related to the home and social environment.																
Superintendent - Vocational	36.36	45.45	9.09	.....	29.17	54.17	12.50	.....	43.75	50.00	6.25	.....	30.00	70.00	.....	.....
General	45.45	45.45	9.09	.....	33.33	44.44	22.22	.....	.....	100.00	.....	.....	36.36	54.55	9.09	.....
Principal - Vocational	9.09	63.64	27.27	.....	40.00	60.00	.....	.....	41.18	52.94	5.88	.....	36.36	54.55	9.09	.....
General	33.33	66.67	.....	.....	22.22	44.44	33.33	.....	.....	60.00	20.00	.....	40.00	40.00	10.00	10.00
Counselor - Vocational	20.00	40.00	40.00	.....	28.57	47.62	23.81	.....	20.00	40.00	20.00	20.00	.....	100.00	.....	.....
General	46.67	33.33	20.00	.....	30.00	40.00	20.00	.....	.....	66.67	33.33	.....	25.00	50.00	25.00	.....
Item f. Work experiences are sometimes utilized to give practical application to learning.																
Superintendent - Vocational	.....	54.56	45.45	.....	20.83	41.67	29.17	4.17	18.75	43.75	18.75	12.50	40.00	20.00	40.00	.....
General	18.18	36.36	45.45	.....	.....	44.44	33.33	22.22	.....	33.33	33.33	33.33	9.09	45.45	45.45	.....
Principal - Vocational	9.09	45.45	27.27	18.18	8.00	52.00	28.00	8.00	5.88	47.06	41.18	5.88	27.27	45.45	9.09	18.18
General	26.67	33.33	33.33	6.67	11.11	44.44	11.11	33.33	.....	20.00	40.00	20.00	20.00	30.00	40.00	10.00
Counselor - Vocational	20.00	30.00	30.00	20.00	14.29	42.86	33.33	9.52	10.00	40.00	30.00	20.00	.....	.....	100.00	.....
General	20.00	40.00	13.33	26.67	30.00	20.00	30.00	10.00	33.33	33.33	33.33	.....	25.00	25.00	25.00	25.00

TABLE 23--Continued

C_2. Program is so organized as to provide instruction which reaches all individuals and groups:	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item i. An active chapter of an organization for appropriate age group is part of the program.																
Superintendent - Vocational	45.45	18.18	27.27	9.09	41.67	29.17	16.67	8.33	50.00	37.50	6.25	6.25	40.00	30.00	10.00	20.00
General	27.27	18.18	18.18	36.36	11.11	33.33	55.56	.....	.....	.....	83.33	16.67	.....	9.09	45.45	45.45
Principal - Vocational	9.09	9.09	45.45	36.36	40.00	40.00	12.00	8.00	82.35	17.65	.....	.....	63.64	9.09	9.09	18.18
General	13.33	40.00	26.67	20.00	22.22	44.44	11.11	22.22	20.00	20.00	.....	40.00	10.00	10.00	10.00	70.00
Counselor - Vocational	10.00	30.00	10.00	50.00	47.62	23.81	23.81	4.76	40.00	40.00	10.00	10.00	100.00	.....	.....	.....
General	13.33	33.33	20.00	33.33	20.00	10.00	40.00	20.00	33.33	.....	33.33	33.33	.....	.....	25.00	75.00
Item j. Students and teacher have adequate time definitely scheduled and used for individual or small group conferences.																
Superintendent - Vocational	18.18	72.73	9.09	.....	16.67	54.17	25.00	.....	56.25	37.50	.....	6.25	50.00	40.00	.....	10.00
General	18.18	18.18	45.45	18.18	44.44	33.33	22.22	.....	.....	33.33	33.33	33.33	.....	63.64	27.27	9.09
Principal - Vocational	9.09	18.18	54.56	18.18	20.00	48.00	24.00	8.00	29.41	35.29	35.29	.....	36.36	45.45	18.18	.....
General	13.33	40.00	33.33	13.33	22.22	22.22	44.44	11.11	.....	20.00	40.00	20.00	10.00	30.00	40.00	20.00
Counselor - Vocational	.....	30.00	20.00	50.00	9.52	28.57	33.33	23.81	20.00	20.00	30.00	30.00	.....	.....	100.00	.....
General	13.33	33.33	40.00	13.33	30.00	10.00	30.00	20.00	.....	33.33	33.33	33.33	.....	50.00	.....	50.00
Item k. Teacher visits homes of students and cooperates with family members in supervision of home and community experiences of students.																
Superintendent - Vocational	9.09	18.18	36.36	27.27	20.83	16.67	37.50	16.67	31.25	12.50	43.75	12.50	20.00	30.00	30.00	20.00
General	9.09	18.18	27.27	45.45	.....	.....	55.56	44.44	33.33	.....	33.33	33.33	18.18	.....	45.45	36.36
Principal - Vocational	.....	18.18	18.18	63.64	8.00	32.00	40.00	20.00	5.88	29.41	35.29	29.41	9.09	45.45	18.18	27.27
General	13.33	.....	33.33	33.33	.....	.....	22.22	77.18	20.00	.....	.....	60.00	.....	.....	20.00	80.00
Counselor - Vocational	20.00	10.00	10.00	60.00	4.76	23.81	42.86	28.57	.....	.....	60.00	40.00	.....	.....	.....	100.00
General	.....	.....	33.33	66.67	.....	20.00	10.00	60.00	.....	33.33	33.33	33.33	.....	.....	25.00	75.00

TABLE 24

HOME ECONOMICS EDUCATION IN MICHIGAN SECONDARY SCHOOL PROGRAM, 1964-65

C_3. The program has gained the support of local groups and individuals because its value in the school curriculum has been established.	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practices				Extent of Practices			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item a. There are evidences of personal growth of individuals reached by the program.																
Superintendent - Vocational	9.09	90.91	.....	.....	25.00	58.33	12.50	.....	43.75	50.00	6.25	.....	30.00	50.00	10.00	.....
General	18.18	54.56	18.18	.....	11.11	77.78	11.11	.....	.....	83.33	16.67	.....	18.18	63.64	18.18	.....
Principal - Vocational	.....	45.45	45.45	.....	20.00	60.00	12.00	.....	17.65	70.59	11.76	.....	36.36	64.55	9.09	.....
General	26.67	40.00	33.33	.....	11.11	55.56	33.33	.....	.....	60.00	20.00	.....	30.00	40.00	20.00	10.00
Counselor - Vocational	10.00	40.00	50.00	.....	9.52	52.38	23.81	9.52	.....	50.00	50.00	.....	.....	.....	100.00	.....
General	13.33	46.67	33.33	6.67	10.00	60.00	20.00	.....	33.33	66.67	.....	.....	.....	75.00	.....	25.00
Item b. There are evidences of improved practices in family living.																
Superintendent - Vocational	9.09	72.73	9.09	9.09	16.67	58.33	20.83	.....	31.25	37.50	31.25	.....	20.00	40.00	30.00	.....
General	18.18	45.45	27.27	.....	11.11	66.67	22.22	.....	.....	83.33	16.67	.....	18.18	54.55	27.27	.....
Principal - Vocational	.....	45.45	27.27	27.27	8.00	60.00	20.00	.....	17.65	41.18	41.18	.....	27.27	45.45	18.18	.....
General	20.00	33.33	46.67	.....	.....	44.44	55.56	.....	.....	40.00	40.00	.....	20.00	50.00	10.00	20.00
Counselor - Vocational	.....	50.00	50.00	.....	9.52	38.10	28.57	14.29	.....	20.00	80.00	.....	.....	.....	100.00	.....
General	13.33	20.00	53.33	13.33	.....	40.00	10.00	20.00	.....	100.00	.....	.....	.....	25.00	50.00	25.00
Item c. A large number of persons who could benefit by the program are being reached.																
Superintendent - Vocational	9.09	45.45	45.45	.....	12.50	70.83	16.67	.....	31.25	43.75	25.00	.....	10.00	60.00	30.00	.....
General	.....	54.56	27.27	9.09	11.11	22.22	55.56	11.11	.....	50.00	33.33	16.67	.....	63.64	36.36	.....
Principal - Vocational	18.18	18.18	54.56	9.09	20.00	60.00	20.00	.....	11.76	41.18	41.18	.....	36.36	36.36	18.18	.....
General	6.67	46.67	40.00	6.67	.....	77.78	22.22	.....	.....	60.00	40.00	.....	20.00	50.00	10.00	20.00
Counselor - Vocational	10.00	40.00	40.00	10.00	4.76	47.62	42.86	4.76	10.00	60.00	20.00	10.00	.....	.....	100.00	.....
General	.....	33.33	46.67	6.67	20.00	40.00	20.00	20.00	.....	66.67	.....	33.33	.....	25.00	50.00	25.00
Item d. There are evidences of desirable changes in behavior of pupils.																
Superintendent - Vocational	9.09	81.82	9.09	.....	20.83	62.50	16.67	.....	37.50	50.00	12.50	.....	50.00	30.00	20.00	.....
General	9.09	45.45	36.36	.....	.....	77.78	22.22	.....	.....	83.33	16.67	.....	18.18	63.64	18.18	.....
Principal - Vocational	.....	18.18	81.82	.....	8.00	64.00	20.00	.....	17.65	58.82	17.65	.....	36.36	45.45	9.09	.....
General	13.33	60.00	26.67	.....	22.22	44.44	33.33	.....	.....	60.00	40.00	.....	20.00	50.00	30.00	.....
Counselor - Vocational	10.00	40.00	40.00	10.00	19.05	28.57	33.33	.....	.....	60.00	30.00	10.00	.....	.....	100.00	.....
General	6.67	26.67	53.33	.....	20.00	50.00	30.00	.....	.....	33.33	66.67	.....	.....	75.00	.....	25.00

TABLE 24--Continued

C_3. The program has gained the support of local groups and individuals because its value in the school curriculum has been established.	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item e. The program is understood and participated in by the students in the high school and the people of the community.																
Superintendent - Vocational	.....	81.82	18.18	.....	16.67	58.33	25.00	.....	18.75	62.50	18.75	.....	30.00	70.00	.....	.....
General	.....	54.56	45.45	.....	.....	66.67	33.33	.....	.....	83.33	16.67	.....	9.09	63.64	27.27	.....
Principal - Vocational	9.09	45.45	45.45	.....	12.00	60.00	24.00	.....	17.65	47.06	29.41	.....	27.27	45.45	18.18	.....
General	13.33	46.67	26.67	13.33	.....	55.56	44.44	.....	.....	60.00	20.00	20.00	10.00	50.00	30.00	10.00
Counselor - Vocational	10.00	20.00	50.00	20.00	4.76	42.86	47.62	4.76	10.00	20.00	50.00	20.00	.....	.....	100.00	.....
General	.....	33.33	33.33	13.33	.....	40.00	40.00	10.00	33.33	.....	33.33	.....	.....	75.00	25.00	.....
Item f. The department presents a desirable standard for the community (size, attractive learning, adequate library and teaching material).																
Superintendent - Vocational	63.64	27.27	9.09	.....	33.33	54.17	12.50	.....	62.50	25.00	12.50	.....	40.00	40.00	20.00	.....
General	9.09	90.91	.....	.....	66.67	33.33	.....	.....	33.33	.....	66.67	.....	36.36	36.36	27.27	.....
Principal - Vocational	9.09	54.56	36.36	.....	20.00	60.00	20.00	.....	11.76	64.71	17.65	.....	18.18	63.64	9.09	.....
General	20.00	40.00	33.33	6.67	11.11	77.78	11.11	.....	40.00	40.00	20.00	.....	.....	50.00	50.00	.....
Counselor - Vocational	20.00	50.00	30.00	.....	14.29	33.33	38.10	9.52	40.00	20.00	30.00	10.00	.....	.....	100.00	.....
General	33.33	33.33	13.33	6.67	40.00	40.00	20.00	.....	.....	33.33	66.67	.....	.....	75.00	.....	25.00

TABLE 25

PERCENTAGE DISTRIBUTION OF PRACTICES IN SUBJECT MATTER CONTENT - HOME ECONOMICS SECONDARY EDUCATION PROGRAM, 1964-65

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. School, home and community experiences in planning, preparing and serving meals.																
Superintendents																
Vocational	45.45	45.45	.....	.....	41.67	50.00	4.17	.....	68.52	31.25	6.25	.....	50.00	50.00	.....	.....
General	63.64	27.27	9.09	.....	66.67	22.22	11.11	.....	66.67	33.33	.....	.....	72.73	18.18	9.09	.....
Principals																
Vocational	36.36	45.45	18.18	.....	56.00	40.00	4.00	.....	47.06	47.06	.....	.....	72.73	18.18	.....	.....
General	53.33	33.33	13.33	.....	55.56	22.22	22.22	.....	40.00	60.00	.....	.....	50.00	30.00	20.00	.....
Counselors																
Vocational	50.00	40.00	.....	10.00	52.38	33.33	14.29	.....	40.00	60.00	.....	.....	100.00	.....	.....	.....
General	33.33	13.33	26.67	13.33	60.00	10.00	20.00	10.00	.....	66.67	33.33	.....	25.00	50.00	25.00	.....
Item 2. Selecting, taking care of and making clothes.																
Superintendents																
Vocational	54.55	36.36	.....	.....	66.67	33.33	.....	.....	81.25	18.75	.....	.....	50.00	50.00	.....	.....
General	90.91	9.09	.....	.....	77.78	22.22	.....	.....	33.33	66.67	.....	.....	81.82	18.18	.....	.....
Principals																
Vocational	54.55	27.27	18.18	.....	64.50	32.00	4.00	.....	58.82	35.29	.....	.....	81.82	9.09	.....	.....
General	66.67	33.33	.....	.....	55.56	44.44	.....	.....	40.00	60.00	.....	.....	70.00	20.00	10.00	.....
Counselors																
Vocational	60.00	40.00	.....	.....	57.14	33.33	9.52	.....	50.00	30.00	20.00	.....	.....	100.00	.....	.....
General	46.67	33.33	6.67	.....	80.00	10.00	10.00	.....	66.67	33.33	.....	.....	25.00	75.00	.....	.....
Item 8. Understanding housing including furnishing and equipment for homes.																
Superintendents																
Vocational	63.64	27.27	.....	.....	54.17	41.67	4.17	.....	56.25	43.75	.....	.....	30.00	40.00	30.00	.....
General	54.55	36.36	.....	.....	44.44	33.33	.....	.....	16.67	33.33	50.00	.....	45.45	54.55	.....	.....
Principals																
Vocational	54.55	27.27	18.18	.....	24.00	68.00	8.00	.....	41.18	41.18	.....	.....	36.36	54.55	.....	.....
General	53.33	46.67	.....	.....	44.44	33.33	22.22	.....	20.00	60.00	20.00	.....	30.00	50.00	20.00	.....
Counselors																
Vocational	40.00	60.00	.....	.....	28.57	47.62	14.29	.....	30.00	40.00	20.00	10.00	.....	.....	.....	.....
Counselors	26.67	33.33	20.00	6.67	50.00	20.00	30.00	4.76	.....	100.00	.....	.....	50.00	50.00	.....	.....

TABLE 26

PERCENTAGE DISTRIBUTION OF PRACTICES IN SUBJECT MATTER CONTENT - HOME ECONOMICS SECONDARY EDUCATION PROGRAM, 1964-65

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 4. Improving one's manners.																
Superintendents																
Vocational	63.64	27.27	.....	.....	50.00	8.33	.....	.....	68.75	31.25	.....	.....	50.00	50.00	.....	.....
General	81.82	18.18	.....	.....	77.78	11.11	.....	.....	33.33	66.67	.....	.....	72.73	18.18	9.09	.....
Principals																
Vocational	63.64	18.18	18.18	.....	36.00	4.00	12.00	.....	70.59	23.53	.....	.....	72.73	18.18	.....	.....
General	66.67	33.33	.....	.....	55.56	11.11	.....	.....	20.00	80.00	.....	.....	40.00	40.00	20.00	.....
Counselors																
Vocational	50.00	40.00	.....	10.00	33.33	23.81	9.52	.....	30.00	30.00	20.00	20.00	.....	.....	100.00	.....
General	33.33	33.33	70.00	.....	60.00	30.00	.....	.....	33.33	33.33	33.33	.....	50.00	50.00	.....	.....
Item 5. Understanding one's self.																
Superintendents																
Vocational	54.55	36.36	.....	.....	50.00	45.83	4.17	.....	75.00	25.00	.....	.....	40.00	60.00	.....	.....
General	63.64	18.18	18.18	.....	66.67	22.22	11.11	.....	50.00	33.33	16.67	.....	45.45	45.45	9.09	.....
Principals																
Vocational	54.55	27.27	18.18	.....	24.00	60.00	16.00	.....	64.71	29.41	.....	.....	54.55	27.27	9.09	.....
General	66.67	33.33	.....	.....	55.56	44.44	.....	.....	20.00	80.00	.....	.....	30.00	50.00	20.00	.....
Counselors																
Vocational	40.00	50.00	.....	.....	28.57	47.62	23.81	.....	20.00	10.00	50.00	20.00	.....	100.00	.....	.....
General	26.67	40.00	20.00	.....	60.00	20.00	20.00	.....	33.33	33.33	33.33	.....	50.00	25.00	25.00	.....
Item 6. Improving one's personal grooming.																
Superintendents																
Vocational	63.64	27.27	.....	.....	58.33	41.67	.....	.....	68.75	31.25	.....	.....	60.00	40.00	.....	.....
General	63.64	36.36	.....	.....	77.78	22.22	.....	.....	33.33	66.67	.....	.....	63.64	27.27	9.09	.....
Principals																
Vocational	45.45	45.45	9.09	.....	36.00	60.00	.....	4.00	76.47	17.65	.....	.....	63.64	27.27	.....	.....
General	66.67	33.33	.....	.....	55.56	33.33	.....	.....	40.00	60.00	.....	.....	40.00	30.00	30.00	.....
Counselors																
Vocational	50.00	50.00	.....	.....	42.86	47.62	9.52	.....	40.00	20.00	30.00	10.00	.....	100.00	.....	.....
General	40.00	46.67	.....	.....	60.00	30.00	10.00	.....	66.67	33.33	.....	.....	50.00	50.00	.....	.....

TABLE 27

PERCENTAGE DISTRIBUTION OF PRACTICES IN SUBJECT MATTER CONTENT - HOME ECONOMICS SECONDARY EDUCATION PROGRAM, 1964-65

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 3. Understanding and living with children.																
Superintendents																
Vocational	36.36	54.55	.....	.....	29.17	62.50	8.33	.....	56.25	43.75	.....	.....	10.00	70.00	20.00	.....
General	45.45	45.45	9.09	.....	44.44	44.44	11.11	.....	50.00	33.33	16.67	.....	54.55	36.36	9.09	.....
Principals																
Vocational	45.45	45.45	9.09	.....	36.00	52.00	4.00	8.00	41.18	47.06	5.88	.....	54.55	18.18	18.18	.....
General	66.67	33.33	.....	.....	55.56	33.33	11.11	.....	20.00	60.00	20.00	.....	20.00	50.00	30.00	.....
Counselors																
Vocational	30.00	60.00	10.00	.....	28.57	47.62	23.81	.....	30.00	40.00	.....	30.00	.....	100.00	.....	.....
General	20.00	33.33	20.00	13.33	50.00	10.00	30.00	10.00	.....	33.33	66.67	.....	25.00	25.00	50.00	.....
Item 7. Understanding families and living in one's own home.																
Superintendents																
Vocational	45.45	45.45	.....	.....	37.50	62.50	.....	.....	62.50	37.50	.....	.....	20.00	70.00	10.00	.....
General	63.64	27.27	9.09	.....	55.56	33.33	11.11	.....	16.67	66.67	16.67	.....	63.64	36.36	.....	.....
Principals																
Vocational	45.45	45.45	9.09	.....	32.00	60.00	8.00	.....	58.82	35.29	.....	.....	63.64	27.27	.....	.....
General	53.33	46.67	.....	.....	44.44	33.33	22.22	.....	20.00	40.00	40.00	.....	40.00	40.00	20.00	.....
Counselors																
Vocational	40.00	50.00	10.00	.....	33.33	47.62	19.05	.....	20.00	30.00	50.00	.....	.....	100.00	.....	.....
General	33.33	40.00	13.33	.....	50.00	20.00	30.00	.....	.....	66.67	33.33	.....	50.00	.....	50.00	.....

TABLE 28

PERCENTAGE DISTRIBUTION OF PRACTICES IN EXPERIENCING WITH MATERIAL AND HUMAN RESOURCES

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. Develop important learning skills, e.g. interviews, surveys.																
Superintendents																
Vocational	45.45	45.45	.....	9.09	20.83	41.67	37.50	.....	12.50	50.00	31.25	6.25	.....	60.00	40.00	.....
General	27.27	9.09	63.64	.....	11.11	44.44	33.33	11.11	.....	.....	50.00	50.00	.....	36.36	54.55	9.09
Principals																
Vocational	9.09	45.45	45.45	.....	4.00	56.00	28.00	8.00	5.88	47.06	35.29	5.88	9.09	45.45	36.36	.....
General	33.33	33.33	20.00	13.33	.....	33.33	55.56	11.11	.....	.....	100.00	.....	10.00	20.00	50.00	20.00
Counselors																
Vocational	20.00	30.00	40.00	10.00	.....	28.57	66.67	4.76	10.00	20.00	40.00	30.00	.....	100.00	.....	.....
General	6.67	20.00	40.00	20.00	.....	40.00	40.00	20.00	.....	.....	66.67	.....	.....	.....	100.00	.....
Item 3. Effective use of directed study.																
Superintendents																
Vocational	45.45	45.45	.....	.....	25.00	62.50	8.33	.....	25.00	68.75	6.25	.....	30.00	50.00	20.00	.....
General	9.09	81.82	9.09	.....	22.22	66.67	11.11	.....	.....	83.33	16.67	.....	18.18	72.73	9.09	.....
Principals																
Vocational	9.09	54.55	36.36	.....	8.00	72.00	8.00	8.00	35.29	58.82	.....	.....	27.27	45.45	18.18	.....
General	13.33	66.67	20.00	.....	.....	66.67	33.33	.....	.....	60.00	40.00	.....	20.00	50.00	30.00	.....
Counselors																
Vocational	10.00	60.00	20.00	.....	9.52	52.38	33.33	.....	20.00	50.00	30.00	.....	.....	100.00	.....	.....
General	6.67	33.33	33.33	13.33	40.00	40.00	10.00	.....	.....	33.33	66.67	.....	.....	75.00	25.00	.....

TABLE 28--Continued

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 4. Effective use of student committees.																
Superintendents																
Vocational	45.45	36.36	9.09	.....	20.83	50.00	29.17	.....	25.00	56.25	18.75	.....	20.00	60.00	20.00	.....
General	45.45	18.18	27.27	.....	11.11	44.44	33.33	11.11	.....	66.67	33.33	.....	9.09	54.55	27.27	9.09
Principals																
Vocational	9.09	45.45	45.45	.....	12.00	48.00	36.00	.....	23.53	52.94	17.65	.....	27.27	45.45	18.18	.....
General	40.00	26.67	33.33	.....	.....	44.44	44.44	11.11	.....	40.00	40.00	20.00	20.00	.....	70.00	10.00
Counselors																
Vocational	10.00	40.00	40.00	.....	9.52	33.33	52.38	4.76	10.00	40.00	40.00	10.00	.....	.....	100.00	.....
General	13.33	33.33	33.33	6.67	20.00	40.00	20.00	20.00	.....	33.33	33.33	.....	.....	50.00	50.00	.....
Item 6. Pertinent and meaningful group discussions on which more than a few participate.																
Superintendents																
Vocational	63.64	36.36	.....	.....	37.50	45.83	16.67	.....	56.25	43.75	.....	.....	20.00	60.00	10.00	.....
General	27.27	63.64	9.09	.....	22.22	44.44	22.22	.....	16.67	83.33	.....	.....	27.27	63.64	9.09	.....
Principals																
Vocational	27.27	45.45	18.18	.....	20.00	60.00	20.00	.....	25.53	70.59	5.88	.....	54.55	36.36	9.09	.....
General	53.33	40.00	.....	.....	11.11	88.89	.....	.....	.....	100.00	.....	.....	20.00	70.00	10.00	.....
Counselors																
Vocational	20.00	50.00	20.00	.....	28.57	47.62	23.81	.....	.....	60.00	40.00	.....	.....	.....	100.00	.....
General	33.33	60.00	6.67	.....	40.00	40.00	20.00	.....	33.33	33.33	33.33	.....	.....	100.00	.....	.....
Item 7. Frequent opportunities for both oral and written expression by students.																
Superintendents																
Vocational	54.55	27.27	9.09	.....	50.00	50.00	.....	.....	43.75	56.25	.....	.....	50.00	50.00	.....	.....
General	45.45	54.55	.....	.....	22.22	44.44	22.22	.....	16.67	83.33	.....	.....	27.27	63.64	9.09	.....
Principals																
Vocational	18.18	54.55	18.18	.....	20.00	68.00	12.00	.....	52.94	47.06	.....	.....	54.55	36.36	9.09	.....
General	46.67	40.00	6.67	.....	33.33	66.67	.....	.....	20.00	60.00	20.00	.....	30.00	50.00	20.00	.....
Counselors																
Vocational	50.00	20.00	30.00	.....	28.57	47.62	23.81	.....	10.00	70.00	10.00	10.00	.....	100.00	.....	.....
General	33.33	53.33	13.33	.....	40.00	40.00	20.00	.....	33.33	66.67	.....	.....	25.00	75.00	.....	.....

TABLE 29

PERCENTAGE DISTRIBUTION OF PRACTICES IN EXPERIENCING WITH MATERIAL AND HUMAN RESOURCES

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 2. Develop proper attitudes towards homemaking.																
Superintendents																
Vocational	54.55	45.45	.....	.....	37.50	54.17	8.33	.....	62.50	31.25	6.25	.....	30.00	70.00	.....	.....
General	45.45	54.55	.....	.....	66.67	22.22	11.11	.....	33.33	66.67	.....	.....	36.36	54.55	9.09	.....
Principals																
Vocational	9.09	45.45	45.45	.....	24.00	64.00	12.00	.....	47.06	35.29	11.76	.....	45.45	45.45	.....	.....
General	40.00	46.67	13.33	.....	22.22	44.44	33.33	.....	20.00	80.00	.....	.....	30.00	50.00	20.00	.....
Counselors																
Vocational	10.00	50.00	40.00	.....	28.57	57.14	9.52	4.76	20.00	60.00	20.00	.....	.....	100.00	.....	.....
General	26.67	40.00	20.00	.....	50.00	40.00	10.00	.....	33.33	33.33	33.33	.....	.....	75.00	25.00	.....
Item 8. Effective use of community and civic projects.																
Superintendents																
Vocational	9.09	63.64	27.27	.....	20.83	62.50	16.67	.....	12.50	50.00	37.50	.....	40.00	30.00	30.00	.....
General	18.18	54.55	27.27	.....	11.11	33.33	33.33	11.11	.....	33.33	33.33	33.33	9.09	45.45	36.36	9.09
Principals																
Vocational	9.09	18.18	63.64	.....	4.00	60.00	28.00	8.00	17.65	29.41	52.94	.....	27.27	45.45	27.27	.....
General	26.67	33.33	26.67	6.66	.....	33.33	22.22	33.33	.....	40.00	60.00	.....	10.00	30.00	50.00	10.00
Counselors																
Vocational	30.00	.....	70.00	.....	9.52	47.62	33.33	9.52	.....	10.00	80.00	10.00	.....	100.00	.....	.....
General	20.00	13.33	66.67	.....	.....	20.00	50.00	30.00	.....	33.33	66.67	.....	.....	50.00	50.00	.....
Item 9. Use of laymen to talk to classes.																
Superintendents																
Vocational	45.45	27.27	18.18	.....	20.83	41.67	33.33	4.17	18.75	43.75	37.50	.....	10.00	50.00	40.00	.....
General	18.18	45.45	36.36	.....	.....	44.44	44.44	.....	.....	66.67	16.67	16.67	.....	36.36	54.55	9.09
Principals																
Vocational	.....	45.45	45.45	.....	28.00	40.00	20.00	8.00	17.65	35.29	35.29	11.76	27.27	54.55	9.09	9.09
General	33.33	26.67	26.67	6.66	.....	22.22	44.44	33.33	.....	20.00	80.00	.....	10.00	10.00	70.00	10.00
Counselors																
Vocational	30.00	20.00	50.00	.....	19.05	23.81	47.62	9.52	.....	50.00	20.00	30.00	.....	.....	100.00	.....
General	26.67	20.00	46.67	6.67	10.00	20.00	50.00	20.00	66.67	.....	33.33	.....	.....	25.00	25.00	50.00

TABLE 30

PERCENTAGE DISTRIBUTION OF PRACTICES IN EXPERIENCING WITH MATERIAL AND HUMAN RESOURCES

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 5. Opportunities for more than a few students to exercise or develop leadership qualities.																
Superintendents																
Vocational	45.45	54.55	.....	.....	20.83	75.00	4.17	.....	50.00	31.25	18.75	.....	30.00	70.00	.....	.....
General	27.27	54.55	18.18	.....	11.11	44.44	33.33	.....	33.33	33.33	33.33	.....	27.27	54.55	18.18	.....
Principals																
Vocational	.....	45.45	45.45	.....	4.00	68.00	28.00	.....	35.29	52.94	11.76	.....	36.36	54.55	.....	9.09
General	40.00	33.33	13.33	6.66	11.11	22.22	44.44	.....	.....	80.00	20.00	.....	20.00	60.00	10.00	10.00
Counselors																
Vocational	10.00	50.00	40.00	.....	14.29	57.14	28.57	.....	.....	50.00	50.00	.....	.....	100.00	.....	.....
General	13.33	60.00	20.00	6.67	30.00	40.00	20.00	10.00	.....	66.67	33.33	.....	.....	75.00	25.00	.....
Item 10. Bring community problems into classroom for discussion and study.																
Superintendents																
Vocational	36.36	45.45	9.09	.....	8.33	62.50	29.17	.....	18.75	50.00	25.00	6.25	20.00	40.00	20.00	10.00
General	18.18	63.64	18.18	.....	.....	44.44	44.44	.....	.....	50.00	33.33	16.67	18.18	54.55	27.27	.....
Principals																
Vocational	9.09	27.27	45.45	9.09	16.00	44.44	32.00	8.00	17.65	35.29	47.06	.....	27.27	54.55	9.09	9.09
General	26.67	33.33	26.67	6.66	.....	44.44	33.33	22.22	.....	60.00	40.00	.....	10.00	40.00	40.00	10.00
Counselors																
Vocational	20.00	30.00	50.00	.....	14.29	33.33	33.33	14.29	.....	.....	70.00	30.00	.....	.....	100.00	.....
General	13.33	33.33	46.67	6.67	.....	50.00	30.00	10.00	.....	33.33	33.33	33.33	.....	25.00	50.00	25.00

TABLE 31

PERCENTAGE DISTRIBUTION OF RESPONSES ON STATUS OF HOME ECONOMICS SECONDARY EDUCATION PROGRAM, 1964-65

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 1. Local community understands the program.																
Superintendents																
Vocational	27.27	36.36	27.27	.....	12.50	58.33	29.17	.....	31.25	56.25	12.50	.....	20.00	60.00	20.00	.....
General	.....	63.64	27.27	9.09	11.11	55.56	33.33	.....	.....	66.67	33.33	.....	.....	63.64	36.36	.....
Principals																
Vocational	.....	.....	54.54	36.36	4.00	72.00	24.00	.....	23.53	23.53	52.94	.....	18.18	45.45	27.27	9.09
General	.....	60.00	33.33	.....	.....	44.44	33.33	11.11	.....	40.00	40.00	20.00	10.00	50.00	30.00	10.00
Counselors																
Vocational	.....	40.00	40.00	20.00	4.76	23.81	57.14	9.52	10.00	30.00	40.00	20.00	.....	.....	100.00	.....
General	.....	46.67	40.00	13.33	.....	60.00	40.00	.....	33.33	.....	66.66	.....	.....	75.00	25.00	.....
Item 2. Local groups expect the program to be broad in scope rather than limited in content.																
Superintendents																
Vocational	36.36	27.27	18.18	9.09	29.17	50.00	16.67	4.17	31.25	68.75	.....	.....	30.00	50.00	20.00	.....
General	27.27	27.27	27.27	9.09	22.22	55.56	11.11	11.11	.....	66.67	16.67	16.67	.....	72.73	27.27	.....
Principals																
Vocational	.....	.....	45.45	45.45	12.00	52.00	20.00	4.00	17.65	41.18	41.18	.....	18.18	36.36	18.18	27.27
General	6.67	46.67	26.67	13.33	11.11	55.56	11.11	22.22	.....	60.00	20.00	20.00	20.00	50.00	20.00	10.00
Counselors																
Vocational	10.00	20.00	50.00	20.00	14.29	47.62	19.05	14.29	.....	40.00	40.00	20.00	.....	.....	100.00	.....
General	6.67	33.33	40.00	13.33	.....	40.00	30.00	20.00	.....	66.67	33.33	.....	.....	50.00	50.00	.....
Item 3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place.																
Superintendents																
Vocational	18.18	45.45	18.18	9.09	12.50	58.33	20.83	4.17	37.50	62.50	.....	.....	10.00	70.00	20.00	.....
General	27.27	36.36	18.18	9.09	.....	66.67	11.11	11.11	33.33	16.67	50.00	.....	27.27	63.64	9.09	.....
Principals																
Vocational	.....	45.45	45.45	.....	8.00	56.00	24.00	8.00	17.65	47.06	29.41	5.88	27.27	54.55	9.09	9.09
General	13.33	53.33	13.13	13.33	33.33	44.44	11.11	11.11	40.00	20.00	20.00	20.00	20.00	60.00	20.00	.....
Counselors																
Vocational	.....	20.00	50.00	30.00	4.76	47.62	14.29	23.81	.....	60.00	30.00	10.00	.....	.....	100.00	.....
General	13.33	33.33	33.33	13.33	10.00	40.00	20.00	20.00	.....	33.33	33.33	.....	.....	.....	50.00	50.00

TABLE 31--Continued

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 4. Teaching as geared to present day realities in the several subject matter areas.																
Superintendents																
Vocational	63.64	27.27	.....	.....	41.67	54.17	4.17	.....	75.00	25.00	.....	.....	40.00	50.00	10.00	.....
General	45.45	36.36	18.18	.....	44.44	55.56	.....	.....	.....	100.00	.....	.....	36.36	45.45	18.18	.....
Principals																
Vocational	27.27	45.45	18.18	.....	32.00	60.00	.....	8.00	47.06	47.06	5.88	.....	54.55	36.36	9.09	.....
General	53.33	26.67	13.33	.....	44.44	55.56	.....	.....	.....	80.00	20.00	.....	50.00	50.00	.....	.....
Counselors																
Vocational	50.00	40.00	10.00	.....	23.81	47.62	14.29	9.52	20.00	70.00	.....	10.00	.....	100.00	.....	.....
General	33.33	53.33	13.33	.....	40.00	50.00	10.00	.....	33.33	66.67	.....	.....	.....	75.00	25.00	.....
Item 5. Education for effective homemaking in today's world is needed--persons are not innately good homemakers.																
Superintendents																
Vocational	45.45	36.36	9.09	.....	37.50	58.33	4.17	.....	68.75	25.00	.....	.....	40.00	50.00	10.00	.....
General	45.45	45.45	9.09	.....	22.22	44.44	22.22	.....	33.33	33.33	16.67	16.67	36.36	54.55	9.09	.....
Principals																
Vocational	.....	45.45	45.45	.....	36.00	60.00	4.00	.....	29.41	52.94	11.76	5.88	45.45	54.55	.....	.....
General	40.00	46.67	6.67	.....	44.44	33.33	11.11	.....	20.00	60.00	20.00	.....	40.00	40.00	20.00	.....
Counselors																
Vocational	40.00	50.00	10.00	.....	42.86	47.62	9.52	.....	20.00	50.00	20.00	10.00	.....	100.00	.....	.....
General	40.00	40.00	13.33	.....	70.00	30.00	.....	.....	33.33	.....	33.33	.....	.....	75.00	25.00	.....
Item 6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.																
Superintendents																
Vocational	63.64	18.18	9.09	.....	37.50	50.00	12.50	.....	37.50	56.25	6.25	.....	30.00	60.00	10.00	.....
General	54.55	45.45	.....	.....	22.22	66.67	11.11	.....	16.67	83.33	.....	.....	54.55	45.45	.....	.....
Principals																
Vocational	18.18	45.45	18.18	9.09	24.00	60.00	12.00	.....	35.29	58.82	5.88	.....	45.45	45.45	.....	9.09
General	53.33	20.00	20.00	.....	33.33	33.33	22.22	.....	20.00	40.00	40.00	.....	30.00	50.00	20.00	.....
Counselors																
Vocational	40.00	50.00	10.00	.....	28.57	57.14	9.52	.....	10.00	60.00	30.00	.....	.....	100.00	.....	.....
General	40.00	46.67	13.33	.....	50.00	30.00	10.00	10.00	.....	66.67	33.33	.....	.....	75.00	25.00	.....

TABLE 31--Continued

Respondents	Class A				Class B				Class C				Class D			
	Extent of Practice				Extent of Practice				Extent of Practice				Extent of Practice			
	3	2	1	0	3	2	1	0	3	2	1	0	3	2	1	0
Item 7. Program contributes to general education of individuals.																
Superintendents																
Vocational	54.55	36.36	.....	.....	50.00	45.83	4.17	.....	56.25	37.50	6.25	.....	30.00	70.00	.....	.....
General	45.45	54.55	.....	.....	33.33	66.67	.....	.....	33.33	66.67	.....	.....	63.64	18.18	18.18	.....
Principals																
Vocational	.....	63.63	27.27	.....	32.00	60.00	8.00	.....	52.94	47.06	.....	.....	54.55	36.36	9.09	.....
General	46.67	46.67	.....	.....	22.22	55.56	11.11	.....	20.00	80.00	.....	.....	40.00	50.00	10.00	.....
Counselors																
Vocational	40.00	60.00	.....	.....	52.38	33.33	14.29	.....	30.00	50.00	20.00	.....	.....	100.00	.....	.....
General	46.67	40.00	13.33	.....	50.00	50.00	.....	.....	66.67	.....	33.33	.....	25.00	50.00	25.00	.....
Item 8. Homemaking education has potential values for all students.																
Superintendents																
Vocational	63.64	27.27	.....	.....	41.67	45.83	12.50	.....	68.75	31.25	.....	.....	40.00	60.00	.....	.....
General	63.64	27.27	9.09	.....	33.33	55.56	11.11	.....	66.67	16.67	16.67	.....	54.55	36.36	9.09	.....
Principals																
Vocational	9.09	63.63	18.18	.....	32.00	56.00	8.00	.....	47.06	41.18	11.76	.....	45.45	54.55	.....	.....
General	46.67	33.33	13.33	.....	55.56	44.44	.....	.....	40.00	40.00	20.00	.....	60.00	30.00	10.00	.....
Counselors																
Vocational	40.00	30.00	20.00	.....	52.38	23.81	19.05	4.76	40.00	50.00	.....	10.00	.....	100.00	.....	.....
General	33.33	40.00	20.00	.....	60.00	20.00	20.00	.....	.....	66.67	33.33	.....	50.00	25.00	25.00	.....
Item 9. Homemaking education is intellectually stimulating.																
Superintendents																
Vocational	36.36	45.45	9.09	.....	16.67	54.17	29.17	.....	25.00	68.75	6.25	.....	30.00	60.00	10.00	.....
General	36.36	54.55	9.09	.....	33.33	55.56	11.11	.....	66.67	16.67	16.67	.....	36.36	45.45	18.18	.....
Principals																
Vocational	.....	90.91	.....	.....	8.00	80.00	8.00	.....	17.65	52.94	29.41	.....	18.18	63.64	18.18	.....
General	33.33	33.33	20.00	6.67	22.22	66.67	.....	.....	20.00	20.00	60.00	.....	10.00	70.00	20.00	.....
Counselors																
Vocational	.....	60.00	30.00	10.00	23.81	52.38	23.81	.....	.....	60.00	40.00	.....	.....	.....	100.00	.....
General	33.33	40.00	20.00	.....	50.00	20.00	20.00	10.00	.....	66.67	33.33	.....	.....	50.00	50.00	.....
Item 10. Home economics is a matter of training people to do things--to perform.																
Superintendents																
Vocational	36.36	45.45	9.09	.....	12.50	75.00	12.50	.....	31.25	43.75	18.75	.....	20.00	80.00	.....	.....
General	18.18	54.55	9.09	18.18	33.33	33.33	22.22	11.11	.....	66.67	33.33	.....	27.27	54.55	9.09	9.09
Principals																
Vocational	9.09	63.63	18.18	.....	16.00	60.00	20.00	.....	35.29	58.82	5.88	.....	18.18	45.45	27.27	9.09
General	33.33	33.33	13.33	13.33	22.22	55.56	11.11	.....	.....	60.00	40.00	.....	40.00	40.00	10.00	10.00
Counselors																
Vocational	10.00	50.00	40.00	.....	28.57	47.62	23.81	.....	.....	70.00	30.00	.....	.....	25.00	75.00	.....
General	26.67	46.67	20.00	6.67	40.00	50.00	10.00	.....	33.33	33.33	33.33	.....	.....	75.00	25.00	.....

TABLE 33

ATTITUDES TOWARD CERTAIN ASPECTS OF THE SECONDARY HOME ECONOMICS EDUCATION PROGRAM IN MICHIGAN BY SUPERINTENDENTS, PRINCIPALS, AND COUNSELORS 1964-65

	Class A						Class B					
	Respondents						Respondents					
	Supt.		Prin.		Coun.		Supt.		Prin.		Coun.	
	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.
Item 1. Should there be a state guide for home economics education?												
Yes..	45.45	45.45	54.55	20.00	50.00	46.67	41.67	22.22	52.00	66.67	57.14	40.00
No..	9.09	36.36	36.36	53.33	20.00	33.33	33.33	55.56	36.00	33.33	9.52	50.00
Uncertain..	45.45	18.18	9.09	26.67	30.00	20.00	25.00	22.22	12.00	.....	33.33	10.00
Item 2. In view of the requirements for graduation from high school, would a course in general homemaking at 10th or 12th grade (above 9th) have value for potential drop-outs?												
Yes..	72.73	63.64	90.91	66.67	100.00	86.67	70.83	77.78	72.00	88.89	85.71	80.00
No..	.....	36.36	.....	20.00	.....	13.33	12.50	11.11	16.00	.....	4.76	.....
Uncertain..	27.27	.....	9.09	13.33	.....	.....	16.67	11.11	12.00	11.11	9.52	20.00
Item 3. Have value for students who graduate?												
Yes..	100.00	90.91	100.00	73.33	100.00	86.67	83.33	100.00	92.00	100.00	95.24	100.00
No..	.....	.....	.....	13.33	.....	13.33	4.17	.....	.....	.....	.....	.....
Uncertain..	.....	9.09	.....	13.33	.....	6.67	12.50	.....	8.00	.....	4.76	.....
Item 4. Is home economics overemphasizing the secondary school program and underemphasizing the young adult program?												
Yes..	36.36	18.18	18.18	20.00	30.00	26.67	16.67	11.11	20.00	11.11	14.29	.....
No..	54.55	45.45	63.64	40.00	50.00	33.33	50.00	66.67	60.00	66.67	71.43	60.00
Uncertain..	9.09	36.36	18.18	40.00	20.00	40.00	33.33	22.22	20.00	22.22	14.29	40.00
Item 5. Is home economics education being underemphasized at the secondary level?												
Yes..	18.18	36.36	45.45	40.00	70.00	60.00	29.17	33.33	40.00	55.56	61.90	50.00
No..	63.64	54.55	54.55	53.33	30.00	33.33	58.33	55.56	56.00	44.44	28.57	50.00
Uncertain..	18.18	9.09	.....	6.67	.....	6.67	12.50	11.11	4.00	.....	9.52	.....
Item 6. Do demands of parents for skills in home economics nessitate a change in objectives in home economics?												
Yes..	.....	18.18	.....	.....	10.00	13.33	33.33	11.11	20.00	11.11	19.05	30.00
No..	54.55	45.45	100.00	40.00	50.00	40.00	41.67	55.56	72.00	55.56	47.62	60.00
Uncertain..	45.45	36.36	.....	60.00	40.00	46.67	25.00	33.33	8.00	33.33	33.33	10.00
Item 7. Should home economics be offered at the junior high school level?												
Yes..	81.81	100.00	90.90	100.00	100.00	100.00	87.47	100.00	80.00	88.89	85.70	100.00
No..	9.09	.....	.....	.....	.....	.....	4.17	.....	16.00	11.11	9.52	.....
Uncertain..	9.09	.....	9.09	.....	.....	.....	8.33	.....	4.00	.....	4.76	.....
Item 8. Is maximum use being made of resource material in the organization and teaching of the subject?												
Yes..	45.45	36.36	63.63	53.33	20.00	33.33	33.33	44.44	40.00	.....	14.28	30.00
No..	9.09	45.45	36.36	20.00	50.00	33.33	37.49	55.56	40.00	66.67	52.37	50.00
Uncertain..	45.45	18.18	.....	26.66	30.00	33.33	29.16	.....	20.00	33.33	33.33	20.00
Item 9. Does home economics make a contribution to job opportunities and competence for the high school student?												
Yes..	90.90	54.55	90.90	53.33	90.00	66.66	74.99	88.89	60.00	55.56	71.42	80.00
No..	.....	36.36	.....	20.00	.....	26.66	4.17	.....	16.00	33.33	9.52	10.00
Uncertain..	9.09	9.09	9.09	26.66	10.00	6.67	20.83	11.11	24.00	11.11	19.04	10.00
Item 10. Would you prefer the curriculum in home economics to be directed to home and family living?												
Yes..	36.36	54.55	45.45	26.66	50.00	79.99	70.82	11.11	40.00	55.56	71.42	20.00
No..	45.45	45.45	45.45	33.33	30.00	13.33	20.83	44.44	40.00	22.22	23.81	50.00
Uncertain..	18.18	9.09	9.09	40.00	20.00	6.67	8.33	44.44	20.00	22.22	4.76	30.00

TABLE 33--Continued

Class C						Class D					
Respondents						Respondents					
Supt.		Prin.		Coun.		Supt.		Prin.		Coun.	
Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.
68.75	33.33	52.94	40.00	40.00	33.33	60.00	9.09	54.54	30.00	66.67	50.00
12.50	33.33	29.41	20.00	60.00	.....	30.00	45.45	36.36	60.00	.....	25.00
18.75	33.33	17.65	40.00	.....	66.67	10.00	45.45	9.09	10.00	33.33	25.00
87.50	100.00	70.58	60.00	90.00	100.00	90.00	81.81	81.81	70.00	66.67	75.00
.....	.....	11.76	.....	.....	.....	10.00	9.09	18.18	10.00	33.33	.....
12.50	.....	17.65	40.00	10.00	.....	.....	9.09	.....	20.00	.....	25.00
93.75	83.33	88.23	100.00	90.00	100.00	100.00	90.90	90.90	100.00	33.33	75.00
.....	.....	.....	.....	.....	.....	.....	9.09	.....	.....	33.33	.....
6.25	16.67	11.76	.....	10.00	.....	.....	.....	9.09	.....	33.33	25.00
18.75	16.67	17.65	20.00	.....	.....	20.00	18.18	36.36	10.00	66.67	25.00
50.00	66.67	35.29	60.00	60.00	66.67	60.00	63.63	54.54	60.00	.....	75.00
31.25	16.67	47.06	20.00	40.00	33.33	20.00	18.18	9.09	30.00	33.33	.....
18.75	16.67	47.06	.....	50.00	.....	10.00	18.18	45.45	10.00	.....	25.00
68.75	83.33	47.06	80.00	50.00	66.67	90.00	72.72	45.45	80.00	66.67	.....
12.50	.....	5.88	20.00	.....	33.33	.....	9.09	9.09	10.00	33.33	75.00
25.00	33.33	23.53	40.00	20.00	33.33	10.00	18.18	.....	30.00	33.33	25.00
62.50	50.00	47.06	20.00	60.00	33.33	70.00	72.72	90.90	50.00	33.33	25.00
12.50	16.67	29.41	40.00	20.00	33.33	20.00	9.09	9.09	20.00	33.33	50.00
81.25	100.00	88.23	80.00	80.00	66.67	80.00	81.81	54.54	70.00	33.33	75.00
12.50	.....	5.88	20.00	.....	.....	20.00	9.09	27.27	20.00	66.67	25.00
6.25	.....	5.88	.....	20.00	33.33	.....	9.09	18.18	10.00	.....	.....
62.50	66.64	23.53	60.00	20.00	33.33	60.00	63.63	45.45	50.00	66.67	75.00
31.25	33.32	58.82	20.00	60.00	33.33	30.00	27.27	54.54	50.00	.....	25.00
6.25	.....	17.65	20.00	20.00	33.33	10.00	9.09	.....	.....	33.33	.....
87.50	83.30	64.70	60.00	70.00	66.67	70.00	45.45	54.54	60.00	66.67	.....
6.25	16.66	11.76	40.00	20.00	.....	10.00	27.27	27.27	10.00	.....	.....
6.25	.....	23.53	.....	10.00	33.33	20.00	27.27	18.18	30.00	33.33	100.00
37.50	33.32	64.70	60.00	60.00	33.33	50.00	72.72	45.45	40.00	.....	50.00
25.00	16.66	11.76	20.00	20.00	33.33	40.00	.....	36.36	30.00	66.67	25.00
37.50	49.98	23.53	20.00	20.00	33.33	10.00	27.27	18.18	30.00	33.33	25.00

TABLE 33--Continued

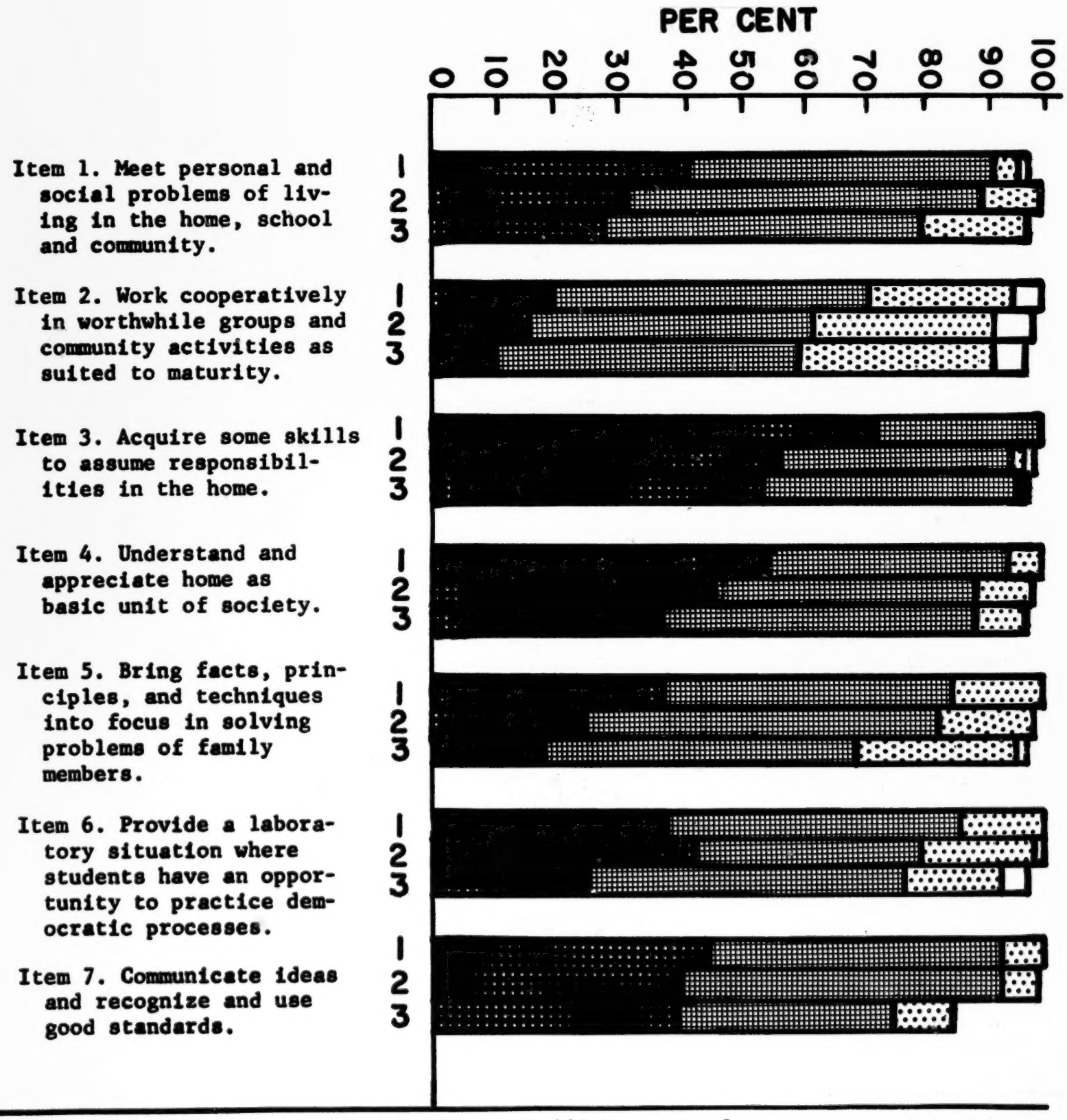
	Class A						Class B					
	Respondents						Respondents					
	Supt.		Prin.		Coun.		Supt.		Prin.		Coun.	
	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.
Item 11. Should the home economics program be designed for both boys and girls?												
Yes..	90.90	54.55	90.90	73.33	90.00	66.66	62.49	44.44	60.00	66.67	76.18	90.00
No..	.....	9.09	9.09	.....	.....	13.33	12.50	33.33	20.00	33.33	23.81	.....
Uncertain..	9.09	36.36	.....	26.66	10.00	20.00	25.00	22.22	20.00	.....	.....	10.00
Item 12. Are facilities and resource materials being evaluated as a part of the teaching-learning situation and being adjusted to curriculum improvement?												
Yes..	72.72	72.72	81.81	73.33	80.00	53.33	91.65	88.89	80.00	100.00	76.18	60.00
No..	.....	18.18	9.09	13.33	.....	26.66	.....	11.11	12.00	.....	9.52	.....
Uncertain..	27.27	9.09	9.09	13.33	20.00	20.00	8.33	.....	8.00	.....	14.28	40.00
Item 13. Should there be measurement of understanding in subject content and at grade levels?												
(a) Before and after instruction												
Yes..	54.54	81.81	72.72	73.33	70.00	100.00	74.99	77.79	72.00	77.78	95.22	100.00
No..	.....	9.09	18.18	.....	20.00	.....	4.17	.....	16.00	.....	.....	.....
Uncertain..	45.45	9.09	99.09	26.66	10.00	.....	20.83	22.22	12.00	22.22	4.76	.....
(b) By types of objectives--thinking, problem-solving, etc.												
Yes..	54.54	81.81	72.72	66.66	50.00	86.66	79.15	55.55	68.00	77.78	80.94	90.00
No..	.....	.....	18.18	.....	.....	6.67	.....	11.11	20.00	.....	9.52	.....
Uncertain..	45.45	18.18	9.09	33.33	50.00	6.67	20.83	33.33	12.00	22.22	9.52	10.00

TABLE 33--Continued

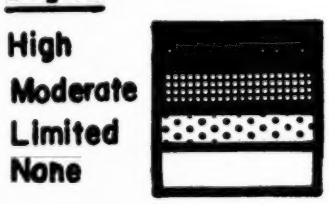
Class C						Class D					
Respondents						Respondents					
Supt.		Prin.		Coun.		Supt.		Prin.		Coun.	
Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.	Voc.	Gen.
75.00	66.64	58.82	80.00	80.00	66.67	80.00	72.72	63.63	40.00	33.33	50.00
25.00	33.32	11.76	.....	10.00	33.33	20.00	9.09	18.18	30.00	66.67	25.00
.....	.....	29.41	20.00	10.00	.....	.....	18.18	18.18	30.00	.....	25.00
87.50	83.30	70.58	60.00	40.00	66.67	80.00	72.72	63.63	60.00	33.33	100.00
6.25	16.66	11.76	40.00	40.00	.....	20.00	9.09	27.27	20.00	66.67	.....
6.25	.....	17.65	.....	20.00	33.33	.....	18.18	9.09	20.00	.....	.....
81.25	100.00	76.47	80.00	70.00	66.67	90.00	90.90	72.72	100.00	66.67	50.00
6.25	.....	23.53	.....	20.00	.....	.....	9.09	9.09	.....	.....	.....
12.50	.....	.....	20.00	10.00	33.33	10.00	.....	18.18	.....	33.33	50.00
81.25	100.00	76.47	80.00	70.00	66.67	80.00	100.00	63.63	100.00	33.33	75.00
.....	.....	23.53	.....	10.00	.....	10.00	.....	18.18	.....	66.67	.....
18.75	.....	.....	20.00	20.00	33.33	10.00	.....	18.18	.....	.....	25.00

APPENDIX III. FIGURES

Purpose A. Prepare students for homemaking responsibilities and activities to achieve family well being.



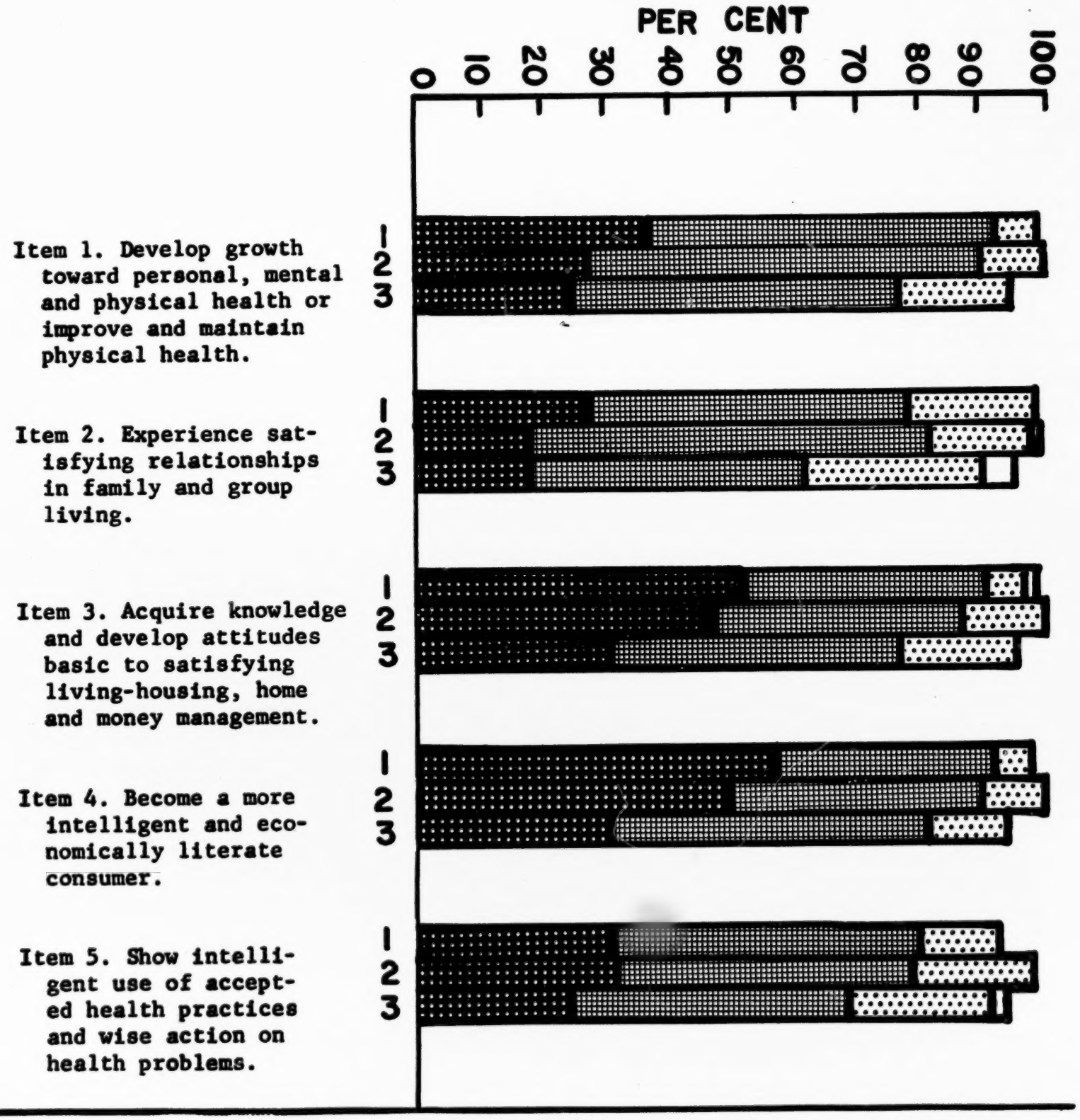
Note: Per cents do not necessarily total 100 because of no return responses.



Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.1.-Application of Purpose "A" in 112 Home Economics Secondary School Programs in Michigan, 1964-65.

Purpose B. Help family members improve quality of their home life through more thoughtful and efficient development and utilization of human and material resources.



Note: Per cents do not necessarily total 100 because of no return responses.

Degree

High
Moderate
Limited
None

Column 1 Superintendent
Column 2 Principals
Column 3 Counselor

Fig.2.-Application of Purpose "B" in 112 Home Economics Secondary School Programs in Michigan, 1964-65.

Purpose C. Fit persons for useful employment and develop competent workers.

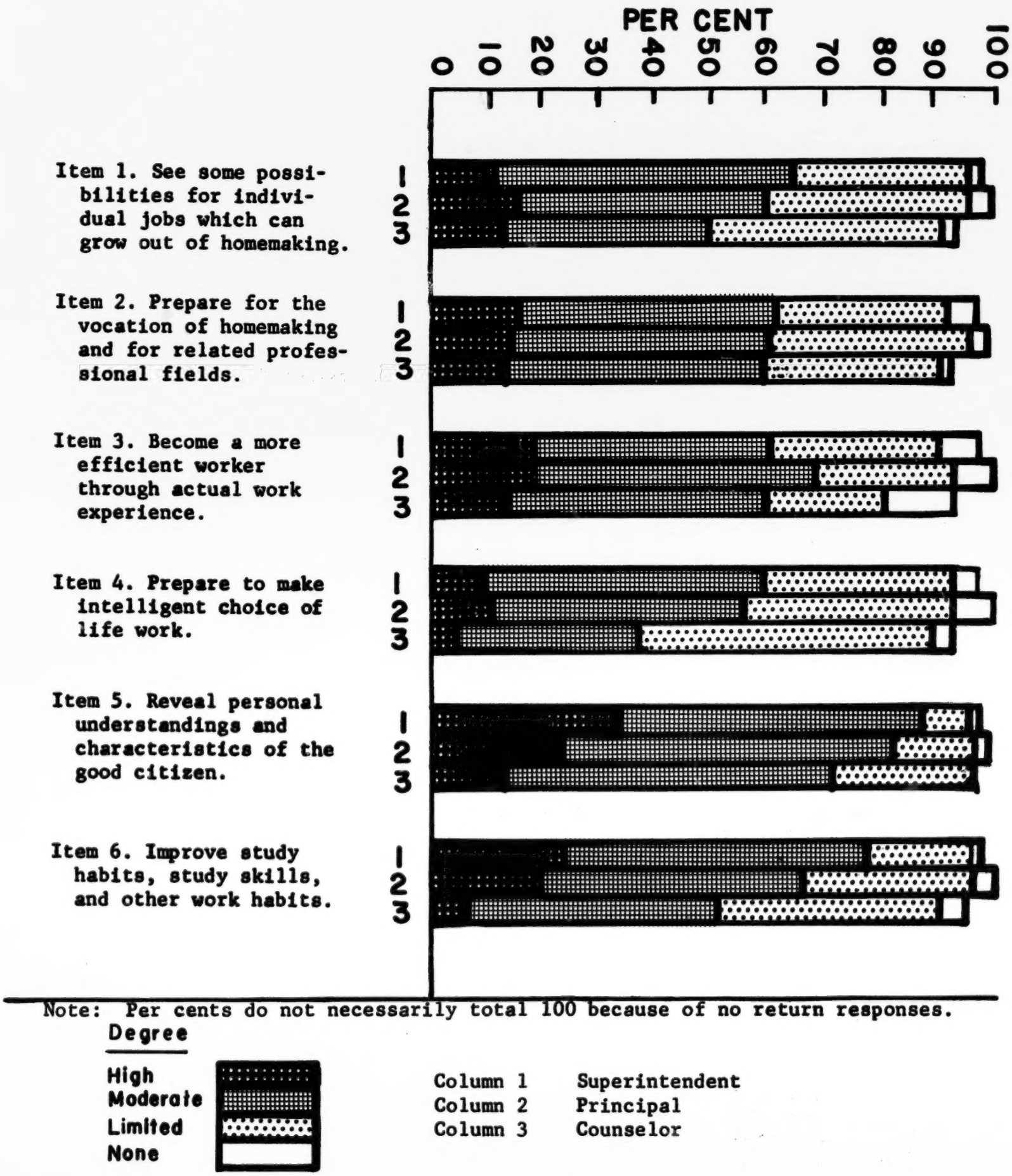
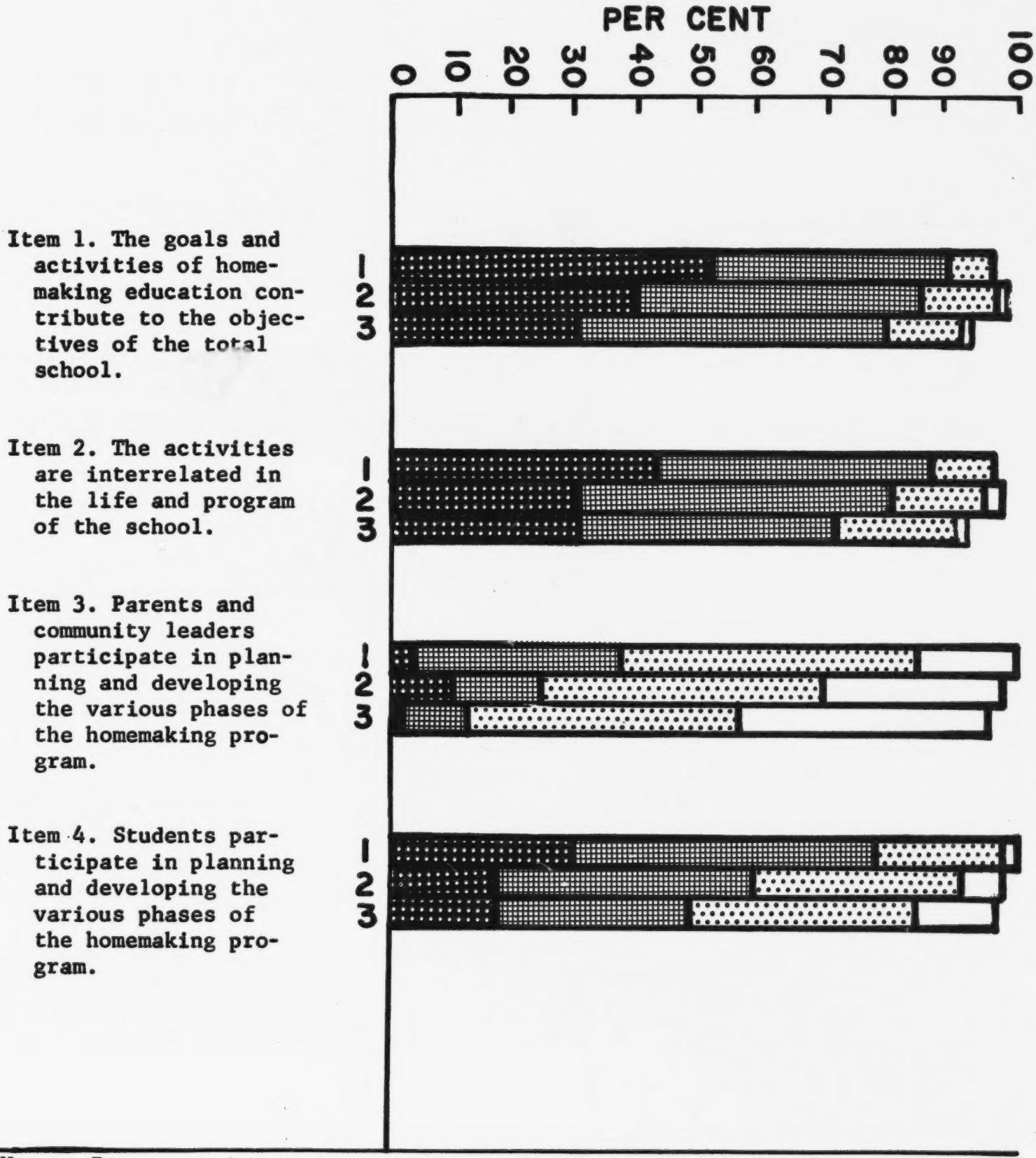


Fig.3.-Application of Purpose "C" in 112 Home Economics Secondary School Programs in Michigan, 1964-65.

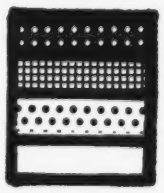
Organization A. The program is planned as an integral part of the total school-community program.



Note: Per cents do not necessarily total 100 because of no return responses.

Degree

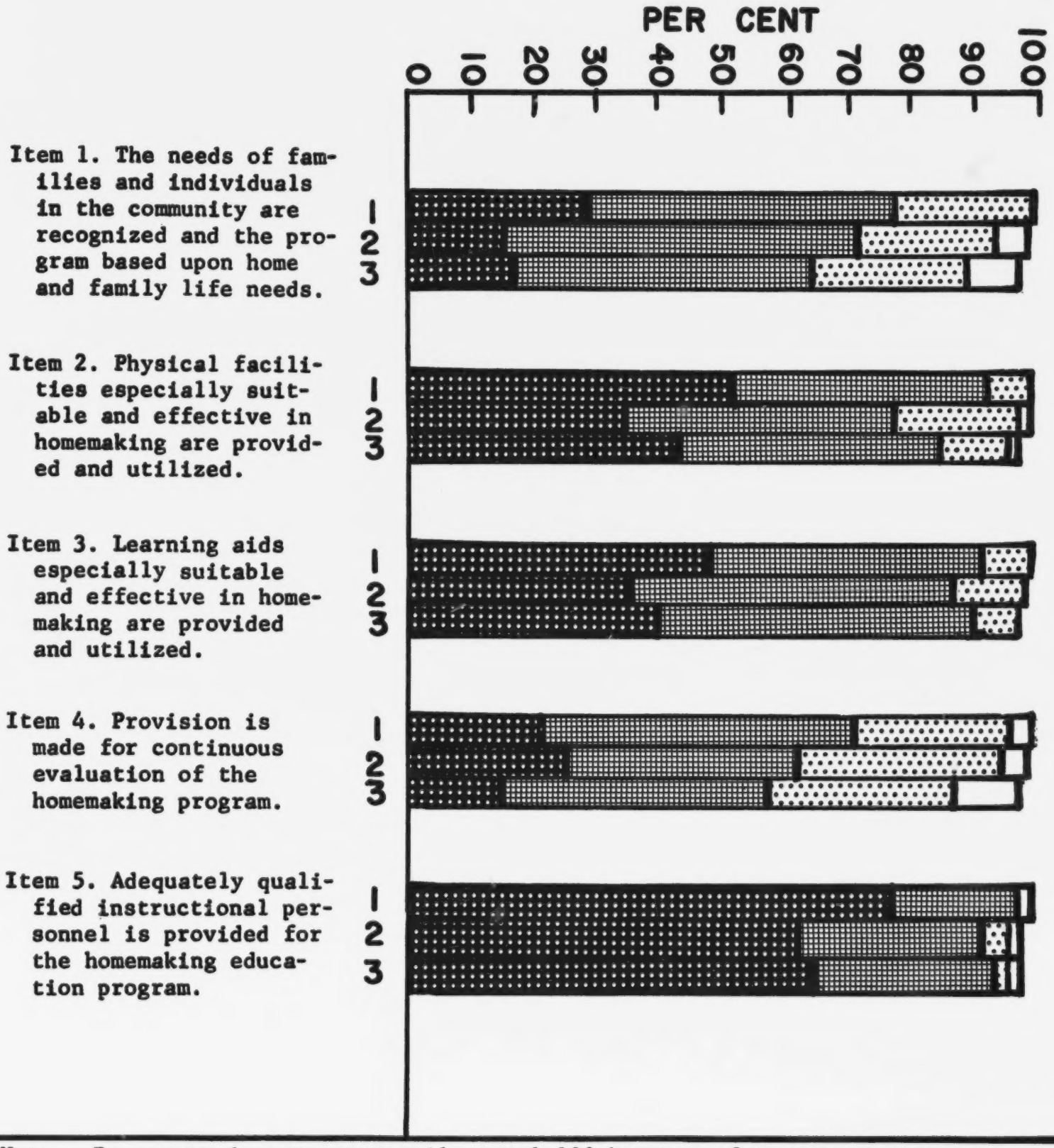
High
Moderate
Limited
None



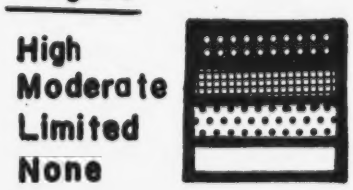
Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.4.-Organization of Home Economics in 112 Michigan Secondary School Programs 1964-65.

Organization B. There is a comprehensive program serving the needs of individuals and groups in the community.



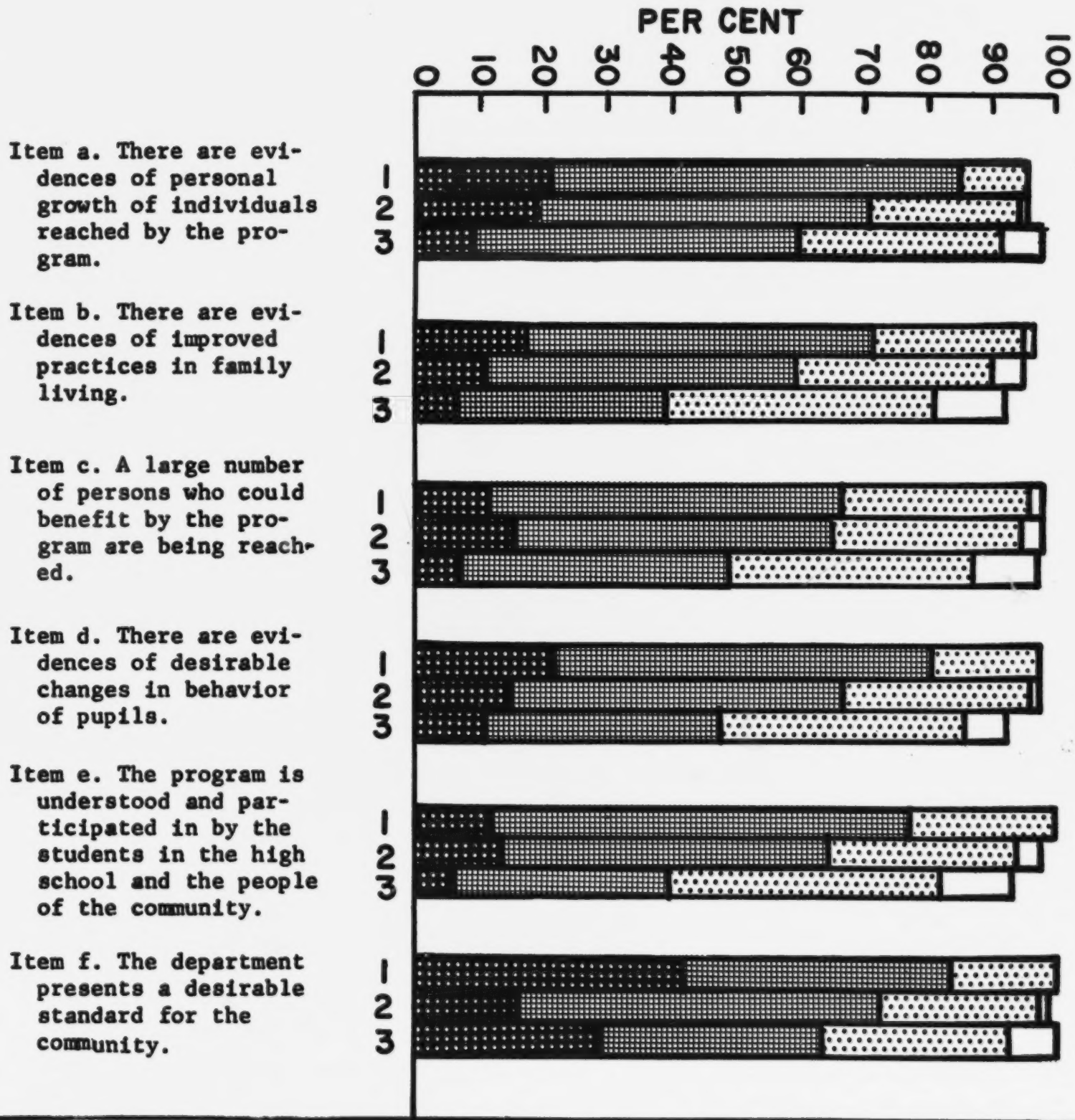
Note: Per cents do not necessarily total 100 because of no return responses.



Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.5.-Organization of Home Economics in 112 Michigan Secondary School Programs 1964-65.

Organization C_3. The program has gained the support of local groups and individuals because its value in the school curriculum has been established.



Note: Per cents do not necessarily total 100 because of no return responses.

Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.6.-Organization of Home Economics in 112 Michigan Secondary School Programs 1964-65.

KEY TO ITEMS USED IN FIGURE 7

Conditions Satisfied by Home Economics Education

1. Local community understands the home economics program.

2. Local groups expect the program to be broad in scope rather than limited in content.

3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place in home and families.

4. Teaching is geared to present day realities in the several subject matter areas.

5. Education for effective homemaking in today's world is needed -- persons are not innately good homemakers.

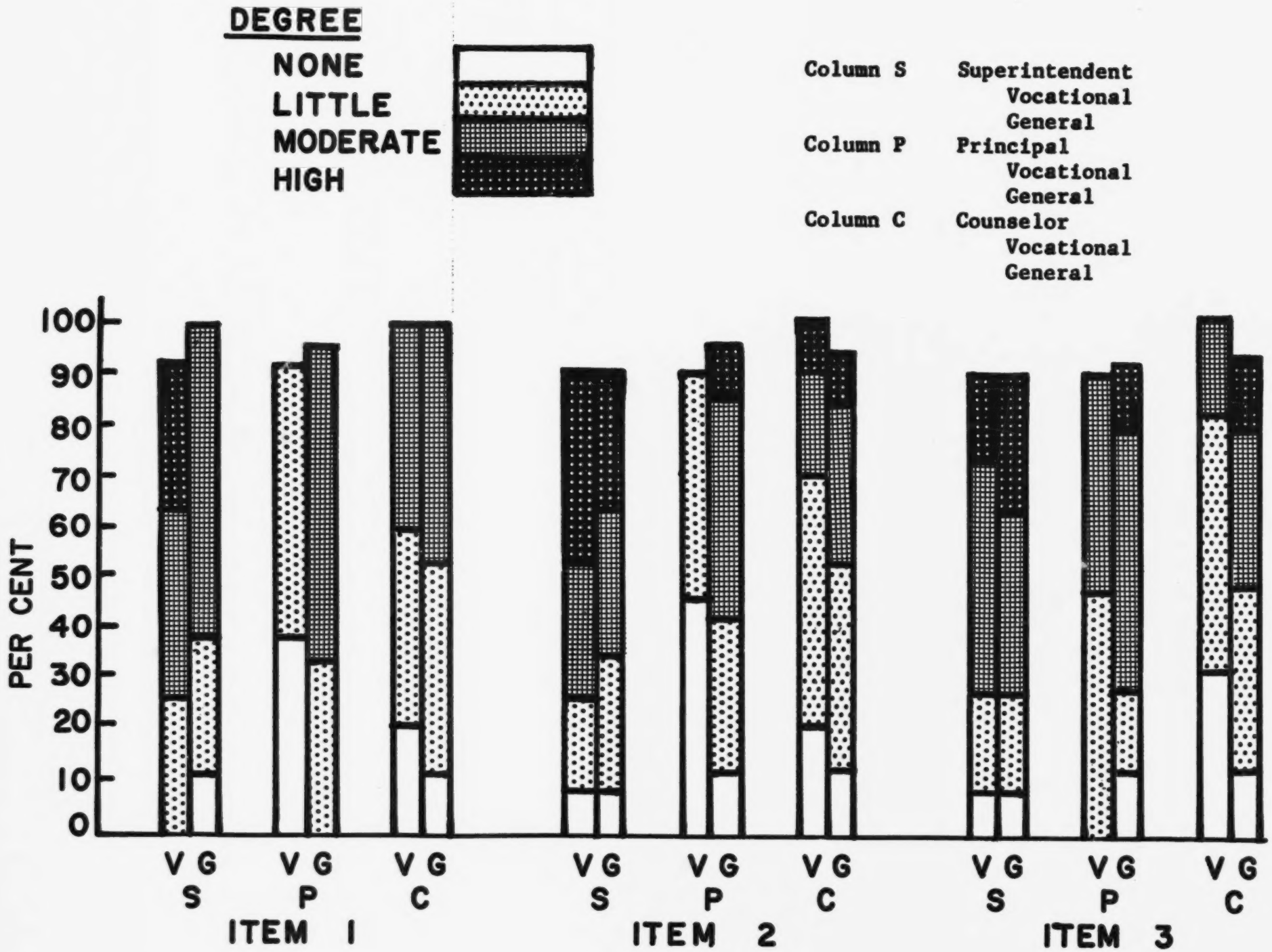
6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.

7. Program contributes to general education of individuals.

8. Homemaking education has potential values for all students.

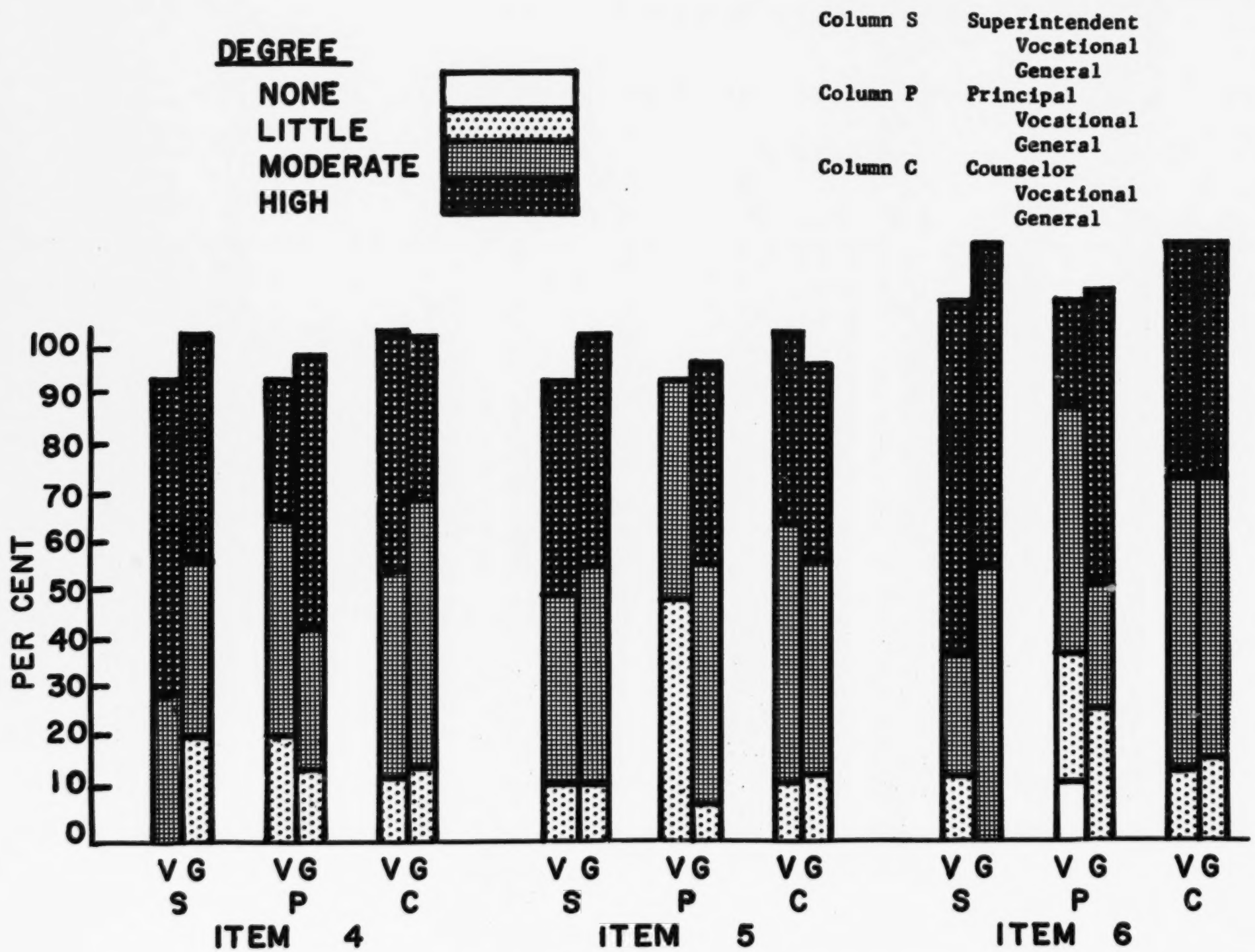
9. Homemaking education is intellectually stimulating.

10. Home economics is a matter of training people to do things -- to perform.



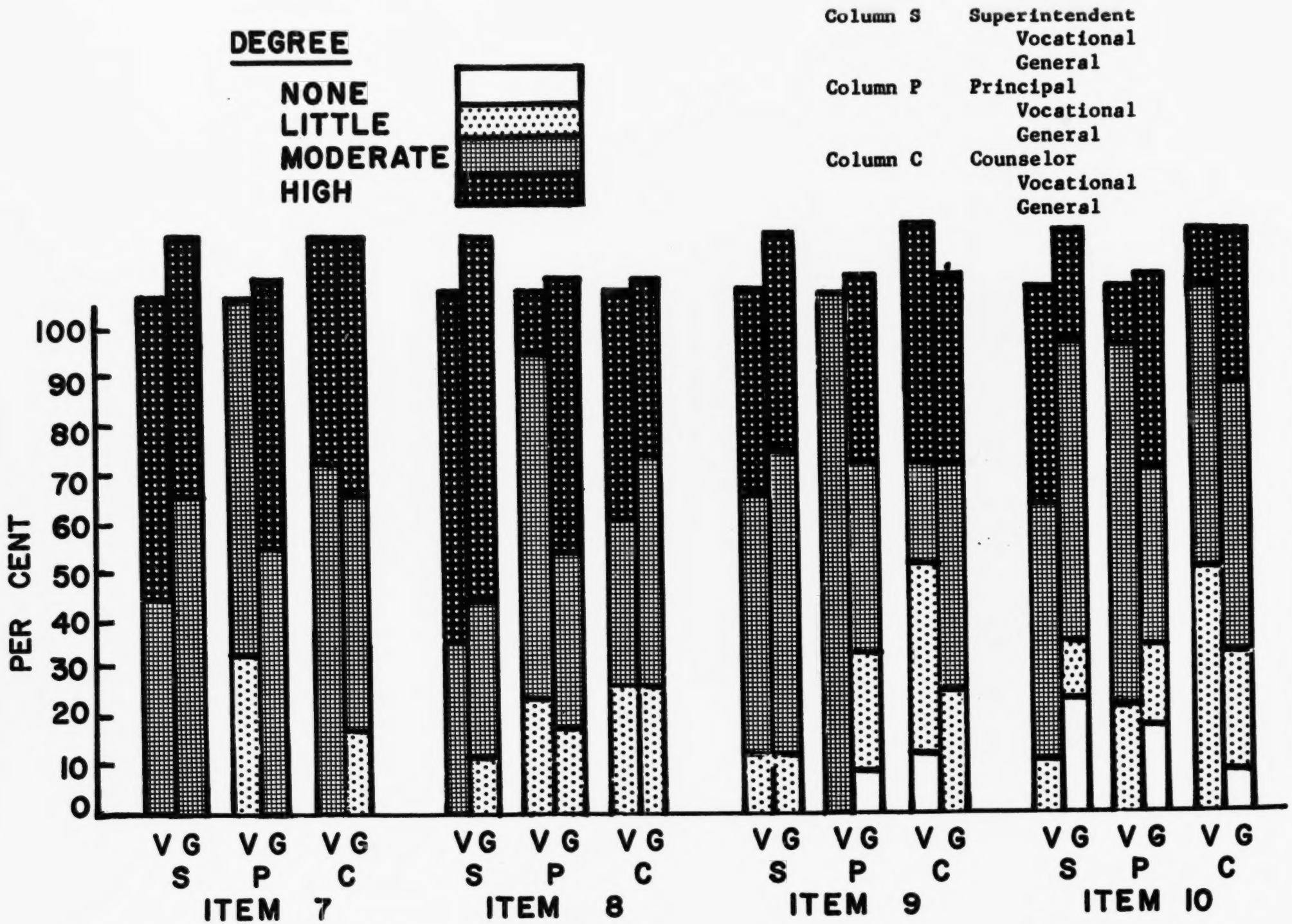
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.7.-Status of the Program, Class A Schools



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.7.-Status of the Program, Class A Schools (continued)



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.7.-Status of the Program, Class A Schools (continued)

KEY TO ITEMS USED IN FIGURE 8

Conditions Satisfied by Home Economics Education

1. Local community understands the home economics program.

2. Local groups expect the program to be broad in scope rather than limited in content.

3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place in home and families.

4. Teaching is geared to present day realities in the several subject matter areas.

5. Education for effective homemaking in today's world is needed -- persons are not innately good homemakers.

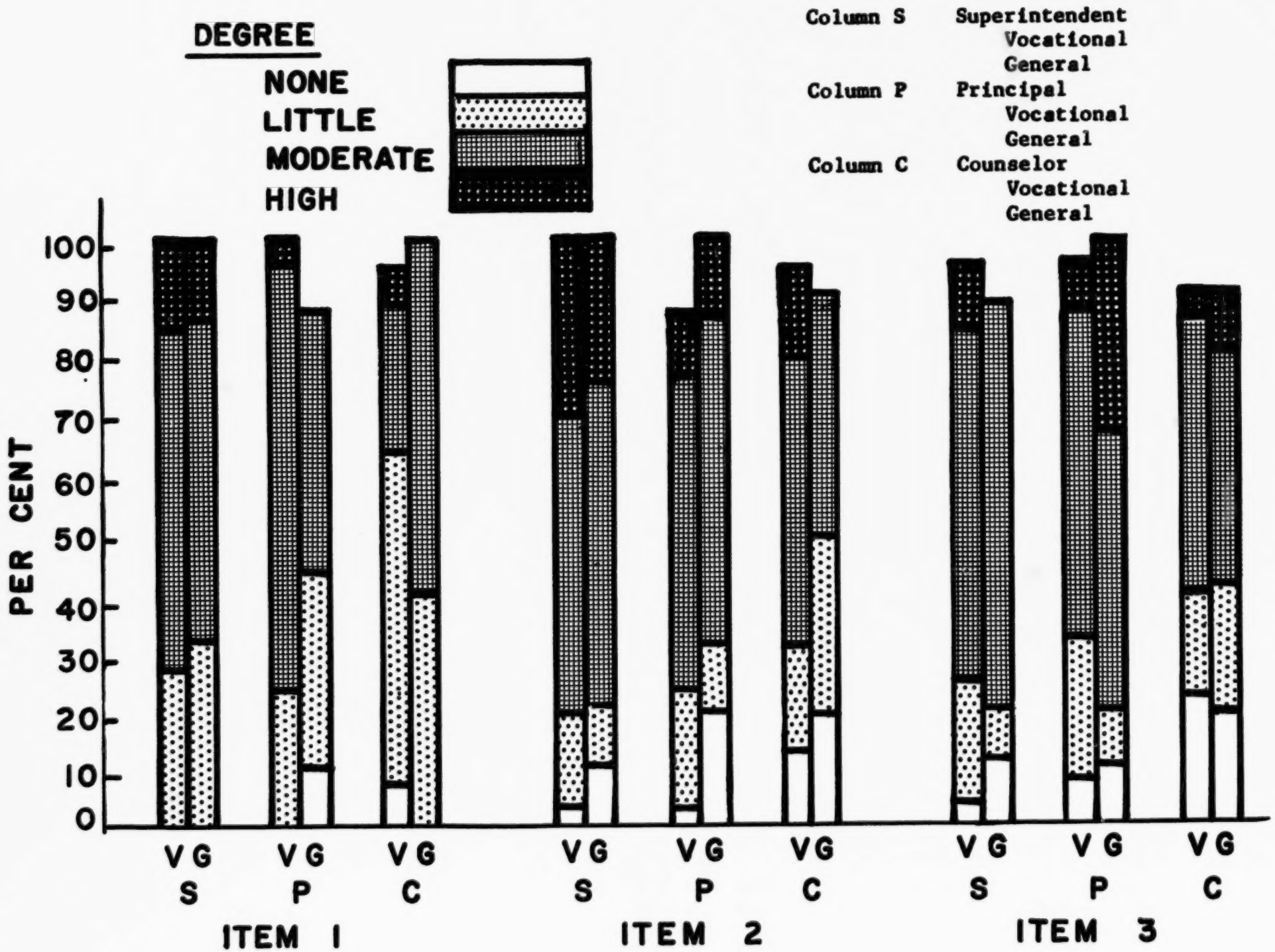
6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.

7. Program contributes to general education of individuals.

8. Homemaking education has potential values for all students.

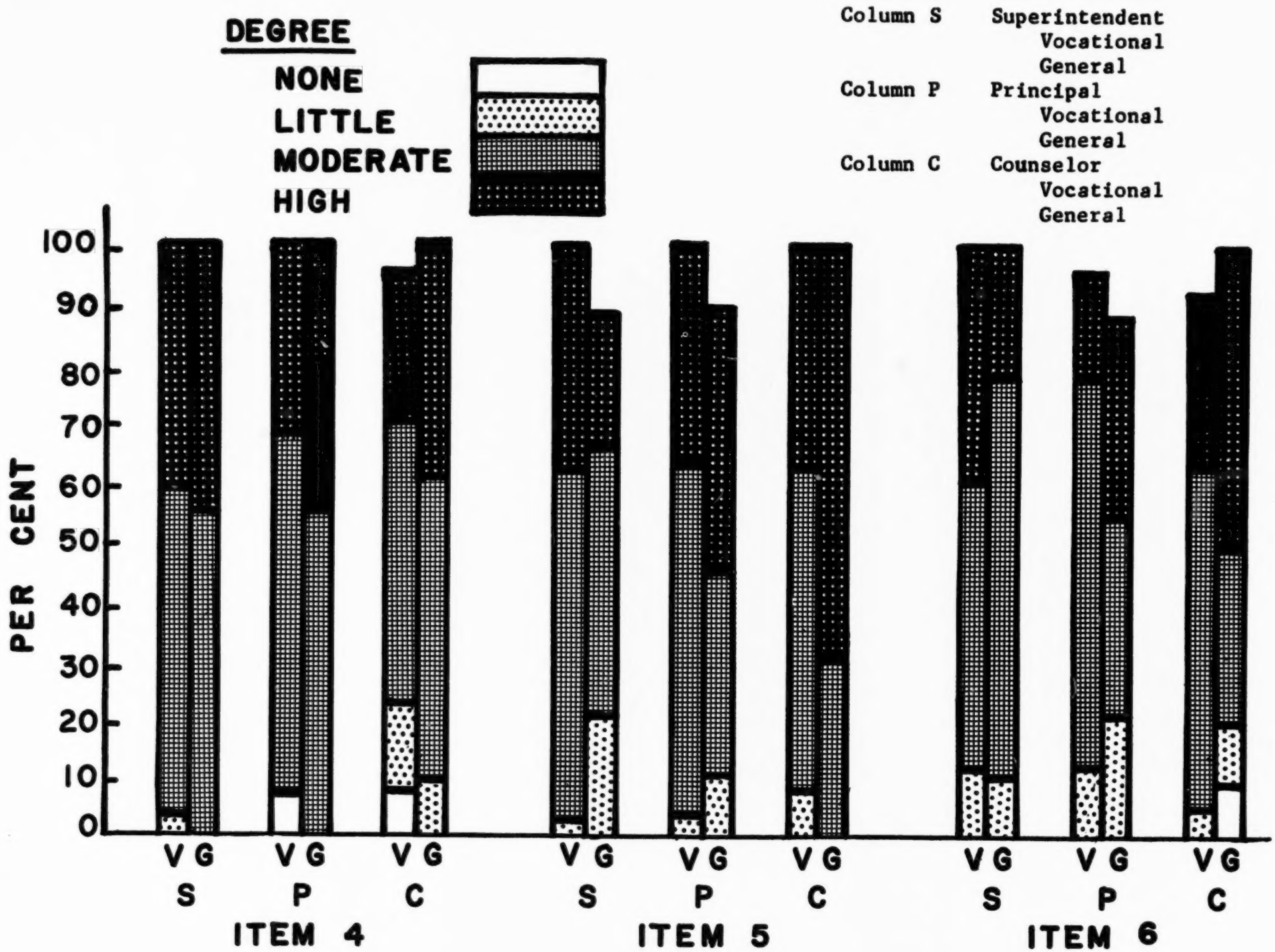
9. Homemaking education is intellectually stimulating.

10. Home economics is a matter of training people to do things -- to perform.



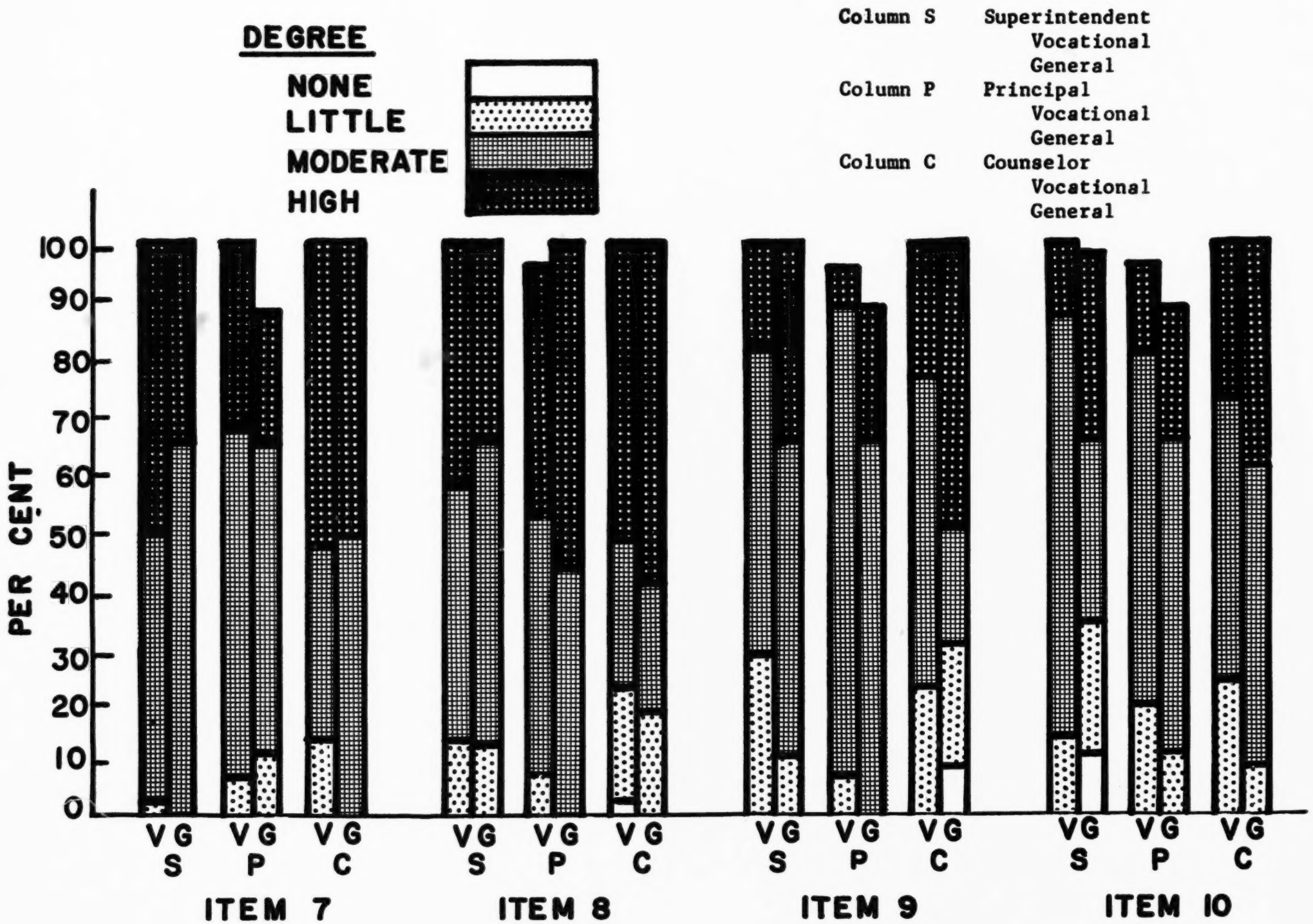
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.8.-Status of the Program, Class B Schools



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.8.-Status of the Program, Class B Schools (continued)



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.8.-Status of the Program, Class B Schools (continued)

KEY TO ITEMS USED IN FIGURE 9

Conditions Satisfied by Home Economics Education

1. Local community understands the home economics program.

2. Local groups expect the program to be broad in scope rather than limited in content.

3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place in home and families.

4. Teaching is geared to present day realities in the several subject matter areas.

5. Education for effective homemaking in today's world is needed -- persons are not innately good homemakers.

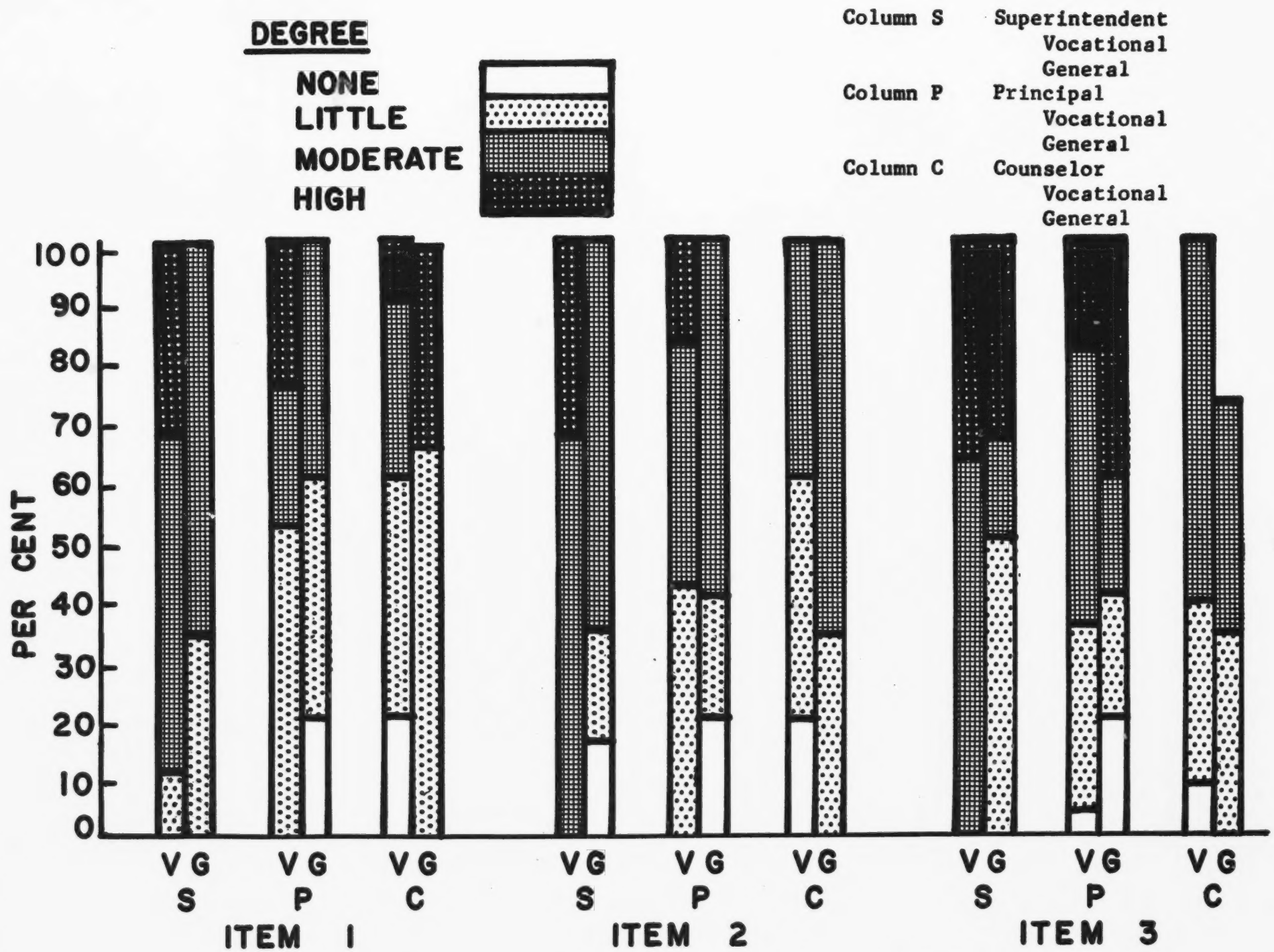
6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.

7. Program contributes to general education of individuals.

8. Homemaking education has potential values for all students.

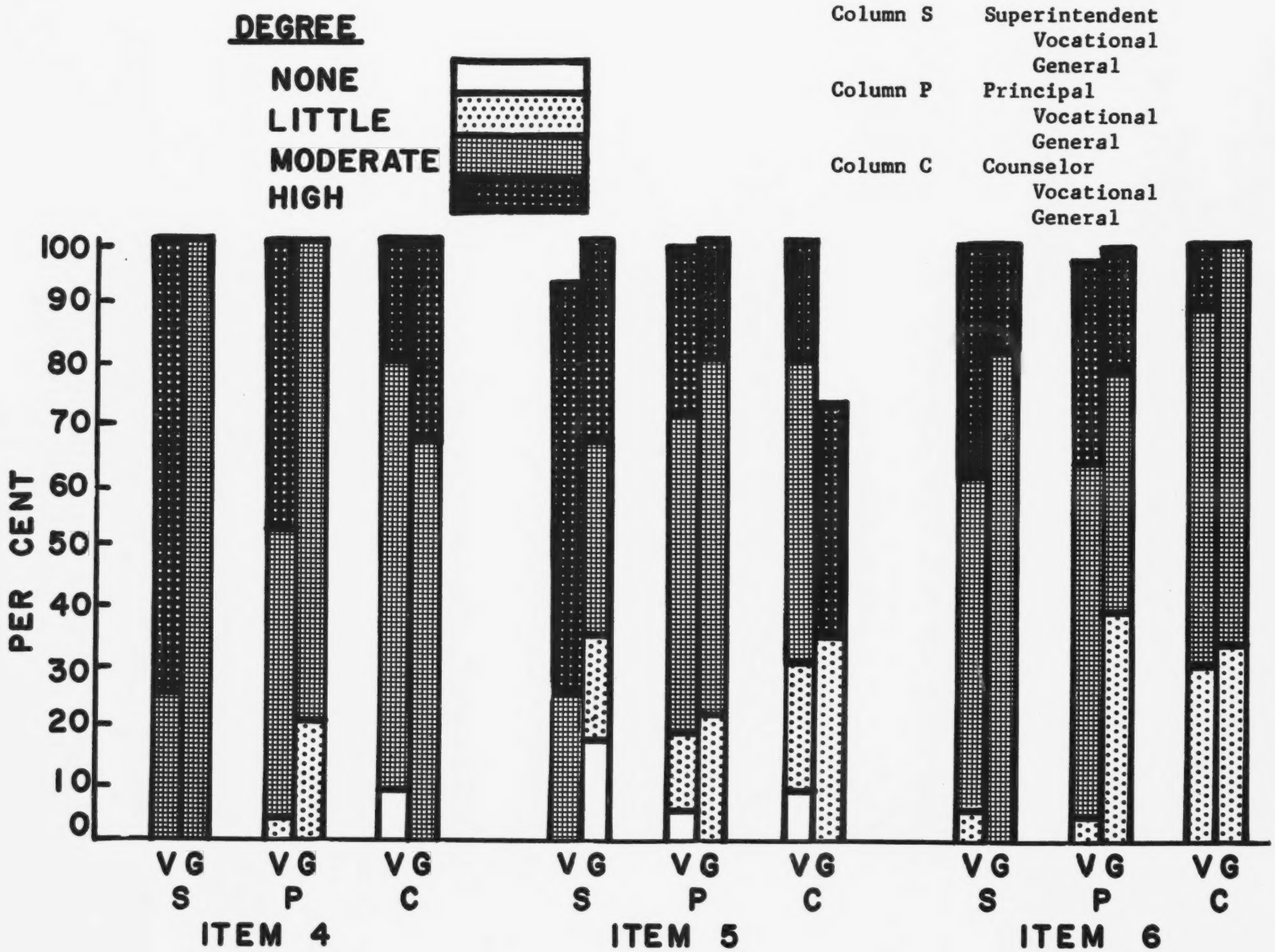
9. Homemaking education is intellectually stimulating.

10. Home economics is a matter of training people to do things -- to perform.



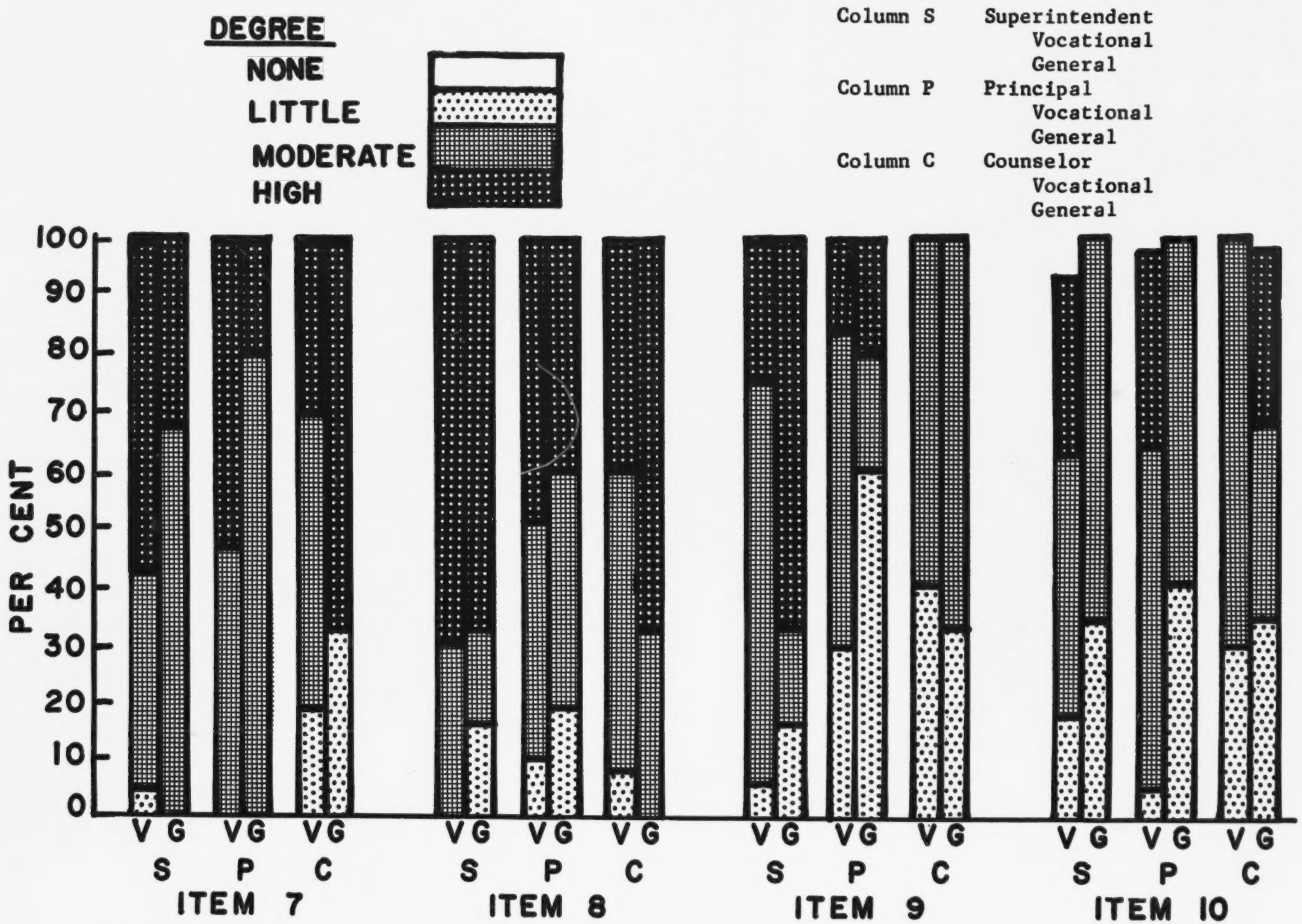
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.9.-Status of the Program, Class C Schools



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.9.-Status of the Program, Class C Schools (continued)



NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.9.-Status of the Program, Class C Schools (continued)

KEY TO ITEMS USED IN FIGURE 10

Conditions Satisfied by Home Economics Education

1. Local community understands the home economics program.

2. Local groups expect the program to be broad in scope rather than limited in content.

3. Local groups believe the program should be adjusted to local conditions and to changes which have taken place in home and families.

4. Teaching is geared to present day realities in the several subject matter areas.

5. Education for effective homemaking in today's world is needed -- persons are not innately good homemakers.

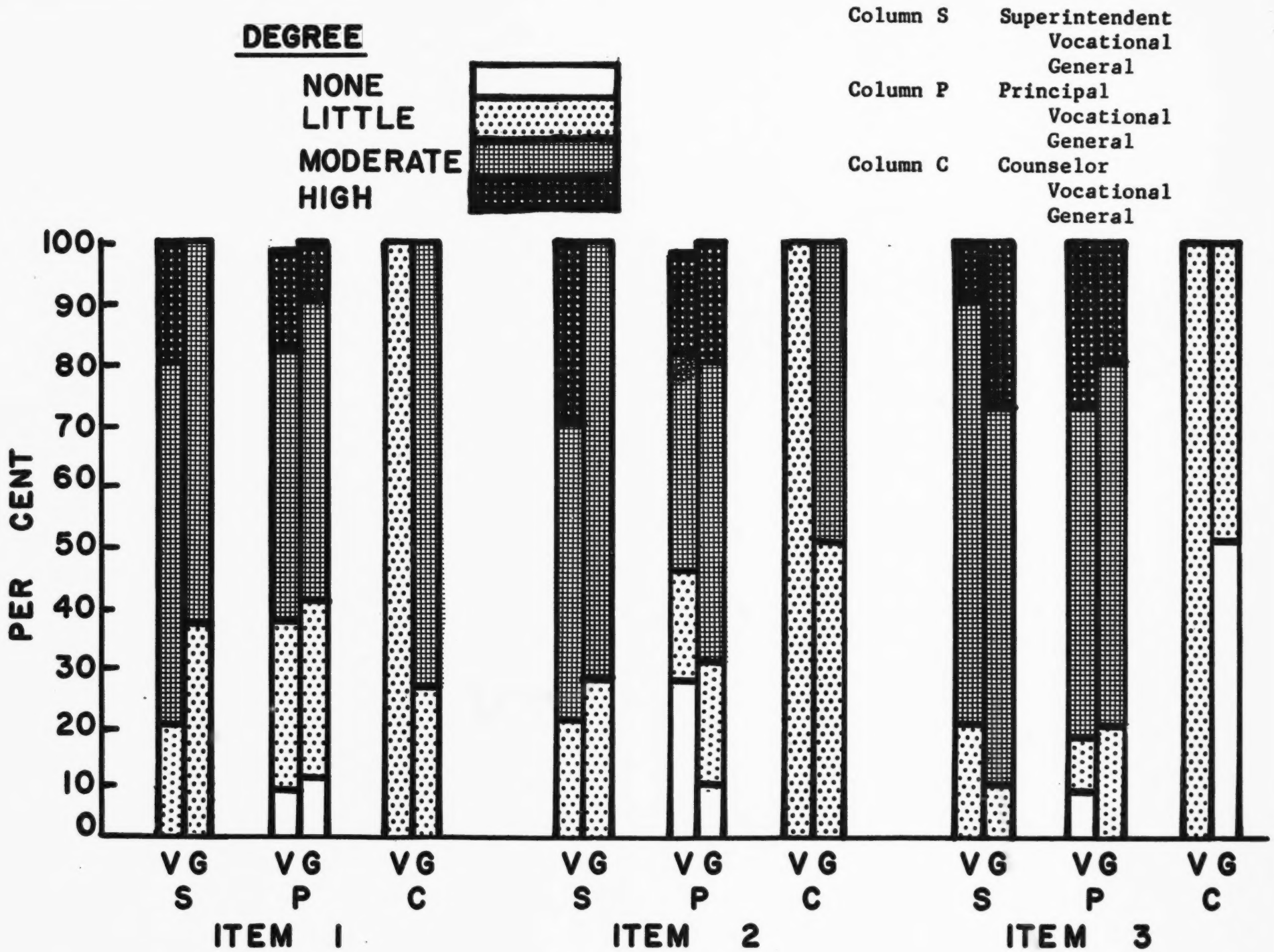
6. Program utilizes specific aspects of many subject fields and disciplines with a focus on the home and family.

7. Program contributes to general education of individuals.

8. Homemaking education has potential values for all students.

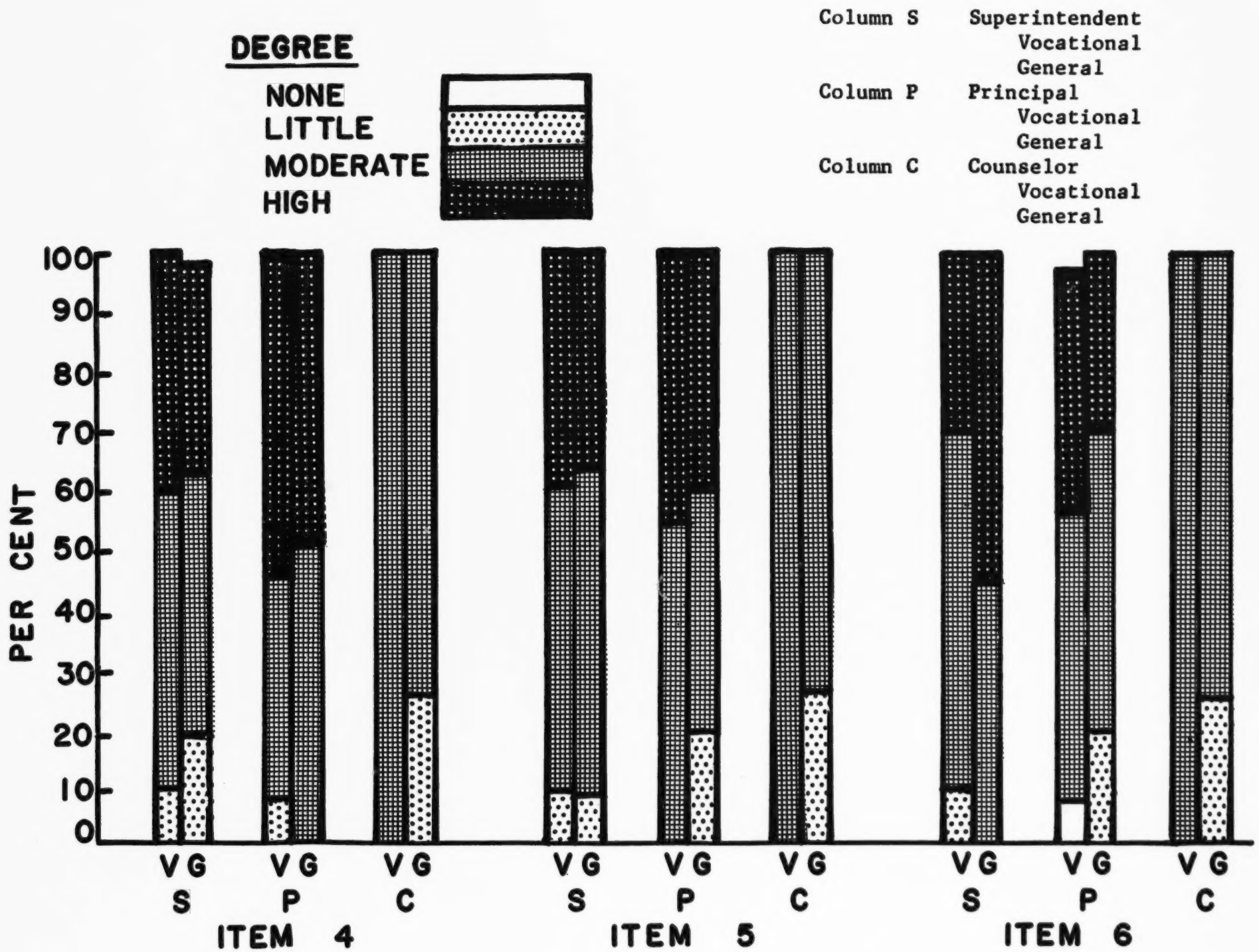
9. Homemaking education is intellectually stimulating.

10. Home economics is a matter of training people to do things -- to perform.



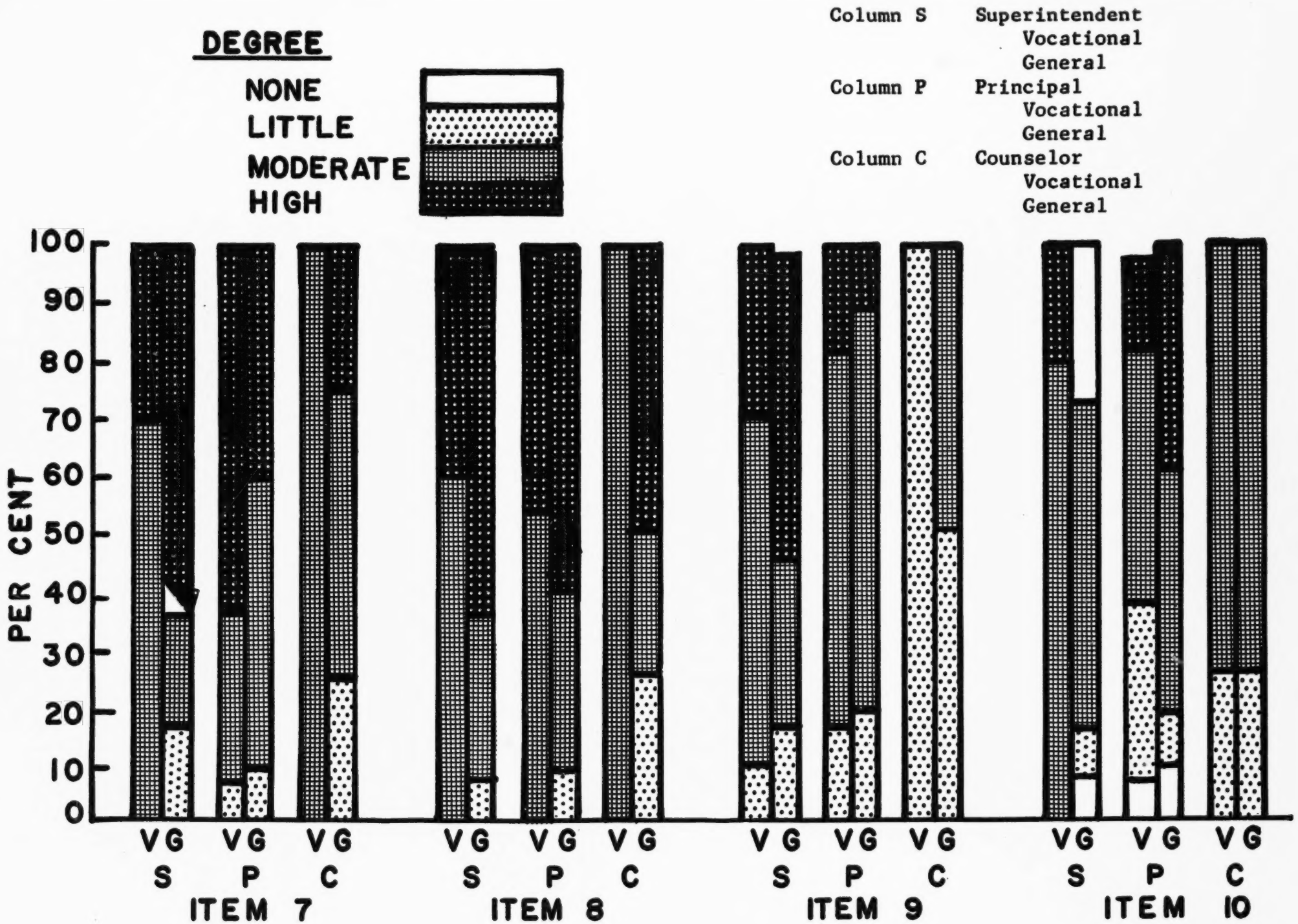
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.10.-Status of the Program, Class D Schools



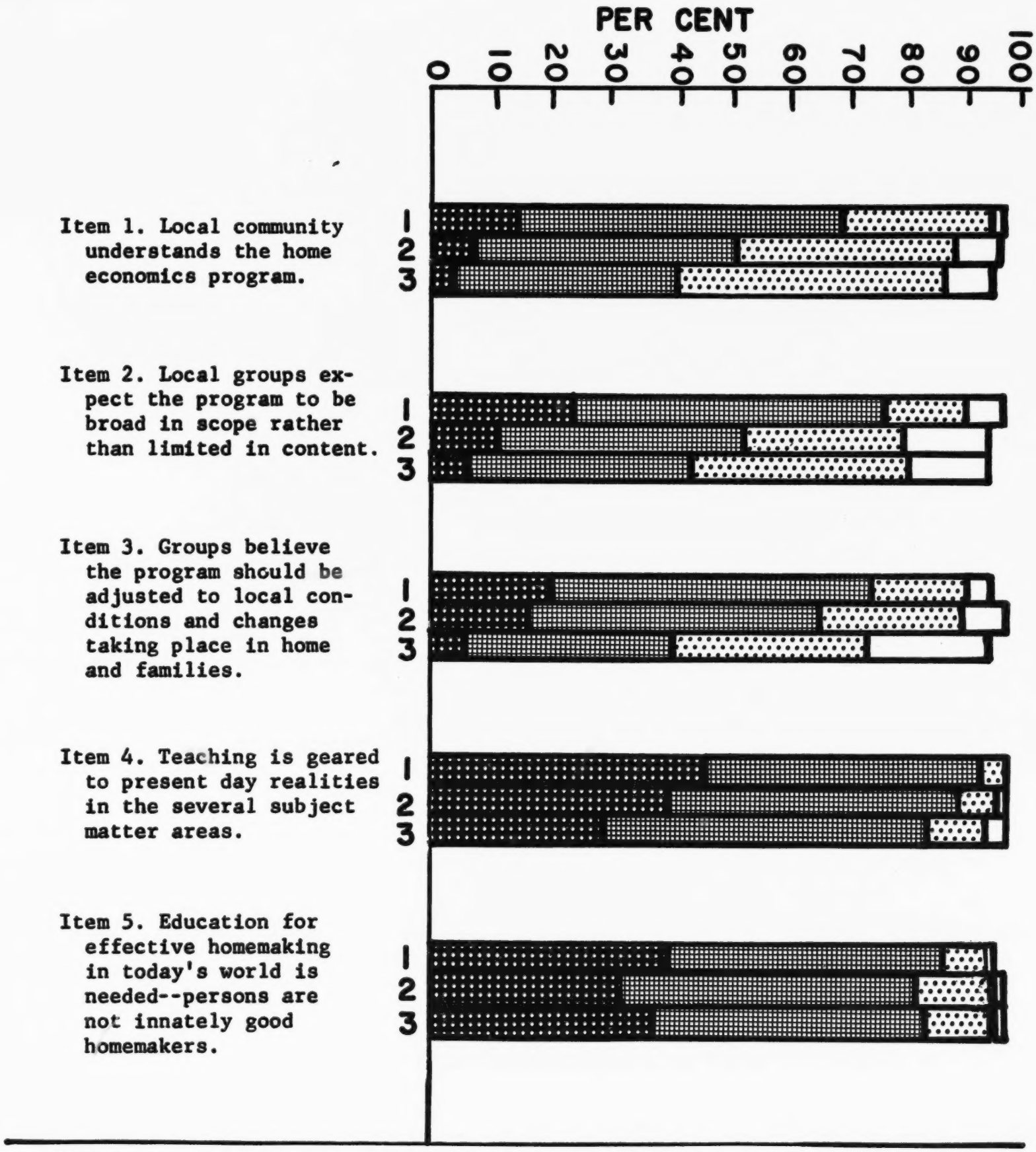
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.10.-Status of the Program, Class D Schools (continued)



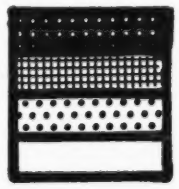
NOTE: Per cents do not necessarily total 100 because of no return responses.

Fig.10.-Status of the Program, Class D Schools (continued)



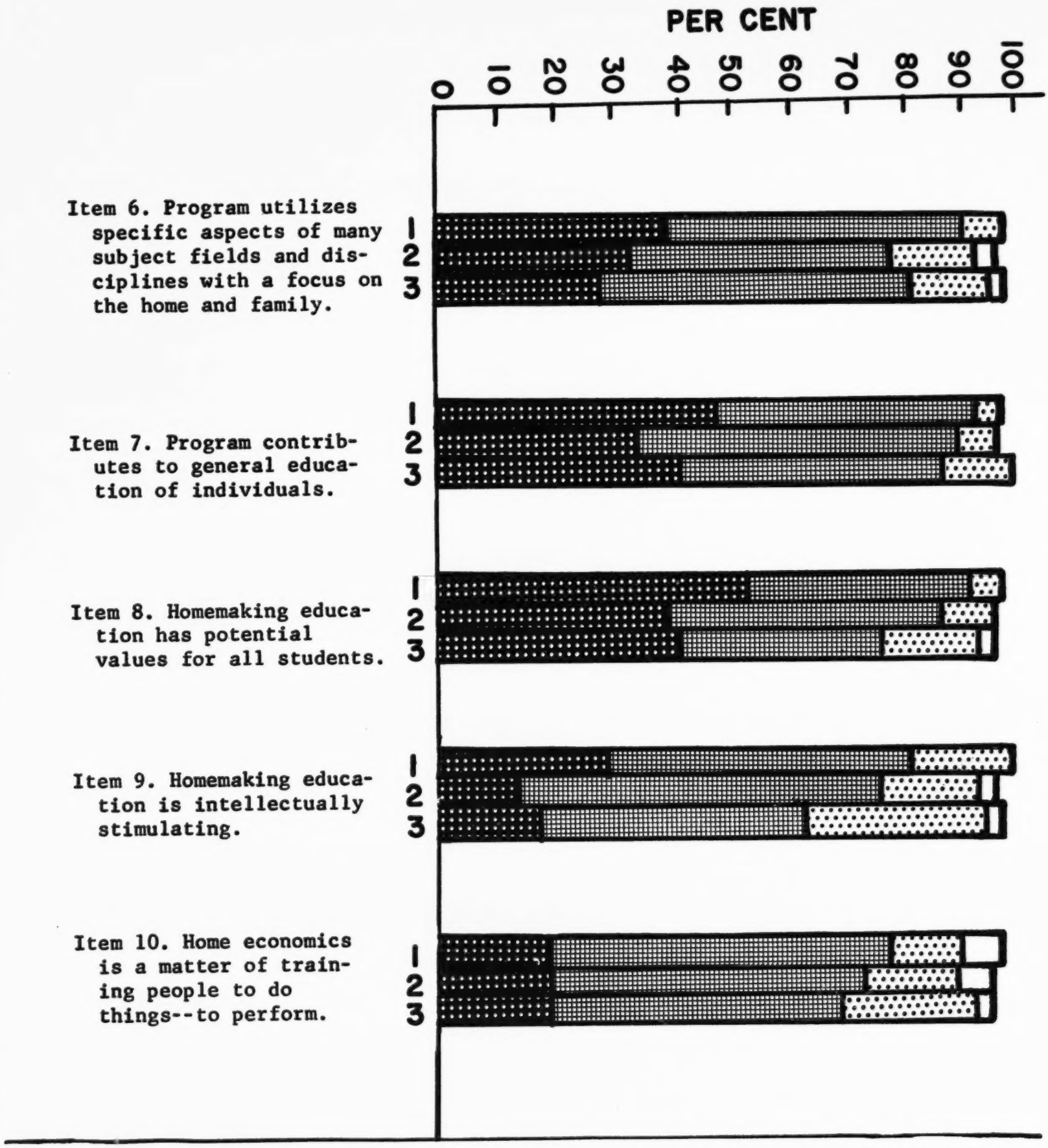
Note: Per cents do not necessarily total 100 because of no return responses.

Degree

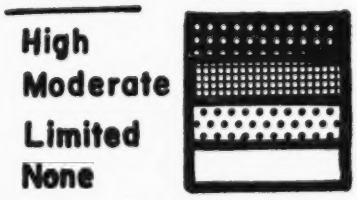


Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.11.-Status of Home Economics Education Program in 112 Michigan Secondary Schools, 1964-65.



Note: Per cents do not necessarily total 100 because of no return responses.



Column 1 Superintendent
Column 2 Principal
Column 3 Counselor

Fig.11.-Status of Home Economics Education Program in 112 Michigan Secondary Schools, 1964-65 (continued).

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A PREFERRED ORDER FOR STUDYING CURRENT PROBLEMS IN MINNESOTA'S TRADE AND TECHNICAL PROGRAM

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FOREWORD

One result of the implementation of the Area Redevelopment Act and the Manpower Development and Training Act is to increase the administrative burden in the area vocational-technical schools of Minnesota.

Vocational education services have always attempted to be immediately responsive to industrial change, increasing population, re-location of people at work and to occupational demand.

Now the Vocational Education Act of 1963, P.L. 88-210, has increased the impact of P.L. 88-27 and of P.L. 87-415; administrative responsibilities must cover a greater range. The need for research, fundamental to the development of plans and programs, is immediately apparent.

It was with this in mind that the cooperation of the University of Minnesota was requested to determine those problems currently affecting the area vocational-technical schools of the state. Many of such problems are identified in this report.

Vocational Section
State Department of Education
State of Minnesota

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I. THE PROBLEM

The recently increased financial support for vocational education, a heightened awareness of the number and acuteness of extant problems, and a growing belief in the value of formalized problem-solving procedures have combined to provide unprecedented opportunities and obligations for research in all areas of vocational education.

This study has been designed to supply information useful in planning a sustained program of research in one such area. Its major purpose is to obtain a current priority of significant problems in public vocational trade and technical education in Minnesota suitable for guiding potential investigators in problem selection, and for assisting the State in determining its allocation of resources for research.

More specifically, the following questions are posed:

1. In the opinion of vocational educators who are most familiar with the statewide program of public trade and technical education, and who are in a position to encourage, direct, and/or support research,
   a. What problem areas[1] appear to be limiting the effectiveness of the trade and technical program in the State?
   b. What is the preferred order in which these problem areas should be studied?
2. When vocational educators who are most familiar with the statewide program of trade and technical education are organized into categories of area school administrators, teacher trainers, and State Department personnel,
   a. What is the preferred order in which each of these categories feels the problem areas should be studied?
   b. To what extent do these categories agree upon the preferred order in which the problem areas should be investigated?
3. To what extent do vocational educators with specific statewide responsibility for agriculture, business, distributive, and home economics education agree with their colleagues in trade and technical education on the preferred order in which the problem areas should be studied?
4. When the principal findings of this study are compared with those of similar studies in Michigan and Pennsylvania,[2]
   a. What common problem areas have been identified?
   b. To what extent are the priorities assigned to common problem areas in each of the other studies in agreement with the priority found in this study.

II. PROCEDURES

Sampling. Two purposive samples are utilized. The first sample (n=29), called the "trade and technical" sample, is composed of three subsamples: a) All the directors and assistant directors of the fifteen area vocational schools[3] presently in operation (n=17), b) the total trade and technical teacher training staff (n=6), and c) the Director and Assistant Director of Vocational Education, the State Supervisor of Manpower Training,

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[1] Problem areas are not necessarily researchable in their present form, but they do represent areas from which specific research problems can be developed.

[2] Advisory Committee for Research Project on Organization, Administration and Supervision of Vocational Education, "Research Problems", Ann Arbor, Mich., Department of Vocational Education and Practical Arts, University of Michigan, n.d., 3p. (mimeographed).

State Research Advisory Committee, Trade and Industrial Education, *As You See It*, Harrisburg, Pa., Pennsylvania Department of Public Instruction, 1960, 4p.

[3] The area schools enroll over 95% of the trade and technical students in the State; conversely, they enroll less than 4% of the students in agriculture, business, distributive, and home economics programs.

the State Supervisor of Trade and Industrial Education, and the two Assistant State Supervisors of Trade and Industrial Education (n=6).

The second sample (n=8), called the "related vocational fields" sample, consists of the four head teacher trainers and the four State Supervisors of Agriculture, Business, Distributive, and Home Economics Education.

Data Collection. Ninety-eight percent (n=28) of the trade and technical sample and 38% (n=3) of the related vocational fields sample attended a conference designed to develop a list of problems which appear to be limiting the effectiveness of the trade and technical program in the State. No reference was made to lists of problems developed in Michigan or Pennsylvania.

The problems suggested during the conference were rephrased and incorporated in an opinionnaire containing eighteen problem areas[4]. The opinionnaire, together with an explanatory cover letter, was then sent[5] to both samples with instructions to ". . . indicate your opinion of the relative importance of each problem listed below by ranking them in the consecutive order in which you feel they should be studied. The rank of one (1) represents the highest priority. Use the space at the bottom of the list to add significant problems that are not shown and include these additions in your ranking." Replies were received from 98% (n=28) of the trade and technical sample and 100% of the related vocational fields sample.

Treatment of Data. To determine the consistency with which an individual might be expected to rank eighteen items, the opinionnaire was administered three times to five members of the trade and technical sample, using intervals of three days and forty-five days. The respondents did not know they would be retested. Spearman rank order correlations were calculated. Table 1 presents the results.

Table 1.
TEST-RETEST COEFFICIENTS OF RELIABILITY OF THE OPINIONNAIRE
(Rank order)

Interval	Sample Member 1	2	3	4	5	Average r′ of the Five Members*
3 days	.95	.94	.89	.90	.94	.93
45 days	.86	−.11	.22	.60	.55	.50

*Using z′ transformations.

The ability of the opinionnaire to reflect an individual's current opinion satisfactorily is shown by the high correlations obtained between two administrations given three days apart. On the other hand, the opinionnaire's sensitivity to actual change of individual opinion[6] is reflected in the much lower correlations obtained when consecutive administrations were separated by forty-five days.

Further evidence of the short term stability of the opinionnaire was secured by correlating the average of the five members' ranks for each problem area on one administration with their average ranks on the second administration given three days later; a rank order coefficient of .96 was obtained, indicating the high reliability of the average ranks of the sample.

To find the preferred order in which the problem areas should be studied, the average rank of each problem area was computed for the trade and technical sample, the three

[4] A complete list of the eighteen problem areas is given in Appendix A.

[5] The list of problems was developed prior to, and the opinionnaire was mailed subsequent to, the passage of the Vocational Education Act of 1963.

[6] Because the Vocational Education Act of 1963 was passed during the 45 day interval, the individuals completing the opinionnaire stated that they were conscious of varying amounts of actual change of opinion. For example, the importance of improving the "image" of the field was initially given a top priority by one individual, but after the Act made additional funds available, he felt that the problem should be assigned a very low priority.

subsamples within the trade and technical sample, and the related vocational fields sample. Then, for each sample and subsample, Kendall's Coefficient of Concordance[7] (W) was calculated to determine the degree of agreement among individuals in their rankings of the eighteen problem areas. When a low coefficient was found, indicating little consensus within a sample or subsample on the exact order in which the problem areas should be investigated, the distribution of the eighteen average ranks was inspected to identify relatively homogeneous groupings of average ranks. Priorities of problem areas were then reported in terms of *groups* of problem areas.

To ascertain the extent to which the various samples and subsamples agree upon the preferred order in which to study the problem areas, the average ranks assigned by each sample or subsample to the problem areas were converted to a range of one to eighteen. Spearman rank order coefficients were then calculated between pairs of converted average ranks to find the degree of their relationship.

Separate comparisons of the findings of this study with those reported by Michigan and by Pennsylvania were made by first analyzing the content of problems identified in each study to determine which problems correspond to one or more of Minnesota's eighteen problem areas. When more than one problem from a given study corresponded to a particular Minnesota problem area, the average rank of the individual problems was computed. The average ranks were then converted into ranks representing the priorities of "common" problem areas within each study. Rank order correlations between problem areas common to Minnesota-Michigan and Minnesota-Pennsylvania were calculated.

III. FINDINGS

Question 1a. In the opinion of vocational educators who are most familiar with the statewide program of public trade and technical education, and who are in a position to encourage, direct, and/or support research, what problem areas appear to be limiting the effectiveness of the trade and technical program in the State?

Appendix A and Table 2 contain the list of problem areas considered by thirty-one persons in attendance at the conference to be most significant in limiting the effectiveness of the trade and technical program in the State.

Despite the fact that the list of problem areas was developed prior to the passage of the Vocational Education Act of 1963, and opinions concerning their relative importance were obtained subsequent to the passage of the Act, only three additional problem areas were suggested by the opinionnaire respondents. The suggested problems were concerned with State vs. local control and financing of area schools, the effect of lack of transportation on attendance at area schools, and the operation of high school and post-high school vocational guidance programs. It is not possible to estimate what the relative importance of these problem areas would have been had they been included in the opinionnaire.

Question 1b. What is the preferred order in which these problem areas should be studied?

Table 2 presents the order in which the trade and technical sample feels the problem areas should be investigated.

Weighting the opinion of each member of this sample equally, the degree of agreement among individuals, as measured by the coefficient of concordance, was found to be .17 (significant at the .01 level). Because of the low extent of agreement, indicating a lack of real consensus, priorities are reported by groups of problem areas.

Question 2a. When vocational educators who are most familiar with the statewide program of trade and technical education are organized into categories of area school administrators, teacher trainers, and State Department personnel, what is the preferred order in which each of these categories feel the problem areas should be studied?

[7] $W = \frac{\text{Sum of squares between problems}}{\text{Total sum of squares}}$

Table 2.
PREFERRED ORDER IN WHICH GROUPS OF PROBLEM AREAS SHOULD BE STUDIED: TRADE AND TECHNICAL SAMPLE
(n = 28)

Rank of Groups of Problem Areas	Range of Average Ranks Within Each Group	Problem Areas (Numbered as listed on the opinionnaire)
1	6.5-6.7	5. How can we improve the techniques for identifying the occupations for which training should be provided? 1. How can the high school years be best used to discharge public education's total responsibility for preparing students to enter the world of work?
2	7.2-7.7	2. What responsibility does vocational education have for providing curricula for the "low ability" student and the potential high school drop-out? What can it do for those students? 14. How can we improve the recruitment, selection, training, and updating of vocational instructors? 9. How can we improve our methods of identifying and developing the curriculum and specific course content used to train for a given occupation?
3	8.2-8.9	6. For what operative (semi-skilled) occupations should the schools provide training? At what educational level(s)? How? 15. How can we improve the efficiency and effectiveness of the classroom and shop teaching-learning situation (methods, class size, instructional materials, length of class periods, etc.)? 11. What are the relative merits of the administrative structure and educational opportunities provided by (a) specialized and (b) comprehensive institutions (i.e. area vocational-technical schools vs. community colleges, vocational high schools vs. comprehensive high schools)? 17. What will be the statewide quantitative need for workers in each of the trade and industrial occupations by 1970? In what geographical areas will these needs be centered?
4	9.4-9.9	13. What programs can be devised to recruit, select, and train vocational supervisors, coordinators, and directors? 18. What are the objective measures which will predict student achievement and completion rate in our vocational curricula? 10. What relative emphasis should be placed in preparatory vocational curricula on the attainment of specialized, immediately productive skills versus the development of abilities permitting greater breadth and flexibility in attaining long-range occupational goals?

Table 2 (Continued)

5	10.6-11.3	4. What techniques and procedures are most effective in improving the "image" of vocational and technical education? 3. What is the "image" of vocational and technical education in the minds of its publics (administrators, teachers, students, industry, labor, etc.)? 7. Are there occupations that require combination distributive-trade and industrial programs? How, when and where might these be offered?
6	11.8	12. What evidence can be secured illustrating the relative effectiveness of vocational vs. non-vocational programs (to show the personal and social benefits of vocational programs)?
7	13.4	16. What is the extent of geographical mobility among youth and workers in the State?
8	14.3	8. What specific occupations will emerge from the taconite industry?

Table 3 presents the degree of agreement on priorities of problem areas found *within* each of the three trade and technical subsamples.

Table 3.
DEGREE OF AGREEMENT WITHIN EACH TRADE AND TECHNICAL SUBSAMPLE

Subsample	(W) Coefficient of Concordance	Range of Average Ranks
Area School Administrators (n=17)	.15**	6.9-13.6
Trade and Technical Teacher Trainers (n=5)	.41**	3.0-16.6
Selected State Department Personnel (n=6)	.32*	4.6-14.5

*Significantly different from zero at the .05 level.
**Significantly different from zero at the .01 level.

Although some degree of agreement within each subsample is evident, the coefficients do not appear sufficiently large to warrant the assumption that average opinions represent common points of view. Consequently, Tables 4, 5, and 6 report the priority rankings of each subsample by groups of problem areas. To preserve space, only the number of each problem area has been given.

Question 2b. To what extent do these categories (subsamples) agree upon the preferred order in which the problem areas should be investigated?

Table 7 shows the rank order correlation coefficients of priority rankings of problem areas between pairs of trade and technical subsamples.

Table 4.
PREFERRED ORDER IN WHICH GROUPS OF PROBLEM AREAS SHOULD BE STUDIED:
AREA SCHOOL DIRECTORS AND ASSISTANT DIRECTORS
(n=17)

Rank of Groups of Problem Areas	Range of Average Ranks Within Each Group	Problem Areas*
1	6.9-7.1	2, 5, 14, 9
2	8.3-9.3	1, 15, 11, 17, 6, 18, 4
3	10.2-10.9	13, 10, 7
4	11.5-12.2	3, 12
5	13.0-13.6	16, 8

*Individual problem areas are numbered as they are listed on the opinionnaire. (See Appendix A.)

Table 5.
PREFERRED ORDER IN WHICH GROUPS OF PROBLEM AREAS SHOULD BE STUDIED:
TRADE AND TECHNICAL TEACHER TRAINERS
(n=5)

Rank of Groups of Problem Areas	Range of Average Ranks Within Each Group	Problem Areas*
1	3.0-3.4	5, 1
2	6.1	9
3	7.7-7.9	18, 17, 14
4	8.7-9.2	10, 12, 2, 15
5	10.4	6, 11
6	11.2-12.0	3, 13, 7
7	13.4-13.8	16, 4
8	16.6	8

*Individual problem areas are numbered as they are listed on the opinionnaire. (See Appendix A.)

Table 6.
PREFERRED ORDER IN WHICH GROUPS OF PROBLEM AREAS SHOULD BE STUDIED:
SELECTED STATE DEPARTMENT PERSONNEL
(n=6)

Rank of Groups of Problem Areas	Range of Average Ranks Within Each Group	Problem Areas*
1	4.6-4.7	6, 1
2	5.7-6.3	13, 2
3	7.8-8.7	11, 5, 15, 14
4	9.5-10.5	3, 10, 17, 9
5	11.5-12.0	4, 18, 7
6	13.2	12
7	14.3-14.5	8, 16

*Individual problem areas are numbered as they are listed on the opinionnaire. (See Appendix A.)

Table 7.
CORRELATION COEFFICIENTS OF PRIORITY RANKINGS OF PROBLEM AREAS BETWEEN TRADE AND TECHNICAL SUBSAMPLES

	Trade and Technical Teacher Trainers	Selected State Department Personnel (n=6)
Area School Administrators (n=17)	.68**	.64**
Trade and Technical Teacher Trainers (n=5)		.32

**Significantly different from zero at the .01 level.

Question 3. To what extent do vocational educators with specific statewide responsibility for agriculture, business, distributive, and home economics education agree with their colleagues in trade and technical education on the preferred order in which the problem areas should be studied?

In response to the opinionnaire sent to the related vocational fields sample, the two representatives of home economics education stated that the listed problem areas are *not* relevant to their field; they did not presume to assign ranks to the problem areas.

The remaining six members of the related vocational fields sample had a low, but statistically significant (.05 level), degree of agreement among their individual rankings (W=.28). Consequently, problem areas were grouped on the basis of their average ranks. Table 8 presents this grouping; it signifies the preferred order in which the "delimited" related vocational fields sample (n=6) believes the problem areas should be studied.

Table 8.
PREFERRED ORDER IN WHICH GROUPS OF PROBLEM AREAS SHOULD BE STUDIED:
DELIMITED RELATED VOCATIONAL FIELDS SAMPLE
(n=6)

Rank of Groups of Problem Areas	Range of Average Ranks Within Each Group	Problem Areas*
1	5.6- 5.8	14, 10
2	6.8- 7.3	13, 5, 2
3	8.0- 8.8	1, 4, 9, 15, 3, 7
4	10.0-10.5	11, 17, 6
5	11.5	12
6	12.8	18
7	14.5	16
8	17.3	8

*Individual problem areas are numbered as they are listed on the opinionnaire.

When the average ranks assigned to the problem areas by the trade and technical sample and the delimited related vocational fields sample are each converted to a range of one to eighteen, a Spearman rank order correlation between the two sets of converted ranks yields a coefficient of .60 (significant at the .01 level).

Question 4a. When the principal findings of this study are compared with those of similar studies in Michigan and Pennsylvania, what common problem areas have been identified?

The study in Michigan, conducted during 1961–2, attempted to identify and rank

vocational education problems in that State by securing nominations and ratings from a research project advisory committee, State vocational supervisors, and the vocational and practical arts teacher training staff at the University of Michigan. Thirty-seven problems were accumulated and ranked.

Twenty-one of Michigan's vocational problems seem comparable to eleven of Minnesota's trade and technical problem areas. Table 9 gives the common problem areas.

Appendix B lists the sixteen Michigan problems for which Minnesota has no direct counterparts. In the opinion of the Michigan respondents, six of these problems rank in the first (upper) quartile of all problems in importance, two are in the second quartile, three are in the third quartile, and five are in the fourth (lowest) quartile.

The 1960 Pennsylvania study utilized eighty-five criteria for evaluating local programs of trade and industrial education as the major source list for problem statements. Sixty-eight local directors, principals, and trade and industrial coordinators (about 70% of the desired sample) rated these problems plus thirty-four additional (respondent suggested) problems. A rank order was ascertained.

Only the fourteen most important (of the total one hundred and nineteen) problems in Pennsylvania's trade and industrial program were reported; these have been compared with Minnesota's eighteen problem areas. Twelve of the fourteen problems correspond to eight of the Minnesota problem areas. These are shown in Table 9.

Appendix C lists the two Pennsylvania problems for which Minnesota has no direct counterparts; they fall into the first and third quartiles of the fourteen most significant Pennsylvania problems.

All but one (number 6) of the thirteen top-ranked Minnesota problem areas have been considered significant enough by Michigan and/or Pennsylvania to include in their rankings. Only one (number 12) of the five lowest ranked Minnesota problem areas has been considered sufficiently important (by Michigan) to be ranked at all.

Table 9.
COMMON PROBLEM AREAS IDENTIFIED BY STUDIES IN MINNESOTA, MICHIGAN, AND PENNSYLVANIA*

Minn. Problem Areas**	Mich. Problem Areas	Penna. Problem Areas
1	x	
2		x
3	x	
4		x
5	x	x
6		
7		
8		
9	x	x
10	x	x
11	x	
12	x	
13	x	
14	x	x
15		x
16		
17	x	
18	x	x

*An (x) indicates that the Minnesota problem area has also been identified by the other State.
**Problem areas are numbered as they are listed in Appendix A.

Question 4b. To what extent are the priorities assigned to common problem areas in each of the other studies in agreement with the priority found in this study?

Table 10 indicates that there are no statistically significant relationships between common problem areas, although there is a slight tendency for both Michigan and Pennsylvania to assign reverse priorities to those problem areas which each has in common with Minnesota.

Table 10.
CORRELATION COEFFICIENTS OF PRIORITY RANKINGS OF PROBLEM AREAS COMMON TO MINNESOTA AND MICHIGAN, AND TO MINNESOTA AND PENNSYLVANIA

	Michigan (n=11)	Pennsylvania (n=8)
Minnesota	—.22	—.39

IV. CONCLUSIONS

Any conclusions that may be drawn as a result of this study are necessarily restricted to the sample at the time the instrument was completed. The reader is, therefore, cautioned that the value of the conclusions is dependent upon, first, acceptance of the particular respondents as qualified judges who have provided honest, thoughtful opinions, and second, recognition that changes in conditions within the State might well alter the kind and/or priority of problems that exist. Within these limitations, it can be concluded that:

1. The questions listed in Appendix A reflect most of the current problem areas which appear to be significantly limiting the effectiveness of the trade and technical program in Minnesota. Researchable problems remain to be extracted from each of these areas.
2. Table 2 provides the best estimate of the order in which the identified trade and technical problem areas should be investigated. This conclusion assumes that the respondents are equally capable judges of the needs of trade and technical education, and that an arithmetic average of diverse individual opinions (in lieu of any consensus) is more valid than a single individual opinion.
3. Tables 4, 5, and 6 provide the best estimate of the order in which separate groups of area school administrators, trade and technical teacher trainers, and selected State Department personnel feel the problem areas should be studied.
4. There is little agreement within each of these separate groups of trade and technical educators as to preferred order. However, average opinions indicate that similarities and differences in the nature of the responsibilities of each group tend to be reflected in their choice of problem area priorities.
5. The problem areas identified for trade and technical education are relevant to the fields of agriculture, business, and distributive education, but not to home economics education. Based on a very limited sample, there is some reason to believe that the opinions of individuals in the first three mentioned fields are as disparate as those of the trade and technical educators, and that their average opinion agrees with the results reported in Table 2 as well as any of the groups within trade and technical education agree among themselves.
6. Michigan and Pennsylvania have also identified almost all of the problem areas which this study finds most important. Within these "common" problem areas, however, there is no appreciable relationship between the priorities assigned by this State and Michigan or Pennsylvania. Differences in the nature of the sample, time, conditions within each State, and the frame in which the opinion was requested may all contribute to a lack of relationship. It should also be noted that both Michigan and Pennsylvania have recognized problems for which Minnesota has no apparent counterparts.

V. IMPLICATIONS

1. It is inevitable that, in evaluating proposals submitted to the State for funding, some consideration be given to their immediate educational significance. The results of this study should contribute to this aspect of the total evaluation. But because individuals most intimately acquainted with the State's trade and technical program do not agree upon the most desirable priority in which to investigate problems, care must be taken not to weight immediate educational significance too heavily, or to use too fine a scale in its measurement.
2. If the type and relative importance of problems expressed by educational practitioners are directly affected by their perception of changing conditions, then it is necessary, especially in the rapidly evolving vocational program, to keep the list of problem priorities current if it is to maintain its usefulness.
3. In addition to the desirability of maintaining a current list of problems for research and administrative purposes, repetitive measures should reveal the "persistent" problems, and might also provide an opportunity to evaluate program progress, indirectly and subjectively, by utilizing change in perceived problems as a criterion.

APPENDIX A

PROBLEM AREAS IDENTIFIED BY MINNESOTA CONFEREES

(Shown in the order in which they were listed on the opinionnaire)

1. How can the high school years be best used to discharge public education's total responsibility for preparing students to enter the world of work?
2. What responsibility does vocational education have for providing curricula for the "low ability" student and the potential high school dropout? What can it do for those students?
3. What is the "image" of vocational and technical education in the minds of its publics (administrators, teachers, students, industry, labor, etc.)?
4. What techniques and procedures are most effective in improving the "image" of vocational and technical education?
5. How can we improve the techniques for identifying the occupations for which training should be provided?
6. For what operative (semi-skilled) occupations should the schools provide training? At what educational level(s)? How?
7. Are there occupations that require combination distributive-trade and industrial programs? How, when, and where might these be offered?
8. What specific occupations will emerge from the taconite industry?
9. How can we improve our methods for identifying and developing the curriculum and specific course content used to train for a given occupation?
10. What relative emphasis should be placed in preparatory vocational curricula on the attainment of specialized, immediately productive skills versus the development of abilities permitting greater breadth and flexibility in attaining long-range occupational goals?
11. What are the relative merits of the administrative structure and educational opportunities provided by (a) specialized and (b) comprehensive institutions (i.e. area vocational-technical schools vs. community colleges, vocational high schools vs. comprehensive high schools)?
12. What evidence can be secured illustrating the relative effectiveness of vocational vs. non-vocational programs (to show the personal and social benefits of vocational programs)?
13. What programs can be devised to recruit, select, and train vocational supervisors, coordinators, and directors?
14. How can we improve the recruitment, selection, training, and updating of vocational instructors?
15. How can we improve the efficiency and effectiveness of the classroom and shop teaching-learning situation (methods, class size, instructional materials, length of class periods, etc.)?
16. What is the extent of geographical mobility among youth and workers in the State?
17. What will be the statewide quantitative need for workers in each of the trade and industrial occupations by 1970? In what geographical areas will these needs be centered?
18. What are the objective measures which will predict student achievement and completion rate in our vocational curricula?

APPENDIX B

MICHIGAN PROBLEMS NOT DIRECTLY RELATED TO MINNESOTA PROBLEM AREAS

Problem	Quartile Rank
1. To determine the need for, and feasibility of area vocational schools in Michigan.	1
2. To determine the essential services and organization of an effective vocational guidance program.	1
3. To determine the organizational relationships of vocational education programs in community colleges and the high schools within their service areas.	1
4. To determine the individuals or groups who make the decisions relative to the operation of vocational education at the local, state and national levels with particular emphasis at the local level.	1
5. To determine the essential characteristics and organization of a program for retraining displaced adult workers.	1
6. To make an opinion survey of local school administrators to determine the anticipated effect of a gradual withdrawal of special reimbursement on the high school program, on the teacher-education program, and on the post-high school programs.	1
7. To appraise the research in vocational education to determine scope and quality.	2
8. To catalogue the opinions of school and community leaders on ways of better utilization of community resources in cooperative occupational training, apprenticeship, work experience, and job-upgrading programs.	2
9. To describe the organizational structure of vocational education in Michigan and the kinds of services rendered.	3
10. To determine the structure, goals and activities of school, community, state and federal agencies concerned with vocational education and to show the interrelationships among them.	3
11. To determine the extent to which lay advisory committees are being used and to assess the opinions of school and lay persons as to the value of lay advisory committees.	3
12. To analyze the areas of responsibility of practical arts and of vocational education and to determine the administrative relationships between them.	4
13. To determine the extent to which the Michigan Council for Vocational Education Administration is representative of those groups interested in and concerned with the administration of vocational education.	4
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15. To analyze the programs and activities of selected professional organizations in Michigan to determine how effective they are in providing leadership in vocational education.	4
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APPENDIX C

PENNSYLVANIA PROBLEMS* NOT DIRECTLY RELATED TO MINNESOTA PROBLEM AREAS

Problem	Quartile Rank
1. The identification and proper installation of safety devices for various trade areas.	1
2. Methods of securing support for an adequate budget for a T. & I. program.	3

*Including only the top-ranked fourteen problems.

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A GUIDE FOR DEVELOPING OCCUPATIONAL PROGRAMS IN HOME ECONOMICS EDUCATION

STATE DEPARTMENT OF EDUCATION

JESSE T. ANDERSON, STATE SUPERINTENDENT
COLUMBIA, S. C.
1966

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F O R E W O R D

This bulletin has been prepared to help school administrators and home economics teachers plan and develop programs which prepare high school youth, post-high school youth, and adults for employment in occupations utilizing home economics knowledge and skills.

The State Home Economics Education Supervisory Staff has contributed to the development of this guide. Miss F. Louise Keller, Supervisor Home Economics Occupational Employment Programs, was responsible for writing and preparing the materials. We appreciate her leadership in the development of this bulletin.

We greatly appreciate the interest of Miss Ata Lee, Regional Representative Home Economics Education, and Miss Rua Van Horn who read the material, offered suggestions, and raised questions.

It is hoped that this guide will provide assistance and encouragement to school administrators in the development of high quality occupational programs.

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State Director
Vocational Education

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INTRODUCTION

Home Economics education programs in South Carolina are expanding. In addition to maintaining and improving the programs which focus on preparation for the responsibilities of homemaking, new programs are being offered which prepare for gainful employment in occupations utilizing knowledge and skills in home economics subjects. This expansion is timely due to the many socio-economic changes affecting families and society.

The responsibilities of the homemaker are more challenging today than ever before due to many choices which she makes in relation to new equipment, new products, new techniques as well as changing values and roles of family members. This presents an increasing need for continued and expanded education to prepare youth and adults for the important vocation of homemaking.

A large number of women are employed outside the home and the number is rapidly increasing. It is estimated that by 1970, 30 million women will be working outside the home. Women always have made significant contributions to the economy of homes and of the country, now contributions of many women include work outside the home as well as work in the home. Employed women have become a permanent and significant addition to our economy. Some facts concerning women in the world of work are:

> Women comprise one-third of employed labor force; in 1970 it is predicted that 50 percent of labor force will be women.
>
> Women will work outside the home for approximately 25 years of their lives.
>
> Working wives make up more than half of the entire female labor force.
>
> One-third of all women workers have children under six years of age.
>
> One woman in ten is the head of a household and the main breadwinner for the family.

In light of these trends in our society, home economics education in many communities will be expanded. It will

- continue to prepare individuals for the important vocation of homemaking;
- prepare some youth and adults for employment in occupations which use home economics knowledge and skills.

While both of these purposes are important and present a challenge to home economists, this bulletin deals only with the development of programs which focus on preparation of individuals for gainful employment.

SECTION I

OCCUPATIONAL EMPLOYMENT PROGRAMS

The Vocational Education Act of 1963 was passed by Congress during a period of high unemployment and underemployment. The funds authorized therefore, were designated for the development of vocational education programs for gainful employment. Home economics educators have accepted the responsibilities of developing courses or curriculum which prepare youth and adults for gainful employment in occupations utilizing knowledge and skills in home economics subject matter areas. These areas include child development, clothing and textiles, food and nutrition and home and institution management.

The Vocational Act of 1963 also stresses the importance of developing high quality programs for

- persons attending high school
- persons who have completed or left high school and who are available for full-time study in preparation for entering the labor market.
- persons who have already entered the labor market, and who need training or retraining to achieve or advance in employment.
- persons who have academic, socio-economic or other handicaps that prevent them from succeeding in the regular vocational education program.

Some examples of occupations in the four areas of home economics have been identified by the Home Economics personnel in the Vocational Division of the U. S. Office of Education. The list of occupations and the groups of people for whom training programs seem to be appropriate will assist educators in planning programs which will meet the employment needs of youth and adults. See Chart I.

CHART I

SOME EXAMPLES OF OCCUPATIONS USING HOME ECONOMICS KNOWLEDGE AND SKILLS

Occupations	Grades 11 & 12	Grades 13 & 14	School Dropouts or Special groups	Adults
AREA OF FOOD MANAGEMENT PRODUCTION & SERVICE				
Food Service Worker	x			
Food Service Assistant	x	x	x	x
Food Service Supervisor		x		x
School Lunch Manager		x		x
Food Demonstrator		x		
Food Service Technician		x		
AREA OF CARE AND GUIDANCE OF CHILDREN				
Child Care Aide or Worker	x		x	x
Assistant in Nursery School or Day-care Center		x		x
Child Care Supervisor		x		
AREA OF INSTITUTIONAL AND HOME MANAGEMENT				
Homemaker Service (Visiting Homemaker)				x
Homemaker's Assistant			x	x
Management Aide in Low-rent Housing				x
Institutional Housekeeper			x	x
Hotel and Motel Housekeeping Aide			x	x
AREA OF CLOTHING MANAGEMENT PRODUCTION AND SERVICE				
Assistant Seamstress	x		x	x
Seamstress				x
Clothing Alterer	x		x	x
Dry Cleaning & Laundry Aide	x		x	x
Home Furnishings and/or Clothing Technician		x		

The above chart indicates the broad scope of occupations, which utilize home economics knowledge and skills, and it also suggests occupations appropriate for upper secondary students, youth studying at 13 and 14 grade levels, and for out-of-school youth and adults.

A description of responsibilities usually carried by employees in these occupations and some possible places of employment are included in Chart II.

CHART II

RESPONSIBILITIES AND OPPORTUNITIES FOR EMPLOYMENT IN SOME OCCUPATIONS UTILIZING HOME ECONOMICS KNOWLEDGE AND SKILLS

OCCUPATIONS	RESPONSIBILITIES	POSSIBLE PLACES OF EMPLOYMENT
AREA OF FOOD MANAGEMENT PRODUCTION & SERVICE		
Food Service Worker	Prepares and serves food, under direction of food service supervisor.	Hotels, restaurants, lunchrooms, children's homes, nursing homes, child day care centers, private clubs, catering services, school cafeterias, hospitals, and individual family homes.
Food Service Supervisor	Assistant to Dietician or manager of food establishment.	
AREA OF CARE AND GUIDANCE OF CHILDREN		
Child Care Worker	Assists the director or mother helping with the various activities of the children.	Day care centers, nursery schools, recreational centers, children's homes, children's hospitals or pediatric wards and individual family homes.
Child Care Supervisor	Assistant Director. Assists in management of center, in guidance of children, and development of planned program for center.	
AREA OF CLOTHING MANAGEMENT PRODUCTION AND SERVICE		
Assistant Seamstress	Assists a professional dressmaker in fitting, altering, styling and constructing garments.	Speciality stores, cleaning establishments, department stores, private business (as a dressmaker) individual family homes.
Seamstress	Constructs, styles, fits and alters clothing.	
Home Furnishings and/or Clothing Technician	Makes custom home furnishings as draperies and slip covers.	Furnishings, decorating, gift departments or speciality shops; decorators studios.

Chart II, (continued)

OCCUPATIONS	RESPONSIBILITIES	POSSIBLE PLACES OF EMPLOYMENT
AREA OF INSTITUTIONAL AND HOME MANAGEMENT		
Homemaker's Assistant Housekeeping Assistant	Maintains clean and orderly home or institution, working under supervision of homemaker or housekeeping supervisor	Public and Private housing developments; hotels and motels; individual family homes, family service agencies.
Homemaker Service (Visiting Homemaker)	Performs duties of the homemaker when there is illness or emergency in the family	

It is important to note that these occupations range in scope from semi-skilled or entry-level jobs to those requiring more technical competencies. They are classified into three skill level categories in Chart III.

CHART III

CLASSIFICATION OF SOME OCCUPATIONS AT THREE SKILL LEVELS

SEMI-SKILLED OR ENTRY LEVEL	SKILLED LEVEL	MORE ADVANCED LEVEL
Child Care Worker	Child Care Assistant	Child Care Supervisor
Food Service Worker	Food Service Assistant School Lunch Manager	Food Service Supervisor Food Demonstrator
Assistant Seamstress	Seamstress	
Clothing Alterer	Home Furnishings Assistant	Clothing Technician
Hotel & Motel Housekeeping Aide	Homemakers Service	Management Assistant in multi-housing project
Homemaker's Assistant	Management Aide in Low-Rent Housing	

The organization of the above chart implies that occupations listed at the semi-skilled or entry-level are not dead-end jobs. For example, with successful performance on the job and with additional preparation, a person may advance from a child care worker into a child care assistant and then to a child care supervisor. It is important that prospective trainees be helped to see all avenues of promotion and/or advancement as a basis for making occupational choices.

The home economics program for gainful employment offered in a community may include courses or curriculum for any of above occupations; at any one or all three occupational levels, the entry level, the skilled level, or the advanced level; and for any or all groups to be served, the upper-secondary students, the post-high school youth, and/or adults. A comprehensive occupational program will meet the employment needs of the area and the wide range of ability and interests of all groups to be served by vocational education. That is, a local program is determined by such factors as:

- Opportunities for employment in the geographical area served by the school

- Skill level of performance requirements of available jobs

- Number of persons who are interested in and who have ability and aptitude for training at varying skill levels.

- Availability of qualified teachers.

Section II and III of this material, Developing Occupational Employment Programs and Policy Guidelines, have been developed to assist school administrators in the establishment of high quality gainful employment programs in occupations which use home economics knowledge and skills.

SECTION II

DEVELOPING OCCUPATIONAL EMPLOYMENT PROGRAMS

This section is designed to help public school personnel in planning and initiating home economics occupational programs which are of high quality, realistic in light of actual or anticipated opportunities for gainful employment, suited to needs, interests and abilities of students who can benefit from such programs. To meet these criteria programs must be carefully planned and initiated.

The following steps are recommended for planning and initiating a local program:

1. Determine Employment Opportunities

   Realistic programs are established only when employment opportunities exist, therefore, collecting evidences of opportunities for employment precedes the organization of a program or course.

   Occupational surveys comprise one effective method of collecting reliable data concerning employment opportunities, and provide a basis for deciding upon programs to be offered by a school.

   Survey forms may be secured from your District Supervisor, Home Economics Education. Upon request, she will assist in planning and interpreting a local occupational survey.

2. Appoint and Work with an Advisory Committee

   An advisory committee for occupational programs requiring home economics knowledge and skills is needed as the success of a program depends upon a close working relationship between the school and the community. The personnel of the committee may include school administrators, home economics teachers, guidance director, prospective employers from business, health and welfare agencies, a representative from Employment Security, and professional women, including a home economist.

   Such a committee is invited by the school superintendent to serve in an advisory capacity. This committee has no administrative function but it can give valuable assistance in:

   - determining occupational opportunities in the school area
   - selecting occupations for which programs are to be developed
   - recommending groups to be served as high school students, out-of-school youth or adults.
   - interpreting and supporting program
   - reviewing and evaluating program in light of opportunities for employment and employability of trainees

   A few of the advisory committee members may be asked to help a teacher plan a specific course. For example: in planning a child care course, additional committee members may include a specialist in child development, a director of a child care center, a curriculum specialist, and several parents.

3. Determine the Availability of Students Who Have Interest, Aptitude and Ability to Profit from the Program

   Prospective students should be of employable age at completion of course, have aptitude, ability and characteristics necessary for successful employment, and are interested in employment.

4. Select Program(s) to be Offered

   After studying the information obtained concerning opportunities for employment and number of prospective students, select the course(s) or programs(s) to be offered.

5. Plan Specific Course to be Offered

   A Plan is developed so that the scope and emphasis of the program will meet the unique needs of the community and the requirements of the specific occupation.

   a. Identify the job by title

   b. Make a job analysis

   c. Develop curriculum

      - state clear-cut objectives based on the performance requirements of the job as defined in job analysis

      - Plan course content and teaching procedures

      - select teaching materials and resources -- reference, films, visual aids, and field trips

      - select appropriate work experience situations and make plans for supervision of this experience

   d. List qualifications needed by trainees, in terms of

      - educational background

      - minimum age

      - interests and aptitude

   e. Estimate Budget

      - include such items as salary of staff, supplies, and equipment

   f. Recommend facilities and equipment

   g. Organize plan for job placement and follow-up

      - The Employment Service assists with job placement. The school prepares forms for keeping records on placement, and evaluates job success.

6. Procedure for Action

a. Local school administrator will write to the District Supervisor of Home Economics Education expressing an interest in offering an occupational course(s) and requesting assistance in planning ways of

- securing evidences of opportunities for employment

- determining probable enrollment

- exploring availability of qualified teachers

b. After securing information which indicates employment opportunities and probable enrollment, school administrator will write to the State Supervisor of Home Economics Education requesting approval of an occupational course or program in home economics and submit two copies of form "Data and Plans".

Approval will be made as soon as possible so that local plans for high school classes can be completed before pre-registration for following school year.

DATA AND PLANS FOR AN OCCUPATIONAL EMPLOYMENT COURSE IN HOME ECONOMICS

(Prepare and submit two copies when making an application. Copies will be found in back of this bulletin. Additional ones may be secured from Supervisor of Occupational Program, Home Economics Education.)

SCHOOL_____ COUNTY_____ DATE_____

1. Course requested (such as, Food Service, Child Care_____

_____

2. Summary of survey findings by giving evidence of employment opportunities.

   a. Now

   b. In the future

3. Counseling - Method of counseling prospective students

4. Basis for selecting students

5. Enrollment - Probable enrollment_____

6. Grade Placement of probable enrollees

   a. High School students grade 11_____ grade 12_____

   b. Post-high school youth and adults: _____

7. Time class will meet daily_____length of class_____

8. Work experience - Number of employers who have agreed to provide work experience for students _____

9. Teacher Name_____

Certificate_____Yrs. Teaching Experience_____

Types of work experience in the occupation to be taught_____

_____

10. Schedule of Teacher

a. High School Classes _____
Number of regularly scheduled classes _____
Number of weekly conference periods to be used for developing wage earning programs _____
Number of months of employment _____

b. Out of school youth and adult classes
Number classes to be taught _____
Period of employment _____

11. Budget for

Travel of teacher _____
Operating program _____
Facilities _____

12. Facilities - Plan for providing necessary facilities

Signed:_____ School Superintendent

_____ Principal

Section III, Policy Guidelines, will be helpful in filling out this report.

SECTION III

POLICY GUIDELINES

This section, on Policy Guidelines, has been developed to help administrators plan quality programs for persons who are attending high school, and for post-high-school youth and adults.

A. Policy Guidelines for Programs for Persons Attending High School

High school groups to be served by home economics vocational education for gainful employment include boys and girls who expect to enter the labor market on completion of their high school education. The following will be helpful in planning a quality program for youth in your school.

1. Purpose

The purpose of the course is to prepare persons for employment in an occupation utilizing knowledge and skills in home economics subjects. Entry into an occupation is the focus of the program.

2. Advisory Committees

The school administrator, with assistance of home economics teacher(s) appoints advisory committee members and participates in committee meetings. (See p. 7). The support of program by administrator is an important aspect in determining its success.

3. Employment Opportunities

Programs are established only when employment opportunities exist. Surveys, interviews or questionnaires provide basis for determining employment opportunities.

4. Instruction

The instruction shall include learning experiences which help students develop an understanding of basic principles and acquire essential skills and abilities needed for successful performance on the job. The understandings, skills, and abilities are developed in classroom, laboratory work, and supervised work experience.

5. Observation and Work Experience

In addition to class and laboratory sessions each student needs opportunities for observation, participation, and on-the-job work experience.

a. Observation and participation

Observation and participation are a part of each program planned to help students develop an understanding of the world of work and requirements of the job for which he is receiving training. Fifteen to twenty hours of observation and participation is necessary for each student to achieve these objectives.

b. Work experience

Work experience means a paid job outside the school, specifically related to the occupation being studied in the school. This is work experience under the supervision of both the employer and the teacher of the course.

The amount of work experience feasible for students depends upon the competencies to be developed. Through experiences provided in class, laboratory, observation, and participation students develop some proficiencies before assignment for work experience. This work experience may be carried out during school hours, after school hours, on week-ends or in summer if the course is two years in length.

Some criteria for selection of appropriate places for work experience of students include:

- Respectability and reputation of the employer.
- Competence of employees.
- Standards of workmanship.
- Adequacy of equipment.
- Policies of company toward occupational courses.
- Existing employer-employee relationships.

6. Class Schedule and Credit

Students shall receive instruction in the classroom for a minimum of one regular class period per day five days per week. The occupational program is an integral part of the total school program, thus allowing students enrolled to earn credits which count toward requirements for graduation. One unit of credit is given for a class scheduled for one period daily, five days a week for two semesters. One-half unit of credit is given for a course offered for one semester.

7. Class Size

The enrollment shall meet the requirements as set up in Standards for Accredited High Schools of South Carolina. It is suggested that classes be limited to 16 or 20 students so as to provide for individual instruction in developing skills and for adequate supervision of work experience.

8. Student Selection

Students to be enrolled shall

- be regular high school students.
- be classified as a junior or senior
- be at least 16 years of age and meet legal age requirements for entry into occupation for which he wishes to take training.
- have aptitude, ability and interest to profit from course and to succeed on the job. These qualifications may have been demonstrated in previous courses or they are determined through planned demonstrations and tests.

9. Counseling

A school offers a realistic counseling program which aids students in the selection of courses by providing information concerning opportunities for employment, education requirements for successful achievement, and opportunities for advancement.

10. Teacher Qualifications

The teacher

- meets the State Home Economics Certification Standards as outlined in the South Carolina State Plan for Vocational Education, or has earned a major in a specific home economics subject matter field specifically related to the particular occupation to be taught.

- has proficiencies in basic skills required in specific occupations to be taught.

- has had some occupational experience as a paid worker or as a volunteer in a work situation related to the occupation to be taught.

11. Teacher Schedule

Time in the teachers school schedule is provided for counseling occupational students, surveying employment opportunities, making contacts with prospective employers of students, working with an advisory committee, and supervising work experience. While a student is participating in on-job work experience the teacher shall visit him once every two weeks for supervision.

For a class of 16 to 20 students, five conference periods per week are recommended for this phase of the home economics program.

12. Financing the Program

Reimbursement to help finance salary and travel will be paid from State and Federal funds.

a. Salary

1. For a full-time teacher of an occupational program, three-fourths of the certificate salary will be reimbursed from State and Federal funds. For a teacher employed on a part-time basis, the reimbursement will be based on teacher certification and hours of employment.

2. For a full-time home economics teacher whose schedule includes classes in homemaking and at least one class in occupational preparation, the reimbursement will be the same as for a full-time teacher of an occupational program.

b. Travel

Reimbursement for approved travel is paid at the current rate per mile in the State. One-half of the travel is reimbursed from local funds and one-half from State and Federal funds.

The total amount budgeted for travel is determined jointly by the teacher and school administrators, with consideration given to enrollment, geographical area and location of work experience stations.

Payment is made for actual approved travel and is not on a flat monthly basis. Mileage is computed from the school and not from the teacher's place of residence.

Approved travel includes trips to

- interview prospective employers
- interview advisory committee members
- supervise work experience
- interview prospective students and their parents
- conference with consultants or resource persons
- attend conferences and workshops

c. Operation of Department

Adequate funds for operation of the occupational classes are necessary for successful teaching. The following factors are to be considered in setting up an operational budget:

- funds for operation of the occupational class(es) are included in the budget for the home economics department. These funds will be provided from the school budget for consumable supplies.

- A minimum of $3 per pupil should be budgeted for classes of less than 20. The amount needed will be determined by the occupational program that is being taught.

- Operating funds are needed for the following types of consumable supplies:

  Supplies for demonstrations and laboratory work and the preparation appropriate for the occupational class.

  Textbooks, references, instructional materials, audio-visual media appropriate for instruction in occupation for which training is being provided.

13. Space and Equipment

The State and District Supervisors of Home Economics Education will help a local school plan for facilities and equipment needed for occupational programs.

B. Programs for Post-High School Youth and Adults

It is important that vocational education be made available to post-high school youth and adults. These groups include anyone who has completed or left high school; who is interested in full-time study in preparation for entry into the world of work, and anyone who is employed but needs to upgrade his skills and knowledge in order to advance to a higher level position. The following policies will be helpful in planning quality occupational programs to meet the varied needs of post-high school youth and adults.

1. Purpose

The goal of the program is preparation for employment in a particular occupation or cluster of closely related occupations.

2. Advisory Committee

One advisory committee helps plan the total occupational program which uses home economics knowledge and skills. (See Section II, page 7.

3. Employment Opportunities

Programs are established only when employment opportunities exist. Surveys, interviews or questionnaires provide basis for determining employment opportunities.

4. Instruction

The instructional program will vary according to interests, ability, and educational background of enrollees and according to the competencies needed for employment in an occupation.

The understandings, skills and abilities needed for successful performance on the job are developed through instruction in the classroom, laboratory, and supervised work experience.

5. Supervised Work Experience

In addition to class and laboratory sessions each enrollee shall make observations and complete some work experience. Work experience is an integral part of an occupational preparation program and it is carried parallel with the classwork.

6. Scheduling

The instructional program may be offered at any time which encourages those interested to attend.

The programs may be offered

- for any duration of time as needed to achieve specific goals.
- on a full-time basis with enrollees spending the full school day in preparation for employment.
- on a part-time basis with enrollees spending two to three hours daily or two to four hours weekly in preparation for employment

7. Class Size

To initiate a class it is desirable to have a minimum enrollment of ten with average attendance of eight.

8. Qualifications of Trainees

- Shows special interest in area she has chosen for preparation and is interested in employment in the area.
- Shows through demonstrations and aptitude tests some ability in the area she has chosen for employment training.
- Is cooperative and dependable.
- Is able to read and follow directions.
- Is of sound physical and emotional health.
- Is able to work under supervision.
- Is willing to have a physical examination, if required for employment.

9. Counseling

Prospective enrollees need information regarding opportunities for employment, opportunities for advancement, and requirements for successful achievement in occupations for which training programs are being offered.

10. Teacher Qualifications

a. A teacher employed on a full-time basis

- is a college graduate in home economics or home economics education with additional credits in the area in which she teaches.
- has had some occupational experience in the area in which she will be teaching.
- has demonstrated ability to plan an instructional program and to teach effectively.

b. A teacher employed for short intensive courses

- has completed some college courses in the area in which she will be teaching.
- has had much successful work experience in the occupation she will be teaching.
- is willing to attend an in-service workshop to plan instructional program and teaching procedures.

11. Term of Employment of Teachers

Term of employment of each teacher shall be adequate to permit her to

- recruit class members
- plan program
- secure teaching materials and plan for needed equipment
- teach class(es)
- contact prospective employers
- make plans for work experience
- supervise work experience
- keep adequate records
- follow-up of trainees
- evaluate program

A teacher may be employed

- on a full-time basis when she carries responsibilities listed above and teaches four or five courses during the school year
- on a half-time basis when she carries responsibilities listed above and teaches two or three courses during the year.
- on a part-time basis when she carries above responsibilities and teaches one course during the year.

The length of the courses to be taught determines the number a teacher can adequately develop on a full-time and a half-time basis. The length of a training course for a specific occupation or cluster of occupations is determined by the competencies to be developed by trainees. Suggestions for length of any three courses are included here.

For Child Care Workers - 220 hours of which 90-120 hours of class instruction; 100-124 hours of observation and supervised work experience.

For Food Service Workers-200 hours, of which 100-120 hours of class instruction; 80-100 hours supervised work experience.

For Seamstress - 220 hours, of which 100-120 hours of class instruction; 100-120 hours of supervised work experience.

Additional hours may be required if needed by the trainee to develop the competencies needed for successful employment.

A teacher of the day school home economics program may serve as a coordinator of an occupational program. A coordinator helps make a community survey of job opportunities, recruit qualified class members, plan program, select teaching materials, select suitable work experience situations, and evaluate the program.

12. Financing the Program

Reimbursement to help finance approved adult and post-high school youth programs will be paid from State and Federal funds.

a. Salary

- for a full-time or half-time teacher, three-fourths of the salary will be reimbursed from State and Federal funds.

- for a teacher employed part-time, reimbursement will be paid at the current rate paid for adult homemaking classes. In addition, reimbursement will be paid at the same rate for such activities as planning, recruitment, supervision. (See item 11, page 18). For school year 1965-66 the current rate is $7 per two hour class meeting. Appropriations will determine whether a higher rate can be paid in 1966-67. A salary budget for each course is established cooperatively by school administrator, teacher, and state supervisor of home economics.

- for consultants, who are not State, county or city employees, reimbursement is limited to a total of $20 per course.

- for a coordinator, reimbursement is limited to $35 per course. This is equivalent to $3.50 per hour for 10 hours.

b. Travel

Reimbursement for approved travel is paid at the current rate per mile in the State. One-half of the travel is reimbursed from local funds and one-half from State and Federal funds.

The total amount budgeted for travel is determined jointly by the teacher and school administrators, with consideration given to enrollment, geographical area and location of work experience stations.

Payment is made for actual approved travel and is not on a flat monthly basis. Mileage is computed from the school and not from the teacher's place of residence.

Approved travel includes trips to

- interview prospective employers
- interview advisory committee members
- supervise work experience
- interview prospective enrollees
- confer with consultants or resource persons

c. Operation of Program

Occupational class(es) for post-high school youth and adults are a part of the total home economics program. Funds for the operation of these class(es) are included in the operational budget for the home economics department. These funds will be provided from the school budget for consumable supplies.

The nature of the program being offered will influence the need for consumable supplies, but $3 per enrollee will serve as a basis for estimating a budget for operating post-high school and adult classes.

13. <u>Facilities</u>

With the wide range in possibilities for adult programs, school administrators will need to make use of all available facilities. These might include the use of

- home economics department in a junior or senior high school, or in an area school.
- community and four-year college laboratories
- public housing centers
- facilities in industry - as a waitress class in restaurant
- community centers
- school lunch room and kitchen.

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VOCATIONAL EDUCATION IN MICHIGAN

The Final Report of the Michigan Vocational Evaluation Project

1963

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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VOCATIONAL EDUCATION IN MICHIGAN

The Final Report

of the

Michigan Vocational Education Evaluation Project

Michigan State University
College of Education
September, 1963

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Studies Conducted by the
Michigan Vocational Education Evaluation Project

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Analysis of Vocational Education Curricula in Michigan Public High Schools, S. Nosow, Michigan State University, September 1963.

A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Operated by Local School Districts, R. Wenrich, The University of Michigan, July 1962.

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Area Vocational Schools, L. Alger, Department of Public Instruction, in process.

Identification of the Role of the Practical Nurse as Part of the Nursing Team and Curriculum Required to Train for this Role, M. Hill and H. Dillon, Michigan State University, in process.

Follow-up Study of Graduates of Lansing Public and Parochial Schools, K. Bournazos, Michigan State University, in process.

Preface

Accomplishments of the Michigan Vocational Education Evaluation Project during its four year period of operation are presented in abbreviated form in this report published for the State Board of Control for Vocational Education. It is intended as a brief description of what has been done and the continuative work in progress. A more detailed treatment of specific sub-researches is delineated in supportive documents which number twenty-five as of this writing.

Of paramount importance in any report of the Michigan Vocational Education Evaluation Project is recognition of the wisdom and foresight of the State Board of Control for Vocational Education. Without its initial financial backing plus a supplementary funding amounting to commitments of $85,000, such a far-reaching undertaking would not have been possible. This overt act coupled with provision for maximum flexibility in the use of funds permitted abundant opportunity for creativity and latitude in translating dollars into action.

MVEEP has been an inter-university cooperative effort. One of the heart-warming aspects has been the enthusiastic manner in which institutions of higher education and the Department of Public Instruction have entered and suffered through the various activities. The various institutions contributed personnel and services that have augmented the basic financial grant. Functioning as key people in shaping and energizing the entire effort of MVEEP have been the members of the Executive Committee both as individuals and collectively.

The Michigan Vocational Education Evaluation Project is without parallel or precedent in the history of vocational education in Michigan, or for that matter, in the United States. Although vocational education surveys have been conducted in other states, no study has been discovered comparable to MVEEP. Obviously, a report of this limited scope fails to capture and catalogue the manifold by-products that occur within people and a social system as a result of cooperative interaction. Furthermore, it is impossible to summarize some fifteen hundred pages into this final report without losing some of the emphasis and continuity which make up the specific researches. Tangible evidence is already available attesting to the fact that the Project has had an impact and that its influence will be felt because of the built-in dynamics in the on-going program of vocational education.

The present study was not intended to be comprehensive nor exhaustive. Additional areas of study in the Michigan program of vocational education are plentiful. Research investigators, stimulated by funds resulting in part from recommendations in this study, are already continuing to conduct studies which will shed added light on some anxious and perplexing questions.

It would take much space to list the names of persons who have given of themselves to bring this study to completion. We take this opportunity to express our appreciation and thanks to all of them. However, without the assistance of the Project Directors identified previously the study would not have come to fruition. A special thanks is given to the coordinators of special projects: P. Haines, G. Timmons, B. O'Donnell, and W. Bateson. We also are grateful for the research assistance provided by M. Larson, R. Poland, K. Bournazos, and R. Shupe. Finally, to Miss Suzanne Durell we owe a gift of gratitude for her patient and persistent technical assistance.

Lawrence Borosage, Director

FOREWORD

The State Board of Control for Vocational Education on September 16, 1958, authorized the initiation of a comprehensive evaluation study which would assist in determining the direction of the Michigan program of vocational education in the immediate future, as well as the years beyond. The following is the text of the Charter that was acted upon by the State Board.

1. The coming of automation, the "jet age," the era of space exploration, and the peaceful and productive uses of the energy of the atom have opened up vast new areas of opportunity for a wide variety of skilled technicians. It has been estimated that at the present time - and for the forseeable future - there will be a demand for a score or more of trained technicians for each college-trained engineer and scientist. To say that we are living in an increasingly emphatic age of applied sciences is to make an obvious observation - to say less would be to make a gross understatement.

   The role of vocational education in the training of needed technicians is well-known; how well the program of vocational education in Michigan is prepared to meet its responsibility in this connection is less well-known. The extent and types of training for which a national program of vocational education was initiated in 1917 may be notably dissimilar from those needed in 1958 and those anticipated in the years ahead. If the vocational education program in Michigan is to serve best the needs of our youth and adults, it is fitting that a reasonable portion of our energies and resources be devoted to a careful study of its purposes, achievements, limitations, and desirable future, nature, and direction. If we have a sincere interest in the welfare of Michigan youth and adults who will need some kind of vocational education, we can do no other.

2. Within the memory of the members of the staff of the Division of Vocational Education the Michigan program of vocational education has never undergone a thorough evaluation, either for the purpose of providing valid bases for making evaluative judgments about the program in operation or for planning an improved program for the days ahead. Such an evaluation project should include a study of local programs, vocational teacher education, state administration, and guidance and counseling services, which underpin any adequate program of vocational education.

Purposes of the Study

The purposes ascribed to the evaluative study were set down in the original Charter and included:

a. To discover the strengths and weaknesses of the present program of vocational education in terms of the needs of individuals, local communities, and of society.

b. To provide information which would properly shape the direction of the program in the immediate future and in the years beyond.

c. To evaluate separate aspects of the program in light of a steadily changing world of work.

d. To point up aspects of the program which should be pointedly emphasized based upon the needs of the people in Michigan and of our occupational society.

e. To distinguish more sharply the role of the state office consultant staff in the Michigan program of vocational education.

f. To ascertain more precisely the role of vocational education in Michigan's whole program of education.

g. Such other purposes as may emerge from their present state of obscurity into the line of vision of those involved in the evaluation project.

General Design of the Project

The following three guide-lines served as a basic undergirding during the initiatory phase of the study:

a. Contract with one of the Michigan teacher education institutions now designated by the Michigan State Board of Control for Vocational Education as a vocational teacher education institution to carry the major work load generated by the Project.

b. Employ a competent professional person to have general direction of the study.

c. Contract for the services of other Michigan teacher education institutions and/or possibly such out-of-state agencies as the Advisory Committee may deem desirable.

Selection of Coordinating Institution and Director of the Study

In accordance with the above charter, the State Superintendent of Public Instruction called a meeting of administrative heads responsible for vocational education in the various institutions of higher education. At this meeting the decision was made that the College of Education at Michigan State University should assume the responsibility for coordinating and directing the study. This determination was based upon the fact that Michigan State University had the singular organizational feature of having all vocational teacher education services in agriculture, business, counselor training, home economics and industrial education in one college. Such an arrangement, it was believed, would enable communication and coordination across the fields. Shortly after this meeting a staff member of the faculty in the College of Education was appointed Study Director.

Appointment of the Executive Committee

Subsequent to the appointment of the Study Director, an Executive Committee was appointed. Committee composition included the Assistant Superintendent for Vocational Education, Department of Public Instruction; Assistant Dean, Curriculum and Program, College of Education, Michigan State University; Assistant Dean, Research and Publication, College of Education, Michigan State University; a representative of the State Board of Control for Vocational Education and the Study Director. This nucleus was later augmented to include four project directors, a representative from Wayne State University, and the Research Consultant from the Division of Vocational Education in the Department of Public Instruction.

The chief responsibilities of the Executive Committee were:

a. To establish a plan of organization providing for the conduct of a comprehensive study under its direction.

b. To steer the general direction of the study.

c. To determine the policies related to the study, and define responsibilities of various individuals and groups.

d. To approve the design of the study.

e. To approve the allocation of sub-researches to the various institutions of higher education.

f. To approve major allocations of monies to contracting institutions.

g. To assess progress of the study toward the achievement of designated purposes.

h. To approve reports prior to dissemination.

The Advisory Committee

An advisory committee composed of representatives from management, labor, agriculture, business, and education was appointed jointly by the Dean of the College of Education and the State Superintendent of Public Instruction. The primary task of the Advisory Committee was to identify some areas of emphasis which should be considered in the framework of the study. The Advisory Committee met in a one-day session and addressed itself to the following question:

> Given the responsibility for the research study of the Michigan Program of Vocational Education, what areas should be evaluated?

The committee summarized its deliberations by suggesting that the following fifteen concerns be given attention in the study:

1. Since misunderstanding seems to attend the role of vocational education in the program of public education in Michigan, a statement of beliefs regarding the relationships between vocational and general education should be developed. This would enable educators and lay groups to have a base from which to communicate more effectively. It would also serve as a point of departure for determination of educational objectives.

2. It was generally agreed that any evaluative study must be rooted in educational objectives. It would seem appropriate to review the objectives of vocational education in terms of the changing socio-economic scene. The evaluation should be concerned with objectives that reflect "what should be done" rather than concern with "what is."

3. Review adult vocational education needs, particularly those dealing with the problem of retraining because of automation and other factors contributing to dislocation in various segments of the work force.

4. Examine the role of guidance as a purpose of vocational education itself rather than a means to an end. For some individuals the program of vocational education may serve as a finding period rather than one dealing with preparation for employment in a specific occupation.

5. Determine the extent of adequate linkage between the schools and community groups in the organization and execution of vocational education programs. Are advisory committees a reality? Are they establishing the liaison necessary for the best possible vocational education plans of instruction?

6. Provide more basic information about the vocational education program to the advisory committee members in order that an image of our present program be identified.

7. To what extent can educational television be a force in vocational education? It would appear that some areas of instruction could be served by this medium.

8. Studies made by the Conference of Large City Superintendents should be reviewed for clues regarding problem areas in vocational education in the large city. Some of the research accomplished by the U. S. Office of Education might prove valuable.

9. With the constant decrease in dollars available for programs of vocational education, it may be well to examine alternative plans for expenditure of funds.

10. Since the Department of Public Instruction is a potent force in determining educational direction, it was suggested that a statement of beliefs prepared by each individual in the Department of Public Instruction concerned with vocational education might serve to get a "feel" of current thought.

11. Vocational education should be thought of in the broadest sense rather than that type of vocational education characterized by Federal-State subvention.

12. Determine the extent to which enrollment in vocational education courses precludes entrance into college. The student should not be jeopardized because of the way in which the program is organized.

13. According to labor forecasts women will increasingly be needed in the labor force. Do guidance workers recognize this fact and what planning is underway to provide additional training opportunities for women?

14. Examine the role of public education in offering a program of vocational education, i.e., where does public education stop in fulfilling its responsibility?

15. Determine the justification for programs of vocational education to serve as a motivational vehicle per se. This implies that the nature of the activity has inherent values over and beyond development of occupational competency.

Development of the Study Design

Three ingredients entered into the construction of the study design: (a) the basic charter as submitted to the State Board of Control for Vocational Education; (b) the recommendations of the advisory committee; and (c) review of other evaluative studies to discover applicable models. From

these three sources it was decided to carry on research in the following major areas:

1. Study and investigation leading to the preparation of a statement of philosophy and objectives.

2. Study and investigation leading toward an understanding of vocational curricula in Michigan public schools.

3. Study and investigation of the organization, adminstration and supervision of vocational education.

4. Study and investigation of the vocational teacher education program.

5. Study and investigation of current practices as related to the four areas above.

A seventeen-page document was prepared, entitled "Project Information and Design," which included the following major considerations:

a. Philosophy Undergirding the Study

b. Guiding Principles

c. General Approach to the Study

d. Areas to be Investigated

e. Proposed Implementation

f. Organizational Structure

The following provisions were inherent in this basic framework:

1. Any research conducted shall fall within the intent and spirit of the over-all evaluation study.

2. Development of preliminary plans by each institution for conducting its work. This included:

   a. Drafting a proposal or outline of the studies to be carried out as part of the assignment.

   b. Developing a tentative schedule for collection of data.

3. Presentation of the preliminary plans for review by the Executive Committee.

4. Preparation of periodic progress reports, both oral and written, to the Executive Committee.

5. Submission of a draft of the report for review by the Executive Committee.

6. Revision of the draft of the report to include findings and recommendations for inclusion in the official report of the study.

The Design Review Conference

After the design for the project had been approved by the Executive Committee, it was deemed advisable to hold a one-day review conference. Invitations were extended to all vocational teacher educators from institutions of higher education and consultants from the Department of Public Instruction. In addition, special consultants in educational philosophy, curriculum, and administration were invited. A total of 67 people attended. The basic purpose of the conference was three-fold:

a. To review the proposed research design and to solicit reactions from those who were in leadership positions.

b. To make the leadership aware of developments in the study.

c. To enable institutions to think about the phases of the study in which they wished to participate.

As a result of this conference a substantial number of suggestions were submitted and incorporated into the final research design.

Research Centers Selected and Established

After the final acceptance and approval of the study design by the Executive Committee, the next task was to allocate responsibilities to the various institutions of higher education in conformity with the basic charter. Administrative heads met to decide on a plan for division of labor. It was not the intent of the Executive Committee nor the Project Office to impose research assignments on each of the institutions arbitrarily, but rather to operate in a climate of free choice. First of all, each of the institutions were free to decide whether or not it wished to participate. If the answer was affirmative, then freedom of election of any of the major task force areas would be made based upon the institution's interest and security. Fortunately, the final elections squared with institutional preference and as a result commitments were made, assignments accepted, and project directors identified. Table 1 lists the participating institutions together with assignments.

Table 1

Task Force Assignments

Task Force	Institution	Project Director
Philosophy and Objectives	Michigan State University	H. Byram
Organization, Administration, and Supervision	University of Michigan	R. Wenrich
Curriculum	Michigan State University	S. Nosow
Teacher Education	Western Michigan University	G. Kohrman A. Trimpe
Historical and Current Practice	Department of Public Instruction	L. Alger

In order to encourage maximum creativity, no operational pattern within the task force assignments was prescribed for implementation of institutional responsibility. Diverse approaches were encouraged and participating institutions were given a broad framework within which to operate. In each task force the method of attack was different. As specific studies were undertaken, plans were reshaped and redirected as developing activities and new insights dictated the wisdom of such modification.

Although it is difficult to predict whether an imposed system would have been more productive, it is safe to say that many of the studies would not have resulted if a more restrictive operational pattern were used.

A Brief Preview

Against this background, a preview of the various phases of the study follow: Chapter I provides an overview of the growth and development of vocational education. Chapter II presents a statement of position regarding philosophy and objectives as developed by a group of vocational leaders and consultants. A survey of existing vocational curricula in relation to some aspects of the labor force is provided in Chapter III. Several studies concerned with aspects of administration, organization, and supervision of vocational education in local communities are discussed in Chapter IV. Chapter V examines the vocational teacher education in Michigan. The character of research conducted in vocational education is reviewed in Chapter VI. Finally, Chapter VII summarizes some important recommendations and suggests possible guidelines for future improvements.

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CHAPTER I

DEVELOPMENT OF VOCATIONAL EDUCATION IN MICHIGAN

Vocational education as an integral part of the Michigan educational enterprise is essentially a product of the twentieth century. From its very inception it represents a struggle for democratization of educational opportunity for the many rather than the few, on the collegiate and subcollegiate levels of instruction. The following pages present a brief account of its growth, together with the forces that had an influence on its development. Since not all readers may be familiar with the program of vocational education and its many ramifications, this chapter may be helpful as a prelude to the report.

Vocational education in its broadest interpretation encompasses both collegiate instruction leading to the professions and training for those occupations which require less than college level instruction. This study will focus on those areas of vocational education leading toward occupational competence on the high school, community college, and adult education levels.

Historically, the early concerns for vocational education in Michigan are lost in obscurity; however, one significant bench mark is the Annual Report of the State Superintendent of Public Instruction for the year 1900, in which some forty pages are given over to the then broadly defined area of manual training.[1] The following statistics together with a provocative question appear:

> From the latest reports received in this office from 43 leading cities of Michigan, we have compiled the following statistics for 1899:
>
> Total enrollment, 173,250
> Number in high school, 13,270
> Number graduating, 1,332
>
> From the most careful computations, taking into consideration that there are four high school and eight primary grades, and that only one class graduates each year, we deduce the following:
>
> Less than 16 per cent of the total enrollment enter the high school; and less than 40 per cent of this 16 per cent, or less than 7 per cent of their total enrollment, graduate from the high schools.... Something must be done to improve these conditions. Will manual training do it?[2]

Apparently there was concern for the school dropout at that time.

Agricultural Education

During this same period agitation for more instruction in agriculture in the public schools was evidenced. Lay groups as well as professional educators were interested in having more functional education for youth, as reported in the document First Came the Farms.[3]

> About 1900 the demand for agricultural instruction in the elementary and secondary schools became articulate. Teachers in scattered districts, particularly where grades

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[1] Sixty-fourth Annual Report of the Superintendent of Public Instruction of the State of Michigan, 1900. Lansing, Michigan: Department of Public Instruction, 1901, pp. 16-56.

[2] Ibid., p. 21.

[3] First Came the Farms, State Board of Control for Vocational Education, Bulletin 289, June 1944, p. 7.

> and higher educational departments were combined, undertook the teaching of agriculture to younger children. The farming population, through their organizations, began to move legislatures to pass laws permitting or requiring the instruction in the elementary schools of the state. The spread of nature study and school garden movements intensified the desire of farmers and friends of rural education to have instruction more definitely related to agriculture at least in the rural elementary schools, which usually were the only educational institutions attended by the great mass of farm boys.

By 1906, elementary agriculture was taught in about 300 school districts; by 1908 approximately 1,000 rural schools in the state were offering some type of agricultural instruction.

The first six high schools (established around 1910) providing instruction in agricultural subjects were located in Hillsdale, Hudson, Lawton, North Adams, Otsego, and St. Louis, Michigan. These six schools enrolled 160 pupils. By 1916 sixty-three high schools were offering courses with 2,547 students enrolled.

Although it would be assumed that during this early period agricultural courses would exist in rural communities, the historical record indicates that certain urban schools also expanded their curricula to include instruction in agriculture. Bay City placed emphasis on vegetable gardening, landscape gardening, and dairying. Special courses were offered for individuals interested in securing positions with the city park commission. In Muskegon, orcharding, vegetable gardening, and forestry constituted the course of study. Escanaba provided school gardens for children above the fifth grade.

Home Economics Education

Just as in the case of agricultural education, home economics as a derivative of the manual training movement came as a result of community expression. One of the first documented clues regarding the inception of home economics appeared in the previously mentioned Report of the State Superintendent of Public Instruction in 1901. The report stated:

> Manual training work in Menominee is the result of a sentiment created by a zealous, believing, working woman's club, seconded by a progressive, courageous superintendent of schools. At first a small amount of money was raised by subscription as an experiment. Members of the Woman's Club attended the schools and supervised the sewing work. Meetings were held to discuss the matter. As a result, sufficient interest was developed to secure a vote for an appropriation to establish manual training in the schools.[4]

It can be deduced from this statement that home economics education was included in the generic term, manual training. However, a more definitive label, domestic science, began to appear in subsequent reports. Mentzer points this out in reporting the number of schools with courses in domestic science during the years 1900, 1905, 1910, and 1915.[5]

As Table 1 illustrates, the increment in the number of schools teaching domestic science was relatively negligible in the five-year period, 1900 to 1905. In the five-year period, 1905 to 1910, the number had increased slightly more than three times. Nine times as many schools were offering domestic science in 1915 than in 1900.

The eleven communities that had introduced domestic science courses in 1900 were: Ann Arbor Bay City, Calumet, Detroit, Flint, Grand Rapids, Ishpeming, Kalamazoo, Muskegon, Menominee, and Saginaw. In some cases classes were scheduled starting in the third grade through high school. Eight

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[4] Sixty-fourth Annual Report of the Superintendent of Public Instruction of the State of Michigan, 1900. op. cit., p. 39.

[5] R. Mentzer, A History of the Program of Vocational Home Economics in the Secondary Schools of Michigan 1917-18 Through 1952-53, (unpublished doctoral dissertation, Michigan State University, East Lansing, 1954), p. 41.

of the eleven communities provided instruction on the elementary level; four, on the high school level. By 1915 the distribution on the elementary and high school levels was just about even, with ninety-four reporting instruction on the elementary school level and ninety-nine on the high school level. The curriculum placed main emphasis on cooking and sewing in 1900. Additional subjects were included by 1915, resulting in a broader curriculum.

Table 1

Number of Schools Teaching Domestic Science*

Year	Number of schools teaching domestic science
1900	11
1905	17
1910	53
1915	98

*Derived from the Annual Reports of the Superintendent of Public Instruction of the State of Michigan for the Years 1900, 1905, 1910-11, 1915-16.

Industrial Education

From what has been said concerning the beginnings of agriculture and home economics, the turn of the century had great significance for vocational education. The earliest traces of industrial education are found during the same period in such communities as Calumet, Battle Creek, Detroit, Grand Rapids, Lansing, Muskegon, and Pontiac. Although each of these cities was a pioneer in its own right, several have contributed uniquely to the expansion of knowledge regarding practical education. Unfortunately, the limitations of space preclude full justice to these contributions.

One of the initial efforts in establishing industrial education programs took place in Calumet, Michigan. Dalton discovered that instruction in the Calumet Schools was somewhat atypical:

> The curriculum from the early 90's was more or less an apprentice course designed to prepare mechanics for the shops of the copper mining companies. At this time men from the shops of the companies acted as teachers.[6]

Through the civic consciousness and benevolence of Mr. Charles H. Hackley, the first manual training school was established in Michigan in 1897 at Muskegon. The Hackley Manual Training School, named after its benefactor, became one of the outstanding schools of its kind in the United States. In addition to providing instruction to youth in manual skills, a two-year teacher preparation program was instituted in 1903 for high school graduates who were interested in teaching manual arts and home economics.

In addition to the trade and apprentice classes offered at the Cass Technical High School in 1910, Detroit made provision for a part-time school for employed women. Instruction was available primarily in dressmaking. Evening classes were included in the program of industrial education offerings for employed workers desirous of increasing their earning power as well as those interested in preparing for employment. The cooperative work plan, in which pupils spend half-time on the job and half-time in school,was initiated in the public schools of Lansing in 1912. The city of Muskegon, as previously mentioned, received certain financial grants. However, other communities were to enjoy similar advantages, notably Saginaw. In 1909, W. R. Burt provided a sum of $2,000 to the Saginaw public schools to finance a one-year trade program. Later a gift from Arthur Hill of $200,000 supported the Arthur Hill Trade School, the first of its kind in Michigan.

State Legislative Interest

Although local initiative played the major role in the development of vocational education, state legislative acts were passed, furthering the cause sparked by local interests. Public Act 144 of 1901 provided for a course of study "which shall be approved by the superintendent of public

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[6]Dalton, Frank W., The Development of Industrial Education in Michigan, Michigan Industrial Education Society, Ann Arbor, 1940, p. 10.

instruction and the President of Michigan Agricultural College and shall not consist of more than four years' work. Said course of study may include instruction in manual training, domestic science, nature study, and the elements of agriculture."[7] In 1907, the state legislature passed Act No. 38. The language of this act spelled out rather clearly that county schools of agriculture, manual training and domestic economy could be established. General supervision of these schools was committed to the state superintendent of public instruction with the advice of the president of Michigan Agricultural College; but direct control was to be vested in a five-member county board. The act also specified that these schools were to have a two-year course, including agriculture and related subjects, and at least ten acres of land.

It was not until this act was amended by Act No. 219 in 1909 that state aid was provided for these schools. By meeting certain requirements as to equipment, buildings, and title to land which was to be used in connection with the teaching of agriculture, the school might receive an amount equal to two-thirds of the amount expended for a year up to $4,000.[8]

Not only was legislative interest apparent during these early years, but other bodies were at work encouraging the expansion of vocational education. A state commission on agricultural and industrial education was appointed by Governor Warner. The report of the commission contained the following recommendations:

> "Provision of at least one high school with a four-year course in agricultural education in each township.
>
> "Introduction as soon as possible of agricultural education, manual training, and home economics in all high schools.
>
> "Certification of all teachers of agricultural and industrial subjects.
>
> "State supervision of all agricultural and industrial courses.
>
> "State aid for all schools introducing high school courses in agriculture and home economics."[9]

The above thumbnail sketch from 1900 to 1917 describes the early concerns and curricular innovations that lay groups and educators struggled with to provide a new and different educational opportunity to youth and adults in Michigan. All of this effort proved to be a harbinger to more vigorous developments on the national, state, and local levels.

The Expanding Program of Vocational Education

The real impetus for the further promotion, stimulation and refinement of vocational education came as a result of ferment and agitation on the federal level during the first two decades of the twentieth century. It is safe to say that since that period each major forward thrust can be attributed to federal initiative and attendant financial support. Precedent had been set by passage of the Morrill Act of 1862 and subsequent legislation including the Hatch Act, Adams Act, Nelson Act, and Smith-Lever Act. These major pieces of legislation destroyed the equanimity in collegiate education by making provision for instruction in agriculture and the mechanic arts, and thereby opening the doors for educational equality. It was only a matter of time until the Smith-Hughes Act of 1917 was to provide the framework for less than college-grade instruction in agriculture, home economics and trade and industrial education for in-school youth, out-of-school youth and adults.

In 1914, Congress created the Commission on National Aid to Vocational Education, authorizing President Wilson to appoint a nine-man commission to consider the subject of national aid to vocational education.[10] The report of the commission was presented to Congress in June, 1914, and two and a half years later, in 1917, the Smith-Hughes Act was passed.[11] This piece of legislation made

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[7]Public Acts of Michigan, 1909, pp. 403-4.

[8]Public Acts of Michigan, 1909, pp. 403-4.

[9]First Came the Farms, Issued by the State Board of Control for Vocational Education, Lansing, Michigan, June, 1944, p. 11.

[10]Report of the Commission on National Aid to Vocational Education, Washington: U. S. Government Printing Office, 1914, Vol. 1, p. 9.

[11]Public Law 347, 64th Congress, Approved February 23, 1917.

provision for federal aid to the extent of $7,200,000. In addition it set down certain mandatory requirements that states were to adopt if they were to share in the financial benefits.

In the years to follow, this basic law was the subject of much controversy. Charges were made that too many restrictive covenants prevented states from developing the kinds of programs they deemed advisable. Countercharges stressed that elimination of certain requirements would result in reduction of standards. At the present time, vocational educators are not in complete agreement themselves regarding the retention, amendment, or elimination of this basic law. Regardless of what position one subscribes to, the fundamental fact remains that the Smith-Hughes Act was instrumental in ushering in a new dimension for vocational education in Michigan.

Acceptance Legislation in Michigan

In order to utilize federal aid made possible through the Smith-Hughes Act, it was imperative that acceptance legislation be passed by the various state legislatures. The Michigan Legislature, in 1917, passed Public Act 189, known as the Tufts Act, which provided the legal framework for utilization of federal and state funds. The act was revised in 1919 and the controlling law in Michigan since that time has been Act No. 149 of the Public Acts of 1919. This law still bears the name of Tufts, who sponsored it. The early experimentation and experience in vocational education conducted prior to 1917 made it possible to move rapidly, since many of the local programs met the requirements set down in the Smith-Hughes Law. Total enrollment for the year 1917-18 in agriculture, home economics and trade and industrial education was 7,218. State and federal financial expenditures in support of these programs amounted to $60,544.[12] Forty-five years later in 1962 the total enrollment was 145,986 and the expenditure, $3,535,805.[13] Unfortunately the statistics for the year 1962 are grossly inadequate. Many communities that formerly received vocational education funds conduct commendable programs without financial support, and data is not available.

Additional Federal Legislation and Grants

The Smith-Hughes Act was the only source for federal subvention until 1929. From 1929 to 1958, five additional pieces of federal legislation modified or extended aid for vocational education to the states. The George-Reed Act (1929) authorized the appropriation of $500,000 for the year ending June 30, 1930, and an additional $500,000 each year thereafter for four years. The George-Ellzey Act (1934) authorized the sum of $3,000,000 for three years. Approximately $14,000,000 was authorized under the George-Deen Act (1936). In addition, to the amounts quoted above, small amounts were authorized for administrative purposes on the federal level. It is important to point out that, with the passage of the George-Deen Act, monies were made available for reimbursement of distributive occupations, thus adding a fourth area for which federal funds were available. The George-Reed Act and George-Ellzey Act expired, whereas the George-Deen Act was amended to become the George-Barden Act (1946) which authorized the sum of $28,850,000. From 1946 to 1958, federal aid stemmed from the Smith-Hughes and George-Barden Acts. In 1958, the National Defense Education Act authorized the appropriation of $15,000,000 annually for the training of technicians necessary for national defense.

Table 2 provides a summary of federal expenditures for vocational education for fiscal year 1961.

Vocational Education in Michigan During Periods of Crises

Not only has the Michigan program of vocational education made its mark during periods of normalcy but it has also been called upon to meet the challenge of intermittent emergency demands. World War II cast its grim shadow over Michigan when vocational educators were requested to train skilled manpower in both urban and rural areas in connection with the war effort. Michigan contributed to the seven and one-half million people trained throughout the United States under the Vocational Education for National Defense Program, later renamed the War Training Program for War Production Workers and the Food Production Training Program. From 1940 to 1945, physical facilities and instructional staffs were taxed to the utmost in providing the necessary instruction to man the war production machine. Certain programs such as the Food Conservation Program were still in existence in 1962.

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[12] Annual Descriptive Report of the Michigan State Board of Control for Vocational Education, Division of Vocational Education, Department of Public Instruction, 1962, pp. 57-58.

[13] Ibid., pp. 57-58.

Table 2

Federal Expenditures for Vocational Education
Fiscal Year 1961

Purpose	Smith-Hughes Act	Title I	Title II George-Barden Act	Title III	Total
Agriculture	$3,045,260	$10,225,579	---	---	$13,270,839
Trade and Industrial	3,103,569*	8,234,514	---	---	11,338,083
Teacher Training	1,111,817	---	---	---	1,111,817
Home Economics	---	8,215,908	---	---	8,215,908
Distributive Occupations	---	2,556,886	---	---	2,556,886
Fishery Occupations	---	105,912	---	---	105,912
Practical Nursing	---	---	$3,496,892	---	3,496,892
Area Vocational Education	---	---	---	$7,913,337	7,913,337
TOTAL	$7,260,646	$29,338,799	$3,496,892	$7,913,337	$48,009,674

*Includes Home Economics
Source: Unpublished Report from Vocational Education Division, USOE, March, 1962. Provisional figures, subject to audit of State reports.

The explosion of the atom bomb and capitulation by Japan changed the focus from destruction to assisting the veteran's readjustment to peacetime activities. Once again vocational education in Michigan was called upon to marshal its energies to this critical need. Through special programs under Federal Laws 346, 550, and 894, veterans were able to engage in educational activities leading toward successful adjustment in occupations in agriculture, business, and industry.

More recently, two federal acts have left their imprint: The Area Redevelopment Act of 1961 and the Manpower Development and Training Act of 1962. The former established a four-year program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically distressed areas. The latter is a three-year program authorizing the Secretary of Labor to appraise manpower requirements and resources of the nation, and to provide training programs for the unemployed and for those whose skills need upgrading in order to meet shifting employment needs.

At the present time, deliberative bodies, governmental agencies, and notable authorities have recommended the expansion and improvement of vocational education. Judging from these pronouncements, any argument on whether or not public education has a responsibility for the development of vocational competence is academic. A more pertinent question would be concern about what level, to what extent of specialization, and through what vehicle specialization should take place. The President's Panel on Youth Employment appointed in 1961 has submitted its report. Although all fourteen recommendations have some relevance to vocational education, two are of special note:[14]

11. Existing vocational education laws and practices should be reexamined by the Congress and State vocational education authorities.

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[14] The Challenge of Jobless Youth, President's Committee on Youth Employment, Washington: U. S. Government Printing Office, 1963, p. 11.

Where necessary, these laws and practices should be revised to:

a. Eliminate irrelevant or out-of-date limitations on the availability of Federal funds.

b. Strengthen the vocational and technical education programs by offering Federal reimbursement for training in more and different occupations. Information about job trends from public employment services, counseling and guidance organizations, as well as occupational outlook materials, should be used in determining new vocational education programs. Courses for out-of-school youth should be either on a part-time or full-time basis, regardless of whether or not the youth is employed in the trade for which he seeks training. These courses should provide for teaching of short-term or long-term occupational skills.

c. Provide for a continuing reexamination of programs and expenditures to assure that they reflect changing job needs and patterns.

d. Insure that federal vocational money should go only to states where the vocational education courses are open to all without regard to race, creed, or color.

12. Area skill centers, or technical or vocational schools, should be established in many new central locations.

Developed and administered by cities, counties, school districts, or other governmental units, these schools should draw their pupils from a large enough area to permit full staffing and equipment, and should offer a wide variety of courses. The size of the area served will vary; there may be a number of centers in a large city, or a single center for several counties. The schools should be open to adults as well as young people for full-time and part-time instruction. Their entrance dates should be flexible, and times at which courses are offered should be spread over both day and evening hours. The curriculum in these schools should provide training for any occupation in which a job may be reasonably expected and for which youth may be qualified. Training programs for high or less demanding skills should be adequate and of reasonable duration, in order to prepare boys and girls for the occupations they propose to enter.

Just prior to the appoint of the Panel on Youth Employment, the President in his message to Congress, February 20, 1961, requested the Secretary of Health, Education and Welfare to convene an advisory body to review and evaluate the current National Vocational Education Acts and make recommendations for improving and redirecting the program. The Panel of Consultants on Vocational Education has submitted its report recommending certain changes, refinements, and expansion of the vocational education program.

The Manpower Report of the President to the Congress states:[15]

> We must modernize and enlarge our vocational and technical education programs for all age groups and focus them on occupations with future opportunities. Adequate facilities and qualified teachers are disturbingly below need; vigorous expansion is needed if we want tomorrow's workers to be qualified for tomorrow's needs.

Additional citations are available; the persistent buzz for more and better vocational education programs is increasing to a crescendo. The voices antagonistic to vocational education are strangely silent. At this juncture in history, the mandate to the Michigan program is quite clear--evaluation and realignment is the order of the day.

Enrollments in Vocational Education in Michigan

A review of the information as reported in the "Annual Descriptive Report of the Michigan State Board of Control for Vocational Education," June, 1962, shows that vocational programs in the high schools, community colleges and other area schools, and the degree-granting institutions are increasing. A large portion of this increase is registered in programs for out-of-school youth and adults. The following table presents the enrollments in the various vocational education programs for the year 1962-63.

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[15] Manpower Report of the President, U. S. Department of Labor, Washington: U. S. Government Printing Office, 1963, p. XVIII.

Table 3

Enrollments in Vocational Education
in Michigan 1962-63

Service	In-School (High School)	In-School (Post High School)	Out of School Youth and Adults	Total
Agriculture	12,796	---	3,303	16,099
Distributive:			15,514	15,514
Cooperative	2,848	255	---	3,103
Office (Cooperative)	3,445	291	---	3,736
Homemaking	43,313	---	20,566	63,879
Trade & Industrial	6,336	10,876	27,921	45,133
Practical Nurse and Other Health Occups.	381	1,992	185	2,558
Technician Programs	398	3,717	2,177	6,292
TOTALS	69,517	17,131	69,666	156,314

CHAPTER II

PHILOSOPHY AND OBJECTIVES OF VOCATIONAL EDUCATION
A STATEMENT OF POSITION

The formulation of education policy and its attendant translation into action cannot be accomplished in a vacuum. What are the responsibilities of a democratic society toward helping its members decide about and prepare for their life's work? A basic tenet of democracy is that everybody should have the right to choose his own work. Furthermore, he should have access to the education he needs to qualify for the work. Third, he should be permitted to utilize effectively the education and training which he obtains.

Modern democratic society clearly does not regard labor as odious or disgraceful; on the contrary, in the United States at least, it regards leisure with suspicion and expects each person to contribute through socially useful employment. In addition, each individual is expected to govern his own life and share in the responsibility for the management of the community. It is also clear that the need for a concurrent, balancing force of general education is imperative. Making a living is the function of the citizen, and being a citizen is a function of the worker.

We are living in an age of specialization in which the avenue to success lies in the choice of an occupational career. Observers of the future predict that specialism promises to be on the increase, even though of different dimension. Improvement in equipment and technology doubles the productivity of the average worker of each generation. Science and technology have presented adequate evidence that a high degree of specialized knowledge and skill is an imperative.

A. Occupational Choice is a Continuing Factor. The development of manpower in any sector of our economy results from an interplay of many forces. Thus, the home, the formal educational structure, the armed services, and the agriculture-business-industry complex all act as determinents in shaping the manpower potential. For example, the determination of occupational choice is never a single action, but the result of a continuing process initiated in early childhood, usually determined tentatively in young adulthood, and tempered or changed in later life. All of the forces mentioned may influence the original and subsequent occupational choices of a substantial segment of our work force. The formal educational structure through the high school, collegiate, and adult education programs should play a role in preparing, in retraining, and in upgrading individuals throughout their careers.

B. Military Training Plays a Role. Compulsory military training has become a fixed part of the life of most men. In only two years since 1940 were there no inductions. Many young men spend as much time in military service as they do in high school. Approximately one-half of all military assignments require men trained in some occupational area beyond basic instruction.

C. Business and Industry Develop Manpower. Industry and business, through apprenticeship, training programs, and opportunity for cumulative job experience, make the greatest contribution to the development of manpower.

D. Productive Resources Can Be Wasted. None of these agencies, however, contributes with maximum efficiency to the increment of the skills of a nation. Discriminating observers point out that four factors contribute to the squandering of our human productive resources: unemployment, underemployment, inadequate training, and arbitrary barriers to employment.[1]

1. The first is waste that arises when there is a shortage of jobs, so that men accustomed to work become idle and young adults find little opportunity for employment.

2. The second waste - underemployment - results from individuals who may have partial employment, but could, if opportunity were available, make better

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[1] Eli Ginzberg, Human Resources; The Wealth of Nations (Simon and Schuster, New York, 1958), p. 41.

use of their talents. These may include such individuals as those living on farms who are busy during a portion of the year, and homemakers who would welcome the opportunity for paid employment. Underemployment may also occur when positions held by full-time employed workers are not commensurate with their potential.

3. A third waste arises when the community fails to invest in, and plan adequately, the education and training of young people and those already employed.

4. The fourth waste centers in the imperfections in the employment market. Waste of manpower also occurs from discrimination against minority groups, the inadequate use of womanpower, the drain on human resources through inadequate treatment of mental disease, and a host of other deterrents.

Role of Formal Education

Public education has a substantial contribution to make in the development of competent workers and the conservation of human resources.

The charge to public education is rather obvious. Two strands of education inseparably woven together must be considered: that part of a person's development which looks first of all to his life as a responsible human being and citizen, and that part which looks to the person's specializations. Each aspect should seek to complement the other. For example, it is difficult to isolate the contribution that an individual makes through work from his role as a citizen. Unfortunately, too many make false distinctions at this point.

With all the educational forces at work, both formal and informal, the role of the public school throughout the life of an individual is one of emphasis. In the early stages of a person's development, the elementary school and general education are usually synonymous, since the emphasis from kindergarten to junior high school deals with common learnings. In the junior high school exploration is provided through a wide range of experiences. The pupil comes in contact with a host of activities such as science and mathematics, designed to provide additional general education and identification of interest-specializations. This concept of specialization includes not only vocational interests but intellectual and cultural as well. From this point on specialization becomes increasingly evidenced.

In the senior high school specialization for one student comes in the form of a selection of courses leading to a specific vocational objective in junior college or university. Another may pursue a similar sequence or a different sequence on the basis of pure interest without specific regard for occupational competence. This specialization may represent additional general education. Another student may regard as his speciality the preparation for some form of employment on completion of high school.

In adult education this interrelationship between generalization and specialization should continue. Planned, personalized adult education programs, including counseling, should be the right of all citizens in a democracy.

The basic problem is then to find an answer which will combine the responsibilities of a democratic society to each individual for (1) choosing, entering into, and progressing in an occupation, and (2) the personal-social competency necessary for active participation in society.

Throughout all of this, one salient index prevails: we must prepare youth for an occupational and family life, the specific elements of which we cannot predict. And we must be prepared to cooperate in keeping adult workers abreast of new knowledges and skills as these become functional in our industrial life, our business life, and our home life. The Special Studies Project of the Rockefeller Brothers Fund says in its Report by Panel V:[2]

> There is a constant pressure by an ever more complex society against the total creative capacity of its people. Our most critical need a decade hence may be unknown today. Rather we must prepare ourselves for a constant and growing demand for talents of all varieties, and must attempt to meet the specific needs of the future by elevating the quality and quantity of talented individuals of all kinds.

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[2] Rockefeller Brothers Fund, The Pursuit of Excellence, Education, and the Future of America, Special Studies Project Report V. (New York: Doubleday & Company, 1958), pp. 10-12.

> One of our great strengths as a people has been our flexibility and adaptability under the successive waves of change that have marked our history. Never have we needed the trait more than today. It is for this reason that we should educate our young people to meet an unknown need rather than to prepare them for needs already identified.

Such factors, plus the basic view of vocational education in the total educational complex, form the backdrop for the suggested line of inquiry regarding philosophy and objectives of vocational education.

Undergirding any educational venture is the set of beliefs and aims which provide direction for subsequent performance. In a changing, dynamic, technological society, beliefs and objectives must be examined. How do leaders in Michigan perceive the role of vocational education in the educational structure at this critical juncture? What position are they willing to endorse for future direction? In order to arrive at answers to these questions, the first impulse was to have an independent researcher make a critical analysis of the official pronouncements, catalogues, and bulletins and, thereby determine the extent of agreement and diversity. However, statements prepared in the past frequently do not have sufficient currency to reflect present thinking and future outlook. Considered judgment, therefore, dictated the more tedious route of deliberation and discussion. Out of such deliberation would emerge a reexamination and reformulation of a statement of position.

Procedure

In January, 1960, a task force on Philosophy and Objectives was appointed by the Executive Committee. The primary mission of this task force was to develop a statement of beliefs and objectives providing guidelines for other groups involved in the evaluative study. In addition, it would serve as a basis for school administrators, teachers, and lay people who either had the responsibility for planning, organizing, and executing curricula or who had a general interest in educational matters.

The remaining portion of this chapter represents the findings of the task force after a year and a half of arduous work. Part I discusses the objectives of education in Michigan. Part II spells out the meaning and nature of vocational education. Parts III through VI present, in considerable specificity, the objectives of the various areas of vocational education, namely, agriculture, business and distribution, home economics, and industrial education. Part VII suggests some concrete recommendations for use of the material.

Part I

Objectives for Public Education in Michigan

Any area of school instruction must be evaluated in terms of its contribution to overall objectives. Since vocational education operates within a framework of total education, Task Force No. 1, as the first action group of the Michigan Vocational Education Evaluation Project, examined and considered objectives for public education and the contribution that vocational education makes to them.

The selection of these objectives for this statement was influenced by several considerations: the unique contribution of comprehensive educational programs; the right of all individuals to achieve to the extent of their ability; the need of our society for the talents of all as citizens and productive workers; and the desire to crystallize thinking about our schools.

It was decided that this statement should be presented in brief form, yet be comprehensive enough to serve all levels of public education. The goal was to prepare a statement of objectives acceptable to school leaders and the general public, which in turn will serve as a basis for the evaluation of Michigan's vocational education programs.

This statement of objectives stems from the "Ten Imperative Needs of Youth." In 1959, the Michigan Association of Secondary School Principals adopted and reaffirmed this statement. The present statement is a modification of these earlier ideas in terms of the space age and makes them applicable to children, youth, and adults.

American schools must be guided by many objectives. Priorities in objectives can best be determined in terms of individuals and local school situations. Thus, there is no significance in the order of listing of the following objectives.

In addition to the home, church, and community groups, the school contributes to the fulfillment of the basic needs and the development of individual aspirations for continued personal growth of children, youth, and adults through these objectives of education:

1. To understand and appreciate American democracy, including the rights and responsibilities of its citizens, and to be diligent and competent in performing obligations as members of the family and community and as citizens of the state, the nation, and the world.

2. To grow in ability, to think rationally, to express ideas clearly, and to read and to listen with understanding.

3. To develop basic communication skills and mathematical concepts in such ways as to be functionally useful.

4. To develop abilities, attitudes, skills, and understandings that make a person an intelligent, occupationally competent participant in the changing economic life.

5. To develop the attitudes, competencies, and understandings basic to satisfying family life.

6. To develop capacities to appreciate nature and the arts in our own and other cultures.

7. To understand the methods of natural and social sciences, the influences of science on human life, and the nature of the universe and of man.

8. To develop and maintain good physical and mental health.

9. To grow in insight into moral and spiritual values and to act in accordance with these values.

10. To be able to use leisure time effectively.

11. To understand and to appreciate the American economic system.

12. To be able to purchase and conserve human and material resources and use goods and services intelligently.

Part II

The Meaning of Vocational Education

Introduction

This section deals with education for vocations, as embodied in the Task Force No. 1 statement, "The Objectives for Public Education in Michigan." Programs in vocational education contribute to the twelve objectives listed therein, but the objective to which they should make the largest or most direct contribution is number four: To develop abilities, attitudes, skills and understandings that make a person an intelligent, occupationally competent participant in the changing economic life. The goal of programs of vocational education should be to contribute in a unique and specific manner to the development of individuals who will possess necessary competencies for chosen occupations. A concomitant goal should be the economic improvement of society.

A Concept of Vocational Education

Within the context of this document, vocational education means education that is needed to engage in socially useful work. It goes further than general education by dealing in a more specialized manner with the development of occupational competency. The concept is not restricted to those programs which are reimbursable through the National Vocational Education Acts.

Vocational education involves a variety of student experiences or learning activities, including supervised work experience in and relating to the desired occupational field. There also should be instruction designed to provide information, to develop understandings, to illustrate the application of principles, and to motivate and develop socially desirable attitudes for the person preparing for entry or advancement in an occupation. Such organized instruction should be given by those who possess competency and experience in the occupational field involved. Student activities contribute to vocational education when based upon students' interests in the occupation and when related to the occupation. When student, teacher, employer, and/or parent cooperate in planning these activities and experiences, such activities become increasingly appropriate and effective.

The content of education for a specific occupation should be derived from analyses of information from several sources. These include employers and supervisors; the workers themselves; self-employed persons and parents; agencies, organizations, and community institutions. Use should also be made of reliable research by professional workers; by industrial, business, trade, and agricultural associations; by governmental and educational agencies; and by research foundations.

Effective programs of vocational education may be organized: (1) to prepare individuals for entry into employment; (2) to upgrade or prepare those already engaged in an occupation for advancement in it, or for retraining for another occupation; (3) to provide basic preparation for additional specialized vocational or professional education.

The desired outcomes of these programs will vary considerably from one occupational field to another. The objectives for each field should be considered, and stated in terms of behavioral change. Some of these naturally will apply more to one age or maturity level than to another, and will vary with the school level in which programs are placed. While objectives will differ for each field, certain ones could be identified as important for a vocational education program in any field. The following are suggested outcomes for programs of vocational education, expressed in terms of characteristics of a person occupationally competent in today's society.[3]

1. He has mastered the basic abilities or skills and the technical information according to the standards of the job market or requirements for success in the occupation.

2. He understands the requirements of the occupation and how nearly he has met or will be able to meet these requirements.

3. He understands how to get a job or otherwise to make a beginning in his chosen occupation.

4. He understands how to prepare for advancement in his chosen work.

5. He understands the relationships between management and employees in his occupation, as well as the functions of their respective organizations.

6. He understands the relation of government to this occupation.

7. He understands how his occupation functions in relation to others and to the local, state, and national economy.

8. He knows how to utilize the public and private services available to him for use in the occupation.

9. He is aware of, and is disposed to make use of, educational opportunities to qualify for advancement in the occupation; and to acquire new understandings, abilities, and skills resulting from increased application of technology to the occupation of his choice.

10. He has developed some ability to make wise decisions on questions facing workers in a rapidly changing occupational setting.

Preparation for work has always been an important part of education. Success at work is essential for survival and for the development of a good life. To provide one's share of the goods and services needed by mankind is a recognized attribute of citizenship. As public schools have been established, vocational education increasingly has been included as a part of a total educational program. One educational goal toward which the public schools have worked is the development of systems that are comprehensive in character. Present and prospective workers for all walks of life need to attend such a comprehensive educational system where they may learn to live and to make a living. While not all vocational education needed by people can be given in community schools comprehensive in their scope, the curricula of such schools should reflect as far as possible the needs of the students for specialized education.

In addition, certain aspects of effective education for occupational competency include general education. Effectiveness in any occupation is dependent on the development of functional abilities in written and oral communication, critical thinking, care of oneself, human relationships, and citizenship. All educational subjects and experiences should, if properly taught, contribute to occupational competency. Courses in English, science, social studies, and mathematics are typical offerings dealing with these general aspects.

Included also among the subjects of value to everyone, regardless of his occupational aspirations, are certain subjects and curricular areas which emphasize practical activities. These contribute to the development of understandings, attitudes, and general competencies required in various occupations; provide exploration or tryout experiences in various occupational areas; and help the student and his teachers identify or substantiate vocational interests, aptitudes, and abilities. They also help to motivate a student in an occupational choice; to acquire useful information about occupations and himself; and to choose that program which best fulfills his educational needs.

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[3]An adaptation of statements of purposes of vocational education from The Educational Policies Commission, Education for All American Youth (Washington, D.C., NEA, 1948), pp. 289-290.

Relation of Vocational Guidance to Vocational Education

Vocational education is most effective when it is preceded, accompanied, and followed by vocational guidance. When youths are provided with continuous, adequate guidance services, they are assisted to make known their occupational interests, abilities and aptitudes, and to prepare occupational plans. Programs in vocational education offered in a school should reflect the vocational interests, the employment opportunities, and the training needs of youth and adults. Specialized courses for development of specific occupational competencies should be available to those persons who want them, need them, and can profit from them.

A good program in vocational education, like any other program in a comprehensive school system will, of necessity, involve individuals of varying general and special aptitudes and aspirations. Vocational education has a place in the total school program to help youth to make and substantiate vocational choices and to relate educational plans to these choices. It also should provide motivation for other school work, and indeed could be used as a focal point toward which many of the total educational experiences or activities may be directed.

Part III

Philosophy and Objectives for Agricultural Education

Vocational education in agriculture and general education in agriculture both should contribute to the attainment of all objectives of education in Michigan as stated by Task Force No. 1. The objectives of vocational agriculture as presented in this report should be considered as contributing principally "to develop abilities, attitudes, skills, and understandings that make a person an intelligent, occupationally competent participant in the changing economic life." The modification of this objective for vocational education in agriculture is to substitute the words, "agricultural occupations" for "the changing economic life."

For many years the objectives stated in Educational Objectives of Vocational Agriculture[4] have been a guide for educators. These objectives have recently been reviewed and revised by leaders in agricultural education in Michigan, and appear in This We Believe About Vocational Agriculture.[5] A more detailed description of these objectives of vocational agriculture is found in these two publications.

The public school should provide an educational program which will have the major responsibility for developing needed agricultural abilities, attitudes, and understandings of persons engaged in or planning to engage in agricultural occupations. A comprehensive program in vocational agriculture should meet the needs of people in the community served by the school. This should include persons such as young or adult farmers currently engaged in agricultural work, or those such as high school students planning to engage in farming or in other agricultural occupations. Persons engaged in farming may be full-time farmers or those operating a farm on a part-time basis. Vocational agriculture on the high school level should also provide for youth interested in non-farm agricultural occupations, so that they might participate in learning situations contributing to the development of agricultural competencies for such occupations.

Area schools, community colleges, and technical institutes should consider programs to meet the expanding need for technically trained persons in agriculture. Such programs should develop highly specialized skills in areas where the number of workers required do not justify every public school offering this instruction.

Vocational agriculture, like other fields of vocational education, encompasses more than classroom or school shop instruction. The home farms provide laboratories for many learning situations. In addition, many schools find it desirable to provide an agricultural land laboratory. The local chapter of the Future Farmers of America should be utilized to organize and carry out many group projects to enhance learning. Individual farming programs of students should be utilized to make instruction practical and to provide for individual instruction on the farm.

Many of the abilities to be developed in agriculture are managerial in nature. Therefore, the instruction should be related to real business situations in agriculture involving finance, credit, record keeping, and the legal aspects of agriculture.

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[4] Educational Objectives in Vocational Agriculture, U.S. Office of Education, Washington, D.C., Vocational Division, Monograph No. 21, Rev. 1955.

[5] This We Believe About Vocational Agriculture, Michigan Department of Public Instruction, Lansing, Michigan, Publication No. 509, 1960.

The objective of vocational agriculture should be to develop abilities, attitudes, skills, and understandings that make a person an intelligent, occupationally competent participant in agricultural occupations. This objective is broken down in the following manner:

a. The basic objective for persons engaging in farming is the development of effective abilities, attitudes, skills, and understandings to:

1. Make a beginning and advance in farming.

2. Produce farm commodities efficiently.

3. Utilize adequately farm buildings, power, machinery, and services.

4. Use sound judgment in buying and selling, such as machinery and farm commodities.

5. Conserve soil and other natural resources.

6. Conserve human resources through greater use of farm safety, sanitation, and labor-saving practices.

7. Manage a farm business efficiently.

8. Improve living conditions in the home and community.

9. Use credit wisely in farming operations.

10. Interpret the relationship of agriculture to society.

b. The educational objective in agriculture for persons such as agricultural professionals, technicians, processors, and servicemen, engaging in occupations with some agricultural activities, is the development of those basic abilities, attitudes, skills, and understandings for farming that are found in specific occupations, and should include:

1. Study of career opportunities in occupations requiring some agricultural background and training.

2. Farm work experience, together with instruction basic to the agricultural activities of workers in non-farm occupations.

Part IV

Philosophy and Objectives for Education for Business (Distribution and Office)

The Nature of Education for Business: Distribution and Office

At the turn of the century, business education was accepted as a phase of public education to prepare typists, stenographers, and bookkeepers. Its reason for being has now extended to include other office responsibilities, plus basic business and distributive education, as a phase of the curriculum in most comprehensive schools. Distributive and office education are areas of study that prepare individuals for the business aspects of family living as well as for earning a living in business.

A program of education for business, an essential part of the total program of education, consists of a basic phase with opportunity for specialization in (a) distributive education, and (b) office education.

Basic business education develops general business understandings, skills, and economic concepts needed by all individuals. Distributive education prepares individuals for all levels of employment and responsibility by providing instruction in marketing, merchandising, and management for those preparing for or engaged in retailing, wholesaling, and service businesses or activities. Office education prepares individuals for the various levels of office employment and responsibility.

The impact of invention and increasing complexity are changing the nature of the American economic society. The rapidly changing business climate impels a close liaison between schools and business through coordinated work experience for instance, or similar job laboratory experience beyond that found in other academic areas.

Education for business contributes to the general education of all students through the tools or content of business. For example, typewriting contributes to the communication development of all who seek it. The business transactions of the local supermarket or the nearby office become media through which all students can learn to make wise economic decisions. Indeed, the nature of business problems lends itself to teaching for thinking, for creating, for solving problems, and for arriving at sound solutions--a necessary end result of all education.

For many students who seek early employment, education for business is an exploration to assess personal attributes with the demands of distributive or office pursuits. For others who have not made a definite career decision, it is a broad job preparation that can be used for advancement through a succession of occupations. And for still others who have chosen an appropriate occupational goal in distributive or office work, it is the skilled and technical preparation required to enter upon, and advance in, a career.

Education for business provides important ancillary understandings and skills. It should equip the small manufacturer or operator of a repair shop with the business "know-how" to earn a profit. It should provide the person who seeks a college education with marketable skills to enable him to earn part of his expenses while in school. Bookkeeping, for example, can be very vital to the farm entrepreneur, who can be successful only to the extent that he arrives at wise decisions based on accurately recorded and interpreted financial data.

Basic and Economic Objectives of Education for Business

Basic business education consists of courses that contribute to general vocational understandings and efficiency, social and economic understandings, and personal growth values. The chief goals of basic business education are:

1. To develop the proper attitudes, the desired character traits, and ability to get along well with fellow workers in office and distributive pursuits.

2. To teach students to apply business skills, understanding, concepts, and principles in the orderly organization and conduct of their personal business affairs.

3. To help students prepare for distributive, office, and related professions by providing basic background instruction.

4. To develop those business skills and abilities which help self-employed individuals to operate their business in an efficient manner.

5. To help the student meet the requirements of his occupational pursuit and his personal life through reviewing, expanding, and applying arithmetic and communication knowledge and skills.

6. To develop an understanding of the principles of business law and of an individual's personal duties, rights, and obligations in financial transactions.

7. To give the individual a useful understanding of basic economic concepts, including the organization, finance, and operation of a business.

Objectives of Education for Office Occupations

In addition to contributing to the basic office competencies such as communication and computation, the major goals of education for the performance of office functions are:

1. To provide prevocational orientation for those who have only a general desire for some type of business work or who have made an unrealistic selection without self-appraisal.

2. To provide the general clerical experiences that lead to attitudes, knowledges, and skills necessary for initial employment in nontechnical office job classifications or for basic office task performance in the technical classifications.

3. To provide for the needs of students, employees, and employers by technical preparation in such fields as stenography and the newer office job classifications developing through electronic invention.

4. To prepare students for a new environment by an emphasis on thinking, problem solving, and wise decision-making.

5. To develop ancillary occupational understandings and skills for those planning careers in areas other than business.

Objectives of Education for Distribution

Education for distribution is identified as a program of instruction in marketing and distribution, at the secondary, adult, and community college levels.

Distributive occupations are defined as those followed by proprietors, managers, supervisors, and rank-and-file employees engaged primarily in marketing or merchandising goods (the products of farm and industry) or services. Such occupations may be found in various business establishments such as retailing, wholesaling, manufacturing, storing, transporting, financing, and/risk bearing. This means that distribution can be a function in many occupations as well as an occupation itself.

Education for distribution has received considerable recognition in recent years as an essential instrument for the efficiency of our marketing system. Today's marketing situation in our country indicates a special need for increasing and strengthening education in distribution. The growing importance of distribution itself has been demonstrated by the growing number of jobs the field of distribution provides.

Distribution also makes possible the benefits of mass production. If distribution fails to achieve its maximum efficiency and purpose, the nation will fall short of reaching its greatest potential in service and economic progress. Moreover, the growing complexities of operating practices in marketing and distribution accentuate the need for greater skills in the management and ownership of business. Learning by experiences is no longer sufficient for the difficult tasks with which business managers and supervisory personnel are confronted today. Education has become a necessity. The major objectives of education for distribution are:

1. To develop an understanding of the contributions that the field of distribution and marketing make to the individual and society.

2. To develop an awareness of the varied career opportunities in distribution through providing the kind and amount of instruction needed.

3. To help the individual to enter into and achieve continued success and advancement in distribution and marketing through providing appropriate instruction and experiences.

4. To improve the operational techniques in distribution and marketing.

5. To develop an understanding of the social and economic responsibilities and ethical conduct which accompany the right of the individual to engage in distribution and to maintain a competitive, free-enterprise economy.

Part V

Philosophy and Objectives for Homemaking Education

Homemaking education is that part of total education which enters upon relationships, responsibilities, attitudes, and activities carried on in the home. It is a tool subject for that vocation for which all other vocations exist--the making of a satisfying home. It draws upon the arts and sciences for its guiding prinicples, and is related to all other subjects in the school system, since each also makes a contribution to home and family life education. Homemaking should be considered as essential education for all, to be available at all educational levels from the home through doctoral levels, and in both organized and informal offerings.

Homemaking is the only educational area that is centered entirely in the family: its care, development and nurture; its use of resources, human and nonhuman; its balance of social, managerial and manipulative skills; and its interrelations and contributions to community, national, and international life.

Each individual is not only part of a nation and a world. He or she lives also in other social units--a family, a community. The needs of families cannot be separated from the needs of the greater society, nor from the behavior patterns of its family members.

Provision of offerings that help homemakers with their problems through adult education assures greater confidence in their abilities to make successful homes.

Homemaking is a many-faceted school program, all interrelated as are aspects of home and family life. Providing depth in learning to meet needs, current knowledge, and trends is a challenge worthy of the best qualified teachers. Curriculum should be flexible to meet changing needs in local communities and in society; i.e., earlier marriages, and an increase in college-bound students.

Homemaking education can affect family living patterns. Such changes can be reflected in national life and in better world cooperation.

As vocational education, homemaking education is an integral part of the school program and should contribute toward the achievement of several of the objectives proposed for public education in Michigan. Although the primary purpose of homemaking education is to prepare individuals for more satisfying home and family living, some attention should be given to wage-earning opportunities.

The basic objective of homemaking education should be to help the individual to live a useful and satisfying personal, family, and community life. The following are general objectives of homemaking education for all age groups:

1. Appreciate that the home and family are the core of the American way of life.
2. Live more democratically in the family and society.
3. Understand and live happily with their families and other people.
4. Recognize their personal and family problems and acquire the learning needed to solve them.
5. Develop skill in using human and material resources of the home.
6. Use the family income to the best advantage of each member of the family, and of the family as a unit.
7. Develop and use homemaking skills so that they will be recognized for their contribution to family living and not as ends in themselves.
8. Achieve a set of values to use as guides in personal and family living.
9. Understand, guide, and care for young children.
10. Develop understandings of the duties and responsibilities involved in family living.
11. Understand how changes have influenced life for both the individual and the family and provide them with some tools for meeting changes.
12. Enrich personal and family life through the arts and humanities.
13. Contribute and participate in activities for the improvement of the community.
14. Provide opportunities to explore careers in home economics.
15. Appreciate the values in wholesome family living for the individual, the family, and the community.
16. Understand the importance of education for homemaking and develop a desire to be a good homemaker.

Part VI

Philosophy and Objectives for Industrial Education

Any industrial education program must be based on a sound philosophy to furnish direction and incentive for it in a total learning program. Education should prepare youth for present-day living, and be of proper scope and depth to cope with the changing conditions of future living. To this end, then, explicit objectives of industrial education are essential if the contribution of this field to a total program of education is to reach its maximum.

Public education in a democratic society has responsibility for helping persons evaluate their abilities, interests, and potentialities, to work successfully in industrial and technical pursuits, and to assist those who should be encouraged to enter these essential occupations in acquiring and maintaining the needed specialized skills. It is essential that industrial education maintain significant and broad offerings to support a total program of education. The goal is the development of a contributing citizen for a democratic society--one who is well qualified to assume his place in a world where industry has such an important place.

In the modern world, industrial education means more than the mere transmission of skills and technical knowledge. It interprets industry and contributes to economic, social, and industrial

progress as it facilitates man's efforts in experimenting with better and more efficient productive methods in industrial pursuits. Industrial education is the successful transmission of man's increasing knowledge and ability to control and utilize the forces and materials of an industrial culture. This results in the improvement of tools and useful products to advance civilization. Society's greatest resource for industrial development is its skilled and technical manpower.

Industrial arts is that phase of industrial education which is offered for its general educational value. In our highly industrialized social order, it may serve as a means of exploring industrial knowledge, industrial methods, hobby interests, and the development of such attitudes as will enable youth and adults of all ages to adjust more adequately to responsibilities of a democratic society. The specific involvement of youth with tools, materials, and equipment gives them the opportunity to relate general education subjects to occupational exploration which offers a meaningful and practical response.

Trade and technical courses should provide instruction for entry into employment and for upgrading those persons in occupations concerned with designing, producing, maintaining, and servicing industrial products. These specialized areas in industrial education place emphasis on pride of and respect for workmanship, practical application of scientific and mathematical principles, essential technical information, developing skills in manipulative occupations, safety practices, good work habits, and a wholesome attitude toward keeping abreast of technological developments.

Among the objectives that are being advanced for total education, reference is made to developing abilities, attitudes, skills, and understandings that make a person an intelligent, occupationally-competent participant in a changing economic life. Since industrial pursuits make up a large portion of the total occupational complex, the following objectives tend to enhance these outcomes in desirable individuals seeking to build basic competencies in that field of education concerned with industry:

1. To assist students in determining their abilities, interests, and potentialities. By providing for general basic exploratory experiences in woodworking, metalworking, electricity and electronics, power mechanics, graphic arts, drafting, industrial crafts, and current industrial practices and methods.

2. To develop competencies in the industrial application of mathematical and scientific principles and in communication.

3. To develop understandings about industrial and related occupations of American industry for education and occupational guidance purposes.

4. To develop fundamental and essential occupational competencies for selected students entering industry:

    a. by providing basic instruction for those planning to enter an apprenticeship.

    b. by providing basic training for those entering the nonapprenticeable industrial pursuits.

    c. by providing related information for apprentices.

    d. by stimulating interest and developing talents in the technical occupations.

5. To develop basic understandings for those students in a college transfer program to become engineers, industrial education teachers, or qualifying for positions of leadership in industry through providing for the required technical courses in engineering shop, engineering graphics, automotive mechanics, electronics, and the like.

6. To develop added competencies in people who are now engaged in industrial occupations through industrial technical instruction.

7. To retrain adult workers whose skills are no longer adequate due to technological developments in industry, through industrial-technical instruction.

Part VII

Conclusions and Recommendations

Earlier in the report reference was made to the concerns of the Advisory Committee regarding the relationship between general education and vocational education and the preparation of a set of objectives for vocational education. These may bear repeating:

1. Since misunderstanding seems to attend the role of vocational education in the program of public education in Michigan, a statement of beliefs regarding the relationships between vocational and general education should be developed. This would enable educators and lay groups to have a base on which to communicate more effectively. It would also serve as a point of departure for determination of educational objectives.

2. It was generally agreed that any evaluative study must be rooted in educational objectives. It would seem appropriate to review the objectives of vocational education in terms of the changing socio-economic scene. The evaluation should be concerned with objectives that reflect "what should be done" rather than concern with "what is."

It is hoped that the previous statement of position satisfies this requirement.

Conclusions

Analysis of the statement points up the following conclusions:

1. That public education has a responsibility for conservation of human resources brought about by unemployment, underemployment, inadequate training programs and imperfections of the labor market resulting from discrimination against minority groups, disadvantaged younsters, inadequate use of womanpower and other deterrents.

2. Closely allied to the above, the mandate is evident in the statement that all individuals have the right to secure the advantage of vocational education whether they be employment bound before, or after completion of high school, or college bound. That public education must also establish the organizational arrangements to deal with the disadvantaged youngsters as well as adults. This implies in some respects a departure from traditional patterns attending the reimbursed program.

3. The inevitability of change and the inadequate means at our disposal for predicting long range needs for various types of workers should be reflected in vocational education programs that will enable individuals to expect change as a continuing factor in their occupational life and have sufficient flexibility in assisting them to adopt change.

4. The statement implies that vocational programs conducted under the aegis of the public schools represent only one of the organizational pathways contributing to the development of the labor force and that certain complementary and supplementary agencies exist and that concerted effort must take place if maximal impact is to be made in manpower development.

5. Although the issue of breath versus specialization has not been totally resolved, it is clear in the foregoing statement that a different emphasis obtains than in some of the earlier pronouncements and interpretations of the basic vocational education acts. It is apparent that the leadership in Michigan's program of vocational education subscribe to a wholesome blending of general and specialized education including vocational education and that an interrelationship should exist in which sharp lines of distinction between general and vocational education are considered artificial.

6. It is also explicit in the statement that individuals enrolled in vocational education programs should be provided with many alternatives as a result of their training. One senses readily that the once prevelant notion of preparing individuals for specific jobs has been broadened to consider training for occupational areas and clusters of occupations.

7. The statement provides the opportunity to discuss with more precision the objectives of vocational education in various fields. In the past, statements of objectives have been abstract and nebulous. Sufficient specificity exists in the stated objectives to communicate more effectively, design curricula more precisely and to evaluate results more intelligently. As the task force has indicated, if additional time had been available the objectives would have been translated into behavioral outcomes which would have the added advantage of more specificity.

8. Although the unitary concept of general and vocational education is evident, the statement is strangely silent about the needed unification within the respective fields of vocational education. It is no longer necessary to speculate about the fact that the occupational complex demands certain occupations requiring training that cuts across several fields. One gathers from the heavy emphasis on compartmentalization that this factor has not been taken into account and that little interrelationship exists among the various fields.

9. Greater emphasis is given to certain learning concepts dealing with the application of scientific and mathematical principles, critical thinking and effective communication. This may not necessarily imply the reduction of manipulative skills but rather a more judicious selection of content to be taught, improved methodology utilized in teaching the content, and, in some instances, additional time.

Recommendations

Statements of philosophy and objectives such as the one prepared by the task force may be either instrumental in bringing about change or may be relegated to gather dust without having the desired effect. The expenditure of time and effort on the part of those leaders who deliberated long and diligently to refine a position should not follow the latter course and, therefore, some recommendations for implementation are provided:

1. It is recommended that the Department of Public Instruction prepare a publication for dissemination to various groups and individuals who are in a position to act as change-agents. This should include particularly school administrators who play a key role in engineering change, school boards members, guidance counselors, and others internally connected with the school system. Legislative leaders, business and industrial leaders, and lay leaders should also be recipients of the publication.

2. It is recommended that the Department of Public Instruction through the instrumentality of the Michigan Curriculum Committee provide for discussions and interim study addressed to the need for more and better types of vocational education using the statement as a point of departure. It is further recommended that the Division of Vocational Education in the various conferences under its control suggest that certain sessions be given over to discussion of the statement.

3. It is recommended that state consultants, teacher educators and others who may engage in program evaluation in local communities may wish to utilize the statement in evaluative studies.

4. That the statement or a counterpart be submitted to the various professional journals for publication.

5. That vocational education teachers in local communities be encouraged to read and discuss the statement to determine the extent to which the objectives are reflected in their teaching.

6. That faculty in institutions of higher education who have the responsibility for preparing various school personnel receive review copies of the statement.

CHAPTER III

THE VOCATIONAL NEEDS OF MICHIGAN AND ITS LOCAL COMMUNITIES*

The United States is an affluent society when measured by such economic indexes as gross national product or per capita national income. However, a new industrial revolution, an inadequately expanding economy for the expanding population, and the convergence of a variety of social forces directly affecting our economy have resulted in one of our greatest potential crises--mass unemployment. One cannot overestimate the social significance of labor force trends which made obsolete both manual and white-collar skills and which increasingly demand greater educational requirements of all types of workers. Nor can one overestimate those social forces which have brought about a huge population bulge, the increasing proportion of women entering the labor market; and the millions of youths who, because of inadequate education or training, find themselves hopelessly ill-equipped to obtain any type of work.

The consequences of such trends need not be elaborated upon; the waste of manpower is apparent. The increased social waste of indigent millions, the social costs of deteriorated neighborhoods with their poverty, disease, and crime, and lack of social identity of the unemployed and hopeless is inestimable. Projections of contemporary trends into the future provide little cheer. Unless some of the basic problems of providing employment for the new youthful and older displaced workers, the relatively poorly educated, and the socially and psychologically underprivileged are met, the resultant social dislocation may increase enormously.

A world which rapidly makes obsolete many types of specialized skills, traditionally acquired through vocational education or apprenticeship--one in which the lower manual and office skills are rapidly losing their value in the labor market--forces a close examination and evaluation of current vocational education. In fact, the local communities are finding the burden of adequately preparing youth for occupational roles increasingly difficult. So many variables which directly affect the employment of workers lie beyond the local school district and the local economic scene. It has become apparent to those studying contemporary labor market trends and contemporary vocational education practices that new and broader approaches to the training of youth are needed.[1]

To take a place successfullly in the labor market today, one needs more education and training than ever before. The wave of the future is projecting us into a world in which low-level skills have little utility. Can the schools meet these problems? How shall they be met?

From the point of view of a single school district or even a broader region, forces making for economic and social change seem beyond control. But the macroscopic end-product, the nature of the economy, its regional distribution, the distribution and movements of populations, and the changing age composition of the population can be rationally analyzed and predicted. It is only on the basis of the knowledge of such forces that the adequate vocational preparation of youth can take place at the national, state, or local levels.

How does one go about meeting the challenges to vocational education? The first task is identifying the nature of the challenge and the direction of the forces which are creating burdens on vocational education. In essence, the problems facing vocational education stem from these major sources: changes in the industrial complex and the structure of the labor force, making for redistributions in types of training and skill demands; the mobility patterns characteristic of the United States in which populations tend to move from areas with limited economic opportunities to areas with greater economic opportunity; the changing age and sex composition of the entire labor force, but especially the increasing participation of women; and the forces of tradition which freeze educational practices

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*Written by Sigmund Nosow, Michigan State University who carried out the research while on loan to the Project from the Michigan State University School of Labor and Industrial Relations, which also provided funds toward the support of the curriculum evaluation section of the Project.

[1]See, for Example, U. S. Department of Health, Education, and Welfare, Office of Education, "Vocational Education in the Next Decade," Washington, D. C., 1961.

and curricula into given institutional molds, with control vested to the greatest extent in the local communities. Perhaps of equal importance is the challenge to the local school districts to keep in school and give adequate vocational training and guidance to that one-third of the students who comprise the annual dropouts.

It is apparent that the responsibilities for providing adequate training and job opportunities both for those capable and incapable of completing high school-level work transcend most local communities. The continuous upgrading of the educational quality of the labor force which has characterized American industry, at least during this century, has gained momentum. This makes it extremely difficult to place in the labor market the poorly educated millions seeking work each year.

The task we have set for ourselves is based on an effort to relate current vocational education in Michigan to the principal trends affecting the employment of the youth of the state.* What employment opportunities are going to be available in Michigan in the future? What proportion of the population is going to be seeking employment? What is the likelihood that youths are going to remain in their local communities seeking employment? To what extent do local vocational education programs meet current or future needs of the youths of these communities?

While many of the patterns for Michigan may be unique, the emergent needs in the state reflect broader tendencies in the United States. While many of the needs of local communities are a reflection of their own unique history and situation, they, too, reflect the broader patterns of the state and nation.

The number of excellent studies which have projected manpower needs for the next decade and beyond, both for the United States and for Michigan, present us with a body of data based upon past statistics and the seasoned judgments of experts concerning future trends.[2] All of these studies agree on a number of basic trends:

1. The proportion of the population in the labor force will increase.

2. The proportion of women in the labor force will increase.

3. The labor force is going to consist increasingly of younger workers, with a relative decline in the number of workers in all other age groups, especially the middle-age groups. Women, age 45 and over, will be the exception to this trend.

4. The absolute number of farmers, farm managers, and farm laborers will decline. The absolute number of laborers will remain the same. While there will be some increases in the number of craftsmen and other blue-collar skilled workers, their proportions in the labor force will decline.

5. The rapid rate of growth among the white-collar workers in the labor market will continue, with the greatest increase among the professional and technical groups.

6. Shifts in the percentage of employment by industry are going to show great relative declines in the commodity-producing industries such as agriculture, mining, and manufacturing, and large increases in the areas of trade, services and, to a lesser extent, governmental employment, and construction.

7. The labor market will place increasing demands upon workers for better education. It appears from current trends that even high school graduates without adequate vocational preparation will find it difficult to get jobs. Those with less than high school education (the one-third of the youths who drop out before graduation) are going to have even more difficulty in finding employment.

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*We recognize the vocational needs of adults, but the focus of the report is on youth.

[2]U. S. Department of Labor, "Manpower Challenge of the 1960's," Washington, D. C.: U. S. Government Printing Office, 1960; Michigan Employment Security Commission, "Manpower in Michigan," Detroit, Michigan" Michigan Employment Security Commission, 1962; U. S. Department of Labor, "Manpower Report of the President and A Report on Manpower Requirements, Resources, Utilization, and Training," Washington, D.C.: U. S. Government Printing Office, 1963; U. S. Department of Labor, Office of Manpower, Automation and Training, "Manpower and Training: Trends, Outlook, Programs," Washington D.C.: U. S. Government Printing Office, 1963; W. Haber, et. al., The Michigan Economy, Kalamazoo, Michigan: The W. E. Upjohn Institute for Employment Research, 1959; National Planning Association," National Economic Projection Series, 1962 edition," National Planning Association Washington, D.C., 1962; S. Cooper, "Special Labor Force Report No. 24, Interim Revised Projections of U. S. Labor Force, 1965-75," Washington, D. C.: U. S. Government Printing Office, 1962.

8. Population shifts will continue to reflect the changes in industrial concentration which have been occurring over the past decades. The fastest growing areas will continue to be the Far West and the Southwest. Patterns of migration from one region to another, and the movement of populations from the rural to industrial urban areas will continue to reflect the high mobility of Americans and the likelihood that youths shall migrate from the communities in which they have been reared and educated. Over the next decade, Michigan will continue to grow above the national average and also reflect similar patterns of rural-urban migration.

Growth of the Labor Force

Historically, the United States, more than any other country over the same period, has enjoyed consistently great growths in population and in the size of its labor force. This has been paralleled by a dynamic economy which has become second only to the United Kingdom in proportionate smallness of the population in agricultural activity, moving from a labor force in 1820 which was 71.8 per cent agricultural to one which in 1960 was only 7.9 per cent agricultural. During the same period, the population in the United States, which was 10,8 per cent urban in 1820 and 25.7 per cent urban in 1870, by 1960 was more than 63.0 per cent urban.*

While the trends over recent decades may not continue at the same rate, it is felt that by 1970 agricultural workers will constitute 5.3 per cent of the labor force, and by 1975, 4.5 per cent. By 1975, the urban population should approach 75 per cent of the total population under the new definition.[3]

Over the past century and a half, marked changes have also taken place for the labor force generally. It has grown from 21.9 per cent of the total population in 1820 to 40.4 per cent of the total population in 1960. From 1870 to the present, the participation rates, that is the percentage of persons who are labor force age entering the labor force,** have not changed radically. From the relatively stable rates between 1920 and 1940, there was a rise to 58.3 per cent by 1950. As may be observed in Table 1, the rates are expected to level off at about 57 per cent, at least for the near future.

Among other significant changes apparent in these participation rates are the consistently increasing rates of female participation in the labor force. This is perhaps the best criterion of what has been taking place in women's social roles in our society. The projections for the future indicate a continuation of these participation trends for women, although there is expected to be a decline in the participation rates of males.

There were 66.7 million employed persons in the civilian labor force in 1960 and 3.9 million unemployed, an unemployment rate of 5.6 per cent. If we accept as a goal for 1970 a full-employment economy, assuming 3 per cent or fewer unemployed, we would have to provide approximately 83 million jobs. Assuming that the 2.5 million now in the Armed Forces would remain at the same level, we would have to provide more than 13 million new jobs. This level can be reached only if the economy achieves a more dynamic growth rate and if the labor force achieves higher levels of education and training. If the economy were to achieve a full-employment level, many persons not now in the labor force might enter, making the potential job needs greater than the 13 million suggested above.

Growth patterns which have characterized the United States generally have also been reflected in Michigan. (See Table 2) During the present century, the percentage of the Michigan population in the labor force has been relatively constant. From 37.2 per cent of the population in the labor force in 1900, it rose to 37.6 per cent by 1960.

The declining importance of agriculture to Michigan's economy is also very apparent. From an experienced labor force with 43.8 per cent in agricultural activity in 1880, and 34.5 per cent in agricultural activity by 1900 (a more accurate figure than earlier census figures), by 1960 agricultural activity in Michigan only involved about 3 per cent of the experienced civilian labor force, and 3.4 per cent of the employed workers.

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*This was under the old definition used until 1950. Under the more liberal definition used since 1950, the rate was 69.9 per cent urban.

**Until the 1940 census this included children 10 years old and over. Starting in 1940, this included children 14 years old and over.

[3] D. J. Bogue, The Population of the United States, Glencoe, Illinois: The Free Press, p. 784.

Table 1

THE WORK FORCE IN THE UNITED STATES, 1870-1960, AND PROJECTIONS FOR 1965-1975

Year	Gainful[1] workers (thousands)	Labor Force[2] (thousands)	Percent of total population	Percent of workers female	Participation rate		
					Total	Male	Female
1870.....	12,925	12,557	31.5	14.8	51.5	86.2	15.5
1880.....	17,392	16,896	33.7	15.2	52.5	87.3	16.3
1890.....	23,318	22,653	36.0	17.2	54.2	87.3	19.2
1900.....	29,073	28,282	37.2	18.1	55.0	87.7	20.4
1910.....	37,371	...	...	...	...	...	...
1920.....	42,434	42,660	38.7	20.4	55.8	85.9	24.1
1930.....	48,830	50,080	39.5	22.0	54.6	83.4	25.1
1940.....	...	56,030	42.5	25.3	55.9	83.9	28.2
1950.....	...	64,599	42.7	28.9	58.3	84.4	33.1
1960.....	...	73,081	40.4	32.2	57.4	79.7	36.1
1965.....	...	78,936	40.6	33.5	57.1	77.9	37.3
1970.....	...	85,703	42.7	34.3	57.0	77.1	38.0
1975.....	...	93,031	(3)	34.5	57.0	76.9	38.2

[1] The reporting of gainful workers under 20 years of age prior to 1930 was highly unreliable. The report for 1910 generally shows wide discrepancy with that for 1900 and 1920 and questions of reliability have also been raised. For a critical discussion of labor force trends and statistics to 1940 see J. Durand, The Labor Force in the United States, 1890-1960, New York; Social Science Research Council, 1948, especially Appendix A, pp. 191-218.

[2] The data since 1940 are not strictly comparable with previous labor force data since the concept of "gainful worker" was replaced with a different definition of "labor force." Gainful workers did not include workers without previous experience. A number of other changes were made in the 1940 census, among these was the decision only to enumerate persons 14 years and over, rather than 10 years and over as previously.

[3] Not available.

Sources: For 1870-1950, D. J. Bogue, The Population of the United States, Glencoe, Ill., The Free Press, 1959, Table 16-1, p. 423. For 1960 and projections to 1975, S. Cooper, "Interim Revised Projections of the U.S. Labor Force, 1965-1975," Bureau of Labor Statistics Special Labor Force Report No. 24, Bureau of Labor Statistics, U.S. Government Printing Office, Washington, D.C., 1962, Tables 1 and 2, pp. 2-4.

Table 2

THE WORK FORCE IN MICHIGAN, 1900-1960,
AND PROJECTIONS TO 1970

Year	In labor force or gainful workers 14 years and over[1] (thousands)	Percent of total population	Percent of workers female	Participation rate		
				Total	Male	Female
1900.....	900	37.2	14.7	53.1	87.0	16.3
1910.....	1,109	39.5	16.4	54.6	87.2	19.1
1920.....	1,471	40.1	16.7	55.9	87.4	19.9
1930.....	1,926	39.8	18.7	54.6	84.6	21.5
1940.....	2,126	40.4	21.5	52.7	80.5	23.3
1950.....	2,541	39.9	25.3	53.8	80.2	27.5
1960.....	2,944	37.6	30.3	55.0	78.3	32.7
1970.....	3,750	39.1	32.0	56.7	77.1	37.0

[1] See Table 1.

Sources: For 1900-1940, U.S. Bureau of the Census, U.S. Census of Population: 1940, Characteristics of the Population, Michigan, 2nd Series. U.S. Government Printing Office, Washington, D.C., 1942. For 1950-1960, U.S. Bureau of the Census, U.S. Census of Population: 1960, General Social and Economic Characteristics, Michigan. Final Report PC (1) - 24C. U.S. Government Printing Office, Washington, D.C., 1962.
For the 1970 projections, population projections for Michigan and for those age groups in the labor force were taken from J.F. Thaden, Population of Michigan Counties, Projections to 1970, Institute for Community Development, Technical Bulletin B-24 Continuing Education Service Michigan State University, 1962. Assumptions were made that the participation trends for the 1960-1970 decade would follow those manifested over the 1940-1960 period used as a base. It was also assumed that basic demographic patterns such as growth for the state, marital status of population, proportions of youths in schools would not depart radically from those of the past decade. These figures are similar to those of Dr. Haber and of the M.E.S.C.; the basic differences arise from different projections of the size of the population, of which Thaden's is 9.6 million.

	Population for 1970	Labor Force	%
Haber*	9.9 (medium pro.)	3.8	38.5
M.E.S.C.**	9.4	3.7	39.4

*W. Haber et al, The Michigan Economy, Kalamazoo, Michigan, the W. E. Upjohn Institute for Employment Research, 1959.

**Michigan State Employment Security Commission, Manpower in Michigan, Michigan Employment Security Commission, 1962.

The degree of urbanization for Michigan also reflects the national patterns. In 1820, Michigan territory was considered to be 100.00 per cent rural. By 1870, Michigan was 20.1 per cent urban, becoming more urbanized than the United States as a whole by 1910. In 1960, Michigan was 65.0 per cent urban under the old definition, and 73.3 per cent under the new, more urbanized than the national average, and the 16th most urbanized state.

If the trends for the past decade are continued, the urban population of Michigan should be more than 76 per cent of the state's population by 1970. The significance of the increasing patterns of urbanization to the labor force and especially to the occupational structure will be discussed at a later point. However, in passing, we might note that urbanization has always been directly associated with increasing levels of trade and service employment and decreasing levels of agricultural employment.[4]

The participation rates for the Michigan labor force are not dissimilar from those of the nation as a whole. This is especially true if one looks at the entire labor force. If we examine male and female participation rates separately, we find that the male rates have been somewhat higher than the national averages until 1940, and then dipped below. The female participation rates consistently have been below the national averages. However, if the trends of the past two decades continue, by 1970 both male and female rates should approach the national rate, since the rates of participation to a great extent reflect the industrial structure and employment opportunities.

Michigan has had a very heavy concentration of manufacturing industry throughout the 20th century, especially in durable goods, with the largest concentration in automobile manufacture. The proportional declines in manufacturing and the increases in non-commodity employment which open up new employment opportunities for white-collar workers, help to explain some of the changing patterns in Michigan and the projections for the future.

Comparing future growth with employment for 1960, there will be a need for approximately 900,000 new jobs over the decade.* Of this increase more than 45 per cent will constitute white-collar jobs.**

Age and Sex Characteristics of the Labor Force

The outlook for future employment rests largely on the age and sex distributions for the population, since the size of the labor force is a function of participation rates of various segments of the population. Projections of the size and characteristics of the labor force from this decade to 1975 show the continuance of a very significant trend, the increasing participation of women in the labor market. Perhaps the most striking trend of the current decade is the increasing number of young workers entering the labor force.[5]

In 1900, one-fifth of all women 14 years and older were in the labor force. By 1960, the figure had risen to 36.1 per cent. The projected figures for 1975 anticipate a steady increase in the proportion of women in the labor force to 38.2 per cent of the female population 14 years old and older. (See Table 3).

Starting in the decade of the sixties, increasing millions of new young workers in the labor force have made the problems of maintaining a full-employment economy even more difficult. The expectation that the total population between 14 and 24 years of age will increase by more than 46.5 per cent between 1960 and 1970, and by more than 59.8 per cent between 1960 and 1975, shows why communities are facing increasing burdens of preparing youths for employment and in providing jobs for them.

The increases in the number seeking work from these age groups will approximate 6 million by 1970 and 8 million by 1975. Whereas the 14-24-year-old group comprised but 18.7 per cent of the

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[4]Cf. P. A. Sorokin, C. C. Zimmerman, and C. J. Galpin, A Systematic Source Book in Rural Sociology, Vol. 1, Minneapolis: The University of Minnesota Press, 1930, pp. 186, 239-241; N. P. Gist and L. A. Halbert, Urban Society, New York: Thomas Y. Crowell Co., 1938, pp. 3-4.

*Assuming full-employment (3% of labor force unemployed).

**See pp. 83-84.

[5]S. Cooper, op. cit., p. 10.

Table 3

Labor Force Participation Rates by Age and Sex for the United States and Michigan
1940, 1950, 1960, and Projections for 1965, 1970, and 1975

Age and Sex	Labor Force Participation Rates, (per cent)								
	United States						Michigan		
	1940 [1]	1950 [1]	1960 [2]	1965 [2]	1970 [2]	1975 [2]	1940 [3]	1950 [3]	1960 [3]
Both Sexes									
14 years and over	52.2	53.4	57.4	57.1	57.0	57.0	52.7	53.7	55.0
14 to 24 years	44.1	45.7	50.2	49.4	49.7	50.0	44.5	46.1	44.4
25 to 34 years	63.7	61.0	65.8	66.2	66.7	67.1	62.4	60.2	62.9
35 to 44 years	60.8	64.2	69.3	70.6	71.5	72.0	60.8	63.1	67.3
45 to 64 years	55.1	58.2	66.6	68.1	68.9	69.2	55.9	58.4	64.8
65 years and over ...	23.3	23.6	20.3	18.3	17.4	16.8	23.6	29.9	17.2
Male									
14 years and over	79.0	78.9	79.7	77.9	77.1	76.9	80.5	80.2	78.3
14 to 24 years	57.8	59.1	63.5	61.9	62.2	62.4	57.6	59.0	56.3
25 to 34 years	95.2	92.1	96.4	96.2	96.2	96.2	95.9	93.0	95.4
35 to 44 years	94.7	94.5	96.4	96.7	96.7	96.7	95.7	94.7	96.2
45 to 64 years	88.7	88.2	90.4	90.7	90.6	90.3	90.2	89.3	90.7
65 years and over ...	41.5	41.5	32.2	28.2	26.4	25.4	42.2	42.0	26.2
Female									
14 years and over	25.4	29.0	36.1	37.3	38.0	38.2	23.3	27.5	32.7
14 to 24 years	30.5	32.5	36.7	36.5	36.8	37.2	31.3	33.6	35.5
25 to 34 years	32.9	31.8	35.8	36.8	37.5	38.0	28.7	29.3	33.2
35 to 44 years	26.9	35.0	43.1	45.5	47.0	47.9	22.8	31.8	40.5
45 to 64 years	19.8	28.8	43.8	46.7	48.8	49.7	16.5	25.4	40.1
65 years and over ...	5.9	7.8	10.5	10.5	10.5	10.5	5.1	7.0	9.8

Sources: 1

U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, U.S. Summary. Final Report PC (1) - 1C. U.S. Government Printing Office, Washington, D.C., 1962.

2

S. Cooper, "Interim Revised Projections of U.S. Labor Force, 1965-75, "Bureau of Labor Statistics Special Labor Force Report No. 24, Bureau of Labor Statistics, 1962. The discrepancy between these data and those from the 1960 Census arises from allowances for population change between April 1, 1960 and July 1, 1960 and the inclusion of Armed Forces abroad, as well as from different sampling procedures between the census and the current population survey.

3

U.S. Bureau of the Census, U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC (1) - 24C. U.S. Government Printing Office, Washington, D.C., 1962.

labor force in 1960, it will exceed 23 per cent in 1970-75. (See Table 4). The proportions of the total labor force of all age groups over 25, male and female, with the exception of women 44 years and older, will decline. However, there will be sizeable declines in actual numbers only for men aged 35-44 and 65 and over.

The actual rates of participation among the various age groups, especially for those in the 14-24 category, are not expected to change or the problems of employment would be compounded. (See Table 4). Actually, the greatest changes in participation rates are to be among women 25 years old and over. More women are either returning to the labor force or entering it for the first time after they have had their children. The emergent industrial structure which emphasizes trade and services is providing the types of opportunities ideally suited to this situation.

Although similar to the nation, Michigan does differ in some particular details regarding present and projected age and sex distributions of its labor force. The change in the sex distribution of the labor force is going to be more dramatic for Michigan than for the nation as a whole. This is accounted for by the lower participation rates for women in Michigan which have been discussed above. If current trends continue, total participation rates both male and female should be approximately 56.2 per cent by 1970. Participation rates for women, if they follow the trends over the past two decades, should be 38.6* per cent and the women as a proportion of the labor force should be greater than 34 per cent.

Between 1960 and 1970 there will be an increase in the youthful population in Michigan of more than half a million between the ages 14 and 24 or an increase of more than 55 per cent. If we assume that their participation in the labor force is to be at about the same rate as currently, there will be an increase in the labor force of at least 275,000 youthful workers. If we were to project increasing rates of participation based on the trends between 1940 and 1960, this figure would approximate the 300,000 suggested by the M.E.S.C.**

Whether one uses conservative or liberal estimates, the seriousness of the rise in youthful job aspirants and the critical problems posed for local communities are evident. The pressures on educational institutions to provide the kinds of training which may allow this tremendous bulge of young workers to be absorbed into the labor market cannot be denied.

More favorable to Michigan's employment picture will be the fact that the marked increase in youthful workers aged 14-24 will be offset almost completely during the coming decade by the decline in workers, male and female, in the 35-44 age group. (See Table 5). While there will be some decline in the 25-34 age group, there will be practically no change for those over 45 years old.

Trends in Occupational and Industrial Distribution

We have indicated some of the basic labor force trends and some of the expectations regarding the nature and size of the population which is going to comprise the labor force over the next decade. What types of training should persons receive if they are to be successful in their pursuit of employment? The only way one can clearly define the adequacy of vocational education or vocational preparation is to ask whether such training prepares workers to take the types of jobs which are available. This means that one must anticipate the occupational and industrial trends which make for particular types of employment. Knowledge about the labor market offers little help if training facilities, techniques and administration are inadequate. The educational experience which should be offered to meet these emergent needs is beyond the scope of this report.

To those studying the shifts in occupational distribution, the outstanding trend over the decade of the 1950's was "the much faster growth of white-collar (professional, managerial, clerical, and sales) than manual (craftsmen, operatives, and laborers) occupations."[6] This was a continuation of a long-term trend, from the turn of the century, in the employment of white-collar workers.

*Probably the 38.0 per cent shown in Table 2 is more likely.

** The Michigan Employment Security Commission projects an increase in this age group of 60.0 per cent or almost 300,000, although the projection of this age group presents them as constituting 21.6 per cent of the labor force. Discrepancies among the various statistics presented here and elsewhere in the report arise through a number of sources. Much of the current labor force data comes from the monthly sample survey by the Bureau of Labor Statistics and is presented in its "Monthly Report on the Labor Force." Population statistics are also based on sub-samples gathered during the intercensal periods found in Current Population Reports. Census data are based on labor force activity in a specific week during the census year. Much of the data gathered by the Bureau of Labor Statistics is reported in terms of annual averages, which run higher than the census reports of the labor market behavior for the same years.

[6] M. Rutzick and S. Swerdloff, "The Occupational Structure of U. S. Employment, 1940-60," Monthly Labor Review, November 1962, p. 1209.

Table 4

Distribution of the Total Labor Force, by Age and Sex, Annual Averages, Actual 1950, 1960 and Projected 1970 and 1975

Age and Sex	Actual		Projected	
	1950	1960	1970	1975
Both Sexes				
14 years and over	100.0	100.0	100.0	100.0
14 to 24 years	20.6	18.7	23.2	23.4
25 to 34 years	23.4	20.7	19.5	22.4
35 to 44 years	21.8	23.0	19.3	17.4
45 to 64 years	29.5	33.0	34.0	32.8
65 years and over ..	4.7	4.6	4.1	4.0
Male				
14 years and over	71.2	67.8	65.7	65.5
14 to 24 years	13.4	11.9	14.7	14.8
25 to 34 years	17.1	15.0	14.0	16.0
35 to 44 years	15.4	15.7	12.8	11.6
45 to 64 years	21.5	21.9	21.5	20.5
65 years and over ..	3.8	3.3	2.7	2.6
Female				
14 years and over	28.8	32.2	34.3	34.5
14 to 24 years	7.2	6.8	8.5	8.6
25 to 34 years	6.3	5.7	5.5	6.3
35 to 44 years	6.4	7.3	6.4	5.9
45 to 64 years	8.0	11.1	12.5	12.3
65 years and over ..	.9	1.3	1.4	1.4

Source: S. Cooper, "Interim Revised Projections of U.S. Labor Force, 1965-75," Bureau of Labor Statistics Special Labor Force Report No. 24, Bureau of Labor Statistics, U.S. Government Printing Office, Washington, D.C., 1962.

Table 5

Distribution of the Labor Force in Michigan by Sex and Age for 1940, 1950, 1960 and Projections for 1970

Sex and Age	1940[1]	1950[1]	1960[1]	1970[2]
Both Sexes				
14 years and over	100.0	100.0	100.0	100.0
14 to 24 years	21.6	18.6	17.1	23.8
25 to 34 years	24.9	24.8	21.7	19.9
35 to 44 years	21.9	22.3	24.3	19.8
45 to 64 years	28.0	29.9	33.3	32.9
65 years and over ..	3.6	4.4	3.6	3.6
Male				
14 years and over.....	78.5	74.3	69.7	69.1
14 to 24 years	14.0	11.7	10.5	14.6
25 to 34 years	19.2	18.6	16.1	14.8
35 to 44 years	17.9	16.7	17.0	13.9
45 to 64 years	24.1	23.6	23.4	23.1
65 years and over ..	3.3	3.7	2.7	2.7
Female				
14 years and over	21.5	25.7	30.3	30.9
14 to 24 years	7.6	6.9	6.6	9.2
25 to 34 years	5.7	6.2	5.6	5.1
35 to 44 years	3.9	5.6	7.2	5.9
45 to 64 years	3.8	6.3	9.9	9.8
65 years and over ..	.7	.7	1.0	.9

Source: [1]U.S. Bureau of the Census, U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC (1)-24C. U.S. Government Printing Office, Washington D.C., 1962.

[2]J.F. Thaden, Population of Michigan Counties, Projections to 1970, Institute for Community Development, Technical Bulletin B-24, Continuing Education Service, Michigan State University, 1962. The sex ratios for 1960 were used to derive the separate male and female projections for 1970.

As the data on employment indicate, in 1900 there were half as many white-collar workers as blue. (See Table 6). By 1956, the number of white-collar workers has surpassed the number of blue and this gap continues to increase. During this long-term period the greatest increase has been in clerical workers, mainly in stenographic, typing, and secretarial work, an elevenfold increase. Professional workers, second only to the clerical workers in rate of growth, increased more in the newer fields than in the traditional ones, and this trend also is continuing.[7]

Table 6

Occupational Composition of the Non-Farm Labor Force,[1] 1900 and 1950

Occupation Group	Per cent distribution 1900	Per cent distribution 1950	Per cent change in labor force 1900-1950
All occupations	100	100	187
White-collar workers	28	42	322
Professional, technical, and kindred workers	7	10	312
Managers, officials, and proprietors	9	10	204
Clerical and kindred workers	5	14	725
Sales workers	7	8	216
Blue-collar workers	57	47	133
Craftsmen, foremen and kindred workers	17	16	173
Operatives and kindred workers	21	23	233
Laborers	20	8	7
Service workers	15	12	135
Private household workers	9	3	-2
Service workers, excluding private household	6	9	343

[1]The data for 1900 included all persons 10 years of age and over reporting a non-farm occupation in the census; those for 1950, all persons 14 years of age and over who were employed in a non-farm occupation during the week preceding the census and those unemployed whose last occupation was non-farm, i.e., the non-farm labor force.

Source: C. A. Barry. "White-Collar Employment: I-Trends and Structure," Monthly Labor Review, February 1961, Table 1, p. 12.

During the past decade, white-collar workers increased by nearly 28 per cent in contrast to the 6 per cent increase in manual workers. (See Table 7). In 1950, manual workers constituted 40.3 per cent of the work force in the United States, while white-collar workers constituted but 37.4 per cent. By 1960 they comprised 43.3 per cent of the employed civilian labor force, while manual workers constituted but 38.6 per cent. The long-term decline in agricultural workers continued during this decade, so that by 1960 the number of farm workers had declined to 6.4 per cent of the work force.

The fastest growing major occupational group during the 1950's was the professional, technical, and kindred workers, whose employment increased four times as fast as total employment and three times as fast as total non-agricultural employment.[8] The largest single percentage increase in this group

[7]Ibid., p. 1210; also C. A. Barry, "White-Collar Employment: I-Trends and Structure," Monthly Labor Review, February 1961, pp. 12 ff., also, U. S. Department of Labor, "Manpower Report of the President..." op. cit., p. 26.

[8]Rutzick and Swerdloff, loc. cit.

Table 7

Distribution of Employed Civilian Workers, by Occupational Groups and Selected Occupations, United States,[1] 1940, 1950, and 1960

Occupation groups and selected occupations	1960		1950		1940		Percent increase	
	Number	Percent	Number	Percent	Number	Percent	1950–60	1940–60
All employed persons	64,639,167		58,426,273		45,970,315		25.2	14.5
Persons with occupations reported	61,455,572	100.0	55,692,340	100.0	44,551,964	100.0	24.7	10.3
White-collar workers	26,257,534	42.7	20,819,314	37.4	14,676,255	32.9	41.9	27.7
Professional, technical, and kindred workers	7,222,410	11.8	4,921,272	8.8	3,579,585	8.0	37.5	47.0
Engineers, technical[2]	853,738	1.4	513,980	.9	275,544	.6	88.6	64.3
Chemical	41,626	.1	22,543	.1	(3)	(3)	(3)	28.1
Civil	155,173	.3	125,125	.2	(3)	(3)	(3)	24.0
Electrical	183,867	.3	105,867	.2	(3)	(3)	(3)	73.7
Industrial	97,458	.2	40,273	.1	(3)	(3)	(3)	142.0
Mechanical	158,188	.3	112,440	.2	(3)	(3)	(3)	40.7
Sales	56,836	.1	24,734	(3)	(3)	(3)	(3)	129.8
Natural scientists	149,330	.2	116,918	.2	(3)	(3)	(3)	27.7
Biological scientists	13,987	(3)	9,215	(3)	(3)	(3)	(3)	51.2
Chemists	83,420	.1	74,637	.1	(3)	(3)	(3)	11.8
Mathematicians	7,527	(3)	1,691	(3)	(3)	(3)	(3)	345.1
Physicists	13,941	(3)	7,422	(3)	(3)	(3)	(3)	87.8
Medical and other health workers	1,305,901	2.1	1,007,515	1.8	(3)	(3)	(3)	29.6
Dentists	83,003	.1	75,355	.1	(3)	(3)	(3)	10.2
Dietitians and nutritionists	26,119	(3)	22,474	(3)	(3)	(3)	(3)	16.2
Nurses, student professional and professional	639,719	1.0	476,647	.9	(3)	(3)	(3)	34.2
Physicians and surgeons	228,926	.4	192,520	.3	(3)	(3)	(3)	18.9
Technicians, medical and dental	138,162	.2	76,662	.1	(3)	(3)	(3)	80.2
Teachers, elementary and secondary schools	1,521,590	2.5	1,042,809	1.8	(3)	(3)	(3)	45.9
Other professional, technical, and kindred workers	3,401,851	5.5	2,234,350	4.0	(3)	(3)	(3)	52.3
Accountants and auditors	471,302	.8	378,055	.7	(3)	(3)	(3)	24.7
Lawyers and judges	212,408	.3	181,646	.3	(3)	(3)	(3)	16.9
Technicians, electrical and electronic	91,463	.1	11,738	(3)	(3)	(3)	(3)	679.7
Technicians, other engineering and physical science	183,609	.3	90,995	.2	(3)	(3)	(3)	101.8
Managers, officials, and proprietors, except farm	5,409,543	8.8	5,036,808	9.0	3,633,656	8.1	38.6	7.4
Salaried	3,387,918	5.5	2,508,984	4.5	(3)	(3)	(3)	35.0
Self-employed	2,021,625	3.3	2,527,824	4.5	(3)	(3)	(3)	−20.0
Clerical and kindred workers	9,306,806	15.1	6,964,440	12.5	4,382,200	9.8	58.7	33.8
Secretaries, stenographers, and typists[4]	2,178,641	3.5	1,507,649	2.7	990,157	2.2	52.3	44.5
Other clerical workers	7,128,255	11.6	5,446,791	9.8	3,392,143	7.6	60.6	30.9
Cashiers	468,960	.8	231,382	.4	(3)	(3)	(3)	102.7
Office-machine operators	307,828	.5	142,350	.3	(3)	(3)	(3)	116.2
Sales workers	4,628,985	7.5	3,906,794	7.0	3,680,714	8.9	28.8	18.7
Retail trade	2,694,745	4.4	2,449,780	4.4	(3)	(3)	(3)	10.0
Other than retail trade	1,944,240	3.2	1,457,034	2.6	(3)	(3)	(3)	33.4
Insurance agents, brokers, and underwriters	364,537	.6	272,463	.5	(3)	(3)	(3)	33.7
Real estate agents and brokers	193,164	.3	141,003	.3	(3)	(3)	(3)	37.0
Salesmen and sales clerks, manufacturing	464,770	.8	338,084	.6	(3)	(3)	(3)	41.7
Manual workers	23,798,463	38.6	22,437,999	40.3	16,364,304	36.7	36.9	5.9
Craftsmen, foremen, and kindred workers	8,741,202	14.2	7,820,634	14.0	5,177,394	11.6	51.2	11.8
Foremen (not elsewhere classified)[5]	1,036,838	1.8	777,368	1.4	465,714	1.1	81.2	41.1
Construction craftsmen[5]	2,464,223	3.9	2,364,996	4.2	(3)	(3)	(3)	2.1
Bricklayers, stonemasons, and tile setters	105,909	.3	105,981	.3	(3)	(3)	(3)	22.6
Carpenters	818,836	1.3	918,723	1.6	(3)	(3)	(3)	−31.9
Electricians	327,567	.5	311,251	.6	(3)	(3)	(3)	8.3
Mechanics and repairmen[5]	2,197,108	3.6	1,736,812	3.1	951,125	1.9	105.6	26.6
Air-conditioning, heating, and refrigeration equipment	61,867	.1	42,529	.1	(3)	(3)	(3)	42.1
Automobiles	692,133	1.1	664,288	1.2	(3)	(3)	(3)	4.2
Office machines	28,262	(3)	31,023	.1	(3)	(3)	(3)	−8.7
Metal craftsmen, except mechanics[5]	1,088,536	1.8	1,096,693	2.0	822,962	2.1	27.4	−.4
Boilermakers	22,794	(3)	35,948	.1	(3)	(3)	(3)	−36.4
Machinists	496,668	.8	514,696	.9	(3)	(3)	(3)	−3.1
Molders	42,939	.1	63,676	.1	(3)	(3)	(3)	−32.4
Toolmakers, and diemakers and setters	102,365	.3	102,658	.3	(3)	(3)	(3)	32.4
Other craftsmen	1,943,263	3.2	1,883,967	3.4	(3)	(3)	(3)	3.1
Locomotive engineers	56,630	.1	73,994	.1	(3)	(3)	(3)	−22.4
Locomotive firemen	37,057	.1	54,263	.1	(3)	(3)	(3)	−31.7
Operatives and kindred workers	11,897,696	19.4	11,180,315	20.1	8,076,922	18.1	32.4	6.4
Drivers and deliverymen	2,279,576	3.7	1,906,616	3.4	1,495,174	3.4	27.5	19.6
Other operatives, etc.	9,618,060	15.7	9,273,699	16.7	6,584,748	14.8	40.8	3.7
Laborers, except farm and mine	3,107,525	5.1	3,436,110	6.2	3,142,888	7.0	9.3	−9.6
Service workers, including private household	7,170,784	11.7	5,708,178	10.2	5,291,594	11.9	7.9	25.6
Service workers, except private household	5,444,958	8.9	4,297,018	7.7	3,200,341	7.2	34.3	26.7
Protective service workers[5]	662,133	1.1	564,414	1.0	499,721	1.0	25.5	17.3
Waiters, bartenders, cooks, and counter workers	1,717,083	2.8	1,328,018	2.4	927,842	2.1	43.1	29.3
Other service workers	3,065,742	5.0	2,404,586	4.3	1,822,778	4.1	31.9	27.5
Private household workers	1,725,826	2.8	1,411,160	2.5	2,091,253	4.7	−32.5	22.3
Agricultural workers	3,950,491	6.4	6,727,789	12.1	8,289,911	18.5	−18.8	−41.3
Farmers and farm managers	2,505,684	4.1	4,310,979	7.7	5,147,789	11.5	−16.3	−41.9
Farm laborers and farm foremen	1,444,807	2.4	2,416,810	4.3	3,142,122	7.0	−23.1	−40.2
Occupations not reported	3,183,675		742,933		418,351		328.5	661.0

[1] 1940 and 1950 adjusted to include Alaska and Hawaii.
[2] Not available.
[3] Less than 0.05 percent.
[4] Female only; the comparatively few men recorded in this group are included in the total for the major occupational group.
[5] Male only; the few women recorded in this group are included in the total for the major occupational group.

NOTE: Because of rounding, sums of individual items may not equal totals. Most totals include occupation not shown separately.

SOURCE: *United States Census of Population, 1960, United States Summary, General Social and Economic Characteristics, PC-1 Series*, table 89, and State reports on *Detailed Characteristics, PD-1 Series* for 50 States and the District of Columbia, table 120.

Source: M. Rutzick and S. Swerdloff, "The Occupational Structure of U.S. Employment, 1940-60," Monthly Labor Review, November 1962, p. 1211.

took place for technicians in the electrical and electronic fields. Teachers in elementary and secondary schools, who comprise the largest single professional group, also showed a very large increase during the decade.

Although clerical and sales employment has continued to increase at somewhat lower rates than in previous decades, this group still had an increase about three times greater than the increase for total employment. The largest increase for this group continues to be among secretaries, stenographers, and typists. Very large increases also took place in the number of cashiers and operators of business machines.

Sales workers increased by about 19 per cent. However much of the recent growth in the total number of sales workers is associated with increasing utilization of part-time workers in retail stores,[9] although the increases should diminish with the introduction of self-service devices.[10] It is among the non-retail sales workers such as wholesale trade, insurance, and real estate salesmen that the rate of growth has been greatest.

The growth in numbers of blue-collar workers continues but at a rapidly declining rate. Employment of craftsmen rose, but at 12 per cent below the average increase for total employment. A large proportion of the increase for this group came from the increases in craftsmen, foremen, and kindred workers. Within this group the largest increases were in the number of foremen, mechanics, and repairmen. While there was some increase in craftsmen in construction, metal craftsmen and other types of craftsmen showed marked declines. There was almost a 10 per cent decline in the number of non-farm laborers, so that by 1960 they comprised but 5.1 per cent of the total employed.

Service workers continue to show marked rates of increase, although somewhat lower than for the previous decade. The marked decline in private household workers during the decade of the 1940's was replaced in the 1950's by a marked increase. By 1960, service workers comprised almost 12 per cent of the entire employed labor force.

The increasing importance of white-collar work and the decline in blue-collar occupations rest essentially on the changing nature of our technology, and on the changing composition of American industry. Technological changes have reduced the number of operatives and laborers in manufacturing, mining, and other industries. Employment has risen rapidly in all of the service industries, public and private, providing increasing opportunities for white-collar workers. On the other hand, the growth rate of goods-producing industries has slowed down, providing fewer opportunities for blue-collar workers.[11] (See Table 8).

Production changes associated with greater uses of automated equipment are perhaps most familiar. However, the electronic data processing revolution in traditional white-collar office occupations is equally significant to employment trends. And to these one must add the changes which are being introduced into traditional retail trade areas, which provide self-service instead of employment for service workers.[12]

Even more startling is the increasing importance of white-collar workers in the manufacturing and service sectors of the economy. In Table 9 we see some of the changes which have taken place between 1952 and 1960 in the relative employment of white-collar and blue-collar workers in the various industries. In construction, manufacture of durable goods, and the service industries there are prominent increases in the number of white-collar workers over this eight-year period, while the employment of blue-collar workers in the same areas decreased (with the exception of the service industries), or increased at a lower rate.[13]

Recent Congressional hearings have described white-collar employment trends in selected industries emphasizing the radical changes taking place in occupational distribution.[14] For example, in the

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[9] Ibid., p. 1212.

[10] Loc. cit.

[11] U. S. Department of Labor, "Manpower Report of the President..." loc. cit.

[12] Vending machines are the most primitive form of self-service retailing. Department stores and supermarkets completely eliminating clerical help are now being contemplated seriously.

[13] Barry, op. cit., pp. 15-16.

[14] Committee on the Judiciary. Subcommittee No. 1. House of Representatives, Special Series No. 3, "Study of Population and Immigration Problems. Manpower in the United States with Projection to 1970," presented by Dr. S. L. Wolfbein, Washington, D. C.: U. S. Government Printing Office, 1962.

Table 8

CIVILIAN EMPLOYMENT BY MAJOR INDUSTRY GROUP AND AVERAGE ANNUAL RATES OF CHANGE
1947, 1957, 1976, and 2000

Major Industry Group	Employment (millions)				Average Annual Rates of Change			
	1947	1957	1976	2000	1947-57	1957-76	1957-2000	1976-2000
Agriculture.....	8.34	6.24	4.56	5.35	-2.9	-1.7	-0.4	1.3
Mining.....	0.87	0.69	0.68	0.60	-2.3	-0.1	-0.3	-0.5
Manufacturing.....	16.12	17.31	21.15	25.00	0.7	1.1	0.9	0.7
Utilities.....	0.62	0.69	0.99	1.20	1.1	1.9	1.3	0.8
Construction.....	2.85	3.62	6.20	7.40	2.4	2.9	1.7	0.7
Transportation.....	3.19	2.88	2.84	2.94	-1.0	-0.1	0.0	0.1
Communication.....	0.76	0.89	1.17	1.40	1.6	1.5	1.1	0.8
Trade.....	10.96	12.72	20.25	35.00	1.5	2.5	2.4	2.3
Finance and real estate..	1.86	2.55	3.48	5.00	3.2	1.7	1.6	1.5
Services.....	7.85	10.99	19.68	35.00	3.4	3.1	2.6	2.4
Government.....	4.41	6.38	9.10	16.21	3.8	1.9	2.2	2.4
Statistical discrepancy..	-0.02	0.05	---	---	---	---	---	---
Total.....	57.81	65.01	90.10	135.10	1.2	1.6	1.7	1.7

Source: Projection to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, Outdoor Recreation Resources Review Commission, Study Report 23, National Planning Association, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C., 1962, Tables E-6 and E-6a.

Table 9

INDUSTRIAL DISTRIBUTION OF NONAGRICULTURAL EMPLOYMENT, BY MAJOR OCCUPATION GROUP, 1952 AND 1960

(Percent)

Occupation group	All industries	Construction	Manufacturing		Transportation and public utilities	Wholesale and retail trade	Service and miscellaneous[1]	All other[2]
			Durable goods	Nondurable goods				
White-collar workers:								
1952	100.0	2.9	9.3	8.4	7.5	33.2	30.2	8.5
1960	100.0	3.3	10.3	8.1	6.5	28.9	34.9	8.1
Blue-collar workers:								
1952	100.0	13.9	27.6	21.7	11.6	11.0	7.8	6.4
1960	100.0	13.9	27.1	21.6	11.3	12.7	9.3	4.2
Service workers, excluding private household:								
1952	100.0	.6	3.9	3.3	3.1	31.5	46.7	10.9
1960	100.0	.4	2.8	2.6	2.1	28.8	53.3	10.1
WHITE-COLLAR OCCUPATIONS								
Professional, technical, and kindred workers:								
1952	100.0	3.1	10.7	6.9	3.0	4.0	63.8	8.5
1960	100.0	2.7	13.0	6.6	4.0	3.2	63.1	7.3
Managers, officials, and proprietors:								
1952	100.0	5.6	6.6	7.4	6.0	50.7	18.6	5.1
1960	100.0	7.3	7.7	7.2	5.5	45.4	22.0	5.0
Clerical and kindred workers:								
1952	100.0	1.9	13.5	10.2	14.7	19.6	25.1	15.0
1960	100.0	2.1	12.9	9.6	11.8	17.7	31.5	14.5
Sales workers:								
1952	100.0	.3	2.7	8.0	.5	74.0	14.3	.2
1960	100.0	.3	4.1	8.6	.8	70.7	15.4	.1

[1]Includes finance, insurance, and real estate.
[2]Public administration, mining, forestry, and fisheries.

Note: Because of rounding, sums of individual items may not equal totals.

Source: C.A. Barry, "White-Collar Employment: I-Trends and Structure," Monthly Labor Review, February 1961, Table 3, p. 14.

automobile industry in 1951, white-collar workers constituted 16.7 per cent of all employees; in 1960 they constituted 21.8 per cent.[15] In agricultural implement manufacture, white-collar workers constituted 22.0 per cent of the employees in 1951 and 31.6 per cent in 1960. In the aerospace field, white-collar workers constituted 26.3 per cent of the labor force in 1951 and 41.7 per cent in 1960. In certain electronic plants, white-collar workers now outnumber blue-collar workers by two to one.

Projections for the coming decade and beyond suggest continuations of current trends. (See Table 10). Professional, technical, and kindred workers will show the greatest increases, with service workers not far behind. Somewhat smaller increases will continue for the other white-collar groups, with clerical workers outpacing both sales workers, and managers, officials, and proprietors, as a group.

Among the blue-collar workers, only the craftsmen and foremen will maintain their relative percentages in the labor force. All other groups will show proportionate declines. Farm workers and non-farm labor will continue their absolute and relative declines.

It is apparent that occupations with high educational requirements are going to offer the greatest employment opportunities.[16] This is clear from the continuing demand for professional and semi-professional workers. The demand for skilled technicians in the electronics, electrical equipment, chemistry, aircraft, paper and similar fields will be very high. In a recent survey it was found that between 1959 and 1960 "the rate of increase in employment of technicians was greater than that for engineers and scientists,"[17] although the ratio of technicians to scientists and engineers is lower than one to one.

There will evidently be a need for other white-collar workers, especially for office workers with typing and stenographic skills and the ability to operate office equipment. Service occupations which will continue in high demand are those found in food service and hospital work. Among the relatively unskilled there should remain an increasing demand for domestic service.

In the skilled trades there seems to be a continuing need for repairmen of all types, especially automobile mechanics, TV, radio, and appliance servicemen, business machine, air-conditioning, refrigeration, and instrument repairmen and mechanics, as well as all-around skilled tailors.[18] The largest group of manual workers will continue to be operatives and kindred workers. Of this group, drivers and deliverymen will continue to show the greatest gains for the coming decade.

As one might expect, historical changes in occupational structure in region and state have continued into the 1950's. How do the patterns of occupational change in the East North Central region, of which Michigan is a part, compare with the national patterns, and how do changes in Michigan compare with the national and regional trends?

The region as a whole reflected the same trends found for the entire country. However, the rates of growth are lower in all occupational categories in which there is growth, and the declines are less in all occupational groups in which there are declines, with the exception of farm laborers and farm foremen. (See Table 11). These growth patterns are reflected in the over-all occupational statistics which show that while the growth was 10.4 per cent for the entire country, the growth in the East North Central Region was only 7.9 per cent. The greatest rates of growth in the country are found in the Mountain and Pacific regions, in which employment increased by approximately one-third over the past decade.

Michigan is the only state in the East North Central region which showed a greater rate of growth over the 1950's than the national average, although the difference is minor. The growth in employment of professional and technical workers exceeded the national increase by 16.4 per cent, and the regional increase by 30.5 per cent. Increases in the managerial, official, and proprietor occupations, although 24.3 per cent greater than the national increases, were 460.0 per cent greater than the regional increases.

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[15] Ibid., p. 91

[16] C. A. Barry, "White Collar Employment: II - Characteristics," Monthly Labor Review, February 1961, pp. 144 ff.

[17] U. S. Department of Labor Bureau of Labor Statistics, "Scientific and Technical Personnel in Industry 1960," Washington, D. C.: U. S. Government Printing Office, 1961, pp. 15-17.

[18] U. S. Department of Labor, "Manpower Report of the President..." op. cit., p. 31.

Table 10

Employment in the United States by Major Occupational Group, 1960 to 1976

Major occupational group	Actual, 1960		Projected, 1970		Projected, 1976		Percent Change		
	Number (in millions)	Percent	Number (in millions)	Per cent	Number (in millions)	Per cent	1960-70	1970-75	1960-75
Total	66.7	100.0	80.5	100.0	87.6	100.0	21	9	31
Professional, technical, and kindred workers	7.5	11.2	10.7	13.3	12.4	14.2	43	16	65
Managers, officials, and proprietors, except farm	7.1	10.6	8.6	10.7	9.4	10.7	21	9	32
Clerical and kindred workers..	9.8	14.7	12.8	15.9	14.2	16.2	31	11	45
Sales workers	4.4	6.6	5.4	6.7	5.9	6.7	23	9	34
Craftsmen, foremen, and kindred workers	8.6	12.8	10.3	12.8	11.2	12.8	20	9	30
Operatives and kindred workers	12.0	18.0	13.6	16.9	14.2	16.3	13	4	18
Service workers	8.3	12.5	11.1	13.8	12.5	14.3	34	13	51
Laborers, except farm and mine	3.7	5.5	3.7	4.6	3.7	4.3	-------	-------	-------
Farmers, farm managers, laborers, and foremen	5.4	8.1	4.2	5.3	3.9	4.5	-22	-7	-28

Source: Manpower Report of the President and A Report on Manpower Requirements, Resources, Utilization, and Training, The United States Department of Labor, U.S. Government Printing Office, Washington, D.C., 1963.

Table 11

Geographic Distribution of Employed Civilian Workers in All Occupations and in Major Occupation Groups United States, 1950, and 1960 (Percent)

Region and State	All occupations [1]		Professional, technical, and kindred workers		Managers, officials, and proprietors, except farm		Clerical and kindred workers		Sales workers		Craftsmen, foremen, and kindred workers	
	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950
Total, 51 States:												
Number	61,455,572	55,692,340	7,232,410	4,921,272	5,409,543	5,036,808	9,306,896	8,954,440	4,638,985	3,900,704	8,741,292	7,820,634
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New England	6.2	6.4	6.7	7.0	5.9	6.3	6.6	7.1	6.1	6.6	6.7	7.0
Maine	.5	.6	.4	.5	.5	.5	.4	.4	.5	.5	.5	.5
New Hampshire	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4
Vermont	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
Massachusetts	3.1	3.3	3.6	3.8	2.9	3.2	3.5	3.9	3.2	3.5	3.2	3.5
Rhode Island	.5	.5	.4	.5	.4	.5	.5	.6	.5	.5	.6	.6
Connecticut	1.6	1.5	1.8	1.7	1.5	1.5	1.8	1.7	1.5	1.4	1.9	1.8
Middle Atlantic	20.1	21.0	21.5	23.5	20.1	22.0	23.3	25.5	20.7	21.5	20.4	22.4
New York	10.1	10.5	11.4	12.7	10.9	12.9	12.9	14.2	10.4	11.2	9.4	10.5
New Jersey	3.6	3.5	4.0	4.0	3.8	4.0	4.1	4.2	3.7	3.4	4.0	4.0
Pennsylvania	6.4	7.0	6.1	6.7	5.4	6.0	6.4	7.1	6.6	6.9	7.1	8.0
East North Central	20.6	21.0	19.7	20.4	18.4	19.6	21.0	22.5	20.6	21.1	22.4	23.6
Ohio	5.4	5.4	5.3	5.4	4.8	5.0	5.4	5.7	5.5	5.7	6.2	6.5
Indiana	2.7	2.7	2.3	2.4	2.3	2.4	2.5	2.5	2.5	2.6	2.9	3.0
Illinois	6.0	6.3	5.8	5.5	5.6	6.3	7.0	8.0	6.0	6.3	6.3	6.8
Michigan	4.3	4.2	4.3	4.1	3.7	3.8	4.1	4.3	4.4	4.3	4.8	5.0
Wisconsin	2.3	2.4	2.0	2.2	2.0	2.1	2.0	2.1	2.2	2.3	2.3	2.4
West North Central	8.7	9.5	8.0	8.7	8.6	9.2	8.0	8.6	8.7	9.5	7.5	8.0
Minnesota	1.9	2.0	2.0	2.0	1.9	2.0	1.8	2.0	2.0	2.1	1.7	1.8
Iowa	1.6	1.8	1.4	1.6	1.5	1.7	1.3	1.4	1.6	1.8	1.2	1.5
Missouri	2.4	2.7	2.1	2.4	2.3	2.6	2.5	2.3	2.5	2.8	2.2	2.3
North Dakota	.3	.4	.3	.3	.4	.4	.2	.2	.3	.3	.2	.2
South Dakota	.4	.4	.3	.4	.4	.4	.2	.3	.3	.4	.3	.3
Nebraska	.8	.9	.7	.8	.9	.9	.7	.8	.8	.9	.7	.7
Kansas	1.2	1.3	1.3	1.2	1.3	1.3	1.1	1.1	1.3	1.3	1.2	1.2
South Atlantic	14.0	13.5	12.7	11.9	13.7	11.8	12.4	11.4	13.5	12.3	13.1	11.9
Delaware	.3	.2	.3	.3	.2	.2	.3	.2	.3	.2	.3	.3
Maryland	1.7	1.6	2.1	1.8	1.7	1.6	2.1	1.9	1.8	1.6	1.9	1.8
District of Columbia	.5	.7	.7	1.0	.4	.5	.9	1.6	.3	.5	.3	.5
Virginia	2.1	2.0	2.1	1.9	2.0	1.8	2.0	1.9	2.0	1.8	2.0	1.9
West Virginia	.8	1.1	.8	.9	.8	.9	.6	.8	.8	1.0	.9	1.2
North Carolina	2.5	2.6	1.8	1.8	2.0	1.9	1.6	1.4	2.2	2.2	2.1	2.0
South Carolina	1.3	1.3	.9	.9	1.0	.9	.8	.6	1.1	1.1	1.1	1.0
Georgia	2.2	2.2	1.6	1.6	2.1	1.8	1.7	1.6	2.0	1.9	1.9	1.6
Florida	2.6	1.8	2.4	1.7	3.5	2.3	2.4	1.5	3.0	2.0	2.7	1.7
East South Central	6.1	3.8	4.8	5.0	5.4	5.2	4.4	4.3	5.5	5.5	5.5	5.2
Kentucky	1.5	1.7	1.2	1.2	1.3	1.3	1.1	1.2	1.4	1.4	1.3	1.4
Tennessee	1.9	2.0	1.6	1.6	1.7	1.6	1.5	1.5	1.8	1.8	1.7	1.7
Alabama	1.7	1.8	1.3	1.3	1.5	1.4	1.2	1.1	1.5	1.5	1.6	1.4
Mississippi	1.1	1.3	.8	.8	1.0	.9	.6	.6	.8	.8	.8	.7
West South Central	8.8	8.9	8.2	8.2	10.0	9.3	7.8	7.3	8.7	8.9	8.4	8.0
Arkansas	.9	1.1	.6	.8	.9	.9	.6	.6	.8	.9	.7	.7
Louisiana	1.6	1.6	1.4	1.4	1.7	1.5	1.3	1.2	1.4	1.4	1.4	1.3
Oklahoma	1.2	1.3	1.2	1.4	1.4	1.5	1.2	1.2	1.3	1.4	1.2	1.3
Texas	5.1	4.9	4.9	4.5	5.9	5.4	4.8	4.3	5.2	5.2	5.0	4.8
Mountain	3.7	3.1	4.0	3.4	4.4	3.5	3.4	2.7	3.5	3.0	3.7	3.0
Montana	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.2	.3
Idaho	.4	.4	.3	.3	.4	.4	.3	.3	.3	.3	.3	.2
Wyoming	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2	.2	.2
Colorado	1.0	.8	1.2	1.0	1.2	1.0	1.0	.9	1.0	.9	.9	.8
New Mexico	.5	.4	.6	.4	.6	.4	.4	.3	.4	.3	.5	.4
Arizona	.7	.4	.7	.5	.8	.5	.6	.4	.7	.4	.7	.4
Utah	.5	.4	.5	.5	.5	.4	.5	.4	.5	.4	.5	.5
Nevada	.2	.1	.2	.1	.2	.2	.2	.1	.1	.1	.2	.1
Pacific	11.9	9.8	14.2	11.9	12.6	12.1	13.0	10.8	12.7	11.6	12.3	10.7
Washington	1.6	1.5	1.8	1.7	1.8	1.7	1.6	1.5	1.6	1.7	1.7	1.7
Oregon	1.0	1.0	1.0	1.0	1.2	1.3	.9	.9	1.0	1.1	1.0	1.0
California	8.9	6.9	10.9	8.8	10.2	8.8	10.1	8.0	9.7	8.5	9.2	7.6
Alaska	.1	.1	.1	.1	.1	.1	.1	.1	.1	(*)	.1	.1
Hawaii	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.4	.3

[1] Includes occupations reported only. See footnote 1, table 1.

* 1950 total adjusted to include Alaska and Hawaii.

Source: S. P. Manor, "Geographic Changes in U. S. Employment from 1950 to 1960," Monthly Labor Review, January 1963, pp. 6-7

Table 11 (con't)

Region and State	Operatives and kindred workers		Laborers, except farm and mine		Service workers, except private household		Private household workers		Farmers and farm managers		Farm laborers and farm foremen	
	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960	1950
Total, 51 States: Number.	12,897,636	11,180,315	3,107,535	3,436,110	5,444,958	4,297,018	1,725,826	1,411,160	2,505,684	4,319,979	1,444,807	2,416,810
Percent.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New England.	7.6	6.8	4.9	5.6	5.9	6.3	4.0	4.6	1.4	1.5	2.4	2.7
Maine.	.7	.7	.7	.9	.5	.5	.5	.5	.3	.4	.5	.5
New Hampshire.	.5	.6	.3	.4	.3	.3	.3	.3	.1	.2	.2	.2
Vermont.	.2	.2	.2	.2	.2	.2	.3	.3	.4	.3	.5	.5
Massachusetts.	3.7	4.3	2.3	2.6	3.2	3.5	1.6	2.1	.3	.3	.6	.6
Rhode Island.	.7	.9	.4	.4	.5	.5	.2	.3	(1)	.1	.1	.1
Connecticut.	1.8	2.0	1.1	1.1	1.3	1.3	1.1	1.1	.2	.3	.5	.4
Middle Atlantic.	22.0	24.6	18.3	19.9	20.6	22.0	14.6	18.2	5.5	5.0	6.4	6.2
New York.	10.1	11.0	7.6	7.9	11.2	12.8	7.9	9.9	2.5	2.3	2.8	2.7
New Jersey.	4.1	4.3	3.0	3.1	3.2	3.2	2.3	2.9	.6	.5	.9	.9
Pennsylvania.	7.9	9.4	7.7	8.9	6.2	6.6	4.4	5.4	2.4	2.2	2.7	2.6
East North Central.	23.1	24.1	19.5	19.3	20.5	21.1	14.1	14.0	18.2	16.5	12.3	13.0
Ohio.	6.2	6.3	5.7	5.3	5.2	5.4	4.0	4.0	3.4	3.4	2.4	2.5
Indiana.	3.1	3.2	2.8	2.7	2.6	2.5	1.9	1.9	3.2	2.9	1.8	1.9
Illinois.	6.2	6.7	5.5	5.8	6.0	6.8	3.4	3.9	4.9	4.0	2.8	3.0
Michigan.	5.1	5.6	3.5	3.5	4.3	4.2	3.4	2.8	2.4	2.3	1.8	1.9
Wisconsin.	2.5	2.4	2.0	2.0	2.3	2.2	1.4	1.4	4.4	3.6	3.6	3.9
West North Central.	6.8	6.5	7.4	8.2	8.9	8.8	6.9	6.2	20.9	21.5	13.4	15.7
Minnesota.	1.5	1.4	1.5	1.6	2.0	2.0	1.6	1.2	5.3	4.0	2.3	3.5
Iowa.	1.2	1.2	1.3	1.5	1.6	1.6	1.2	1.2	6.3	4.9	3.2	3.4
Missouri.	2.3	2.4	2.3	2.5	2.4	2.6	1.8	2.1	4.3	4.4	2.4	2.9
North Dakota.	.1	.1	.2	.3	.4	.3	.3	.2	2.1	1.6	1.1	1.3
South Dakota.	.2	.2	.3	.3	.4	.4	.4	.2	2.2	1.6	1.1	1.2
Nebraska.	.5	.5	.7	.8	.9	.8	.7	.5	3.4	2.5	1.6	1.7
Kansas.	.9	.8	1.1	1.2	1.3	1.1	1.0	.8	3.3	2.8	1.4	1.7
South Atlantic.	14.4	13.8	16.3	15.5	13.3	12.3	23.4	23.7	13.8	16.3	21.0	21.3
Delaware.	.2	.2	.2	.3	.2	.2	.3	.3	.2	.2	.2	.2
Maryland.	1.5	1.5	1.8	1.9	1.6	1.6	1.8	2.2	.7	.5	1.0	1.0
District of Columbia.	.3	.3	.6	.6	.9	1.1	1.0	1.3	(1)	(1)	(1)	(1)
Virginia.	2.0	2.0	2.5	2.6	1.9	1.8	2.9	3.1	2.4	2.4	2.5	2.6
West Virginia.	1.1	1.2	1.1	1.2	.8	.9	.3	.9	.6	.9	.6	1.0
North Carolina.	3.4	3.1	2.6	2.5	1.9	1.8	4.1	4.0	5.0	5.3	5.1	5.4
South Carolina.	1.7	1.5	1.6	1.5	1.0	.9	2.9	2.9	1.8	2.5	3.2	3.7
Georgia.	2.5	2.2	2.8	2.7	2.0	1.9	5.1	5.3	2.4	3.7	3.7	4.3
Florida.	1.8	1.2	3.2	2.4	3.1	2.3	4.5	3.7	.9	.9	4.6	2.1
East South Central.	6.5	6.1	7.4	7.1	5.4	5.4	11.1	10.8	12.6	16.6	12.0	13.1
Kentucky.	1.6	1.7	1.5	1.5	1.3	1.4	1.5	1.6	3.8	4.0	2.4	3.0
Tennessee.	2.1	1.9	2.1	2.0	1.8	1.8	2.9	2.9	3.5	4.1	2.6	2.8
Alabama.	1.8	1.8	2.4	2.3	1.5	1.4	3.9	3.9	2.4	3.7	2.5	3.8
Mississippi.	1.0	.8	1.4	1.4	.9	.8	2.8	2.4	2.9	4.8	4.5	3.7
West South Central.	7.5	8.5	10.6	10.5	9.2	8.8	13.2	12.5	11.1	13.8	13.2	14.1
Arkansas.	.9	.7	1.2	1.3	.8	.8	1.4	1.3	2.0	3.3	1.9	2.3
Louisiana.	1.4	1.2	2.4	2.5	1.7	1.6	2.5	3.1	1.3	2.1	2.0	2.4
Oklahoma.	.9	.9	1.1	1.2	1.3	1.3	1.1	1.2	2.0	2.6	1.3	1.7
Texas.	4.2	3.7	5.8	5.6	5.3	5.1	7.2	7.0	5.8	5.9	8.0	7.2
Mountain.	2.6	2.1	3.7	3.2	4.2	3.5	3.1	2.2	4.8	4.2	6.1	5.1
Montana.	.2	.2	.4	.4	.4	.4	.3	.2	1.0	.8	.9	.8
Idaho.	.3	.3	.4	.4	.4	.4	.3	.2	1.1	.8	1.0	.8
Wyoming.	.1	.1	.2	.2	.2	.2	.2	.1	.4	.3	.4	.4
Colorado.	.7	.6	1.0	.8	1.1	1.0	.8	.6	1.1	1.0	1.1	1.2
New Mexico.	.3	.2	.5	.6	.5	.4	.5	.3	.4	.5	.6	.7
Arizona.	.5	.3	.8	.5	.7	.5	.6	.4	.3	.3	1.6	.8
Utah.	.4	.3	.5	.4	.5	.4	.3	.2	.4	.4	.4	.4
Nevada.	.1	.1	.1	.1	.4	.2	.1	.1	.1	.1	.2	.1
Pacific.	9.5	7.6	12.0	10.6	12.0	11.2	9.7	7.8	5.6	4.7	13.4	9.4
Washington.	2.2	1.7	1.9	2.0	1.6	1.7	1.4	1.0	1.2	1.1	1.9	1.2
Oregon.	.9	.8	1.6	1.7	1.1	1.1	.8	.7	1.0	.9	1.2	1.1
California.	7.2	5.2	7.9	6.4	8.8	8.0	7.1	5.9	2.3	2.6	9.6	6.3
Alaska.	.1	.1	.1	.2	.1	.1	.1	(1)	(1)	(1)	(1)	(1)
Hawaii.	.3	.2	.4	.4	.4	.4	.3	.2	.1	.1	.7	.7

[1] Less than 0.05 percent.

SOURCE: See table 1.

NOTE: Because of rounding, sums of individual items may not equal totals.

Of special significance to Michigan is the decline in the number of operatives and kindred workers, agricultural workers, and non-farm laborers. Between 1950 and 1960 there was a decline of 12,739 operative jobs, a decline of 53,280 farmer and farm manager jobs, a decline of 17,203 jobs for farm laborers, and a decline of 9,640 non-farm laborer jobs. Most of these declines represent losses in male employment. (See Table 12).

There is little likelihood that the trends indicated for Michigan and for the East North Central Region will shift or will be radically different from those for the country as a whole. As far as the shift of populations and employment opportunities among regions is concerned, recent informed opinion feels that "a gradual reduction in state differentials in industrial employment is developing."[19] However, the vast shifts which have taken place and continue to take place in both employment and population growth point to the need for "rapid expansion in education and other public services in many states, not only to meet the needs of the present workers and their families, but to equip the states to share appropriately in future employment growth."[20]

Predicting future occupation needs or the composition of industrial activity for a state is more difficult than for the country or region as a whole. The errors in predicting Michigan's future needs are, therefore, likely to be greater than in predicting the changes for a larger population. While the trends in the state should approximate those of the country, significantly different patterns have emerged over the past decade and should make for some differences over the next.

In projecting the occupational distributions of Michigan employment over the next decade, one might assume a continuation of past trends. Following the assumption of the National Planning Association that"there are strong pressures for existing capacity to remain where it is; even additional capacity, unless there are strong reasons to the contrary, will tend to locate where similar capacity is already located,"[21] it is most likely that recent trends in Michigan shall continue. Another economic phenomenon which reinforces Michigan trends is that the commodity-producing sectors are functions for the basic sectors[22] (For N.P.A. industrial projections see Table 13).

The projections of Michigan's occupational structure assume not only the continuation in industrial trends, but a continuation of past rates of economic growth. If we were to make a most conservative estimate of occupational change we might assume that the proportions of the population in the various occupations would remain exactly as they were in 1960. In the light of trends, this is an unrealistic assumption. However, there are a number of other assumptions based on past occupational distributions or on past trends which would provide us with a range of reasonable estimates of occupational distributions for the future.

One assumption would accept the rate of change for the major occupational groups during the decade of the 1950's and assume a similar rate of change for the decade of the 1960's, what we have called projection A. (See Table 14). Another assumption might be that the trends manifested over the 1940-50 period and the 1950-60 period would continue for 1960-70--projection B. Still another assumption might accept the mean rates of change over the 1940-1960 period--projection C. None of these, in and of themselves, seem valid for all, or even most, of the occupational groups, since one must expect that the rates of change for the recent fastest growing occupations would tend to show some decline, as would the rates of change for the recent most rapidly declining occupations. For example, in the former case, the rates of increase of professional and technical workers, and in the latter, the rates of decline in agricultural employment.

An attempt to reconcile past trends with future probability has led to our making two "judgment models;" a conservative one (judgment model I) and a more liberal one (judgment model II). (See Table 15). In both cases we have constructed the model from figures derived from projections A, B, and C, accepting the figures which appeared to be most consistent with past distributions of the major occupational groups. Model II is constructed from those figures which seem most consistent with the direction of recent trends. If we had set a fixed figure of employment for 1970, we would have had to give each occupational group a proper weight to derive the projections and the judgment models; then in all cases we would have derived the same total employment figure. Instead we just took the projections for each occupational group and totaled these. As a result the projections of the size of the labor force for each of the cases is different. In the projection, the smallest

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[19]Ibid., p. 25, Cf. S. P. Manor, "Geographic Changes in U. S. Employment From 1950 to 1960," Monthly Labor Review, January 1963, pp. 1-10; V. R. Fuchs, Changes in the Location of Manufacture in the United States Since 1929, New Haven: Yale University Press, 1962, pp. 19-29.

[20]U. S. Department of Labor, "Manpower Report of the President," loc. cit.

[21]Outdoor Recreation Resources Review Commission, Study Report 23, National Planning Association, Bureau of Labor Statistics, U. S. Department of Labor, "Projection to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportion," Washington, D. C.; U. S. Government Printing Office, 1962, p. 295.

[22]Loc. Cit.

Table 12

OCCUPATIONAL DISTRIBUTION OF THE LABOR FORCE
IN MICHIGAN, 1940-1960
(thousands)

Major Occupational Group	1940			1950			1960		
	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female
Total	1821.4	1423.9	397.5	2391.9	1784.8	607.1	2726.9	1898.0	828.8
Professional, technical, and kindred workers.....	141.8	86.1	55.7	202.0	126.0	76.0	312.6	200.9	111.7
Farmers and farm managers.....	144.2	141.0	3.2	113.3	110.3	3.0	60.1	57.1	2.9
Proprietors, managers and officials, exc. farm.....	136.2	123.1	13.1	189.3	165.9	23.4	200.0	173.9	26.1
Clerical, sales and kindred workers.....	305.1	173.7	131.4	462.1	221.1	241.0	582.0	251.4	330.6
Craftsmen, foremen, and kindred workers.....	281.6	276.1	5.6	392.3	382.1	10.2	420.1	410.1	10.0
Operatives and kindred workers.	412.4	349.7	62.7	619.2	510.1	109.1	606.4	494.8	111.6
Domestic service workers.....	59.9	1.9	58.0	40.1	1.9	38.2	58.7	2.0	56.6
Service workers, exc. domestic.	129.4	76.4	53.0	181.9	98.7	83.2	236.4	106.6	129.9
Farm laborers (wage workers) and farm foremen.....	66.7	64.8	1.9	42.5	35.3	7.1	25.3	20.8	4.5
Laborers, exc. farm.....	125.9	119.8	6.1	118.7	113.3	5.5	109.3	104.8	4.5

[a] will not equal combined male and female because each was rounded.

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC (1)-24C. U.S. Government Printing Office, Washington, D.C., Table 59.

Table 13

Distribution of Michigan Civilian Employment by Industry for the years 1947, 1957, and Projections for 1976

Industry	Employment			% of state civilian employment		
	1947	1957	1976	1947	1957	1976
Commodity Employment						
Agriculture	220.0	193.0	157.2	9.0	6.8	4.4
Mining	17.1	14.2	12.5	0.6	0.5	0.4
Manufacturing	1040.8	1051.2	1045.6	42.4	37.0	29.4
Non-Commodity Employment						
Transportation, communication and utilities	141.0	161.0	182.2	5.7	5.6	5.1
Trade	447.9	524.0	784.1	18.2	18.4	22.1
Service	264.8	443.7	739.0	10.8	15.6	20.8
Finance and real estate	54.7	81.2	97.3	2.2	2.9	2.7
Construction	99.2	138.2	204.4	4.1	4.9	5.8
Government	171.0	237.0	329.1	7.0	8.3	9.3
Total civilian employment	2456.5	2843.5	3551.4	100.0	100.0	100.0
Total population	6,075	7,690	10,289			

Source: Projection to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, Outdoor Recreation Resources Review Commission, Study Report 23, National Planning Association, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C., 1962, Table F-9, p. 328.

Table 14
Percent Change in Employment in Michigan by Major Occupational Group, 1940 to 1970

Major occupational group	1940 - 1950			1950 - 1960			1960 - 1970 Projections								
							A[1]			B[2]			C[3]		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total	31.3	25.3	52.7	14.0	6.3	36.5	14.0	6.3	36.5	6.3	1.6	20.3	22.5	15.8	44.6
Professional, technical workers and kindred	42.4	46.2	36.6	54.7	59.5	46.9	54.7	59.5	46.9	70.7	76.6	60.1	48.6	52.9	41.8
Farmers and Farm managers	-21.4	-21.7	-5.2	-47.0	-48.2	-3.0	-47.0	-48.2	-3.0	-103.2	-107.1	-1.7	-34.2	-35.0	-4.1
Proprietors, managers and officials, exc. farm	39.0	34.8	78.1	5.6	47.9	11.7	5.6	47.9	11.7	.8	65.9	2.3	47.7	41.4	44.9
Clerical, sales and kindred workers	51.4	27.2	83.4	25.9	13.7	37.2	25.9	13.7	37.2	13.1	6.9	16.6	38.7	20.5	60.3
Craftsmen, foremen and kindred workers	39.3	38.4	83.4	7.1	7.3	-2.1	7.1	7.3	-2.1	(a)	1.4	(a)	(a)	22.9	(a)
Operatives and kindred workers	50.1	45.9	73.9	-2.1	-3.0	2.3	-2.1	-3.0	2.3	(a)	(a)	.1	(a)	(a)	38.1
Domestic service workers	-33.1	.1	-34.2	46.2	7.6	48.2	46.2	7.6	48.2	(a)	(b)	(a)	(a)	3.8	(a)
Service workers, ex. domestic .	40.5	29.1	57.0	30.0	8.0	56.0	30.0	8.0	56.0	37.8	2.2	55.1	35.3	18.6	56.5
Farm laborers (wage workers) and farm foremen	36.3	-45.4	269.4	-40.5	-41.3	-36.7	-40.5	-41.3	-36.7	-45.2	-37.6	(a)	-38.4	-43.4	(a)
Laborers, exc. farm	-5.7	-5.4	-10.6	-8.0	-7.5	-17.8	-8.0	-7.5	-17.8	-11.2	-10.4	-29.9	-6.8	-6.5	-14.2

[1]assumes the same rate of change as 1950-1960.
[2]based on trends over 1940-1960.
[3]based on the mean rates of hhange 1940-1960.
[a]trend changed direction between 1940-1950 and 1950-1960.
[b]negligible change for 1940-1950.

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., 1962, table 59.

Table 15

Occupational Distribution of the Labor Force in Michigan, 1970*

Major occupational group	Projection A[a] (thousands)			Projection B[b] (thousands)			Projection C[c] (thousands)			Judgment models I[d] (thousands)			Judgment models II[e] (thousands)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total	3222.3	2,115.1	1107.2	3178.4	2131.1	1047.3	3418.1	2190.9	1227.2	3125.4	2088.8	1036.6	3241.9	2122.3	1119.6
Professional, technical and kindred	484.5	320.4	164.1	533.6	354.7	178.9	465.5	307.1	158.4	484.5	320.4	164.1	533.6	354.7	178.9
Farmers and Farm managers	32.5	29.6	2.9	32.5	(29.6)[f]	2.9	39.9	37.1	2.8	40.0	37.1	2.9	32.5	29.6	2.9
Proprietors, managers and officials, exc. farm	286.4	257.2	29.2	315.2	288.5	26.7	283.8	245.9	37.9	272.6	245.9	26.7	286.4	257.2	29.2
Clerical, sales and kindred workers	739.5	285.9	453.6	654.3	268.8	385.5	832.9	302.9	530.0	654.3	268.8	385.5	739.5	285.9	453.6
Craftsmen, foremen and kindred workers	449.8	440.0	9.8	425.7	415.9	(9.8)[f]	513.8	504.0	(9.8)[f]	449.8	440.0	9.8	425.7	415.9	9.8
Operatives and kindred workers	594.1	480.0	114.1	591.7	480.0	111.7	634.1	480.0	154.1	594.1	480.0	114.1	591.7	480.0	111.7
Domestic service workers	86.1	2.2	83.9	86.1	2.2	(83.9)[f]	86.0	2.1	(83.9)[f]	86.1	2.2	83.9	86.1	2.2	83.9
Service workers, ex. domestic	317.7	115.1	202.6	310.3	108.9	201.4	329.6	126.4	203.2	311.5	108.9	202.6	318.3	115.1	203.2
Farm laborers (wage workers) and farm foremen	15.1	12.2	2.9	15.9	13.0	(2.9)[f]	14.7	11.8	(2.9)[f]	15.9	13.0	2.9	15.1	12.2	2.9
Laborers, exc. farm	100.6	96.9	3.7	97.1	93.9	3.2	101.8	98.0	3.8	100.6	96.9	3.7	97.0	93.9	3.1
Occupation not reported	116.0	75.6	40.4	116.0	75.6	40.4	116.0	75.6	40.4	116.0	75.6	40.4	116.0	75.6	40.4

*Assuming no radical changes in economic growth or development.

[a]assumes the same rate of change as 1950-1960.
[b]based on trends over 1940-1960.
[c]based on the mean rates of change 1940-1960.
[d]most consistent with past events (adopting the most reasonable conservative figures).
[e]most consistent with the direction of the trends, 1940-1960.
[f]figures borrowed from Projection A.

labor force would be 3.2 million, projection B; the largest 3.4 million, projection C. The judgment models, which we feel are more reasonable than any of the projections, show a difference of about 115,000 workers between the two estimates.*

Using any of the projections or judgment models, the patterns for future occupational distribution in Michigan are clear. The large increases among the professional and technical, the service, clerical and sales occupations are consistent with the growing demand for white-collar workers and the increasing participation of women in Michigan's labor force. These patterns are also consistent with the proportional declines of blue-collar workers in commodity-producing industries. The trends are also consistent with the emergent crisis in the employment of youth, especially those who have not received adequate education or training.

Unemployment Trends

If the statistics on employment trends as they affect particular occupational and industrial groups have not made the imminent employment probabilities for these groups clear, the complementary figures on unemployment certainly reinforce the impressions created in the discussion of employment. The increased demands for white-collar workers, placing a premium on education and training, are evident in the contemporary patterns of unemployment. Difficulties encountered by youthful workers entering the labor market in ever-increasing numbers also dominate unemployment patterns. Workers, especially young people, from underprivileged, socially marginal groups such as the U. S. Negroes, are unable to get full-time employment, reflecting the fact that employments trends have sociological significance.

The unemployment rates for all age groups have been increasing steadily over the past number of years. (See Table 16). Unemployment among youthful workers has consistently been higher than for the rest of the work force because of the problems which face new workers entering the labor force: early patterns of job-seeking reflecting inexperience; lack of identification with an industry or company; shopping around for jobs and job changing, reflecting a lack of knowledge of the labor market; and increasing vulnerability to layoff due to lack of seniority.[23] The anomaly concerning young workers entering the labor market today is that, with their rapidly increasing numbers, the unemployment rates for these age groups are also increasing very rapidly.

Perhaps more significant to the American economy and the problems of maintaining full employment than the rising rates of unemployment are the rising rates of long-term** unemployment. The long-term unemployed as a percentage of the total civilian labor force rose by approximately 16 per cent between 1957 and 1961. The largest rise has been for males in the 18-24 age group, more than 27 per cent, although there was a slight decline for male workers as a whole. The slight rise in long-term unemployment for all females reflects the 14 per cent rise in the 18-24 year old group. All other female groups showed declines over this period.[24]

The industrial redistribution of the labor force which has been taking place over past decades is also reflected in recent patterns of unemployment. In contrasting unemployment between 1958 and 1961, one finds that the proportion of workers in manufacturing who had some unemployment during each of these years respectively, fell from 24 to 22 per cent while unemployed in the service industries went up from 11 per cent to 14 per cent.[25]

A study of the distribution of unemployment for wage and salary people in industries which directly meet the needs of consumers and other industries with those producing commodities, as for example, construction, shows the disparate burden of unemployment placed on blue-collar workers. (See Table 17). As one might expect, the lowest rates of unemployment would be found among farmers

*It should be recognized that these projections are not based on a full-employment economy and hence show lower figures than indicated in the earlier section.

**Arbitrarily defined as workers looking for jobs fifteen weeks or longer.

23 U. S. Department of Labor, "Manpower Report of the President..." op. cit., p. 40; U. S. Department of Labor, Manpower Research Bulletin No. 2, op. cit.; J. L. Meredith, "Long-Term Unemployment in the United States," Monthly Labor Review, June 1961, pp. 605-606.

24 Meredith, loc. cit.

25 C. Rosenfeld, "Work Experience of the Population in 1961," Monthly Labor Review, December, 1962 p. 1353.

Table 16

Unemployed persons, by age and sex

Annual averages, 1947-61

Age and sex	1961	1960[1]	1959	1958	1957	1956[2]	1955	1954	1953[3]	1952	1951	1950	1949	1948	1947
Number unemployed (thousands):															
Total	4,806	3,931	3,813	4,681	2,936	2,551	2,654	3,230	1,602	1,673	1,879	3,142	3,395	2,064	2,142
Male	3,060	2,541	2,473	3,155	1,893	1,608	1,752	2,161	1,069	1,062	1,123	2,155	2,415	1,430	1,595
14 to 19 years	542	480	451	473	351	296	292	318	195	222	206	339	367	262	279
14 and 15 years	63	55	53	57	52	44	33	26	24	30	27	38	28	30	27
16 and 17 years	221	200	191	185	140	125	129	138	89	110	96	133	140	103	107
18 and 19 years	258	225	207	231	159	127	130	154	82	82	83	168	199	129	145
20 to 24 years	457	369	343	478	283	219	224	299	132	134	138	358	459	294	368
25 to 34 years	585	492	483	685	349	315	329	469	202	195	209	435	491	260	326
35 to 44 years	507	415	407	552	304	250	301	390	178	166	168	326	379	203	226
45 to 54 years	473	392	390	492	302	247	262	337	166	154	171	313	317	182	188
55 to 64 years	374	294	287	349	220	199	250	243	145	127	149	272	283	160	148
65 years and over	122	96	112	124	83	84	94	104	52	64	82	112	119	72	60
Female	1,747	1,390	1,340	1,526	1,043	943	903	1,069	533	611	756	987	981	633	547
14 to 19 years	379	310	276	284	222	214	179	197	117	140	150	204	228	153	146
14 and 15 years	30	24	20	22	25	25	17	18	10	15	16	23	17	17	17
16 and 17 years	142	124	110	114	90	89	71	72	49	59	61	81	88	60	57
18 and 19 years	207	162	146	148	107	100	91	107	58	66	73	100	123	76	72
20 to 24 years	265	214	200	223	147	137	131	159	89	97	102	168	178	115	109
25 to 34 years	304	260	242	308	224	181	199	243	119	135	176	216	213	144	112
35 to 44 years	342	256	266	319	195	173	172	215	92	112	141	168	168	94	82
45 to 54 years	278	222	214	239	146	139	129	155	67	74	109	141	109	74	58
55 to 64 years	141	101	119	122	80	83	79	84	40	42	67	73	65	43	33
65 years and over	36	25	23	31	28	17	14	17	9	11	14	18	20	10	8
Unemployment rate:															
Total	6.7	5.6	5.5	6.8	4.3	3.8	4.0	5.0	2.5	2.7	3.0	5.0	5.5	3.4	3.6
Male	6.5	5.4	5.3	6.8	4.1	3.5	3.9	4.9	2.4	2.4	2.6	4.9	5.5	3.3	3.7
14 to 19 years	15.4	14.0	13.8	15.2	11.3	9.6	9.9	11.2	6.8	7.6	7.0	11.0	11.9	8.3	9.1
14 and 15 years	8.7	8.6	7.8	8.4	7.6	6.6	5.8	4.5	4.3	5.1	4.4	6.1	4.9	5.2	4.6
16 and 17 years	18.3	15.5	15.8	16.3	12.4	10.9	12.1	13.5	8.3	10.0	8.9	12.7	13.3	9.3	9.7
18 and 19 years	16.3	15.0	14.9	17.8	12.3	9.8	10.0	12.1	6.6	6.8	6.6	11.5	14.0	8.7	10.5
20 to 24 years	10.7	8.9	8.7	12.7	7.8	6.3	7.0	9.8	4.3	4.0	3.5	7.7	9.9	6.3	7.9
25 to 34 years	5.7	4.8	4.7	6.5	3.3	2.9	3.0	4.4	1.9	1.8	2.0	4.2	4.7	2.5	3.2
35 to 44 years	4.6	3.8	3.7	5.1	2.8	2.3	2.8	3.7	1.7	1.7	1.7	3.3	3.8	2.1	2.4
45 to 54 years	4.9	4.1	4.1	5.3	3.3	2.7	3.0	3.9	1.9	1.8	2.1	3.9	3.9	2.3	2.4
55 to 64 years	5.7	4.6	4.5	5.5	3.5	3.2	4.1	4.9	2.4	2.1	2.5	4.7	4.9	2.8	2.6
65 years and over	5.5	4.2	4.8	5.2	3.4	3.3	3.7	4.2	2.0	2.7	3.3	4.6	4.9	3.0	2.5
Female	7.2	5.9	5.9	6.8	4.7	4.3	4.3	5.4	2.7	3.1	3.9	5.3	5.4	3.6	3.2
14 to 19 years	14.8	12.9	12.3	13.1	10.1	9.9	9.0	10.0	6.0	7.0	7.4	10.4	11.2	7.3	7.1
14 and 15 years	7.2	6.9	5.7	6.6	7.5	8.0	6.6	7.1	4.2	6.1	6.3	8.6	7.0	6.9	7.3
16 and 17 years	18.3	15.4	14.4	16.6	12.6	12.1	11.1	11.6	7.5	8.4	9.2	13.3	13.6	8.9	8.9
18 and 19 years	15.1	13.0	12.9	12.9	9.4	9.0	8.4	10.1	5.5	6.3	6.7	9.1	10.6	6.5	6.0
20 to 24 years	9.8	8.3	8.1	8.9	6.0	5.6	5.4	6.6	3.7	3.9	3.8	6.3	6.7	4.2	4.0
25 to 34 years	7.3	6.3	5.9	7.3	5.3	4.3	4.7	5.8	2.9	3.1	4.1	5.3	5.3	3.7	3.0
35 to 44 years	6.3	4.8	5.1	6.2	3.8	3.4	3.6	4.6	2.0	2.5	3.3	4.0	4.2	2.5	2.2
45 to 54 years	5.1	4.2	4.2	4.9	3.2	3.2	3.1	4.0	1.8	2.0	3.1	4.2	3.5	2.5	2.1
55 to 64 years	4.5	3.4	4.1	4.5	3.0	3.2	3.3	3.9	2.0	2.1	3.5	3.9	3.8	2.7	2.2
65 years and over	3.9	2.8	2.8	3.8	3.4	2.1	1.8	2.9	1.3	1.9	2.5	3.4	3.4	1.9	1.8

[1] See footnote 4, table 1.
[2] See footnote 2, table 7.
[3] See footnote 3, table 1.

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Labor Force, Employment, and Unemployment Statistics, 1947-61," Washington, D.C.: U.S. Government Printing Office, October 1962, Table 12, p. 13.

Table 17

Unemployment rates and percent distribution of the unemployed, by major industry group

Annual averages, 1948-61

Major industry group	1961	1960[1]	1959	1958	1957	1956[2]	1955	1954	1953[3]	1952	1951	1950	1949	1948
Unemployment rate:														
Total[4]	6.7	5.6	5.5	6.8	4.3	3.8	4.0	5.0	2.5	2.7	3.0	5.0	5.5	3.4
Experienced wage and salary workers	6.8	5.7	5.6	7.2	4.5	3.9	4.3	5.5	2.7	2.9	3.2	5.6	6.2	3.7
Agriculture	9.3	8.0	8.7	9.9	6.7	6.5	6.4	8.0	4.7	3.9	3.9	8.2	6.5	4.7
Nonagricultural industries	6.7	5.6	5.5	7.1	4.5	3.8	4.2	5.4	2.6	2.8	3.2	5.4	6.2	3.7
Mining, forestry, fisheries	11.6	9.5	9.7	10.6	6.3	6.4	8.2	12.3	4.9	3.4	3.8	6.6	8.5	2.9
Construction	14.1	12.2	12.0	13.7	9.8	8.3	9.2	10.5	6.1	5.5	6.0	10.7	11.9	7.6
Manufacturing	7.7	6.2	6.0	9.2	5.0	4.2	4.2	6.1	2.5	2.8	3.3	5.6	7.2	3.5
Durable goods	8.4	6.3	6.1	10.5	4.9	4.0	4.0	6.5	2.0	2.4	2.6	5.2	7.4	3.4
Nondurable goods	6.7	6.0	5.9	7.6	5.3	4.4	4.4	5.7	3.1	3.3	4.0	6.0	6.9	3.6
Transportation and public utilities	5.1	4.3	4.2	5.6	3.1	2.4	3.5	4.8	1.8	1.9	1.9	4.1	5.2	3.0
Wholesale and retail trade	7.2	5.9	5.8	6.7	4.5	4.1	4.3	5.2	3.0	3.1	3.7	5.8	5.8	4.3
Finance, insurance, and real estate	3.3	2.4	2.6	2.9	1.8	1.4	2.1	2.0	1.6	1.5	1.3	2.0	1.8	1.6
Service industries	4.9	4.1	4.3	4.6	3.4	3.2	3.8	4.0	2.4	2.6	3.1	5.0	5.1	3.5
Public administration	2.7	2.6	2.3	3.0	2.0	1.6	1.8	2.0	1.2	1.1	1.6	2.8	2.9	2.0
Percent distribution:														
Total[4]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Experienced wage and salary workers	84.9	85.3	85.6	87.8	87.2	85.8	88.0	89.8	88.6	87.7	87.8	89.1	89.6	87.7
Agriculture	3.7	4.1	4.2	3.9	4.2	4.6	4.4	3.9	4.5	3.7	3.6	4.9	3.7	4.2
Nonagricultural industries	81.2	81.2	81.4	83.9	83.0	81.2	83.6	85.9	84.1	84.0	84.3	84.2	85.9	83.5
Mining, forestry, fisheries	1.6	1.7	1.8	1.7	1.7	2.1	2.5	3.1	2.7	2.0	2.0	2.0	2.2	1.4
Construction	11.7	12.3	12.6	11.6	12.5	11.8	12.5	11.4	12.9	12.1	10.8	11.0	10.9	10.7
Manufacturing	28.8	28.2	27.8	34.4	30.8	29.0	27.5	33.3	27.0	28.3	29.3	28.8	33.3	28.0
Durable goods	17.5	16.0	16.1	22.2	17.2	16.1	15.0	20.0	13.1	13.3	12.5	13.9	17.8	14.3
Nondurable goods	11.3	12.2	11.6	12.2	13.6	12.9	12.5	13.3	13.9	15.1	16.8	14.9	15.4	13.6
Transportation and public utilities	4.9	5.2	5.0	5.4	5.0	4.5	6.0	6.7	5.3	5.3	4.7	5.9	7.2	6.8
Wholesale and retail trade	16.4	16.3	16.3	15.2	15.9	16.6	16.3	16.0	17.9	18.0	18.6	17.9	16.2	18.8
Finance, insurance, and real estate	1.9	1.7	1.7	1.5	1.5	1.2	1.7	1.2	1.9	1.7	1.3	1.1	.9	1.3
Service industries	13.9	13.6	14.3	12.1	13.6	14.2	15.0	12.4	14.1	14.5	15.1	14.9	12.9	13.9
Public administration	1.9	2.2	1.9	2.0	2.1	1.9	2.0	1.8	2.2	2.1	2.4	2.6	2.4	2.7

[1] See footnote 4, table 1.
[2] See footnote 2, table 7.
[3] See footnote 3, table 1.
[4] Includes other experienced unemployed (self-employed and unpaid family workers); excludes those with no previous work experience.

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Labor Force, Employment, and Unemployment Statistics, 1947-61," Washington, D.C.: U.S. Government Printing Office, October 1962, Table 16, p. 16.

and farm managers, although agricultural workers as a group had a relatively high rate of unemployment. The lowest unemployment category of workers is the higher white-collar workers,[26] and clerical and sales workers still seem to share their good fortune. The highest rates of unemployment are found among operatives and laborers; craftsmen and foremen are also hard hit by unemployment.

Although unemployment touches all industries, even public administration, the service industries generally provide the most stability in employment. The highest rates of unemployment are found in construction, forestry, fisheries and mining and in the manufacture of durable goods-industries with the highest proportions of blue-collar employees. (See Table 18).

As the changes in the distribution of white- and blue-collar workers continue, it will be found that the lower white-collar workers are not immune to instabilities in employment. In fact, between 1947 and 1961, unemployment rates for blue-collar workers have shown a slight decline. (See Table 19). The unemployment rates for the higher white-collar groups remain fairly constant, but the unemployment rates for the lower white-collar groups have shown a slight rise. The unemployment rates for service workers remained fairly stable during this period.

Some of the tendencies indicated above are even more disturbing when one explores unemployment for 1961 among those who had no work experience during that year. (See Table 20). More than 46 per cent of this group consisted of workers 24 years and under. Of this group a little less than half looked for regular full-time jobs, of which only a fourth looked for less than 5 weeks. Of the total looking for full-time employment, 28 per cent were non-white workers and of this group 87 per cent were unemployed and looking for work for five weeks or more.

What are the variables which underlie these patterns of unemployment? The single most important criterion of stability in employment appears to be the level of education of the worker. As one moves up the occupational ladder toward the professions with their high levels of education, the rates of unemployment decline radically.

The significance of education to the employment patterns in the United States cannot be overstated. The median years of education attained by the population generally and by the labor force specifically have been rising steadily. (See Table 21). Over the past ten years the median education of the employed rose from 10.9 to 12.1 years of schooling. The level of education among the unemployed has also shown a rise. The higher educational levels of the female employed and unemployed workers reflect the greater proportion of women in the white-collar sector of the labor force.

The relatively low educational levels of the rural labor force is reflected in the fact that the median educational level of the employed agricultural workers is lower than the median education level of the total unemployed. With the continued large decline in agricultural employment and the movement of workers from rural to urban areas, the difficulties inherent in these migration patterns are almost insurmountable. This is true for both white and non-white workers leaving marginal agricultural lands seeking urban employment. The handicaps of poor education and the lack of employment opportunities in occupations which now call for relatively low educational levels make the probabilities of these groups getting employment very small.

The high educational demands traditionally made on professional and technical occupations are evident. Also in evidence is the greater than high school education demanded in the sales and clerical fields. The 10-11th grade median high school education found for craftsmen and operatives is misleading. Since educational levels have risen historically, the older, more established workers in each of these fields are most likely to have lower educational levels, bringing the median figure down. (See Table 22). This means that new young workers entering the labor force will have to compete with other young workers with at least a high school education. Laboring jobs and some of the semi-skilled operative jobs do not make high educational demands. But as has already been demonstrated, these jobs are becoming less significant to our economy and offer few opportunities for youthful job aspirants flooding the labor market.

The problems for the Negro worker are even greater than for the poorly prepared whites. The deprivation of the Negro worker is reflected not only in his inability to get work, as evidenced in his high rates of unemployment, but in the types of work he gets when employed. Today, 22 per cent of all unemployed are Negro workers, although Negroes constitute only 11 per cent of the labor force. These figures also tend to be underestimates because of the underemployment of Negroes in Southern

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[26] C. W. Mills uses this term to describe the professional, technical, owner, and managerial groups among the white-collar workers. See White Collar Workers, New York: Oxford University Press, 1956.

Table 18

Extent of Unemployment in 1960 and 1961 Among Persons Who Worked During the Year, By Major Occupation and Industry Group of Longest Job

Major occupation or industry group	Unemployed as percent of total who worked		Percent of unemployed who worked during the year having unemployment of-					
			15 weeks or more		2 spells		3 spells or more	
	1961	1960	1961	1960	1961	1960	1961	1960
All Groups	16.7	15.6	37.7	35.4	17.1	16.2	19.8	20.4
OCCUPATION GROUP								
Professional, technical, and kindred workers	7.1	5.4	26.1	25.5	9.7	13.6	13.9	9.1
Farmers and farm managers	2.5	2.0	(1)	(1)	(1)	(1)	(1)	(1)
Managers, officials, and proprietors, except farm	5.8	4.5	38.3	34.1	14.1	12.0	13.0	11.5
Clerical and kindred workers	13.6	11.1	30.1	27.2	13.0	12.7	10.2	9.3
Sales workers	12.1	12.3	32.5	26.5	14.2	14.7	13.1	12.4
Craftsmen, foremen, and kindred workers	23.1	21.3	34.8	37.3	20.0	16.8	24.4	28.2
Operatives and kindred workers	27.8	27.7	37.4	33.6	17.8	18.1	19.4	17.8
Private household workers	12.0	11.4	41.1	37.9	19.6	15.1	21.7	20.6
Service workers, except private household	17.5	16.0	40.9	38.8	19.3	15.2	15.2	19.4
Farm laborers and foremen	14.0	13.2	42.9	41.4	16.5	13.7	35.7	42.2
Laborers, except farm and mine	36.6	43.9	48.6	46.1	18.6	18.1	29.6	27.7
INDUSTRY GROUP								
Wage and salary workers	18.9	18.0	37.3	35.2	17.3	16.4	19.2	19.9
Agriculture	24.7	24.3	44.3	43.8	18.7	14.6	33.1	41.3
Nonagricultural industries	18.7	17.7	36.9	34.7	17.2	16.5	18.4	18.7
Forestry, fisheries, and mining	30.0	21.9	40.6	45.5	15.4	17.9	25.6	20.5
Construction	43.9	43.4	41.2	44.4	22.3	20.1	31.3	34.3
Manufacturing	22.0	21.7	34.6	30.7	16.6	16.3	16.0	15.2
Durable goods	23.6	23.3	34.7	29.7	15.9	17.0	14.3	13.3
Nondurable goods	20.1	19.6	34.6	32.1	17.6	15.3	18.4	18.2
Transportation and public utilities	14.0	13.2	38.2	36.0	12.8	12.1	24.0	20.4
Wholesale and retail trade	17.9	17.9	36.7	32.7	17.8	15.4	14.9	15.6
Service industries	13.7	11.3	37.3	35.4	16.1	16.6	15.3	16.2
Private households	13.0	12.8	43.4	39.1	16.7	14.4	26.2	26.6
Other services	13.9	11.0	35.9	34.4	16.0	17.2	12.8	13.4
Public administration	7.5	7.4	33.8	36.6	11.7	12.8	13.2	10.6

(1) Percent now shown where base in less than 100,000.

Source: C. Rosenfeld, "Work Experience of the Population in 1961," Monthly Labor Review, December 1962, p. 1354.

Table 19

Unemployment rates and percent distribution of the unemployed, by major occupation group

Annual averages[1], 1947-61

Major occupation group	1961	1960[2]	1959	1958	1957	1956[3]	1955	1954	1953[4]	1952	1951	1950	1949	1948	1947
Unemployment rate:															
Total	6.7	5.6	5.5	6.8	4.3	3.8	4.0	5.0	2.5	2.7	3.0	5.0	5.5	3.4	3.6
Professional, technical, and kindred workers	2.0	1.7	1.7	2.0	1.2	1.0	1.0	1.6	.9	1.0	1.5	2.2	1.9	1.7	1.9
Farmers and farm managers	.4	.3	.3	.6	.3	.4	.4	.4	.2	.2	.3	.3	.2	.2	.2
Managers, officials, and proprietors, except farm	1.8	1.4	1.3	1.7	1.0	.8	.9	1.2	.9	.7	1.0	1.6	1.5	1.0	1.2
Clerical and kindred workers	4.6	3.8	3.7	4.4	2.8	2.4	2.6	3.1	1.7	1.8	2.1	3.4	3.8	2.3	2.9
Sales workers	4.7	3.7	3.7	4.0	2.6	2.7	2.4	3.7	2.1	2.5	2.8	4.0	3.5	3.4	2.6
Craftsmen, foremen, and kindred workers	6.3	5.3	5.3	6.8	3.8	3.2	4.0	4.9	2.6	2.4	2.6	5.6	5.9	2.9	3.8
Operatives and kindred workers	9.6	8.0	7.6	10.9	6.3	5.4	5.7	7.6	3.2	3.9	4.3	6.8	8.0	4.1	5.1
Private household workers	5.9	4.9	4.8	5.2	3.7	4.2	4.1	5.0	2.5	3.2	3.8	5.6	5.2	3.2	3.4
Service workers, except private household	7.4	6.0	6.4	7.4	5.1	4.8	5.8	5.2	3.6	3.7	4.3	6.8	6.1	4.8	4.7
Farm laborers and foremen	5.7	5.2	5.1	6.2	3.7	3.7	3.7	4.2	2.5	2.3	2.1	5.0	3.9	2.3	2.7
Laborers, except farm and mine	14.5	12.5	12.4	14.9	9.4	8.2	10.2	10.7	6.1	5.7	5.6	11.7	12.9	7.5	7.5
Percent distribution:															
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	3.3	3.4	3.2	2.9	2.7	2.4	2.2	2.8	3.0	3.1	3.8	3.1	2.3	3.4	3.2
Farmers and farm managers	.2	.2	.2	.4	.3	.5	.5	.5	.6	.5	.6	.5	.3	.4	.4
Managers, officials, and proprietors, except farm	2.8	2.5	2.4	2.6	2.3	2.0	2.2	2.5	3.8	2.4	3.2	3.2	2.9	3.3	3.1
Clerical and kindred workers	9.9	9.8	9.3	9.0	9.2	8.6	8.0	8.2	8.5	8.5	8.7	8.2	8.8	8.6	9.5
Sales workers	4.6	4.2	4.4	3.7	3.8	4.5	3.6	4.8	5.2	5.4	5.7	4.9	4.0	6.3	4.0
Craftsmen, foremen, and kindred workers	12.1	12.1	12.5	13.2	12.0	11.3	12.8	13.5	14.5	12.5	11.5	13.8	14.4	12.0	13.5
Operatives and kindred workers	26.0	26.5	25.5	30.0	29.4	28.5	28.2	32.1	26.5	28.8	29.1	26.9	30.5	26.0	28.9
Private household workers	3.0	2.9	2.9	2.6	2.8	3.6	3.1	2.9	3.0	3.4	3.8	3.4	2.9	2.9	2.6
Service workers, except private household	10.5	9.9	10.5	9.5	10.2	10.9	11.7	8.7	12.0	10.4	10.9	10.3	8.8	10.7	9.1
Farm laborers and foremen	3.1	3.6	3.6	3.5	3.7	4.4	4.0	3.4	3.8	3.6	3.2	4.8	3.8	3.8	3.8
Laborers, except farm and mine	12.2	13.3	13.9	13.5	13.3	12.8	15.3	13.7	14.8	13.1	12.2	14.2	14.6	14.0	12.5
No previous work experience	12.2	11.6	11.6	9.3	10.3	10.4	8.4	7.0	4.4	8.3	7.3	6.8	6.6	8.8	9.4

[1] See footnote 2, table 6.
[2] See footnote 4, table 1.
[3] See footnote 2, table 7.
[4] See footnote 3, table 1.

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Labor Force, Employment, and Unemployment Statistics, 1947-61," Washington, D.C.: U.S. Government Printing Office, October 1962, Table 13, p. 14.

Table 20

Unemployed Persons With No Work Experience in 1961, By Extent of Unemployment, Type of Job Looked for, Age, Marital Status, and Color

Type of job looked for, age, marital status, and color	Total looking for work		Percent distribution by number of weeks unemployed				
	Number (thousands)	Percent	Total	1 to 4 weeks	5 to 14 weeks	15 to 26 weeks	27 weeks or more
Total, 14 years and over...	1,676	100.0	100.0	33.4	21.9	8.6	36.2
Age:							
14 to 17 years.....	368	22.0	100.0	47.4	35.3	7.2	10.2
18 to 24 years.....	407	24.3	100.0	33.2	23.8	12.5	30.5
25 to 64 years.....	814	48.6	100.0	28.9	15.1	7.2	48.9
65 years and over.....	87	5.2	(1)	----	----	----	----
Marital Status:							
Single	702	41.9	100.0	34.7	28.8	9.6	26.9
Married, spouse present.....	728	43.4	100.0	36.3	18.7	7.3	37.7
Other marital status	246	14.7	100.0	20.6	10.7	11.1	57.6
Color:							
White.....	1,279	76.3	100.0	38.2	21.4	8.3	32.2
Nonwhite.....	397	23.7	100.0	17.9	23.5	9.7	49.0
Looked for regular full-time job	1,022	100.0	100.0	22.4	18.1	10.7	48.8
Age:							
14 to 24 years.....	363	35.5	100.0	25.1	23.7	15.9	35.2
25 years and over	659	64.5	100.0	20.9	15.0	7.8	56.3
Marital status:							
Single	315	30.8	100.0	15.3	22.3	14.6	47.8
Married, spouse present.....	516	50.5	100.0	29.2	18.3	8.8	43.8
Other marital status.....	191	18.7	100.0	15.9	10.1	10.6	63.5
Color:							
White.....	734	71.8	100.0	25.8	18.8	10.0	45.3
Nonwhite.....	288	28.2	100.0	13.5	16.3	12.4	57.8
Looked for temporary or part-time job.....	654	100.0	100.0	50.7	27.8	5.3	16.2
Age:							
14 to 24 years.....	412	63.0	100.0	52.7	34.0	4.9	8.5
25 years and over.....	242	37.0	100.0	47.2	16.6	6.1	30.1
Marital status:							
Single.....	387	59.2	100.0	50.7	34.1	5.5	9.7
Married, spouse present.....	212	32.4	100.0	54.5	19.8	3.5	22.3
Other marital status.....	55	8.4	(1)	----	----	----	----
Color:							
White.....	545	83.3	100.0	55.2	24.9	5.8	14.1
Nonwhite.....	109	16.7	100.0	29.1	41.8	2.7	26.4

(1) Percent not shown where base is less than 100,000

Source: C. Rosenfeld, "Work Experience of the Population in 1961," Monthly Labor Review, December 1962, p. 1358.

Table 21

Median Years of School Completed by the Civilian Noninstitutional Population 18 Years Old and Over, by Employment Status and Sex, 1952-62

Sex	Total, 18 years old and over	Labor Force					Not in Labor Force
		Total	Employed			Unemployed	
			Total	Agriculture	Nonagriculture		
Both Sexes							
October 1952	10.6	10.9	10.9	(1)	(1)	10.1	10.0
March 1957	11.0	11.6	11.7	(1)	(1)	9.4	10.2
March 1959	11.4	12.0	12.0	8.6	12.1	9.9	10.5
March 1962	11.9	12.1	12.1	8.7	12.2	10.6	10.7
Male							
October 1952	10.1	10.4	10.4	(1)	(1)	8.8	8.5
March 1957	10.7	11.1	11.2	(1)	(1)	8.9	8.5
March 1959	11.1	11.5	11.7	8.6	12.0	9.5	8.5
March 1962	11.6	12.0	12.1	8.7	12.1	10.0	8.7
Female							
October 1952.....	11.0	12.0	12.0	(1)	(1)	11.5	10.4
March 1957.....	11.4	12.1	12.1	(1)	(1)	10.4	10.7
March 1959	11.7	12.2	12.2	8.8	12.2	10.7	10.9
March 1962	12.0	12.2	12.3	9.4	12.3	11.5	11.2

(1) Not available

Source: Manpower Report of the President and A Report of Manpower Requirements, Resources, Utilization, and Training, United States Department of Labor, U.S. Government Printing Office, Washington, D.C., 1963.

Table 22

Median Years of School Completed by the Civilian Labor Force 18 Years Old and Over, by Age and Sex, 1952-62

Sex	18 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over
Both Sexes						
October 1952	12.2	12.1	11.4	8.3		8.3
March 1957	12.3	12.2	12.0	9.5		8.5
March 1959	12.3	12.3	12.1	10.8	8.9	8.6
March 1962	12.4	12.4	12.2	11.6	9.4	8.8
Male						
October 1952	11.5	12.1	11.2	8.7		8.2
March 1957	12.1	12.2	11.8	9.0		8.4
March 1959	12.1	12.3	12.1	10.4	8.8	8.5
March 1962	12.3	12.4	12.2	11.1	9.0	8.7
Female						
October 1952	12.4	12.2	11.9	9.2		8.8
March 1957	12.4	12.3	12.1	10.8		8.8
March 1959	12.4	12.3	12.2	11.7	10.0	8.8
March 1962	12.5	12.4	12.3	12.1	10.7	9.0

Source: Manpower Report of the President and A Report of Manpower Requirements, Resources, Utilization, and Training, United States Department of Labor, U.S. Government Printing Office, Washington, D.C., 1963.

agricultural industry and the proportions who drop out of the labor force. Three-fourths of the Negro workers are concentrated in low skill occupations and in industries most susceptible to irregular employment.[27]

The tremendous disparities in the employment opportunities between white and non-white workers is reflected for males and females in total unemployment figures and in long-term unemployment. (See Table 23). The tremendous increase in long-term unemployment for non-white women between 1960 and 1961, for example, shows the vagaries of the economic scene and of the labor market generally and their effects on employment opportunities for different groups in the labor force.

What are the chances that young high school graduates or high school dropouts with or without vocational training will successfully get work? A study of the June, 1961, high school graduates in the United States showed that by October, 1961, 850,000 of the 1,750,000 who had been graduated were enrolled in college.[28] Of the 900,000 who did not go to college, most were in the labor force and 18 per cent were unemployed. Of these high school graduates, two-thirds of the girls had clerical jobs and two-thirds of the boys semi-skilled operative jobs or unskilled laborer jobs. These patterns were similar to those for the 1960 graduates.[29]

Between January, 1961, and October, 1961, about 350,000 in the age group 16-24 quit elementary or high school, similar to the dropout rate a year earlier. In contrast to the high school graduates, the dropouts had an unemployment rate of 27 per cent. In general, the dropouts were in an unfavorable position when compared to the graduates in the types of jobs they could obtain. They were more likely to be service workers, undoubtedly of the lowest skill levels, and farm workers. Only 1 in 9 had a clerical job. (See Table 24). In contrast to the 10 per cent of the graduates who had part-time work because of the inability to find full-time employment, 20 per cent of the dropouts had part-time work. As Secretary Wirtz has put it, "A boy or girl who drops out of school today without an elemental skill comes awfully close to committing economic suicide; for the number of unskilled jobs is getting smaller and smaller every year."[30]

If these levels of unemployment and the areas in which employment was available reflected the purely rational characteristics related to employment, such as training and education, rather than also reflecting discriminatory hiring, the opportunities for Negroes would still be highly limited. While every thirteenth person among the unemployed had less than five years of elementary school education, one out of every five adult non-white male unemployed persons had less than five years of formal education.

During the school months of 1962, approximately 700,000 youths between the ages of 16 and 21 were not in school and did not have work;[31] one out of four was non-white. Non-white youths under 19 had an unemployment rate of 24 per cent, double that of white youths. In 1962, 57 per cent of the non-white youths between 20-24 years of age were school dropouts; among white youths the percentage was 28 per cent.

The patterns of unemployment found for the nation as a whole are also found in Michigan. White-collar workers have lower rates of unemployment than blue-collar workers; non-whites suffer much more unemployment than do white workers, and youthful workers have a more difficult time in gaining employment than do older workers.[32] (See Table 25). Again, education seems to be the most crucial variable in employment.

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[27]Statement of W. Wirtz, Secretary of Labor before the Subcommittee on Unemployment of the House Education and Labor Committee on the President's Proposed Amendments of the Manpower Development and Training Act, July 8, 1963, p. 12; also, U. S. Department of Labor, "Manpower Report of the President..." op. cit.,p. 43.

[28]U. S. Department of Labor, Bureau of Labor Statistics, Advanced Summary Special Labor Force Report, "Employment of 1961 High Schools Graduates and Dropouts," October, 1961, pp. 1-2.

[29]U. S. Department of Labor, Bureau of Labor Statistics, Advance Summary Special Labor Force Report, "Employment of 1961 High School Graduates and Dropouts," October 1961, pp. 1-2.

[30]Wirtz, op. cit., p. 12.

[31]Ibid., p. 14.

[32]The patterns of unemployment are universal, although the rates related to various social characteristics vary with region, social and economic areas.

Table 23

Extent of Unemployment in 1960 and 1961, By Age, Marital Status, Color, and Sex

Characteristics	Unemployed as percent of total working or looking for work		Percent of unemployed who worked during the year having unemployment of-					
			15 weeks or more		2 spells		3 spells or more	
	1961	1960	1961	1960	1961	1960	1961	1960
Total, 14 years and over	18.4	17.2	37.7	35.4	17.1	16.2	19.8	20.4
AGE AND SEX								
Male, 14 years and over.....	19.5	18.4	38.4	37.0	17.6	16.8	22.2	22.8
14 to 17 years.....	20.8	19.3	25.5	29.7	17.6	16.6	14.3	22.5
18 and 19 years.....	35.5	33.0	36.1	32.5	20.6	15.1	18.2	22.4
20 to 24 years.....	33.6	34.8	34.3	36.2	20.2	16.1	19.1	19.8
25 to 34 years.....	21.1	20.1	36.4	33.2	16.4	16.5	22.1	18.4
35 to 44 years.....	17.6	15.3	38.1	33.5	16.4	18.0	23.4	24.0
45 to 64 years.....	15.2	14.4	43.7	43.0	17.9	17.1	24.5	27.0
65 years and over.....	10.6	10.8	55.4	61.4	13.7	15.7	35.0	33.1
Female, 14 years and over....	16.7	15.3	36.1	31.9	16.1	14.9	15.0	15.2
14 to 17 years.....	13.6	13.7	28.4	18.9	17.3	8.5	6.2	9.1
18 and 19 years.....	35.5	29.9	23.0	21.1	18.2	13.2	11.2	8.3
20 to 24 years.....	24.1	19.5	31.3	30.8	15.0	18.2	12.2	11.4
25 to 34 years.....	18.7	16.2	33.3	33.5	16.0	15.9	13.8	15.4
35 to 44 years.....	15.5	14.5	42.0	31.9	14.9	14.3	17.1	17.4
45 to 64 years.....	12.5	12.5	44.0	36.1	17.2	14.6	19.4	18.7
65 years and over.....	7.0	8.3	(1)	(1)	(1)	(1)	(1)	(1)
MARITAL STATUS AND SEX								
Male:								
Single.....	27.0	26.1	38.0	38.2	18.4	16.8	19.4	22.0
Married, wife present.....	16.6	15.7	37.4	35.2	17.5	16.7	22.0	23.0
Other marital status.....	28.7	25.9	47.6	47.6	16.6	17.3	34.1	24.7
Female:								
Single.....	18.6	16.7	31.2	29.6	18.9	15.2	11.8	11.4
Married, husband present...	15.5	14.1	36.7	30.6	15.0	14.6	15.3	15.0
Other marital status.....	18.3	17.5	39.7	37.3	15.6	14.9	18.1	19.8
COLOR AND SEX								
Both sexes:								
White.....	17.0	15.9	35.3	33.8	17.2	16.2	18.1	19.0
Nonwhite.....	29.3	27.8	49.2	42.3	16.6	16.2	28.4	27.1
Male:								
White.....	17.8	16.9	36.4	35.7	18.1	17.1	20.4	21.0
Nonwhite.....	34.1	31.8	48.2	43.3	15.3	15.0	30.7	31.4
Female:								
White.....	15.7	14.2	32.8	29.9	15.4	14.0	13.2	14.4
Nonwhite.....	23.5	22.9	51.3	40.4	19.2	18.3	23.7	18.5

(1) Percent not shown where base is less than 100,000.

Source: C. Rosenfeld, "Work Experience of the Population in 1961," Monthly Labor Review, December 1962, p. 1355.

Table 24

Employment Status and Major Occupation Group of June 1961 High School Graduates Not Enrolled in College and Nongraduates Who Dropped Out of School in 1961, by Sex, October 1961

Employment status and major occupation group	June 1961 high school graduates			Nongraduates who dropped out of school in 1961		
	Both sexes	Male	Female	Both sexes	Male	Female
Civilian noninstitutional population (thousands)	916	345	571	354	179	175
In labor force						
Number (thousands)	730	297	433	239	150	89
Percent of population	79.7	86.1	75.8	67.5	83.8	50.9
Employed						
Number (thousands)	599	242	357	175	108	67
Unemployed						
Percent of labor force	17.9	18.5	17.6	26.8	28.0	(1/)
Percent distribution of employed by occupation	100.0	100.0	100.0	100.0	100.0	(1/)
Professional, technical, and kindred workers	1.5	-	2.5	1.1	1.8	(1/)
Managers, officials, and proprietors, except farm	.2	.4	-	-	-	(1/)
Clerical and kindred workers ...	41.6	9.9	63.2	11.4	7.3	(1/)
Sales workers	5.7	4.5	6.5	4.5	3.6	(1/)
Craftsmen, foremen, and kindred workers	4.2	9.9	.3	2.8	4.5	(1/)
Operatives and kindred workers .	18.2	31.0	9.6	17.0	22.7	(1/)
Private household workers	2.8	-	4.8	9.7	1.8	(1/)
Service workers, except private household	8.7	6.6	10.1	18.2	12.7	(1/)
Farmers, farm managers, laborers, and foremen	7.5	14.0	3.1	24.4	28.2	(1/)
Laborers, except farm and mine .	9.5	23.6	-	10.8	17.3	(1/)

1/ Percent not shown where base is less than 100,000.

Source: U. S. Department of Labor, Bureau of Labor Statistics, Advance Summary Special Labor Force Report, "Employment of 1961 High School Graduates and Dropouts," October 1961, p. 4

Table 25

EMPLOYMENT STATUS, BY COLOR AND SEX, MICHIGAN 1940 TO 1960

Employment Status and Sex	1960			1950			1940		
	Total	White	Non-White	Total	White	Non-White	Total	White	Non-White
Both Sexes									
Population, All Ages.....	7,824,965	7,088,013	736,952	6,371,766	5,917,825	453,941	5,256,106	5,039,643	216,463
Total, 14 Years Old and Over.....	5,349,563	4,876,839	472,724	4,717,979	4,382,486	335,493	4,036,893	3,869,512	167,381
Labor Force	2,943,909	2,685,815	258,094	2,540,508	2,359,547	180,961	2,125,877	2,033,307	92,570
Armed Forces	13,561	12,364	1,197	10,448	9,229	1,219	3,550	3,535	15
Civilian Labor Force	2,930,348	2,673,451	256,897	2,530,060	2,350,318	179,742	2,122,327	2,029,772	92,555
Employed	2,726,864	2,511,881	214,983	2,393,574	2,235,361	158,213	1,821,403	1,758,695	62,708
Unemployed	203,484	161,570	41,914	136,486	114,957	21,529	300,924	271,077	29,847
Percent of Civilian Labor Force.	6.9	6.0	16.3	5.4	4.9	12.0	14.2	13.4	32.2
Not in Labor Force	2,405,654	2,191,024	214,630	2,177,471	2,022,939	154,532	1,911,016	1,836,205	74,811
Male									
Population, All Ages.....	3,881,255	3,519,698	361,557	3,212,119	2,983,372	228,747	2,694,727	2,584,459	110,268
Total, 14 Years Old and Over.....	2,619,801	2,390,295	229,506	2,368,024	2,198,765	169,259	2,073,535	1,987,747	85,788
Labor Force.....	2,050,818	1,881,188	169,630	1,897,894	1,765,709	132,185	1,669,018	1,600,035	68,983
Armed Forces	13,369	12,215	1,154	9,976	8,816	1,160	3,550	3,535	15
Civilian Labor Force	2,037,449	1,868,973	168,476	1,887,918	1,756,893	131,025	1,665,468	1,596,500	68,968
Employed	1,898,034	1,757,949	140,085	1,786,025	1,670,105	115,920	1,423,909	1,377,896	46,013
Unemployed	139,415	111,024	28,391	101,893	86,788	15,105	241,559	218,604	22,955
Percent of Civilian Labor Force.	6.8	5.9	16.9	5.4	4.9	11.5	14.5	13.7	33.3
Not in Labor Force	568,983	509,107	59,876	470,130	433,056	37,074	404,517	387,712	16,805
Female									
Population, All Ages.....	3,943,710	3,568,315	375,395	3,159,647	2,934,453	225,194	2,561,379	2,455,184	106,195
Total, 14 Years Old and Over.....	2,729,762	2,486,544	243,218	2,349,955	2,183,721	166,234	1,963,358	1,881,765	81,593
Labor Force	893,091	804,627	88,464	642,614	593,838	48,776	456,859	433,272	23,587
Armed Forces	192	149	43	472	413	59	...	...	...
Civilian Labor Force	892,899	804,478	88,421	642,142	593,425	48,717	456,859	433,272	23,587
Employed	828,830	753,932	74,898	607,549	565,256	42,293	397,494	380,799	16,695
Unemployed	64,069	50,546	13,523	34,593	28,169	6,424	59,365	52,473	6,892
Percent of Civilian Labor Force.	7.2	6.3	15.3	5.4	4.7	13.2	13.0	12.1	29.2
Not in Labor Force	1,836,671	1,681,917	154,754	1,707,341	1,589,883	117,458	1,506,499	1,448,493	58,006

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., 1962, Table 53.

A study of the educational background of job applicants by the M.E.S.C., November, 1960, showed that almost two-thirds of the unemployed job applicants had not completed high school.[33] An examination of the educational backgrounds of Michigan workers over 25 shows that in 1960, for urban residents, 40.9 per cent of the white labor force over age 25 had a high school education or higher, while only 25.2 per cent of the non-white labor force had this much education. (See Table 26). The contrasts between the backgrounds of rural farm and urban residents is also apparent in the fact that among the rural farm white members of the labor force, 32.7 per cent had a high school education or higher. For the non-white population this figure was 18.7 per cent.

Whether the lower employment rates of non-whites is a function of poorer educational background, lack of experience or training, or discrimination, it is apparent that in Michigan, non-white workers followed the national pattern of being concentrated in the lower manual occupations. For 1960 almost 39 per cent of the employed males were in operative or other semi-skilled manual work; other large groups were in the laborer, unskilled manual work, 14 per cent and 12 per cent in the manual skilled occupations. (See Table 27) Among the non-white women employed workers, more than 50 per cent were private household or service workers.

Among the unemployed, as might be expected, the same concentration of occupations is found. Of the experienced male unemployed in 1960 among the non-whites, 38.8 per cent were operatives or kindred workers, 23.3 per cent were laborers, and 9.9 per cent craftsmen. The comparable figures for whites is 34.4 per cent operatives, 14.6 per cent laborers, and 24.3 per cent craftsmen. (See Table 28). Among experienced non-white female unemployed workers, the largest concentrations are: 26.1 per cent service workers, 20.3 per cent private household workers, and 16.1 per cent operatives. For experienced white female workers the largest concentration of unemployed is among operatives and kindred workers, 35.4 per cent; sales workers, 18.8 per cent; and service workers, 15.5 per cent. In the cases for both males and females, the non-white population has more disadvantages than the white population, suffering from higher rates of unemployment and greater concentrations in the lowest skilled occupations and in industries with the greatest amounts of instability in employment. (See Table 29). In the cases of all workers, it is apparent that the patterns of unemployment show that the groups suffering most from the changing structure of the labor market are those with the lowest skills and with the poorest education.

Migration and Labor Markets

Have all the significant data upon which vocational education must be based been presented? Is it enough for local school administrators to know about national and statewide trends in employment and the factors which are related to unemployment? The answers rest on the type of labor market for which youths are being prepared.

The labor market is the focus for the analysis of employment and occupational activities. Labor markets, however, may be defined in a number of ways, depending upon the types of analysis or the discussion undertaken. For many purposes the labor market is adequately defined in purely geographic terms, although even here we must recognize the overlapping of local and regional markets. In other cases, it is possible to define labor markets in terms of given industries, or the production of given commodities, or even in terms of given union jurisdictions.[34] For our purposes, we shall define the labor market as a recognizable area of employment opportunities which provides a fixed number of persons within a given region, at a given time, with employment or potential employment.

A primary question, then, to be answered by the vocational educator is: For which labor markets local, statewide, regional, or national are we training our youths? If youths remain in the local community and work there or in geographically contiguous areas, preparation depends on local conditions, and training is for a local labor market. If youths seek work elsewhere, training and preparation must be for labor markets other than the local one. What is demanded of those responsible for the vocational education of youths in their communities is some knowledge of job-seeking behavior. How many youths remain in the community after terminating their educations? Which youths migrate elsewhere? How do patterns of migration for males and females differ?

If one prepares youths for labor force activity beyond the local labor market, local economic trends hardly provide a proper basis for adequate vocational training. On the other hand, preparing youths for the local labor market, must also reflect the changes in the broader economy which affect local labor market employment patterns. What significant local trends should be understood? What are the significant statewide, regional, and national trends?

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[33] Michigan Employment Security Commission, op. cit., p. 19.

[34] S. Nosow, "Labor Distribution and the Normative System" Social Force, October 1956, p. 26.

Table 26

Years of School Completed by Persons 25 Years Old and Over, by Color and Sex, for Michigan: 1960

Color, and Sex	Total 25 years old and over	Years of School Completed								
		None	Elementary School				High School		College	
			1 to 4	5 and 6	7	8	1 to 3	4	1 to 3	4 or More
The State.....	100.0	1.5	4.3	5.9	5.8	19.4	22.2	26.0	8.1	6.8
White.....	100.0	1.4	3.7	5.3	5.6	19.7	21.9	26.9	8.3	7.2
Nonwhite.....	100.0	2.2	10.9	11.9	8.3	16.1	25.4	16.8	5.5	2.9
Male.....	100.0	1.5	5.0	6.4	6.5	20.2	21.8	22.1	7.9	8.4
White.....	100.0	1.4	4.2	5.8	6.3	20.6	21.6	22.9	8.2	9.0
Nonwhite.....	100.0	2.7	13.5	13.1	8.6	16.3	23.5	14.2	5.0	3.0
Female.....	100.0	1.4	3.6	5.3	5.2	18.6	22.7	29.8	8.2	5.2
White.....	100.0	1.4	3.2	4.8	4.9	18.9	22.2	30.8	8.4	5.4
Nonwhite.....	100.0	1.8	8.3	10.8	8.0	15.8	27.2	19.4	6.0	2.8

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., 1962, Table 47.

Table 27

Major Occupation Group of Employed Persons, by Sex and Color
Michigan: 1960

Occupation Group	Sex and Color			
	Male		Female	
	White	Nonwhite	White	Nonwhite
Total Employed.....	100.0*	100.0*	100.0*	100.0*
Professional, technical, and kindred workers.....	11.0	3.5	14.1	7.4
Farmers and farm managers.....	3.2	.1	.4	--
Managers, officials and proprieters, ex, farms.....	9.7	1.9	3.4	1.2
Clerical and kindred workers.....	6.7	5.0	32.6	12.7
Sales workers.....	7.1	1.9	9.8	2.6
Craftsmen, foremen and kindred workers.....	22.3	12.3	1.2	.8
Operatives and kindred workers...	25.1	38.7	13.5	13.0
Private household workers.....	.1	.4	5.1	23.9
Service workers, except private household.....	5.1	11.5	14.6	26.9
Farm laborers and foremen.....	1.1	.5	.6	.2
Laborers, except farm and mine...	4.8	14.2	.5	1.2
Occupation not reported.....	3.5	10.0	4.4	10.0

* Columns may not equal 100.0 because of rounding.

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., 1962, Table 58.

Table 28

Major Occupation Group of the Experienced Unemployed, by Color and Sex, Michigan: 1960

Major Occupation Group	Male				Female			
	White		Nonwhite		White		Nonwhite	
	Total	Percent Distribution	Total	Percent Distribution	Total	Percent Distribution	Total	Percent Distribution
Total	107,057	100.0	26,539	100.0	47,242	100.0	11,585	100.0
Professional, technical, and kindred workers.....	3,141	2.9	222	0.8	1,079	2.3	179	1.5
Farmers and farm managers....	546	0.5	5	...	28	0.1	12	0.1
Managers, officials and proprieters, ex, farms.....	2,692	2.5	144	0.5	530	1.1	53	0.5
Clerical and kindred workers.	4,847	4.5	856	3.2	8,863	18.8	1,308	11.3
Sales workers.....	3,737	3.5	329	1.2	4,692	9.9	443	3.8
Craftsmen, foremen and kindred workers.....	26,015	24.3	2,620	9.9	645	1.4	86	0.7
Operatives and kindred workers.....	36,862	34.4	10,292	38.8	16,747	35.4	1,869	16.1
Private household workers....	124	0.1	70	0.3	2,477	5.2	2,350	20.3
Service workers, except private household.....	5,136	4.8	2,268	8.5	7,486	15.8	3,020	26.1
Farm laborers and foremen....	2,115	2.0	259	1.0	273	0.6	113	1.0
Laborers, except farm and mine.....	15,662	14.6	6,190	23.3	660	1.4	229	2.0
Occupation not reported.....	6,180	5.8	3,284	12.4	3,762	8.0	1,923	16.6

Source: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., 1962, Table 60.

Table 29

Industry Group of Employed Persons, by Color, Michigan: 1960, in Percentages

Industry group	Color	
	White	Nonwhite
Total Employed	100.0	100.0
Agriculture	3.6	0.6
Forestry and Fisheries	0.1	---
Mining	0.6	---
Construction	4.7	3.6
Manufacturing	38.2	35.1
Railroad and Railway Exp. Service	1.0	0.5
Trucking Service and Warehousing	1.5	0.6
Other Transportation	0.8	1.1
Communications	1.2	0.6
Utilities and San. Service	1.4	1.3
Wholesale Trade	3.1	1.7
Food and Dairy Product Stores	2.8	1.5
Eating and Drinking Places	2.7	2.8
Other Retail Trade	9.7	5.4
Finance, Insurance and Real Estate	3.5	1.3
Business Services	1.1	0.6
Repair Services	1.2	1.8
Private Households	1.8	8.9
Other Personal Services	2.3	5.8
Entertainment and Recreation Services	0.6	0.7
Educational Services: Government	4.6	2.9
Private	1.1	0.5
Welfare, Religious, and Nonprofit Mem. Organizations	1.2	1.2
Hospitals	2.6	6.1
Other Professional and Related Services	2.5	1.5
Public Administration	3.3	5.5
Industry not reported	2.8	8.4

Source: U. S. Bureau of the Census. U. S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC (1)-24C. U. S. Government Printing Office, Washington, D. C., Table 61.

Appropriate planning on the part of administrators might start with some analysis of labor market participation by youths of the community. The ideal situation, of course, is to have continual follow-up studies. This would give an absolute picture of the labor force patterns for the youths trained in the local community. This microscopic analysis, while valuable for the diagnosis of patterns and trends, might miss the broader changes which affect the particular community.

Other techniques can rely essentially upon census data. What has been happening to the population of given local communities? What has been happening to employment patterns? If migration has significantly affected local populations, how must this be translated into vocational training? If industrial trends have significantly affected local job opportunities, how might these be translated into vocational training?

Judging from the specific offerings and the types of orientations of the local school systems, the more traditional concepts of a labor market remain, in terms of purely local job opportunities. When society is founded upon an agricultural base and the service industries tied to the agricultural community, such a concept of vocational education is suited to the needs of youth and of the entire community.

However, this concept and the vocational needs of youth, is being questioned because of data which reflect changing economic and demographic characteristics of communities and of broader regions.

Studies of the demographic changes in recent decades indicate the tremendous mobility of the population. About 7 per cent of all male workers in the United States, for example, do not reside in the same county in which they resided a year previously. More than 5 per cent of the nation's inhabitants move from one county to another in the course of a year.[35]

In Michigan, the changes have been no less pronounced. During the decade of the 1950's, 156,000 persons migrated to Michigan, which constituted 2.4 per cent of the state's population in 1950.[36] Of course, population growth and population changes due to in-or out-migration did not affect all of Michigan's counties in the same way.

Populous counties have tended to gain population, while the least populous continue to lose population. In fact, maximum population was reached in Antrim, Manistee, Menominee, and Sanilac counties in 1900. (See Table 30). This pattern of maximum population during previous decades typifies most of the Upper Peninsula and northern lower peninsula counties. In contrast 19 southern Michigan counties have more than doubled population since 1910. In Michigan, 18 counties have less than 10,000 population while 16 counties have 100,000 or more. As might be expected, 15 of the 18 least populous counties are entirely rural, while 11 of the 16 most populous are more urban than rural.[37]

The distribution of population has market significance for the patterns of industrial growth and development. The larger the concentration of population, the more services may be provided in the community. The notable increase in trade and services in Michigan is directly related to the increase in urban concentrations of population.

The extent to which this concentration of population is a function of migration is quite clear from the changes during the past two decades. Contrast Macomb County which had a 78 per cent in-migration during the 1950's with Alger or Missaukee counties with their more than 20 per cent out-migration for the same decade. This does not mean that all persons from the Upper Peninsula go to Macomb County, or even remain in the state, but it does mean that most of them go to the more populous parts of the state. (See Tables 31 and 32). While there are no actual figures which show the extent to which particular age groups leave or enter given counties, one can make significant inferences about the likelihood of any age group's leaving or remaining.

To point up the significance of out-migration to vocational education, a cohort analysis was made of specific age groups which provide new entrants into the labor force. We were interested in finding out how many of those youths who entered the labor force between 1950 and 1960 remained in their local communities.* Recognizing natural changes in population and some in-migration in

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[35]Bogue, op. cit., p. 375.

[36]J. F. Thaden, "Population of Michigan Counties -- Projection to 1970," Technical Bulletin B-24 E. Lansing, Michigan: Institute for Community Development, Continuing Education Service, Michigan State University, 1962, p. 12.

[37]Ibid., p. 22.

*Since the census provides us with demographic and labor force data for counties, the county was operationally established as the geographic bounds of the local community and the local labor market.

Table 30

Population of Michigan by Counties: 1900 to 1960

County	1960	1950	1940	1930	1920	1910	1900
Alcona	6,352	5,856	5,463	4,989	5,912	5,703	5,691
Alger	9,250	10,007	10,167	9,327	9,983	7,675	5,868
Allegan	57,729	47,493	41,839	38,974	37,540	39,819	38,812
Alpena	28,556	22,189	20,766	18,574	17,869	19,965	18,254
Antrim	10,373	10,721	10,964	9,979	11,543	15,692	16,568
Arenac	9,860	9,644	9,233	8,007	9,460	9,640	9,821
Baraga	7,151	8,037	9,356	9,168	7,662	6,127	4,320
Barry	31,738	26,183	22,613	20,928	21,383	22,633	22,514
Bay	107,042	88,461	74,981	69,474	69,548	68,238	62,378
Benzie	7,834	8,306	7,800	6,587	6,947	10,638	9,685
Berrien	149,865	115,702	89,117	81,066	62,653	53,622	49,165
Branch	34,903	30,202	25,845	23,950	23,997	25,605	27,811
Calhoun	138,858	120,813	94,206	87,043	72,918	56,638	49,315
Cass	36,932	28,185	21,910	20,888	20,395	20,624	20,876
Charlevoix	13,421	13,475	13,031	11,981	15,788	19,157	13,956
Cheboygan	14,550	13,731	13,644	11,502	13,991	17,872	15,516
Chippewa	32,655	29,206	27,807	25,047	24,818	24,472	21,338
Clare	11,647	10,253	9,163	7,032	8,250	9,240	8,360
Clinton	37,969	31,195	26,671	24,174	23,110	23,129	25,136
Crawford	4,971	4,151	3,765	3,097	4,049	3,934	2,943
Delta	34,298	32,913	34,037	32,280	30,909	30,108	23,881
Dickinson	23,917	24,844	28,731	29,941	19,456	20,524	17,890
Eaton	49,684	40,023	34,124	31,728	29,377	30,499	31,668
Emmet	15,904	16,534	15,791	15,109	15,639	18,561	15,931
Genesee	374,313	270,963	227,944	211,641	125,668	64,555	41,804
Gladwin	10,769	9,451	9,385	7,424	8,827	8,413	6,564
Gogebic	24,370	27,053	31,797	31,577	33,225	23,333	16,738
Grand Traverse	33,490	28,598	23,390	20,011	19,518	23,784	20,479
Gratiot	37,012	33,429	32,205	30,252	33,914	28,820	29,889
Hillsdale	34,742	31,916	29,092	27,417	28,161	29,673	29,865
Houghton	35,654	39,771	47,631	52,851	71,930	88,098	66,063
Huron	34,006	33,149	32,584	31,132	32,786	34,758	34,162
Ingham	211,296	172,941	130,616	116,587	81,554	53,310	39,818
Ionia	43,132	38,158	35,710	35,093	33,087	33,550	34,329
Iosco	16,505	10,906	8,560	7,517	8,199	9,753	10,246
Iron	17,184	17,692	20,243	20,805	22,107	15,164	8,990
Isabella	35,348	28,964	25,982	21,126	22,610	23,029	22,784
Jackson	131,994	108,168	93,108	92,304	72,539	53,426	48,222
Kalamazoo	169,712	126,707	100,085	91,368	71,225	60,427	44,310
Kalkaska	4,382	4,597	5,159	3,799	5,577	8,097	7,133
Kent	363,187	288,292	246,338	240,511	183,041	159,145	129,714

Table 30 (con't)

County	1960	1950	1940	1930	1920	1910	1900
Keweenaw	2,417	2,918	4,004	5,076	6,322	7,156	3,217
Lake	5,338	5,257	4,798	4,066	4,437	4,939	4,957
Lapeer	41,926	35,794	32,116	28,348	25,782	26,033	27,641
Leelanau	9,321	8,647	8,436	8,206	9,061	10,608	10,556
Lenawee	77,789	64,629	53,110	49,849	47,767	47,907	48,406
Livingston	38,233	26,725	20,863	19,274	17,522	17,736	19,664
Luce	7,827	8,147	7,423	6,528	6,149	4,004	2,983
Mackinac	10,853	9,287	9,438	8,783	8,026	9,249	7,703
Macomb	405,804	184,961	107,638	77,146	38,103	32,606	33,244
Manistee	19,042	18,524	18,450	17,409	20,899	26,688	27,856
Marquette	56,154	47,654	47,144	44,076	45,786	46,739	41,239
Mason	21,929	20,474	19,378	18,756	19,831	21,832	18,885
Mecosta	21,051	18,968	16,902	15,738	17,765	19,466	20,693
Menominee	24,685	25,299	24,883	23,652	23,778	25,648	27,046
Midland	51,450	35,662	27,094	19,150	17,237	14,005	14,439
Missaukee	6,784	7,458	8,034	6,992	9,004	10,606	9,308
Monroe	101,120	75,666	58,620	52,485	37,115	32,917	32,754
Montcalm	35,795	31,013	28,581	27,471	30,441	32,069	32,754
Montmorency	4,424	4,125	3,840	2,814	4,089	3,755	3,234
Muskegon	149,943	121,545	94,501	84,630	62,362	40,577	37,036
Newaygo	24,160	21,567	19,286	17,029	17,378	19,220	17,673
Oakland	690,259	396,001	254,068	211,251	90,050	49,576	44,792
Oceana	16,547	16,105	14,812	13,805	15,601	18,379	16,644
Ogemaw	9,680	9,345	8,720	6,595	7,786	8,907	7,765
Ontonagon	10,584	10,282	11,359	11,114	12,428	8,650	6,197
Osceola	13,595	13,797	13,309	12,806	15,221	17,889	17,859
Oscoda	3,447	3,134	2,543	1,728	1,783	2,027	1,468
Otsego	7,545	6,435	5,827	5,554	6,043	6,552	6,175
Ottawa	98,719	73,751	59,660	54,858	47,660	45,301	39,667
Presque Isle	13,117	11,996	12,250	11,330	12,131	11,249	8,821
Roscommon	7,200	5,916	3,668	2,055	2,032	2,274	1,787
Saginaw	190,752	153,515	130,468	120,717	100,286	89,290	81,222
St. Clair	107,201	91,599	76,222	67,563	58,009	52,341	55,228
St. Joseph	42,332	35,071	31,749	30,618	26,818	25,499	23,889
Sanilac	32,314	30,837	30,114	27,751	31,237	33,930	35,055
Schoolcraft	8,953	9,148	9,524	8,451	9,977	8,681	7,887
Shiawassee	53,446	45,967	41,207	39,517	35,924	33,246	33,866
Tuscola	43,305	38,258	35,694	32,934	33,320	34,913	35,890
Van Buren	48,395	39,184	35,111	32,637	30,715	33,185	33,274
Washtenaw	172,440	134,606	80,810	65,530	49,520	44,714	47,761
Wayne	2,666,297	2,435,235	2,015,623	1,888,946	1,177,645	531,590	348,793
Wexford	18,466	18,628	17,976	16,827	18,207	20,769	16,845
MICHIGAN	7,823,194	6,372,009	5,256,106	4,842,325	3,668,412	2,810,172	2,420,982

Source: J.F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24, Continuing Education Service, Michigan State University, March 1962.

Table 31

Natural Increase Rates and Net Migration Rates, by Counties of Michigan: Intercensal Periods 1940-1950 and 1950-1960

County	Natural Increase Rate[a] 1940-1950	Natural Increase Rate[a] 1950-1960	Net Migration Rate 1940-1950[b]	Net Migration Rate 1950-1960[c]
Alcona	10.1	8.0	-2.9	0.2
Alger	16.3	13.0	-17.4	-20.1
Allegan	9.9	15.7	3.6	4.1
Alpena	14.7	18.9	-8.0	7.1
Antrim	8.3	9.0	-9.8	-12.0
Arenac	9.2	10.6	-4.6	-8.4
Baraga	9.5	9.5	-22.4	-20.1
Barry	7.8	12.2	8.2	7.7
Bay	15.2	18.7	1.8	0.4
Benzie	8.4	9.6	-1.5	-15.0
Berrien	12.0	18.0	16.0	8.9
Branch	7.3	9.9	9.5	4.8
Calhoun	12.2	16.2	14.0	-2.5
Cass	4.8	8.3	23.7	21.4
Charlevoix	10.1	10.3	-6.2	-10.7
Cheboygan	11.9	13.8	-11.0	-8.3
Chippewa	15.7	20.1	-10.7	-9.5
Clare	11.9	15.4	-0.2	-2.9
Clinton	12.1	18.9	4.4	0.8
Crawford	6.8	13.2	3.7	5.3
Delta	11.3	14.5	-14.0	-10.6
Dickinson	11.0	10.3	-23.2	-13.9
Eaton	10.2	15.8	7.0	6.5
Emmet	11.5	13.1	-6.5	-16.7
Genesee	16.0	23.7	1.8	9.8
Gladwin	14.3	13.6	-13.3	-0.6
Gogebic	9.8	7.7	-23.5	-17.2
Grand Traverse	11.6	15.1	10.1	0.6
Gratiot	13.1	16.7	-9.8	-6.8
Hillsdale	8.9	12.3	-0.1	-4.0
Houghton	5.1	4.3	-22.1	-14.5
Huron	13.4	17.4	-11.4	-15.0
Ingham	15.3	20.1	9.6	-0.1
Ionia	10.2	14.4	-3.2	-2.3
Iosco	11.2	19.7	15.5	26.6
Iron	9.4	7.7	-20.7	-10.4
Isabella	14.2	18.1	-7.0	2.0
Jackson	11.0	15.5	4.6	5.1
Kalamazoo	13.0	17.5	9.8	13.5
Kalkaska	9.4	8.2	-19.6	-12.6
Kent	12.4	18.8	4.0	4.8

Table 31 (con't)

County	Natural Increase Rate[a] 1940-1950	Natural Increase Rate[a] 1950-1960	Net Migration Rate 1940-1950[b]	Net Migration Rate 1950-1960[c]
Keweenaw	2.1	-1.6	-28.7	-15.7
Lake	4.0	3.1	5.8	-1.6
Lapeer	9.3	14.6	2.2	1.3
Leelanau	9.3	13.7	-6.5	-6.4
Lenawee	11.9	16.4	7.8	2.3
Livingston	9.3	15.3	18.6	24.6
Luce	11.4	11.7	-1.8	-15.4
Mackinac	12.0	16.3	-13.3	-0.8
Macomb	18.3	25.9	47.7	78.1
Manistee	7.9	9.8	-7.0	-7.1
Marquette	10.3	13.2	-9.6	3.5
Mason	8.8	10.9	-2.8	-4.2
Mecosta	9.4	12.0	0.1	-1.7
Menominee	13.1	12.8	-11.2	-15.1
Midland	22.1	25.2	6.6	13.5
Missaukee	13.4	12.9	-19.6	-21.3
Monroe	11.7	19.0	16.2	11.4
Montcalm	9.6	13.4	-0.5	1.1
Montmorency	13.1	11.9	-5.7	-5.1
Muskegon	18.2	21.0	8.3	0.0
Newaygo	10.8	14.7	1.0	-3.6
Oakland	17.4	23.1	34.5	42.6
Oceana	8.8	13.5	0.1	-10.9
Ogemaw	10.9	10.1	-3.9	6.7
Ontonagon	7.2	10.6	-16.0	-7.8
Osceola	11.8	11.9	-7.6	-13.2
Oscoda	11.0	11.7	11.5	-2.3
Otsego	12.1	15.5	-2.0	0.4
Ottawa	15.1	19.5	6.6	11.1
Presque Isle	15.3	18.9	-16.9	-10.4
Roscommon	10.5	9.9	48.0	10.7
Saginaw	14.7	20.3	2.1	1.5
St. Clair	11.9	15.1	7.6	0.6
St. Joseph	10.2	12.1	0.5	7.3
Sanilac	10.9	12.8	-8.0	-8.4
Schoolcraft	13.5	15.4	-16.8	-17.4
Shiawassee	12.2	17.5	-0.7	-2.6
Tuscola	11.2	14.7	-3.8	-2.5
Van Buren	6.4	11.1	5.8	11.1
Washtenaw	14.5	20.0	25.8	5.2
Wayne	13.6	17.6	5.9	-9.0
Wexford	11.4	13.3	-7.5	-14.1
MICHIGAN	13.3	18.1	6.2	2.5

a. Corrected for underregistration of births

b. Migration as a percentage of 1940 population

c. Migration as a percentage of 1950 population

Source: J.F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24, Continuing Education Service, Michigan State University, Mar. 196

Table 32

Components of Population Change in Counties of Michigan: 1940 to 1960

County	1950 to 1960			1940 to 1950		
	Population Change	Natural Increase[a]	Net Migration	Population Change	Natural Increase[a]	Net Migration
Alcona	496	484	12	416	575	-159
Alger	-757	1,257	-2,014	-114	1,645	-1,759
Allegan	10,236	8,285	1,951	5,924	4,445	1,479
Alpena	6,367	4,787	1,580	1,504	3,152	-1,648
Antrim	-348	942	-1,290	-173	896	-1,069
Arenac	216	1,030	-814	449	868	-419
Baraga	-886	726	-1,612	-1,261	819	-2,080
Barry	5,555	3,551	2,004	3,746	1,904	1,842
Bay	18,581	18,217	364	13,700	12,388	1,312
Benzie	-472	777	-1,249	557	672	-115
Berrien	34,163	23,918	10,245	26,605	12,321	14,284
Branch	4,701	3,247	1,454	4,497	2,043	2,454
Calhoun	18,045	21,039	-2,994	26,315	13,045	13,270
Cass	8,747	2,719	6,028	6,384	1,210	5,174
Charlevoix	-54	1,382	-1,436	532	1,329	-797
Cheboygan	819	1,954	-1,135	132	1,630	-1,498
Chippewa	3,449	6,212	-2,763	1,499	4,464	-2,965
Clare	1,394	1,695	-301	1,134	1,149	-15
Clinton	6,774	6,541	233	4,666	3,509	1,157
Crawford	820	600	220	404	266	138
Delta	1,385	4,864	-3,479	-977	3,776	-4,753
Dickinson	-927	2,532	-3,459	-3,711	2,920	-6,631
Eaton	9,661	7,068	2,593	6,130	3,753	2,377
Emmet	-630	2,128	-2,758	834	1,858	-1,024
Genesee	103,350	76,697	26,653	43,842	39,840	4,002
Gladwin	1,318	1,371	-53	108	1,348	-1,240
Gogebic	-2,683	1,958	-4,641	-4,576	2,853	-7,429
Grand Traverse	4,892	4,709	183	5,346	3,008	2,338
Gratiot	3,583	5,863	-2,280	1,132	4,313	-3,181
Hillsdale	2,826	4,088	-1,262	2,718	2,745	-27
Houghton	-4,117	1,639	-5,756	-8,431	2,234	-10,665
Huon	857	5,830	-4,973	699	4,402	-3,703
Ingham	38,355	38,589	-234	36,656	23,561	13,095
Ionia	4,974	5,839	-865	2,645	3,774	-1,129
Iosco	5,599	2,702	2,897	2,398	1,079	1,319
Iron	-508	1,335	-1,843	-2,400	1,763	-4,163
Isabella	6,384	5,813	571	2,063	3,956	-1,893
Jackson	24,069	18,552	5,517	15,280	11,027	4,253
Kalamazoo	43,005	25,878	17,127	24,794	14,807	9,987
Kalkaska	-215	366	-581	-549	459	-1,008
Kent	74,895	61,040	13,855	42,926	33,137	9,789

Table 32 (con't)

County	1950 to 1960 Population Change	1950 to 1960 Natural Increase[a]	1950 to 1960 Net Migration	1940 to 1950 Population Change	1940 to 1950 Natural Increase[a]	1940 to 1950 Net Migration
Keweenaw	-501	-43	-458	-1,072	73	-1,145
Lake	81	163	-82	479	203	276
Lapeer	6,132	5,672	460	3,857	3,156	701
Leelanau	674	1,228	-554	249	793	-544
Lenawee	13,160	11,673	1,487	11,222	7,066	4,156
Livingston	11,508	4,942	6,566	6,042	2,204	3,838
Luce	-320	935	-1,255	753	885	-132
Mackinac	1,566	1,639	-73	-130	1,122	-1,252
Macomb	220,843	76,357	144,486	77,844	26,722	51,122
Manistee	518	1,829	-1,311	168	1,456	-1,288
Marquette	8,500	6,823	1,677	312	4,873	-4,561
Mason	1,455	2,312	-857	1,221	1,753	-532
Mecosta	2,083	2,408	-325	1,722	1,707	15
Menominee	-614	3,207	-3,821	491	3,273	-2,782
Midland	15,788	10,970	4,818	8,708	6,923	1,785
Missaukee	-674	915	-1,589	-529	1,038	-1,567
Monroe	25,454	16,830	8,624	17,272	7,830	9,442
Montcalm	4,782	4,448	334	2,705	2,848	-143
Montmorency	299	509	-210	303	521	-218
Muskegon	28,398	28,430	-32	27,426	19,646	7,780
Newaygo	2,593	3,367	-774	2,404	2,205	199
Oakland	294,258	125,514	168,744	143,461	56,282	87,179
Oceana	442	2,193	-1,751	1,388	1,368	20
Ogemaw	335	962	-627	647	984	-337
Ontonagon	302	1,102	-800	-1,031	778	-1,809
Osceola	-202	1,623	-1,825	583	1,582	-999
Oscoda	313	384	-71	601	310	291
Otsego	1,110	1,083	27	627	744	-117
Ottawa	24,968	16,781	8,187	14,032	10,077	3,955
Presque Isle	1,121	2,368	-1,247	-209	1,848	-2,057
Roscommon	1,284	650	634	2,258	501	1,757
Saginaw	37,237	35,000	2,237	23,538	20,748	2,787
St. Clair	15,602	15,018	584	15,743	9,949	5,794
St. Joseph	7,261	4,694	2,567	3,565	3,398	167
Sanilac	1,477	4,054	-2,577	909	3,315	-2,406
Schoolcraft	-195	1,397	-1,592	-338	1,260	-1,598
Shiawassee	7,479	8,696	-1,217	5,002	5,306	-304
Tuscola	5,047	6,020	-973	2,764	4,120	-1,356
Van Buren	9,211	4,865	4,346	4,396	2,373	2,023
Washtenaw	37,834	30,800	7,034	40,758	16,559	24,199
Wayne	231,062	450,689	-219,627	421,943	302,777	119,166
Wexford	- 162	2,465	-2,627	734	2,078	-1,344
MICHIGAN	1,451,428	1,289,196	162,232	1,106,658	777,597	329,061

a - corrected for underregistration of births.

Source: J.F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24, Continuing Education Service, Michigan State University, March 1962.

the various age groups, we feel that the analysis gives a fairly accurate indication of the number of youths trained in the local community who are likely to remain in it.

Those persons who were 5-9 years old in 1950 would be 15-19 years old in 1960. This group would have entered the labor force in the latter part of the 1950's. Those persons who were 10-14 in 1950 were in the 20-24 year age group in 1960, and would have entered the labor force all through the 1950's. Those persons who were in the 15-19 year age group in 1950 started to enter the labor force during the early 1950's and constituted the 25-29 year old group in 1960.

As an example, there were 180 persons in the 5 to 9-year-old group in Alcona County in 1950. If there had been no deaths and no in- or out-migrations, there should have been 180 persons in the 15-19 age group in 1960. However, there was an 11.7 per cent decrease in this number, an 8.5 per cent decrease for males and a 15.1 per cent decrease for females. (See Table 33). The group which was 10-14 years old in 1950 and 20-24 in 1960 had decreased by 45.9 per cent, and the group which was 15-19 in 1950 and 25-29 in 1960 had decreased by 40.9 per cent. Although the over-all net change in the population through migration was only 1.4 per cent, it is clear that the youths of this county left in very large numbers during the 1950's, which balanced by some in-migration of older persons. Alger County, with the same large declines in the numbers of youths and young adults, did not have this out-migration balanced by the in-migration of other age groups and shows an over-all net out-migration of 20.6 per cent. Fifty-four of Michigan's 83 counties had some loss through migration during the decade of the 1950's. Thirty-six counties had more than 40 per cent net out-migration of youths who were between 10-14 and 20-24 during the decade, and 35 counties which had a net out-migration of 30 per cent or more for those between ages 15-19 and 25-29 during the decade.

These statistics show that a very large segment of Michigan's youthful population leaves local communities to seek work elsewhere. The largest proportion undoubtedly go to urban centers within the state and become part of the statistics showing the tremendous growths of population for such counties as Oakland, Macomb, and Genesee. Unfortunately, some of the movement for many counties is obscured by the census procedure started in 1950 of counting youths as residents of counties in which they are attending college; this would have a large effect on Ingham, Kalamazoo, and Washtenaw counties.

To what extent should one assume that these patterns of mobility, population growth and decline will continue? Dr. J. F. Thaden of Michigan State University has made demographic projections for all of Michigan and its counties for 1970 using three different methods. (See Table 34). In all three cases the projections are based upon past trends.

Projections A and C are both based upon the dynamic forces which have been gaining or losing momentum over the past two decades. Projection B is more static, neglecting the direction of these trends. There undoubtedly are populations which reach an equilibrium point, beyond which populations change little and migration just about disappears; for example, Alcona or Barry counties in the Upper Peninsula or Lapeer county in the lower.

The projections for each of the counties, however, do show many losses over the next decade and in every case these losses arise through out-migration of youths. Forty-three counties are expected to lose population during the 1960-70 intercensal period, from a small loss of 100 persons for Lake or Oscoda counties to a large one of 145,000 for Wayne county. In the latter case, it is unlikely that the movement, essentially residential, will affect labor market patterns. In the former cases, however, these reinforce previous trends which have already radically affected the labor market and vocational needs of the youth of these communities.

Vocational Training for Local Labor Markets

Most of the youths of Michigan, the largest proportion of which are concentrated in the metropolitan areas, initially seek work within these areas. Metropolitan school administrators, in responding to the vocational needs of youth, must build their programs upon the broader occupational trends which have been discussed. The patterns of occupational distribution and the needs of metropolitan labor markets reflect those trends which exist for the state and for the nation. Is this also true for school administrators in the less populous school districts?

Counties which have lost the largest number of youths through migration represent a large proportion of the local school districts within the state, although not a comparable proportion of students. Problems of vocational curricular planning facing school administrators in these less urbanized areas are quite different from those which exist in the urban centers. Vocational planning could be based on local needs or upon the needs of those youths who will leave the community. Does it make sense any longer to prepare youths for local labor markets? Is it financially possible to prepare youths both for local conditions and for labor market conditions more characteristic of the state or of the nation as a whole?

Table 33

Changes in the Population Composition of Youth Who Were of High School Age During 1950-1960, and Net Migration Change for the Total Population 1950-1960, By County, Michigan

Counties	Change in Number of Youths Who Were 5-9 in 1950 and 15-19 in 1960			Change in Number of Youths Who Were 10-14 in 1950 and 20-24 in 1960			Change in Number of Youths Who Were 15-19 in 1950 and 25-29 in 1960			Change Through Migration[a] 1950-1960
	Total (%)	Male (%)	Female (%)	Total (%)	Male (%)	Female (%)	Total (%)	Male (%)	Female (%)	Total (%)
Alcona	-11.7	- 8.5	-15.1	-45.9	-50.3	-40.0	-40.9	-44.1	-36.5	- 1.4
Alger	-33.3	-33.5	-33.0	-55.7	-58.0	-53.4	-38.6	-40.6	-36.7	-20.6
Allegan	- 5.1	- 5.9	- 4.4	-21.3	-26.6	-15.7	- 4.5	- 9.5	+ 0.9	+ 1.8
Alpena	- 2.2	- 7.1	-13.0	-18.6	-25.4	-11.1	0.0	--	--	+ 7.9
Antrim	-24.9	-24.4	-25.4	-59.4	-60.2	-58.4	-47.2	-50.8	-43.2	-13.1
Arenac	-19.1	-16.8	-17.8	-49.0	-49.9	-48.1	-41.8	-40.5	-43.1	- 9.2
Baraga	-36.2	-35.0	-37.5	-61.2	-62.1	-60.2	-47.7	-50.2	-45.1	-22.8
Barry	- 1.6	- 1.3	- 2.0	-21.1	-23.1	-19.0	- 8.0	- 9.9	- 5.8	+ 7.7
Bay	- 6.9	-11.0	- 2.7	-16.6	-23.5	- 9.5	- 4.0	- 2.4	- 5.4	- 1.2
Benzie	-23.1	-21.2	-24.0	-51.8	-53.9	-49.8	-44.3	-43.2	-45.5	-17.2
Berrien	+ 4.7	+ 1.6	+ 7.9	- 4.0	-13.0	+ 5.1	+15.2	+13.5	+16.8	+ 8.1
Branch	+ 5.5	+10.6	+ .4	-20.8	-26.1	-14.4	-10.7	-11.0	-10.3	+ 4.6
Calhoun	+ 2.2	--	+ 3.8	+ 4.4	- 1.2	+10.2	- .8	-10.3	+10.8	- 3.1
Cass	+ 4.8	+ 4.0	+ 5.6	-21.6	-30.1	-11.9	+15.5	+13.4	+17.4	+20.5
Charlevoix	-24.3	-23.0	-25.6	-53.5	-56.7	-49.9	-38.3	-43.6	-32.8	-12.6
Cheboygan	-20.2	-19.3	-16.7	-46.2	-50.9	-47.2	-34.8	-39.9	-27.3	-11.2
Chippewa	-10.0	- 7.0	-13.3	- 2.7	+13.0	-19.7	-14.4	- 9.4	-19.8	-10.5
Clare	-12.0	-16.3	- 7.0	-43.7	-47.3	-39.9	-26.0	-25.4	-26.5	- 3.7
Clinton	-12.7	-16.1	- 8.9	-21.8	-26.6	-16.8	+ .6	- 2.5	+ 3.7	+ .6
Crawford	-10.2	-13.7	- 6.5	-32.9	-29.3	-36.6	+ 4.5	+31.4	-21.1	+ 3.5
Delta	-23.3	-23.6	-22.9	-50.7	-55.2	-46.0	-34.0	-36.7	-31.3	-11.5
Dickinson	-26.3	-29.7	-22.6	-53.3	-61.1	-44.8	-39.5	-43.7	-35.2	- 9.4
Eaton	--	- 2.0	+ 2.3	-17.2	-20.7	-13.4	--	- 3.2	+ 2.6	+ 6.8
Emmet	-25.2	-26.5	-24.0	-52.8	-57.3	-48.5	-41.6	-40.1	-43.0	-18.9
Genesee	+ 3.8	- .8	+ 8.4	+ 6.6	- 4.9	+18.4	+31.8	+32.4	+31.2	+ 8.5
Gladwin	-13.8	-13.5	-14.1	-47.6	-45.5	-49.9	-30.0	-33.7	-26.2	- 1.8
Gogebic	-27.3	-29.5	-24.9	-64.7	-70.6	-58.6	-46.9	-48.9	-44.8	-17.6
Grand Traverse	+ .8	- .7	+ 2.3	-26.9	-30.8	-23.3	- 4.7	- 4.9	- 4.4	- .6
Gratiot	- 5.6	- 8.5	- 2.5	-17.2	-22.7	-11.4	-18.4	-21.9	-14.7	- 6.8
Hillsdale	- 4.9	- 7.6	- 2.0	-21.6	-26.1	-16.5	-23.4	-27.5	-19.0	- 4.2
Houghton	- 3.2	+ 7.9	-15.2	- 7.3	+19.4	-34.8	-41.5	-38.5	-45.0	-14.6
Huron	-21.1	-22.6	-19.5	-48.8	-49.3	-48.3	-36.5	-37.9	-35.1	-15.2
Ingham	+32.4	+27.6	+37.4	+59.5	+54.9	+64.6	+ 5.4	+10.6	+ .3	0.0
Ionia	+ 2.5	+15.1	-11.4	+ 4.3	+32.9	-25.9	-18.3	-24.7	- 9.9	- 2.9
Iosco	+ 5.5	+ 2.6	+ 8.5	+32.4	+38.8	+25.5	+49.6	+62.2	+37.3	+24.0

Table 33 (con't)

Iron	-21.6	-25.2	-17.7	-59.4	-64.3	-53.7	-36.5	-43.7	-29.4	-11.1
Isabella	+44.6	+35.5	+53.5	+ 8.7	+47.2	+50.2	-25.3	-17.1	-32.8	+ 1.7
Jackson	+ .6	- 2.3	+ 3.6	+ .7	- 1.6	+ 3.1	+28.1	+46.9	+10.4	+ 4.2
Kalamazoo	+31.1	+18.5	+44.8	+49.4	+38.0	+51.7	+23.7	+31.4	+16.9	+12.9
Kalkaska	-32.5	-30.8	-34.1	-65.9	-65.6	-66.2	-43.8	-52.3	-33.7	-13.9
Kent	+ 4.7	- 1.1	+10.7	+ 3.3	- 9.1	+15.9	+11.7	+11.6	+11.8	+ 4.2
Keweenaw	-24.2	-22.4	-26.9	-43.8	-35.5	-54.7	-46.2	-37.0	-55.6	-16.8
Lake	-25.2	-29.2	-20.5	-61.4	-66.5	-56.0	-42.5	-46.8	-37.[illegible]	- 2.7
Lapeer	+ 3.5	+ 2.6	+ 4.5	-22.9	-28.6	-16.6	-17.4	-22.3	-12.[illegible]	- 1.1
Leelanau	-21.4	-20.7	-22.2	-40.8	-37.5	-44.4	-35.6	-37.2	-33.9	- 7.7
Lenawee	+ 6.2	- 1.5	+14.0	-11.9	-20.1	- 3.2	- 6.4	- 3.3	- 9.2	+ 1.2
Livingston	+ 9.1	+ 9.9	+ 8.3	- 7.9	-16.3	+ 1.5	+25.5	+22.5	+28.6	+23.7
Luce	-19.0	-21.1	-17.0	-56.2	-59.9	-51.8	-37.1	-40.0	-34.7	-16.6
Mackinac	-18.6	-24.9	-11.3	-37.7	-37.8	-37.7	-21.2	-19.4	-23.1	- .3
Macomb	+29.2	+21.9	+37.0	+45.2	+22.6	+69.4	+136.3	+114.1	+158.9	+77.9
Manistee	-17.8	-18.8	-16.8	-39.2	-44.7	-33.8	-30.2	-29.7	-30.8	- 8.0
Marquette	- 2.1	- 5.8	+ 2.0	+ 3.4	+ 5.3	+ 1.3	+10.9	+31.6	- 8.0	+ 3.3
Mason	-13.6	-14.2	-12.8	-38.9	-41.2	-36.6	-24.5	-30.4	-18.2	- 5.3
Mecosta	+49.4	+79.3	+19.1	+39.3	+77.2	- 4.0	-32.3	-29.5	-35.4	- 1.9
Menominee	-25.5	-24.2	-27.0	-58.1	-59.9	-56.2	-38.5	-41.4	-35.5	-15.4
Midland	- 9.5	-12.0	- 7.0	-21.1	-32.7	- 9.6	+35.8	+30.6	+40.6	+13.0
Missaukee	-33.2	-29.1	-37.1	-62.7	-63.4	-62.0	-56.0	-59.6	-52.2	-22.4
Monroe	- 1.7	- 4.2	+ 1.0	-13.9	-22.0	- 5.6	+11.5	+10.7	+12.3	+10.9
Montcalm	- 9.7	-10.7	- 8.7	-27.1	-31.0	-19.6	-11.8	-14.5	- 9.0	0.0
Montmorency	-11.1	- 6.6	-15.4	-64.7	-64.9	-64.5	-49.3	-50.8	-47.6	- 7.7
Muskegon	- 7.2	-11.1	- 3.1	-21.3	-30.0	-12.7	+ .9	+ .8	+ 1.0	- 1.0
Newaygo	-15.0	-17.1	-12.7	-40.3	-47.1	-33.2	-25.6	-26.9	-24.3	- 4.6
Oakland	+16.9	+13.4	+20.6	+ 8.3	- 6.8	+24.2	+67.2	+58.7	+75.6	+42.0
Oceana	-19.7	-19.4	-20.1	-45.6	-49.4	-41.5	-35.4	-38.1	-32.5	-11.4
Ogemaw	-17.5	-15.4	-17.7	-48.3	-54.0	-41.6	-39.5	-36.5	-42.4	- 7.4
Ontonagon	-27.7	-28.2	-27.2	-46.8	-48.1	-45.3	-27.1	-23.1	-31.6	- 8.9
Osceola	-29.7	-31.7	-21.6	-48.2	-51.3	-44.6	-40.6	-47.7	-33.0	-13.1
Oscoda	-17.4	-23.5	-10.0	-57.2	-57.0	-57.4	-39.3	-36.4	-41.8	- 4.1
Otsego	- 1.4	--	+ 3.3	-41.8	-48.8	-34.4	-26.9	-30.7	-23.1	- .5
Ottawa	+ 6.5	+ 3.4	+ 9.8	- .3	- 6.1	+ 6.0	+ 8.2	+ 3.3	+13.3	+11.0
Presque Isle	-21.1	-19.5	-22.8	-46.2	-44.3	-48.4	-30.7	-30.2	-29.2	-12.6
Roscommon	- 4.7	- .7	- 8.7	-42.2	-49.7	-33.5	-31.2	-25.9	-36.4	+ 8.6
Saginaw	- 7.3	-11.7	- 2.6	-16.4	-19.8	- 4.5	+ 6.8	+ 7.1	+ 6.5	+ .5
St. Clair	- 6.2	- 9.3	- 3.1	-28.7	-50.5	-23.5	-13.2	-16.1	-10.6	- .1
St. Joseph	- .8	- 2.5	+ .8	-16.8	-20.4	- 8.1	+ 4.0	+ .4	+ 7.6	+ 7.2

Table 33 (con't)

Sanilac	-17.3	-16.3	-18.4	-42.4	-45.8	-38.8	-29.2	-35.2	-22.5	- 8.7
Schoolcraft	-30.0	-31.0	-28.6	-59.0	-61.7	-56.1	-38.2	-41.7	-34.8	-14.9
Shiawassee	- 7.4	- 6.8	- 8.1	-18.7	-24.4	-12.8	- 6.2	- 7.0	- 5.5	- 3.1
Tuscola	- 9.8	-12.1	- 5.5	-32.4	-36.3	-39.2	-18.3	-20.0	-16.4	- 3.6
Van Buren	+ 3.2	+ 2.6	+ 3.7	-21.5	-28.1	-14.3	- 6.0	-14.8	+ 4.3	+10.2
Washtenaw	+62.3	+56.2	+68.5	+177.0	+177.9	+176.2	+33.5	+39.7	+27.1	+ 4.4
Wayne	-10.6	-15.2	- 5.7	-11.5	-22.2	- .4	+ 5.1	+ 3.7	+ 6.4	- 8.8
Wexford	-27.5	-30.3	-24.7	-45.5	-50.1	-40.8	-34.8	-35.2	-34.3	-15.6

Sources: U.S. Census of Population: 1960, Final Report, PC (1)- 24-B, General Population Characteristics Michigan, Table 27; U.S. Census of Population: 1950, Population Census Report P-B22, General Characteristics Michigan, Table 49.

(a) Taken from J.A. Beegle and J.F. Thaden, Population Changes in Michigan, 1950-60, (East Lansing: Agricultural Experiment Station, 1960), Table A, pp. 23-25.

Table 34

Population Projections of Michigan, by County, to 1970

County	Population 1960	PROJECTION A[1]	B[2]	C[3]	Percentage Range
Alcona	6,352	6,860	6,730	6,890	2
Alger	9,250	8,410	7,800	8,550	10
Allegan	57,729	69,900	68,360	70,200	3
Alpena	28,556	36,220	33,700	36,750	9
Antrim	10,373	10,080	9,160	10,040	10
Arenac	9,860	10,110	9,760	10,080	4
Baraga	7,151	6,600	4,680	6,360	41
Barry	31,738	38,040	37,970	38,470	1
Bay	107,042	29,390	128,880	129,520	0
Benzie	7,834	7,270	7,340	7,390	2
Berrien	149, 865	190,850	194,650	194,080	2
Branch	34,903	39,660	40,800	40,350	3
Calhoun	138,858	160,040	169,450	159,550	6
Cass	36,932	46,490	48,100	48,380	4
Charlevoix	13,421	13,300	12,910	13,370	4
Cheboygan	14,550	15,920	14,380	15,420	11
Chippewa	32,655	37,100	34,850	36,510	6
Clare	11,647	13,270	13,120	13,230	1
Clinton	37,969	46,130	45,700	46,210	1
Crawford	4,971	5,990	5,720	5,960	5
Delta	34,298	36,770	32,230	35,740	14
Dickinson	23,917	23,850	17,990	23,030	33
Eaton	49,684	61,260	60,560	61,660	2
Emmet	15,904	15,150	14,960	15,300	2
Genesee	374,313	501,260	481,940	516,930	7
Gladwin	10,769	12,330	11,310	12,270	9
Gogebic	24,370	22,730	16,020	21,960	42
Grand Traverse	33,490	39,200	40,440	39,220	3
Gratiot	37,012	42,100	38,680	40,970	9
Hillsdale	34,742	37,990	37,320	37,830	2
Houghton	35,654	33,520	21,680	31,950	55
Huron	34,006	34,990	33,010	34,890	6
Ingham	211,296	258,440	264,680	258,200	3
Ionia	43,132	49,230	47,010	48,740	5
Iosco	16,505	22,890	22,630	24,970	10
Iron	17,184	17,480	13,320	16,690	31
Isabella	35,348	43,040	40,530	43,120	6
Jackson	131,994	160,280	158,500	161,430	2
Kalamazoo	169,712	221,370	219,480	227,240	4
Kalkaska	4,382	4,430	3,370	4,180	31
Kent	363,187	453,080	444,840	457,620	3

[1]assumes that natural increase and migration patterns that prevailed in each county since 1940 will continue.

[2]is based on the ration method assuming that the total population will be 9.6 million and the population of each county would be the same percentage as the ratio from 1940 to 1960.

[3]is based on the assumption that the population of each county will continue to grow at the same rate as it did during the 1950-1960 decade.

Table 34 (con't)

County	Population 1960	PROJECTION A	B	C	Percentage Range
Keweenaw	2,417	2,120	810	2,000	162
Lake	5,338	5,400	5,400	5,420	1
Lapeer	41,926	48,970	48,050	49,100	2
Leelanau	9,321	10,140	9,490	10,050	7
Lenawee	77,789	93,040	94,490	93,660	2
Livingston	38,233	51,350	51,530	54,710	7
Luce	7,827	7,530	7,660	7,520	2
Mackinac	10,853	12,770	11,390	12,690	12
Macomb	405,804	688,320	649,310	890,330	29
Manistee	19,042	19,820	18,320	19,580	8
Marquette	56,154	65,990	60,200	66,150	10
Mason	21,929	23,610	22,810	23,490	4
Mecosta	21,051	23,420	23,020	23,370	2
Menominee	24,685	24,010	22,810	24,090	6
Midland	51,450	71,580	70,140	74,240	6
Missaukee	6,784	6,120	5,200	6,170	19
Monroe	101,120	130,810	132,910	135,100	3
Montcalm	35,795	41,230	40,070	41,310	3
Montmorency	4,424	4,770	4,670	4,740	2
Muskegon	149,943	185,020	190,210	185,030	3
Newaygo	24,160	27,230	27,000	27,060	1
Oakland	690,259	1,034,040	1,040,320	1,203,120	16
Oceana	16,547	17,100	17,040	16,990	1
Ogemaw	9,680	11,280	9,880	10,030	14
Ontonagon	10,584	11,220	9,170	10,890	22
Osceola	13,595	13,390	12,980	13,390	3
Oscoda	3,447	3,770	4,040	3,790	7
Otsego	7,545	8,910	8,580	8,840	4
Ottawa	98,719	128,180	127,290	132,180	4
Presque Isle	13,117	15,010	13,020	14,340	15
Roscommon	7,200	8,490	9,920	8,760	17
Saginaw	190,752	236,240	232,620	237,100	2
St. Clair	107,201	125,780	128,170	125,430	2
St. Joseph	42,332	50,400	49,200	51,090	4
Sanilac	32,314	34,060	32,200	33,870	6
Schoolcraft	8,953	8,720	7,820	8,760	12
Shiawassee	53,446	62,360	61,040	62,160	2
Tuscola	43,305	49,420	47,360	49,020	4
Van Buren	48,395	58,400	57,370	59,770	4
Washtenaw	172,440	217,900	231,850	220,900	6
Wayne	2,666,297	3,014,750	3,072,360	2,919,950	5
Wexford	18,466	18,310	17,660	18,300	4
MICHIGAN	7,823,194	9,654,000	9,600,000	9,975,740	

Source: J.F. Thaden, Population of Michigan Counties, Projections to 1970, Technical Bulletin B-24, Continuing Education Service, Michigan State University, March 1962.

The large numbers of youths seeking employment outside their home towns cannot be dismissed as an insignificant variable in curricular planning. But this fact does not necessarily mean that local educators can neglect the needs of that minority which enters the local labor market. Occupational trends and patterns for some of the smaller rural counties suggest that the patterns for the state, region, and nation are much less typical for them than for the metropolitan centers; for example, contrast Detroit with Allegan county. (See Tables 1 and 2, Appendix A).

In most cases, the changes which specific labor markets undergo over a period of time offer some measures of the types of employment which are going to be forthcoming within these markets. Peculiar local conditions in industrial composition and larger external economic forces help to explain emergent employment patterns. The impact, however, of relatively limited economic phenomena on small labor markets suggests that the study of trends in such markets often provides a rough guide for vocational curriculum planning. A new industrial plant in a small community radically affects the proportional distributions of occupations, as does the closing of an old plant. This is certainly not true of a large metropolitan labor market.

However, let us not mistakenly depreciate the significance of broad economic and industrial trends for even local vocational curriculum planning. As we shall see, a knowledge of such trends is imperative for planning, whether in rural or highly urbanized regions. Where particular local conditions may influence trends significantly, the local administrator is in the best position to know about these and modify his projections of vocational needs. To what extent, however, will short-term trends continue to depart from long-term trends in the broader community?

Study of both state-wide and local trends should sensitize local school administrators, business and professional people to the occupational needs of their youth. Local occupational patterns may also provide a guide or offer a standard of comparison. Certainly most school administrators in Michigan are faced with some, if not all, of the following questions: What is the continuing place of vocational agriculture in the local community? To what extent does business education or distributive education prepare students for local labor markets? For urban metropolitan labor markets? To what extent is highly specialized trade and industrial training practical or adequate for the needs of youths who remain in the local labor market or go elsewhere? What can be done to limit the number of dropouts or to help those who do leave school to find employment? And last but not least, what is the place of home economics in the curriculum? Are home economics courses geared to the kind of world in which women are increasingly entering the labor force? Has home economics met the needs of the emergent patterns of female employment?

In our analysis we have treated 77 counties and two Standard Metropolitan Statistical Areas (Detroit and Lansing)* as local labor markets. We have traced the patterns of change in their occupational structures by showing the changing proportional distributions of the major occupational groups for 1940, 1950, and 1960, as presented in Appendix A. We have also included in Appendix A the percentage changes between 1950 and 1960 for each of these major occupational groups (Table 2), so that one may trace the influence of particular occupational changes on the changing patterns of occupational distribution found in Table 1. The appendices are included to provide local administrators with the raw materials necessary to make future curricular decisions in vocational education. The analysis which each administrator makes for himself, should, we hope, provide him with greater insights into the needs of his community.

Local school administrators would be the first to recognize that, while they are knowledgeable about their own community and events which transpire there, they often overlook significant events affecting them because they cannot place them in a broad enough perspective. For example, in our analysis we find that, contrary to the patterns for the entire state, some local labor markets show substantial increases in the employment of blue-collar workers over the past decade. How should local administrators respond to these data? Does this mean that youths from local schools are going to find plenty of opportunities in the blue-collar occupations? The interpretations of such data, as being short-run or long-run, demand a broader frame of reference than the local community and its labor market can offer. As we shall see, the answer to the above question is emphatically, no!

While each community may have its own unique patterns, an exploration of all of the local labor markets (counties) suggests over-all patterns which have already been evidenced in the state-wide trends. For many communities, the size of the labor force has remained constant or has declined. In some cases there has been a marked increase in unemployment, in others not. Such statistics suggest an inability of the local community to absorb new entrants into the labor force. In other cases there have been marked increases in the size of the labor force, suggesting gains by some labor markets at the expense of others.

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*Detroit S.M.S.A. consists of Wayne, Oakland, and Macomb counties; Lansing S.M.S.A. consists of Ingham, Eaton, and Clinton counties.

If one explores each of the occupational groups separately, it is found that with the exception of one or two counties, the professional and technical occupations have grown as a proportion of the labor force. The growth, however, has been relatively small for the rural counties of Michigan and has often reflected merely the decline in agricultural employment. The more densely populated counties show larger growths in this occupational group, consistent with state-wide and national patterns of occupational and industrial change.

The general availability of white-collar jobs, technical, clerical and sales, is also limited by the smallness of the labor force in most local labor markets. This is also the case for the various service occupations. In addition, one has to weigh properly the size of unemployment in a community to evaluate job opportunities for any of the occupational groups. For example, employment in the professional, technical and kindred occupations in Alger County rose by 27.9 per cent between 1950 and 1960. (See Appendix A, Table 2). But the size of the labor forces is very small and unemployment continues to be very high, above 15 per cent. Professional, technical, and kindred persons in the employed labor force consisted merely of 257 persons.*

If one examines column (b), Appendix A, Table 2, it would appear that professional, technical, and kindred workers' employment is increasing enormously. However, placing these increases in proper perspective, they represent comparative declines among other occupational groups; examine columns (e) and (j), for example, the farm occupations, or (g) and (k) the semi-skilled and unskilled, blue-collar occupations.

The declining significance of agricultural employment is found in the small proportion of employed farmers, farm managers, and farm laborers. In some cases the declines in employment were not very great between 1940 and 1950, but were precipitate between 1950 and 1960; for example, in Alcona, Alger, Alpena, Arenac, or Benzie counties, where agricultural employment constituted a major proportion of available employment. In other counties such as Berrien or Calhoun, the declines, although sharp, have been more gradual over the two decades.

In many cases, the apparent increase in importance of operatives and other semi-skilled and unskilled blue-collar workers merely indicates the decline in importance of farming, as for example in Berrien or Branch counties. In many other cases, however, those counties in which farming has declined show almost a complete balance between those who left farming and those who went into other manual occupations, as for example in Allegan or Tuscola counties.

The relative and absolute increases in blue-collar employment are not the panacea they may appear to be. For although this occupational pattern appears to go counter to state-wide and national trends, it is undoubtedly a transitory phenomenon. The declines in the employment of operatives and kindred workers in the larger urban centers are apparent in column (g) in Table 2. The patterns of increase in most of the less populous counties belie the pervasive trend in declining employment opportunities for semi-skilled and unskilled blue-collar workers which are accurately reflected by trends in the larger urban centers.

As we have indicated above, the potential opportunities for former agricultural workers, with their relatively low levels of education, to get work other than in farming rests in the lesser skilled manual and service occupations. If there is a continuing movement from agriculture, blue-collar jobs will offer little opportunity to youths competing against former agricultural workers. In the larger urban areas, the declining opportunities in the blue-collar and lower service occupations reflect the competition for such jobs among the relatively unskilled, untrained, and poorly educated.

Each administrator responsible for leadership and direction in vocational training must follow the needs of persons in his own community. It is clear that these needs will continue to be expressed in local labor markets and in broader state-wide and national patterns. Persistent employment patterns and rates of unemployment in the various occupational groups offer clues to local administrators. The rates of retirement from the labor force of persons now employed are also significant to the planning of possible occupational opportunities for youth.

The data we have presented on employment and on migration for the state and for each county offer the fundamentals upon which responsible exploration and planning for vocational needs must take place. Local administrators can receive help from the Michigan State Employment Security offices and from the major state universities in interpreting the data and the probability of particular types of emergent occupational trends. Some of the implications of the patterns in employment and migration presented in this report are treated in our final section.

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*If our references are mainly to a few counties, this is because they are at the top of the alphabetical list. Our analysis, intended to provide a model, does not go over each county in detail and makes no pretense of being complete.

Vocational Curricula

Our data dealing with the emergent vocational needs of Michigan and its local communities will have meaning only when they are reflected in vocational offerings in the various educational institutions--high school, community, or senior college. Since we have set for ourselves in this study the task of evaluating vocational education at the secondary school level, our data are confined to course offerings in grades 9-12, in all of Michigan's public schools.* This part of our analysis answers such questions as: What types of courses are being offered to the high school youths of Michigan? Are these offerings consistent with the emergent vocational needs of youth? Are the peculiar needs of each of the local communities adequately recognized in their curricular offerings? How does one go about evaluating vocational education curricula? What is the validity of different approaches to evaluation?

Since we are evaluating vocational education in the public secondary schools, we have made no analysis of post-high school training, or training offered in private secondary schools or training institutes. We recognize the breadth and inclusiveness which evaluation of any educational curricula must represent. We also recognize the peculiar problems which vocational curricula present to the evaluator. For example, we know that facilities vary widely from one school district to the next. Courses bearing the same title but taught in different schools may be unrecognizable as the same course. Perhaps even greater variations are found in the experience and training of teachers of vocational courses.

Limitations must be recognized; for this study we have assumed a constancy of facilities and that titles are actually descriptive of courses. We realize the inadequacies of such assumptions, but the techniques for gathering our data, imposed by limited funds and limited time, made it possible to bring together only what individual school districts described as their offerings and what the local school districts reported on the qualifications and training of their teachers.**

To parallel our discussion of occupational and industrial trends in local labor markets and to evaluate increasing arguments for area-wide educational programs, the curricular data for individual counties have been brought together and analyzed. In many cases, it will be found that even at a county-wide level, taking all courses offered in the county together, the vocational education needs are not being met to prepare youths for either the local labor market or for work in other areas.

While the curricular offerings in vocational education for most K-12 school districts in the state have been brought together, it would be an impossible and perhaps fruitless task to discuss each school district separately. Administrators in each of these districts know what they have been offering, and should have an idea of the changing needs of local and state-wide labor markets.

We have felt it important to present an overview of what is being offered in vocational education, and to give individual school districts some idea of how their own patterns follow those of the state. In many ways this parallels our discussion of state-wide labor market trends. These microscopic views of state-wide education should also provide guides for those responsible for vocational education at the state level, since it allows them to relate over-all education patterns to over-all occupational trends.

Of the the total number of courses offered in vocational education in grades 9-12 for the entire state, the largest number are found in business education: 58.6 per cent of all student-credit hours taught and 54.1 per cent of all classes offered. (See Table 35). Trade and industry provides 39.9 per cent of the classes and 36.6 per cent of student-credit hours, while vocational agriculture only provides 6.0 per cent of the classes and 4.8 per cent of the student-credit hours.

How does one interpret these figures? Interpretation is difficult. In terms of the felt vocational needs of the state, the greatest amount of vocational training is found in the business areas. When one considers that this includes office and distributive education, offering vocational training for both males and females, the relative distribution of curricular offerings does not seem out of line with contemporary labor market needs. However, if one explores the distribution of state and Federal funds provided to the local communities for vocational education, the actual offerings are not in line with the distribution of these funds: $693,753 to trade and industry, $521,791 to agriculture, $484,814 to home economics, and $249,662 to business education.***

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*With the exception of a few schools which did not provide complete enough data. See Table 1, Appendix C.

**See Appendix C for the discussion of methodology and instruments used.

***These are figures for 1961. See Report by R. Wenrich, "A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds."

Table 35

Percentage Distribution of Vocational Education Classes and Student Hours According to Curriculum for Michigan, K-12 School Districts, Grades 9-12*

Curriculum	Classes (%)	Student Hours (%)
Total	100.0	100.0
Vocational Agriculture	6.0	4.8
Business	54.1	58.6
Trade and Industry	39.9	36.6

When one considers that a large proportion of students take college preparatory work which theoretically prepares them for the higher white-collar jobs, the comparative offerings in vocational education do not seem out of balance with the needs of the labor market. A study of the offerings in the various curricular fields county by county, however, reveals that while the over-all distribution for the state may appear adequate for the needs of youth, there is a concentration of particular types of vocational offerings in some counties to the neglect of other offerings. In addition, the actual lack of training offered in many school districts or counties makes for an imbalance in the training for both those who will remain in the local community and those who leave.

Which counties present adequate vocational training or a rational relationship between curricular offerings and labor market needs is difficult to say. We might start with the first two counties on the alphabetical list, Alcona and Alger, and examine some of these relationships. In 1960, Alcona had a proportion of professional, technical, and kindred workers representing 6.1 per cent of the employed labor force; Alger had a 9.6 per cent proportion of this group. Agricultural occupations represented 14.8 per cent of Alcona's employed labor force, and 7.3 per cent of Alger's. Clerical, sales and kindred workers were equally distributed, 14.0 per cent and 14.8 per cent respectively. Operatives and kindred workers represented a much larger proportion in Alger county than in Alcona county, 23.2 per cent and 14.8 per cent respectively.

Alger county had approximately twice the number of students as Alcona, yet the student-hour-offerings were larger only in business curricula. (See Table 36). Alcona not only had more students who went on to college--44 per cent as compared to 24 per cent--but also offered more vocational education, 21 per cent of all high school courses, compared to Alger's 13 per cent.**

Unemployment rates have been somewhat higher in Alcona, although the declines in the higher white-collar occupations and the lower rate of increase of lower white-collar occupations have been more typical of Alger than Alcona. The migration patterns of youth are similar for both counties although over-all migration out of Alcona is very low.

Is vocational training adequate in either of these counties? Are the needs of youth being met? Is one county preparing its youth better than the other? Is Alcona in a better economic condition to offer what appears to be greater educational opportunities to her youth?

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*Based on figures for the entire state including approximations for incomplete data, but excluding all courses which are 7th or 8th grade, or combinations including these grades. (See Appendix B).

**We assume that the total hours taken in a week by any one student is 30, and the total student-hours for the grades 9-12 is the total number of students multiplied by 30.

Table 36

Vocational Curricula in Michigan K-12 School Districts for Grades 9-12, and Total Students Grades 9-12, by County

County	Curricula Measured in Student-hours per week*			Total Students in Grades 9-12[d]
	Agriculture	Business	Trade and Industry	
Alcona	159.25	1046.75	850.00	324
Alger	97.50	1650.50	851.25	666
Allegan	1568.75	6698.75	4283.50	2954
Alpena	118.75	3367.75	2515.25	1260
Antrim	125.00	1568.50	718.50	727
Arenac	215.50	1738.50	999.50	742
Baraga	187.50	1477.25	724.00	515
Barry	1418.50	3803.50	2861.25	1809
Bay	836.00	1249.25	10706.50	4695
Benzie	382.50	1560.25	724.00	527
Berrien	1389.50	10518.00**	6776.00**	6303
Branch	990.50	4923.75	578.25	1809
Calhoun	746.25	8859.75**	5350.00**	5995
Cass	658.75	4616.00	1938.75	1748
Charlevoix	174.25	2123.50	1557.00	851
Cheboygan	247.00	1508.50	1334.75	643
Chippewa	569.25**	4348.75**	3259.00**	1444
Clare	551.00	2346.50	931.00	883
Clinton	1193.50	6188.25	3161.75	1867
Crawford	a	99.75	76.00	291
Delta	150.50	649.00	948.00	1756

[a] no courses at 9-12 level indicated

[b] not enough information

[c] no K-12 school district

[d] one course indicated; no information on student-hours

* The number of hours the course was taught during the week was multiplied by the number of students in the class. Some inaccuracies arose from the fact that, in coding the hours, intervals were used and the final result was derived by taking the mean of the interval and multiplying it by the number of students. Another inaccuracy resulted from the fact that some school districts did not provide complete data on hours, students, or both. In some cases estimates were made from the available figures from the same district or from the total county figures. In other cases, the data was so incomplete that it was felt that it would be better to omit them completely. The school districts for which data is not included are found in Appendix C , Table 1.

**Some school districts were not included because of limited data.

Fourth Friday Membership, not including special students and others, September 30, 1960.

Schools with inadequate data (**) not included. See Appendix C , Table 1.

Table 36 (con't)

County	Curricula Measured in Student-hours per week			Total Students in Grades 9-12
	Agriculture	Business	Trade and Industry	
Dickinson	370.50	413.50	348.00	1414
Eaton	986.75**	5327.00**	3166.75**	2426
Emmet	253.75	479.75	248.75	964
Genesee	1746.75	43876.75	27,218.50	18466
Gladwin	99.75	280.25	104.50	735
Gogebic	60.00	629.00	546.25	1505
Grand Travers	b	b	b	1772
Gratiot	2264.75	9033.00	4428.50	2627
Hillsdale	1782.00**	4431.50**	2256.00**	1474
Houghton	a	3964.50**	2481.25**	1836
Huron	2763.50	5967.25	3475.25	2363
Ingham	1744.75	28712.50**	15303.75**	9858
Ionia	1292.00	5426.50	3172.25	2309
Iosco	760.25	4468.50	1723.50	1300
Iron	a	3190.25	1833.25	1122
Isabella	872.00	3949.50	3115.25	1642
Jackson	1613.75	8602.50	8300.00	6300
Kalamazoo	647.75	8211.75	13412.75	7441
Kalkaska	------	489.25	532.25	303
Kent	1783.00**	32,423.25**	19940.50**	14244
Keweenaw	c	c	c	---
Lake	a	501.25	432.25	268
Lapeer	1381.25	5731.25	3391.50	2050
Leelanau	55.25	236.00	66.00	389
Lenawee	2154.50	8418.25**	4313.75**	3308
Livingston	560.50	3511.50	1636.00	2074
Luce	a	2056.25	1357.50	516
Mackinac	d	417.25**	457.50**	378
Macomb	716.50	45325.25**	29275.00**	17049
Manistee	120.25	1686.00**	1036.25**	496
Marquette	544.00	5305.50**	3934.50**	2163
Mason	923.75	4387.25	2107.00	1365
Mecosta	551.25**	3149.50**	1680.75**	1105
Menominee	426.00	4242.00**	3048.00**	1449
Midland	204.25	8807.75	6166.75	3169
Missaukee	308.75	1296.25	485.50	420
Monroe	1033.00	10134.75	7082.25	4921
Montcalm	2438.75	7659.75	3330.75	2489

Table 36 (con't)

County	Curricula Measured in Student-hours per week			Total Students in Grades 9-12[f]
	Agriculture	Business	Trade and Industry	
Montmorency	324.25	1334.75	249.75	326
Muskegon	655.75	17097.50**	12,414.00**	7266
Newaygo	1246.50	2292.00	1519.25	1598
Oakland	498.75	49822.75**	34027.25**	32994
Oceana	579.50	1976.50	891.50	859
Ogemaw	417.25	1143.50	722.00	607
Ontonagon	a	1830.50	1187.00	719
Osceola	992.00	3181.00	1691.75	1069
Oscoda	126.00	519.75	340.25	195
Otsego	272.25	1050.00	337.75	448
Ottawa	674.50**	9101.00**	6118.00**	3900
Presque Isle	311.25	1541.25	952.50	925
Roscommon	a	2101.00	335.50	505
Saginaw	1725.75	17044.00	13433.00	9451
St. Clair	759.75	6614.00**	5404.75**	4898
St. Joseph	449.25	7525.00	4647.75	2621
Sanilac	2367.75	5568.50	3619.00	2066
Schoolcraft	d	1491.25	573.00	541
Shiawassee	1741.75	7884.00	3830.00	3023
Tuscola	3269.75	8020.75	4185.50	2894
Van Buren	1901.50	7773.75	5353.50	3092
Washtenaw	1215.00	11196.75**	7584.75**	5457
Wayne	346.75	262,138.50**	157,157.00**	103547
Wexford	645.00	968.50**	557.00**	423

Let us compare two more populous counties with similar-sized student bodies and about the same relative distributions of occupational groups, Cass and Clinton counties. Clinton is part of the Lansing S.M.S.A. and many residents work in Lansing. Cass is in the southwestern part of the State bordering Indiana and undoubtedly many persons from Cass work in some of the Indiana industrial communities, such as South Bend.

Although the distributions of occupations are very similar, especially if one combines the agricultural occupations into one group, there are noticeable differences in the distributions and amounts of vocational education curricula. Cass offers approximately 46 per cent more vocational student-hours than does Clinton. Of the course offerings, Cass provides 9.1 per cent in agriculture, 64.0 per cent in business, and 26.9 per cent in trade and industry. Clinton offers 11.3 per cent in agriculture, 58.7 per cent in business, and 30.0 per cent in trade and industry. What accounts for the differences in total amounts and distributions of course offerings?

Let us compare three other counties which are quite similarly situated in the densely populated southern part of the lower peninsula, industrialized, and having some cultural and educational similarities: Ingham, Jackson, and Kalamazoo counties. We find major differences in the nature and quantity of vocational curricular offerings in these counties. Kalamazoo places strongest emphasis on trade and industry, Ingham on business, and Jackson treats these areas about equally. Kalamazoo provides the least training in agriculture.

When we examine the structures of the labor markets of these counties, we find differences in the distributions of both blue-collar and white-collar occupations. The blue-collar occupations represent 31.2 per cent of the labor force in Lansing, 38.6 per cent in Kalamazoo, and 41.6 per cent in Jackson. In the clerical, sales, and kindred occupations Ingham had 26.0 per cent, Kalamazoo 21.7 per cent, and Jackson, 21.3 per cent. If one used purely rational criteria, a superficial conclusion might be that Jackson should offer the greatest proportion of trade and industry courses in its vocational program, and the lowest number of business courses.

One might ask whether the differential offerings between Ingham and Kalamazoo rationally reflect the needs of their labor markets. In terms of trends, Ingham does show a decline over the past decade in the number of operative jobs, while Kalamazoo and Jackson show small increases. However, if one studies the trends over the past two decades found in Appendix A, Tables 1 & 2, similarities are quite evident for all three counties. If vocational education planning is aware of both contemporary distributions and trends in available employment, one should expect that all three counties would show greater similarities in vocational offerings than they now do.

Which of these counties offers the most rational vocational education programs? Again it is difficult to say because of the myriad unexplored variables. We would assume, however, that the youths in these communities, for the most part, are going to remain and seek employment in them. All of the migration data we have presented earlier point in this direction, since each county has had a large increase in the youthful segments of the population. Judging by the proportions of youths going to college in these counties--44 per cent in Ingham, 41 per cent in Jackson, and 41 per cent in Kalamazoo--the social characteristics of these communities do not differ greatly.*

Tradition, rational appraisal of needs, and values of educational, civic, and business leaders profoundly affect the course of education. How one school district or county appraises its needs is a function of many variables. Whether this appraisal will lead to the productive employment of its youth depends on the abilities of those charting the direction of education, and vocational education in particular, to read the economic and occupational signs both on the broader scene and in the local community.

A crucial variable in the evaluation of vocational curricula which we have not discussed is that of dropouts. All school districts are faced with some students who do not complete high school. What training should they get before they leave? Can they be motivated to stay? Are the courses they take before they drop out valuable for employment?

Since the largest percentage of dropouts come from grades 9-10, the vocational offerings which they receive are very limited. It would seem that much of what is offered to these students is wasted. If, for example, we assume that of the one-third who do not finish high school, a large proportion are in the vocational classes in grades 9 and 10, then our evaluation of vocational offerings must be treated in a somewhat different light.

Using very conservative figures, then, a minimum of fifty per cent of the vocational education offerings in grades 9-10 are probably of little value for actual vocational activity, because of the relatively elementary level of such instruction, which postulates a vocational program built on these courses. This means that for the entire state, there are thousands of student hours, and hundreds of classes which are not serving the purposes they have been established to serve.

*See D. J. Porter, "Number and Percentage of Michigan High School Graduates Enrolled in College for Years 1950, 1955, 1960." Research Mono. # 1, Mich. State Dept. of Public Inst. 1963, pp. 9-5.

Education and Experience of Vocational Education Teachers

The evaluation of vocational education courses should certainly treat of the education and experience of teachers as a crucial variable. It is unfortunate that our data do not provide adequate statistics on the education and experience of all teachers in vocational education in Michigan. The number of teachers for whom we do not have information offer 52 per cent of all student hours in business, 49 per cent of all student-hours in home economics, 47 per cent of all student hours in trade and industry, and 74.9 per cent of all student-hours in vocational agriculture. We might make an assumption that the distributions of these teachers for whom we do not have information are comparable to the distributions for those for whom we have the necessary data, since the distributions of data are about equally complete over the State, rural areas as well as urban, small school districts as well as large city systems.

In general, the data on the educational backgrounds of teachers make it difficult to conclude that any one particular group is better prepared educationally than are the others. (See Table 37). The largest number of advanced degrees are found among the teachers in business education. In contrast, the largest number of nondegree teachers are found among those in trade and industry, a fact which recognizes the difficulties of recruiting practices in trade and industry, which places primary emphasis upon trade experience.

Table 37

Percentage of Vocational Education Classes Taught by Teachers With College Majors or Minors in the Fields In Which They Are Teaching

Curriculum	College Training			
	Advanced Degree	Bachelors Degree	No Degree	Total
Vocational Agriculture	100.0	98.8	100.0	99.1
Home Economics	92.2	94.2	92.7	93.6
Business	92.4	94.2	86.7	93.1
Trade and Industry	91.9	94.3	63.9	92.0

When we examine the experience of teachers in the respective fields, we find that a large number have fewer than five years of teaching experience. (See Table 38). The curriculum with the largest percentage of teachers with less than five years of teaching experience is vocational agriculture. Smaller percentages are found for trade and industry, with home economics and business education showing equally the lowest percentages.

Table 38

Percentage of Vocational Education Classes Taught by Teachers With Less than Five Years Teaching Experience

Curriculum	Percentage With Less Than Five Years Experience
Vocational Agriculture	51.3
Home Economics	31.0
Business	30.5
Trade and Industry	39.3

We have been interested in judging the quality of teaching. Certainly one criterion is academic training in the fields being taught. An exploration of the academic backgrounds of the teachers shows that relatively few classes are taught by persons who have had neither a college major or minor in their fields. The lowest proportion of teachers without a major or minor in the field in which they are teaching is found among the vocational agriculture teachers. Less than 1.0 per cent of the

teachers in vocational agriculture did not take a major or minor in agriculture in college. The largest proportion is but 8 per cent, found for trade and industry. An assumption that the experience of the teachers in our sample represents an underestimate of the actual experience and training of all Michigan vocational education teachers does not seem valid when the reliability of the results are checked against the Michigan Department of Public Instruction records on reimbursed programs.

Some Conclusions Suggested by the Data

The problems confronting educators in the out-state areas of Michigan are directly related to the patterns of out-migration from the local communities, and the inability of local school districts to meet the continual challenges of a rapidly changing economy. The types of vocational training needed by youths who are graduated from high school before entering the labor market are difficult enough to envision; the problems for youths who drop out of school before graduation are even more difficult to envision.

In the larger urban areas, the problems facing educators include not only the types of vocational training which youths should be receiving in the light of current labor market trends, but the differential problems where the populations of the communities are much less homogeneous than those in rural counties. The youths who are going to enter the labor force in metropolitan areas may be divided into four significant groups, not including those who go directly to college from high school.

The largest number are those white youths with just a high school education. A rational and successful preparation of these youths for the world of work must rest upon a continuing appraisal of the needs of local industry. Those white youths who drop out of school are going to continue as one of the most difficult problem groups, since there is very little opportunity for their employment appearing on the horizon.

Perhaps the greatest problem of metropolitan area education is the occupational training and occupational placement of non-white youths. These youths not only constitute the largest relative proportions of those not completing high school, but also constitute the largest relative proportions of the unemployed, and especially the long-term unemployed. The data reveals that the types of employment which have been available to non-white persons in the population are becoming less important to the economy, making the problem of placement of these youths even more difficult.

The training of all youths, white and non-white, and their placement in the labor market, cannot be left to chance. The economic models which show labor markets to be vast self-adjusting mechanisms, ultimately maximizing returns if left alone, are just too unrealistic to take seriously. Vocational training of our youth is a serious matter which cannot be left to the vagaries of the economic scene, nor sloughed off completely onto educational institutions, making it solely the responsibility of school administrations.

It must be realized that the attractiveness of communities for business firms rests not only on economic phenomena, but also on the social characteristics of the community. Is it a good place in which to live? Does it have a wholesome, healthy social climate? Does it have good schools, hospitals, and recreational facilities? Does it have a social climate unridden by tension and latent conflict?

The costs of maintaining a community, whether there is full employment or great unemployment, whether the schools and industry adequately prepare youth for the world of work, or relegate them to the unproductive, socially dependent unemployed, are ultimately borne by the community. Industry pays a high share of community costs. From a purely economic view, industry should realize that, along with the schools, it has the responsibility for training youths for employment.

In the complex and rapidly changing world of new technologies and shifting occupations, it becomes unrealistic to expect schools to train persons for specific new emergent jobs in industry. In large communities, the trades and services will maintain enough stability so that youths may be trained to fill available jobs in these fields. This is also true of clerical occupations for women. But only a portion of youths can be trained for these jobs. What is to happen to the others?

It is becoming apparent that narrowly specialized training as vocational curricula no longer makes sense. A broad general training adaptable to a variety of specialized jobs must be worked out. This is true for technical as well as clerical fields. Industry must begin to take its share of the responsibilities for training and job placement. Over and over again, industry spokesmen have said that they want generally educated or trained persons for whom they can provide the kinds of training needed in their plants. It is about time that the relationships between industry and school were formalized. The planning of vocational curricula must be done cooperatively and the placement of youth must not be a haphazard affair.

There will be continuing needs for specialized occupations such as repair services, for which schools can directly train youths. School systems must relate themselves to the changing needs of the labor market, providing flexibility, upgrading of training, and modifications where needed. There is no reason to train only auto mechanics so that there no longer are TV or repairmen for electrical appliances. On the other hand, not all the youths in the community can become repairmen. Large city school systems, of course, can provide sufficient flexibility and funds to meet these challenges; the smaller rural communities obviously face greater problems.

The upgrading of employment in industry has been reflected in the increasing demands for technicians of all types. Such technical training is being given in the community colleges. A responsibility of the high schools is not to attempt to train in these areas, since this training is likely to be inadequate at the high school level, but to prepare youths to go on to a community college to become technicians. Boards of education must resist the patterns through which community colleges, obviously seeking increased prestige or status, become college preparatory. If this becomes the function of the community college it cannot serve the functions of preparing youths for the technical occupations.

High school education, which has always been a multi-track phenomenon, must lay out more tracks. Youths can be trained for some vocations in high school. Others can be prepared for specialized or more sophisticated technical training to be taken in the community colleges. Others, who have been the dropouts must be put on still another track, providing them, with an education which is interesting, and perhaps remunerative, and which offers some hope for future employment.

In large cities such as Detroit, Grand Rapids, Flint, or Lansing, the time has come for industry to join other progressive forces in the community in seeing that larger proportions of non-white youths remain in high school until graduation and are then placed in industry. Cooperative programs which provide some income to such youths would be ideal. This does not mean only their placement in industry, but also opportunities to get employment in the higher service occupations. It means also the training of such youths in the distributive occupations and their placement in cooperative programs.

Non-white females require the same type of considered preferential treatment; efforts must be made to place them in the white-collar fields. The types of training to be given to non-white youths should be similar to the types of training for others, congruent with the changing needs of the labor market. We cannot overly emphasize the need for more numerous cooperative programs as one solution to the dropout problems for all youths, white or non-white, male and female.

The problems for out-state areas are of a different type. Such school systems are also faced with dropouts and to some extent with the employment of non-whites; but for the most part, these systems have as their main problem a traditional orientation to vocational education, based on an agricultural economy. The rationality of a community's maintaining the large number of agricultural vocational courses oriented toward farming has already come into question. It must be faced: farming employment continues to decline at a rapid rate. However, one must recognize that for those who do remain in farming, technologies are also moving ahead rapidly, and persons in agriculture need even greater training. In addition, agricultural service occupations are also very important and require vocational training.

How do the smaller school districts train their youths for the available jobs at home, and for jobs in other markets? The rationalization of vocational education demands a broad economic and population base. School systems which may not have to consolidate for academic education because they have adequate populations and tax bases, must consolidate for vocational education, because they do not have the facilities, and the costs of programs for limited numbers of students are prohibitive. The paucity of vocational curricular offerings in county after county shows the limitations imposed not only on local school districts, but on counties, and broader economic areas within the state. Actually, in such cases, little is done to train youths adequately for the world of work.

In each of the traditional areas of vocational education, tremendous changes have been taking place, making it possible to realize good vocational training for youths if the communities could provide the facilities. The only way this can take place is through area vocational programs; the broader the population base, the better.

Through area-wide vocational programs, vocational agriculture could be continued and expanded into trade and service areas of agriculture, with better offerings. Only students interested in these fields would get training in them, rather than being trained because there is nothing else available. The same is true for training in the operation of complex office or shop equipment. No local community can provide the necessary training for youths to achieve proficiency in the latest office techniques, or provide the latest equipment found in industry.

We have not discussed the role of counseling in vocational education. School systems have to provide adequate vocational data through continual follow-up study of both graduates and dropouts, and keep adequate records on the information so gathered. There also should be centralized facilities for the coordination of county and regional data and the continual meeting of counselors from different school systems to discuss the vocational needs of local youths.

We have not presumed to tell any local school district or any group of school districts in a county whether their vocational training is better or poorer than that of other school districts. What we have attempted in this study is to provide a model for analysis and to bring into conscious awareness some of the crucial variables which affect the future employment of youth in Michigan's schools. Administrators familiar with their own local problems and the broader problems of the state may find materials in the data which go far beyond the analysis we have attempted. We can hope for no happier outcome.

CHAPTER IV

ADMINISTRATION, ORGANIZATION, AND SUPERVISION OF VOCATIONAL EDUCATION

The third task force established by the Executive Committee of the Michigan Vocational Education Evaluation Project investigated certain aspects of administration, organization, and supervision of vocational education in Michigan. This segment of the total study was under the sponsorship of the University of Michigan with Professor Ralph Wenrich serving as Project Director. Two major aspects of vocational education were studied: financing of vocational education programs in Michigan, and organization for the administration of vocational education.

Part I

Financing of Vocational Education Programs in Michigan

Financing adequate services in vocational education, just as in other phases of education, has been a persistent problem. Expanding enrollments, greater student retention in schools, ever-present unmet needs, taxpayer and legislative resistance, and increased cost of operation have caused reexamination of the use of public school funds. It was to be expected, therefore, that a study focusing on the evaluation of vocational education would give top priority to the question of finance.

Sufficient evidence was available to make a case for additional appropriations for the support of more and better vocational education programs on both the federal and state level. Periodic studies had been made on the national level by both the American Vocational Association and the U. S. Office of Education, requesting the states to indicate additional funds needed. Projections of anticipated enrollments on the high school level and the attendant need for growth in vocational education were in existence. Labor market analyses and future projections provided general information regarding the expansion of employment opportunities. Data had been collected showing the communities in Michigan that offer no or minimal programs of vocational education. Although additional appropriations can be anticipated, it is questionable whether adequate funds will ever be available to meet the ever-increasing demand. A second alternative was to examine the use of existing funds to determine whether or not present allocations were being utilized most effectively.

With limited funds available to the Michigan Vocational Education Evaluation Project, it was decided to concentrate on the financial support used for vocational education in Michigan. If certain improvements in financial policies and practices could be suggested, additional appropriations could be utilized more advantageously. The Executive Committee of the Project, the University of Michigan Advisory Committee and state vocational education consultants, through their expressions, concurred that a review of reimbursement practices should be given top consideration. Two studies emerged. The first concentrated on an investigation of the use of state and federal funds to reimburse vocational education programs in local communities; the second focused on the reimbursement of teacher education services conducted by institutions of higher education.

This section of the report will deal with the major findings resulting from the study entitled:

> A STUDY TO DETERMINE MORE EFFECTIVE WAYS OF USING STATE AND FEDERAL VOCATIONAL EDUCATION FUNDS IN THE FURTHER DEVELOPMENT OF PROGRAMS REIMBURSED BY LOCAL DISTRICTS.*

The central question of this study was: are the present uses of state and federal funds resulting in the most effective promotion and development of vocational education in the public schools in Michigan?

Review of Reimbursement Policies and Practices in Michigan

In conformity with the terms of the federal vocational acts, each state is required to prepare a

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*Abstracted from a study conducted by Ralph Wenrich, A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Programs Reimbursed by Local Districts, a part of the Michigan Vocational Education Evaluation Project (Ann Arbor, Michigan: The University of Michigan, Office of Research Administration, July 1962).

State Plan stipulating those conditions under which federal funds will be used. Besides the conditions that conform to statute requirements, the states have freedom to enlarge their programs of service to meet the unique characteristics of their state.

The types of services for which state and federal funds are used in Michigan include state administrative and advisory services, teacher education services, and services provided through local school districts including all-day, part-time and evening instruction, local supervisory and administrative services and travel. These services have been provided in the fields of agriculture, homemaking, business, and trade and industrial education.

Despite the limitations of the federal statutes for the utilization of funds, considerable flexibility and latitude exist for the State Board of Control for Vocational Education to exercise judgment as to the degree of emphasis that should be placed on various services. If the State Board of Control deemed it advisable that additional emphasis should be placed on one field of vocational education, it could make this determination and allocate funds accordingly. Similarly, if the intent was to encourage more local leadership, funds could be diverted from another service and allocated for this purpose.

A review of the pattern of reimbursement reveals that it has remained somewhat consistent since the inception of the Smith-Hughes Act. This does not imply that the rate of reimbursement within this pattern has been constant. Since the Smith-Hughes Act and subsequent legislation state that funds should be used for the promotion and further development of vocational education, there appears to be some evidence to show that the policies and practices governing the conduct of reimbursement may have been conducive to supporting and maintaining some programs of vocational education.

Although the pattern of reimbursement has remained rather constant, the rate of reimbursement has been on the decline, particularly in the vocational education programs carried on in Michigan high schools. Despite this fact, over the years there has been an increase in the number of programs and an increase in enrollments. In recent years, however, there has been a decline in the field of agriculture and trade and industrial education.

Of the $3,182,418.09 state and federal funds available for vocational education in 1959-60, a total of $1,950,021.76 was provided local school districts for all types of services including all day programs, instruction for out-of-school youth and adults, supervisory and administrative costs and travel. Approximately 65 percent of this figure was expended for reimbursement of all-day programs in agriculture, homemaking, trade and industrial education, and cooperative programs.

Since such a large proportion of state and federal vocational education funds was used to reimburse the salaries of teachers in Michigan high schools, it was decided that a study should be made to determine the probable effect if reimbursement of high school programs were discontinued and these funds used to provide other services either on the secondary level or for out-of-school youth and adults programs.

Procedure for the Survey

A questionnaire was developed with the help of the University of Michigan Survey Research Center to obtain the opinions of local administrators as to the probable effect of the withdrawal of reimbursement on the salaries of high school teachers. The questionnaire elicited opinions of local administrators in four areas:

1. Opinions of School Administrators Regarding Probable Effect of Modifications in the Rate of Reimbursement on High School Programs.

2. Opinions of School Administrators Regarding the Use of State and Federal Funds in the Development of High School Versus Post-High School Services and Programs.

3. Opinions of School Administrators Regarding the Use of State and Federal Funds in the Development of State Schools, Area Schools, and/or Local Programs.

4. Opinions of School Administrators Regarding More Effective Use of State and Federal Funds.

The questionnaire was sent to all superintendents, principals, and directors of vocational education in Michigan school districts in which high school-reimbursed vocational education programs were operating during the year 1960-61. Of 861 questionnaires sent, 790 or 92 percent were returned. The distribution of responses according to enrollments of schools was as follows: 0-199, 9 per cent; 200-499, 42 per cent, 500-999, 24 per cent and 1,000 or more 18 per cent; Seven per cent of the respondents did not indicate the enrollment.

Opinions of School Administrators Regarding Probable Effect of Modifications in the Rate of Reimbursement on High School Programs

Although the primary purpose of this survey was to determine the probable effect on high school programs if reimbursement were gradually withdrawn, respondents were given the opportunity to indicate what the effect would be if the rate of reimbursement were doubled, if it were to remain the same as at present, and if it were to be gradually reduced so that at the end of three years no reimbursement were to be made. In the event that additional appropriations for vocational education were available, the opinions regarding doubling reimbursement would be of importance. The respondents were given the opportunity to choose from a list of possible responses in relation to each of the three situations (if reimbursement were increased, remain the same, and decreased). They were also asked to give their opinions in relation to those programs (agricultural, homemaking, trade and industrial and cooperative) which were then operating in their schools; that is, high school principals who were operating reimbursed vocational agricultural programs were invited to respond to the three possible conditions in relation to agricultural education.

Summary and Conclusions

The part of the study having to do with the probable effect of modifications in the rate of reimbursement can perhaps best be summarized in tables assimilating comparable data for the four fields.

Table 1 shows the programs which would be continued unaltered and those which would be improved in quality and/or number of youths served if the rate of reimbursement were increased. It shows the

Table 1

Comparison of the Probable Effect on Reimbursed Vocational Programs In the Four Fields if Reimbursement Rates Were Increased, Remain the Same, or Decreased (per cent)

	Agr.	Hmkg.	T & I	Coop.
If the rate of reimbursement were to be increased:				
Improvement in quality	38	31	12	16
Serve more youth	3	8	14	14
Both improvement in quality and number served	14	22	24	29
Continue unaltered	41	38	47	39
If the rate of reimbursement were to remain the same:				
Continue unaltered	73	78	80	84
If the rate of reimbursement were to be decreased (to no aid):				
Continue unaltered	19	45	46	35
Diminish in quality	12	14	4	8
Serve fewer youth	8	14	15	18
Diminish both in quality and number served	21	15	14	13
Eliminate entirely	36	7	16	20

percentage of programs which would be continued unaltered, if the rate of reimbursement were to remain the same, and it also gives the percentage of programs which would be continued unaltered and those which would diminish in quality and/or serve fewer youth, as well as those programs which would be eliminated entirely. This table suggests that if reimbursement were to be doubled, more qualitative improvement in agriculture and homemaking would take place, and more youth would be served in trade and industrial and cooperative training. There was very little difference among the four fields of vocational education in terms of what might be expected in continuing were the rate of reimbursement to remain the same, although the percentage of agricultural programs which would continue unaltered

was quite striking when considered in relation to reduced reimbursement; only 19 percent of the administrators felt that their agricultural programs would continue unaltered if reimbursement were eliminated; it was 46, 45, and 35 per cent in trade and industrial, homemaking, and cooperative training, respectively.

Another way of analyzing these data was to compare the percentage of programs operating in 1960-61 which would probably be continued with or without modifications. Table 2 shows the programs which would be continued if decreased (to no aid). This table suggests that modifications in the rate of reimbursement would have the least effect on homemaking and the greatest effect on agriculture. It also shows that 75 per cent or more of the programs in homemaking, trade and industrial, and cooperative training would be continued without state and federal aid.

Table 2

Percentage of Programs Operating in 1960-61 Which Would Be Continued With or Without Modifications

If the rate of reimbursement were to:	Agr.	Hmkg.	T & I	Coop.
Be increased (doubled)	96	99	97	98
Remain the same	95	97	98	97
Be decreased (to no aid)	61	89	79	75

A similar comparison is presented in Table 3 of the percentage of programs operating in 1960-61 which would be continued unaltered under the three sets of conditions, that is, with the rate of reimbursement increased, the same, or decreased. Here again, the pattern was somewhat similar to that in the preceding table.

Table 3

Percentage of Programs Operating in 1960-61 Which Would Be Continued Unaltered

If the rate of reimbursement were to:	Agr.	Hmkg.	T & I	Coop.
Be increased (doubled)	41	38	47	39
Remain the same	73	78	80	84
Be decreased (to no aid)	19	45	46	35

Table 4 shows the percentages of programs operating in 1960-61 which would be eliminated entirely under each of the three sets of conditions, that is, if the rate of reimbursement were increased, the same, or decreased.

Table 4

Percentage of Programs Operating in 1960-61 Which Would be Eliminated Entirely

If the rate of reimbursement were to:	Agr.	Hmkg.	T & I	Coop.
Be increased (doubled)	2	--	2	--
Remain the same	3	1	1	1
Be decreased (to no aid)	36	7	16	20

Vocational agriculture would suffer the greatest loss in terms of the number of programs likely to be eliminated if reimbursement were withdrawn. The fact that vocational agricultural programs are currently being reimbursed at a higher rate than other programs may be relevant; in 1960-61, the year this survey was made, the rate of reimbursement on agricultural programs was 38 per cent, while homemaking, trade and industrial, and cooperative programs were reimbursed at 20, 20, and 27 per cent, respectively. The effect of withdrawal or reimbursement would seem to be less in the case of homemaking than in any of the other three fields.

Opinions of School Administrators Regarding the Use of State and Federal Funds in the Development of High School Versus Post-High School Services and Programs

The primary purpose of the survey of local school administrators was to determine the probable effect on reimbursed high school vocational programs if modifications were made in the rate of reimbursement. One part of the questionnaire was designed to find at what level (high school or post-high school) local administrators felt the emphasis on vocational education should be focused. This section of the questionnaire was introduced by the following statement:

> "If, in the future, vocational funds were no longer used to support the present high school programs, these funds could be used to stimulate the further development of new programs and services."

Respondents were then asked to indicate where the funds could be best used; that is, should funds for vocational education be used to stimulate the further development of programs and services for (1) high school youth, or (2) out-of-school youth and adults. An attempt was made to force the respondents to make a choice between the two possibilities by asking them to check only one. They were given the opportunity to respond to this question in relation to each of the fields, agricultural, homemaking, industrial, and business education.

Summary and Conclusions

Table 5 shows the responses from the 790 local school administrators by fields and by positions held. The majority of local administrators felt that the emphasis should be placed on programs and services for high school youth. Among the several fields there was some variation regarding this matter. In relation to homemaking 72 per cent of the respondents favored using funds to stimulate programs for high school youth; in the field of business education, 67 per cent favored high school youth; and in relation to both agricultural and industrial education, 61 per cent. While superintendents and principals were in fairly close agreement with each other, directors of vocational education would give less emphasis to high school programs, and more to programs for out-of-school youth and adults. It should be noted that a significant percentage of the directors of vocational education checked both high school youth and out-of-school youth and adults, even though instructed to check only one.

The number of local school administrators who would use vocational funds to stimulate programs for out-of-school youth and adults is higher when viewed in relation to agricultural (26 per cent) and trade and industrial (24 per cent) than it is in relation to homemaking (18 per cent) and business education (18 per cent).

It was thought that administrators who now have in their schools reimbursed high school programs in a particular field might be more likely to emphasize further development of programs for high school youth than would administrators who did not have in their schools that particular program. Sixty-five per cent of all superintendents thought the emphasis in agriculture should be on programs for high school youth, but of those superintendents who had a reimbursed agricultural program in their high schools, 74 per cent thought the emphasis should be on programs for high school youth. The differences between administrators generally and those who in 1960-61 were operating reimbursed programs seemed to be negligible except in relation to agriculture. In the field of agriculture, superintendents and principals who had reimbursed vocational agricultural programs in their schools were more strongly in favor of the idea of putting the emphasis on programs for high school youth than were superintendents and principals generally.

A further analysis was made of the responses from principals by size of school, as to whether funds should be used to stimulate programs for high school youth or out-of-school youth and adults. Except in relation to the field of agriculture, size of school seemed not to be significant. In agriculture, the smaller the school, the higher the percentage of principals who favored using the funds to stimulate high school programs.

Opinions of School Administrators Regarding the Use of State and Federal Funds in the Development of State Schools, Area Schools, and/or Local Programs

The questionnaire sent to superintendents, principals, and local directors of vocational education included several items designed to determine the opinions of local school administrators in regard to establishing schools which would serve youth and adults on an area basis. First, the question was raised, "How can we best use state and federal funds for improving programs and services for high school youth who want to prepare for employment?" Three possibilities were given: (A) for the State Department of Public Instruction to organize, equip, and operate state and/or area vocational schools, (B) to organize, equip, and operate area vocational schools through cooperating school districts, and (C) for the local school districts to develop more adequate programs and services.

Table 5

Recommendations of Local Administrators by Positions as to the Use of Vocational Funds in the Event these Funds Were no Longer Used to Support Present High School Programs
(per cent)

Funds should be used to stimulate the further development of services and programs for:	Agricultural				Homemaking				Industrial				Business			
	Supt. N-367	DVE N-31	Prin. N-392	Total N-790	Supt. N-367	DVE N-31	Prin. N-392	Total N-790	Supt. N-367	DVE N-31	Prin. N-392	Total N-790	Supt. N-367	DVE N-31	Prin. N-392	Total N-790
High School Youth	(74) 65	(36) 29	(70) 60	(71) 61	(77) 76	(44) 48	(72) 70	(74) 72	(61) 61	(45) 45	(63) 62	(59) 61	(72) 67	(54) 55	(68) 69	(68) 67
Out-of-School Youth and Adults	(19) 23	(36) 33	(21) 27	(20) 26	(14) 15	(28) 23	(19) 22	(17) 18	(24) 22	(20) 29	(31) 24	(26) 24	(20) 17	(23) 19	(23) 18	(22) 18
Both	(3) 3	(19) 19	(5) 5	(5) 4	(3) 3	(17) 16	(5) 4	(4) 4	(9) 5	(25) 20	(4) 6	(10) 6	(4) 5	(15) 19	(6) 6	(6) 6
Response	(4) 9	(9) 19	(4) 8	(4) 9	(6) 6	(11) 13	(4) 4	(5) 6	(6) 12	(10) 6	(2) 8	(5) 9	(4) 11	(8) 7	(3) 7	(4) 9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Figures in parentheses are based upon the responses of only those administrators who operated a reimbursed high school program in that field in 1960-61.

Summary and Conclusions

The respondents were asked to consider each of the above possibilities in relation to each field--agricultural, homemaking, industrial, and business education. The administrators' responses, by fields and by positions, were as follows. In relation to homemaking, 44 per cent checked "C" only, indicating that they would think it best to use funds to develop programs in local school districts. Thirty-one per cent checked "C" only in relation to agriculture; 31 per cent in relation to business; and 23 per cent in relation to industrial education. All other administrators, excepting those who did not respond to this question, favored using funds to develop state and/or area schools, either in addition to, or instead of local programs. For example, in the field of industrial education, 64 per cent indicated support for either state schools or area schools, or both. In the field of business education, 52 per cent; agricultural, 41 per cent; and homemaking, 33 per cent. It should be noted that 32 per cent of the administrators favored the use of funds in other than local districts; that is, state and/or area schools only, for the purpose of providing industrial programs.

Responses from only those administrators who operated a reimbursed high school program in a particular field in 1960-61 indicated that 47 per cent checked "C" only in relation to vocational agriculture, indicating that they thought funds should be used for local school districts to develop more adequate agricultural programs and services. Fifty-four per cent checked "C" only in homemaking; 45 per cent in industrial education and a similar percentage in business. Consistently, school administrators who had a program in a particular field felt more strongly that additional funds should be used for local school districts to develop more adequate programs and services in that field than did administrators generally.

One analysis indicated that the size of the principal's school appears to be most significant in relation to industrial education, as far as his opinions regarding state and/or area schools are concerned. Forty per cent of the principals with schools of over 1,000 students felt that in industrial education, funds should be used for local programs only, while the percentage of principals in smaller schools who felt this way was considerably smaller (500-999 students, 23 per cent; 200-499 students, 14 per cent; 0-199 students, 11 per cent). It is interesting to note that a high percentage of the administrators did not respond to this item.

A similar question was asked in relation to out-of-school youth and adults: "How can we best use state and federal vocational funds for improving programs and services for out-of-school youth and adults who want to prepare for employment?" Again the respondents were given the same three possibilities: (A) for the State Department of Public Instruction to organize, equip, and operate state and/or area vocational schools; (B) to organize, equip, and operate area vocational schools through cooperating school districts; and (C) for the local school districts to develop more adequate programs and services. Respondents were invited to consider each of these three possibilities in relation to each field--agricultural, homemaking, industrial, and business education. The responses to this question suggested that school administrators generally gave stronger support for state and/or area vocational schools for out-of-school youth and adults than they did for such schools for high school youth. Putting it another way, a smaller percentage of local administrators would favor limiting the use of state and federal vocational education funds for local school districts to develop more adequate programs and services for out-of-school youth and adults than would favor the use of such funds in such schools for programs and services for high school youth. Twenty-two per cent of the administrators checked "C" only to indicate how they felt state and federal vocational funds could be best used for improving agricultural programs and services for out-of-school youth and adults who want to prepare for employment; that is, these administrators felt that these funds could best be used to help local school districts develop more adequate programs and services. But when these same administrators were asked the same question in relation to agricultural programs and services for high school youth, 31 per cent checked "C" only. In relation to homemaking, 31 per cent checked "C" only in relation to out-of-school youth and adults, and 44 per cent in relation to high school youth; industrial education, 17 per cent and 23 per cent; and business education, 22 per cent and 31 per cent. It was also interesting to note that there was a higher percentage of "no response" to this question when applied to out-of-school youth than to high school youth. This may mean that school administrators have not given as much thought to the problems of educating out-of-school youth and adults for employment as they have to high school youth.

An analysis of the responses of principals by size of school as to the best utilization of state and federal vocational funds for improving programs and services for out-of-school youth and adults preparing for employment revealed that principals of the larger schools (1,000 students and over), in comparison with principals of smaller schools, gave greater support to the idea of using funds for local school districts to develop more adequate programs and services; this is true in all four fields.

Opinions of School Administrators Regarding More Effective Use of Federal and State Funds

Assuming that state and federal funds were no longer to be used to reimburse the salaries of high school vocational teachers in current programs, funds would be released to reimburse other programs and services. A portion of the survey of local administrators was designed to determine more effective ways in which such funds might aid local school districts in the development of more adequate vocational programs for high school and for out-of-school youth and adults. A list of possible purposes

was introduced by the statement: "Here are several ways in which state and federal funds might be used to help local districts develop more adequate programs and services for high school youth." Respondents were then asked to check each item indicating that they either "agree" or "disagree."

Summary and Conclusions

The item on which there was most agreement was that more should be spent for job training for special groups (e.g., potential dropouts, slow readers, etc.). Eighty-five per cent agreed that more funds should be spent for this purpose, and the agreement was consistently high among administrators in the three categories; superintendents, 82 per cent; directors of vocational education, 84 per cent; and principals, 87 per cent.

Seventy-seven per cent agreed that more should be spent for vocational guidance services for employment-bound youth. There was a higher percentage of agreement among local directors of vocational education (84 percent) than there was among either superintendents (77 per cent) or principals (76 per cent).

There followed in order the following items: spend more for equipment for shops and laboratories --73 per cent; spend more for the preparation of instructional materials--72 per cent; spend more for research and evaluation--64 per cent; spend more for in-service training of teachers--62 per cent.

An analysis of the responses of principals, by size of school, regarding ways in which state and federal funds might be used to help local districts develop more adequate vocational programs and services for high school youth revealed that the differences among principals of different size schools were not significant. Principals of the smallest schools (0-199) apparently saw less need to spend more for occupational surveys and follow-up studies and vocational guidance services for employment-bound youth than did principals of larger schools.

The responses of local school administrators by positions regarding ways in which state and federal funds might be used to help local school districts develop more adequate vocational programs and services for out-of-school youth and adults, revealed the following areas of agreement and disagreement. The highest percentage of agreement to any item came from local directors of vocational education; 90 per cent agreed that more should be spent for vocational guidance services for out-of-school youth and adults. Only 68 per cent of the superintendents, and 65 per cent of the principals, agreed that this is where more funds should be spent. There was quite general agreement among all three categories of administrators (75 per cent) that more should be spent for instruction in evening school and adult classes. Directors of vocational education also felt rather strongly (84 per cent) that more should be spent for the development of instructional materials for use in specific areas of training. Seventy-two per cent agreed that more should be spent for instruction in full-time technical-terminal education on the community college level. A higher percentage of directors recommended that funds be used to stimulate the further development of services and programs for out-of-school youth and adults than did superintendents and principals.

The percentage of agreement and disagreement among principals by school size regarding the ways in which state and federal funds might be used to help local school districts develop more adequate vocational programs and services for out-of-school youth and adults indicated little difference in thinking. Here again, fewer principals of the smallest schools (0-199) agreed that more should be spent for vocational guidance services for out-of-school youth and adults than did principals of the larger schools.

Recommendations

The following recommendations are governed by the principle that the purpose of state and federal vocational education funds is to encourage the improvement and extension of vocational education programs at all levels. Continuous evaluation of reimbursement rates should be made of all vocational programs to accomplish this principle; such evaluation may cause rates of reimbursement to fluctuate in view of local needs and local support.

1. That the full rate of reimbursement be applied to the salaries of day-school teachers and coordinators in approved high school vocational programs for a period of five years and support withdrawn (one-third each year) for the sixth, seventh and eighth years. The withdrawal of support of programs currently operated and which have been supported for five or more years should begin with the school year 1964-65.

2. That the following services for youth of high school age be encouraged through higher rates of reimbursement:

   a. Instructional services which supplement the day-school vocational programs or meet the needs of out-of-school youth. Late afternoon and evening classes for

out-of-school youth, Saturday and summer classes for either in-school or out-of-school youth, and supervised farming practices during the summer months are examples of services which might be promoted through the use of state and federal vocational education funds.

b. Occupational counseling, placement, and follow-up services, those services designed to assist employment-bound youth make the transition from school to job. Career planning, educational planning, job placement and follow-up studies would be included in this category of services which might be promoted through the use of state and federal funds.

c. Professional-growth services for teachers, supervisors, and administrators. Services in this category might include local curriculum workshops, community surveys, studies of the needs of youth and adults for vocational education, preparation of instructional materials, and self-evaluations of local programs.

d. New instructional services. Schools which have not previously provided vocational instruction in a particular field might be encouraged to provide new programs and services if the amount of aid from state and federal vocational funds were sufficient to offset some of the added costs in getting a program established. The school district proposing to initiate a new program should be required to justify the need for and feasibility of such a program.

3. That the following services for adults be encouraged by reimbursement incentives:

a. Instructional services for purposes of training persons engaged in agriculture, business, industry, and homemaking.

b. Instructional services for the training of technicians in agriculture, business, and industry in post-high school programs in community colleges, technical institutes, technical divisions of colleges and universities, area vocational-technical schools or centers, or similar institutions.

c. Vocational counseling services for adults who need help in making a more satisfactory occupational adjustment.

d. Professional improvement services which would include pre-service and in-service training of teachers of adult classes, development of more adequate instructional materials for adult classes, surveys to determine the needs of adults and the development of close cooperative relationships with business, industry, and agriculture.

4. That the following services, which would benefit both youth of high school age and adults, be encouraged through reimbursement policies:

a. Administrative and supervisory services. Every community school system large enough to operate a comprehensive vocational program needs specialized administrative and supervisory help to give leadership and direction to the program and to maintain standards.

b. Services on an area basis. Since many high schools are not large enough to provide a diversified program of specialized training, and some which are large enough are not interested in preparing youth for employment, state and federal vocational funds might be used to develop area vocational programs by providing a higher rate of reimbursement for instructional and other services and by providing reimbursement for a portion of the cost of equipping area schools or centers.

c. Purchase of equipment. Provision should be made for the reimbursement of local school districts for a portion of the cost of new equipment to modernize present facilities and to equip shops and laboratories needed in the development of new programs.

5. That a study be made to determine whether or not reimbursement of the salaries of day-school teachers in the community colleges, technical institutes, and technical divisions of colleges and universities is essential beyond the five-year period of full reimbursement to which high school programs would be limited under recommendation No.1.

Financing Vocational Teacher Education Services

One of the essential features of a good program of vocational education is an adequate supply of competent teachers. This fact was recognized in the first national vocational education act (the

Smith Hughes Act of 1917) which provided specific funds for the training of teachers and required that in order to use the money provided for the salaries of vocational teachers, a state must expend a specified amount for the training of teachers. While the George-Barden Act (1946) does not make a separate authorization of funds for teacher training purposes, it does state that the funds made available for the several vocational fields may be used for assisting the states and territories in maintaining adequate programs of teacher education.

Teacher education as used in relation to the national vocational education acts includes those activities which assist teachers or prospective teachers in securing the professional knowledge, abilities, understandings, and appreciations which will enable them to qualify for professional employment or advancement in teaching vocational subjects.

Teacher education programs in agriculture, home economics, and trade and industry have been offered in Michigan colleges under the support of state and federal vocational education funds since 1917. From 1917 until 1936 only three institutions were providing these teacher education services; since 1936, vocational programs have multiplied as has the number of participating colleges and universities. In 1960 Michigan had seven institutions which were reimbursed for counselor training, five institutions for trade and industrial teacher education, three for homemaking teacher education, three for distributive and/or office occupations, and one for agriculture.

The amount spent in support of these programs during the year 1960-61 was $229,668.83. Pursuant to this fact, it is interesting to note that from 1918 to 1954 it was the policy of the State Board of Control for Vocational Education to make full (100%) reimbursement from state and federal funds for the salaries and travel expenses of approved teacher trainers employed by designated institutions. With the change in the Board's policy, and the subsequent increase in the number of institutions designated to provide vocational teacher-training services, it became necessary to gradually reduce the rate of reimbursement; the rate for the year 1960-61 was 47.2 per cent.

The size of the state program of vocational education, in terms of full-time day-school teachers employed by the local schools in positions which are reimbursed, is a rough index of the teacher training needed--both pre-service training to supply replacements and to fill new positions, and in-service training of those currently employed. This number is given, by fields, for the period 1955-61.

School Year	Agri.	Hmkg.	T & I	Business (Dist. only)
1955-1956	290	426	209	85
1956-1957	299	443	236	67
1957-1958	299	462	260	74
1958-1959	278	496	284	123
1959-1960	270	493	243	109
1960-1961	240	506	244	103

Purpose of the Study

On the assumption that certain vocational teacher education services now provided by Michigan teacher education institutions would be provided even though there were no reimbursement from vocational education funds, and on the further assumption that vocational teacher education funds now being used for such services might be used to promote and stimulate needed services not now being provided, a survey of the institutions of higher education in Michigan operating reimbursed vocational teacher education programs was made during the academic year 1960-61.*

The study sought to obtain the answer to the following two questions:

1. If the reimbursement on vocational (agricultural) (homemaking) (industrial) (business) (counselor) teacher education programs were gradually withdrawn--over a three-year period--how would each of the services be affected?

2. Assuming that current vocational teacher education funds were to be used to reimburse in full certain types of essential (agricultural) (homemaking) (industrial) (business) (counselor) teacher education services (now provided inadequately or not at all) what types of services are most needed and should be supported by the use of these funds?

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*Abstracted from a study conducted by Ralph C. Wenrich, A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Vocational Teacher Education in Michigan, a part of the Michigan Vocational Education Evaluation Project (Ann Arbor, Michigan: The University of Michigan, Office of Research Administration, June 1962).

Sources of Data and Methodology

Questionnaire responses from the following institutions were sought, received and evaluated in the light of the two questions listed above:

Institutions	Agri.	Hmkg.	Ind.	Bus.	Counselor
Central Michigan University		x			x
Eastern Michigan University					x
Michigan State University	x	x	x	x	x
Northern Michigan University			x		x
University of Michigan			x	x	x
Wayne State University			x		x
Western Michigan University		x	x	x	x

Reactions of "continued unaltered," "reduced," "eliminated," or "not applicable" were sought to the question "If the reimbursement on your vocational teacher education program were gradually withdrawn (say, over a three-year period), how would each of the following services be affected?"

a. Pre-service courses for prospective teachers.
b. In-service courses for employed teachers.
c. Assisting teachers through visits to local programs.
d. Conducting in-service training conferences for teachers.
e. Developing and distributing instructional materials.
f. Conducting research and other studies.
g. Assisting teachers in planning programs of study leading to vocational certification.
h. Cooperating with the State Board in conducting conferences and workshops for teachers.
i. Cooperating with the State Board in sponsoring youth groups.
j. Making provision for supervised practice teaching.

Summary and Conclusions

Each of the vocational teacher education fields is confronted with unique problems and conditions; therefore, the responses of the several institutions are examined first in relation to each field.

Argicultural Teacher Education

Agricultural teacher education is unique in that only one institution has ever been designated by the State Board to provide services in this field. In order to prepare persons adequately for the teaching of vocational agriculture, a college or department of agriculture is considered essential; Michigan State University is the only Michigan institution with an agricultural teacher education program concentrated in one institution for a period of over forty years. It has been possible to develop a program of high quality, including specialized services for teachers of agriculture.

Only two of the services listed in the questionnaire would be reduced (and none eliminated) were reimbursement withdrawn. Since there was no response given to the item dealing with "in-service courses for employed teachers of agriculture," one cannot predict what effect the withdrawal of reimbursement would have on this service. The responses suggest that all of the services would be continued with the exception of the following:

Assisting agricultural teachers through visits to local programs would be reduced.
Developing and distributing instructional materials for use in agriculture programs would be reduced.

It could be concluded that the program of agricultural teacher education would not be seriously affected if reimbursement were withdrawn. The predicted reduction in assistance to agricultural teachers through local visits and the development and distribution of instructional materials may mean that these services are too costly to be provided without reimbursement. "Research and experimentation" are seen as services most needed and for which vocational funds should be used.

Business Teacher Education

Homemaking teacher education is now supported, through the use of vocational funds, in three institutions. If reimbursement were withdrawn, one institution (Michigan State University) would continue unaltered all services, while another institution (Western Michigan University) would reduce 8

out of 12 services listed, and the third institution (Central Michigan University) would eliminate 7 out of 10 services now provided. There may be a relationship between the predicted effect of the withdrawal of reimbursement and the length of time the institution has been participating in the reimbursed program; Michigan State University has been reimbursed continuously since 1917, Western Michigan University since 1955, and Central Michigan University since 1960. Services most needed and for which vocational funds should be used, as listed by one institution,included most of the services now provided; apparently these services are not considered adequate and, in the opinion of the respondent, will need continued financial support to make them so. Another respondent listed "research and experimentation" as most needed services.

Industrial Teacher Education

Vocational industrial teacher education presents a unique situation in that there are five institutions engaged in a field which in 1960-61 involved only 244 full-time teachers employed by local schools on reimbursed programs. Only one institution (Michigan State University) would continue all services if reimbursement were withdrawn, but all institutions would continue their pre-service courses for prospective teachers and coordinators of vocational-industrial subjects, and assistance to vocational-industrial teachers in planning programs of study leading to vocational certification. The services most institutions would eliminate, if reimbursement were withdrawn, are:

Assisting vocational-industrial teachers and coordinators through visits to local programs (three institutions)

Developing and distributing instructional materials for use in vocational-industrial programs (one institution)

Cooperating with the State Board in sponsoring youth groups (one institution)

In summary all of the services listed would be provided by one institution (Michigan State University); another institution (Wayne State University) would "reduce" only one service and "eliminate" none; while the three other institutions would either reduce or eliminate most of the services. Regarding most needed services, one institution listed research and experimentation, another suggested "teacher trainers who can work with local communities" in promotional activities, another institution suggested research studies, workshops, and laboratory equipment.

Counselor Training

Although counselor training is relatively new as a part of the reimbursed vocational teacher education program, the number of institutions participating in the reimbursed program has grown from one (Michigan State University) in 1944-45 to seven in 1960-61. Only one institution indicated that it would continue unaltered all of the services to counselors, but five institutions said they would continue their pre-service courses for prospective counselors if reimbursement were withdrawn, and four would continue both their pre-service and in-service courses for counselors. The services most likely to be eliminated if reimbursement were withdrawn are:

Assisting counselors through visits to local programs (five institutions)

Conducting in-service training conferences for counselors (two institutions)

Developing and distributing instructional materials for use in guidance programs (three institutions)

Conducting research and other studies in guidance (one institution)

Cooperating with the State Board in conducting conferences and workshops for counselors (one institution)

Cooperating with the State Board in sponsoring youth groups (two institutions)

Making provisions for supervised experience for counselors (one institution)

One institution said it would also eliminate the services of: (1) offering consultant services, (2) providing lay groups with counseling information, and (3) state and area committees. In response to the question regarding services most needed and for which vocational funds should be used, research was mentioned twice, while consultant services, supervised experience, experimentation, conferences and workshops, promotion and cooperative curriculum development were also suggested.

General Conclusions

When the responses from the institutions in all fields were examined, it was concluded that most programs would continue unaltered without reimbursement as far as the following three services were concerned: (1) pre-service courses for teachers, counselors, and coordinators; (2) assisting teachers, counselors and coordinators in planning programs of study leading to vocational certification or some other credential; and (3) making provision for supervised practice teaching or other experience. The services which would be eliminated most often were:

1. Assisting teachers, counselors and coordinators through visits to local programs.
2. Developing and distributing instructional materials.
3. Cooperating with the State Board in sponsoring youth groups.
4. Conducting in-service training conferences for teachers, counselors, and coordinators.

Recommendations

1. That the State Board adopt the following policies:

   a. That reimbursement for present programs of vocational teachers' education be reduced over a three-year period so that by the school year 1965-66 general reimbursement would be eliminated.

   b. That beginning in 1965-66, reimbursement be provided only for those services essential to the promotion and further development of vocational education, and which services would not be provided adequately without such reimbursement.

      This study would suggest the following services might be included:

      Assisting teachers, counselors, and coordinators through visits to local programs,

      Developing and distributing instructional materials (including programmed materials),

      Conducting in-service training conferences for teachers counselors, and coordinators.

      The most necessary services to be reimbursed under this plan might change as the needs change. Reimbursement on services provided under this arrangement should cover all costs. This policy could be implemented, in part, beginning with the school year 1964-65.

   c. That at least 25 per cent of the funds budgeted for teacher education be designated for research and experimentation.

      Teacher education institutions should be invited to submit proposals with the understanding that any proposal accepted may be financed in full through the use of these funds.

2. That a committee be appointed by the State Board to review and recommend to the State Director the proposals for research and experimentation which should be funded under 1, c above.

Part 2

Organization for the Administration of Vocational Education

Michigan is committed to an educational philosophy that delegates to local boards of education maximum responsibility for planning, organizing, and executing educational programs. Few prescriptions have been imposed by the Legislature or the Department of Public Instruction. Local boards of education, through their administrators, have made determinations regarding the administrative structure in programs of vocational education. In recent years the administrative aspects of vocational education have become increasingly complex. Future demands may result in an even higher degree of complexity. The local community faces many problems arising from the surge in industrial and technical development. The obsolescence of skills, lack of work opportunities for the aged, young people and minority groups, the retention of young people in school, and a host of other concerns have never been more vexing. Relationships with governmental agencies dealing with manpower problems have become intricate and involved and closer contact with the industrial-business, agricultural community is needed to minimize program lag. The expansion of vocational education in the community college,

competition for students, and inadequately trained counselors pose additional problems. Strong, vigorous leadership is necessary if local schools are to fulfill their commitment to young people and adults. A school system's adequacy depends not only on the individual competency of its administrators but also on the extent to which this competency is released.

There has been no systematic study in Michigan of the pattern organization for the administration of vocational education programs. Yet authoritative sources emphasize the importance of organization in determining the effectiveness of educational programs. Therefore, in an evaluative study, some attempt should be made to determine whether or not effective programs of vocational education possess characteristics that make for successful vocational programs, in contrast with those that do not. Furthermore, the University of Michigan Advisory Committee indicated that such a study ranked second in importance to the task force given major responsibility for investigating various aspects of administration, organization, and supervision. The remainder of this section of the chapter discusses the highlights of the study conducted.*

Purpose of the Study

The purpose of this particular study is to shed more light on the organization of vocational education in Michigan high schools, to determine authority positions and to relate the pattern of distribution of authority to the effectiveness of the vocational education programs.

Procedure

The procedure was to identify two groups of schools: Group X, schools whose programs were thought to be more effective than the average; and Group Y, schools whose programs were thought to be less effective than the average. To classify these schools, heads of services of the Department of Public Instruction's Division of Vocational Education were used as a jury of experts. These people, along with their assistants, have close contacts with a large number of schools in the state and are acquainted with all the fields of vocational education. They make frequent visitations to the local school districts and are in written and oral contact with the teachers, directors, and administrators of the school districts.

No set criteria for "effectiveness" of a program were given the jury members. They were merely asked to select the two groups of schools, each using his knowledge of the existing programs in Michigan and in the individual schools and making a subjective judgment based on his interpretation of effectiveness. The lists which the five jurors separately drew up were then consolidated and re-presented to the assembled jurors for consensus. The two groups of schools, X and Y, were chosen at two different periods.

The researcher then devised a questionnaire which attempted to determine who within a particular school or school system had the initial responsibility for performing selected administrative functions. The questionnaire underwent a series of refinements, review by professionals, and a trial run before being sent to the following personnel in each school system selected for inclusion in the study: the superintendent, the high school principal, the director of vocational education (if such a position had been designated by the school), and teachers of courses presumed to be preparing students for post-high school employment.

Altogether, 268 questionnaires were sent to personnel in the 39 Group X schools; of these, 240 or 90 per cent were returned. Seventy-eight questionnaires were sent to personnel in the 12 Group Y schools; of these, 60 or 77 per cent were returned.

Later a sub-group of the X schools was designated. This sub-group (Group Xx) consisted of ten Group X schools whose figures for system-wide enrollment and number of professional teachers employed were closer to those for the Y Schools than were those for the total Group X. Sixty-three questionnaires were sent to personnel in the Xx schools, and 55 or 87 per cent were returned.

Several high schools were visited to gain greater background and insights into administration, organization, and vocational education. These visits afforded an opportunity to check functions covered by the survey instrument; moreover, face-to-face contact aided in clarifying actual practice, provided an in-depth extension of the survey, and assisted in developing a "feeling" for the school and effectiveness of the educational enterprise.

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*Abstracted from a study conducted by Clarence C. Mason, A Study of Organization for the Administration of Vocational Education in Selected Michigan High Schools, a part of the Michigan Vocational Education Evaluation Project (Ann Arbor Michigan: The University of Michigan, Office of Research Administration, June 1963).

Findings

The findings are presented in the complete report through a series of 34 tables and explanatory text. Documentation reveals that the original identification of Groups X and Y by the jury was confirmed by self-identifications made by personnel within the schools studied.

Specific topics covered in the findings are: self-identification, hiring new personnel, supervision, dismissals, evaluation, budgets, job descriptions, lay advisory committees, summer and evening school programs, statements of objectives, departmental structure, directors of vocational education, relation of practical arts and vocational programs, follow-up studies, and structure of organization.

The summarization of the findings is based on the two-fold purpose of the study: to determine authority positions over administrative matters and to relate the pattern of authority distribution to the effectiveness of the vocational education program.

Distribution of Authority

In analyzing the positions to which authority had been distributed, it was discovered that in all groups of schools studied there had been almost total delegation of authority by the school boards to the professional personnel. Table 6 indicates only a one per cent retention of authority at the board of education level in the three groups of schools studied. This table also indicates only one per cent authority level for lay advisory committees in the three groups.

System-wide committees had even less authority. Group X schools gave this position a one per cent response; the other two groups showed no response. The high school committee had responses varying from one per cent in Group Y schools to three per cent in Group Xx schools, an insignificant amount. Presumably boards of education and school executives do not regard committees as proper agencies to exercise administrative authority; such thinking would be consistent with generally accepted administrative theory.

Table 6

Opinion by Group as to Who in the School or School System
Initially Makes Decisions
(In per cent)

Response	Group X N-240	Group Xx N-55	Group Y N-60
Teacher, Coordinator, Counselor	18	21	19
Department Head or Chairman	6	9	5
High School Committee	2	3	1
Principal or Assistant Principal	22	28	28
Director of Vocational or Adult Education	28	11	13
System-wide Committee	1	--	--
Superintendent, Assistant Superintendent, Curriculum Director, Director of Special Services	21	26	32
Lay Advisory Committee	1	1	1
Board of Education	1	1	1

Table 6 indicates that the department heads or chairmen had an authority delegation of five per cent in the Group Y schools, six per cent in Group X schools, and nine per cent in Group Xx schools. Somewhat surprisingly, departmentalization does not carry with it a strong delegation of authority. The extent of delegation indicated above contrasts with a positive response (from 76 per cent in Group Y schools to 84 per cent in Group Xx schools) to the question of whether or not there were

departments for vocational in the respondent's school. This portion of the study would seem to bear out those who say the department head or chairman is merely a figurehead, possibly with influence but certainly without authority.

An 86 per cent of responsiblity in Group Xx schools, 89 per cent in Group X schools, and 92 per cent in Group Y schools was left to be distributed among the superintendent, high school principal, director of vocational education, and individual teachers.

Table 6 indicates the superintendent of schools or one of his immediate central staff personnel retained 32 per cent of the authority for initial administrative decisions in the Group Y schools, as compared with a 26 per cent retention in Group Xx schools and a 21 per cent retention in Group X schools.

The amount of delegated authority which was retained at the high school principal's level was 28 per cent for both the Group Y and Group Xx schools, and 22 per cent for the Group X schools. Individual teachers had 21 per cent of the authority distributed to them in the Group Xx schools, 18 per cent in Group X schools, and 19 per cent in Group Y schools.

The amount of authority delegated to the director of vocational education was 28 per cent in Group X schools and 11 and 13 per cent respectively in Group Xx and Group Y schools. However, when it was asked whether or not the school system had a director of vocational education, the following positive response was shown: Group X, 63 per cent; Group Xx, 36 per cent; and Group Y, 55 per cent. This apparent dichotomy was similar to that of the department heads or chairmen. The explanation of the dichotomy is probably the same in both cases: the position exists more as a title than as an authority position.

Effectiveness of Program

The respondents tended to agree with the jury of experts' value judgment concerning the effectiveness of the vocational education programs in answering the question, "How well does your school's total program compare with the programs of other Michigan high schools in preparing graduates for immediate entry into gainful occupations?" Group X respondents tended to see their program as more successful than the Group Y respondents--72 per cent "very good" and "good" responses in the X group compared with only 47 per cent such responses in the Y group. The Xx group fell into a middle position with a 60 per cent response. The differences in patterns of authority distribution between the Y schools and the Group X and sub-group Xx schools may be considered as organizational factors contributing to the relative effectiveness of the programs.

The Group X school systems averaged 5,683 pupils and 232 teachers; the Group Y school systems averaged 1,862 pupils and 71 teachers. With such a great difference in the size, a great difference in the distribution of authority was expected. Therefore, sub-group Xx was derived as being more similar to Group Y in size of operation. Group Xx schools systems averaged 2,082 pupils and 80 teachers.

The study was not expected to show more similar patterns of response for Group X and Group Y schools than it showed for Group Xx and Group Y or even for Group Xx and Group X schools. However, similarity of response between Group X and Group Y did permeate the findings.

It was interesting to note that according to the response patterns, Group X and Group Xx schools were similar in effectiveness of program, and dissimilar in size of operation and organizational structure; whereas Group Y schools were dissimilar to Group X and Group Xx schools in effectiveness of program, but similar to Group Xx schools in size of operation and similar to Group X schools in organizational structure. These anomalies are not explained by data in the present study; however, the answer may lie in the fact thatGroup Y schools had based their organizational structure on other, larger schools rather than on their particular organizational needs.

Another organizational factor which may influence the effectiveness of vocational education programs is the delegation of authority. Table 6 indicates that Group Y boards of education had delegated as much authority to the professional personnel as had the boards of education in the other groups. However, this table indicates that the superintendent of Y schools retains 32 per cent of the authority, as compared with the 26 per cent retained by Xx superintendents.

It is difficult to comment on delegation of authority to department heads and to directors of vocational education, since the study does not show how closely title is related to authority. However, in all groups of schools meaningless titles should be disposed of and authority distributed where it can carry out the purpose of the organization most effectively.

Recommendations

Based on the findings of the study, the conclusions, and the researcher's observations in the field, the following recommendations are made to strengthen programs of vocational education through organizational structure:

1. That written policies be established which clearly indicate the place of and goals for vocational education programs in the school enterprise.

2. That written policies be established which clearly indicate the duties and relationships of personnel in the vocational education programs.

   The response to the questions, "Who prepares written objectives for vocational departments?", and "Who prepares written objectives for individual vocational courses?" indicated a direct relationship between the existence of such written objectives and the strength of the school program. Likewise, the answer to the questions, "Who prepares job descriptions for various vocational positions?", Does your school or school system have a job description for the position of director of vocational education?", and "Have the respondent's duties been clearly defined so he knows what is expected of him?', also suggested some direct relationship between a positive response and the strength of the school's program.

3. That positions carry responsibility and authority as well as title, and that either a departmental chairman or director of vocational education be designated where the size of operation and/or need for such position is warranted. Further, that titles without corresponding responsibility and authority be eliminated.

   When the responses in Table 6 are compared with the response to the question of whether or not there is a director of vocational education, it seems that many positions exist in title but not in corresponding responsibility and authority.

4. That the superintendent be encouraged to delegate to the principal the responsibility for program appraisal, for supervision, and for hiring and dismissal of teachers, and that where the size of operation warrants sub-delegation, the principal continue to be charged with primary responsibility for these functions of administration.

   Response to the question of how well the school's total program compares with the programs of other Michigan high schools in preparing graduates for immediate entry into gainful occupations shows that the principal is in an advantageous position to evaluate the effectiveness of the vocational program. Response to the question of "Who directly supervises teachers of high school vocational subjects?" shows that the Group Xx principal is the chief supervisor of vocational courses; this principal is also shown to be the primary person to recommend non-renewal of contracts for unsatisfactory vocational teachers.

5. That teachers be delegated a clearly stated role in preparation of budget requests and requests for purchase of material and supplies.

   Group Xx teachers are indicated as playing an important role in response to the questions, "Who prepares budget requests for vocational education?", and "Who initiates requests for purchase of materials and supplies for vocational programs?"

6. That graduates of vocational programs as well as dropouts receive the same degree of attention in follow-up studies as college-bound youth; further, that such information be used as part of the appraisal of effectiveness of vocational programs.

7. That each school and school system study its organizational structure in light of the character and extent of the vocational education program needed for the community.

This study has one other dimension which the researcher had "read between the lines" of the responses to the survey instrument; encountered in discussions with leaders in the field; and verified through school visitations. Though not documented in this study, it is a dimension of equal importance with the statistical findings: namely, that the effectiveness of any program of vocational education is largely determined by how much interest the chief administrators and the faculty have in preparing students for immediate entry into gainful occupations and how sound their ideas are for doing so. The organizational structure can facilitate or impede the effectiveness of a program, but by itself cannot make an otherwise ineffective program effective.

CHAPTER V

VOCATIONAL TEACHER EDUCATION IN MICHIGAN

The present chapter of the report is concerned with the programs of vocational teacher education maintained in Michigan institutions of higher education. Although sources for information are manifold about specific activities of vocational teacher education, relatively little has been done to consolidate this information; consequently, attention is given to a review of institutional activities, patterns of curricula and peculiarities inherent in each of the fields.

Procedure

Responsibility for investigation of teacher education fell under the jurisdiction of Western Michigan University. The project co-directors appointed a task force of thirteen individuals representing eight institutions, two local communities, and the Department of Public Instruction. Composition of this group included: eight teacher educators, a counselor trainer, a local director of vocational education, a local school administrator, a supervisor of student teaching and a representative from the Department of Public Instruction.

Four subcommittees were appointed to appraise teacher education in agriculture education, business education, home economics education and industrial education. A total of ninety-nine professional leaders participated in subcommittee activities. The basic data concerning teacher education programs were submitted in a series of four subcommittee activities. These were later synthesized into one report, Vocational Teacher Education in Michigan. In this final report only certain major findings will be summarized since it is impossible to include the mass of data and findings that emerged. Several of the subcommittees have indicated that the product of their investigations represented a progress report since the opportunity for self-study has triggered the necessity for continued effort.

Part 1

Agricultural Teacher Education

The subcommittee on agricultural teacher education investigated four areas of teacher education: the undergraduate student, the pre-service program, in-service program, and the graduate program. Investigation of each of these areas was not exhaustive; only certain aspects were studied.

Michigan State University has the sole responsibility for the preparation of teachers in vocational agriculture in Michigan, since one institution can readily supply the number of teachers needed. Furthermore, a land grant institution has the facilities and staff both in technical subject matter and professional education, exceedingly difficult to duplicate in other institutions. In the period 1950-1961, a total of 500 teachers who qualified for a vocational secondary provisional certificate graduated from the four-year program. Table 1 summarizes the graduates by year and the distribution according to teaching and non-teaching placements.

Data abstracted from annual federal reports revealed that in the year 1961-62, 231 departments of agricultural education employing 238 teachers were operative in Michigan. Total enrollments in these departments reached 15,518. This enrollment figure included high school or all-day classes, young farmer classes and adult farmer classes. Two hundred and twenty of the teachers employed graduated from Michigan State University; the remaining eighteen graduated from nine other in-state or out-of-state institutions.

The average age of vocational agriculture teachers was 35.5 years. Average teaching experience was 8.9 years; average tenure in present teaching position was 6.8 years.

Fifty-nine per cent had permanent teaching certificates; 38 per cent, provisional certificates; and 5 per cent were teaching on special certification. Thirty per cent had earned the master's degree. Approximately ninety per cent received their master's degree from Michigan State University. Salaries ranged from a low of $4,800 to $9,799 a year, averaging about $6,391 for a 12-month period.

An analysis of teaching time of the 238 teachers revealed that slightly over 30 per cent devoted 100 per cent of their workday to teaching agriculture. About 70 per cent spent anywhere from 14 to 79 per cent teaching agricultural subjects. This latter group either served as administrative assistants or taught other subjects. Table 2 shows the number teaching other subjects or engaged in other activities.

Table 1

Qualifiers For Michigan Vocational Secondary Provisional Certificates,
Vocational Agriculture Education*

Year	Number	Teaching Agriculture In-State	Teaching Agriculture Out-State	Non-Agriculture Teaching Positions	Non-Teaching Positions**	Military	Not Placed***
1961	29	26	0	0	3	0	0
1960	35	22	0	3	6	4	0
1959	35	22	1	4	7	1	0
1958	47	23	1	8	6	9	0
1957	42	25	0	0	17	0	0
1956	37	18	0	0	18	0	1
1955	28	12	1	1	14	0	0
1954	26	16	0	1	1	8	0
1953	46	18	0	6	8	13	1
1952	52	28	1	10	9	0	4
1951	67	34	1	15	17	0	0
1950	56	42	2	9	3	0	0
Total	500	286	7	57	109	35	6

* Figures taken from annual federal reports.
** Change in report form does not give specific breakdown in each category; assumed most are in military service.
*** Most in this category represent students who did not wish employment, address unknown, and the like.

Table 2

Other Subjects Taught by Vocational Agriculture Teachers

Subject	Number of Teachers
Science	78
Shop	35
Study Hall	20
Mathematics	18
Social Studies	5
Conservation	4
Guidance	4
Administrative Assistant	2
Athletics, Band, Business Education, Cooperative Education, English, Family Living, Geography, IOFT, Special Education (one in each subject)	9
	173

In 1960-61, forty-seven teachers or 16 per cent conducted young farm classes with a total enrollment of 704. Average enrollment was about fifteen per teacher. One hundred eighteen teachers or 45 per cent taught adult farmer classes with an enrollment total of 2,791; the average enrollment per teacher was 23.

Some Characteristics of the Undergraduate

In order to ascertain some characteristics of students preparing to be vocational agricultural teachers, the freshman class of 1961-62 was examined. Nineteen students comprised the freshman class, 17 coming from 16 Michigan high schools; two were out-of-state residents. All nineteen were single and one had military experience. Their average age was 19. Four of the 19 transferred into the vocational agriculture curriculum; three from the College of Agriculture at Michigan State; one from an out-of-state institution.

One of Michigan's requirements for certification in teaching vocational agriculture is a minimum of two years of farm experience after reaching the age of fifteen. A Farm Experience Inventory, a self-administered instrument, was used to determine the extent to which the freshman class met the farm experience requirement. The inventory was filled out by the student and then evaluated by faculty members on the basis of a five-point qualitative scale ranging from "excellent" to "not acceptable" and a three-point quantitative scale. Slightly more than sixty per cent fell within the "fair" to "not acceptable" in quality of experience and most students lacked the minimum quantity of experience, which leads to the conclusion that students enrolling in vocational agriculture possess less farm experience than in the past. This can be attributed to three factors: (a) students enroll at an earlier age; (b) limitation of time to accumulate the necessary experience; and (c) difficulty in securing suitable experience.

Sixty-three per cent of the 1961-62 class had 4-H experience ranging from one to ten years. Sixty-eight per cent had F.F.A. experience and took vocational agriculture in high school. Students enrolling in recent years tend to have more farm youth organization experience than previously.

The majority of the students indicated their former teachers of vocational agriculture had been instrumental in their selection of vocational agriculture teaching as a career. This corroborates a study conducted several years ago in which the same conclusion was reached.

Pre-Service Program

The pre-service or four-year undergraduate program included both formal courses and extra curricular activities. Institutional policy, state certification and the state plan were identified as determinants of the undergraduate program. A total of 192 quarter credit hours are required for graduation. Approximately 47 per cent of the curriculum is devoted to general-education-and-science block, 37 per cent to professional education.

Appraisal of the Pre-Service Program

In order to determine the effectiveness of the pre-service program, it was decided that reactions should be solicited from two separate groups, experienced teachers and vocational agricultural students enrolled as seniors in the undergraduate program. The first group was composed of vocational agri-

culture teachers who graduated during the five-year period 1956-1960. During that five-year period, the pre-service program had not changed materially. The second group was composed of 17 seniors. This number constituted the entire senior class for the year 1960. It was hypothesized that experienced teacher responses would differ from students in training.

A survey instrument was prepared to appraise six activities: curriculum, summer experience program, extracurricular, student teaching, counseling and guidance, and general. Responses were based upon a three-point rating scale as well as free choice.

Findings of the Survey

In general, responses from the two groups surveyed were not too dissimilar. Where marked deviations existed, these are noted under each of the activities appraised.

Curriculum

Respondents indicated there was good balance between the general education and science courses. Fifty per cent stated that insufficient numbers of courses were offered in agricultural science, agricultural economics, and agricultural engineering. According to the teacher group, undue emphasis in the curriculum was given to general professional education courses and not enough time was given to agricultural education courses and student teaching. General professional education courses ranked highest on the list requiring reorganization. Students felt that the agricultural electives were sufficient, whereas the teacher group showed a preference for more agricultural electives. (Agricultural electives are selected from technical courses in Dairy, Livestock, Poultry, Farmstead Beautification, Farm Forestry, Crops and Soils, Land Use, and Fruits and Vegetables). Seventy-five per cent of the survey group said that the combination of required courses was satisfactory. Fifty-four per cent thought the required courses adequately met the needs of the vocational agriculture teacher. Fifty per cent felt a five-year preparation program would be beneficial.

Summer Experience Program

In addition to student teaching, undergraduates may spend a two-week apprenticeship with an experienced agriculture teacher through the summer experience program, for which three-quarter credits are offered. The responses by the survey group revealed that those who had participated in the summer experience program tended to rate the activity higher than those who did not. Fifty per cent thought the experience was highly valuable and should be required of all agricultural education majors.

Extracurricular Activities

The majority of the respondents indicated they had participated in the Agricultural Education Club activities. Eighty-four per cent said the experience was of great value, while the remainder reported it was of some value to them in their student teaching as well as in their subsequent teaching. Most respondents suggested that more skills and leadership activities should be incorporated into the Club program.

Student Teaching

Seventy-five per cent of the respondents stated that a full term of student teaching was adequate, although several suggested additional time was required and that fewer students should be assigned to a center. The same number rated their student teaching experience as good.

Counseling and Guidance

All respondents replied that sufficient information and assistance had been provided regarding academic requirements, course offerings, scheduling, and the like. All of the respondents indicated that they had had an academic advisor with whom they felt free to consult at any time. Ninety-two per cent felt the advisement system was adequate and should be retained.

General

This portion of the survey was devoted to future occupational goals and the reasons why teaching agriculture was selected as a career. Fifty per cent of the respondents reported that interest in agriculture was the chief reason, while 24 per cent stated that teaching in general was the paramount factor. Seventy-five per cent considered teaching vocational agriculture as their permanent career; 16 per cent considered it a temporary occupation and 8 per cent were undecided as to their future plans. Eighty per cent stated that the undergraduate program was broad enough in scope to prepare them for related occupations other than teaching.

In-Service Teacher Training Program

A comprehensive program of in-service activities is offered through collective efforts of the College of Education, College of Agriculture and the Department of Public Instruction. The constantly expanding technology in agriculture and changes in instructional technique require that administrators and teachers in the field be given ample opportunity for professional growth on a continuing basis. In-service activities fall into ten categories; (1) credit courses, (2) first year teacher follow-up, (3) instructional materials, (4) service letter, (5) professional meetings, (6) annual conferences, (7) area conferences, (8) research projects, (9) Michigan Education Association meetings, and (10) other professional activities. A detailed description of these activities is included in the publication, Vocational Teacher Education in Michigan.

Appraisal of the In-Service Education Program

A second survey was conducted in connection with this study to ascertain the reactions of the experienced vocational agriculture teachers to the in-service education program. A 10 per cent random sample was taken of teachers graduating between 1955-1960. Twenty-two teachers were included in the sample. A 78 per cent response was received. Teaching experience ranged from two to six years. The following table summarizes the response.

Table 3

Survey Responses to In-Service Training Activities

Item	A Great Help	Some Help	Very Little Help
1. Follow-up visits with first year teacher	12	4	1
2. Individual visits with teachers in their schools	12	4	1
3. Individual visits with administration at time of local school visit	7	9	0
4. The service letter	11	6	0
5. Technical subject-matter meetings	14	3	0
6. Staff participation on professional committees	10	7	0
7. Staff participation at professional meetings	9	8	0
8. Preparation, demonstration, and discussion of teaching aids	14	3	0
9. Staff publications and writings	10	7	0
10. Correspondence to teachers about submitted problems	5	12	0

The teachers surveyed were requested to list suggestions and recommendations for improving or strengthening the in-service program. Comments were also solicited by several staff members as they made contact and otherwise worked with teachers of vocational agriculture. The suggestions and recommendations are listed below:

1. All vocational agriculture graduates from Michigan State University should have a major in agriculture.

2. The responsibility for organizing an in-service training program should rest with the agricultural education staff of the College of Education, Michigan State University.

3. The responsibility for the presentation of technical agricultural information should rest with the College of Agriculture, Michigan State University.

4. A graduate program for vocational agriculture teachers should include a master's degree in technical agriculture with a concentration in areas such as dairy or animal husbandry or other technical areas. This degree should not be the same as that offered in agricultural education.

5. Extension courses with credit should be available at centers in the state to accommodate all types of self-improvement programs.

6. Special Programs:

   The vocational agriculture teachers should be given released time to attend certified special programs such as:

   a. Dairy school at Michigan State University.
   b. Mastitis team meetings.
   c. Brucellosis eradication program meetings.

7. Literature:

   a. Newsletter from departments in the College of Agriculture should be made available to the teachers of vocational agriculture.

   b. Fact sheets on specific topics should be sent to all vocational agriculture departments on a continuing basis.

   c. Bulletins. The policy of sending bulletins in quantity should be determined by the topic and the size of the vocational agriculture department. Single copies should be available to all departments.

   d. Journals. It would be very desirable if the vocational agriculture teachers were active members of such societies as the American Dairy Science Science Association or the Society of Animal Production. A research journal is available from each society.

8. The program of assembling teaching units and teaching aids should be evaluated according to (1) use of vocational agriculture teachers and (2) the development of strong vocational agriculture leaders.

9. All vocational agriculture teachers should be responsible for working with others in a total agricultural program in a county.

Credit Courses

Some special problems attend offering credit courses on an extension basis. Twenty-two extension courses in agricultural education were offered throughout the state during the period, 1956-1961. Twenty courses were conducted in centers in the lower peninsula and two in the Upper Peninsula. Additional courses could have been offered; however, limitation in staff time and funds interfered. The relatively small number of teachers in the Upper Peninsula accounts for the difference in number of course offerings.

Average enrollment in extension courses was approximately 12. The low enrollment can be attributed to several factors. Thirty per cent of the agriculture teachers already had the master's degree. The remaining 166 teachers were so widely scattered geographically that courses scheduled in any one location attracted a limited number of teachers. Furthermore, the specialized subject matter was not conducive to attracting other than agriculture teachers.

Forty courses in technical agriculture were offered throughout the State by the College of Agriculture during the five-year period, 1957-1961. Ninety per cent were conducted in the lower peninsula. This substantiated the complaints of vocational agriculture teachers in the Upper Peninsula that technical agriculture courses were not available.

Graduate Education in Vocational Agriculture

Graduate education is available on both the master's and doctoral level in the College of Education.

Master's Program

The stated objectives for the master's degree program were:

1. To develop further competency as a teacher in a public school system.

2. To provide basic preparation in research and broad areas of education for students of agricultural education who plan to pursue work beyond the master's degree.

3. To develop further competency as a teacher of vocational agriculture.

4. To prepare for entrance into leadership positions in vocational education.

The master's degree program in agriculture education includes work in three areas: general professional education, specialized professional education, and technical agriculture. A total of forty-five credit hours usually is required for completion of the program. As a general rule, one-third of the graduate's program is dedicated to each of these areas.

Professional Education Area: All graduate students are required to take a course in Principles of Curriculum Improvement. Additional courses are selected in guidance, social-philosophical foundations, learning theory, or administration.

Specialized Professional Area: Courses normally included in this area are in agricultural education and vocational education. Seminars and advanced problems courses are based upon the specific needs of the students.

Technical Agriculture Area: The graduate student may strengthen his background in technical agriculture content fields through this portion of his program. Courses may be selected from agricultural economics, agricultural engineering, animal husbandry, dairy, farm crops, horticulture, poultry science, soil science, rural sociology, and closely related sciences. Since many teachers need to strengthen their background in certain areas or overcome certain personal or professional weaknesses they may enroll in one or two courses in any department in the university. Examples are speech, sociology, and language.

For teachers who aspire to leadership positions in agricultural or vocational education or to work beyond the master's degree, there is generally less emphasis on the technical content areas and more on basic preparation in the professional areas.

Appraisal of the Master's Degree Program

In order to determine the effectiveness of the master's degree program it was decided to survey two groups: (1) teachers who had received their master's degree, and (2) students who were enrolled in the master's program. The survey was administered in connection with the Annual Conference held on the Michigan State University campus. One hundred sixty teachers were requested to fill out the survey form. Eighty-eight, or 55 per cent, responded. Thirty-six respondents had completed their master's work and fifty-two were in various stages of completion. Twenty-seven of the 36 who had completed their master's, earned it within five years of the date of the survey, five had been earned within the previous six-to-ten-year period and four had received their degrees prior to the ten-year period.

Reactions to the value of courses taken in the master's degree program are summarized in Table 4. Instructions supplied in connection with the survey form stressed the fact that the respondent was to react only to those courses in which he had been enrolled.

Other questions in the survey revealed the following findings: the majority of respondents indicated that the chief reason for pursuing the master's was for professional improvement; the next largest group indicated financial gain and the smallest, advancement. Seventy-three per cent of the fifty-five teachers responding endorsed more off-campus credit courses. Courses in technical agriculture, Table 5, seemed to have the most appeal.

Doctoral Programs in Agricultural Education

The doctoral programs in agricultural education are designed for persons with exceptional scholastic aptitude who show promise of becoming leaders in agricultural education or in closely related fields. The positions for which the doctorate qualifies a person include: college teacher of agricultural education, instructional materials specialist, research worker (state or national), state supervisor or consultant of vocational education in agriculture, local or state administrator in vocational education, consultant for international programs, education specialist in industry or government. Programs leading to the Doctor of Philosophy and Doctor of Education are offered.

A program encompassing approximately two full years of study beyond the master's degree is planned for each candidate. The concentration of study in the various fields will vary with the candidate's goals, background of study, current status of understanding, and experience. The candidate

for either degree is expected to choose a research problem and to report the research in the form of a thesis. The thesis is usually equivalent to 36 credits. Language requirements for the Doctor of Philosophy degree require that the candidate pass examinations demonstrating his ability to read German and French at a level of proficiency needed to conduct the research work. It is possible to take additional course work in another professional area to offset the requirement of one language. The Doctor of Education Degree requires reading ability of one language or demonstrated competency in the field of statistics.

Table 4

Respondent Reaction to Value of Courses
In Master's Degree Program

ITEM	Reaction		
	Very Important	Important	Not Important
General Professional Education			
Administration	22	13	6
Curriculum Improvement	21	22	6
Guidance	23	17	2
Teacher & Administration	13	21	1
Psychological Problems of the Classroom	6	19	8
Trends in Education	5	20	9
Specialized Professional Education			
Farm Mechanics	37	10	2
Young Farmer	15	24	2
Adult Farmer	18	22	1
Course Building in Vocational Agriculture	29	14	5
Vocational and Practical Arts Education	0	1	0
Technical Agriculture and Cognate Education			
Soils	36	24	0
Animal Husbandry	36	7	0
Sociology	7	24	4
Crops	2	1	0
Horticulture	1	0	0

Table 5
Off-Campus Courses Requested

Course Area	Frequency
Technical Agriculture	33
Agricultural Education	12
Guidance	5
School Administration	3
Sociology	2

The student must pass written and oral comprehensive examinations. The written examination includes three areas: (1) Agricultural Education, (2) the related field outside the College of Education, and (3) the general field of education. The first two of these examinations are under the direction of the appropriate members of the candidate's guidance committee, supplemented by other faculty members appointed by the dean of the college. The third examination is directed by a standing examining committee created for the purpose by the college. The topics covered will represent those ideas and concepts which give structure and meaning to the field of education. The oral examination is held after the written examinations have been completed and evaluated. The purpose of the oral examination is to probe items which appear from the written examination to need further investigation, and items not included in the written examination. The oral examination is directed by appropriate members of the guidance committee and personnel selected from the standing committee by its chairman.

The comprehensive examinations must be passed within five calendar years after the date of admission to the doctoral program. Before taking the examination, the student must have completed at least 80 per cent of his required course credits, not including credit toward his thesis.

The candidate is examined orally upon presentation of his thesis. The examination centers on the thesis itself, but it also includes examination on relevant basic concepts.

Appraisal fo the Doctoral Program

Two separate studies were conducted to appraise the doctoral program in agricultural education. The first study constituted a follow-up of all individuals who had been awarded the doctorate degree since the program was instituted. A self-administered survey form was constructed containing seven categories for which reactions were requested: admission procedure, language requirements, course requirement, dissertation, staff and facilities, examination procedure and placement. A total of twenty-four specific items were listed. Responses to some items were on the basis of satisfactory or unsatisfactory ratings; others, on a yes-no check list.

Findings: A detailed analysis of the findings is beyond the scope of this report; consequently, only a summary is provided.

Admission Procedure: Items in admission procedure included (1) the application form, (2) testing program, (3) the interview, and (4) scholarship requirements. Respondents indicated that the application form, the interview and scholarship requirements were satisfactory. Two of the 17 reacted negatively to the testing program and said it was unsatisfactory.

Language Requirements: Three items were included in this category: (1) language requirement, (2) language substitution option, and (3) statistics option. Twenty-three per cent felt the language requirement was unsatisfactory. The language substitution option and the statistics option were satisfactory to the remainder. As shown by specific comments, those responding negatively questioned whether the benefits were commensurate with time, money, and effort expended.

Course Requirement: Four items were included in this category: (1) greater variety in courses, (2) independent study, (3) courses outside of education, (4) courses in more fields of education. Eight per cent of the respondents said a greater variety of courses would be beneficial and fifty per cent requested additional courses other than professional education. Twenty-three per cent favored more independent study. Twenty-eight thought courses in other areas of education should be available.

Dissertation: Items included in this category included: (1) problem selection, (2) credit allocation, (3) flexibility in pursuing a problem. All respondents rejected the selection of a research problem from a prepared list, implying maximal freedom in problem selection. Less credit allocation for the dissertation and more flexibility in researching a problem was recommended by one respondent.

Staff and Facilities: Items listed in this cateogry included: (1) advisory, (2) other College of Education faculty, (3) faculty from other fields, (4) library, (5) statistical, (6) study facilities.

Of the 17 respondents, all indicated they received adequate assistance from advisers. One of the 17 indicated dissatisfaction with advisory committee members in the College of Education and in another discipline.

Fourteen of the 16 respondents said the library facilities were good; two thought they were inadequate. Statistical equipment and facilities were rated as adequate by 13 of the 15 respondents. Two thought this area could be improved. Study facilities met with less approval since only 10 of the 15 respondents felt they were adequate, four said they were fair and one felt they were poor.

Examinations: Items listed in this category were (1) too early in the program; and (2) too late in the program.

All respondents said the comprehensive examinations came at the right time in their program.

Placement: Individuals were requested to respond to the question as to the quality of the placement service. Ten of the 12 respondents found it satisfactory; two said it was unsatisfactory. Others were on leave from positions and, therefore, found it unnecessary to utilize the placement service.

Appraisal by Doctoral Candidates in Agricultural Education

The second study concerned with the appraisal of the doctoral program was directed to the candidates currently working toward the doctorate in agricultural education. A similar survey instrument to that mentioned in the study above was devised, except that irrelevant items were deleted. Additional items were included since several modifications in the doctoral program had been adopted recently. The respondents were requested to check items on the basis of a three-point rating scale. A summary of the responses is presented in tabular form.

Admission Procedure: Improvement in the testing program and to a lesser degree in the entrance interview was advocated according to responses in Table 6.

Table 6

Responses to Admission Procedures

Item	Response			
	Number	Good	Fair	Poor
Application for Admission	13	11	2	0
Scholarship Requirements	13	13	0	0
Testing Program	11	6	3	2
The Interview Procedure	13	9	4	0

Program Planning: Fifty per cent of the respondents, according to Table 7, suggested that certain weaknesses may exist in planning course work and research in connection with the dissertation. Selection procedures in regard to adviser and guidance committee appeared to be satisfactory.

Table 7

Responses to Program Planning Procedures

Item	Response			
	Number	Good	Fair	Poor
Course Work	11	7	4	0
Research	11	7	3	1
Selection of Guidance Committee	12	10	2	0
Selection of Advisor	12	10	2	0

Examinations: The small number of responses to this category was probably due to the number of doctoral candidates who had not completed their examinations. The general examination in education which is designed to test the competency of the candidate in the overall field of education received unfavorable reaction by over fifty per cent of the seven responding.

Table 8

Responses to Examination Procedures

Item	Response			
	Number	Good	Fair	Poor
Preliminary Examination	6	5	1	0
Oral Examination	5	5	0	0
Comprehensive Examination	7	3	4	0

Language Requirement: Neither the language requirement nor the substitution of twelve hours of course work was endorsed very highly. Almost 70 per cent said the language requirement was unsatisfactory and fifty per cent reacted in a similar manner to the course substitution.

Table 9

Responses to the Language Requirement

Item	Response		
	Number	Satisfactory	Unsatisfactory
Language for Ph.D.	12	4	8
Substitution of Course Work	12	8	4
Substitution of Statistics in Ed.D.	12	10	2

General Recommendations

1. Reimbursable funds for teacher education in vocational agriculture should be specifically identified. The teacher education staff in agriculture should be given the opportunity to recommend uses to which the monies will be put.

2. The staff in agricultural education should be given responsibility to develop program, and the various activities making up such program. These activities and the emphasis on certain activities, may be varied from year to year, depending upon need.

3. The teaching of on- and off-campus courses in teacher education in agriculture at the undergraduate and graduate level becomes the function of the university and, as such, should be financed and promoted by the university.

4. Institutional policies regarding minimum enrollments in courses should not be allowed to handicap vocational education staffs in providing essential specialized professional education courses.

5. Specific reimbursable funds should be set aside in the very near future for an intensive evaluation study of the total program in teacher education for vocational agriculture, with implications for changes as the findings of such a study might indicate.

6. Staff and clerical positions should be filled in keeping with personnel needs, to adequately perform the functions of an on-going program of teacher education in vocational agriculture.

7. Noninstitutional, reimbursable funds should continue to be used to assist communities which provide student teaching, to allow time for the supervising teacher to engage in his teacher education activities.

Part 2

Business and Distributive Teacher Education

Although services for the preparation of business education teachers have been in existence for some time, reimbursed vocational teacher education in business and distributive education is a relatively late arrival. Federal funds through the Smith-Hughes Act of 1917 were appropriated only for teacher education in agriculture, home economics, and trade and industrial education. Business and distributive teacher education have been, in a sense, disadvantaged. With the passage of the George-Deen Act of 1936, additional federal funds have been available for distributive education. Only state funds have been used for the support of business teacher education for the preparation of office coordinators.

For purposes of this report, business and distributive teacher education are discussed separately, although in practice most institutions providing teacher education services have interlocked both phases. Business education as mentioned in this report encompasses both office occupations and basic business and economics education. Distributive education is confined to distributive occupations.

Procedure for the Study

Two separate sub-task forces were appointed to conduct studies in business and distributive teacher education. The business education sub-task force included representatives from those

institutions of higher education that were affiliated with the Michigan Association for Teacher Education in Business. The following nine institutions participated: Central Michigan University, Eastern Michigan University, Ferris State College, Michigan State University, Northern Michigan University, University of Detroit, University of Michigan, Wayne State University, and Western Michigan University. The University of Michigan assumed the responsibility for this sub-task force. Data were secured through reports from the various institutions and conferences held by this group.

The distributive education sub-task force was composed of 15 individuals representing teacher educators, local public schools, business, and a consultant from the U. S. Office of Education. Data were accumulated through meetings, conferences and the review of statistical and descriptive reports. Western Michigan University provided the leadership for this group.

Both of these groups confined their activities to the preparation of a general format by which each institution could appraise its own program.

Cooperative Office Teacher Education

Cooperative office education in Michigan is in its twenty-third year. In 1962, there were 37 specialized office cooperative programs conducted on the high school level and six on the post-high school level. Thirty-two high schools and two post-high school institutions offered both a program of office and a program of distributive education planned by the same teacher-coordinator. Forty-four diversified cooperative programs of office, distributive, and trade and industrial education were conducted in 44 high schools. Thus, office education was a part of 121 programs. Three thousand, two hundred and ninety-seven students received instruction in 1962 in office occupations, through enrollment in a cooperative education program of some type.

Thirty-seven teacher-coordinators had the sole responsibility for coordinating a program in office occupations; 35 coordinating both an office program and a distributive program; 39 were coordinators of diversified cooperative programs involving office, distributive and trade and industrial occupations.

Teacher-coordinators for office occupations have been prepared by the University of Michigan, Michigan State University, and Wayne State University. Since the majority are recruited from the ranks of experienced classroom teachers, most are prepared at the graduate level. The teacher education institutions provide on-campus courses during the year and in summer sessions, offer courses in extension centers, make school visitations and participate in other teacher education activities, including coordinator conferences, preparation of instructional materials and research.

Other Business Teacher Education

Business teachers are trained at eight state colleges and universities and at one private university. These include: Central Michigan University, Eastern Michigan University, Ferris State College, Michigan State University, Northern Michigan University, University of Detroit, University of Michigan, Wayne State University, and Western Michigan University.

All institutions conduct both undergraduate and graduate programs with the exception of Ferris State College. Four administrative patterns are used to locate responsibility for business teacher education curricula. At Eastern Michigan University, Central Michigan University, Western Michigan University, Northern Michigan University, and Ferris State College, the responsibility for programs for business teachers resides in the Department or School of Business. At Wayne State University and at the University of Michigan, the program is administered in the School of Education. At Michigan State University, the undergraduate program is a dual responsibility of the College of Education and the College of Business; the graduate program is handled by the College of Education. The University of Detroit gives joint responsibility for the program to the school of Business and Arts and the School of Sciences.

Precise data on enrollments, staff, budgets, and other aspects of the program were not available, since some institutions enroll business teaching majors in departments having other majors such as secretarial and accounting. An estimated 350 business teachers are certified per year.

The Business Education Program

The program for business teachers in all of the participating schools was almost exclusively concerned with preparation for secondary school teaching. It reflected several influences such as the liberal arts college, the state certification code, and the North Central Association of Secondary Schools and Colleges.

The colleges were consistent in allotting about 50 per cent of the program to liberal arts. They required a minimum of about 12 semester hours in each of the following: linguistics-speech, science-

mathematics, and social studies. The state requirements of a major and two teaching minors was commonly met by a major and minor in the business field, and one teaching minor in a cognate field. Most of the schools represented offered a choice of two majors (secretarial and general business), with a few offering a third choice, distribution.

The curriculums in general represented a loose fit to student needs. Offerings and elections are on the basis of subject names or titles, frequently according to availability. In practically all cases there was reason to assume that content and teaching method were geared to the needs of students preparing for business positions rather than teaching. Furthermore, subject matter could be more closely fitted to the needs of prospective teachers, economics for teachers, conservation for teachers, and others.

Each of the following was a course required by at least one school. Those marked with an asterisk (*) were required by at least half of the colleges represented:

* accounting	management
* economics	personnel
* communications (report writing)	statistics
* typewriting	marketing
law	shorthand
office machines	income tax
introduction to business	finance
business policy	business mathematics
records management	secretarial science

Professional Education

Instruction in professional education in all of the colleges conformed to the requirements of the certification code, and differed from institution to institution in organization pattern and amount rather than in kind. The twenty semester hours defied comparison and tabulation because of the nature of these differences, but in all cases included the following:

Social foundations of education (history of education, philosophy of education, educational sociology, and others).

Psychological foundations (educational psychology, child growth and development, guidance, mental health, and others).

Public education (organization, administration, and curriculum).

Methods of teaching (general methods, general methods in business subjects and methods of teaching specific subjects, such as secretarial, distribution, general business).

Directed teaching (this laboratory experience was considered a most important part of the preparation of teachers, and the great variety of practices was shown).

Some relied on campus schools controlled by the department or school of education, where the student teacher was in close and frequent contact with instructors of method courses and with busines education instructors. Some used off-campus schools where articulation of practice teaching with professional classes was likely to be very loose. Practice varied as to the amount of laboratory experiences. Some schools arranged for full-day experience of six weeks or more; some planned half-day assignments for one semester only. Variety of experience was sought by any of the following: (1) additional experience in teaching in both a major and a minor; (2) in two different subjects, i.e. typing and bookkeeping; (3) at two levels, i.e. a junior high school and a senior high school experience.

Supervision varied. Some arranged to have student teachers supervised by members of the business education faculty, or by general methods teachers, and some appointed resident supervisors. There were faults with each of these arrangements, and little confidence was expressed that the full possibilities of the laboratory experience were being realized.

Distributive Teacher Education

Distributive education in Michigan is in its twenty-fifty year. In 1962 there were 34 distributive education cooperative programs conducted on the high school level and four on the post-high school level. Thirty-two high schools and two post-high school institutions offered both a program of distributive and a program of office education, coordinated by the same teacher-coordinator. Forty-four diversified occupations programs of office, distributive, and trade and industrial education were conducted in 44 high schools.

Thirty-six teacher-coordinators had the sole responsibility for coordinating a program in distributive occupations; 35 coordinating both a distributive and office program, and 39 were coordinators of diversified occupations programs of which distributive education was a part. Two thousand seven hundred and fifty-four students received instruction in distributive occupations in a cooperative education program of some type. Although enrollments have periodically fluctuated there has been a noticeable upward trend since 1937.

Four institutions have been designated by the State Board of Control for Vocational Education to prepare distributive education coordinators. These include Michigan State University, University of Michigan, Wayne State University, and Western Michigan University. At Western Michigan, distributive teacher education is located in a single department, while at the other institutions it is a part of a total program of business and distributive education.

Western Michigan University operates a rather extensive undergraduate and graduate program, whereas the other institutions conduct programs on the graduate level only. In addition to offering professional courses on campus, the institutions offer extension courses to upgrade coordinators, provide school visitations and consultative curriculum aid, develop instructional materials, and participate in coordinator conferences and other in-service activities.

The Forward Look in Preservice Distributive Teacher Education

The pre-service distributive teacher education program of the future has an unparalleled challenge before it. The nation-wide emphasis upon the program approach to distributive education has very definite implications. The program approach involves a complete curriculum and implies a series or sequence of distributive experiences beginning very early in the individual's school career. It is conceivable that a person could begin the study of distribution as early as kindergarten and continue on through elementary school experience, to junior high school graduation, on to community college, and into adulthood.

With such a broad program approach, the distributive teacher education program of the future will need to meet this challenge. The following set of beliefs should undergird distributive education and the new distributive teacher education program:

Belief number one: A general introduction to the field of distribution should begin in the elementary grades--as early as the kindergarten--units devoted to the study of the distribution process and its career implications.

The new distributive teacher education program should provide instructional units for the preservice preparation of elementary teachers. It is conceivable that a course, "Teaching of Distribution for the Elementary School," could be offered. This would be similar to such courses as "Teaching of Reading" or "Industrial Arts for the Elementary Teacher."

The distributive teacher education institution should also provide topical outlines dealing with content, lists of audio-visual aids available and suitable for this level, and story books and other materials designed to be read by the elementary pupils.

Belief number two: Career opportunities in distribution should be adequately covered in the junior high school in those courses dealing with careers and/or occupations.

The new distributive teacher education program should provide instructional units for the preservice preparation of the junior high school teacher, so that he may better understand its career opportunities.

Belief number three: The distribution process should be adequately covered in the high school by the course or courses dealing with general or basic business.

The new distributive teacher education program should provide instructional units for the preservice preparation of general business teachers dealing with the distribution process and the teaching of it.

Belief number four: Specialized courses in the various aspects of distribution should be a part of the curricular offerings in the 11th and 12th grades of all comprehensive high schools and community colleges.

The new distributive teacher education program should prepare teachers of distribution through a pre-service curriculum which will provide the individual with considerable depth in subject-matter preparation and practical work experience.

Belief number five: Cooperative work-study technique should be a part of the distributive education program in all comprehensive high schools and community colleges.

The new distributive teacher education program should prepare teacher-coordinators through a well-planned pre-service curriculum which has a proper balance of general and specialized education. The specialized area should provide for depth in subject matter, supervised work-experience, and a well-planned student teaching internship.

Belief number six: A distributive education program in the comprehensive high schools and community colleges should have a youth organization for the distributive education students.

The new distributive teacher education program should devote some time in the pre-service teacher preparation of teachers to the importance and need of a youth organization for distributive education students.

Belief number seven: Distributive adult education should be made available through the community schools for all individuals engaged in distributive businesses.

The new distributive teacher education program should provide adequate preparation for those individuals, (educators and business people) involved in organizing, supervising and/or teaching of distributive adult education classes.

Belief number eight: Supervision should be provided by the school administration for the distributive education program in the community schools.

The new distributive teacher education program should provide instructional units on the planning and supervising of the distributive education program in the schools.

Conclusions

1. The number of cooperative occupational education programs in the public high schools and community colleges, in which vocational distributive education is a part, has remained nearly constant during the past five years. This is true for student enrollments for the past ten years.

2. Distributive education as a specialized cooperative program is found in only 28.3 per cent of Michigan's public class A high schools and in none of the smaller high schools.

3. The majority of the teacher-coordinators presently employed by the public schools having cooperative programs including distributive education did not earn undergraduate or graduate degrees from a designated distributive teacher education institution.

4. Approximately 85 per cent of the teacher-coordinators are male.

5. On an average, the salary of the teacher-coordinator is greater than the average public school teacher.

6. Approximately 59 per cent of the teacher-coordinators of cooperative programs, in which distributive education is a part, devote full time to the position. The other teacher-coordinators have additional assignments.

7. The presently designated distributive teacher education institutions appear to be providing a rather complete program of service for vocational distributive teachers, as evidenced by a comparison with the activities described in the U. S. Office of Education policy bulletin, Administration of Vocational Education.

8. Student teaching centers for prospective distributive teacher-coordinators need greater attention on planning, supervision, and designation procedure.

9. The present supply of teacher-coordinator candidates is inadequate for meeting present and future demands.

10. The certification requirements of the reimbursed distributive teacher education institutions are more demanding than the minimums as set forth in the State Plan.

Recommendations

1. The designated teacher education institutions should more actively recruit students for their programs, to provide more trained teacher-coordinators for distributive education. A concentrated state-wide effort led by the State Office of Vocational Education would also help the situation.

2. The designated teacher education institutions, with the assistance of the State Office of Vocational Education, should give greater attention to developing student teaching centers, to designation procedure, and supervision.

3. The designated teacher education institutions should be encouraged to devote more time to the preparation of instructional materials.

4. The designated institutions should be encouraged to devote more time to research, particularly of the experimental typs.

5. More schools in the state should be encouraged to allow the teacher-coordinator to devote full time to the program.

6. The designated distributive teacher education institutions should be encouraged to keep certification standards higher than the minimums set forth in the State Plan.

Part 3

Home Economics Teacher Education Program

Description of the Study

Purposes of this study were: (1) to secure facts relating to the present status of home economics teacher education in Michigan; (2) to determine strengths and weaknesses of the well-developed and underdeveloped areas of the home economics teacher education program; and (3) to draw some conclusions and make recommendations warranted by the facts, to raise questions, identify issues or indicate areas which need further study.

The study was primarily carried on through regular administrative channels and the organization of the Michigan Home Economics Teacher Educators. The origin, purposes, responsibilities, and challenges of the Michigan Vocational Education Evaluation Project were explained to all participants of the study. Criteria developed by recognized professional groups at national and state levels were assembled and utilized. The study involved individuals and groups responsible for specific aspects of the home economics teacher education program.

In general, five sources of data were used: (1) catalog materials submitted by the participating institutions; (2) official reports and records; (3) summary reports which were prepared after special conferences involving home economics faculty; (4) questionnaires to home economics teachers; and (5) focused interviews with teacher educators.

Eight institutions participated in the study: Albion College, Central Michigan University, Eastern Michigan University, Mercy College, Michigan State University, Northern Michigan University, Wayne State University, and Western Michigan University. The home economics and family life staff of the Department of Public Instruction also participated. Over 550 individuals participated directly in the study. Of these, fifty-four were home economics faculty and state staff, 29 were supervising teachers and 472 were home economics teachers in reimbursed vocational programs, 1961-62.

Supply and Demand for Home Economics Teachers

Twelve institutions in Michigan had four-year programs for the preparation of home economics teachers, and eight of them were approved by the State Board of Control for Vocational Education.

Table 10 indicates an upward trend in the number of approved institutions but a downward one in those reimbursed. The number of reimbursed institutions had decreased from six to three. This was not in keeping with the national trend, which showed an increase in the number of institutions both approved and reimbursed.

Enrollment data indicated that (1) there was a potential supply of women in Michigan colleges, and (2) over 90 per cent of these women were attracted to major curricular areas other than home economics.

An analysis was made of the enrollment of juniors and seniors in home economics education from 1958 through 1961 in all eight institutions. The average number for each year was 355.5 If there were a trend in numbers of students enrolled, the last three years indicated a downward one.

As for seniors graduating from home economics teacher education, the number in all eight institutions varied from a low of 116 (in 1958-1959) to a high of 158 (in 1960-1961), averaging 142 per year. Michigan State University consistently graduated the largest number, with Western Michigan second.

Table 10

Number and Status of Michigan Institutions
Preparing Home Economics Teachers

Name of Institution	Status 1917-61		Status 1961-62	
	Approved	Reimbursed	Approved	Reimbursed
Approved by State Board of Control for Vocational Education				
Michigan State University	1917	1917-62	Yes	Yes
Eastern Michigan University	1917	1917-47	Yes	No
Northern Michigan University	1937	1944-47		
		1937-38	Yes	No
Wayne State University	1937	1944-47	Yes	No
Western Michigan University	1937	1937-39		
		1944-47		
		1955-62	Yes	Yes
Central Michigan University	1941	1944-47		
		1960-62	Yes	Yes
Albion College	1952-53	No	Yes	No
Mercy College	1960	No	Yes	No
Others				
Adrian College	No	No	No	No
Marygrove College	No	No	No	No
Sienna Heights	No	No	No	No
Emmanual Missionary College (Andrews College)	No	No	No	No

During the two-year period (1958-59 and 1959-60), a total of 325 majors in home economics education graduated. Table 11 furnished information regarding the placement of graduates by institution. Of this group, 231 or 71 per cent accepted teaching positions the first year after graduation. Sixty-two per cent accepted positions in vocational or reimbursed homemaking programs and 38 per cent accepted positions in non-vocational programs. Sixteen per cent married and did not teach; nine per cent accepted other positions; and three per cent continued to study and did not teach.

The percentage of graduates of teacher training programs who taught home economics the first year after graduation had been third highest in the ten-year period, 1947-57, in the central region.

Data about the present and future demands for home economics teachers are difficult to estimate because of many unknown factors. The demands are greater than the supply in those fields in which positions are held primarily by women. In the fall in 1958 it was reported by the U. S. Office of Education that "there were at least 500 unfilled home economics teaching vacancies in the secondary schools and at least 222 vacancies in college and university teaching and research positions. There were 265 unfilled positions for county agents and assistants and 59 positions on State Extension Service staffs."

During 1961-62, more than one thousand home economics teachers in Michigan were employed in vocational and non-vocational homemaking programs at the secondary level. Of these, 524 were in vocational programs. Considering the projected school enrollments in grades 7-12 in the next decade, 1963-64 to 1973-74, the number of home economics teachers should be increased by 50 to 60 per cent to maintain the present program.

The community college program is growing in Michigan and home economics courses are frequently included in the curriculums. The Cooperative Extension Service and adult education programs also need the services of home economics teacher education graduates. Estimates of the needs in these fields are not available.

Colleges and universities will continue to need staff members who have completed considerable graduate work with a minimum of a master's degree but, increasingly, graduate work above the master's

level. Michigan home economics teachers, after completing work for certification and advanced degrees, tend to remain as classroom teachers in Michigan.

Table 11

The Placement of Home Economics Education Students Who Graduated in 1958-59 and 1959-60 from Eight Approved Institutions*

Institution	Graduates	Teaching		Not Teaching		Other
		Vocational	Non-Vocational	Married	Further Study	
Albion						
1958-59	4	0	3	0	0	1
1959-60	3	1	2			
Central Mich.						
1959-59	17	7	4	2	2	2
1959-60	12	12	0			
Eastern Mich.						
1958-59	17	11	3	1	--	2
1959-60	19	15	2	2		
Mercy						
1958-59	3	0	1	0	0	0
1959-60	4	3	1			
Michigan State						
1958-59	74	25	25	11	1	12
1959-60	57	31	9	14	1	2
Northern Mich.						
1959-59	3	2	1	0	0	0
1959-60						
Wayne State						
1958-59	17	0	11	3	1	2
1959-60	20	1	11	4	4	
Western Mich.						
1958-59	22	6	5	5	1	5
1959-60	53	29	10	12		2
Total 1958-59	157	51	53	22	5	24
Total 1959-60	168	92	35	32	5	4

*Data secured from "Enrollment and Placement of Graduates in Home Economics Education" submitted by consultants, State Department of Public Instruction and further checked with the various institutions.

There are few sources for estimating the future demands for home economics teachers at the local level; in the community college program; in adult education; in positions of leadership at the state level; in colleges and universities, including teacher educators and specialists in home economics subject fields. For future planning, it is imperative that this task be delegated to appropriate groups and the results be made available to persons responsible for recruiting, education and placing of home economics teachers.

Faculty in Home Economics Teacher Education

Only limited data were collected relating to the faculty. However, data about number of faculty, degrees and rank in home economics and home economics education were secured in 1960-61.

The administrative units in the various institutions varied considerably. The majority of faculty were engaged in teaching. A few had responsibilities for administration, non-credit field

service, follow-up of first year teachers and for research. In 1960-61 there were 127 home economics and home economics education faculty, including full-time administrators. Of the 112 with academic rank, 70 per cent had ranks of assistant professor or instructor.

The number of faculty in the eight institutions ranged from 84 to 2. Four of the institutions (or 50%) had an average of 3.3 faculty in home economics and home economics education. The faculty distribution was 84, 17, 7, 7, 5, 3, 2, 2.

As to academic degrees, 25 or 19.7 per cent had doctor's degrees, 101 or 79.5 per cent had master's degrees, and one person had a bachelor's degree. Some faculty were involved in completing requirements for the doctoral degree, and a few have received their doctoral degrees since 1960.

While the size of the staff in the various institutions appeared adequate for the purposes of the home economics department involved, the prevailing attitude in most institutions was that the size of the staff was not adequate.

Pre-Service Home Economics Teacher Education

The purpose of the undergraduate program is to assist the prospective homemaking teacher to develop her intellectual capacities so that she is able to think critically, apply principles and make generalizations. The curriculum is based upon the liberal studies--humanities including philosophy, social science and natural science. The emphasis in courses in home economics shall be intellect centered rather than activity-centered. The end product of the program is an educator, not a technician.

The program shall be based upon competencies, particularly important for the teacher in present-day society. These include knowledge and understanding in the areas of human development, the family as a social institution, management of resources both human and non-human, role of the consumer in aesthetic needs of the family, including food, clothing and housing.[1]

The General Pattern of Distribution of Credit Hours

Table 12 indicates the distribution of credit hours within the individual institutions.

An analysis of individual institutions indicated that approximately 39.6 per cent (or 46.9 credits) of the average total credits required for graduation (122.5) were devoted to courses in general education. These credits were distributed somewhat differently in the individual institutions, but tended to include communication skills, American thought and literature, the physical, natural and behavorial sciences, and the arts and humanities.

Twenty-eight and three tenths per cent or approximately 34.6 credits were allocated to professional courses in home economics, including the family, child development, consumer education, family economics, management, family health, foods and nutrition, clothing and textiles, housing-home furnishings and household equipment. While the distribution of credits in home economics courses varied, the general pattern was very similar in the eight institutions. In some institutions, certain so-called home economics areas were taught in departments other than in home economics.

The tendency was to meet only the minimum requirements in education, 22.4 semester or 33.6 term credits, or approximately 17.8 per cent of the total credits required for graduation. The remainder of the program, 18.4 semester hours or 15.3 per cent, was spent in recommended electives and in further meeting of the minors for certification.

Description of the Required Home Economics Courses. All institutions required at least one course in the following areas: family and child development, home management, family economics, art, home furnishings, nutrition, food preparation, meal management, clothing selection and construction, and textiles.

Some of the diversities encountered in the eight institutions were:

1. Some subject matter areas were taught as separate courses, and others were integrated in more general courses. An example of this was in the area of textiles: in one institution it was included in three integrated clothing courses rather than taught separately.

2. There was no particular pattern as to grade level. Required home economics courses could be taken anywhere from the freshman to the senior year.

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[1]Statement prepared at Michigan State University under the leadership of Dr. Thelma Porter.

Table 12

Distribution of Courses by Semester Hours of Credit in Pre-Service Undergraduate Curricula in the Eight Approved Institutions

Institution	General Education		Home Economics Education		Teacher Education		Electives		Total
	Hours	Per cent	Hours	Per cent	Hours	Per cent	Hours	Per cent	
Albion	48	38.6	30	24.2	20	16.2	26	21.9	124
Central Michigan	49	39.6	33	26.6	19	15.3	23	18.5	124
Eastern Michigan	43	34.7	38	30.6	21	17.0	22	17.7	124
Mercy	51	42.5	30	25.0	23	19.2	16	13.3	120
Michigan State*	44	34.3	50	38.3	20	15.5	16	11.9	130
Northern Michigan	48	38.8	35	28.2	23	18.5	18	14.5	124
Wayne State	50	42.4	28	23.7	31	26.3	9	7.6	118
Western Michigan	42	33.9	33	26.6	22	17.7	27	21.8	124
AVERAGE	46.9	39.6	34.6	28.3	22.4	17.8	18.4	15.3	122.5

*Term hours equated to semester hours

3. In some institutions required home economics courses were taught outside of the department. For example, family relationships was taught in the college of education in one institution, and child development was taught in the psychology and education department in another.

4. The number of credits required in the different subject matter areas varied from institution to institution.

5. There was a wide variation in the prerequisites for required courses in home economics.

6. There was a variation in the relative emphasis given to lecture and laboratory experiences in the various courses.

7. There were variations in the number of credits assigned to each course.

Description of Required Professional Education Courses. Inquiry into the general nature of the professional education courses required before and following the student teaching experience was limited. However, institutions seemed to meet the professional education requirements in different ways. Required courses placed emphasis on (1) psychological foundations, nature and direction of learning and child development; and (2) school and society, foundations of education and similar courses. In some institutions, students had additional observation and experiences in schools outside of the student teaching experience. Not all institutions had resident student teaching experience, but approximately one half of them did.

All eight institutions had special methods courses. Seven institutions submitted course outlines which were then analyzed by a special committee to determine common and diverse elements in the content.

The Common Elements

1. All institutions indicated in their objectives a concern for helping students

understand the scope and purpose of homemaking education.

2. Each of the institutions gave some consideration to program planning or to curriculum in either the objectives, experiences or topics included in their course outlines.

3. Each of the institutions included some consideration to teaching techniques. This was indicated in both objectives and in learning experiences or topics.

4. Each of the institutions considered instructional materials in their objectives, learning experiences and/or topics.

Differences or Variability

1. Not all of the institutions indicated that they include "vocational education" in their home economics methods courses.

   Four of the institutions indicated in their objectives that "vocational education" was a major concern. Five of the institutions indicated this in the experiences and/or topics.

   Vocational education, when it was included in the home economics methods course, might deal with:

   a. Vocational homemaking in Michigan, including personnel and reports.

   b. Present scope of homemaking and family living--vocational education and the role of homemaking in the total field of family life education.

   c. National vocational education acts.

   d. Curricula or programs--relation to general education.

   e. Requirements of the vocational homemaking program.

   f. Qualifications of homemaking teachers for the vocational program.

2. In some institutions, enrichments were not included in program planning, but were set up separately and/or not included in the home economics methods courses. These aspects included:

   Future Homemakers of America Organization
   Home visitations
   Home experiences
   Advisory committees
   Adult homemaking classes
   Conference periods

3. In a few institutions, some consideration was given to:

   a. Basic concepts of learning.

   b. Management of the department - including the room, its equipment, finances, extra class responsibilities, school parties and storage.

Description of Some Common Practices in Student Teaching

Certain requirements or criteria for student teaching and the supervision of student teaching centers were described in the State Plan for Vocational Education. The major responsibility for the student teaching experience in some institutions was assumed by special coordinators. Specific responsibility actually assumed by the home economics teacher educators and by the special coordinators varied somewhat among the institutions. The coordinator appeared to assume less responsibility in some institutions than in others.

Fifty per cent of the institutions had full-time resident student teaching centers. During 1959-60 the eight institutions reported they had 58 student teaching centers; three were campus laboratory schools and 55 schools were "off-campus centers." Within these centers there were 69 home economics supervising teachers.

The student teaching experiences showed some evidence of (1) less emphasis on the so-called voca-

tional homemaking philosophy and requirements than in the past, and a tendency for the experience to be a more broadly conceived experience for teachers; (2) less supervision of student teachers by the home economics teacher educators than formerly, with a shift in the role and responsibility to supervising teachers and student teaching coordinators; and (3) less communication between the supervising teacher and the home economics teacher educator because of pressures and problems of time. The common practice was for the home economics teacher educator to visit the center twice a term or semester.

Appraisal of the Pre-Service Program for Home Economics Teachers

In appraising the undergraduate program, a questionnaire was sent to 113 home economics teachers who had recently completed their undergraduate program and had from one month to three years of teaching experience. Sixty-six per cent responded. They were asked whether they felt the emphasis placed upon certain aspects of their program was "too much," "too little," or "about right."

In general, these teachers felt that the amount of emphasis given to the physical sciences, natural sciences, behavorial science, philosophy and the arts, and to communication skills was "about right." However, in the field of philosophy and the arts, the reaction of the home economics teachers was divided between "too little" and "about right" emphasis.

In addition to data from these recent graduates, questionnaires were developed and sent to 401 other home economics teachers teaching in reimbursed vocational programs in Michigan, in 1961-62. Of the 515 questionnaires the total number returned was 472, for a 92 per cent return. All the home economics teacher educators were invited to participate and appraise the aspect of the program in which they were involved.

The reactions of these home economics teacher educators and home economics teachers of varying backgrounds, showed some agreement about the importance of the sociological-psychological, the art, and the scientific emphases in the preparation of home economics teachers. There were, however, differences in agreement as to the degree of emphases in the undergraduate program.

Eighty-six per cent of the teacher educators believed that "too little" emphasis was given to the sociological-psychological aspect.

In regard to art, 179 of the 472 teachers believed the present emphasis was "about right," but 92 felt there was "too little" emphasis. Seventy per cent of the teacher educators thought there was "too little emphasis;" 30 per cent, "about right."

All of the home economics teacher educators thought that the scientific emphasis was very important. Fourteen per cent thought there was "too much" emphasis, but 55 per cent thought there was "too little." Of the 472 home economics teachers, 152 thought the scientific emphasis was important, and 151 thought it was of "some importance." One hundred sixty eight home economics teachers thought that about the "right emphasis" was given to it.

The importance of problem solving and critical thining in home economics teacher preparation was generally accepted. Eighty-five per cent of the teacher educators and 32 per cent of the home economics teachers thought there was "too little" emphasis placed on it in the undergraduate program. Both groups believed that seminars were important for relating, synthesizing or integrating ideas.

Teacher educators believed that independent work by students in the undergraduate program aided in understanding families different from their own. Home economics teachers felt that the present emphasis was "about right" on independent work.

Reactions to Required Home Economics Courses

There was strong total acceptance or satisfaction with the amount of emphasis given to the groups of courses including: foods and nutrition, clothing and textiles, housing, home furnishings, household equipment and art and design. Very few thought there was "too little" emphasis, although some thought there was "too much" emphasis in certain areas.

The reaction, however, was different in the groups of courses including: family relations, marriage, child development, home management, consumer education, and family economics. While some felt the emphasis "about right," a substantial group indicated "too little" emphasis placed in certain areas. Very few felt there was "too much" emphasis.

Especially in the area of consumer education, all of the home economics teacher educators believed the consumer emphasis "very important," with three-fourths indicating "too little" emphasis given to it in the undergraduate program. Of the 472 home economics teachers, 284 checked that they believed the consumer emphasis very important, and 169 indicated it was given "too little" emphasis in the undergraduate program.

In the area of management, all of the home economics teacher educators and 242 of the 472 home economics teachers thought it was "very important."

There were differences as to degree of emphasis indicated. Fifty-five per cent of the teacher educators and 23 per cent of the teachers believed there was "too little" emphasis to the managerial-decision making process in the undergraduate program. Forty-five per cent of the teacher educators and 31 per cent of the teachers thought the degree of emphasis was "about right."" In checking the responses from the teachers who had recently graduated, there were twice as many who thought it was "about right" as those who thought there was "too little" emphasis.

In the area of family and family relationships, all of the home economics teacher educators thought the area was "very important," and that there was "too little" emphasis on the family in the teacher education program. Two hundred and fifty-seven of the 472 home economics teachers felt the area was "very ;important;" 193 thought there was "too little" emphasis given to the family focus, and 182 thought there should be more field or laboratory experiences with real families.

In the related area of child development, data were not secured from all of the home economists. However, data were available for a group of 73 home economics teachers who had recently completed their undergraduate work and had been teaching from one to three years. A study of these findings indicated that 66 per cent were in agreement that the amount of emphasis on child development was "about right;" twenty-three per cent thought there was "too little" emphasis.

Reaction to the Emphasis Given to Required Courses

In general, recent graduates who are now teaching believed that the amount of emphasis given to education courses including adolescent psychology, psychology of learning, social foundations, student teaching and seminars seemed to be "about right." However, about half of the group felt that the emphasis given to general methods of teaching and home economics methods was "too little," and the other half thought it was "about right." Few thought there was "too much" emphasis in any of the education courses.

Appraisal of the Total Program of Home Economics Education by Home Economics Teacher Educators

The home economics teacher educators indicated through interviews and questionnaires they believed:

1. It is very important that the students in home economics education are able to relate their learnings from one course to another and from one field to another.

2. The colleges at present attempt to help prospective home economics students relate their learnings to limited extent in:

   a. student teaching and home economics special methods courses.

   b. professional education courses and home economics education courses.

   c. home economics education courses and home economics courses.

They believe that less attempt is made to relate professional education courses and home economics education courses than is made in relating courses within home economics education, or relating home economics education and home economics courses.

3. The seminar appears to be an emerging method for securing synthesis; this type of course is in operation and is elective in three institutions. There is a certain amount of informal or incidental "relating" with little or no plan.

4. Prospective home economics teachers have the least difficulty in synthesizing their learnings in foods and nutrition.

   They have the most difficulty in relating management, consumer, and home furnishings. They also have great difficulty in relating or integrating units.

   In the professional field, they have least difficulty with the "mechanics" of teaching. They have most difficulty with: (1) "scope and sequence;" (2) meeting individual differeneces; and (3) the wise choice of methods.

Appraisal of Home Economics Special Methods Courses by Home Economics Teacher Educators

1. The bases upon which the special methods courses in home economics are built are

relatively different, with no clear-cut pattern throughout all institutions.

2. The home economics teacher educators report that the special methods course, as it is now planned and taught, provides insufficiently for time. The general reaction is that there is "room for improvement."

3. In special methods courses, students in the various institutions do not have extended working periods or laboratory work. One institution reported extended working periods. Students have independent projects such as resource units, bulletin boards, and observational adult classes.

4. Teacher educators reported providing considerable help with evaluating student progress and evaluating the effectiveness of the program and of teaching. Less emphasis is placed on evaluating outcomes of the program than on evaluating student progress.

The In-Service Program for Home Economics Teachers (Non-Credit)

The eight institutions and the State Department of Public Instruction reported four major categories of non-credit in-service education provided for home economics teachers in Michigan: non-credit professional study on the college campus and/or in the field; field or school visits to teachers and school administrators; consultant service on individual, group and state levels; printed materials.

Field consultant service was the most common type of non-credit in-service activity in which the institutions reported being involved. Three institutions had follow-up programs in which they visit their own graduates, usually first-year teachers. Only one institution reported professional study groups as an in-service activity. Michigan does not have a plan for preparing and distributing printed materials to teachers.

Appraisal of Non-Credit Service Activities by Teacher Educators

In appraisal of the non-credit in-service program for home economics teachers, the home conomics teacher educators felt they attempted to use the principles of in-service education to a relatively high degree but they reported only moderate development of their programs in their institutions. The home economics and family life education staff of the State Department of Public Instruction indicate only moderate use of principles of in-service education. Both groups were aware of certain well-developed and certain underdeveloped aspects of the program.

The teacher educators believed that the follow-up program does an effective job. Insufficient staff prevents institutions from developing and expanding this program. Limited encouragement in local schools for teachers to participate in experimental programs, experimental methods or in making studies is a weak spot. The schools appear favorable to change but are reluctant without approval and adequate leadership or guidance. Through the non-credit activities, home economics teachers have had opportunities to express their feelings about the adequacies and inadequacies of their college programs. However, changes are not necessarily followed by the college, even when certain weaknesses are persistently reported.

Teacher educators are questioning the field consultant service in the home economics teacher education program. Some believe it is too much of a "hit and miss" program. Some feel that tremendous amounts of time and energy are spent in these many activities and they question the results.

The State Curriculum Program in Home Economics and Family Life continues to be the major organized non-credit in-service activity for all teachers. Approximately 500 home economics teachers attend the Annual State Home Economics Teachers Conference each year. Many attend the Michigan Education Association regional meetings in the fall, in which there are special programs for home economics teachers. The reactions were sought of a group of teachers who met the criteria of attending two state conferences during 1960-62 and/or of attending one conference and being visited by a home economics consultant from the State Department of Public Instruction. Two-thirds of the group responding indicated that the State Conference was "very valuable" to them personally; one-third had participated in special committees and one-fourth had been on the program. Of the groups who had attended the fall regional meetings, one-third felt that they were "very valuable" and an equal number felt they were of "considerable value."

Of the teachers who had been visited by consultants from the State Department of Public Instruction and by college representatives, about hone-half of the group felt that the visits were "very valuable."

Only a few home economics teachers had participated in the past two years in non-credit research

projects. Of those who had participated, the reactions were not highly favorable in terms of values to them. No doubt most of these teachers had been asked to respond to questionnaires and did not feel very enthusiastic about them.

Appraisal of Non-Credit In-Service Activities by Teachers

In appraising the non-credit in-service activities, only those teachers who had met certain criteria were used in the sample. The one hundred and two homemaking teachers selected had attended the two Annual State Conferences in 1960 and 1961, or during 1960-61 and 1961-62, had been visited in their local schools by a homemaking and family consultant, State Department of Vocational Education, and had also attended one of the above state conferences. The questionnaire sent to these teachers contained many of the standard items as well as items relating to the teachers' experiences in the non-credit in-service program and its value to them. Eighty-nine per cent of the teachers in this group responded to the questionnaire.

The summary of the responses indicated that three-fourths had attended the annual state conference during 1960-61 and 1961-62. About one-fourth had been on the program and about 30 per cent had participated on special committees. Two-thirds of the group indicated that the conference was "very valuable" to them personally. About 73 per cent of the group had attended fall meetings and 36 per cent of them felt that it was of "considerable value." In general, the total number of responses in the "very valuable" and "considerable value" were approximately the same.

Responses from home economics teachers indicated that only a few (46) had participated in special meetings or conferences sponsored by the college. Among these, there was a relatively high level of satisfaction. A few (10-15) of the homemaking teachers had requested and had had conferences with consultants in the State Office and/or in one of the colleges. The level of satisfaction was equally divided between "very valuable" and "considerable value."

The In-Service Program for Home Economics Teachers (Credit Aspects)

The credit aspects of the in-service home economics teacher education program in Michigan are designed to provide opportunity for teachers to meet state certification requirements and to pursue study for advanced degrees.

Graduate programs for home economics teachers are offered at the following institutions in Michigan:

Central Michigan University
Eastern Michigan University
Northern Michigan University
Michigan State University
Wayne State University
Western Michigan University

Enrollments of Graduate Students

Table 13 summarizes the enrollment of students in graduate courses in the participating institutions. The highest enrollment is in the summer program. There are certain questions about the data indicated in this table. For example, the number enrolled during the year should be full-time graduate students and the number enrolled in "other" should include students who take only one or two courses, in extension or in residence. These students might be full-time homemakers or full-time teachers. This part of the form seems to have been interpreted differently by the various institutions. Consequently, it figures or enrollments are to be comparable, there needs to be more uniformity in interpretation.

Master's Program

The master's candidate follows a program planned to develop competency and understanding in four areas through appropriate courses, individual study and close association with the faculty.

Area I - Home Economics Education. Typical areas of study include trends in home economics education; curriculum, evaluation, adult education and supervision in home economics; programs in home and family living; and equipping and furnishing home economics departments.

Area II - General Professional Education. The student usually selects courses from the social, philosophic, historic-comparative aspects of education and from educational psychology, guidance and personnel services.

Area III - Home Economics. The student selects courses offered by the college in home economics,

Table 13

Enrollment of Home Economics Education Graduate Students in the Eight Approved Michigan Institutions*

	1960-61			1959-60			1958-59			1957-58		
	During Year	In Summer	** Other	During Year	In Summer	Other	During Year	In Summer	Other	During Year	In Summer	Other
Albion College	0	0	0	0	0	0	0	0	0	0	0	0
Central Michigan University	0	7	12	0	0	12	0	0	22	0	0	21
Eastern Michigan University	0	0	0	0	0	0	3	9	0	5	5	0
Mercy College	0	0	0	0	0	4	--	--	--	--	--	--
Michigan State University	127	101	12	103	92	46	26	76	0	46	80	9
Northern Michigan University	0	0	0	0	9	0	10	0	0	0	10	0
Wayne State University	27	32	16	32	19	37	32	25	27	30	10	14
Western Michigan University	62	103	0	45	123	0	25	27	0	33	36	2
	216	243	40	180	243	99	96	137	49	114	141	46

* Data secured from "Enrollment and Placement of Graduates in Home Economics Education" submitted by consultants, State Department of Public Instruction, and further checked with the various institutions.

** Students taking one or two courses.

such as foods and nutrition, textile and clothing, home management, family economics, family relations, child development, housing and home furnishings.

Area IV - Related Disciplines. The student selects courses from such areas as sociology, psychology, art, political science and others, according to her interest.

The specific study program within these four areas is developed by the candidate and her adviser. It takes into account her previous education, experience, general professional background, and future career goals.

Normally, all students are required to do advanced study in home economics curricula and evaluation, research methods, and independent research.

Doctoral Program

The doctoral programs are designed for the person who shows exceptional leadership ability in home economics education. Most candidates follow a program that prepares them for a position in the field of home economics teacher education or research.

All the candidate's undergraduate and graduate program preparation is considered in selecting the study program that will best fit her future career goals. Because of the flexibility permitted to meet individual needs, only a general outline is presented here.

The doctoral candidate plans the program with her advisory committee in three areas:

1. Specialized professional education (home economics).

2. General professional education.

3. Cognate area. An area of special interest to the candidate may be selected from the sciences and arts in Home Economics. The choice is made according to the type of professional leadership development desired.

Some Questions

1. Considering the 1959 data secured by the U. S. Office of Education on home economics in the public secondary schools, does the present emphasis in home economics courses at the secondary level in vocational and non-vocational programs in Michigan indicate that the program is effective in the light of present and predictable social-economic and technological change? Does the present emphasis indicate an educational lag?

2. To what extent and in what ways is the teacher education program responsible for the present emphasis in home economics courses at the local level? What are the other factors influencing the emphases in home economics courses? To what extent and in what ways are these facilitative or restrictive? What procedures would be most effective in determining the factors influencing the content of home economics programs in local schools? Would a home economics program theoretically geared to the present and predictable social-economic and technological changes be acceptable in Michigan communities?

3. In what ways and to what extent are the local school program, the pre-service, in-service, and research programs integrally related? What are the channels for communication between school administrators and home economics teacher educators? What would be the attitude of all groups toward more field work, independent study and cooperative projects involving home economics teachers, and prospective teachers in research and developmental projects at the local level?

4. Should greater emphasis be placed on the use of the research and scientific method in developing home economics programs and less emphasis on opinions and value judgments?

5. Is home economics intellectually stimulating and challenging at the secondary level, at the in-service, pre-service and graduate levels?

6. What is the best type of graduate program for a home economics teacher at the secondary level? Should it place emphasis on developing competence in the one or more aspects of home economics? On the professional education aspects? On broad cultural understandings and experiences?

7. Is there a need for a new type of in-service education? What is the place of consultant

service? Should there be more in-service opportunities for university credit and less emphasis on the non-credit? Should there be some new larger blocks of credit over a longer period of time in which teachers could be involved more deeply and extensively in projects in their own schools?

8. How might reimbursement be used to stimulate new programs, help in the development of needed materials, and support research related to educational gaps?

General Recommendations

1. That Michigan home economics teacher educators study and appraise the report and indicate implications which the findings have for the Michigan program and/or for further study.

2. That certain groups who have not been included in the study to date be contacted, for a more adequate description and appraisal of the home economics teacher education program in Michigan.

3. That there be a continuation of inter-institutional conferences of home economics and related faculty to review the findings and to move in the direction of significance.

4. That some planned approach be made to the study of the basic issues cited, and some attempt be made to involve groups who have varying points of view.

5. That special consideration be given to the continued and accelerated development of effective leadership and in-service programs involving both credit and non-credit aspects.

6. That high priority be given to the development of research competence throughout the home economics teacher education program.

7. That encouragement, guidance and financial assistance through vocational or other funds be given to support cooperative research and development projects involving local schools and the pre-service, in-service and graduate programs, especially in those areas of apparent "educational lag" and/or "unmet needs."

Part 4

Vocational Industrial Education

From the beginning, the preparation of teachers for vocational industrial education has been an enigma and the problem still remains, although some innovations may alleviate the situation. Shortly after the passage of the Smith-Hughes Act, it was anticipated that all vocational education teachers would receive their training through the conventional baccalaureate degree program. Successful programs were devised for agriculture and home economics teachers; however, obstacles were encountered with the vocational industrial teacher.

Requirements placed first priority on competency in the trade to be taught. In some instances a minimum of seven years was the criterion. This called for a mature individual who had already established himself and would be reluctant to give up a profitable existence to enter a four-year degree program at a financial loss. In addition, institutions were not equipped to offer technical content courses in quality or quantity that would enable the younger recruit to develop equivalent competency of actual work experience. As an outgrowth of these barriers, teachers were recruited from the trade area in which they were expected to teach. Professional training was provided after employment through itinerant instruction, extension courses, institutes, and workshops conducted by institutions of higher education. This practice in recruiting still prevails, although in recent years several attempts have been made to establish cooperative work study programs. As yet this pattern has not received wide acceptance.

Michigan State Plan for Vocational Education

The Guide to Reimbursed Vocational Education Programs describes the manner in which an individual may be certified to teach day trade and industrial preparatory classes:[2]

1. Teachers of trade practices with a baccalaureate degree in industrial education shall have had at least three years of work experience, one of which shall be at the journeyman

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[2]Michigan State Plan for Vocational Education, Bulletin No. 201, Division of Vocational Education, Department of Public Instruction, Lansing, Michigan, 1962.

level in the trade to be taught, or

2. Under emergency conditions officially recognized by the State Board, a combination of education and occupational experience acceptable to the State Board may be approved for special certification.

Qualifications of a lesser degree are required of related subjects, teachers, and trade and industrial coordinators.

It is obvious that the pathway to teaching is not as neatly defined as the conventional baccalureate programs for agriculture, business, and home economics teachers. Any study of vocational industrial teacher education must include teacher education in industrial arts, since an individual with a degree in industrial arts plus satisfactory work experience may teach in a vocational program. Four institutions prepare teachers in both of these phases of vocational industrial education; namely, Michigan State University, University of Michigan, Wayne State, and Western Michigan. Three others, Eastern Michigan University, Northern Michigan University, and Central Michigan University prepare industrial arts teachers primarily. At the time of this study, Ferris State College, another publicly supported institution in Michigan, was also designated to offer teacher education services in vocational industrial education.

Pre-Service Training

It will be noted from the data reported in Table 14 that students graduating with the B.S. degree in industrial arts are required to complete from 124 to 143 semester hours, depending upon the institutions in which they are enrolled. The major concentration required in industrial arts ranges from 30 to 45 semester hours. However, the one institution reporting 45 semester hours indicated that this included both a major and a minor in this field. In other words, if a student shows this field as a major, his minor would have to be in the same area.

Table 14

Number of Semester Hours Required to Complete the B.S. Degree with a Major in Industrial Arts

Subject	CMU	EMU	MSU	NMU	U of M	WSU	WMU
General Education	40	38	32	40	65	59	42
Major Specialty	40	30	39	30	35	40	45
Professional Education	26	22	20	22	20	29	28
Curriculum Requirement	*	***	7	4	*	*	7
Minor Concentration	20	20	20	20	*	20-24**	***
Electives	17	14	10	8	4	8-0	10
Total	143	124	128	124	124	135	132

* Included in general education
** Partially included in general education
*** Normally included in major

Professional education courses concerned specifically with the area of industrial arts are grouped with the general professional education work required for certification. The number of hours reported by the University of Michigan and Wayne State University in general education (liberal arts) normally includes a teaching minor. Eastern Michigan University includes all curricular requirements in the major concentration, while at Wayne State, Central Michigan, and the University of Michigan, all curricular requirements are included in the general education category.

Table 15 indicates that three Michigan institutions have curricula at the B.S. degree level in the field of vocational industrial teacher education. Each of these institutions allows some college credit in the major teaching area (or specialty) for occupational experience. This experience may be secured on a full-time basis, or through a cooperative arrangement with industry. The minor is included in the general education area at the University of Michigan and at Wayne State. Special curricular requirements in these institutions have also been included with general education. Vocational industrial professional education courses have been reported with other professional education work required for certification.

Table 15

The Vocational Industrial Education Curriculum in Michigan Teacher Education Institutions

Subject Area	U of M	WSU	WMU
1. General Education	69	59-69	42
2. Major Specialty	25	30-40	24
3. Professional Education	30	29	27
4. Curriculum Requirements	*	*	7
5. Minor Concentration	*	20-24*	26
6. Electives	9	4-0*	8
Total	133	128	134

* Included in general education

In-Service Education

New teachers in industrial education may pursue additional course work in all of the institutions surveyed for this report. Each of these universities offers on-campus work on an in-service basis in the evenings and Saturdays at both the undergraduate and graduate level. The universities also reported that one or more courses are offered during each semester on an extension basis. Likewise most of the institutions provide workshops, consultant services, and short conferences for teachers. Two or three institutions also report that they schedule television programs and educational publications geared to the needs of teachers of industrial arts and vocational industrial education subjects.

Central Michigan University furnishes a unique follow-up service for all first and second year teachers. Teachers are visited on the job on a regular annual basis. In addition, during the spring of each year, first year teachers are invited to a conference held on campus. (All departmental staff participate in the conferences).

Graduate Education

Data pertaining to the master's degree program in industrial education is reported in Table 16. Since Central, Eastern, and Northern do not offer work in vocational education, the master's at these institutions would naturally be in the area of industrial arts education. At the other institutions, the master's degree may be in industrial arts, vocational industrial education, or a combination of the two areas. Most of the institutions indicated that approximately two-thirds of the master's program may be in industrial arts, vocational industrial education, or cognate areas.

Three institutions, Michigan State, the University of Michigan, and Wayne State, prepare individuals at the doctoral level. Information received from these institutions indicates that the requirements for the doctorate are very much the same. Approximately one-half of this work is required in cognate areas. The remaining work is divided among education, languages, and a research study concerned with the industrial education field. In all three institutions, approximately three years of work is required beyond the B.S. or B.A. degree for the doctorate.

Table 16

The Master's Degree Curriculum in Industrial Education

Subject Area	CMU	EMU	MSU	NMU	U of M	WSU	WMU
Specialization	10-20	20	10-14	18	---	8-10	10-20
Professional Education	10	6	10-8	6	10	6-8	10
Electives	10-0	4	10-8	6	20*	14-16	10-0

* May be in cognate areas

Enrollments. The data reported in Table 17 show the number of students majoring in industrial education in Michigan teacher education institutions during the 1961-62 school year. No enrollment data were received from Wayne State University. The total number of students working on a major in this area ranged from 135 at Eastern Michigan University to 250 at Western Michigan University.

Table 17

Number of Students Majoring in Industrial Education 1961-62 School Year

Educational Level	CMU	EMU	MSU	NMU	U of M	WMU
Freshman	40	35	8	40	---	34
Sophomores	35	25	15	34	---	28
Juniors	30	15	35	25	---	48
Seniors	38	10	26	21	38*	40
Masters	25	50	101	26	101	100
Educa. Specialist	--	--	--	--	17	--
Doctorates	--	--	24	--	8	--
Totals	168	135	209	146	164	250

* Students reported include all four years

Although Table 17 does not show a breakdown in the enrollments between industrial arts and vocational education, data submitted by the institutions indicate that no students are enrolled for vocational subjects at Northern, Eastern, or Central. Of the enrollments shown at Western, 30 undergraduates and 20 students at the master's level are working in the field of vocational industrial education. The 101 master's degree candidates reported at the University of Michigan included both industrial arts and vocational industrial education majors. Of the enrollments reported by Michigan State, none at the undergraduate level are in vocational industrial education, while 32 at the master's and nine at the doctoral level are in the vocational field.

The graduates in industrial education in the school year 1961-62 are tabulated in Table 18. Graduates reported for the M.A. or M.S. degree level at Michigan, Michigan State, or Wayne State may have specialized either in industrial arts or in vocational industrial education or a combination of both, since some teachers in the public schools teach in both areas.

Appraisal of the Industrial Teacher Education Program

Each institution appraised its program through a self-evaluation form prepared by the task force subcommittee. Since the subcommittee was composed of one individual from each state institution con-

ducting industrial education teacher education, the collection of data was channeled through these representatives. Eight standards were developed:

1. Objectives and Organization of Industrial Teacher Education Units
2. Student Personnel Services
3. Preparation of Faculty
4. Teaching Load
5. Instructional Patterns
6. Laboratory Experience
7. Library
8. Physical Facilities

Table 18

Number of Graduates in Industrial Education 1961-62

Institution	B.S.	M.S.	Ed.D
Central Michigan University	37	7	--
Eastern Michigan University	12	5	--
Michigan State University	26	10	3
Northern Michigan University	24	1	--
University of Michigan	7	19	--
Wayne State University	41	11	2
Western Michigan University	20	7	--
Total	167	60	5

Specific items included under each of the eight standards totaled approximately two hundred. The results of the self-evaluation were compiled, analyzed, and summarized in a subcommittee report.

This final report will explain briefly each standard and conclusion drawn from the data. Additional information may be secured from the report entitled Vocational Teacher Education in Michigan.

I. Objectives and Organization of Industrial Teacher Education Units

This phase of the study concerned itself with two dimensions--objectives and organization. The former dealt with how well objectives have been formulated, their evaluation and the recognition and acceptance by the staff of certain student outcomes. The latter dealt primarily with administrative and supervisory procedures, faculty involvement in decision-making and relationships with other units in the college or university and community. A total of 46 items were rated on a 10-point scale by the participating institutions.

Conclusions Drawn from Data Submitted

1. The results of the evaluation indicate considerable satisfaction among the participating institutions. Approximately 85 per cent of the 46 items that were studied were rated "most aspects satisfactory." This rating represents a mean of seven or above on a 10-point scale.

2. Two items in the instrument were rated nine by the seven institutions. The items were

(1) "Cooperation with institution-wide services such a library, research bureau, placement office, and public relations office," and (2) "How effectively does the administrator of the unit keep open the lines of communications with his faculty?"

3. The two items receiving the lowest rating dealt with the utilization of follow-up studies and advisory committees. These items were rated 5 and 5.5 respectively. In other words, by comparison these items were low; even so, they were rated as "more aspects satisfactory than unsatisfactory."

4. In general, there seems to be less variance in policies governing organization of the departments among the seven institutions. Only one item showed a range of 1-10. This item dealt with "How satisfactory are the intra-unit organizational and administrative procedures for representation in policy-making matters?"

5. All seven institutions offering work on an in-service basis on their campuses reported that evening and Saturday courses are available to employed teachers both at the undergraduate and graduate level. They also reported that one or more courses are offered during each semester on an extension basis. Likewise, most of the institutions provided workshops, consultant services, and short conferences for teachers. Two or three institutions reported television programs and educational publications geared to the needs of teachers of industrial arts and vocational industrial education subjects.

6. All of the institutions reported that instruction in the organization and development of instructional materials for industrial education is included in their course offerings. Only two, the University of Michigan and Northern Michigan University, reported organized curriculum materials centers. The center at the University of Michigan is devoted primarily to cooperative education. The one at Northern Michigan University is of more general character, serving as the official repository for courses of study from all high schools in Michigan. Both institutions arrange for loan or sale of instructional materials to public schools throughout the state.

II. Student Personnel Services

The factors considered under "Student Personnel Services" included such matters as admissions, retention, counseling, placement and follow-up of students in vocational industrial teacher education curricula. Policies and practices governing administrative structure, faculty and student participation, and internal and external relationships were reviewed and evaluated.

Thirty-one items related to student personnel services were rated on a 10-point scale by each of the cooperating institutions.

Conclusions Drawn from Data Submitted

1. The over-all evaluation of the adequacy of the student personnel services in the seven participating institutions appears to be satisfactory. One institution, however, rated its student personnel services at two on a 10-point scale. The mean of all ratings was 6.7. Consequently, the rating would approach the appraisal of being satisfactory in most aspects.

2. An examination of the four general categories, (A) Selective Admission and Progressive Retention, (B) Educational Guidance and Counseling, (C) Placement Services, and (D) Follow-up Services, indicates that the first three are satisfactory and that the fourth needs improvement. The ratings were respectively 6.8, 7.3, 8.5, and 5.3.

3. The greatest variation in ratings on items within a category was in the evaluation of follow-up services. The range for most of these ratings was from 1-9 or 1-10, which would indicate considerable differences in services from ine institution to another.

4. The highest average rating in the four categories was 8.5 for (c) Placement Services. The highest rating given to an item was 8.8, given to two items in this category. These were concerned with the effectiveness in placing industrial education graduates and the relationship between the placement office and the industrial teacher education unit.

5. The lowest rating for any single item was 3.5 for the provisions made for the follow-up of drop-outs. The next lowest rating was a 3.7 for the item concerning the participation of the teaching staff in student recruitment for the vocational teacher education programs. The former item was incorporated in (D) Follow-up Services and the

latter was included in (A) Selective Admission and Progressive Retention.

6. For the most part, potential students in industrial education are admitted in a similar manner to students in other areas; namely, through the central admissions office. All students meet the same criteria for admission and in most cases are enrolled in a common core of general education subjects during the first two years of college. In several institutions, the record of the student's first two years is carefully evaluated by a teacher education committee, and the student is either accepted or rejected as a teacher candidate before any professional education work is taken.

   Few of the institutions reported any active program of recruitment except that which may be implied in offering a limited number of scholarships or visits by the industrial education staff to the public schools during career days or on other occasions.

III. Preparation of the Faculty

The evaluation of the faculty consisted of two major parts: (1) Education and Professional Experience and (2) Professional and Personal Activities. Ten specific items within these two categories were rated on a 10-point scale by the different institutions.

1. The extent of participation and involvement in matters directly related to industrial activities by the vocational industrial teacher educators in Michigan institutions seems to be rather small. Specifically, in answer to the item "To what extent does the faculty attend meetings sponsored by industrial groups?," the responses ranged from "all or nearly all aspects unsatisfactory" to "more aspects satisfactory than unsatisfactory." The median and mean of the responses (on a 10-point scale) were 2.5 and 2.6, respectively. With respect to the question "How satisfactorily do faculty members identify themselves with industrial groups?," the range was 3-7, with the median and mean being 4.5 and 4.6, respectively. These two items incidentally, were rated the lowest of all appearing in this phase of the evaluation.

2. Although a rather satisfactory rating was given to the over-all evaluation of educational and professional experiences of the faculty, the range of responses to two items within this category showed some concern for (1) the amount of "formal education of the industrial teacher educators" and (2) the amount of "work experience in industry."

3. The participation of the faculties in professional meetings and associations identifed with the field of industrial education is very high.

4. In general, the over-all evaluation of the total preparation of the industrial teacher education faculty was quite favorable.

IV. Teaching Load of Faculty

The opportunities any faculty has to do research, professional writing, participate in local, state, and national conferences and other similar activities, depends a great deal on the teaching load or responsibility of a faculty member. This phase of the evaluation was designed to determine what adjustments are made in the "teaching load" for matters essential to a functioning teacher education department.

Conclusions Drawn from Data Submitted

1. The over-all evaluation of the teaching load of the faculties indicated that "more aspects are satisfactory than unsatisfactory." The range, median, and mean for the over-all conditions was 1-8, 5 and 4.6 (on a 10-point scale), respectively.

2. The range of the responses for 75 per cent of the items was the maximum. In other words, the responses to 9 of the 12 items ranged from the lowest to the highest degree of satisfaction. This indicates a great difference of opinion with regard to the nature of the teaching load among the participating institutions.

3. The lowest mean of the group appeared for the adjustment to the teaching load for activities directly related to industry.

4. Provisions in the teaching load for "extension or off-campus classes" seem to be lacking in most of the institutions.

5. Provisions for research and writing also seem to be lacking.

V. Curriculum - Instructional Patterns

The curriculum is the device used to achieve educational objectives. It represents the nerve center of a teacher education program. Such matters as general or liberal education, specialization and professional education, the manner of involvement of interested parties, provisions for change and administration of the curriculum, are all important. This phase attempted to evaluate these important considerations. Fifteen items relating to curriculum were investigated.

Conclusions Drawn from Data Submitted

1. There is almost complete agreement among the several colleges and universities in the area of balance between general education, professional education and specialized education. The agreement extends to the amount of time spent in the several areas of study.

2. There is further agreement on major and minor preparation. The general practice, with one exception, was to concentrate the entire program of specialization in the area of industrial education.

3. Each university or college expressed a high degree of satisfaction with the curriculum as it is presented at its own institution.

VI. Professional Laboratory Experiences

This phase of the study concerned itself with the nature and organization of professional laboratory experiences. The situations under consideration are those other than formal "classroom" experiences. Laboratory experiences include, among other things, experiences in field, seminars familiarizing the prospective teacher with the actual teacher-learner relationship or environment. Practice teaching has long been recognized in this category, but other professional laboratory experience may precede or follow student teaching.

Conclusions Drawn from Data Submitted

1. The over-all rating of the professional laboratory experiences for industrial education is very satisfactory. No institution rated its professional laboratory experiences below seven; the mean of all ratings was eight.

2. An examination of the three general categories, (1) Nature of and Organization for Professional Experiences, (2) Student Teaching Experiences, and (3) Appraisal of Student Teachers After Completion of Professional Laboratory Experiences, reveals that all three categories are considered very satisfactory. The ratings were respectively 7.8, 8.3, and 7.7.

3. While group two, Student Teaching Experience, was rated the most satisfactory of the three under consideration, the greatest variance for any item within the groups appeared in this category. The range for effective use of community groups and agencies in providing out-of-school experiences for practicing teachers was from three to ten. The mean for this item was seven. This does, however, represent the lowest average rating for any single item.

4. The adequacy of frequency of conferences between the student teacher and the supervising teachers received the highest rating given to an item, specifically, 8.5.

5. While one institution considered that it most adequately provided for internship for prospective industrial education teachers, 50 per cent of the institutions responded "item not present in unit or no opinion or basis for a judgment." This may be an indication for some concern.

6. Little variation in average ratings is apparent for each of the categories or individual items, with Michigan industrial education units rating themselves very satisfactory in each category. Moreover, little variance in individual evaluations exists among the units reporting. Minor exceptions are noted.

7. All institutions reported that their student teaching programs were either organized on a full-time basis for at least eight weeks or on a part-time basis for a longer period. During this period, the apprentice teacher is assigned to a public high school for observation and practice in his specialization. The schools are selected on the basis of the quality of their programs and proximity to the campus. Generally, the institution pro-

vides a supervisor from the Industrial Education Department to visit the practicing teachers at least once during their teaching assignment.

VII. The Library

The evaluation of the library in the various institutions included such matters as administration, housing, extent of holdings, utilization and expenditures. A total of 17 specific items were evaluated.

Conclusions Drawn from Data Submitted

1. The over-all rating of the adequacy of library provisions for industrial education is very satisfactory. No institution rated its library provisions below seven on a 10-point scale, and the mean of all evaluations was 7.6. In other words, the library provisions for industrial education in our state institutions have been judged as satisfactory in most aspects.

2. Of the four general categories, (1) Library Organization and Housing, (2) Books, Periodcals and Other Collections, (3) Utilization and (4) Expenditures for Library Materials, the first two, although satisfactory, were evaluated below the latter two. The ratings were 6.6, 6.6, 6.8, and 7.6, respectively.

3. The greatest variation in the evaluations appeared in the categories (a) Library Organization and Housing and (b) Books, Periodicals, and Other Collections. Specifically, within the first category, dissatisfaction was expressed in such matters as accessibility of facilities, assemblage within the library, materials of special interest to industrial education students and the lack of special shelves, files, alcoves, and seminar rooms devoted to industrial education students.

   Regarding "library collection," a high degree of variance between institutions was again evidenced; particularly with the adequacy of the resources in (a) historical materials, (b) publications from industry, labor and trade associations, and (c) microfilms.

4. Although no single item in the evaluation instrument was judged unsatisfactory by either all or a majority of the institutions, the item receiving the lowest rating concerned the adequacy of the library's collection on "publications from industry, labor and trade associations." The next lowest rating involved the historical collections in the respective libraries.

5. Matters relating to relationships between library personnel, students and staff were rated very satisfactory. As a category, it was rated the highest of the four under consideration.

6. Provisions relating to expenditures for materials in industrial education seem to be satisfactory in all institutions.

VII. Physical Layout and Equipment

In a broad sense, the term "physical facilities" includes all the necessary rooms, laboratories, furniture, equipment, machines, tools, supplies, and materials necessary to achieve the objectives of the curriculum. The nature and extent of each would be determined largely by the curriculum objectives developed by the participating institutions. The committee believed that each institution had the inherent right to implement its own philosophy of education and therefore no evaluation should or could be made of those facilities directly governed by curriculum objectives. Specifically, no attempt was made to evaluate facilities directly related to any subject (such as auto mechanics, drafting, etc.,) in industrial education.

Conclusions Drawn From Data Submitted

1. The overall rating of the physical layout and equipment for the industrial education in Michigan institutions participating in the evaluation is satisfactory. However, considerable disparity is evident in the individual institutions reporting.

   Only one unit considered itself adequate in all respects, rating 10 for all items on a 10-point scale. The overall evaluation of the physical layout, equipment and supplies was rated at 6.4 although the mean of all items rated was 7.7.

2. With but one exception, the industrial education areas are not too inconveniently located in relation to the other institutional instruction units. All units are generally quite compact. The adequacy of the laboratories, with reference to size and number, was rated 6.0. This is an indication of some inadequacy and it was extremely apparent in two reporting units out of the seven.

3. Though not unanimous in their ratings, Michigan industrial education areas rate themselves as generally satisfactory in variety of visual aids and equipment and rooms for instruction by means of visual aids. Minor exceptions were noted.

4. Considerable variation exists in the adequacy of office space. Each unit rated itself differently in this respect. The rating 6.6, however, indicates more satisfactory aspects than unsatisfactory. The offices of the industrial education areas are in all instances readily accessible to the students, though improvements could be made in most situations.

   Waiting areas for students are not as satisfactory, rating at the midpoint 5 of the scale. Of all the physical features rated, office space allocation and student waiting areas appeared most critical. Though storage and filing facilities were adequate in three of the institutions reporting, the remaining units expressed concern as to the inadequacy.

5. Equipment inventory records are satisfactory in nearly all reporting institutions in most respects. Equipment service records are not as adequate. Considerable variance exists among the units, ranging from one extreme to the other on a ten-point scale.

6. The adequacy of equipment for instructional purposes in industrial education laboratories was more satisfactory than unsatisfactory in most institutions.

Conclusions and Recommendations

The overall evaluation of the industrial teacher educstion curricula in the seven participating institutions was favorable. On a ten-point scale, the overall median and mean for the eight standards was 7.0 and 7.1 respectively. In other words, the seven participating institutions believe that "most aspects (are) satisfactory." Table 19 indicates the overall evaluation for each standard in terms of range of responses, median and mean.

Table 19

Evaluation Results for the Eight Standards

Standard	Range	Median	Mean
I. Objectives and Orgnaization of Unit	7-9	8	7.9
II. Student Personnel Services	2-9	7.5	6.7
III. Preparation of Faculty	7-9	8	7.8
IV. Teaching Load	1-8	5	4.6
V. Instructional Patterns	7-10	8	8
VI. Laboratory Experience	7-9	8	8
VII. Library	7-9	7	7.6
VIII. Physical Facilities	3-10	5	6.4
Average		7.0	7.1

Table 19 shows that the three standards were rated below seven for the mean were: II, "Student Personnel Services;" IV, "Teaching Load of Faculty;" and VIII, "Physical Facilities." The greatest range in responses also occurred in these areas, indicating a considerable degree of variance between institutions.

With respect to the adequacy of the physical facilities, the adequacy of layout and equipment and recency of construction are closely related. As enrollments increase and equipment deteriorates with age and use, the discrepancy among institutions will be magnified. Only new equipment and

construction will alleviate those institutions currently hard pressed. Capital outlay for new equipment and construction, though dependent somewhat on needs, rests primarily upon legislative action at the state level. Whether funds for teacher education activities should be used for the purchase of heavy equipment and new construction is a moot question. On the other hand, present fiscal policies with respect to reimbursement of teacher education may be changed, which may indirectly alleviate the problem. Therefore, the committee recommends the proper authorities on the state level initiate action which will result in further study of this problem by a representative committee.

The comparatively low rating of Standard II, "Student Personnel Services," stems from two basic factors: (1) follow-up services and (2) recruitment. Among student personnel services, the greatest dissatisfaction concerned follow-up of students. Undoubtedly, this is due to a lack of personnel and finances in half of the institutions reporting. In view of the importance of follow-up study results on curriculum improvement, it appears that more attention should be given to this matter.

Little doubt can be raised regarding the importance of selecting qualified students for industrial teacher education--in fact, for any teacher education program. Nevertheless, the majority of our institutions consider present policies and practices governing recruitment of students to be very poor. Whether existing recruitment procedures exclude participation of staff or lack of staff precludes participation in recruitment procedures should be determined, and action which would result in better conditions initiated by the staff.

It was pointed out earlier that Standard IV, "Teaching Load," received the lowest rating among all aspects of the evaluation. The value of the mean was 4.6 on a 10 point scale. In other words, there are "more aspects unsatisfactory than satisfactory." The lack of follow-up studies, the absence of advisory committees, the little participation of teaching staff in student recruitment, the disassociation with the industrial complex, the lack of innovation, dissatisfaction in the use of community resources and the scarcity of time for research and writing may be direct results of heavy teaching loads in a number of our teacher training institutions. In view of the apparent effects of heavy teaching loads, the committee strongly recommends that funds for industrial teacher education be increased and disbursed among the teacher training institutions according to a formula which takes into consideration student enrollments. The committee believes that a more equitable distribution of funds will materially improve the equality of industrial teacher education programs in the state.

Conclusions

On the basis of the data presented in this report and information gained through personal interviews, the following conclusions may be drawn from this study:

1. The vocational teacher education program in Michigan is, in general, meeting the current needs of local communities as to the number of teachers trained, nature of curricula offered and other services normally expected of teacher education institutions.

2. Those responsible for vocational teacher education in Michigan's institutions of higher learning are keenly aware of the changes taking place in our homes, business, industry, and agricultural occupations. It is recognized that a program which is adequate today is likely to be inadequate for tomorrow.

3. Michigan's vocational teacher education program includes an extensive offering of professional vocational education courses at both the undergraduate and graduate levels. This, no doubt, results from the large number of institutions in some vocational fields approved to offer vocational work.

4. The supervision of student teachers, although generally adequate, is carried on in a variety of ways. Some institutions follow a visitation program which involves a minimum of two visits by a representative of the teacher education staff during the term or semester involved. Other institutions assign this responsibility to the general education supervisor who reviews the work of all practice teachers in that local school or area. Other institutions use a system of periodic reports by the supervising teacher of the local school.

5. The practice of reimbursement for services rendered by practice teaching centers varies with the college or university concerned, and to some extent with the vocational area involved. For example, in one particular vocational field, a local school may receive additional compensation for services as a practice teaching center, while a neighboring school district may not receive any additional reimbursement for similar services. In two vocational areas, the state provides no additional reimbursement to local schools providing practice teaching centers, while in two other vocational service areas, additional state aid is available.

6. In-service teacher education varies a great deal among the services and in different institutions. Some institutions attempt to visit new teachers at least once during the first year. Others have no organized program of in-service visitation. Interest was expressed by some vocational teacher education leaders in a five-year teacher education program, with the last year being devoted to an internship under the close supervision of the university.

   In-service course offerings at the graduate level appeared to be quite adequate in all areas of vocational education. Non-degree in-service teacher education, however, appeared to be quite inadequate. At present, this does not seem to be a serious problem in the field of agriculture. Short intensive teacher training courses given on an individual basis are needed to meet the needs of evening, apprentice, and other part-time instructors recruited from business and industry.

7. Follow-up work or consultative services appear to be adequate in some of the vocational services, while in other areas it has not been developed to meet current needs.

8. Although instructional materials centers have been established in some universities, much more needs to be done if Michigan is to be ready to meet the challenge of the technological age.

9. The research program in vocational education is not keeping pace with current needs. Research on an extensive basis has been carried out in only one or two vocational service areas. Most research concerning vocational education appears to be of the status study, normative survey type.

10. There appears to be a need for a more adequate system of coordinating the teacher education activities among the several institutions designated by the State Board for Vocational Teacher Education. Campus course offerings, consultative services, practice teaching centers, certification standards, and many other phases of the vocational teacher education program should be provided on a cooperative basis, according to an organized plan worked out with the institutions.

11. Considerable variance in statistical reporting of teacher training work is being required by different services of the State Department of Public Instruction. While some types of information must be different among the services, such items as enrollments, research studies, consultative services, etc., should be reported on a more uniform basis.

12. With the possible exception of the cooperative education program, vocational teachers at the pre-service and in-service levels are not being adequately prepared in the field of guidance and counseling. An earnest attempt should be made to develop an integrated and comprehensive program of guidance and counseling as part of the preparation of all vocational teachers.

Recommendations

In view of the conclusions outlined above and the need for an expanded and more effective program of vocational teacher education, it is recommended that:

1. The State Office of Vocational Education should have a clear understanding with each designated teacher education institution as to those activities for which the institutions is best prepared, and the completion of these activities should then be made the basis for reimbursement of vocational teacher education funds to that institution.

2. Vocational teacher education activities and practices should be reviewed and redefined under the leadership of the State Department of Public Instruction, Vocational Division, and a priority established for financial assistance to institutions for carrying out such activities.

3. Each service in the State Office of Vocational Education should, at the beginning of the school year, consult with its respective teacher education institutions concerning the activities each institution plans to carry out during the year and the percentage of time to be devoted to each activity.

4. Research of the experimental type should be encouraged and developed. Pilot and experimental programs in all vocational service areas are needed if vocational education is to meet the challenges in the years ahead.

5. More emphasis should be placed on vocational teacher education programs in providing assistance for teachers of adult, apprentice, and other part-time classes. Since the percentage of older people is increasing, new occupations are being created, and the amount of technical knowledge is growing rapidly in all areas, the need for adult classes is likely to expand greatly in the years ahead.

6. Counseling and guidance services should be a part of an effective program of vocational teacher education. Ways and means should be developed for better use of guidance services by vocational teachers at the local level and the necessary changes incorporated in current vocational teacher education programs.

CHAPTER VI

RESEARCH IN VOCATIONAL EDUCATION

Introduction

The temptation to side-step the appraisal of the vocational education research effort could occur easily, since research is one aspect of the total program that has received minimal attention. Thoughtful observers are agreed that the research performance in vocational education has not been impressive in the past. In an eye-opening position paper submitted to the President's Panel on Vocational Education, the Research Committee of the American Vocational Association presented a passionate plea for more attention to this area when it stated:

> "Obviously, vocational education in our contemporary and future occupational complex cannot play a meaningful role to our citizens and to our national security and defense amid the paucity of research which presently exists because of our inadequate resources and feeble efforts."[1]

Smith, in describing vocational education in several states, comments:

> "There is now developing for the first time a serious nationwide interest in research in vocational education and Michigan finds itself in the vanguard of the new research."[2]

Reasons for the dearth in research are manifold. First, vocational education as a phase of the formal education structure is a relative newcomer in educational ventures. If, as Traver states, educational research as it is known today is a relatively new branch of knowledge, with little more than a half century since Joseph Mayer Rice planned his researches to bring about educational reform, then it is understandable that systematic research in vocational education should be slow in arriving.[3]

Another deterrent to research productivity is the climate within the federal-state local vocational system, not necessarily conducive to elicit sympathy toward research. Although the basic acts (Smith-Hughes and George-Barden Acts) made provisions for conducting studies and investigations, these have never been exploited maximally.

The previously mentioned American Vocational Association Research Committee requested in its declaration the establishment of a National Institute of Occupational Research and a full-time administrative staff within the Division of Vocational and Technical Education in the U. S. Office of Education. The Committee was especially concerned when it said:

> "The traditional pattern of assignment of part-time specialists to research activities in the Division of Vocational Education is recognized as grossly inadequate in the judgment of the Committee."[4]

In the early stages of the development of vocational education, there was substantial direction and control from the federal level. Consequently, much of the promotion and stimulation was dependent upon the values held on the Federal level. The disparity of research activities in the various sections of agriculture, business, home economics, and trade and industrial education may be, in part, a reflection of the values held by the leadership personnel on the Federal level.

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[1]American Vocational Association Research Committee. Provisions for Vocational Education Research, 1962, p. 1.

[2]Smith, Harold T., Education and Training for the World of Work, A Vocational Education Program for the State of Michigan, The Upjohn Institute for Employment Research, 1963, p. 43.

[3]Travers, Robert M. W., An Introduction to Educational Research, The Macmillan Company, New York, 1958, p. 43.

[4]American Vocational Association Research Committee, op. cit., p. 3.

A third deterrent rests in the fact that, as in other aspects of education, there are two groups in vocational education with differing perceptions regarding research; those who conduct the research, and those who have final responsibility for decision-making in implementation. Sufficient evidence indicates that little penetration has been made in utilization of a research orientation in program development and improvement. Results of significant studies, scanty though they be, lie dormant and have not found their way into the mainstream of practice. The gulf between research and practice still remains wide. Long-range plans must be made, calling upon all avenues of communication to develop greater awareness of the importance of research in the conduct of the program. Other inhibiting factors include inadequate financial support, limited research competency, and lack of inducements.

The Michigan Concern for Research

Fortunately, the leadership in Michigan has long recognized the need for attention to research. Under the aegis of the Department of Public Instruction, a variety of research projects and demonstrations have been evidenced. For the past decade and a half, Michigan has been one of the few states that has employed a full-time research consultant. In addition, state consultants have either conducted research studies themselves or have been instrumental in encouraging universities and local communities to do so. Agenda in various conferences called by the Division of Vocational Education have made provision for the dissemination of research findings. As a result of the Michigan Vocational Education Evaluation Project, the future holds considerable promise for augmenting present effort. The proposal to the State Board of Control for an extension of the Project by the Executive Committee of MVEEP contained a statement which gave some clues to future development.

> This continuative effort is requested on the basis of the following six concerns:[5]
>
> 1. Continued application of interest and resources of Michigan's leadership in vocational education and related disciplines toward making the program of vocational education more efficient and effective. There are areas of need in vocational education research that MVEEP has only begun to meet.
>
> 2. Capitalization on the high degree of momentum and motivation in both interest and action in research which, if permitted to wane, might take years to recapture. The climate for sustained research is more favorable now than ever before for maximum impact. The investment of additional financial resources promises to yield a relatively greater impact than would be possible without the base already laid.
>
> 3. Final implementation of a concept of cooperative effort which in a period of three years has demonstrated the ability to marshall human and material resources to stimulate and promote research in vocational education.
>
> 4. Completion of certain sub-researches which were not written into the original design, but have emerged since the inception of the project. It would not only be tragic but wasteful to lose the effort expended due to the lack of small amounts of money.
>
> 5. Provision for the extablishment of a framework to enable the systematic takeover of current and projected activities by the Department of Public Instruction and institutions of higher education. The Project has served its role as catalytic agent and a long-range, sustained program of research should be planned, organized, and executed.
>
> 6. Diffusion of the outcomes of the study at the chief point of focus, namely, local communities where vocational education programs are operative.

Further comments in the same proposal add a note of optimism regarding future outlook:

> Changing research climate in Michigan as it affects vocational education:
>
> a. There is increased awareness and sensitivity throughout the entire vocational education structure, including the state and local level and institutions of higher education, of the importance and role of research. This is the result, in large measure, of the opportunities provided for a large number of persons to participate in planning and executing various researches.

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[5] A Proposal-Request to the State Board of Control for Vocational Education for Continued Support of the Michigan Vocational Education Evaluation Project, Michigan Vocational Education Evaluation Project, (1962), p. 2.

b. Significant steps have been taken to mobilize and test resources and individuals to attack problems of vocational education. In other words, visibility has been given to research competence on the part of individuals as well as institutional resources.

c. Tangible evidence from a multitude of sources and disciplines has identified and brought together basic knowledge having an impact on vocational education. The notion that vocational education is an island unto itself is undergoing dissolution.

d. Productive efforts have been initiated to bring this knowledge not only to vocational educators, but others in a strategic position to use and incorporate it into the stream of affairs.

e. Overall, this attention to evaluative research has touched off a chain reaction of interests for accelerating the collection, dissemination, and application of available and emerging knowledge of vocational education.

Analysis of the Research Conducted

In order to determine the nature of research conducted in the past, a survey form was sent to the Department of Public Instruction and the several institutions of higher education in the state, inviting them to submit the vocational education researches which had been conducted under their auspices since 1937. The specific responses are reported in a more detailed document entitled Research in Vocational Education in Michigan. All institutions did not respond; however, it is safe to say that most of the research conducted was reported. A total of 325 research studies were submitted from eight institutions and the Department of Public Instruction; 304 of these studies were completed while 21 were reported to be in process. No attempt was made to ascertain research studies carried on in local communities. Table 1 shows the number of studies conducted and institutional output. Practically all research was produced in the larger universities. This is understandable since institutional objectives, availability of university-wide resources, graduate student assistance, and released time for faculty make research more feasible in the larger institution.

Table 1

Institutions Conducting Research

Institution	Number of Completed Studies	Percentage of Completed Studies	Number of Studies in Process
Michigan State University	214	70	10
University of Michigan	14	5	1
Wayne State University	34	11	--
Central Michigan University	--	--	1
Western Michigan University	8	3	--
Northern Michigan University	7	2	--
Eastern Michigan University	1	1	--
Ferris Institute	1	1	4
Michigan Department of Public Instruction	25	8	5
	304	100	21

Quantitatively, the bulk of the research as indicated in Table 2 has been produced by vocational agriculture and vocational home economics, with relatively little in business and trade and industrial education. A few studies cut across the subject matter lines.

A word of caution may be necessary in interpreting these data. These are merely numerical figures. No value judgments were made regarding the quality or the level of sophistication of these research studies.

Reasons for this quantitative disparity may be difficult to determine; in the case of agriculture and home economics, probable nudging from the federal level, regional research committees, nationwide studies, and a greater number of graduate students contributed to the output. In addition, in these fields university personnel have been given either full or part-time assignments for research.

The picture is somewhat different in business and trade and industrial education. Business education has never been accorded its rightful position in the vocational education family. In part, this stems from the fact that limitations of federal legislation and attendant interpretations have restricted the amount of funds available for training for both office and distributive occupations.

Reimbursement has been available for training in distributive education only since 1937. Occupational training for office work has never been accorded first class membership since financial support stems only from state funds. Fortunately, proposed new legislation on the federal level, if enacted, will aid in providing needed financial support. Meager funds in this area have precluded the possibility of more research.

Table 2

Studies Conducted in Various Fields, 1937-1962

Field	Number of Studies	Per cent
Home Economics	202	62.0
Agriculture	71	21.8
Trade and Industrial	21	6.7
General	16	4.9
Business	15	4.6
	325	100.0

In trade and industrial education, the situation has been somewhat different and difficult to diagnose. First of all, trade and industrial educators have not been research-oriented by background and training. In the past, research has never been a strong concern of personnel either on the national or state level and this is reflected in the program. Fortunately, this has changed in recent years. Token recognition on the national level, a noticeable absence of national studies, and non-existence of regional research committees lead one to conclude that the absence of research is due to lack of interest. In addition, fewer trade and industrial educators are prone to pursue advanced degrees in which a thesis or dissertation is required.

An analysis of research conducted since 1937 revealed that only 12 studies were completed from 1937 to 1949 inclusive. For a comparable period of time, 1950 to 1962 inclusive, 288 research studies were completed. This growth was attributed to additional interest in graduate study and a greater concern for research, particularly in agriculture and home economics. Table 3 indicates the growth by years.

Approximately eighty-one per cent of all research completed or in process was carried on by graduate students. Faculty in institutions of higher education contributed eleven per cent and state consultants eight per cent. (See Table 4).

Types of Research Conducted

Much of the research which has been conducted in Michigan attempts to describe current practice or to develop normative rules which summarize what is considered best prevailing practice. A few studies were experimental in nature. In general, there has been a tendency to favor utilitarian, short-range studies.

Needed Improvements in Research

In many ways current resources for vocational education research are unequal to the demand placed upon them by the scientific and technical orientation of society and the increasingly complex problems which attend this development. It is highly questionable whether future resources will ever be able to match the accelerated tempo of change which appears to be inevitable. Nevertheless, some affirmative action can take place which will affect the quantity and quality of research.

1. State-wide coordination of effort in manpower development research.

At the present time, a multiplicity of public and private agencies, too numerous to mention here, are addressing themselves to manpower problems. Much of this effort is carried on independently and on a fragmented basis, with little consideration for a united approach.

Table 3

Research Conducted According to Years, 1937-1963

Year	Number of Studies	Agriculture	Business	Home Economics	Trade and Industrial	General
1937	1	--	--	--	1	--
1938	--	--	--	--	--	--
1939	1	1	--	--	--	--
1940	--	--	--	--	--	--
1941	1	1	--	--	--	--
1942	1	1	--	--	--	--
1943	--	--	--	--	--	--
1944	1	1	--	--	--	--
1945	1	1	--	--	--	--
1946	1	1	--	--	--	--
1947	1	1	--	--	--	--
1948	2	2	--	--	--	--
1949	2	1	--	1	--	--
1950	10	1	1	8	--	--
1951	13	2	--	8	2	1
1952	12	5	--	7	--	--
1953	19	4	--	14	1	--
1954	24	7	1	16	--	--
1955	26	5	--	19	--	2
1956	18	4	--	12	--	2
1957	16	2	--	12	2	--
1958	31	5	--	23	2	1
1959	25	4	--	19	2	--
1960	28	6	2	18	2	--
1961	27	--	4	17	4	2
1962	39	8	6	23	1	1
1963	4	2	--	1	1	--
In Process	21	6	1	4	3	7
	325	71	15	202	21	16

Table 4

Individuals Conducting Research

Category	Number	Per cent
State Consultants	25	8
University Faculty	36	11
Graduate Students	264	81

Particularly is this true in research. The possible overlapping and duplication that may occur is apparent in the proposed stepped-up plans for research to be conducted by the Department of Labor.

> To guide our national efforts in training and manpower development, much additional information is needed also on problems and progress in this field. Some of this will be forthcoming over the next year or two as a by product of the training programs set up under the Manpower Act. For example, the Department of Labor--in cooperation with educational and training institutions and other interested government agencies and outside groups--plans to study such fundamental questions as the kinds of educational background workers must have to enter and successfully complete various types of training programs, the personal characteristics and other factors which influence trainability and willingness to undertake training and the effects of employers' hiring standards and restrictions on the success of training programs. In this research, it is planned to explore both the needs of young workers (for example, the types of training which are most meaningful for recent or potential school dropouts) and the special kinds of training courses and other programs needed to facilitate the retraining of older wokers.[6]

Although this research hints of cooperation with educational and training institutions, this does not necessarily insure that it will eventuate. Precious time and energy may be wasted through studies and investigations which may be identical or similar in nature. Fortunately, the necessity for coordination is recognized on the national, state, and local level. Secretary of Labor Wirtz, in testifying before the subcommittee on Manpower and Employment, had this to say:

> I believe that one of the most important contributions of the Manpower Development and Training Act in this field is to make possible the coordination and utilization of manpower research not only of the Labor Department and other Federal Government agencies, but also of state and local governments and of academic and other non-governmental organizations, in order to solve the Nation's manpower problems.[7]

The State Director of Vocational Education in Michigan has recently advocated the appointment of an advisory body, in a prospectus submitted to the office of the Governor.

> That a representative advisory committee or commission be appointed to serve the Michigan State Board of Control for Vocational Education, the Superintendent of Public Instruction, and the Division of Vocational Education in reviewing plans for future development of Vocational and Technical Education and to develop recommendations concerning them. Such a committee or commission could be financed from Vocational Teacher Education funds in a manner similar to the Michigan Evaluation Project if approved by the Michigan State Board of Control for Vocational Education.[8]

It may be assumed that, included in the responsibilities of such a body, research would be an important consideration.

2. Centralized programming of research within the vocational education system.

At the time that a request for supplementary funds was submitted to the State Board of Control for Vocational Education to extend the Michigan Vocational Education Evaluation Project, the State Director of Vocational Education presented a proposal for diverting $15,000 of teacher education appropriations to fund additional research projects. The State Board approved the proposal and the funds requested. Although the amount was relatively small, it brought with it a new emphasis in research and experimentation. One of the outcomes was to appoint a review committee to screen and approve proposals submitted. Although this practice is laudable, an additional function of this review committee, or a counterpart, should be centralized planning and programming of long-range, comprehensive research.

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[6] Manpower Report of the President, Superintendent of Documents, U. S. Government Printing Office, March 1963, pp. 113.

[7] Statement of Willard Wirtz, Secretary of Labor before the Sub-committee on Manpower and Employment, Senate Committee on Labor and Public Welfare on National Manpower and Employment Problems, May 20, 1963.

[8] R. M. Winger, "Vocational and Technical Education in Michigan," (Unpublished memorandum, Department of Public Instruction, Divi. of Voca. Education, Lansing, 1963), p. 5.

An analysis of past research indicated that most research was conducted by graduate students and faculty in institutions of higher education. Individual interest appeared to be the chief determinant of the problems to be investigated. Individual initiative and interest should not be discouraged; however, it would seem highly advantageous to program research based upon problems existing in local communities as well as on a state-wide basis. Vocational consultants within the Department of Public Instruction are in an excellent position to serve as problem-spotters in local communities. The coordinative agency suggested above, through its liaison with other agencies, would deal with the larger context. Problem identification based on a multiple approach could be systematically translated into a long-range research program. Within such a framework, university faculty as well as graduate students could select problems to be investigated, thereby contributing to a larger whole. National and regional studies conducted in vocational agriculture and home economics have demonstrated the advantages that can accrue as a result of planning research on a broader base.

The previous research analysis also revealed that relatively few studies provided for "across the board" considerations. Most studies dealt with the problems in the specific areas of agriculture, business, home economics, and trade and industrial education. The changing nature of occupations would suggest that a closer working relationship among the various vocational fields is imperative. Centralized planning could make provision for studies of a more general nature.

3. Increased research competency throughout the entire vocational education system.

Research competency has a multi-dimensional as well as a multi-level connotation. Competence is not restricted to the relative few who actively devote time to conducting research. Researchmindedness should characterize all professional people. This does not suggest that all individuals must be involved in highly sophisticated research as carried on by the scholar. In its most simple form it would imply the acceptance of the need for research and a willingness to utilize research results. Much research exists at the present time in vocational education and in the general field of education, not to speak of other disciplines. Excellent studies in human growth and development, learning theory and methodology have much to offer vocational educators, but somehow the results remain untouched.

A second phase of research competence deals with the interest and ability to conduct minor fact-finding and research studies. One of the recurring problems in this evaluative study has been the gaps and deficiencies in information about vocational education. Although excellent statistical data and records are available in the Department of Public Instruction regarding the reimbursable program, relatively little is known about the vocational education program in general. Information is scanty or non-existent about the characteristics of students who enroll in vocational education programs, the nature of the curricula, the dropout, and labor market behavior of graduates.

A third phase of research competence is concerned with the more sophisticated, rigorous type of research requiring highly specialized skills in problem identification, establishing challenging hypotheses, design construction, and statistical analysis. If research conducted in the past is any index, individuals responsible for the research are operating within a limited frame of reference. It was previously mentioned that most of the research was descriptive in nature, with several modest attempts of an experimental character. This limited approach seems universal in vocational education throughout the nation. The Research Committee of the American Vocational Education Association apparently has recognized this deficiency and has inaugurated a series of seminars to upgrade the quality of research. It would appear advantageous to plan and execute joint seminars on research for vocational teacher educators, state consultants, and research specialists on an in-state basis.

4. Additional financial resources required for research in vocational education.

Modest financial resources have been available to support research in the past. University research funds, allocations through the State Board of Control for Vocational Education, and several grants from governmental and philanthropic agencies constitute the main sources of revenue. The amounts received have been negligible when superimposed against needed research. Recently, the State Board of Control for Vocational Education has authorized the expenditure of $50,000 annually for three years beginning with the year ending June 30, 1963. This is a step in the right direction. Additional funds need to be secured. Foundation and governmental sources remain untapped due, in part, to lack of interest, insufficient time for proposal development, and the inability to design exciting proposals acceptable to sponsoring agencies. A careful study and analysis should be made of philanthropic and governmental agencies to identify those interested in providing grants for vocational education.

5. Research emphasis in undergraduate, graduate, and in-service education programs.

Many avenues exist on the undergraduate level to discuss findings of research, to pose challenging questions worthy of investigation, and to suggest readings that will bring about familiarity with research literature.

The Master's degree is the terminal formal education experience for most vocational education teachers. What has been suggested for the undergraduate has even greater applicability on the graduate level. More rigorous demands should be made on the graduate student. It is absurd to expect teachers to bring a research orientation to classroom teaching if they have not themselves had an exposure to courses in educational research and research seminars. Furthermore, it would seem advantageous to require each graduate student to pursue a challenging problem in order to develop some understanding of and skill in research technique. Involvement in projects under the leadership of competent senior investigators would provide rich experience not otherwise obtainable. Some obstacles may exist in the implementation of these suggestions; however, sacrifices must be made if improvement in research is expected.

In-service activities including conusltative visits, program evaluation, state-wide conferences, workshops, institutes, and published material involving the application of tested research or the reporting of new research, are additional ways to encourage teachers and administrators in developing a research outlook.

CHAPTER VII

RECOMMENDATIONS

This final chapter presents recommendations that emerge from the various studies of the Michigan Vocational Education Evaluation Project. An attempt has been made to list the recommendations in order of priority, without any sequential consideration to the previous chapters. Because of present and future manpower problems in Michigan, the implementation of any or all of the recommendations should improve the vocational education enterprise.

1. It is recommended that the Legislature authorize the creation of a permanent state-wide commission to coordinate the efforts of governmental and private agencies now engaged in activities related to vocational education. It is further recommended that the counterpart of such a commission be established in local communities, particularly in the larger metropolitan centers. This commission should not be confused with the Governor's Committee on Manpower Development or local committees that have been operative in connection with the Manpower Development and Training Act, which may be of short duration.

2. It is recommended that if such a commission is created, it be adequately financed and staffed to conduct a long-range program of research of such nature that state-wide planning will minimize the lag between labor market demands and activities carried on by agencies responsible for vocational education.

3. It is recommended that the Legislature appropriate funds for vocational education programs, to alleviate the plight of minority groups who, because of lack of adequate preparation in vocational skills, are denied the opportunity for employment in the competitive labor market.

4. It is recommended that the Legislature take appropriate measures to eliminate the barriers to training and employment in business, industry, and other employers which preclude training and education through cooperative work-study programs for in-school youth.

5. It is recommended that the Legislature appropriate the necessary funds for the support of vocational education programs for out-of-school youth and adults who find doors to employment closed either because of lack of skills or obsolescence of skills brought about by technological change.

6. It is recommended that the Legislature, through appropriate action, facilitate the establishment of a network of area vocational schools for youth and adults who find it impossible to secure adequate vocational education in sparsely populated areas of the state, many of whom will find it necessary to migrate to larger metropolitan centers to secure employment. This may be accomplished in part by the utilization of existing facilities, expansion of community colleges, or the construction of new facilities.

7. It is recommended that the section of the final report of the Survey of Higher Education in Michigan (1958) dealing with the expansion of community colleges be reexamined and measures taken to speed up the implementation of these recommendations, since vocational technical education is an integral part of such expansion.

8. It is recommended that the existing community colleges be encouraged to expand their vocational-technical curricula through whatever means necessary, since labor market predictions and projections indicate the greatest expansion in job opportunities will occur at the professional and technical level.

9. It is recommended that the community colleges expedite the utilization of their facilities to provide vocational education for high school students who are unable to secure training in their schools.

10. It is recommended that strong adult counseling centers be established in connection with the Michigan Employment Security Commission and local public schools, to assist unemployed or underemployed youth and adults to have the advantage of a continuous program of guidance and counseling, since substantial numbers of individuals will be increasingly concerned with planning for sequential careers.

11. It is recommended that the Legislature pass permanent enabling legislation affecting the acceptance of federal funds for vocational education in order that utilization of such funds may be expedited.

12. It is recommended that the State Board of Control for Vocational Education, through appropriate channels, examine the present use of state and federal vocational education funds, since past practices and procedures have tended to freeze the vocational education program both in terms of emphasis and compartmentalization. It is further recommended that if additional state and federal funds are appropriated, these funds not be used to increase the rate of reimbursement for currently supported services until it is certain that more important or neglected services are adequately supported.

13. It is recommended that the Legislature appropriate additional funds for the support of vocational education programs for in-school youth and disadvantaged youngsters who, because of physical and/or mental deficiencies, are confronted with special problems in securing employment.

14. It is recommended that the Legislature make provision for matching through state funds those vocational education funds received from the federal government, as a minimal plan of financing vocational education services.

15. It is recommended that more and better articulation is necessary between public education and the users of the vocational education product; therefore, advisory committees composed of appropriate representation should be required at all levels of operation. These advisory committees are in addition to the commission suggested above. Furthermore, other means should be employed to effectuate better communication between school and community in matters affecting vocational education.

16. It is recommended that the Division of Vocational Education review its present organizational structure to determine the feasibility of at least a partial dissolution of the compartmentalization which now exists, in order to provide a more unified and integrated approach to vocational education. Occupational patterns are changing to the point that sharp lines of distinction in the fields of agriculture, business, homemaking, and trade and industrial education have become artificial. Consideration should be given to inclusion of a small corps of general vocational education consultants as well as specialists in each field.

17. It is recommended that the Department of Public Instruction continue the excellent practice of providing educational leadership through the Michigan Curriculum Program; however, more emphasis should be given to review of problems concerned with vocational education.

18. It is recommended that the Division of Vocational Education take the leadership in developing criteria that local communities may use as guide-lines in evaluating their vocational education curricula, to minimize obsolescence in light of labor market demands.

19. It is recommended that the Division of Vocational Education encourage local communities to establish long-range plans for program development and program improvement, based upon a total concept of vocational education rather than a segmented approach in each of the fields of vocational education.

20. It is recommended that the Division of Vocational Education marshall all resources available to strengthen local leadership in vocational education; this includes the position of director of vocational education as well as supervisory personnel responsible for separate fields of vocational education. It is further recommended that a long-range program of leadership development be instituted for local directors, and others responsible for the administrative and supervisory function in community colleges and intermediate school districts.

21. It is recommended that the Division of Vocational Education institute a system of reporting whereby information in enrollments, curricula, and other needed data be available in both reimbursable and non-reimbursable vocational education programs.

22. It is recommended that research in vocational education be strengthened both quantitatively and qualitatively through long-range programming, upgrading the competency of those conducting research, and allocation of funds supporting research.

23. It is recommended that local school districts regularize follow-up studies of employment-bound youth, dropouts in the vocational education program, and graduates of vocational education programs, to determine labor market behavior.

24. It is recommended that administrators who have the responsibility for the overall program of teacher education and faculty in vocational education departments come to some agreement regarding teacher education services for which reimbursable funds should be used, since antithetical positions are now evidenced.

25. It is recommended that the long-range program of self-study developed by the home economics teacher educators be continued and encouraged. Furthermore, teacher education services in other vocational fields should emulate the home economics teacher educators in this respect.

26. It is recommended that the practice of offering certain extension courses under joint arrangement by various institutions should be continued and, if possible, expanded to on-campus summer session courses and workshops to reduce the instructional cost stemming from small enrollments.

27. It is recommended that institutions of higher education in which two or more teacher education services are located examine course offerings and other services to determine the extent to which overlapping and duplication exists. Since enrollments in vocational education courses are comparatively low, such review may result in conservation of time, effort and cost.

28. It is recommended that a determined effort be made by vocational teacher education institutions in conjunction with the Division of Vocational Education, to uncover sources of revenue available to support research in addition to state and federal vocational education funds.

29. It is recommended that a study be made of the teacher education services required in the Upper Peninsula to determine whether or not geographical location precludes vocational education teachers in that area from receiving the quality and quantity of teacher education required.

30. It is recommended that the State Board of Control for Vocational Education discourage the approval of any institutions of higher education wishing to offer additional vocational teacher education services, until sufficient evidence is available that additional services are justified.

31. It is recommended that institutions of higher education which are experimenting with patterns of teacher preparation for vocational-technical teachers on a post-high school level be encouraged to arrive at the most satisfactory arrangement for the preparation of such teachers, since there is every indication that an increased number of teachers will be in demand.

Appendix A

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940[1], 1950[2], and 1960[3]

OCCUPATION	Alcona			Alger			Allegan			Alpena			Antrim		
	% distribution			% distribution			% distribution			% distribution			% distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*
Professional, technical, and kindred workers	5.5	4.6	6.1	6.2	6.6	9.6	5.1	5.6	7.2	5.6	7.0	9.2	6.3	6.3	8.5
Farmers and farm managers	36.3	35.7	13.2	12.1	12.2	4.6	28.9	19.3	8.0	15.9	12.5	4.6	33.5	25.8	9.3
Managers, officials, and prop's, exc. farm	8.1	7.4	13.8	8.1	10.5	9.0	7.0	7.1	6.2	7.0	8.3	8.8	7.5	8.4	8.3
Clerical, sales, and kindred workers	5.2	7.3	14.0	9.4	9.5	14.8	8.6	11.4	15.3	11.5	16.1	17.7	5.2	10.2	12.9
Craftsmen, foremen, and kindred workers	6.8	9.5	12.7	8.8	10.0	11.5	9.2	14.0	15.3	12.3	14.8	16.3	5.6	11.0	13.5
Operatives and kindred workers	6.9	6.5	14.8	17.3	19.9	23.2	16.5	23.8	27.2	21.7	17.6	20.6	6.2	10.3	25.8
Private household workers	2.3	1.4	1.9	2.9	.9	2.1	3.3	1.8	2.2	2.8	1.5	2.8	3.4	1.5	3.1
Service workers, except private household	3.1	4.8	9.9	6.6	6.6	8.7	3.5	4.8	6.2	5.3	7.0	7.8	3.3	5.3	7.3
Farm laborers and foremen	19.3	12.8	1.6	4.7	5.2	4.7	12.1	6.6	3.8	9.0	5.5	1.2	16.1	12.8	4.1
Laborers, except farm and mine	5.2	6.5	8.7	22.9	17.3	11.3	4.9	4.8	5.6	8.0	8.3	8.6	12.1	7.2	5.2
Occupation not reported	1.5	3.6	3.4	.9	1.3	.5	1.0	1.0	3.0	.9	1.4	2.6	.7	1.1	2.0
Male	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*
Professional, technical, and kindred workers	4.0	2.8	4.9	4.4	4.7	7.5	2.9	3.7	5.5	4.0	5.0	7.7	3.9	4.5	6.7
Farmers and farm managers	40.3	42.0	18.4	13.6	12.5	6.0	33.5	24.0	10.6	19.8	15.6	5.9	36.4	30.6	12.2
Managers, officials, and prop's, exc. farm	7.8	7.8	13.7	9.0	11.3	10.4	7.5	7.9	7.3	8.2	9.5	10.7	7.7	8.8	9.9
Clerical, sales, and kindred workers	3.7	4.6	8.8	6.9	5.5	8.6	5.8	6.9	8.8	9.0	10.5	10.5	4.0	6.2	7.5
Craftsmen, foremen, and kindred workers	7.5	11.3	18.0	10.4	12.7	15.8	10.7	17.4	20.7	14.9	18.6	21.7	6.4	13.0	18.3
Operatives and kindred workers	7.3	7.4	15.5	17.4	21.3	27.9	16.8	24.3	29.2	17.6	20.3	24.5	7.0	11.2	27.3
Private household workers	.1	.1	- -	.1	- -	- -	.1	.1	.1	.1	.1	.2	.1	- -	.4
Service workers, except private household	1.9	2.7	3.7	4.5	4.6	5.0	2.1	2.5	3.3	4.6	4.4	4.1	2.3	3.0	3.7
Farm laborers and foremen	21.0	10.6	1.6	5.6	5.3	2.7	14.2	6.8	4.2	11.1	4.2	1.2	18.2	12.8	5.2
Laborers, except farm and mine	5.9	7.6	12.0	27.1	20.9	15.7	5.6	5.7	7.5	10.0	10.5	11.6	13.7	8.7	7.0
Occupation not reported	.5	3.1	3.5	1.0	1.1	.5	.9	.8	2.8	.7	1.2	2.1	.5	1.1	1.7
Female	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*	100.0*
Professional, technical, and kindred workers	17.3	13.0	8.9	14.8	13.1	15.2	16.8	12.8	11.5	11.7	13.9	13.2	23.3	14.2	13.1
Farmers and farm managers	5.6	5.6	.7	5.1	10.9	.7	3.8	2.1	1.5	1.3	1.6	1.0	13.2	4.1	2.0
Managers, officials, and prop's, exc. farm	10.2	5.6	14.0	4.0	7.6	5.4	4.5	4.1	3.2	2.3	3.8	3.7	6.0	6.4	4.1
Clerical, sales, and kindred workers	16.8	20.4	26.5	21.6	23.2	31.2	23.4	27.8	31.6	21.2	36.0	37.0	14.0	28.3	26.7
Craftsmen, foremen, and kindred workers	1.0	1.2	- -	1.1	.9	- -	.9	1.3	1.5	2.4	1.2	1.7	.3	1.7	1.2
Operatives and kindred workers	3.6	1.9	13.1	16.8	15.4	11.1	15.1	21.8	22.3	37.4	8.1	10.0	1.0	6.4	21.8
Private household workers	18.3	7.4	6.4	16.3	3.9	7.7	20.7	7.8	7.5	13.1	6.7	9.8	26.7	8.0	10.2
Service workers, except private household	12.2	14.8	24.7	16.8	13.2	18.2	11.3	13.3	13.5	8.1	16.3	17.8	10.9	15.9	16.3
Farm laborers and foremen	6.1	23.1	1.6	.4	4.9	9.9	1.1	5.9	2.9	.9	9.8	1.3	1.8	12.9	1.4
Laborers, except farm and mine	- -	1.2	.9	2.4	5.2	- -	1.1	1.2	.7	.4	.5	.5	.8	.7	.4
Occupation not reported	9.1	5.9	3.2	.7	1.7	.4	1.4	1.8	3.7	1.4	2.1	4.0	2.1	1.4	2.8

Sources: [1]U.S. Bureau of the Census. U.S. Census of Population: 1940. Vol. II, Part 3, Characteristics of the Population, Michigan. U.S. Government Printing Office, Washington, D.C., 1942.

[2]U.S. Bureau of the Census. U.S. Census of Population: 1950. Vol. II, Part 22, Characteristics of the Population, Michigan. Chapter B., U.S. Government Printing Office, Washington, D.C., 1952.

[3]U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC (1)-24C. U.S. Government Printing Office, Washington, D.C., 1962.

*Totals will not equal 100.0 because of rounding.

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Arenac % distribution			Baraga % distribution			Barry % distribution			Bay % distribution			Benzie % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.1	5.3	10.2	7.3	6.8	10.5	6.0	7.5	8.9	6.9	7.6	9.9	7.8	6.7	9.5
Farmers and farm managers	37.6	30.3	11.3	17.5	15.1	6.1	33.1	18.2	9.0	11.0	6.5	2.6	24.4	14.2	5.5
Managers, officials, and prop's, exc. farm	7.0	8.8	7.9	8.7	8.9	10.1	6.6	6.6	5.3	7.8	7.9	8.1	11.7	11.5	9.3
Clerical, sales, and kindred workers	5.7	8.6	12.6	8.1	9.8	13.0	9.2	13.8	16.3	14.8	18.4	19.0	8.9	11.7	14.1
Craftsmen, foremen, and kindred workers	5.7	9.9	13.8	15.4	10.4	17.1	11.5	14.8	15.1	13.9	16.4	17.8	10.0	12.1	14.7
Operatives and kindred workers	5.5	11.9	21.3	13.2	17.6	18.2	11.9	21.6	24.1	23.4	25.9	24.7	8.7	20.9	20.5
Private household workers	2.2	1.5	2.8	1.8	.6	.6	3.9	2.2	1.8	3.4	1.9	2.4	3.7	1.8	2.5
Service workers, except private household	4.6	7.2	8.5	5.8	6.6	11.0	3.4	4.3	6.7	6.1	7.6	8.5	6.4	8.4	10.9
Farm laborers and foremen	20.6	10.6	2.8	10.5	8.9	1.8	9.2	5.9	2.7	5.6	2.0	.7	9.5	5.2	3.5
Laborers, except farm and mine	5.0	4.9	5.8	11.0	14.6	6.4	4.0	3.9	4.9	6.0	5.0	3.7	8.0	6.1	6.6
Occupation not reported	.8	.9	2.9	.6	.7	5.2	1.1	1.1	5.1	1.2	.7	2.7	.7	1.5	2.9
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	3.0	3.2	6.9	4.5	4.4	7.1	3.8	5.4	7.2	4.7	5.8	8.4	4.9	3.7	7.0
Farmers and farm managers	42.4	35.9	14.8	19.0	17.0	7.6	39.0	23.1	12.1	13.9	8.6	3.5	28.5	17.0	7.0
Managers, officials, and prop's, exc. farm	6.9	9.3	9.0	8.6	9.1	11.4	7.1	7.5	6.6	9.1	9.3	10.0	12.4	12.4	11.5
Clerical, sales, and kindred workers	3.8	4.9	6.9	5.7	5.5	6.9	5.6	8.5	9.6	11.0	12.4	11.9	6.7	8.1	9.7
Craftsmen, foremen, and kindred workers	6.5	13.3	13.8	18.0	12.6	22.9	13.7	18.8	20.6	17.6	21.5	24.7	11.6	14.5	20.6
Operatives and kindred workers	6.0	13.9	26.7	15.2	20.9	23.4	12.0	22.0	26.0	24.0	27.7	28.3	10.1	23.2	20.1
Private household workers	- -	- -	.2	.1	.1	.3	.2	.1	.2	.1	.1	.1	.3	.1	- -
Service workers, except private household	2.6	3.8	3.6	4.1	4.9	6.0	2.1	2.7	3.0	4.9	5.4	5.0	4.5	6.5	7.5
Farm laborers and foremen	22.7	9.8	3.2	11.6	7.3	2.4	11.0	6.3	3.3	6.5	2.2	.7	11.2	5.7	4.6
Laborers, except farm and mine	5.7	6.0	7.7	12.9	17.6	8.6	4.7	4.9	6.7	7.2	6.3	5.0	9.4	7.2	9.2
Occupation not reported	.5	.9	2.5	.2	.7	3.5	.9	.8	4.8	1.0	.6	2.4	.6	1.5	2.6
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	19.6	13.5	20.2	23.0	17.8	20.8	16.8	14.3	12.8	14.3	12.8	13.6	23.1	18.8	15.5
Farmers and farm managers	5.1	8.0	1.0	9.4	6.3	1.7	3.8	1.8	1.6	1.3	.4	.4	3.2	2.7	2.1
Managers, officials, and prop's, exc. farm	7.5	7.2	4.5	9.4	7.8	6.1	4.2	3.9	2.3	3.4	3.7	3.6	10.1	7.7	4.0
Clerical, sales, and kindred workers	18.8	23.3	29.3	21.7	29.6	30.9	26.6	31.4	32.8	27.5	36.0	35.8	20.8	26.0	24.1
Craftsmen, foremen, and kindred workers	.5	.6	.4	.6	.5	- -	1.0	1.7	1.8	1.2	1.4	1.3	2.0	2.5	1.0
Operatives and kindred workers	2.7	4.1	5.5	2.3	2.0	2.8	11.9	20.5	19.4	21.0	20.8	15.9	1.6	11.7	21.3
Private household workers	16.9	7.0	10.7	11.7	3.3	1.7	22.2	9.2	5.8	14.5	7.1	8.1	21.4	8.6	8.2
Service workers, except private household	18.6	20.8	22.9	15.2	14.8	25.6	10.1	9.6	15.9	9.9	14.3	16.9	15.9	16.0	18.6
Farm laborers and foremen	7.0	13.8	1.6	4.2	16.3	- -	.5	4.6	1.2	2.6	1.3	.6	.6	3.1	1.0
Laborers, except farm and mine	.5	.6	- -	- -	.8	10.4	.6	.9	.5	2.2	1.0	.5	.3	1.5	.5
Occupation not reported	2.7	1.1	4.0	2.6	.8	- -	2.2	1.9	5.9	2.0	1.0	3.4	1.0	1.3	3.6

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Berrien % distribution			Branch % distribution			Calhoun % distribution			Cass % distribution			Charlevoix % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.8	6.9	9.8	5.2	6.7	6.8	7.5	8.3	10.5	5.1	5.6	6.8	6.2	7.5	9.3
Farmers and farm managers	12.7	7.3	3.9	27.1	18.1	8.3	7.7	4.3	2.3	27.4	15.0	6.0	28.4	17.2	5.5
Managers, officials, and prop's, exc. farm	8.3	7.8	7.1	7.8	7.9	7.2	8.0	8.0	7.9	7.7	6.6	6.5	8.8	9.6	9.3
Clerical, sales, and kindred workers	13.1	16.1	19.1	10.0	14.1	15.6	16.5	18.9	20.2	9.1	13.2	16.1	7.9	13.6	14.8
Craftsmen, foremen, and kindred workers	15.4	16.4	15.4	9.5	11.9	12.3	16.6	16.9	15.0	11.5	15.9	16.2	8.0	13.0	14.7
Operatives and kindred workers	20.0	26.0	24.2	16.9	20.5	23.2	19.9	24.1	22.1	11.2	23.9	25.7	11.2	15.4	22.3
Private household workers	3.0	1.6	2.3	3.7	2.2	3.4	3.7	2.0	2.0	3.5	1.8	2.0	3.6	2.6	3.5
Service workers, except private household	5.5	6.7	8.0	4.1	7.4	12.2	8.1	9.6	10.2	3.7	5.2	6.6	5.9	6.7	10.4
Farm laborers and foremen	7.8	5.1	3.1	10.0	5.6	3.0	3.4	1.9	1.1	12.3	5.3	3.6	10.4	5.6	2.1
Laborers, except farm and mine	7.2	5.0	4.3	4.2	3.7	4.2	7.0	5.0	4.1	6.8	5.7	4.3	8.5	7.9	5.3
Occupation not reported	1.1	1.1	2.7	1.4	1.8	3.7	1.7	1.1	4.6	1.7	1.8	6.3	1.1	1.0	2.7
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.4	5.7	9.3	3.3	4.4	4.7	5.3	6.6	9.3	3.2	4.0	5.3	4.0	4.9	8.0
Farmers and farm managers	15.5	9.4	4.9	33.2	24.1	12.0	10.1	6.1	3.4	31.9	19.0	7.8	3.2	21.1	7.7
Managers, officials, and prop's, exc. farm	9.5	9.3	9.1	8.4	9.2	9.2	9.5	9.7	10.0	8.0	7.6	8.0	9.2	10.1	11.7
Clerical, sales, and kindred workers	9.2	9.7	11.2	7.3	9.0	10.2	12.4	12.2	11.8	6.3	7.9	9.1	5.9	8.6	9.5
Craftsmen, foremen, and kindred workers	19.2	21.5	21.8	11.6	15.6	18.5	21.8	23.5	22.0	13.3	20.1	22.3	9.5	15.9	21.4
Operatives and kindred workers	19.7	27.3	27.1	15.3	20.9	24.6	20.2	24.5	24.6	10.8	24.3	27.5	12.0	18.1	22.9
Private household workers	.2	.1	.1	.1	.1	.2	.2	.1	.1	.3	.2	- -	- -	.5	.6
Service workers, except private household	3.9	4.6	4.6	2.5	4.5	6.8	6.1	7.2	6.8	2.3	3.5	4.0	4.1	4.2	6.7
Farm laborers and foremen	9.2	5.0	3.3	12.3	5.7	4.0	4.4	2.2	1.4	14.4	4.9	4.0	11.8	6.2	2.5
Laborers, except farm and mine	8.2	6.4	6.1	4.9	4.8	6.0	8.5	7.4	6.0	7.7	7.0	5.7	10.1	9.6	7.5
Occupation not reported	.9	.9	2.4	1.1	1.6	3.8	1.5	.6	4.5	1.8	1.4	6.3	1.0	.7	1.6
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	11.2	10.2	11.0	13.5	13.1	10.7	14.0	12.4	12.8	14.9	10.9	10.3	16.8	18.1	12.2
Farmers and farm managers	2.1	1.5	1.5	2.1	1.6	1.5	.6	.2	.2	3.0	1.5	1.3	8.1	1.5	.9
Managers, officials, and prop's, exc. farm	4.1	3.6	2.9	4.8	4.4	3.4	3.5	4.0	3.8	6.3	3.1	2.8	7.0	7.3	4.3
Clerical, sales, and kindred workers	27.7	34.1	36.3	21.2	28.1	25.6	28.5	34.3	36.5	23.8	31.0	33.2	18.2	33.4	26.1
Craftsmen, foremen, and kindred workers	1.2	2.0	1.4	1.1	1.6	.9	1.4	1.8	1.1	1.5	1.6	1.4	.7	1.0	.7
Operatives and kindred workers	21.0	22.0	17.9	23.7	19.6	20.7	18.9	23.3	17.4	13.6	22.7	21.4	7.5	4.3	21.1
Private household workers	13.5	5.7	7.0	18.4	7.8	9.4	13.9	6.2	5.6	20.9	7.4	6.9	21.5	11.3	9.6
Service workers, except private household	11.6	12.6	15.5	10.8	15.5	22.2	13.7	15.0	16.8	11.2	10.5	12.9	15.1	16.6	18.5
Farm laborers and foremen	2.8	5.5	2.6	.3	5.2	1.2	.5	.8	.6	1.1	6.4	2.6	3.6	3.4	1.2
Laborers, except farm and mine	3.1	1.2	.6	1.4	.7	.8	2.6	.6	.3	2.1	1.5	1.0	.2	1.1	.6
Occupation not reported	1.7	1.6	3.2	2.6	2.5	3.7	2.3	1.4	4.8	1.5	3.3	6.2	1.5	2.0	4.8

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Cheboygan % distribution			Chippewa % distribution			Clare % distribution			Clinton % distribution			Crawford % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.8	7.3	9.4	5.8	7.7	11.1	5.4	6.1	8.7	4.9	5.9	7.9	8.4	10.2	9.2
Farmers and farm managers	28.8	16.5	5.4	12.9	8.1	4.0	31.3	18.5	7.0	32.1	20.5	10.5	7.2	3.7	.5
Managers, officials, and prop's, exc. farm	9.3	10.9	13.9	9.3	9.3	11.6	8.7	10.0	9.4	6.4	6.3	5.7	16.9	14.0	12.9
Clerical, sales, and kindred workers	9.3	12.4	15.7	12.1	16.0	18.5	9.2	12.6	13.8	8.7	12.2	16.4	11.6	13.1	15.6
Craftsmen, foremen, and kindred workers	9.0	13.8	13.3	8.2	12.6	16.0	8.3	12.2	15.0	8.7	13.5	16.1	12.5	12.7	11.8
Operatives and kindred workers	12.1	14.3	15.3	14.5	20.3	14.5	11.2	19.6	23.3	11.7	22.8	21.6	14.8	15.8	17.6
Private household workers	2.7	1.5	3.4	3.5	1.5	3.3	3.2	1.3	2.7	3.7	2.0	2.1	3.8	2.0	3.6
Service workers, except private household	5.5	9.6	11.0	15.5	9.0	9.9	4.9	6.6	8.9	3.7	4.9	6.7	13.5	11.0	13.2
Farm laborers and foremen	10.0	5.6	1.8	4.8	3.8	1.7	12.3	7.3	1.5	13.9	5.6	3.6	2.4	1.4	- -
Laborers, except farm and mine	6.7	6.4	5.5	12.2	10.5	5.6	4.0	4.5	4.5	5.3	4.6	3.4	7.7	13.4	11.6
Occupation not reported	.8	1.7	5.3	1.3	1.1	3.8	1.5	1.4	5.0	1.0	1.7	6.2	1.3	2.7	4.0
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.2	4.8	7.8	3.8	5.1	9.3	3.5	4.7	9.0	2.5	3.6	5.7	6.2	7.5	8.1
Farmers and farm managers	32.9	20.6	7.1	15.1	10.4	5.0	36.3	23.8	9.8	37.4	25.4	14.1	9.3	4.8	.8
Managers, officials, and prop's, exc. farm	9.9	11.5	17.4	10.0	10.5	13.9	8.5	11.2	11.3	6.7	7.0	7.0	17.6	15.7	15.5
Clerical, sales, and kindred workers	7.0	8.6	10.7	8.6	9.5	10.2	6.6	7.7	8.0	5.9	7.1	8.6	9.4	9.8	10.6
Craftsmen, foremen, and kindred workers	10.8	17.1	18.3	9.7	16.1	22.3	9.7	15.7	19.9	10.1	16.5	21.6	16.0	16.1	17.3
Operatives and kinderd workers	10.9	14.5	18.5	15.6	23.1	19.4	12.9	19.4	25.1	12.5	24.0	25.3	16.5	18.1	21.2
Private household workers	- -	.2	.6	.1	.1	.1	.3	.1	.2	.1	.1	.1	.4	.2	- -
Service workers, except private household	3.7	6.6	5.4	15.9	6.1	7.0	2.5	3.4	4.2	2.1	2.7	3.4	9.9	7.4	5.4
Farm laborers and foremen	11.9	6.5	2.2	5.7	4.5	1.9	14.3	7.5	1.9	15.9	6.4	4.1	3.2	1.4	- -
Laborers, except farm and mine	7.9	8.1	7.6	14.5	13.5	8.0	4.5	5.7	6.4	6.1	5.5	4.5	10.2	16.5	17.1
Occupation not reported	.7	1.6	4.4	1.0	1.1	3.0	1.0	.9	4.0	.8	1.7	5.7	1.3	2.5	4.1
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	13.3	16.6	13.4	15.1	16.3	15.5	16.3	10.9	7.9	18.8	14.9	13.6	15.2	19.2	11.2
Farmers and farm managers	9.5	1.2	.9	2.5	.7	1.5	2.6	1.4	- -	1.7	1.2	1.3	.5	- -	- -
Managers, officials, and prop's, exc. farm	6.4	8.8	4.8	6.0	5.5	6.1	9.7	6.2	4.8	4.7	3.8	2.3	14.8	8.5	8.2
Clerical, sales, and kindred workers	20.2	26.6	28.6	28.4	37.3	38.3	24.2	28.4	27.9	24.6	32.4	36.0	18.4	24.4	24.9
Craftsmen, foremen, and kindred workers	.6	1.7	.3	1.4	1.0	.9	.5	.9	3.3	1.1	1.8	2.2	1.4	1.1	1.4
Operatives and kindred workers	18.1	13.6	7.0	9.3	11.4	2.9	1.5	20.3	18.9	7.1	17.9	11.9	9.2	8.1	10.9
Private household workers	15.3	6.2	10.8	19.4	6.1	10.9	20.4	5.1	8.9	24.3	9.8	7.1	14.3	8.1	10.3
Service workers, except private household	13.6	20.7	25.5	13.5	18.2	16.9	18.6	16.6	20.4	12.7	13.3	15.1	24.9	23.3	27.7
Farm laborers and foremen	1.1	2.1	.9	.4	1.6	1.3	.8	6.6	.5	2.1	2.2	2.3	- -	1.1	- -
Laborers, except farm and mine	.6	.2	- -	1.2	.7	- -	1.3	.6	- -	1.0	.9	.7	- -	3.0	1.4
Occupation not reported	1.1	2.1	7.9	2.8	1.2	5.7	4.1	3.1	7.5	2.1	1.8	7.4	1.4	3.3	4.0

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Delta % distribution			Dickinson % distribution			Eaton % distribution			Emmet % distribution			Genesee % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	6.7	7.1	8.2	8.2	8.3	10.6	6.1	7.0	8.4	8.0	9.0	10.6	6.2	6.7	9.3
Farmers and farm managers	9.7	9.5	4.6	5.1	5.1	1.5	25.1	14.9	7.3	18.4	11.7	4.4	2.9	1.6	.7
Managers, officials, and prop's, exc. farm	10.3	9.4	10.4	10.6	8.8	9.9	7.0	6.6	6.4	10.8	10.2	12.2	6.2	5.9	5.7
Clerical, sales, and kindred workers	13.8	16.4	19.1	14.9	18.4	18.6	11.1	15.2	20.0	12.8	16.5	19.2	15.6	17.2	18.4
Craftsmen, foremen, and kindred workers	11.8	14.2	13.4	15.6	15.2	16.1	10.7	14.9	16.5	10.2	14.0	12.9	16.4	17.0	17.2
Operatives and kindred workers	13.0	18.0	21.2	23.6	23.2	20.4	16.6	23.6	22.3	11.3	15.9	13.1	31.7	37.5	31.2
Private household workers	4.2	1.1	2.3	3.0	.9	1.6	3.7	1.8	2.8	4.6	3.1	4.9	3.5	1.7	2.1
Service workers, except private household	6.4	7.0	10.3	6.3	7.4	10.1	3.9	5.2	7.3	7.1	8.9	12.3	6.4	6.8	7.2
Farm laborers and foremen	5.5	3.6	1.5	2.4	1.8	.8	8.9	4.8	2.2	8.6	3.5	1.5	1.9	.6	.4
Laborers, except farm and mine	16.9	12.3	6.8	9.3	10.0	6.0	5.2	4.0	3.7	7.1	6.0	6.3	8.3	3.8	3.8
Occupation not reported	1.8	1.4	2.2	.9	.9	4.3	1.8	1.9	3.1	1.2	1.2	2.6	.9	1.3	4.0
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.3	5.0	6.1	5.2	5.8	8.1	3.9	5.1	6.8	4.5	5.7	8.9	4.2	5.2	7.8
Farmers and farm managers	11.3	11.0	5.8	6.0	6.2	2.0	30.0	18.9	10.2	22.5	15.8	6.5	3.6	2.0	.9
Managers, officials, and prop's, exc. farm	11.5	10.9	12.7	11.5	10.0	12.8	7.7	7.4	7.9	12.6	11.9	15.1	7.0	6.6	6.9
Clerical, sales, and kindred workers	10.2	10.2	12.5	10.4	22.2	11.7	7.7	9.4	10.8	9.2	10.2	11.8	11.5	11.2	11.3
Craftsmen, foremen, and kindred workers	14.4	17.9	18.2	18.9	18.9	22.4	12.4	18.7	22.8	12.8	18.9	19.5	20.5	22.0	23.9
Operatives and kindred workers	15.2	20.6	26.6	27.9	26.2	24.4	17.6	25.7	26.4	13.0	19.0	18.0	35.5	41.9	35.2
Private household workers	.0	.1	.2	.1	.0	.1	.1	.0	.1	.2	.4	.5	.1	.1	.1
Service workers, except private household	4.2	4.6	5.2	4.7	5.6	5.7	2.6	3.3	4.2	4.2	4.9	5.6	4.7	4.6	4.4
Farm laborers and foremen	6.6	3.2	1.5	3.2	2.0	.9	10.6	5.2	2.9	10.6	4.1	2.3	2.3	.7	.5
Laborers, except farm and mine	20.7	15.4	9.4	11.2	12.4	8.5	6.1	5.0	4.9	9.1	8.1	9.5	9.8	4.8	5.2
Occupation not reported	1.5	1.1	1.7	.8	.8	3.3	1.4	1.3	3.0	1.2	1.0	2.2	.8	.8	3.8
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	17.1	14.9	13.6	21.6	18.4	16.3	16.5	13.7	12.2	20.7	17.7	13.8	13.8	11.5	12.9
Farmers and farm managers	2.4	3.8	1.5	.9	.9	.4	2.0	1.7	.7	3.7	.8	.4	.3	.2	.2
Managers, officials, and prop's, exc. farm	5.1	4.0	4.5	6.8	4.2	3.4	3.6	3.8	3.1	4.2	5.5	6.8	3.2	3.5	2.7
Clerical, sales, and kindred workers	29.1	39.6	35.9	35.3	43.0	33.9	27.1	34.6	41.0	25.8	33.7	33.0	30.8	36.0	35.8
Craftsmen, foremen, and kindred workers	.7	.6	1.1	.4	.6	1.8	2.6	2.3	1.9	.6	.9	.4	1.2	1.3	.8
Operatives and kindred workers	3.6	8.2	7.3	3.4	11.3	11.6	11.9	16.6	12.9	5.0	7.5	4.0	17.6	23.7	21.3
Private household workers	21.9	4.9	7.8	16.3	4.5	5.1	21.0	7.7	9.1	20.5	10.5	13.2	16.1	6.6	7.2
Service workers, except private household	15.6	16.2	23.2	13.3	14.3	9.7	10.2	11.6	14.2	17.4	19.6	24.8	12.8	13.6	14.1
Farm laborers and foremen	1.0	4.8	1.4	.6	1.0	.6	.9	3.5	.6	1.0	1.8	- -	.3	.3	.1
Laborers, except farm and mine	.5	.5	.2	.2	.6	.5	.8	.6	1.0	.1	.3	.2	2.8	.5	.5
Occupation not reported	3.1	2.5	3.4	1.1	1.2	6.6	3.4	3.9	3.4	1.1	1.6	3.3	1.1	2.8	4.4

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Gladwin % distribution			Gogebic % distribution			Grand Traverse % distribution			Gratiot % distribution			Hillsdale % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.2	6.6	9.4	8.2	7.9	8.8	9.1	10.1	13.4	6.2	7.0	9.5	5.8	6.8	8.5
Farmers and farm managers	40.6	28.8	12.1	3.5	2.3	.9	18.0	9.5	4.4	31.3	22.8	10.3	32.5	29.5	14.5
Managers, officials, and prop's, exc. farm	7.2	6.8	9.7	9.3	8.5	7.4	9.4	10.3	9.5	7.9	8.2	7.0	7.6	6.2	6.0
Clerical, sales, and kindred workers	5.8	10.0	13.8	13.7	13.8	16.8	14.9	18.8	20.3	10.4	14.0	17.9	8.6	13.8	13.3
Craftsmen, foremen, and kindred workers	9.2	12.2	13.8	13.6	15.5	14.2	10.8	13.6	12.1	8.2	12.2	12.4	9.9	11.8	14.2
Operatives and kindred workers	7.7	12.8	18.1	28.7	33.3	33.4	11.4	13.5	15.9	9.8	16.1	23.3	10.9	18.7	24.7
Private household workers	2.2	1.3	3.6	2.3	1.0	1.3	4.7	1.8	2.2	3.4	1.9	3.2	3.2	2.0	2.6
Service workers, except private household	2.6	5.0	7.6	8.4	7.9	9.8	8.7	12.2	14.2	4.3	5.6	8.8	3.6	6.0	8.2
Farm laborers and foremen	14.9	10.5	5.7	1.2	1.4	.4	7.3	4.2	2.0	12.3	6.9	2.5	11.9	- -	- -
Laborers, except farm and mine	3.9	4.7	4.0	10.3	7.3	4.2	5.0	3.7	2.8	4.6	4.3	3.2	4.8	3.4	3.8
Occupation not reported	.7	1.2	2.2	.7	1.0	2.9	.7	2.3	3.0	1.6	1.0	1.9	1.2	20.0	4.2
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	3.3	4.5	8.4	5.5	5.5	6.8	5.5	7.1	11.1	3.8	4.7	7.2	3.4	4.5	6.3
Farmers and farm managers	44.9	34.4	15.7	3.8	2.6	1.2	22.9	13.0	6.3	36.9	28.3	14.6	38.1	35.4	19.0
Managers, officials, and prop's, exc. farm	7.0	7.2	10.1	10.1	9.4	8.8	11.4	12.5	12.9	8.6	9.2	8.8	8.1	6.9	7.1
Clerical, sales, and kindred workers	3.8	5.5	7.1	9.4	8.2	9.0	11.1	12.8	13.4	6.9	8.0	9.6	5.9	8.6	7.5
Craftsmen, foremen, and kindred workers	10.2	14.8	18.3	16.3	18.9	18.8	14.0	18.7	18.6	9.6	15.1	17.4	11.6	14.4	19.3
Operatives and kindred workers	8.4	14.9	23.2	33.9	38.4	42.1	11.6	14.9	18.0	10.9	18.4	27.3	10.3	20.4	27.7
Private household workers	- -	.1	- -	.1	.1	.1	.3	.1	.1	.1	.1	.1	.1	.1	.1
Service workers, except private household	1.1	2.6	3.4	6.6	6.0	5.2	6.5	8.1	9.8	2.7	3.1	5.4	2.1	3.6	3.8
Farm laborers and foremen	16.6	9.4	6.3	1.4	1.2	.5	9.6	5.7	3.1	14.1	7.0	3.3	13.9	- -	- -
Laborers, except farm and mine	4.0	5.7	5.2	12.3	8.8	5.4	6.4	5.0	4.3	15.4	5.3	4.4	5.3	4.1	5.2
Occupation not reported	.6	1.0	2.3	.6	.8	2.1	.7	2.1	2.4	1.3	.8	2.0	1.0	1.7	4.1
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	20.3	16.1	12.4	21.5	18.1	14.4	19.9	17.4	17.5	19.0	15.7	14.9	18.1	15.3	14.1
Farmers and farm managers	5.7	4.3	1.6	2.4	1.0	- -	3.1	1.1	.9	2.3	2.0	.5	4.8	6.6	3.1
Managers, officials, and prop's, exc. farm	8.3	5.2	8.7	5.5	4.7	3.6	3.3	5.0	3.5	4.0	4.5	2.8	4.6	3.4	3.2
Clerical, sales, and kindred workers	22.7	30.1	33.2	35.1	37.4	38.0	26.4	32.9	32.6	28.7	37.0	36.9	22.3	33.7	27.9
Craftsmen, foremen, and kindred workers	1.0	.7	.6	.3	1.0	1.7	1.2	1.0	.3	.9	1.2	1.2	1.3	1.5	1.3
Operatives and kindred workers	2.3	3.9	3.5	2.5	11.5	10.1	10.9	9.9	12.2	5.8	7.2	14.0	14.1	11.9	17.4
Private household workers	20.3	6.3	14.0	13.1	4.9	4.7	17.7	6.1	6.4	20.6	8.8	10.3	19.2	8.9	9.0
Service workers, except private household	14.3	16.0	19.6	17.5	16.4	22.0	15.6	22.3	22.1	12.7	15.2	16.5	11.3	15.0	19.4
Farm laborers and foremen	1.0	15.1	4.0	.6	2.3	- -	.4	.7	.2	2.5	6.3	.7	- -	- -	- -
Laborers, except farm and mine	2.3	.4	.5	.3	.8	.8	.7	.5	.1	.4	.5	.4	2.1	.7	.2
Occupation not reported	1.7	2.0	1.9	1.2	1.9	4.8	.8	2.9	4.0	3.0	1.5	1.7	2.4	3.1	4.4

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Houghton % distribution			Huron % distribution			Ingham % distribution			Ionia % distribution			Iosco % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	8.3	9.4	12.7	4.6	5.6	8.3	9.9	12.9	15.5	6.0	6.1	8.1	6.5	6.7	10.8
Farmers and farm managers	8.2	7.5	3.8	36.7	31.5	22.6	5.0	2.9	1.5	24.2	16.1	8.0	23.9	15.2	6.3
Managers, officials, and prop's, exc. farm	8.6	9.1	7.7	6.4	7.1	6.9	8.8	6.6	7.8	7.7	6.8	6.9	11.8	13.6	14.4
Clerical, sales, and kindred workers	14.3	15.4	16.7	6.5	9.6	13.5	22.9	25.2	26.0	9.3	13.2	13.8	9.2	11.7	15.5
Craftsmen, foremen, and kindred workers	12.0	14.0	15.7	5.0	9.7	12.3	13.8	14.2	12.9	9.6	11.9	12.2	9.8	15.1	13.1
Operatives and kindred workers	27.9	22.0	19.6	6.6	11.3	15.7	19.6	20.8	15.6	16.2	25.4	26.9	9.8	15.0	14.8
Private household workers	3.9	1.3	2.4	2.6	1.6	1.9	3.8	1.2	2.1	3.5	1.9	2.5	2.5	1.7	2.6
Service workers, except private household	6.4	7.8	10.7	2.8	4.4	7.4	7.9	9.8	10.6	5.3	7.5	9.1	5.5	7.1	11.2
Farm laborers and foremen	3.9	3.7	.7	19.6	10.9	5.9	2.2	1.2	.9	10.9	5.6	3.5	10.0	4.3	.5
Laborers, except farm and mine	6.0	8.9	4.6	7.8	5.7	3.7	5.2	2.9	2.7	6.0	4.2	4.1	9.5	7.3	6.5
Occupation not reported	.6	.9	5.4	1.3	2.6	1.9	.8	2.3	4.4	1.1	1.3	4.9	1.5	2.3	4.4
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.0	6.2	10.4	3.1	3.8	4.9	8.4	11.9	15.6	3.8	4.3	5.8	4.5	5.0	8.3
Farmers and farm managers	9.9	9.0	5.0	41.2	37.4	29.2	6.6	4.0	2.1	29.7	20.8	15.3	27.3	19.1	8.4
Managers, officials, and prop's, exc. farm	9.5	10.3	8.8	6.8	7.6	8.0	10.7	8.2	10.1	8.3	7.7	8.2	11.8	14.2	17.5
Clerical, sales, and kindred workers	10.0	9.0	9.5	4.2	5.1	7.3	15.6	15.4	15.6	7.1	8.4	8.3	6.5	6.6	9.4
Craftsmen, foremen, and kindred workers	14.7	17.3	21.0	5.7	11.6	16.0	18.2	19.6	18.9	11.1	15.1	16.5	11.4	19.1	18.5
Operatives and kindred workers	33.6	26.5	25.4	6.0	11.5	17.9	23.9	26.0	20.3	14.2	24.9	29.0	11.1	16.6	17.5
Private household workers	.1	.1	- -	.1	.1	.2	.1	.1	.1	.1	- -	- -	.2	.1	- -
Service workers, except private household	4.6	5.5	8.0	1.6	2.5	3.5	5.9	7.9	7.8	4.2	6.3	7.0	3.5	4.1	6.5
Farm laborers and foremen	4.7	4.2	.9	21.5	11.7	6.7	2.9	1.5	1.2	13.3	6.1	- -	11.5	4.2	.7
Laborers, except farm and mine	7.3	11.0	6.2	8.8	6.7	4.8	6.9	4.0	3.9	7.1	5.3	5.1	11.0	9.1	9.4
Occupation not reported	.5	1.0	4.7	1.0	2.1	1.6	.8	1.5	4.3	.9	1.0	4.9	1.2	1.9	3.8
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	22.6	21.1	19.1	14.9	14.6	18.8	14.3	15.4	15.5	15.4	12.1	13.7	17.9	12.5	16.3
Farmers and farm managers	1.0	1.6	.4	6.4	3.0	1.8	.3	.5	.2	1.1	1.2	.6	4.8	1.8	1.5
Managers, officials, and prop's, exc. farm	4.6	4.3	4.5	4.1	4.8	3.4	3.5	2.7	3.3	5.3	3.7	3.6	11.8	11.8	7.7
Clerical, sales, and kindred workers	32.8	41.3	37.1	22.2	31.3	32.9	43.8	48.4	46.2	18.6	28.0	27.4	24.4	29.6	28.8
Craftsmen, foremen, and kindred workers	.5	1.1	.6	.4	.6	.7	1.1	1.5	1.1	3.1	1.8	1.5	.6	1.1	1.2
Operatives and kindred workers	3.3	4.2	3.4	10.3	10.1	8.8	7.6	8.4	6.5	24.6	26.9	21.8	2.2	9.6	8.8
Private household workers	20.3	6.4	9.0	20.0	9.2	7.3	14.4	3.9	6.0	17.7	7.9	8.7	15.7	7.2	8.2
Service workers, except private household	14.0	16.9	18.4	10.8	13.5	19.6	13.5	14.2	16.0	9.9	11.4	14.0	16.8	17.5	20.9
Farm laborers and foremen	.2	1.5	- -	6.8	6.9	3.4	.2	.5	.2	.8	4.1	1.9	1.4	4.8	- -
Laborers, except farm and mine	.1	.6	- -	.9	.9	.2	.5	.3	.5	1.4	.8	1.6	1.1	.8	.3
Occupation not reported	.7	1.1	7.4	3.1	5.1	3.2	.8	4.4	4.5	2.1	2.1	5.1	3.4	3.4	6.3

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Iron			Isabella			Jackson			Kalamazoo			Kalkaska		
	% distribution			% distribution			% distribution			% distribution			% distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	8.6	7.1	9.7	6.2	8.8	12.2	7.5	8.9	10.7	8.3	10.4	13.3	6.1	6.6	10.3
Farmers and farm managers	7.3	6.1	1.7	30.6	21.9	9.0	8.0	4.6	2.1	5.8	3.0	1.6	44.7	29.6	7.7
Managers, officials, and prop's, exc. farm	9.5	8.1	8.9	7.6	7.5	6.7	8.5	8.7	7.6	8.1	8.8	7.8	6.2	8.8	9.7
Clerical, sales, and kindred workers	12.3	12.4	14.4	9.0	14.3	18.2	17.5	19.7	21.3	17.9	20.3	21.7	3.5	8.9	16.5
Craftsmen, foremen and kindred workers	12.2	13.7	15.3	8.0	12.2	11.1	15.4	16.4	15.0	14.5	16.3	14.2	3.5	10.3	13.6
Operatives and kindred workers	26.7	32.5	31.6	12.2	15.1	16.1	22.2	24.6	23.0	25.4	24.6	20.7	5.5	13.0	19.4
Private household workers	2.5	1.2	.9	4.0	1.8	4.4	3.6	2.0	1.8	3.3	1.6	2.0	2.9	1.6	2.3
Service workers, except private household	7.9	7.9	10.4	4.4	7.4	12.5	7.8	8.4	9.4	6.8	8.4	9.0	3.5	5.2	8.6
Farm laborers and foremen	2.7	4.0	.8	13.0	6.0	2.2	3.4	1.9	1.3	2.5	1.2	.9	11.9	8.7	3.6
Laborers, except farm and mine	9.7	4.4	4.9	3.8	3.6	4.8	5.1	3.7	3.6	5.9	4.3	3.7	11.4	5.4	7.1
Occupation not reported	.5	2.6	1.2	1.2	1.5	2.9	1.0	1.3	4.2	1.4	1.1	5.2	.7	1.9	1.3
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.7	5.4	7.0	4.2	6.5	10.6	6.1	7.7	9.5	6.0	8.5	12.4	3.1	3.6	8.6
Farmers and farm managers	8.6	7.0	2.0	36.1	27.5	13.0	10.4	6.2	2.8	7.8	4.3	2.3	49.0	35.9	10.6
Managers, officials, and prop's, exc. farm	10.1	8.9	10.3	8.4	8.4	8.9	10.2	10.3	9.4	9.8	10.9	10.3	5.7	8.8	10.4
Clerical, sales, and kindred workers	8.2	6.7	7.0	6.3	8.5	10.4	13.0	13.0	13.2	13.7	13.7	13.9	2.8	5.3	11.4
Craftsmen, foremen, and kindred workers	14.7	16.7	20.0	9.5	15.0	16.3	20.1	22.1	21.2	19.1	22.3	20.7	4.0	12.6	19.2
Operatives and kindred workers	31.4	39.1	39.3	13.1	16.2	20.2	22.2	25.7	26.5	26.3	25.9	22.9	6.2	13.5	20.0
Private household workers	.2	.2	- -	- -	- -	.2	.3	.1	.1	.2	.1	.2	- -	.1	- -
Service workers, except private household	5.9	5.9	5.7	2.6	4.6	8.1	6.3	6.5	6.4	5.0	6.2	5.9	2.1	3.5	5.5
Farm laborers and foremen	3.1	3.1	1.1	14.7	7.4	2.8	4.4	2.3	1.7	3.3	1.5	1.0	13.6	9.0	3.7
Laborers, except farm and mine	11.6	5.4	6.3	4.3	4.5	6.6	6.2	4.9	5.1	7.6	5.8	5.4	13.1	6.5	9.8
Occupation not reported	.5	1.6	1.1	.9	1.2	2.9	.8	1.1	4.3	1.2	.9	5.0	.4	1.2	.9
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	23.0	14.5	18.3	16.2	17.4	15.5	12.0	11.9	13.6	14.9	14.9	15.0	26.9	19.1	14.0
Farmers and farm managers	1.1	2.6	.7	3.4	.9	1.1	.7	.4	.4	.3	.2	.3	15.2	3.6	1.0
Managers, officials, and prop's, exc. farm	6.5	4.4	4.6	4.0	3.7	2.5	3.2	4.3	3.6	3.1	4.0	2.7	9.4	8.7	8.3
Clerical, sales, and kindred workers	32.6	37.5	38.0	22.1	35.8	33.4	31.2	36.9	37.4	29.9	35.7	37.0	8.8	24.2	28.0
Craftsmen, foremen, and kindred workers	- -	.5	- -	1.0	1.5	.8	1.1	1.6	1.4	1.4	2.1	1.2	.6	.8	1.0
Operatives and kindred workers	3.6	3.6	7.4	7.7	10.7	8.0	22.3	21.6	15.4	22.5	21.6	16.5	.6	11.1	18.0
Private household workers	13.9	5.7	3.9	23.5	8.4	12.7	13.8	6.5	5.7	12.4	5.2	5.7	22.8	7.9	7.5
Service workers, except private household	17.6	16.5	25.4	13.3	17.6	21.1	12.2	13.4	15.9	11.9	13.6	14.9	12.9	11.9	15.8
Farm laborers and foremen	.9	8.0	- -	4.6	.8	1.0	.2	.8	.4	.2	.5	.7	- -	7.5	3.3
Laborers, except farm and mine	- -	.1	.3	1.3	.5	1.1	1.8	.7	.3	1.3	.8	.5	- -	.8	1.0
Occupation not reported	.7	6.6	1.4	2.8	2.6	2.8	1.4	2.0	3.9	2.1	1.5	5.5	2.9	4.4	2.3

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Kent			Keweenaw			Lake			Lapeer			Leelanau		
	% distribution			% distribution			% distribution			% distribution			% distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	7.6	8.6	11.1	3.9	3.4	4.1	5.6	6.1	5.8	6.3	5.9	8.6	5.6	7.2	9.6
Farmers and farm managers	6.7	3.5	1.8	6.1	2.6	.7	50.4	31.0	10.7	30.1	20.6	9.8	39.0	28.2	11.8
Managers, officials, and prop's, exc. farm	9.0	9.1	8.4	9.0	7.4	5.5	9.9	9.1	10.4	6.0	5.8	5.9	7.7	6.6	7.4
Clerical, sales, and kindred workers	20.4	21.9	23.9	7.5	9.4	11.5	5.8	10.2	14.5	7.2	11.7	12.8	4.7	9.5	16.5
Craftsmen, foremen, and kindred workers	15.3	16.5	15.3	12.3	16.9	21.8	6.9	10.5	15.8	8.2	11.7	14.8	5.3	11.7	13.7
Operatives and kindred workers	24.8	26.4	22.9	43.2	45.1	38.9	6.7	9.8	12.5	11.6	21.0	23.6	6.1	10.2	15.4
Private household workers	3.7	1.7	2.1	2.9	.4	- -	3.1	2.5	5.7	2.7	1.0	2.3	3.9	1.7	2.7
Service workers, except private household	6.9	7.1	7.7	6.2	4.7	9.8	5.3	6.9	10.1	4.9	7.5	10.7	3.7	5.1	8.7
Farm laborers and foremen	2.2	1.0	.6	.5	- -	- -	11.9	9.7	1.8	16.5	8.4	4.9	17.0	11.5	5.7
Laborers, except farm and mine	4.7	4.1	3.7	8.3	9.5	7.2	5.8	11.8	11.4	4.8	4.1	3.5	6.5	5.0	6.0
Occupation not reported	1.0	1.0	3.2	.5	.6	.7	.5	2.1	3.0	1.8	2.4	3.0	.6	3.2	2.4
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.4	7.0	9.6	2.6	2.6	4.7	3.4	4.9	4.6	3.3	3.5	5.8	3.5	4.4	7.7
Farmers and farm managers	8.8	4.8	2.5	6.6	2.9	.8	56.5	33.8	13.0	35.0	25.5	13.4	43.1	33.6	15.5
Managers, officials, and prop's, exc. farm	11.1	11.5	11.1	9.3	6.9	3.2	10.0	8.5	11.9	6.2	6.2	7.3	7.3	6.6	8.8
Clerical, sales, and kindred workers	16.1	15.4	16.7	4.4	5.3	6.0	4.7	7.7	7.9	4.8	7.4	7.3	3.0	5.8	7.6
Craftsmen, foremen, and kindred workers	20.1	22.2	22.1	13.5	18.2	24.5	7.8	13.1	21.9	9.5	14.3	20.5	6.0	14.0	19.6
Operatives and kindred workers	26.7	28.0	24.9	48.1	49.2	45.1	6.9	11.2	16.8	12.5	23.1	28.0	6.6	10.9	16.4
Private household workers	.1	.1	.1	- -	.2	- -	.2	.3	.4	.2	.1	.1	.4	.2	.2
Service workers, except private household	5.1	5.1	5.0	5.7	3.9	6.6	3.4	4.1	5.1	2.4	4.0	4.5	2.8	3.0	6.6
Farm laborers and foremen	2.8	1.2	.8	.6	- -	- -	13.5	7.4	2.2	19.2	9.1	5.6	19.6	13.2	7.5
Laborers, except farm and mine	5.9	5.2	5.1	9.3	10.4	8.3	6.7	14.7	15.4	5.4	4.9	4.8	7.3	6.0	8.4
Occupation not reported	.8	.8	2.9	.6	.5	.8	.4	1.7	3.0	1.5	2.0	2.8	.4	2.2	1.8
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	14.1	12.7	14.0	15.6	12.7	- -	19.2	10.5	8.8	23.4	15.8	15.5	19.6	21.0	14.0
Farmers and farm managers	.5	.4	.4	1.6	- -	- -	11.9	20.7	5.1	2.7	.8	.8	12.4	2.2	3.1
Managers, officials, and prop's, exc. farm	3.1	3.2	2.8	6.3	12.7	20.0	9.6	11.5	6.7	4.8	4.3	2.6	10.3	6.6	4.2
Clerical, sales, and kindred workers	32.7	38.4	38.4	34.4	52.4	45.9	13.0	19.7	30.7	20.6	29.2	26.5	15.2	27.6	37.1
Craftsmen, foremen, and kindred workers	1.3	2.0	1.6	1.6	3.2	4.7	1.1	.6	.9	1.2	.9	.7	.6	.9	- -
Operatives and kindred workers	19.4	22.6	18.8	1.6	1.6	- -	5.1	4.3	1.9	6.5	12.5	12.7	2.8	6.8	13.1
Private household workers	14.2	5.8	6.2	28.1	3.2	- -	21.5	10.8	18.8	16.7	4.9	7.7	26.4	8.8	8.6
Service workers, except private household	12.0	12.1	13.2	10.9	12.7	29.4	17.5	17.7	22.3	18.6	21.9	26.1	9.0	14.9	13.6
Farm laborers and foremen	.2	.3	.2	- -	- -	- -	2.3	18.4	.9	1.3	5.4	3.1	.6	3.1	1.6
Laborers, except farm and mine	1.3	1.2	.8	- -	- -	- -	- -	.6	1.6	1.1	.5	.4	1.2	.2	.6
Occupation not reported	1.4	1.5	3.9	- -	1.6	- -	1.1	3.6	3.0	3.1	3.8	3.7	1.9	8.1	4.1

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES 1940, 1950 and 1960

	Lenawee			Livingston			Luce			Mackinac			Macomb		
	% distribution			% distribution			% distribution			% distribution			% distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	10.8	6.9	9.9	6.8	7.8	10.2	7.8	9.3	12.5	5.3	5.6	8.9	5.5	5.8	11.9
Farmers and farm managers	20.9	13.0	6.6	26.2	17.3	6.1	5.2	4.2	.8	13.1	9.3	4.4	7.4	3.3	.9
Managers, officials, and prop's, exc. farm	12.7	7.6	7.2	7.0	7.0	7.0	8.3	8.8	9.3	13.7	16.6	12.9	6.1	6.1	6.6
Clerical, sales, and kindred workers	11.2	14.8	16.5	9.8	14.5	18.1	9.5	12.9	13.2	8.3	9.9	15.7	12.3	17.0	22.7
Craftsmen, foremen, and kindred workers	9.8	12.7	12.4	10.1	16.2	16.5	11.5	11.6	9.6	10.6	13.3	16.8	18.8	23.2	20.8
Operatives and kindred workers	15.9	26.1	26.6	10.1	18.5	20.8	14.1	15.4	10.9	11.6	15.6	13.2	26.7	29.8	22.5
Private household workers	3.4	2.1	2.7	2.7	1.3	2.3	3.5	2.1	4.1	3.5	1.3	2.1	2.5	1.0	1.1
Service workers, except private household	4.3	5.9	8.0	5.0	6.5	7.8	14.7	22.3	28.9	8.1	10.0	13.2	6.8	6.2	7.0
Farm laborers and foremen	7.7	3.5	1.8	13.5	5.0	2.7	3.1	2.7	.6	6.4	2.9	1.0	5.1	1.8	.5
Laborers, except farm and mine	6.6	5.9	4.1	7.6	3.8	3.6	21.9	10.4	7.7	18.6	14.1	8.6	7.3	4.3	3.0
Occupation not reported	1.9	1.5	4.0	1.2	2.0	4.7	.4	.4	2.3	.9	1.3	3.2	1.4	1.5	3.0
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.0	4.9	7.5	4.3	5.8	7.8	4.7	6.3	12.6	3.6	3.6	7.1	4.2	4.8	12.1
Farmers and farm managers	26.8	16.9	9.1	30.9	21.3	8.4	5.9	5.5	1.3	15.0	11.0	5.8	8.6	4.0	1.2
Managers, officials, and prop's, exc. farm	8.7	8.7	8.7	7.7	7.9	9.0	9.5	10.7	12.8	14.2	16.9	13.9	6.6	6.8	7.9
Clerical, sales, and kindred workers	8.5	9.6	9.0	6.3	9.0	9.7	6.0	8.5	7.7	5.6	6.0	7.8	9.7	10.5	13.7
Craftsmen, foremen, and kindred workers	12.5	16.3	17.1	12.0	20.7	23.3	14.4	16.2	15.2	12.6	15.8	23.9	22.1	28.9	27.7
Operatives and kindred workers	17.1	27.7	32.4	10.1	19.7	24.6	17.3	19.7	14.9	13.2	17.9	17.5	28.0	32.2	25.4
Private household workers	.2	.1	.2	.1	.1	- -	.5	- -	.3	.3	.1	.2	.1	.1	- -
Service workers, except private household	2.8	3.5	4.0	3.3	4.0	4.1	10.1	14.5	20.1	5.8	7.1	9.4	5.7	4.2	4.7
Farm laborers and foremen	9.8	3.9	2.3	16.0	5.7	3.3	3.7	3.8	.6	7.2	3.3	.5	5.8	1.8	.6
Laborers, except farm and mine	8.2	7.2	5.5	8.5	4.7	4.9	27.7	14.3	12.0	22.0	16.7	11.6	8.1	5.3	3.9
Occupation not reported	1.6	1.3	4.3	.9	1.1	4.7	.3	.5	2.6	.7	1.4	2.2	1.1	1.4	2.8
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	34.0	13.5	15.9	19.0	14.6	15.8	19.4	16.8	12.6	14.7	15.5	13.3	12.8	9.8	11.3
Farmers and farm managers	.9	.8	.6	3.1	3.4	.9	2.4	.9	- -	3.2	.8	1.0	.9	.6	.3
Managers, officials, and prop's, exc. farm	3.3	4.2	3.5	4.0	4.0	2.4	3.7	4.1	3.5	10.9	14.9	10.5	3.6	3.4	3.0
Clerical, sales, and kindred workers	20.6	31.1	35.1	27.0	33.3	37.6	23.1	23.9	22.3	22.6	29.3	34.5	26.7	41.5	48.1
Craftsmen, foremen, and kindred workers	.7	1.3	.9	.9	1.1	.8	.5	- -	.5	.3	1.1	- -	1.2	1.7	1.0
Operatvies and kindred workers	12.1	20.9	12 3	10.3	14.7	12.1	2.4	4.5	4.3	3.0	4.2	3.1	19.6	20.7	14.1
Private household workers	14.3	8.5	8.9	15.2	5.2	7.5	15.0	7.3	10.3	20.9	6.8	6.6	15.3	4.4	4.1
Service workers, except private household	9.3	13.3	18.0	13.4	14.7	16.5	32.0	41.7	43.3	20.4	24.0	22.1	12.8	13.4	13.6
Farm laborers and foremen	.6	2.1	.7	1.2	2.9	1.3	.8	- -	.5	1.9	1.1	2.1	1.3	1.8	.3
Laborers, except farm and mine	1.3	1.9	.5	2.8	.7	.4	- -	.6	.8	.3	1.3	1.2	2.7	.8	.5
Occupation not reported	2.8	2.4	3.5	3.0	5.4	4.7	.8	.2	1.9	1.9	1.1	5.7	3.1	1.8	3.8

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Manistee % distribution			Marquette % distribution			Mason % distribution			Mecosta % distribution			Menominee % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	6.4	7.0	9.0	8.3	8.9	12.4	5.8	6.1	8.8	6.8	7.3	13.4	6.1	6.5	9.5
Farmers and farm managers	17.5	11.6	4.3	3.0	2.3	.5	25.9	16.3	7.4	35.8	24.2	7.8	20.6	16.3	9.0
Managers, officials, and prop's, exc. farm	9.0	7.2	8.2	8.2	8.1	8.2	8.9	8.6	8.4	8.0	8.4	8.4	7.6	7.4	8.8
Clerical, sales, and kindred workers	10.2	15.1	15.8	14.0	15.8	15.7	10.3	13.9	14.6	8.1	13.6	18.2	11.1	12.6	14.2
Craftsmen, foremen, and kindred workers	11.3	15.4	16.8	12.7	14.1	15.1	8.8	13.8	15.4	8.7	10.3	12.4	9.8	10.4	13.8
Operatives and kindred workers	19.6	22.5	23.2	30.7	30.5	23.7	15.3	21.6	23.5	8.6	17.5	17.3	16.4	20.4	22.8
Private household workers	2.7	1.4	1.4	2.7	1.1	1.9	2.9	1.6	1.6	2.8	1.9	2.7	3.4	1.7	2.4
Service workers, except private household	5.8	6.8	9.9	7.9	8.3	11.5	4.8	7.1	7.9	3.6	6.0	9.0	4.5	6.3	8.1
Farm laborers and foremen	6.4	4.8	2.1	1.7	1.0	.4	9.9	6.0	2.4	12.9	5.4	3.2	10.8	8.4	2.2
Laborers, except farm and mine	10.0	8.8	7.2	10.1	8.9	4.5	5.2	4.0	6.3	3.5	3.7	4.7	8.8	9.5	7.0
Occupation not reported	1.0	1.0	2.2	.8	.9	6.0	.6	1.0	3.7	1.3	1.6	2.8	1.0	.5	2.2
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.6	5.2	6.6	5.1	6.3	10.9	3.5	4.1	6.4	4.3	5.3	12.3	3.7	4.4	7.6
Farmers and farm managers	21.6	14.9	5.9	3.5	2.8	.7	30.6	20.2	9.6	40.5	30.5	10.7	23.9	20.3	11.8
Managers, officials, and prop's, exc. farm	10.5	8.3	10.9	9.6	9.3	9.8	9.8	9.6	10.1	8.4	9.2	9.9	8.2	8.4	10.3
Clerical, sales, and kindred workers	7.3	10.9	7.7	10.4	10.1	9.1	7.2	8.8	9.3	5.4	8.8	11.7	8.1	7.8	9.4
Craftsmen, foremen, and kindred workers	14.0	20.0	23.4	15.9	18.1	20.4	10.5	17.4	20.3	10.0	13.0	16.4	11.5	13.0	18.3
Operatives and kindred workers	16.0	20.7	24.5	33.9	33.7	28.7	14.7	23.0	24.5	9.5	17.0	19.8	17.4	21.5	24.7
Private household workers	-.-	- -	- -	.2	.1	- -	.1	.2	.2	- -	.1	.3	.1	- -	.1
Service workers, except private household	4.7	5.2	6.5	6.2	6.5	7.9	3.5	5.6	5.5	2.0	3.5	5.9	3.3	4.1	3.9
Farm laborers and foremen	8.2	5.0	2.7	1.8	1.0	.6	13.7	5.5	2.5	14.6	6.5	4.2	12.6	7.8	2.5
Laborers, except farm and mine	12.3	11.2	10.0	12.7	11.4	5.9	5.8	4.8	8.1	4.0	4.6	6.3	10.5	12.0	9.4
Occupation not reported	.7	.7	1.8	.6	.7	5.9	.6	.9	3.5	1.2	1.5	2.5	.8	.5	2.0
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	13.0	12.5	14.6	19.8	17.1	16.5	16.4	13.4	15.0	22.2	14.7	16.2	18.8	13.4	14.8
Farmers and farm managers	3.1	1.5	.6	1.0	.8	.1	4.3	2.1	1.8	6.6	1.6	.7	3.4	2.7	1.2
Managers, officials, and prop's, exc. farm	3.6	3.6	2.1	3.3	4.3	4.0	4.9	5.0	3.7	5 8	5.5	4.9	4.3	3.8	4.3
Clerical, sales and kindred workers	21.3	28.2	34.3	27.0	34.2	33.3	24.6	32.2	28.5	24.6	30.9	34.4	26.9	29.0	28.0
Craftsmen, foremen, and kindred workers	1.4	1.1	1.6	.7	1.4	.9	.9	.9	2.6	.3	.8	2.5	.9	1.5	1.0
Operatives and kindred workers	32.5	28.2	20.1	19.2	20.3	10.5	17.9	16.6	20.8	2.8	19.2	10.9	11.0	16.5	17.3
Private household workers	12.3	5.9	4.5	11.8	4.4	6.7	15.6	6.7	5.3	20.2	8.3	8.7	20.4	7.2	8.9
Service workers, except private household	9.5	11.8	17.7	14.1	13.9	21.2	10.7	12.7	14.4	13.6	15.0	16.7	11.1	14.0	20.2
Farm laborers and foremen	.3	4.1	.8	1.3	1.3	- -	1.3	7.7	2.2	2.1	1.6	.8	.9	10.1	1.2
Laborers, except farm and mine	.9	1.3	.5	.6	.8	.6	2.4	1.1	1.6	.1	.4	.7	.3	1.1	.2
Occupation not reported	1.9	1.9	3.1	1.2	1.5	6.1	1.2	1.6	4.0	1.7	2.1	3.6	2.0	.6	2.8

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS BY SEX, FOR COUNTIES, 1940, 1950 and 1960

OCCUPATION	Midland % distribution			Missaukee % distribution			Monroe % distribution			Montcalm % distribution			Montmorency % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	10.9	14.9	19.5	5.8	5.6	9.5	4.9	6.0	7.6	5.6	6.7	8.7	7.0	7.8	8.9
Farmers and farm managers	15.8	8.3	2.0	43.9	36.0	20.7	16.5	9.4	4.0	34.4	21.3	9.4	40.1	22.8	10.6
Managers, officials, and prop's, exc. farm	6.2	7.3	7.7	5.6	5.7	6.1	6.3	6.6	6.4	7.7	7.1	6.3	8.8	9.4	10.5
Clerical, sales, and kindred workers	10.8	16.6	17.7	4.1	8.2	12.0	11.3	15.0	17.8	8.2	12.6	14.5	5.1	10.8	15.6
Craftsmen, foremen, and kindred workers	13.7	17.6	16.8	4.8	9.0	9.5	11.8	16.2	17.0	7.9	11.4	12.5	3.9	11.6	11.9
Operatives and kindred workers	19.6	19.7	16.3	5.5	10.5	15.7	21.1	28.6	26.8	12.7	21.0	27.8	5.5	11.5	11.3
Private household workers	4.8	2.2	3.5	3.1	1.7	2.8	2.9	1.4	1.8	3.7	2.1	2.6	2.7	1.7	4.5
Service workers, except private household	4.7	6.5	7.3	1.7	3.6	5.5	4.7	6.1	8.0	3.4	5.7	6.5	2.9	8.2	10.7
Farm laborers and foremen	6.4	1.9	.6	20.0	12.5	6.4	8.1	2.7	1.6	9.7	6.3	3.4	17.3	7.8	3.1
Laborers, except farm and mine	5.9	4.2	3.4	4.7	4.4	6.3	.5	6.7	5.3	5.6	4.0	4.0	6.3	7.9	11.8
Occupation not reported	1.1	.8	5.0	.7	2.7	5.4	2.0	1.3	3.7	1.2	1.8	4.3	.5	.6	1.0
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	10.0	14.3	19.9	3.4	3.1	6.4	2.6	4.1	5.9	3.4	4.6	7.1	4.1	5.2	8.4
Farmers and farm managers	18.6	10.2	2.9	49.1	42.2	26.4	19.4	11.6	5.2	40.6	27.2	13.0	44.0	27.5	14.6
Managers, officials, and prop's, exc. farm	6.7	7.9	9.1	5.8	5.8	6.7	7.0	7.5	7.7	8.2	8.3	7.6	9.0	10.2	11.8
Clerical, sales, and kindred workers	6.9	9.8	10.5	2.7	4.7	8.9	8.1	9.3	10.0	5.7	7.4	7.8	3.7	6.7	7.5
Craftsmen, foremen, and kindred workers	16.2	21.8	22.3	5.3	10.8	12.4	14.0	20.0	22.6	9.2	14.3	17.4	4.4	13.8	16.5
Operatives and kindred workers	22.7	22.9	20.7	5.3	10.1	17.4	22.4	31.4	32.2	12.5	21.6	30.4	6.1	12.9	14.7
Private household workers	.1	- -	.1	- -	.1	- -	.1	.1	- -	.1	.1	.1	.1	.2	- -
Service workers, except private household	3.4	4.9	4.4	.9	3.0	2.5	3.3	4.1	4.4	2.0	3.6	3.0	1.8	5.0	5.4
Farm laborers and formen	7.5	2.2	.8	22.3	13.5	5.7	9.4	2.7	1.6	11.4	6.6	4.2	19.3	8.7	3.8
Laborers, except farm and mine	7.0	5.2	4.4	4.5	3.5	8.0	12.2	8.1	6.9	6.1	4.9	5.5	7.2	9.6	15.9
Occupation not reported	.9	.7	5.0	.7	2.3	5.5	1.5	1.1	3.4	1.0	1.5	3.9	.2	.3	1.4
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	15.7	17.2	18.5	25.8	17.7	19.8	16.3	13.4	12.4	17.0	13.8	12.5	27.0	20.5	10.4
Farmers and farm managers	1.3	.9	.2	.8	5.7	2.6	1.8	1.0	.7	2.9	1.4	.6	13.1	.5	- -
Managers, officials, and prop's exc. farm	3.8	4.7	3.6	3.3	5.4	4.0	3.0	3.4	2.8	4.9	3.3	3.2	7.3	5.7	7.2
Clerical, sales, and kindred workers	31.2	43.1	38.6	15.8	24.8	22.1	27.3	36.5	40.1	21.1	30.1	30.6	14.6	30.5	36.5
Craftsmen, foremen, and kindred workers	.5	1.4	.7	.4	.5	- -	.8	1.8	1.1	1.5	1.4	.8	- -	1.0	- -
Operatives and kindred workers	4.0	7.4	3.6	7.1	12.8	10.1	15.0	17.8	11.3	13.8	19.2	21.5	1.5	4.8	2.4
Private household workers	29.2	10.3	13.4	29.2	9.6	11.7	16.8	6.5	6.8	22.1	8.9	8.7	20.4	8.6	16.3
Service workers, except private household	11.4	12.5	15.8	8.7	10.6	15.2	11.8	13.7	18.5	10.6	13.0	14.8	10.2	23.3	24.5
Farm laborers and foremen	.6	.9	- -	1.7	7.9	8.5	1.1	2.3	1.4	1.0	5.4	1.7	3.6	3.3	1.3
Laborers, except farm and mine	.2	.4	.5	6.3	.7	.8	1.9	1.4	.5	2.8	.8	.4	- -	- -	1.3
Occupation not reported	2.2	1.1	5.2	.8	4.4	5.1	4.2	2.2	4.3	2.4	2.8	5.2	2.2	1.9	- -

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Muskegon % distribution			Newaygo % distribution			Oakland % distribution			Oceana % distribution			Ogemaw % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	6.6	8.1	10.1	5.4	6.5	9.2	8.3	10.4	15.6	6.1	6.6	8.7	5.8	6.2	6.0
Farmers and farm managers	3.8	1.9	.8	37.1	22.8	10.7	2.6	1.1	.3	36.3	24.4	12.5	49.3	35.9	13.8
Managers, officials, and prop's, exc. farm	7.8	7.9	6.8	7.0	7.0	7.8	8.0	9.0	10.1	7.9	7.0	5.7	7.9	11.6	10.4
Clerical, sales, and kindred workers	15.5	18.2	19.1	7.4	13.0	15.7	18.0	20.1	23.7	7.0	10.5	13.1	8.2	11.7	15.4
Craftsmen, foremen, and kindred workers	17.2	19.2	17.8	6.1	12.3	14.0	18.1	19.2	16.2	6.5	11.3	13.8	8.0	11.0	14.5
Operatives and kindred workers	28.1	28.7	26.4	6.7	19.6	22.3	26.0	25.8	18.5	7.9	18.0	24.1	7.6	10.0	19.9
Private household workers	3.3	1.6	2.2	3.0	1.1	2.0	4.3	2.0	2.1	3.1	1.7	1.4	3.1	1.3	2.6
Service workers, except private household	5.9	6.7	7.5	3.4	4.1	7.0	6.3	6.3	6.7	2.8	4.0	7.1	4.6	5.4	9.1
Farm laborers and foremen	1.7	1.0	.6	15.3	6.3	3.8	2.1	.8	.3	17.1	9.7	6.3	15.0	7.9	3.5
Laborers, except farm and mine	9.5	5.6	4.4	7.8	6.3	5.5	5.3	4.0	2.8	4.7	5.2	5.2	3.8	5.2	6.1
Occupation not reported	.5	1.0	4.3	1.0	1.0	1.9	1.0	1.2	3.6	.6	1.6	2.2	1.6	1.6	2.2
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.9	6.1	8.7	3.3	4.1	7.0	6.8	9.5	15.6	3.3	3.9	5.3	3.6	3.9	3.2
Farmers and farm managers	4.8	2.4	1.0	43.0	27.8	14.0	3.1	1.3	.4	41.4	29.8	15.7	56.0	41.5	18.7
Managers, officials, and prop's, exc. farm	9.2	9.1	8.4	7.4	7.6	9.5	8.9	10.4	12.7	8.2	7.3	6.1	8.7	12.4	12.8
Clerical, sales, and kindred workers	11.3	11.6	11.0	4.6	7.8	9.0	14.1	13.6	15.9	4.2	6.4	7.8	5.8	7.2	7.2
Craftsmen, foremen, and kindred workers	22.2	24.6	24.3	7.2	14.9	18.8	22.0	24.5	21.9	7.6	13.7	17.6	9.2	13.1	19.5
Operatives and kindred workers	29.2	32.2	31.7	6.9	19.7	24.5	30.1	29.3	21.9	7.9	17.8	27.5	8.4	11.4	22.7
Private household workers	.1	.1	.1	.1	.1	.1	.4	.2	.1	.1	- -	- -	- -	.1	- -
Service workers, except private household	4.6	4.7	4.0	2.0	2.3	3.4	4.5	4.1	4.0	1.7	2.2	3.6	2.8	3.1	4.9
Farm laborers and foremen	2.2	1.1	.7	17.8	7.2	4.6	2.6	.9	.3	19.8	11.2	7.3	17.1	8.2	4.8
Laborers, except farm and mine	11.2	7.1	6.0	7.1	7.5	7.5	6.4	5.0	3.7	5.3	6.2	7.0	4.4	6.2	8.4
Occupation not reported	.4	.9	4.0	.6	.9	1.7	1.0	1.1	3.3	.6	1.5	2.0	1.0	1.1	2.4
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	12.2	14.9	13.6	16.6	16.3	14.8	14.8	13.4	15.7	21.9	17.2	18.5	21.0	17.6	13.6
Farmers and farm managers	.6	.3	.2	6.3	2.3	2.2	.3	.2	.1	7.0	2.7	2.6	4.5	7.6	.5
Managers, officials, and prop's, exc. farm	3.4	3.9	3.1	4.5	4.3	3.4	3.9	4.0	3.4	6.4	5.9	4.7	3.0	7.6	3.7
Clerical, sales, and kindred workers	29.2	39.7	38.3	21.7	33.7	33.6	34.5	41.9	44.2	23.2	27.1	28.8	23.7	34.3	37.3
Craftsmen, foremen, and kindred workers	1.0	1.5	2.1	.4	1.5	1.5	1.1	1.6	1.2	.4	1.6	2.3	.3	.4	1.1
Operatives and kindred workers	24.7	16.9	13.8	5.6	19.4	16.3	8.9	14.1	9.5	7.5	19.0	14.1	2.1	3.5	12.3
Private household workers	13.5	6.5	7.0	18.4	5.3	7.1	20.5	8.1	7.3	20.6	8.5	5.4	23.4	7.2	9.5
Service workers, except private household	10.2	13.5	15.7	10.4	11.3	16.7	13.8	13.8	13.9	9.1	11.2	17.4	16.5	17.1	20.4
Farm laborers and foremen	.2	.8	.5	2.0	2.9	1.7	.2	.4	.2	1.6	3.5	3.2	1.5	6.3	- -
Laborers, except farm and mine	4.1	.8	.6	10.7	1.5	.2	.6	.8	.4	1.3	1.3	- -	.3	.4	- -
Occupation not reported	.9	1.4	5.1	3.3	1.5	2.6	1.3	1.6	4.2	.9	2.0	2.9	5.4	4.3	1.7

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Ontonagon % distribution			Osceola % distribution			Oscoda % distribution			Otsego % distribution			Ottawa % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.4	7.1	9.2	5.8	6.3	7.7	6.9	6.7	13.2	6.6	7.8	7.0	5.6	6.5	9.0
Farmers and farm managers	19.1	19.3	7.0	40.4	27.5	12.4	31.5	21.5	9.7	29.0	17.0	6.2	14.8	9.0	4.1
Managers, officials, and prop's, exc. farm	7.6	8.5	7.7	7.1	6.2	7.3	12.2	13.3	16.1	10.1	11.9	13.4	8.2	8.1	7.4
Clerical, sales, and kindred workers	7.0	9.0	10.7	7.8	10.8	11.0	5.0	7.8	11.9	8.5	11.4	13.6	11.9	15.0	17.5
Craftsmen, foremen, and kindred workers	9.2	10.1	19.0	5.6	10.3	12.1	9.8	12.3	11.0	4.5	10.2	12.7	14.1	17.0	17.7
Operatives and kindred workers	11.5	16.7	24.0	6.1	14.4	23.3	5.9	13.8	12.4	7.7	16.5	22.9	23.9	27.4	26.6
Private household workers	2.1	1.1	2.4	2.8	2.6	2.6	5.0	1.4	1.2	2.5	1.1	2.0	3.3	1.7	1.9
Service workers, except private household	5.3	6.3	8.2	3.2	4.9	6.5	3.9	4.9	6.1	7.0	9.3	14.7	4.4	5.5	7.6
Farm laborers and foremen	10.0	9.4	3.1	13.7	9.7	3.8	9.8	6.8	.8	15.4	7.1	.8	6.5	3.9	2.1
Laborers, except farm and mine	21.6	10.9	5.1	6.7	4.7	5.8	8.9	7.8	15.0	6.7	6.3	3.9	6.3	4.1	3.9
Occupation not reported	1.2	1.5	3.4	.7	2.7	7.5	1.1	3.8	2.6	2.0	1.3	2.7	.9	1.8	2.3
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	3.3	4.5	7.3	3.2	4.3	5.1	5.8	4.1	8.7	3.8	5.4	6.2	4.2	5.0	7.5
Farmers and farm managers	20.7	21.7	8.4	45.8	34.9	16.8	36.8	25.1	12.9	32.9	21.1	8.7	17.8	11.6	5.4
Managers, officials, and prop's, exc. farm	7.8	8.8	8.2	7.2	6.8	8.4	10.9	12.5	18.8	10.9	13.4	17.0	9.3	9.6	9.4
Clerical, sales, and kindred workers	4.4	5.4	4.8	5.3	7.0	6.9	3.1	4.6	4.3	5.9	7.8	9.2	8.2	9.7	10.5
Craftsmen, foremen, and kindred workers	10.4	12.3	24.6	6.4	12.9	16.3	11.8	14.7	14.8	5.4	12.9	18.0	17.0	21.7	23.9
Operatives and kindred workers	12.8	19.5	30.8	6.5	15.0	22.2	7.1	16.1	16.1	8.4	16.8	24.4	24.7	28.4	29.4
Private household workers	.1	- -	- -	.1	.1	- -	.9	- -	- -	- -	.1	- -	.1	.1	.1
Service workers, except private household	4.1	4.3	4.7	1.9	2.9	3.1	2.0	3.2	3.1	5.1	5.5	7.4	3.4	3.6	4.2
Farm laborers and foremen	10.9	8.7	1.4	15.7	9.3	4.9	11.1	7.3	.6	18.1	7.6	1.2	7.6	4.0	2.2
Laborers, except farm and mine	24.5	13.2	6.5	7.3	5.6	7.3	10.0	9.2	19.4	8.0	7.9	5.7	7.1	5.2	5.2
Occupation not reported	1.0	1.5	3.2	.5	1.1	8.8	.7	3.2	1.2	1.5	1.6	2.1	.6	1.0	2.2
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	20.1	18.5	15.4	22.6	13.1	14.3	12.6	18.9	26.4	20.6	16.7	8.8	12.2	11.3	12.9
Farmers and farm managers	7.5	8.7	2.3	5.0	1.9	1.1	5.4	4.4	- -	9.4	2.2	.5	1.6	.6	.7
Managers, officials, and prop's, exc. farm	6.2	7.3	6.3	6.3	4.3	4.4	18.9	17.0	8.1	6.0	6.6	5.3	3.1	3.1	2.1
Clerical, sales, and kindred workers	26.3	25.5	30.4	23.9	23.7	21.4	14.4	22.6	34.4	21.3	24.8	23.4	28.5	32.1	35.5
Craftsmen, foremen, and kindred workers	1.1	.4	.6	.7	1.1	1.2	- -	1.3	- -	- -	.4	.7	1.3	1.8	1.5
Operatives and kindred workers	2.1	3.7	1.5	3.2	12.3	26.0	- -	2.5	1.5	4.1	15.1	19.7	20.6	24.2	19.2
Private household workers	16.1	6.0	10.2	20.9	10.9	9.2	25.2	8.2	4.8	15.0	4.6	6.6	17.4	6.9	6.5
Service workers, except private household	13.7	15.1	20.2	11.5	11.9	15.1	13.5	13.2	15.0	16.5	23.0	31.1	9.2	11.3	16.4
Farm laborers and foremen	3.5	12.7	8.6	1.1	11.0	.9	3.6	4.4	1.5	2.2	5.5	- -	1.4	3.5	1.8
Laborers, except farm and mine	.5	.6	.6	2.8	1.4	2.1	3.6	.6	1.8	.4	.7	- -	2.7	.8	.7
Occupation not reported	3.0	1.5	4.0	2.0	8.2	4.1	2.7	6.9	6.6	4.5	.4	3.9	1.9	4.3	2.6

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Presque Isle % distribution			Roscommon % distribution			Saginaw % distribution			St. Clair % distribution			St. Joseph % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	5.5	5.7	8.1	7.5	6.7	9.5	6.6	7.5	10.1	5.8	6.5	9.0	5.9	6.7	7.2
Farmers and farm managers	27.5	20.2	9.8	13.2	4.4	1.5	9.7	5.8	2.7	13.0	7.9	4.2	16.6	11.7	5.9
Managers, officials, and prop's, exc. farm	6.6	7.8	10.3	22.1	17.2	19.6	7.5	7.9	7.1	8.9	8.7	8.0	8.9	8.2	7.0
Clerical, sales, and kindred workers	6.0	8.7	11.9	8.4	13.2	18.2	16.0	18.1	20.5	15.0	18.0	19.8	13.8	16.0	15.3
Craftsmen, foremen, and kindred workers	8.7	13.3	14.7	10.3	19.6	15.6	14.8	17.4	16.2	14.3	16.8	16.3	12.7	15.2	14.4
Operatives and kindred workers	15.2	16.0	23.3	11.1	14.7	14.2	22.1	25.5	25.1	19.0	25.1	22.4	20.9	24.9	27.3
Private household workers	3.4	1.6	1.1	2.7	1.3	1.5	3.5	1.7	2.0	2.9	1.4	2.5	3.7	1.7	2.2
Service workers, except private household	4.1	5.3	9.5	10.3	10.9	8.0	6.4	7.1	8.5	5.6	6.5	8.4	5.3	6.4	6.3
Farm laborers and foremen	16.0	12.4	5.0	4.8	1.5	.4	4.9	1.8	.9	6.6	2.6	1.5	6.8	4.0	1.6
Laborers, except farm and mine	6.4	6.4	4.8	8.6	7.0	5.2	7.4	6.1	4.3	7.3	4.8	3.8	4.9	4.2	4.0
Occupation not reported	.6	2.7	1.6	1.0	3.5	6.1	1.4	1.1	2.6	1.7	1.7	4.1	.5	1.0	8.8
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	3.5	3.7	5.4	7.0	5.2	8.9	4.6	5.6	8.3	4.0	4.9	7.4	4.1	5.2	5.6
Farmers and farm managers	31.1	24.2	12.3	15.5	5.4	1.9	12.1	7.5	3.6	15.8	10.2	5.5	21.2	15.5	8.4
Managers, officials, and prop's, exc. farm	7.0	8.6	12.0	22.5	17.5	21.6	8.7	9.1	8.9	10.0	10.2	9.8	10.1	9.8	9.3
Clerical, sales, and kindred workers	4.3	5.1	6.7	6.2	9.2	11.3	11.8	11.6	12.3	10.4	11.3	12.6	9.7	10.3	9.7
Craftsmen, foremen, and kindred workers	10.1	16.0	18.6	12.8	24.8	20.9	18.5	22.5	22.5	17.6	21.8	22.5	16.1	20.1	21.0
Operatives and kindred workers	14.0	18.0	27.1	13.6	18.0	16.4	24.0	28.4	30.3	19.6	26.2	26.3	20.3	24.2	25.5
Private household workers	.1	- -	- -	.3	- -	.3	.1	.1	.1	.1	.1	.1	.1	.2	.2
Service workers, except private household	3.2	3.6	6.3	5.8	6.8	5.1	4.4	4.6	4.6	4.3	4.9	5.1	3.5	4.2	4.2
Farm laborers and foremen	18.8	11.7	4.4	5.2	1.7	.6	6.0	2.0	.9	8.1	2.9	1.8	8.4	4.4	1.8
Laborers, except farm and mine	7.6	7.6	6.0	10.6	9.0	6.6	8.8	7.6	5.9	8.7	6.1	5.2	6.1	5.4	5.5
Occupation not reported	.4	1.4	1.3	.4	2.3	6.2	.9	1.0	2.6	1.4	1.5	3.7	.5	.8	8.8
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	16.3	14.6	17.7	9.4	12.0	10.9	14.0	13.2	14.3	13.0	11.7	13.1	12.0	10.6	10.3
Farmers and farm managers	8.2	2.3	1.1	4.4	.7	.7	.6	.6	.6	1.7	.8	.8	1.1	1.4	1.1
Managers, officials, and prop's, exc. farm	4.5	4.0	4.1	20.7	16.3	14.5	3.2	4.0	2.9	4.3	4.2	3.7	4.9	3.9	2.5
Clerical, sales, and kindred workers	15.0	24.6	30.7	16.3	26.8	36.4	32.0	38.0	40.0	33.7	38.7	37.3	27.8	31.7	26.4
Craftsmen, foremen, and kindred workers	1.5	1.1	.4	1.0	1.7	1.6	1.1	1.7	1.0	1.3	1.4	1.0	1.4	1.8	1.4
Operatives and kindred workers	22.0	7.1	9.5	1.5	3.4	8.5	15.1	16.6	12.8	16.4	21.9	13.1	23.1	26.9	30.8
Private household workers	21.3	8.7	5.0	11.8	5.9	4.7	16.3	6.6	6.5	14.0	5.3	8.3	15.8	6.0	6.1
Service workers, except private household	8.6	12.9	20.9	27.1	24.9	15.5	13.8	15.0	17.8	11.0	11.3	16.4	11.1	12.4	10.5
Farm laborers and foremen	1.0	15.4	7.3	3.4	.7	- -	.5	1.3	.8	.5	1.6	.7	1.4	2.9	1.0
Laborers, except farm and mine	- -	.6	.4	1.0	- -	1.5	2.0	1.6	.7	1.6	.8	.4	.9	1.0	1.0
Occupation not reported	1.5	8.7	2.8	3.4	7.6	5.7	1.5	1.5	2.7	2.6	2.2	5.1	.6	1.4	9.0

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Sanilac % distribution			Schoolcraft % distribution			Shiawassee % distribution			Tuscola % distribution			Van Buren % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	4.3	5.1	7.8	6.8	7.8	7.3	5.7	6.3	8.4	5.2	6.3	8.2	5.7	5.9	8.1
Farmers and farm managers	46.2	37.1	22.2	9.4	5.3	2.5	20.1	11.9	5.6	34.8	26.1	13.3	29.9	17.6	7.8
Managers, officials, and prop's, exc. farm	5.7	6.2	6.7	11.6	10.1	10.9	7.8	7.4	6.7	6.2	6.9	6.0	8.9	7.4	6.1
Clerical, sales, and kindred workers	5.4	9.6	9.8	11.1	14.7	15.2	12.1	15.3	18.1	6.7	10.1	13.9	8.8	12.6	14.3
Craftsmen, foremen, and kindred workers	4.6	8.2	10.9	11.0	15.0	14.5	11.8	14.3	16.0	7.5	10.8	13.9	8.6	13.2	14.2
Operatives and kindred workers	5.5	11.3	18.0	16.0	21.1	20.8	19.0	28.4	27.0	9.5	18.0	22.1	11.3	21.8	24.2
Private household workers	2.4	2.7	2.1	2.9	2.6	3.1	3.4	1.5	2.6	2.9	1.3	2.1	2.6	1.6	2.1
Service workers, except private household	2.3	3.5	5.3	7.1	8.7	12.0	4.6	5.3	6.9	3.9	6.6	9.1	4.0	5.5	6.2
Farm laborers and foremen	18.7	10.5	7.0	3.4	2.7	2.0	8.6	3.3	1.7	17.7	7.4	4.5	12.1	7.8	5.8
Laborers, except farm and mine	3.9	3.5	3.9	19.8	11.3	10.2	5.5	4.3	4.3	4.6	3.8	3.7	6.3	5.3	4.9
Occupation not reported	1.1	2.2	6.3	.9	.6	1.6	1.4	1.9	2.7	.9	2.8	3.3	1.8	1.4	6.0
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	2.8	3.3	4.9	4.5	5.9	4.4	3.6	4.8	6.1	3.0	3.8	5.7	3.4	3.8	6.2
Farmers and farm managers	50.4	43.8	28.8	10.7	6.4	3.3	24.9	15.8	7.8	39.2	31.3	17.7	34.8	22.2	10.5
Managers, officials, and prop's, exc. farm	5.7	6.4	6.8	12.6	11.0	12.7	8.7	8.8	8.5	6.6	7.4	6.9	9.2	8.3	7.4
Clerical, sales, and kindred workers	3.3	5.8	5.9	8.0	8.3	8.7	8.9	9.5	10.4	4.6	6.2	8.0	5.8	8.4	8.2
Craftsmen, foremen, and kindred workers	5.0	9.7	14.1	13.0	18.7	20.1	14.4	18.4	22.4	8.5	12.9	18.9	10.1	16.8	19.7
Operatives and kindred workers	5.8	11.5	17.8	18.4	25.4	28.7	18.2	28.1	28.9	10.1	19.9	26.1	11.5	20.1	25.5
Private household workers	- -	.1	.2	- -	.3	- -	- -	.1	.2	.1	- -	- -	.1	.1	.1
Service workers, except private household	1.3	2.2	2.7	4.6	6.2	5.5	3.4	3.6	5.0	2.3	3.6	4.1	2.7	4.1	4.1
Farm laborers and foremen	20.5	11.2	7.9	3.9	3.2	1.8	10.5	3.9	2.2	19.8	8.1	4.8	14.1	8.5	6.2
Laborers, except farm and mine	4.3	4.2	4.9	23.5	14.0	14.1	6.1	5.6	5.9	5.2	4.6	4.8	6.9	6.5	6.4
Occupation not reported	.8	1.7	6.0	.7	.7	.7	1.2	1.4	2.5	.7	2.2	2.9	1.5	1.2	5.7
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	17.3	13.9	16.1	19.1	15.3	13.8	14.2	10.8	13.6	19.9	17.6	14.6	17.4	12.7	12.6
Farmers and farm managers	8.8	3.9	3.0	2.3	.7	.7	.7	.7	.7	4.8	2.8	1.7	4.6	2.5	1.6
Managers, officials, and prop's, exc. farm	5.0	4.9	6.5	5.9	6.5	6.7	4.2	3.4	2.6	4.1	5.0	3.5	7.0	4.6	3.0
Clerical, sales, and kindred workers	23.8	28.5	21.4	27.9	39.6	30.2	25.1	32.2	35.0	21.4	27.5	29.0	24.4	26.2	28.9
Craftsmen, foremen, and kindred workers	.8	.6	1.3	.8	.9	1.6	1.0	1.9	1.9	.5	1.1	1.0	.9	1.4	1.2
Operatives and kindred workers	3.2	10.2	18.5	3.1	4.8	2.8	22.2	29.2	22.6	5.9	9.4	11.8	10.5	27.2	21.2
Private household workers	22.8	15.9	7.7	18.1	11.5	10.1	17.0	5.8	7.8	22.1	6.7	7.5	15.4	6.5	7.1
Service workers, except private household	11.1	9.9	13.1	20.2	18.2	26.9	9.5	10.3	11.2	15.1	19.8	22.2	10.9	9.9	11.3
Farm laborers and foremen	3.0	7.0	4.4	.5	1.1	2.2	.6	1.6	.8	3.5	4.2	3.6	2.0	5.4	4.9
Laborers, except farm and mine	.4	.4	.7	- -	1.1	1.3	3.1	.7	.6	.7	.5	.6	3.2	1.3	1.3
Occupation not reported	3.9	4.9	7.3	2.1	.4	3.7	2.5	3.4	3.1	2.1	5.3	4.5	3.7	2.2	6.9

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Washtenaw % distribution			Wayne % distribution			Wexford % distribution			Detroit S.M.S.A.* % distribution			Lansing S.M.S.A.* % distribution		
	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960	1940	1950	1960
Both sexes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	14.1	18.1	23.4	7.4	8.7	11.2	7.1	8.2	9.4	7.4	8.7	12.1	8.6	11.2	13.5
Farmers and farm managers	8.4	4.4	2.4	.2	.1	.1	16.6	10.5	3.3	.7	.4	.2	12.1	6.9	3.5
Managers, officials, and prop's, exc. farm	7.3	7.0	6.7	7.3	8.0	6.6	9.8	9.0	9.3	7.3	8.0	7.2	8.2	.6.5	7.3
Clerical, sales, and kindred workers	15.8	19.6	20.4	20.7	22.2	24.0	14.0	17.2	20.6	20.1	21.6	23.8	19.0	22.1	23.9
Craftsmen, foremen, and kindred workers	12.3	13.5	11.1	17.7	17.1	15.0	12.2	14.1	14.3	17.8	17.7	15.8	12.6	14.2	13.8
Operatives and kindred workers	15.8	17.4	14.3	26.8	27.5	22.0	16.8	22.3	22.2	26.7	27.4	21.4	18.1	21.5	17.4
Private household workers	4.6	2.3	2.5	3.1	1.6	2.2	3.3	2.6	3.0	3.2	1.7	2.0	3.8	1.4	2.2
Service workers, except private household	10.2	11.3	12.1	9.1	8.3	9.4	5.6	7.3	11.2	8.7	8.0	8.7	6.6	8.4	9.6
Farm laborers and foremen	4.3	1.8	1.1	.2	.2	.1	6.3	3.1	.8	.6	.3	.2	4.9	2.3	1.4
Laborers, except farm and mine	6.2	3.3	2.5	6.7	5.2	4.2	7.3	3.9	3.2	6.7	5.0	3.9	5.2	3.3	3.0
Occupation not reported	1.1	1.3	3.6	.6	1.1	5.3	1.0	1.8	2.8	.7	1.1	4.7	1.0	2.2	4.4
Male	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	10.9	16.7	23.6	6.1	7.8	10.9	4.8	5.9	7.8	6.1	7.9	11.9	6.7	9.6	12.8
Farmers and farm managers	11.4	6.4	3.4	.3	.2	.1	4.0	14.0	4.6	.9	.5	.3	15.5	9.3	5.0
Managers, officials, and prop's, exc. farm	9.0	9.0	9.1	8.5	9.6	8.3	11.4	10.8	11.8	8.5	9.5	9.0	9.5	7.9	9.3
Clerical, sales, and kindred workers	11.5	12.3	12.1	15.6	14.3	15.1	10.2	11.7	14.3	15.2	14.0	15.1	12.7	13.3	13.9
Craftsmen, foremen, and kindred workers	16.8	19.4	17.0	22.8	22.6	21.4	14.8	18.1	20.3	22.7	23.2	22.1	15.9	19.0	19.9
Operatives and kindred workers	17.6	19.2	17.0	29.9	31.0	26.6	16.6	23.9	26.0	29.8	30.9	25.6	21.0	25.7	22.0
Private household workers	.3	.1	.1	.2	.1	.1	.2	.1	.2	.2	.1	.1	.1	.1	.1
Service workers, except private household	7.6	8.7	8.9	7.3	6.5	6.6	4.1	5.0	6.8	6.9	6.1	5.9	4.7	6.4	6.7
Farm laborers and foremen	5.8	2.4	1.4	.2	.1	.1	7.7	3.6	1.1	.7	.3	.2	6.3	2.8	1.8
Laborers, except farm and mine	8.0	4.6	3.8	8.6	6.7	6.0	8.4	5.3	4.7	8.3	6.4	5.3	6.6	4.3	4.1
Occupation not reported	1.0	1.2	3.5	.6	1.1	4.9	.8	1.7	2.6	.6	1.1	4.4	.9	1.5	4.2
Female	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional, technical, and kindred workers	22.1	21.0	22.9	11.5	11.0	12.0	14.8	14.3	12.5	11.8	11.2	12.5	15.0	15.2	14.8
Farmers and farm managers	.8	.3	.5	- -	- -	- -	1.7	1.4	.8	.1	.1	.1	.6	.7	.4
Managers, officials, and prop's, exc. farm	2.9	2.9	2.4	3.2	3.8	3.0	4.4	4.3	4.3	3.3	3.8	3.0	3.6	2.9	3.2
Clerical, sales, and kindred workers	26.7	34.5	35.0	37.4	44.0	43.5	26.3	31.7	33.3	36.8	43.6	44.0	40.0	45.2	44.4
Craftsmen, foremen, and kindred workers	.9	1.5	.9	1.5	1.8	1.2	3.6	3.4	2.2	1.4	1.8	1.2	1.3	1.6	1.4
Operatives and kindred workers	11.3	13.7	9.7	16.8	17.8	11.9	17.4	18.2	14.8	16.2	17.5	11.7	8.1	10.3	8.0
Private household workers	15.4	6.8	6.7	12.6	5.9	6.6	13.9	9.1	8.3	13.3	6.1	6.5	16.1	4.9	6.6
Service workers, except private household	16.7	16.7	17.6	15.0	13.4	15.3	10.9	13.4	19.9	14.9	13.5	14.9	13.0	13.7	15.6
Farm laborers and foremen	.4	.5	.4	- -	.1	- -	1.7	1.8	.2	.1	.2	.1	.4	1.0	.5
Laborers, except farm and mine	1.6	.5	.3	1.2	1.0	.5	3.7	.3	.3	1.2	1.0	.5	.5	.4	.6
Occupation not reported	1.2	1.6	3.6	.8	1.2	6.0	1.5	2.1	3.4	.8	1.2	5.5	1.2	4.1	4.7

*Detroit Standard Metropolitan Statistical Area Consists of: Macomb, Oakland and Wayne Counties

*Lansing Standard Metropolitan Statistical Area Consists of: Clinton, Eaton and Ingham Counties

TABLE 1 - OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR COUNTIES, 1940, 1950, and 1960

OCCUPATION	Michigan % distribution		
	1940	1950	1960
Both sexes	100.0	100.0	100.0
Professional, technical, and kindred workers	7.8	8.4	11.5
Farmers and farm managers	7.9	4.7	2.2
Managers, officials, and prop's, exc. farm	7.5	7.9	7.3
Clerical, sales, and kindred workers	16.8	19.3	21.3
Craftsmen, foremen, and kindred workers	15.5	16.4	15.4
Operatives and kindred workers	22.6	25.9	22.2
Private household workers	3.3	1.7	2.2
Service workers, except private household	7.1	7.6	8.7
Farm laborers and foremen	3.7	1.8	.9
Laborers, except farm and mine	6.9	5.0	4.0
Occupation not reported	1.0	1.3	4.3
Male	100.0	100.0	100.0
Professional, technical, and kindred workers	6.0	7.1	10.6
Farmers and farm managers	9.9	6.2	3.0
Managers, officials, and prop's, exc. farm	8.6	9.3	9.2
Clerical, sales, and kindred workers	12.2	12.4	13.2
Craftsmen, foremen, and kindred workers	19.4	21.4	21.6
Operatives and kindred workers	24.6	28.6	26.1
Private household workers	.1	.1	.1
Service workers, except private household	5.4	5.5	5.6
Farm laborers and foremen	4.5	2.0	1.1
Laborers, except farm and mine	8.4	6.3	5.5
Occupation not reported	.8	1.1	4.0
Female	100.0	100.0	100.0
Professional, technical, and kindred workers	14.0	12.5	13.5
Farmers and farm managers	.8	.5	.4
Managers, officials, and prop's, exc. farm	3.3	3.9	3.2
Clerical, sales, and kindred workers	33.1	39.7	39.9
Craftsmen, foremen, and kindred workers	1.4	1.7	1.2
Operatives and kindred workers	15.8	18.0	13.5
Private household workers	14.6	6.3	6.8
Service workers, except private household	13.3	13.7	15.7
Farm laborers and foremen	.5	1.2	.5
Laborers, except farm and mine	1.5	.9	.5
Occupation not reported	1.7	1.7	4.9

TABLE 2 - CIVILIAN LABOR FORCE STATUS AND PERCENTAGE CHANGE IN MAJOR OCCUPATIONS, MICHIGAN: 1950-1960, BY COUNTY

County	Employment Status				Percentage Change in Major Occupations, 1950-1960											
	1950		1960													
	Employed	Unemployed	Employed	Unemployed	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Alcona	1,858	93	1,895	303	2.0	36.5	-62.3	89.1	94.9	35.6	133.0	44.0	108.0	-87.3	36.4	-1.5
Alger	3,038	448	2,677	398	-11.9	27.9	-67.0	-23.9	36.6	0.9	2.8	111.1	16.6	21.4	-42.3	-68.4
Allegan	17,101	520	19,923	964	16.5	49.9	-51.7	1.4	56.5	27.4	33.4	43.9	50.9	-32.1	36.4	25.7
Alpena	7,034	439	9,185	865	30.6	71.6	-52.5	39.1	43.4	43.6	52.3	139.3	44.4	-70.9	35.0	146.9
Antrim	3,259	167	3,198	369	-1.9	33.2	-64.6	-3.3	23.7	21.0	145.0	108.0	33.3	-68.4	-30.1	77.7
Arenac	3,222	208	3,198	261	-.74	92.4	-62.9	-11.6	44.6	38.4	77.9	89.6	16.7	-73.9	16.4	217.2
Baraga	2,246	347	1,862	381	-17.1	28.9	-66.8	-5.5	105.0	35.9	-14.6	-14.3	37.6	-88.5	-63.2	506.2
Barry	9,495	285	11,367	603	19.7	42.4	-40.5	-4.1	41.6	22.5	33.1	-1.4	87.7	47.5	464.1	-455.6
Bay	31,546	1,796	36,416	2,917	15.4	50.4	-54.6	18.7	19.0	25.2	9.7	46.8	29.1	-60.7	-15.0	320.9
Benzie	2,618	150	2,547	250	-2.6	38.1	-62.0	-21.3	17.7	18.7	-4.6	31.3	25.9	-33.8	5.0	112.8
Berrien	45,379	1,814	56,355	3,308	24.2	77.6	-34.4	13.9	47.4	16.2	15.6	79.7	48.5	-32.3	7.5	199.0
Branch	10,571	506	12,538	565	18.6	19.7	-45.8	7.5	31.1	23.2	34.2	87.3	95.5	-36.1	33.7	143.0
Calhoun	44,993	2,209	51,063	3,322	13.5	42.6	-39.3	12.6	21.3	0.3	4.0	13.3	20.9	-28.2	6.4	375.1
Cass	10,019	432	12,871	688	28.5	54.5	-49.0	25.9	56.4	31.2	38.2	41.0	62.4	-13.2	-3.0	77.6
Charlevoix	3,967	265	4,320	530	8.9	35.2	-65.4	6.1	18.9	23.5	58.4	45.2	175.6	-60.0	-27.2	194.9
Cheboygan	3,762	492	3,979	595	5.8	35.6	-65.6	34.6	10.2	1.5	13.2	144.7	21.6	-65.2	-9.9	236.5
Chippewa	9,415	702	8,388	1,480	-10.9	27.8	-56.3	10.8	2.9	13.5	-36.5	94.4	-1.3	-60.3	-52.3	159.3
Clare	3,407	257	3,653	203	7.2	52.2	-59.7	0.9	18.2	32.5	27.6	132.6	46.2	-78.2	7.8	275.6
Clinton	10,810	324	13,009	777	20.3	62.1	-38.8	7.9	61.5	43.3	13.9	22.6	65.1	-22.7	-10.4	337.0
Crawford	1,182	110	1,632	133	38.1	25.0	-94.4	27.1	64.5	28.0	53.5	145.8	65.4	--	19.6	106.3
Delta	10,219	695	10,519	1,060	2.9	19.6	-49.9	13.5	20.5	-3.1	20.9	111.8	50.8	-57.5	-42.9	57.2
Dickinson	7,592	1,221	7,683	749	11.9	29.7	-70.5	13.9	2.2	7.6	-10.7	77.5	38.6	-51.8	-39.2	387.7
Eaton	14,527	400	18,047	883	24.2	48.8	-39.0	20.4	63.5	36.8	17.4	93.5	73.5	-43.4	15.5	105.4
Emmet	5,387	453	5,174	622	-4.0	14.1	-63.9	15.1	10.2	-11.7	-20.4	51.2	32.6	-58.3	0.9	103.1
Genesee	108,525	3,283	132,406	9,096	22.0	69.1	-45.1	18.2	30.6	23.3	1.5	55.8	29.0	-36.3	24.4	276.3
Gladwin	3,015	95	3,319	151	10.1	56.0	-58.3	56.3	52.0	24.1	54.9	215.8	65.8	-40.2	-8.8	108.6
Gogebic	8,818	780	7,296	774	-17.3	-7.6	-68.8	-27.9	0.8	-32.2	-20.5	3.2	1.8	-76.4	-52.8	139.1
Grand Traverse	8,868	522	10,173	884	14.7	52.1	-47.0	5.9	24.1	2.2	47.2	32.8	-44.4	-12.0	49.5	35.8
Gratiot	10,988	487	12,552	803	14.2	55.4	-48.5	-3.0	46.4	16.5	65.5	90.6	77.7	-58.3	-15.7	122.4

a Total
b Professional, technical, and kindred workers
c Farmers and farm managers
d Proprietors, managers and officials, exc. farm
e Clerical, sales and kindred workers
f Craftsmen, foremen, and kindred workers
g Operatives and kindred workers
h Domestic service workers
i Service workers, exc. domestic
j Farm laborers (wage workers) and farm foremen
k Laborers exc. farm
l Occupation not reported

TABLE 2 - CIVILIAN LABOR FORCE STATUS AND PERCENTAGE CHANGE IN MAJOR OCCUPATIONS, MICHIGAN: 1950-1960, BY COUNTY

County	Employment Status				Percentage Change in Major Occupations, 1950-1960											
	1950		1960													
	Employed	Unemployed	Employed	Unemployed	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Hillsdale	10,855	413	12,276	543	13.1	41.5	-45.3	16.3	9.1	36.4	49.9	50.9	35.9	-41.0	26.9	135.5
Houghton	11,370	1,193	10,241	1,004	-9.9	21.6	-54.4	-23.9	-2.6	0.7	-19.6	63.8	24.1	-83.3	-53.5	459.5
Huron	11,017	386	10,281	694	-6.7	37.2	-33.2	-9.0	31.3	17.6	29.9	7.8	57.8	-49.6	-39.6	-30.1
Ingham	65,615	3,393	79,222	3,678	20.7	44.9	-40.1	42.9	24.6	9.6	-9.2	110.1	67.5	-11.2	14.7	125.1
Ionia	12,880	560	13,695	780	6.3	39.8	-46.9	8.4	11.7	8.8	12.5	40.2	28.1	-33.2	2.6	309.7
Iosco	3,563	199	4,382	493	23.0	99.6	-49.3	30.0	62.6	6.1	21.1	86.7	91.3	-85.7	10.8	145.7
Iron	5,472	755	5,040	497	-7.7	26.2	-75.0	2.0	7.2	2.8	-10.3	-30.9	22.6	-81.3	2.1	-57.9
Isabella	8,777	384	11,624	722	32.4	83.6	-45.6	19.6	68.4	20.6	41.3	221.5	124.8	-51.1	73.4	150.0
Jackson	38,265	2,307	45,798	3,117	19.7	44.2	-46.0	4.9	29.7	9.5	12.1	14.5	33.8	-14.5	15.1	277.0
Kalamazoo	49,177	1,557	62,712	2,681	27.5	62.9	-33.2	12.6	36.4	11.1	7.3	58.7	36.5	-6.7	10.9	508.5
Kalkaska	1,299	113	1,307	199	0.6	55.8	-74.0	11.4	85.3	32.8	49.7	42.9	68.7	-40.7	32.9	-29.2
Kent	113,966	4,292	132,239	7,612	16.0	48.7	-44.2	1.6	26.2	7.8	0.3	41.6	26.8	-28.5	5.1	275.4
Keweenaw	727	117	615	86	-15.4	0.0	-78.9	-37.0	4.4	8.9	-27.1	--	76.5	--	-36.2	0.0
Lake	1,465	220	1,490	188	1.7	-2.2	-57.5	15.7	45.0	53.2	30.1	136.1	48.5	-81.0	-1.7	45.2
Lapeer	11,315	216	13,308	676	17.6	71.6	-44.4	20.6	29.4	49.1	32.3	165.8	66.9	-30.6	1.5	50.2
Leelanau	2,663	169	2,862	303	7.5	42.5	-55.2	21.0	86.2	24.9	61.8	77.3	85.2	-46.6	28.4	-17.6
Lenawee	23,554	474	26,284	2,020	11.6	59.7	-43.2	5.5	58.3	7.2	14.1	42.0	53.2	-40.5	-23.4	192.6
Livingston	9,325	460	13,200	798	41.6	85.8	-31.4	41.2	76.9	44.2	59.2	156.8	72.1	-22.7	34.1	225.1
Luce	1,867	155	1,944	275	4.1	40.2	-79.5	9.8	6.6	-13.4	-26.5	105.1	35.3	-78.4	-22.7	542.9
Mackinac	2,796	287	2,946	685	5.4	67.5	-50.2	-17.9	66.2	33.0	-10.8	77.1	39.1	-65.9	-36.2	154.1
Macomb	63,360	3,192	133,915	9,797	111.4	330.9	-40.3	128.9	181.1	89.8	59.7	129.1	139.9	-41.4	45.6	324.1
Manistee	6,354	420	6,443	676	1.4	30.6	-62.8	16.2	5.5	10.9	4.5	-4.3	47.9	-55.0	-17.1	124.2
Marquette	15,808	1,126	15,845	1,502	0.2	40.3	-77.1	1.2	-0.3	7.3	-22.1	69.5	39.7	-58.5	-49.6	564.3
Mason	7,323	316	7,347	507	0.3	45.1	-54.3	-2.5	5.2	12.0	9.0	1.7	11.9	-59.6	58.1	255.3
Mecosta	5,771	298	6,756	439	17.1	114.7	-62.2	17.3	56.4	40.5	15.6	70.4	75.7	-30.4	48.8	100.0
Menominee	8,901	508	7,995	529	-10.2	31.4	-50.2	6.9	0.8	19.4	0.6	26.2	15.3	-76.6	-33.7	293.3
Midland	11,504	532	16,297	821	41.7	86.0	-62.4	50.3	50.7	17.2	126.9	59.6	-58.6	14.3	762.1	35.0
Missaukee	2,367	66	2,073	87	-12.4	49.6	-49.5	-7.4	28.4	-8.0	30.5	41.5	33.7	-55.6	27.2	75.0
Monroe	25,512	2,077	32,420	2,807	27.1	60.9	-45.9	23.7	51.3	33.5	19.1	59.6	66.5	-24.2	-0.2	247.2
Montcalm	11,272	393	12,598	530	11.8	45.7	-50.9	-0.9	28.5	23.1	47.7	37.8	26.8	-39.4	12.2	172.9
Montmorency	1,211	105	1,345	164	11.1	26.3	-48.6	23.7	60.3	14.3	74.1	20.5	45.5	-55.3	65.6	100.0
Muskegon	42,043	3,862	51,703	3,274	22.9	53.4	-49.3	6.3	29.1	12.1	13.4	66.7	36.6	-2.1	-3.1	410.2
Newaygo	6,705	305	7,370	727	9.9	55.0	-48.2	23.1	33.6	25.7	24.7	97.3	87.3	-33.9	-4.5	110.3
Oakland	146,981	5,382	240,861	13,165	63.9	146.0	-48.5	85.4	92.9	38.4	17.6	69.4	74.0	-39.7	13.8	372.1
Oceana	5,220	377	4,951	584	-5.2	25.1	-51.6	-22.2	17.6	155.6	27.0	-25.6	67.5	-38.6	-5.1	35.4

TABLE 2 - CIVILIAN LABOR FORCE STATUS AND PERCENTAGE CHANGE IN MAJOR OCCUPATIONS, MICHIGAN: 1950-1960, BY COUNTY

County	Employment Status				Percentage Change in Major Occupations, 1950-1960											
	1950		1960													
	Employed	Unemployed	Employed	Unemployed	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Ogemaw	2,796	99	2,772	359	-0.9	-4.0	-63.7	-11.4	30.3	30.8	96.4	102.9	67.5	-55.9	16.4	34.8
Ontonagon	2,850	601	3,145	452	10.4	42.6	-60.0	0.4	31.5	107.3	59.4	131.3	45.3	-63.8	-48.2	143.2
Osceola	4,788	206	4,644	230	-3.0	19.3	-56.3	13.7	-1.5	14.2	56.7	1.6	29.4	-62.3	21.0	171.1
Oscoda	916	46	1,086	78	18.6	134.4	-46.7	43.4	81.7	6.2	7.1	0.0	46.7	-85.5	129.6	-20.0
Otsego	2,118	107	2,420	235	14.3	2.4	-58.4	29.0	36.0	42.1	59.0	113.0	80.7	-86.8	-29.1	132.1
Ottawa	27,293	770	34,583	1,359	26.7	74.8	-42.4	15.3	47.7	32.3	22.7	37.3	75.4	-33.0	20.5	67.4
Presque Isle	3,852	174	4,151	234	7.8	53.4	-47.6	42.0	47.6	18.9	56.7	-27.4	93.1	-55.5	-18.8	-37.1
Roscommon	1,823	176	2,231	252	22.4	71.5	-57.5	39.5	69.2	-2.8	18.3	41.7	-10.1	-66.7	-8.7	112.5
Saginaw	57,155	2,378	64,463	3,765	12.8	51.4	-46.5	2.5	27.5	4.8	11.1	33.6	34.3	-45.5	-20.1	161.1
St. Clair	32,600	1,652	35,039	3,130	7.5	48.4	-43.2	-1.5	18.4	3.9	-4.0	92.5	39.8	-47.5	-57.0	162.3
St. Joseph	13,498	530	16,545	720	22.6	32.8	-38.4	3.7	17.2	16.3	34.4	34.5	21.6	-51.8	16.0	999.2
Sanilac	10,727	370	10,930	648	1.9	35.4	-39.1	10.1	4.3	35.3	62.4	-20.7	54.9	-32.4	11.9	170.7
Schoolcraft	2,705	342	2,507	504	-7.3	-9.4	-55.6	0.0	-4.3	-10.6	-8.7	8.5	28.2	-33.8	-16.3	141.2
Shiawassee	17,246	449	18,899	1,176	7.6	46.2	-48.8	-0.6	29.3	23.9	4.2	83.9	41.8	-43.3	8.1	53.9
Tuscola	12,358	358	13,865	709	11.2	45.7	-42.9	-3.8	57.3	45.4	37.6	86.5	55.9	-31.6	7.6	34.0
Van Buren	14,200	699	17,179	1,034	20.9	67.4	-46.1	--	37.9	30.4	34.5	63.8	37.1	10.0	12.6	409.8
Washtenaw	48,110	1,926	65,532	3,312	36.2	75.8	-26.5	29.7	41.7	12.6	12.1	45.3	45.0	-19.7	5.6	275.5
Wayne	983,003	69,209	953,959	88,871	-3.0	26.1	-45.5	-20.7	5.2	-14.7	-22.6	27.6	8.9	-36.2	-20.3	361.0
Wexford	6,372	384	6,284	435	-1.4	13.0	-68.9	1.4	18.4	-0.3	-2.2	12.2	51.0	-74.0	-19.3	58.4
Detroit(S.M.S.A.*)	1,193,344	77,783	1,328,735	111,833	21.2	46.4	39.2	35.2	31.3	18.0	-1.6	91.5	37.7	24.6	10.7	141.9
Lansing(S.M.S.A.*)	90,952	4,117	110,278	5,338	11.3	54.6	-44.3	-0.2	22.6	-0.3	-13.2	37.1	20.7	-39.2	-13.9	359.8

* Detroit Standard Metropolitan Statistical Areas combines Macomb, Oakland, and Wayne counties.

* Lansing Standard Metropolitan Statistical Areas combines Clinton, Eaton, and Ingham counties.

Sources: U.S. Bureau of the Census. U.S. Census of Population: 1960. General Social and Economic Characteristics, Michigan. Final Report PC(1)-24C. U.S. Government Printing Office, Washington, D.C., Table 73; U.S. Bureau of the Census. U.S. Census of Population: 1950. Vol. II, Characteristics of the Population, Part 22, Michigan, Chapter B. U.S. Government Printing Office, Washington, D.C., 1952, Table 43.

Appendix B

TABLE 1

AGRICULTURAL COURSES FOR MICHIGAN K-12 SCHOOLS FOR GRADES 7-12, BY NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

GRADE LEVEL

Course	8			9			10			11			12			8-9			9-10			10-11		
	S[2]	C[3]	H[4]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Farm Crops				21	1	99.75	22	1	93.45															
Vocational Agriculture[5]	84	4	357.00	2545	147	12223.75	2403	165	11473.00	842	56	4004.00	811	59	3910.25	28	1	133.00	607	33	2935.50	330	17	1595.25
Soil Science				27	1	128.25													26	1	84.50			
Conservation[6]	22	1	82.50	35	1	192.50	35	2	161.75	6	1	19.50	20	1	95.00				17	1	55.25	16	1	60.00
Animal Husbandry				19	1	247.00	16	1	76.00	14	1	59.50							18	1	85.50			
Farm Mechanics	39	2	78.00				435	29	2035.75	123	10	559.75	41	3	178.75				26	1	143.00			
Farm Management													24	2	102.00									
Unknown													2	1	9.50									
Total	145	7	517.50	2647	151	12891.25	2911	198	13840.00	985	68	4642.75	898	66	4295.50	28	1	133.00	694	37	3303.75	346	18	1655.25

Course	11-12			9-11			9-12			10-12			Grade Unknown			Totals		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Farm Crops																43	2	193.25
Vocational Agriculture	3509	143	16888.50	30	2	142.50	219	15	997.75	277	15	1332.00	593	33	2989.25	12278	690	58981.75
Soil Science																53	2	212.75
Conservation	120	5	496.50				65	3	285.75	225	9	954.25	92	4	388.00	653	29	2791.00
Animal Husbandry																67	4	468.00
Farm Mechanics	262	17	1206.00				15	1	82.50	82	6	390.00	319	21	1512.75	1342	90	6186.50
Farm Management	54	4	256.50										30	2	112.50	108	8	471.00
Unknown																2	1	9.50
Total	3945	169	18847.50	30	2	142.50	299	19	1366.00	584	30	2676.25	1034	60	5002.50	14546	826	69313.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Students

[3]Classes

[4]Hours per week

[5]This category also includes "General Agricultural" courses.

[6]Usually non-vocational in nature.

TABLE 2

BUSINESS EDUCATION COURSES FOR MICHIGAN K-12 SCHOOLS FOR GRADES 7-12, BY NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

GRADE LEVEL

Course	7			8			9			10			11			12			7-8			7-9		
	S[2]	C[3]	H[4]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping							30	2	127.50	7202	244	29939.25	3821	155	17213.75	1912	84	8989.75	25	1	137.50	21	1	99.75
Business Economics																253	9	1188.00						
Business English										120	6	570.00	51	3	253.50	1086	44	4990.75						
Business Law										152	4	635.75	278	9	1270.50	2336	84	10065.50						
Business Mathematics	170	6	722.50	269	11	1177.75	857	35	3991.50	6933	225	27172.00	304	10	1430.25	350	14	1599.75						
Business Organization							94	4	368.00	263	9	1368.50	89	3	333.75	112	4	505.00						
Co-Op Training for Distributive Occupations													17	1	80.75	572	21	3164.75						
Co-Op Training for Office Occupations													31	1	116.25	514	16	3283.25						
Distributive Education										67	2	280.25	208	9	988.00	271	10	1185.50						
Economic Geography	63	2	299.25				35	2	129.75	104	4	444.50	106	3	469.50									
Filing										755	25	3019.25				197	8	880.75						
General Business				1460	47	6132.75	10867	375	46725.75	2177	82	9895.00	34	1	161.50	54	2	273.75						
Merchandising Information													12	1	66.00	156	5	641.00						
Office Machines													296	11	1198.50	1920	89	6281.50						
Office Practices	7	1	26.25				20	1	95.00				354	17	1715.00	3550	180	16466.75						
Retailing	32	1	152.00				25	2	106.25	13	1	61.75	552	21	2567.75	775	30	3660.00						
Secretarial Practices													18	2	78.50	289	16	1371.75						
Shorthand	16	2	76.00				18	1	85.50	367	17	1643.25	7947	341	35064.50	4141	237	18783.25	15	1	82.50			
Notehand (Personal Use)																22	7	104.50						
Transcription	32	1	120.00										279	14	1263.00	1670	74	7185.75						
Typewriting	207	7	699.75	1911	60	7728.00	9230	300	39613.00	17238	576	72297.00	10037	381	44069.75	4291	191	19788.75	29	1	123.25			
Introduction to Distribution							57	2	254.75															
Unknown										310	9	1472.50	933	30	4414.75	304	13	1444.00						
Totals	527	20	2095.75	3640	118	15038.50	21233	724	91497.00	35701	1204	148799.00	25367	1013	112755.50	24775	1138	111854.00	69	3	343.25	21	1	99.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Students

[3]Classes

[4]Hours per week

TABLE 2 - Continued

GRADE LEVEL

Course	8-9			8-10			8-11			9-10			9-11			9-12			10-11			10-12			11-12			Unknown			Total		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping													114	4	632.50	77	3	401.75	1027	41	4679.75	2327	83	11482.25	5126	214	23503.25	4684	185	22490.00	26366	1017	119697.00
Business Economics																			33	1	156.75	23	1	109.25	188	7	746.00	25	1	118.75	522	19	2318.75
Business English																									91	6	423.25	961	34	4056.25	2309	93	10293.75
Business Law																26	1	123.50				212	9	985.75	491	21	2223.00	634	25	3147.00	4129	153	18451.00
Business Mathematics							21	1	99.75	95	4	429.25	31	1	147.25	330	13	1607.25	160	6	759.50	722	24	3520.75	460	17	2228.75	1093	39	5383.75	11795	406	50270.00
Business Organization																						300	11	1650.00	69	3	342.50	77	3	386.75	1004	37	4954.50
Cooperative Training for Distributive Occupations																						9	1	72.00	93	5	409.75	364	15	1716.25	1055	43	5443.50
Cooperative Training for Office Occupations																									238	10	943.00	881	40	5332.00	1664	67	9674.50
Distributive Education																						26	1	123.50	225	9	927.25	60	3	285.00	857	34	3789.50
Economic Geography																20	1	95.00	33	2	147.75	120	5	633.00	52	2	242.25	416	16	1804.25	949	37	4265.25
Filing				38	1	142.50													55	2	247.50	134	5	582.00	933	31	3580.75	102	4	411.50	2214	76	8864.00
General Business										644	25	2832.00				625	24	2758.25	447	17	2110.75	640	27	3155.25	215	9	1025.00	2425	84	11194.00	19588	693	86264.00
Merchandising Information																						28	1	133.00	174	5	889.50	28	1	182.00	398	13	1911.50
Office Machines																			30	1	112.50	21	1	99.75	2260	84	8819.50	695	43	3382.25	5222	229	19894.00
Office Practices																						13	1	52.25	880	49	3975.50	818	43	3906.50	5642	292	26237.25
Retailing																34	1	161.50	28	1	105.00	105	4	498.75	1763	63	6900.75	679	24	3139.25	4006	148	17353.00
Secretarial Practices																									15	1	71.25	143	8	763.50	465	27	2285.00
Shorthand										14	1	66.50				35	2	159.25	268	13	1310.75	309	12	1386.00	3799	196	17866.75	2496	115	11861.25	19425	938	88385.50
Notehand (Personal Use)																									347	12	1448.25				369	19	1552.75
Transcription																						17	1	72.25	95	5	430.50	789	39	3554.00	2882	134	12625.50
Typewriting	819	25	3245.75							677	28	2921.25	247	8	1359.00	1813	63	8476.00	2993	118	13774.50	9955	350	47638.25	8928	377	41325.75	13145	476	62854.00	81520	2961	365914.00
Introduction to Distribution																															57	2	254.75
Unknown																						13	1	61.75							1560	53	7393.00
Totals	819	25	3245.75	38	1	142.50	21	1	99.75	1430	58	6249.00	392	13	2138.75	2960	108	13782.50	5074	202	23404.50	14974	538	72255.75	26442	1126	118322.50	30515	1198	145968.25	193998	7491	868091.50

TABLE 3

HOME ECONOMICS COURSES FOR MICHIGAN K-12 SCHOOLS FOR GRADES 7-12, BY NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

GRADE LEVEL

Course	Grade Unknown			7			8			9			10			11			12			7-8		
	S[2]	C[3]	H[4]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Care & Guidance of Children	54	2	256.50										26	1	84.50	88	3	286.00	104	4	372.50			
Clothing and Textiles	480	22	2551.75	494	20	2134.25	2586	98	11794.00	1305	63	5913.25	660	32	2776.25	172	9	931.75	143	7	782.50	341	17	1438.75
Commercial Cooking Baking, etc.[6]	225	15	1068.75				29	2	157.00	49	3	208.25							12	1	96.00			
Consumer Ed. & Housing							55	2	270.00															
Cosmetology[6]																50	2	400.00	49	2	392.00			
Foods & Nutrition	257	16	1330.00	519	19	1077.75	1756	71	8048.75	1055	47	4640.50	779	35	3918.25	334	14	1931.50	181	7	871.25	142	7	592.50
Health[5]	131	5	631.25				51	2	219.25															
Home & Family Living	1627	65	8016.50	234	11	1111.50	1517	49	6548.50	409	16	1806.75	359	12	1805.25	206	7	822.00	3240	132	14281.00			
Homemaking & Health	4787	196	23371.00	7256	315	29200.00	16802	777	70428.50	15075	766	70130.25	7656	436	32860.50	2542	137	11365.75	1899	111	9142.00	1137	53	5076.25
Home Furnishings & Equipment	32	5	612.25				70	3	352.00	41	2	194.75	30	2	150.00	124	5	454.00	1161	42	4305.25			
Hospital Service[6]																			51	1	191.25			
Unclassified or Unknown	40	2	190.00	294	10	1382.50	160	5	760.00	86	3	464.50	25	1	81.25				62	3	281.00			
Total	7633	328	38028.00	8797	375	34906.00	23026	1009	98578.00	18020	900	83358.25	9535	519	41676.00	3516	177	16191.00	6902	310	30714.75	1620	77	7107.50

Course	7&9			8-9			8-10			9-10			9-11			9-12			10-11			10-12			11-12			Total		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Care & Guidance of Children																31	1	100.75				289	10	976.25	408	14	1460.00	1000	35	3536.50
Clothing and Textiles	93	3	427.75							187	8	925.25	182	8	870.75	1384	53	5668.00	198	9	894.50	1298	52	6153.75	512	24	2513.50	10035	425	45776.00
Commercial Cooking Baking, etc.				24	1	102.00				42	2	236.25	24	1	78.00				64	4	459.50	66	2	328.25	33	2	264.00	568	33	2998.00
Consumer Ed. & Housing																									10	1	55.00	65	3	325.00
Cosmetology																						38	2	304.00				137	6	1096.00
Foods & Nutrition				74	3	351.50	44	1	352.00	32	1	176.00	24	1	192.00	795	32	3598.75	111	5	487.00	1077	49	5434.50	161	10	849.25	7341	318	33851.50
Health																												182	7	850.50
Home & Family Living										31	1	170.50	20	1	65.00	108	4	428.25				480	18	2025.25	2331	85	9519.50	10562	401	46600.00
Homemaking & Health				363	12	1632.00				835	45	4019.50	145	7	688.75	1201	58	5567.25	710	40	3357.25	2259	116	10419.50	4528	272	22832.00	67195	3341	300090.50
Home Furnishings & Equipment																						202	8	730.75	200	7	777.50	1860	74	7576.50
Hospital Service																						151	4	971.50				202	5	1162.75
Unclassified or Unknown																42	2	231.00				22	1	176.00				731	27	3566.25
Total	93	3	427.75	461	16	2085.50	44	1	352.00	1127	57	5527.50	395	18	1894.50	3561	150	15594.00	1083	58	5198.25	5882	262	27519.75	8183	415	38270.75	99878	4675	447429.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Students

[3]Classes

[4]Hours per week

[5]Usually not considered as a specific Home Economics course, but taught in Physical Education or Science.

[6]Taught in the Trade & Industrial curriculum.

TABLE 4

TRADE AND INDUSTRIAL COURSES FOR MICHIGAN K-12 SCHOOLS FOR GRADES 7-12, BY NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Grade Level

Course*	Unknown[2]			7			8			9			10			11			12		
	S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	467	21	2001.25	1999	71	8392.00	4363	192	20101.25	2093	95	9504.25	805	39	3801.50	518	26	2563.50	245	14	1321.25
General Shop	3525	184	17156.25	3578	161	14686.25	9476	445	41550.25	9904	496	46641.75	3106	173	14988.25	921	57	4264.50	589	40	2732.75
Wood Shop	2152	102	10845.25	963	40	4142.75	2679	107	11488.00	2423	107	10834.50	2171	101	11084.00	620	33	3055.75	164	10	794.00
Bench Wood																					
Cabinet & Furniture Making	8	1	38.00																		
Machine Woodwork	74	5	313.50										51	2	242.25	32	2	164.00			
Pattern Making													46	3	201.50	35	2	166.25			
Carpentry (Building Const.)	39	3	185.25										104	7	494.00	25	2	118.75	7	1	33.25
Building Materials													91	3	490.75	88	4	551.00	77	4	404.00
Residential Development																32	1	136.00			
Metal Shop & Metal Fitting	1394	76	7230.75	308	14	1694.00	2054	87	8746.25	3172	122	13661.50	1477	64	6797.75	332	18	1612.25	117	8	569.00
Bench Metal													136	5	508.75						
Sheet Metal	23	1	126.50																		
Foundry													23	3	109.25	32	2	152.00	13	1	61.75
Machine Hand Tools	13	1	48.75										81	4	384.75				41	2	174.75
Machine Shop	875	52	4862.50				184	9	773.75	516	22	2648.50	1172	58	6388.50	601	29	3111.75	362	21	1831.00
Machine Metal Work																26	1	110.50	60	3	52.00
Machine Working	90	6	427.50																		
Power Machinery	189	11	915.00							222	11	943.50	119	8	565.25	130	9	653.00	231	11	1087.50
Welding	475	24	2252.00										83	6	371.75	76	6	459.50	106	6	503.50
Electricity	81	4	384.75				82	5	426.00	92	5	458.00	507	22	2506.75	193	9	1302.50	240	9	1224.50
Radio Electronics	43	3	190.25	19	1	80.75	36	2	153.00	22	1	104.50	25	3	118.75	39	3	185.25			
Electrical Mechanics													89	4	578.50	61	3	396.50	46	2	299.00
Drafting	1418	62	6896.50	594	27	2601.25	3074	110	13876.00	3737	141	15828.50	3061	123	13117.50	927	41	3920.50	917	42	3780.75
Mechanical Drawing	3235	153	15673.50	582	25	2531.25	1112	45	5173.50	2406	109	10981.50	2417	113	11153.25	1013	51	4756.00	318	24	1662.00
Blue Print Reading	155	7	784.00	112	4	476.00				53	2	251.75	107	5	394.75	20	1	75.00	52	2	237.00
Architectural Drawing	170	11	901.00							19	1	90.25	184	9	850.00	209	11	1000.75	63	4	267.25
Machine Drafting & Drawing	100	5	505.00										165	6	735.75	136	6	609.25	101	5	479.75
Tool Design																			18	1	117.00
Graphic Arts																					
Printing & Print Design	519	30	2443.75	265	10	1070.25	1290	43	5767.00	303	13	1478.75	77	5	389.75	67	5	343.00			
Photography							696	23	3077.50	191	10	802.00	505	27	2433.00	313	19	1610.50	159	11	876.25
Total	15045	762	74181.25	8420	353	35674.50	25046	1068	111132.50	25153	1135	114229.25	16602	793	78706.25	6446	341	31318.00	3926	221	18508.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Grade level not reported.

[3]Students.

[4]Classes.

[5]Hours.

*Note: See Table 3 for Commercial Cooking, Baking, etc.; Cosmetology; and Hospital Service.

TABLE 4 - Continued

GRADE LEVEL

Course	7-8			7&9			7-9			8-9			8-10			8-11			8-12			9-10			9-11		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	159	6	710.75							107	4	408.25										97	6	559.25	36	2	204.25
General Shop	1353	63	6004.75	45	2	213.75	48	2	215.50	200	9	1007.25	92	4	536.25							892	47	4254.25			
Wood Shop	22	1	93.50				28	2	119.00	212	9	943.50				69	3	454.25				129	5	639.00	175	7	1047.75
Bench Wood																						52	3	195.00	30	2	240.00
Cabinet & Furniture Making																											
Machine Woodwork																											
Pattern Making																											
Carpentry (Building Const.)																											
Building Materials																											
Residential Development																											
Metal Shop & Metal Fitting	20	1	95.00				42	2	178.50	107	4	467.75										81	4	423.25	76	4	453.00
Bench Metal																						85	4	293.25	14	1	52.50
Sheet Metal																											
Foundry																											
Machine Hand Tools																											
Machine Shop																70	3	462.25				37	2	224.50	26	1	169.00
Machine Metal Work																											
Machine Working																											
Power Machinery																											
Welding																24	1	192.00				25	1	200.00			
Electricity																									28	1	224.00
Radio Electronics																											
Electrical Mechanics																											
Drafting	22	1	93.50	24	1	114.00	27	1	114.75	223	7	965.75				25	1	200.00	16	1	128.00	425	18	1542.25	533	20	2125.50
Mechanical Drawing	64	3	261.50							66	2	280.50	71	3	266.25	49	2	183.75				165	7	764.75	220	8	1025.50
Blue Print Reading																											
Architectural Drawing																											
Machine Drafting & Drawing																											
Tool Design																											
Graphic Arts										63	2	281.25															
Printing & Print Design	20	1	50.00							82	4	348.50															
Photography																											
Total	1660	76	7309.00	69	3	327.75	145	7	627.75	1060	41	4702.75	163	7	802.50	237	10	1492.25	16	1	128.00	1988	97	9095.50	1138	46	5541.50

TABLE 4 - Continued

GRADE LEVEL

Course	9-12 S	9-12 C	9-12 H	10-11 S	10-11 C	10-11 H	10-12 S	10-12 C	10-12 H	11-12 S	11-12 C	11-12 H	Total S	Total C	Total H
Industrial Arts	65	3	387.50	85	5	411.50	256	11	1174.75	389	21	1800.50	11684	516	53341.75
General Shop	515	26	2457.25	599	34	2905.50	1080	63	5006.25	1861	112	8549.50	37784	1918	173170.25
Wood Shop	906	42	4151.75	201	10	933.75	1576	73	7423.75	789	41	3754.25	15279	693	71804.75
Bench Wood													82	5	435.00
Cabinet & Furniture Making							47	2	223.25	93	5	502.00	231	12	1169.50
Machine Woodwork										88	3	572.00	243	13	1253.25
Pattern Making	36	2	94.50				15	1	120.00				187	13	860.50
Carpentry (Building Const.)	16	1	60.00							39	2	238.50	350	17	1929.50
Building Materials							15	1	63.75				47	2	199.75
Residential Development										24	1	192.00	24	1	192.00
Metal Shop & Metal Fitting	392	17	2079.00	235	9	1123.50	839	43	4020.25	555	32	2721.00	11201	505	51872.75
Bench Metal	16	1	60.00										251	11	914.50
Sheet Metal										31	1	147.25	54	2	273.75
Foundry													68	6	323.00
Machine Hand Tools													135	7	608.25
Machine Shop	516	29	2538.25	272	12	1506.00	1237	55	7440.25	1190	61	7021.75	7058	354	38978.00
Machine Metal Work				17	1	63.75				37	2	114.75	140	7	341.00
Machine Working				25	2	93.75				35	2	192.50	150	10	713.75
Power Machinery				52	2	221.00	51	3	242.25	333	15	1771.00	1327	70	6398.50
Welding	259	12	1420.00				396	20	2225.00	207	12	1109.00	1651	88	8732.75
Electricity	48	2	228.00	119	5	735.00	395	17	2037.25	366	21	1897.25	2151	100	11424.00
Radio Electronics	56	2	266.00				215	9	1045.00	82	5	368.50	537	29	2512.00
Electrical Mechanics				52	1	416.00	44	2	352.00	46	2	336.50	338	14	2378.50
Drafting	1618	61	6900.00	541	22	2415.50	2156	90	9048.25	1509	71	7089.75	20847	840	90758.25
Mechanical Drawing	517	24	2371.75	604	28	2815.00	1366	70	6442.25	2038	124	9512.75	16243	791	75855.00
Blue Print Reading				22	1	121.00	68	3	374.00	13	1	42.25	602	26	2755.75
Architectural Drawing	83	4	341.75				69	3	326.00	228	12	1032.00	1025	55	4809.00
Machine Drafting & Drawing										55	3	316.25	557	25	2646.00
Tool Design										20	1	160.00	38	2	277.00
Graphic Arts							24	1	114.00	22	2	104.50	1846	71	8478.25
Printing & Print Design	272	19	1301.00	16	1	76.00	690	39	3365.75	435	27	2577.25	4163	221	20031.75
Photography							15	1	71.25				15	1	71.25
Total	5315	245	24656.75	2840	133	13837.25	10554	507	51115.25	10485	579	52123.00	136308	6425	635509.25

TABLE 4 - Continued

GRADE LEVEL

Course	Unknown S	Unknown C	Unknown H	7 S	7 C	7 H	8 S	8 C	8 H	9 S	9 C	9 H	10 S	10 C	10 H	11 S	11 C	11 H	12 S	12 C	12 H	8-11 S	8-11 C	8-11 H	9-10 S	9-10 C	9-10 H
Paint Shop	23	1	184.00																								
Painting & Decorating																											
Commercial Art																											
Auto Mechanics & Shop	697	50	3667.00										720	33	3928.75	792	38	4305.25	786	40	4004.50				149	7	798.50
Auto Theory	36	2	153.00																34	1	161.50						
Bump & Paint Shop - Auto Body																											
Industrial Mechanics										219	7	883.50	142	5	518.00				43	2	292.00				80	3	520.00
Power Plant										25	1	81.25							34	6	148.75						
Industrial Hydraulics																77	3	500.50									
Air Conditioning & Refrigeration																											
Astronautics													69	3	448.50	32	2	104.00	27	1	175.50						
Air Craft Power Plant																											
Air Frame																			5	1	18.75						
Plastics	57	3	270.75				40	2	190.00																		
Shoe Repair	19	2	152.00																								
Automation																			23	1	184.00						
Applied Physics																69	5	327.75									
Shop Mathematics & Industrial Construction Mathematics	434	18	2010.25	55	2	233.75				175	7	734.00	1229	49	5626.75	133	5	487.25	18	1	85.50	24	1	90.00			
Co-Op Training - T & I	140	11	876.25																174	11	1115.25						
Misc. - (Industrial History, Related Social Science)	25	1	93.75										21	1	68.25												
Unknown or Unclassified	92	4	437.00	85	3	361.25	16	1	76.00	17	1	80.75							11	1	52.25						
Total	1523	92	7844.00	140	5	595.00	56	3	266.00	436	16	1779.50	2181	91	10590.25	1103	53	5724.75	1155	65	6238.00	24	1	90.00	229	10	1318.50

TABLE 4 - Continued

GRADE LEVEL

Course	9-11 S	9-11 C	9-11 H	9-12 S	9-12 C	9-12 H	10-11 S	10-11 C	10-11 H	10-12 S	10-12 C	10-12 H	11-12 S	11-12 C	11-12 H	Total S	Total C	Total H
Paint Shop																23	1	184.00
Painting & Decorating										46	2	368.00				46	2	368.00
Commercial Art				40	2	320.00										40	2	320.00
Auto Mechanics & Shop				330	15	1662.75	90	4	314.50	976	48	4748.50	947	52	5232.75	5487	287	28662.50
Auto Theory																70	3	314.50
Bump & Paint Shop - Auto Body				59	3	395.50				22	1	82.50	68	4	544.00	149	8	1022.00
Industrial Mechanics	49	2	356.00	33	1	214.50				187	7	835.00	24	1	78.00	777	28	3697.00
Power Plant										43	2	344.00				102	9	574.00
Industrial Hydraulics																77	3	500.50
Air Conditioning & Refrigeration										16	1	104.00				16	1	104.00
Astronautics													30	1	195.00	158	7	923.00
Air Craft Power Plant													28	1	224.00	28	1	224.00
Air Frame										21	1	168.00	10	2	80.00	36	4	266.75
Plastics																97	5	460.75
Shoe Repair																19	2	152.00
Automation																23	1	184.00
Applied Physics																69	5	327.75
Shop Mathematics & Industrial Construction Mathematics	79	3	347.00	301	12	1257.25	99	5	377.25	404	15	1745.00	147	6	598.25	3098	124	13592.25
Co-Op Training - T & I										26	3	123.50	51	2	343.00	391	27	2458.00
Misc. - (Industrial History, Related Social Science)																46	2	162.00
Unknown or Unclassified													45	3	213.75	266	13	1221.00
Total	128	5	703.00	763	33	3850.00	189	9	691.75	1741	80	8513.50	1350	72	7508.75	11018	535	55718.00

TABLE 5

SUMMARY OF EDUCATIONAL BACKGROUND OF VOCATIONAL EDUCATION TEACHERS IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 ACCORDING TO CURRICULUM AND CERTIFICATION BY YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Advanced Degree

Curriculum & Certificate	Major-Minor[2]									Neither[3]								
	Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Less than 5yrs. experience			5-10 yrs. experience			10 or more yrs. experience		
	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Business Education																		
Provisional	4644	154	19198.25							272	10	1241.50						
Permanent				11572	418	48279.50	18975	657	77040.50				576	21	2956.25	901	36	4410.25
Life	437	14	1705.75	235	10	881.25	9976	354	41712.75				14	1	77.00	1412	57	6750.75
Special				178	8	728.50							111	4	610.50	114	4	427.50
Unreported																		
Total	5081	168	20904.00	11985	436	49889.25	28951	1011	118753.25	272	10	1241.50	701	26	3643.75	2427	97	11588.50
Home Economics																		
Provisional	1962	78	8959.50							112	6	616.00						
Permanent				3034	124	12544.00	8261	325	36436.00							500	18	2214.75
Life				202	10	865.75	2260	97	8646.50							773	30	3772.75
Special	71	4	298.25	172	6	960.00	189	8	711.25							16	1	76.00
Unreported																		
Total	2033	82	9257.75	3408	140	14369.75	10710	430	45793.75	112	6	616.00				1289	49	6063.50
Trade & Industrial																		
Provisional	3401	140	15757.75							139	5	614.25						
Permanent				9384	415	44870.00	15552	633	71131.00				940	47	4929.25	801	38	4800.50
Life	6305	270	28750.50													650	28	2894.75
Special				90	3	427.50	17	1	136.00									
Unreported																		
Total	9706	410	44508.25	9474	418	45297.50	15569	634	71267.00	139	5	614.25	940	47	4929.25	1451	66	7695.25
Vocational Agriculture																		
Provisional	100	5	433.00															
Permanent				319	22	1509.50	365	18	1805.00									
Life							10	1	42.50									
Special	173	9	732.75															
Unreported																		
Total	273	14	1165.75	319	22	1509.50	375	19	1847.50									
Grand Total	17093	674	75835.75	25186	1016	111066.00	55605	2094	237661.50	523	21	2471.75	1641	73	8573.00	5167	212	25347.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

TABLE 5 - Continued

Regular Degree

Curriculum & Certificate	Major-Minor: Experience not indicated			Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Neither: Experience not indicated			Less than 5yrs. experience			5-10 yrs. experience			10 or more yrs. experience		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Business Education																								
Provisional				21348	810	92544.50										666	28	3066.50						
Permanent							5426	210	23642.50	5246	203	23352.00							70	3	322.00	367	11	1740.50
Life				472	17	2163.25	925	35	4241.00	7124	292	31514.50							176	5	748.00	677	27	3014.75
Special	49	2	232.75	1666	73	7864.00	422	16	1890.00	89	4	424.50				548	23	2876.00	107	4	588.50	6	2	19.50
Unreported																								
Total	49	2	232.75	23486	900	102571.75	6773	261	29773.50	12459	499	55291.00				1214	51	5942.50	353	12	1658.50	1050	40	4774.75
Home Economics																								
Provisional				9968	459	42296.00										890	38	4223.50						
Permanent							6213	272	27475.75	5754	254	23890.00	42	2	178.50				227	10	1248.50	95	5	443.75
Life				397	20	1969.50	1056	51	4935.25	6634	309	28472.00				74	3	351.50	37	1	157.25	441	22	1968.50
Special	176	8	796.00	1441	74	6619.25	553	27	2626.75	108	6	405.00				170	8	935.00				28	2	154.00
Unreported																								
Total	176	8	796.00	11806	553	50884.75	7822	350	35037.75	12496	569	52767.00	42	2	178.50	1134	49	5510.00	264	11	1405.75	564	29	2566.25
Trade & Industrial																								
Provisional				18853	856	86055.50										567	31	2891.75						
Permanent							5766	264	26577.50	4666	218	21243.50	64	3	337.00				315	13	1772.50	370	17	1907.75
Life				165	6	783.75	73	4	476.75	5533	256	25232.75										783	33	3997.25
Special	96	5	396.00	516	23	2798.50	277	12	1315.75	68	4	544.00										12	2	63.75
Unreported																								
Total	96	5	396.00	19534	885	89637.75	6116	280	28370.00	10267	478	47020.25	64	3	337.00	567	31	2891.75	315	13	1772.50	1165	52	5968.75
Vocational Agriculture																								
Provisional				1330	86	6166.25																		
Permanent							430	30	1940.50	320	20	1390.50										34	2	178.75
Life							40	3	190.00	267	13	1432.50												
Special				243	14	1167.50	13	1	61.75															
Unreported																								
Total				1573	100	7333.75	483	34	2192.25	587	33	2823.00										34	2	178.75
Grand Total	321	15	1424.75	56399	2438	250428.00	21194	925	95373.50	35809	1579	157901.25	106	5	515.50	2915	131	14344.25	932	36	4836.75	2813	123	13488.50

TABLE 5 - Continued

Curriculum & Certificate	Non-Degree: Major-Minor: Experience not indicated S	C	H	Less than 5yrs. experience S	C	H	5-10 yrs. experience S	C	H	10 or more yrs experience S	C	H	Neither: Less than 5 yrs. experience S	C	H	5-10 yrs. experience S	C	H	10 or more yrs experience S	C	H	Degree Unreported: Degree Unreported: Experience not indicated S	C	H	Total S	C	H
Business Education																											
Provisional																									26930	1002	116050.75
Permanent																									43133	1559	181743.50
Life				90	3	427.50	207	6	834.00	726	32	3615.00				56	2	266.00							22527	855	97951.50
Special				342	13	1340.75	115	6	488.75	64	5	272.00				186	8	883.50							3997	172	18646.75
Unreported																						97411	3903	453688.25	97411	3903	453688.25
Total				432	16	1768.25	322	12	1322.75	790	37	3887.00				242	10	1149.50				97411	3903	453688.25	193998	7491	868080.75
Home Economics																											
Provisional																									12932	581	56095.00
Permanent																									24126	1010	104431.25
Life										122	7	490.00													11996	550	51629.00
Special	242	13	1427.00	138	8	643.50	63	3	290.25	222	11	841.50	82	4	498.75				41	3	218.00				3712	186	17500.50
Unreported																						47112	2348	217773.75	47112	2348	217773.75
Total	242	13	1427.00	138	8	643.50	63	3	290.25	344	18	1331.50	82	4	498.75				41	3	218.00	47112	2348	217773.75	99878	4675	447429.50
Trade & Industrial																											
Provisional																									22960	1032	105319.25
Permanent																									37858	1648	177569.00
Life				46	4	172.50	671	32	3660.50										149	6	598.75				14375	639	66567.50
Special	38	1	95.00	444	29	2346.50				901	42	4591.50							731	55	3842.00				3190	177	16556.50
Unreported																						68943	3464	325215.00	68943	3464	325215.00
Total	38	1	95.00	490	33	2519.00	671	32	3660.50	901	42	4591.50							880	61	4440.75	68943	3464	325215.00	147326	6960	691227.25
Vocational Agriculture																											
Provisional																									1430	91	6599.25
Permanent																									1468	92	6824.25
Life																									317	17	1665.00
Special				42	3	231.00				19	1	80.75													490	28	2273.75
Unreported																						10841	598	51951.50	10841	598	51951.50
Total				42	3	231.00				19	1	80.75										10841	598	51951.50	14546	826	69313.75
Grand Total	280	14	1522.00	1102	60	5161.75	1056	47	5273.50	2054	98	9890.75	82	4	498.75	242	10	1149.50	921	64	4658.75	224307	10313	1048628.50	455748	19952	2076051.25

TABLE 6

EDUCATIONAL BACKGROUND OF TEACHERS OF VOCATIONAL AGRICULTURAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Course	Grade Level	Advanced Degree Major-Minor[2] Under 5 yrs. experience			Regular Degree Major-Minor Under 5 yrs. experience			Regular Degree Major-Minor 5-10 yrs. experience			Non-Degree Major-Minor Under 5 yrs. experience			Non-Degree Major-Minor 10 or more yrs. experience			Total		
		S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Vocational Agriculture[7]	9	62	3	273.50	84	4	399.00				19	1	104.50				165	8	777.00
	10	31	2	127.25	57	4	270.75				11	1	60.50				99	7	458.50
	11				10	1	47.50										10	1	47.50
	12				18	1	85.50										18	1	85.50
	9 - 12				20	1	75.00										20	1	75.00
	11 & 12	49	2	204.75	54	3	289.75				12	1	66.00	19	1	80.75	134	7	641.25
Total		142	7	605.50	243	14	1167.50				42	3	231.00	19	1	80.75	426	24	2009.75
Farm Mechanics	N.R.[6]	31	2	127.25													31	2	127.25
	11							13	1	61.75							13	1	61.75
Total		31	2	127.25				13	1	61.75							44	3	189.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Students

[4]Classes

[5]Hours per week.

[6]Grade level not reported.

[7]This category also includes "General Agricultural" courses.

TABLE 7

EDUCATIONAL BACKGROUND OF TEACHERS OF VOCATIONAL AGRICULTURAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PROVISIONAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree			Regular Degree			Total		
		Major-Minor[2]			Major-Minor					
Course	Grade Level	S[3]	C[4]	H[5]	S	C	H	S	C	H
Vocational Agriculture[7]	9	24	1	102.00	224	15	1034.00	248	16	1136.00
	10	27	1	128.25	182	15	844.75	209	16	973.00
	11				90	6	435.25	90	6	435.25
	12				71	5	346.50	71	5	346.50
	9 - 10				89	5	410.50	89	5	410.50
	9 - 12				29	2	128.25	29	2	128.25
	10 - 11				11	1	60.50	11	1	60.50
	10 - 12				73	5	353.50	73	5	353.50
	11 - 12	19	1	90.25	284	17	1340.75	303	18	1431.00
Total		70	3	320.50	1053	71	4954.00	1123	74	5274.50
Conservation[8]	N.R.[6]				18	1	85.50	18	1	85.50
	8				22	1	82.50	22	1	82.50
	10				26	1	123.50	26	1	123.50
	10 - 12				28	1	133.00	28	1	133.00
	11 - 12				38	2	149.50	38	2	149.50
Total					132	6	574.00	132	6	574.00
Soil Science	9 - 10				26	1	84.50	26	1	84.50
Farm Mechanics	N.R.				21	1	99.75	21	1	99.75
	10				24	2	114.50	24	2	114.50
	11				14	1	66.50	14	1	66.50
	11 - 12				60	4	273.00	60	4	273.00
Total					119	8	553.75	119	8	553.75
Farm Management	N.R.	30	2	112.50				30	2	112.50
Total		30	2	112.50				30	2	112.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Students

[4]Classes

[5]Hours per week

[6] Grade level not reported.

[7]This category also includes "General Agricultural" courses.

[8]Usually non-vocational in nature.

TABLE 8

EDUCATIONAL BACKGROUND OF TEACHERS OF VOCATIONAL AGRICULTURAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree						Regular Degree											
		Major-Minor[2]						Major-Minor						Neither[3]					
Course	Grade Level	5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			10 or more yrs. experience			Total		
		S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Vocational Agriculture[8]	N.R.[7]	15	1	56.25													15	1	56.25
	9	51	4	230.75	20	1	110.00	85	6	386.75	46	3	199.00	11	1	52.25	213	15	98.75
	10	73	6	317.25	39	2	206.25	118	7	538.25	59	4	259.25				289	19	1321.00
	11							27	2	101.25							27	2	101.25
	12	17	1	93.50	16	1	76.00	17	2	63.75							50	4	233.25
	9 & 10	31	1	170.50				28	2	127.00	24	2	107.00				83	5	404.50
	9 - 12				92	6	437.00										92	6	437.00
	10 & 11				107	5	475.25	14	1	66.50				23	1	126.50	144	7	668.25
	11 & 12	91	6	444.75	67	2	368.50	106	7	503.75	94	5	393.50				358	20	1710.50
Total		278	19	1313.00	341	17	1673.00	395	27	1787.25	223	14	958.75	34	2	178.75	1271	79	5910.75
Conservation[9]	11							6	1	19.50							6	1	19.50
	10 - 12										47	2	2223.25				47	2	2223.25
Total								6	1	19.50	47	2	2223.25				53	3	2242.75
Farm Mechanics	N.R.										21	2	78.75				21	2	78.75
	10	22	1	104.50	24	1	132.00	21	1	99.75	12	1	66.00				79	4	402.25
	11	10	1	42.50													10	1	42.50
	11 - 12							8	1	34.00	17	1	63.75				25	2	97.75
	10 - 12	9	1	49.50													9	1	49.50
Total		41	3	196.50	24	1	132.00	29	2	133.75	50	4	208.50				144	10	670.75

[1]Student hours were computed by multiplying the total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do nor hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

[8]This category also includes "General Agricultural" courses.

[9]Usually non-vocational in nature.

TABLE 9

EDUCATIONAL BACKGROUND OF TEACHERS OF VOCATIONAL AGRICULTURAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Courses	Grade Level	Advanced Degree Major-Minor[2] 10 or more yrs. experience			Regular Degree Major-Minor 5-10 yrs. experience			Regular Degree Major-Minor 10 or more yrs. experience			Total		
		S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H
Vocational Agriculture[7]	9				10	1	47.50	41	2	209.00	51	3	256.50
	10				11	1	52.25	74	4	362.00	85	5	414.50
	9 - 12	10	1	42.50							10	1	42.50
	10 - 12							22	1	220.00	22	1	220.00
	11 & 12							102	4	498.00	102	4	498.00
Total		10	1	42.50	21	2	99.75	239	11	1289.00	270	14	1431.50
Farm Mechanics	N.R.[6]							14	1	66.50	14	1	66.50
	10							14	1	77.00	14	1	77.00
Total								28	2	143.50	28	2	143.50
Farm Management	11 & 12				19	1	90.25				19	1	90.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Students

[4]Classes

[5]Hours per week.

[6]Grade level not reported.

[7]This category also includes "General Agricultural" courses.

TABLE 10

TEACHERS OF VOCATIONAL AGRICULTURE COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH YEARS OF EXPERIENCE AND EDUCATIONAL BACKGROUND UNREPORTED ACCORDING TO NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

GRADE LEVEL

Courses	Unknown[2]			8			9			10			11			12			8-9			9-10			9-11		
	S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Farm Crops							21	1	99.75	22	1	93.50															
Vocational Agriculture[6]	578	32	2933.00	84	4	357.00	1868	105	9075.50	1721	118	8306.25	715	47	3420.00	672	49	3245.00	28	1	133.00	435	23	2120.50	30	2	142.50
Soil Science							27	1	128.25																		
Conservation[7]	74	3	302.50				35	1	192.50	9	1	38.25				20	1	95.00				17	1	55.25			
Animal Husbandry							19	1	247.00	16	1	76.00	14	1	59.50							18	1	85.50			
Farm Mechanics	232	15	1140.50	39	2	78.00				318	22	1442.00	86	7	389.00	41	3	178.75				26	1	143.00			
Farm Management																24	2	102.00									
Unknown																2	1	9.50									
Total	884	50	4376.00	123	6	435.00	1970	109	9743.00	2086	143	9956.00	815	55	3868.50	759	56	3630.25	28	1	133.00	496	26	2404.25	30	2	142.50

Courses	9-12			10-11			10-12			11-12			Total		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Farm Crops													43	2	193.25
Vocational Agriculture	68	5	315.00	175	9	866.50	182	9	758.50	2612	94	12607.75	9168	498	44280.50
Soil Science													27	1	128.25
Conservation	65	3	285.75	16	1	60.00	150	6	598.00	82	3	347.00	468	20	1974.25
Animal Husbandry													67	4	468.00
Farm Mechanics	15	1	82.50				73	5	340.50	177	11	835.25	1007	67	4629.50
Farm Management										35	3	166.25	59	5	268.25
Unknown													2	1	9.50
Total	148	9	683.25	191	10	926.50	405	20	1697.00	2906	111	13956.25	10841	598	51951.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Grade level not reported.

[3]Students.

[4]Classes.

[5]Hours.

[6]This category also includes "General Agricultural" courses.

[7]Usually non-vocational in nature.

TABLE 11

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Advanced Degree

		Major-Minor[2]			Neither[3]								
		5-10 yrs. experience			5-10 yrs. experience			10 or more yrs experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	11 & 12	28	1	119.00							28	1	119.00
Business Economics	11 & 12							31	1	116.25	31	1	116.25
Business Mathematics	9				49	2	269.50				49	2	269.50
Business Organization	11							33	1	123.75	33	1	123.75
Distributive Education	12	26	1	97.50							26	1	97.50
Economic Geography	11	34	1	127.50							34	1	127.50
Office Machines	12	22	1	82.50				50	2	187.50	72	3	270.00
Shorthand	11	21	1	78.75							21	1	78.75
Typewriting	10				62	2	341.00				62	2	341.00
	11	20	1	95.00							20	1	95.00
	12	27	2	128.25							27	2	128.25
Total		47	3	223.25	62	2	341.00				109	5	564.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

TABLE 11 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

			Regular Degree Major-Minor[2]									Neither[3]											
			Less than 5yrs. experience			5-10 yrs. experience			10 or more years experience			Less than 5yrs experience			5-10 yrs. experience			10 or more years experience			Total		
Courses	Grade Level	Unknown	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	N.R.[7]		181	7	847.75																181	7	847.75
	10											24	1	132.00							24	1	132.00
	11		51	2	203.75																51	2	203.75
	11 & 12		71	4	311.25													3	1	9.75	74	5	321.00
Total			303	13	1362.75							24	1	132.00				3	1	9.75	330	15	1504.50
Business Economics	N.R.		25	1	118.75																25	1	118.75
Business English	12		15	1	71.25																15	1	71.25
Business Law	N.R.		28	1	133.00																28	1	133.00
Business Mathematics	N.R.		68	2	323.00																68	2	323.00
	9											93	4	498.00							93	4	498.00
	12		56	2	266.00																56	2	266.00
	11 - 12		22	1	104.50																22	1	104.50
Totals			146	5	693.50							93	4	498.00							239	9	1191.50
Cooperative Training for Office Occupations	N.R.		25	1	162.50																25	1	162.50
Distributive Education	12		36	1	171.00																36	1	171.00
Economic Geography	9																	3	1	9.75	3	1	9.75
Filing	10		32	1	152.00																32	1	152.00
General Business	N.R.		20	1	75.00																20	1	75.00
	9		86	3	388.50	26	1	123.50													112	4	512.00
	10								30	1	127.50										30	1	127.50
	9 - 10	49	2	232.75																	49	2	232.75
	10 - 11				29	2	123.25														29	2	123.25
Total		49	2	232.75	135	6	586.75	26	1	123.50	30	1	127.50								240	10	1070.50
Office Machines	12		36	2	171.00																36	2	171.00
Office Practices	N.R.		33	2	156.75																33	2	156.75
	11											70	4	373.75							70	4	373.75
	12		32	3	137.00	88	4	340.00				63	3	328.50							183	10	805.50
Total			65	5	293.75	88	4	340.00				133	7	702.25							286	16	1336.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 11 - Continued

Courses	Grade Level	Unknown S	Unknown C	Unknown H	Regular Degree Major-Minor: Less than 5yrs. experience S	C	H	5-10 yrs. experience S	C	H	10 or more years experience S	C	H	Neither: Less than 5yrs experience S	C	H	5-10 yrs. experience S	C	H	10 or more years experience S	C	H	Total S	C	H
Retailing	N.R.				28	1	133.00																28	1	133.00
	9				25	2	106.25																25	2	106.25
Total					53	3	239.25																53	3	239.25
Shorthand	N.R.				22	1	104.50																22	1	104.50
	11				49	2	269.50	33	1	156.75				17	1	93.50							99	4	519.75
	12				35	2	168.00	15	1	71.25													50	3	239.25
	10 - 11				8	1	44.00																8	1	44.00
	10 - 12							24	1	90.00													24	1	90.00
	11 - 12										16	1	88.00										16	1	88.00
Total					114	6	586.00	72	3	318.00	16	1	88.00	17	1	93.50							219	11	1085.50
Typewriting	N.R.				366	12	1819.75																366	12	1819.75
	9																27	1	148.50				27	1	148.50
	10													207	8	1043.25	30	1	165.00				237	9	1208.25
	11				112	6	520.25	150	5	712.50				74	2	407.00	50	2	275.00				386	15	1914.75
	12				38	2	160.50	61	2	289.75													99	4	450.25
	10 - 12				65	3	303.75																65	3	303.75
	11 & 12				72	4	318.25	25	1	106.25	43	2	209.00										140	7	633.50
Total					653	27	3122.50	236	8	1108.50	43	2	209.00	281	10	1450.25	107	4	588.50				1320	51	6478.75

TABLE 11 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Non-Degree

		Major-Minor[2]									Neither[3]					
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more years experience			5-10yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	12	27	2	165.00				15	1	63.75	23	1	109.25	65	4	338.00
	11 & 12	32	1	104.00										32	1	104.00
Total		59	3	269.00				15	1	63.75	23	1	109.25	97	5	442.00
Business Law	10 - 12	35	1	131.25										35	1	131.25
General Business	N.R.[7]	25	1	118.75										25	1	118.75
	9	122	3	457.50										122	3	457.50
	10															
	12										18	1	85.50	18	1	85.50
	11 & 12										60	2	285.00	60	2	285.00
Total		147	4	576.25							78	3	370.50	225	7	946.75
Office Machines	11 - 12	16	1	52.00										16	1	52.00
Office Practices	11							12	1	51.00				12	1	51.00
	11 & 12	32	1	104.00										32	1	104.00
Total		32	1	104.00				12	1	51.00				44	2	155.00
Shorthand	11				12	1	51.00	11	1	46.75				23	2	97.75
	12				10	1	42.50	9	1	38.25	7	1	33.25	26	3	114.00
	11 - 12	8	1	38.00										8	1	38.00
Total		8	1	38.00	22	2	93.50	20	2	85.00	7	1	33.25	57	6	249.75
Typewriting	10				63	3	267.75	17	1	72.25				80	4	340.00
	11				30	1	127.50							30	1	127.50
	12										18	1	85.50	18	1	85.50
	9 & 10	45	2	170.25										45	2	170.25
	11 & 12										60	2	285.00	60	2	285.00
Total		45	2	170.25	93	4	395.25	17	1	72.25	78	3	370.50	233	10	1008.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 12

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PROVISIONAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree						Regular Degree								
		Major-Minor[2]			Neither[3]			Major-Minor			Neither			Total		
Course	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	N.R.[7]							75	3	281.25	10	1	37.50	85	4	318.75
	9							25	1	106.25				25	1	106.25
	10	282	9	1057.50				320	10	1375.50	48	2	264.00	650	21	2697.00
	11	53	2	198.75				168	8	804.75				221	10	1003.50
	12							49	2	222.75				49	2	222.75
	10 & 11	79	3	346.25				123	4	556.75				202	7	903.00
	10 - 12	80	3	440.00				484	17	2564.00				564	20	3004.00
	11 & 12	159	7	755.25				394	21	1742.50				553	28	2497.75
Total		653	24	2797.75				1638	66	7653.75	58	3	301.50	2349	93	10753.00
Business English	N.R.							27	1	101.25				27	1	101.25
	11							15	1	82.50				15	1	82.50
	12							14	1	66.50				14	1	66.50
	11 & 12							18	1	76.50				18	1	76.50
Total								74	4	326.75				74	4	326.75
Business Law	12	55	2	261.25				72	4	338.25				127	6	599.50
Business Mathematics	N.R							189	6	826.25				189	6	826.25
	7							109	4	463.25				109	4	463.25
	8							81	3	344.25				81	3	344.25
	9							35	2	156.25				35	2	156.25
	10				39	1	146.25	1302	42	4914.50	36	1	135.00	1377	44	5195.75
	11	421	13	1578.75										421	13	1578.75
	12							38	2	196.75				38	2	196.75
	9 - 10							22	1	82.50				22	1	82.50
	10 - 11							56	2	210.00				56	2	210.00
	10 - 12							27	1	148.50				27	1	148.50
Total		421	13	1578.75	39	1	146.25	1859	63	7342.25	36	1	135.00	2355	78	9202.25
Business Organizations	N.R.							31	1	170.50				31	1	170.50
	10	159	5	874.50				104	4	494.00				263	9	1368.50
	10 - 12							63	2	346.50				63	2	346.50
Total		159	5	874.50				198	7	1011.00				357	12	1885.50
Cooperative Training for Distributive Occupations	N.R.							100	4	556.25				100	4	556.25
	12							72	3	294.50				72	3	294.50
Total								172	7	850.75				172	7	850.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 12 - Continued

Course	Grade Level	Advanced Degree Major-Minor S	C	H	Advanced Degree Neither S	C	H	Regular Degree Major-Minor S	C	H	Regular Degree Neither S	C	H	Total S	C	H
Cooperative Training for Office Occupations	N.R.							25	1	118.75				25	1	118.75
	11 & 12							46	2	197.50				46	2	197.50
Total								71	3	316.25				71	3	316.25
Distributive Education	10							38	1	142.50				38	1	142.50
	11							21	1	99.75				21	1	99.75
	12							47	2	195.50				47	2	195.50
Total								106	4	437.75				106	4	437.75
Filing	10	66	2	247.50				175	6	656.25				241	8	903.75
	12							111	4	497.25				111	4	497.25
	10 - 12							30	1	127.50				30	1	127.50
	11 & 12	32	1	120.00				140	5	525.00				172	6	645.00
Total		98	3	367.50				456	16	1806.00				554	19	2173.50
General Business	N.R.							174	6	861.00				174	6	861.00
	8	182	6	773.50				229	8	948.25				411	14	1721.75
	9	464	14	2014.75				2523	84	10727.50	47	2	207.25	3034	100	12949.50
	10							214	9	935.50				214	9	935.50
	11							34	1	161.50				34	1	161.50
	9 - 10	41	2	153.75				80	3	300.00				121	5	453.75
	9 - 12							180	7	813.00				180	7	813.00
	10 - 11	36	1	171.00										36	1	171.00
	10 - 12							82	3	391.50				82	3	391.50
	11 - 12							20	1	95.00				20	1	95.00
Total		723	23	3113.00				3536	122	15233.25	47	2	207.25	4306	147	18553.50
Merchandising Information	12							26	1	123.50				26	1	123.50
Office Machines	11	24	1	90.00				133	4	498.75				157	5	588.75
	12	22	1	82.50				231	9	929.25				253	10	1011.75
	11 - 12	138	6	517.50				174	6	652.50				312	12	1170.00
Total		184	8	690.00				538	19	2080.50				722	27	2770.50
Office Practices	N.R.							43	2	204.25				43	2	204.25
	7							7	1	26.25				7	1	26.25
	11				26	1	143.00	122	5	545.50				148	6	688.50
	12	51	2	229.75	25	1	137.50	207	12	934.25				283	15	1301.50
	11 & 12							71	10	335.00				71	10	335.00
Total		51	2	229.75	51	2	280.50	450	30	2045.25				552	34	2555.50
Retailing	11							174	7	830.25				174	7	830.25
	12							189	6	867.75	42	2	210.00	231	8	1077.75
	10 - 12	26	1	123.50										26	1	123.50
	11 - 12	149	5	607.75				497	17	1863.75				646	22	2471.50
Total		175	6	731.25				860	30	3561.75	42	2	210.00	1077	38	4503.00
Secretarial Practices	11							7	1	26.25				7	1	26.25
	11 & 12							15	1	71.25				15	1	71.25
Total								22	2	97.50				22	2	97.50

TABLE 12 - Continued

		Advanced Degree						Regular Degree								
		Major-Minor			Neither			Major-Minor			Neither			Total		
Course	Grade Level	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Shorthand	N.R.							21	2	115.50	13	1	61.75	34	3	177.25
	11	233	9	914.00				581	25	2456.50				814	34	3370.50
	12	17	1	72.25	33	2	181.50	204	15	916.25	12	1	66.00	266	19	1236.00
	10 - 11							13	1	61.75				13	1	61.75
	10 - 12										24	1	114.00	24	1	114.00
	11 - 12	44	2	225.50				420	24	1923.75	27	1	128.25	491	27	2277.50
Total		294	12	1211.75	33	2	181.50	1239	67	5473.75	76	4	370.00	1642	85	7237.00
Notehand (Personal Use)	11 & 12							30	1	112.50				30	1	112.50
Transcription	N.R.							60	3	285.00				60	3	285.00
	11							9	1	33.75				9	1	33.75
	12	17	1	72.25				114	6	474.50	12	1	66.00	143	8	612.75
Total		17	1	72.25				183	10	793.25	12	1	66.00	212	12	931.50
Typewriting	N.R.							314	12	1595.75	24	2	90.00	338	14	1685.75
	8	236	7	1003.00	30	1	127.50	404	12	1752.00				670	20	2882.50
	9	401	12	1704.25	119	4	505.75	2767	89	11792.00	139	5	659.50	3426	110	14661.50
	10	704	21	2640.00				2293	74	9276.25	83	3	256.50	3080	98	12172.75
	11	303	9	1136.25				964	39	4090.75	56	2	308.00	1323	50	5535.00
	12	17	1	80.75				154	12	671.25	28	1	154.00	199	14	906.00
	8 & 9							27	1	114.75				27	1	114.75
	9 & 10							13	1	48.75				13	1	48.75
	9 - 11							158	5	869.00				158	5	869.00
	9 - 12							382	12	1783.00				382	12	1783.00
	10 & 11							333	17	1427.75				333	17	1427.75
	10 - 12	133	4	631.25				1515	54	7289.50	65	2	308.75	1713	60	8229.50
	11 & 12	20	1	75.00				437	24	1975.00				457	25	2050.00
Total		1814	55	7270.50	149	5	633.25	9761	352	42685.75	395	15	1776.75	12119	427	52366.25
Introduction to Distribution	9							57	2	254.75				57	2	254.75

TABLE 13

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Advanced Degree												Regular Degree														
		Major-Minor[2]						Neither[3]						Major-Minor						Neither								
		5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	N.R.[7]	20	2	75.00	29	1	159.50							88	4	418.00	121	4	581.75							258	11	1234.25
	9																5	1	21.25							5	1	21.25
	10	821	27	3243.75	1849	59	7018.75	23	1	126.50	87	3	422.50	210	9	862.75	349	12	1385.75							3339	111	13060.00
	11	323	11	1444.25	453	18	1895.25	10	1	55.00	30	1	112.50	280	10	1190.50	37	2	164.75							1133	43	4862.25
	12	78	3	424.75	69	3	305.75							35	1	166.25	41	2	162.25							223	9	1059.00
	10 - 11	143	5	619.25	111	4	485.25							32	1	152.00										286	10	1256.50
	10 - 12	68	3	359.00	122	4	630.50							17	1	80.75	100	3	526.00				30	1	165.00	337	12	1761.25
	11 & 12	335	14	1551.75	223	9	1074.50							103	4	462.25	41	3	191.50							702	30	3280.00
Total		1788	65	7717.75	2856	98	11569.50	33	2	181.50	117	4	535.00	765	30	3332.50	694	27	3033.25				30	1	165.00	6283	227	26534.50
Business Economics	12										64	2	240.00													64	2	240.00
	10 & 11	33	1	156.75																						33	1	156.75
	11 & 12	51	2	255.75																						51	2	255.75
Total		84	3	412.50							64	2	240.00													148	5	652.50
Business English	N.R.	109	3	408.75	140	4	525.00																			249	7	933.75
	12	50	2	237.50	19	1	90.25	26	1	143.00																95	4	470.75
	11 & 12				17	1	80.75										12	1	57.00							29	2	137.75
Total		159	5	646.25	176	6	696.00	26	1	143.00							12	1	57.00							373	13	1542.25
Business Law	N.R.	25	1	118.75										66	2	363.00										91	3	481.75
	10													88	1	330.00										88	1	330.00
	11										27	1	101.25													27	1	101.25
	12	176	6	697.00	651	21	2639.25	31	1	170.50	23	1	126.50	128	4	577.00	43	2	196.25							1052	35	4406.50
	10 - 12				53	2	291.50																			53	2	291.50
	11 & 12	58	2	231.50	17	1	80.75							54	2	237.00										129	5	549.25
Total		259	9	1047.25	721	24	3011.50	31	1	170.50	50	2	227.75	336	9	1507.00	43	2	196.25							1440	47	6160.25
Business Mathematics	N.R.	25	1	118.75	25	1	106.25							25	1	118.75										75	3	343.75
	9				69	2	274.25	26	1	143.00							37	2	156.75							132	5	574.00
	10	542	18	2064.50	1808	58	6809.00	35	1	131.25				357	12	1362.75	102	3	382.50	36	1	135.00				2880	93	10885.00
	11	34	1	161.50	58	2	241.50										39	1	185.25							131	4	588.25
	12													51	2	242.25										51	2	242.25
	10 - 11				30	1	142.50																			30	1	142.50
	10 - 12				114	3	627.00										31	1	170.50							145	4	797.50
	11 - 12				29	1	137.75																			29	1	137.75
Total		601	20	2344.75	2133	68	8338.25	61	2	274.25				433	15	1723.75	209	7	895.00	36	1	135.00				3473	113	13711.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 13 - Continued

Courses	Grade Level	Advanced Degree: Major-Minor: 5-10 yrs. experience S	C	H	Advanced Degree: Major-Minor: 10 or more yrs. experience S	C	H	Advanced Degree: Neither: 5-10 yrs. experience S	C	H	Advanced Degree: Neither: 10 or more yrs. experience S	C	H	Regular Degree: Major-Minor: 5-10 yrs. experience S	C	H	Regular Degree: Major-Minor: 10 or more yrs. experience S	C	H	Regular Degree: Neither: 5-10 yrs. experience S	C	H	Regular Degree: Neither: 10 or more yrs. experience S	C	H	Total S	C	H
Business	N.R.				21	1	78.75																			21	1	78.75
Organization	9	63	3	236.25										56	2	210.00										63	3	236.25
	11																									56	2	210.00
	12	23	1	109.25																						23	1	109.25
	10 - 12				74	3	407.00																			74	3	407.00
Total		86	4	345.50	95	4	485.75							56	2	210.00										237	10	1041.25
Cooperative	N.R.	96	4	410.00	48	2	180.00																			144	6	590.00
Training for	11	17	1	80.75																						17	1	80.75
Distributive	12	50	2	187.50	304	10	1708.75										20	1	160.00							374	13	2056.25
Occupations	10 - 12				9	1	72.00																			9	1	72.00
	11 & 12	48	3	228.00	32	1	120.00																			80	4	348.00
Total		211	10	906.25	393	14	2080.75										20	1	160.00							624	25	3147.00
Cooperative	N.R.	75	3	356.25	100	4	475.00							25	1	137.50										200	8	968.75
Training for	11																31	1	116.25							31	1	116.25
Office	12				65	2	435.50																			65	2	435.50
Occupations	11 & 12	116	4	435.00	25	1	93.75																			141	5	528.75
Total		191	7	794.25	190	7	1004.25							25	1	137.50	31	1	116.25							437	16	2052.25
Distributive	10	29	1	137.75																						29	1	137.75
Education	11	87	4	413.25																						87	4	413.25
	12	31	1	147.25	53	2	229.75										55	2	261.25							139	5	638.25
	10 - 12																34	1	161.50							34	1	161.50
	11 & 12				31	1	170.50							45	2	168.75										76	3	339.25
Total		147	6	698.25	84	3	400.25							45	2	168.75	89	3	422.75							365	14	1690.00
Economic	N.R.	54	3	202.50													24	1	90.00							78	4	292.50
Geography	10	60	2	225.00																						60	2	225.00
	10 - 12				23	1	126.50																			23	1	126.50
Total		114	5	427.50	23	1	126.50										24	1	90.00							161	7	644.00
Filing	N.R.				14	1	52.50																			14	1	52.50
	10	175	6	656.25	130	4	513.50																			305	10	1169.75
	12	26	1	123.50																						26	1	123.50
	8 - 10				38	1	142.50																			38	1	142.50
	10 & 11				27	1	128.25																			27	1	128.25
	10 - 12				62	2	263.50																			62	2	263.50
	11 & 12	71	3	266.25	449	14	1683.75							33	2	144.75	37	1	138.75							590	20	2233.50
Total		272	10	1046.00	720	23	2784.00							33	2	144.75	37	1	138.75							1062	36	4113.50
General	N.R.													17	1	72.25										17	1	72.25
Business	8	343	11	1457.75	190	6	807.50	34	1	144.50				93	3	395.25										660	21	2805.00
	9	501	17	2208.75	490	18	1884.00	85	4	467.50	73	3	336.50	496	15	2065.00	293	9	1267.75	172	5	731.00				2110	71	8960.50
	10	31	1	147.25	25	1	93.75							107	4	460.25	38	2	174.50							201	8	875.75
	12				23	1	126.50																			23	1	126.50
	9 - 10																			36	1	135.00				36	1	135.00
	10 - 11																26	1	123.50							26	1	123.50
	10 - 12				27	1	148.50																			27	1	148.50
	11 - 12																11	1	41.25							11	1	41.25
Total		875	29	3813.75	755	27	3060.25	119	5	612.00	73	3	336.50	713	23	2992.75	368	13	1607.00	208	6	866.00	3111	106	13288.25			
Merchandising Information	11 - 12													54	2	229.50										54	2	229.50

TABLE 13 - Continued

		Advanced Degree												Regular Degree														
		Major-Minor						Neither						Major-Minor						Neither								
		5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Office Machines	N.R.	18	1	85.50																						18	1	85.50
	11				26	1	97.50																			26	1	97.50
	12	267	10	1148.25	212	10	1076.75							16	2	72.00										495	22	2297.00
	10 - 11				30	1	112.50																			30	1	112.50
	10 - 12				21	1	99.75																			21	1	99.75
	11 - 12	475	18	1904.50	1155	39	4428.50							115	5	522.25										1745	26	6855.25
Total		760	29	3138.25	1444	52	5815.00							131	7	594.25										2335	88	9547.50
Office Practices	N.R.													22	1	121.00										22	1	121.00
	11				25	1	118.75				17	1	93.50				47	2	223.25							89	4	435.50
	12	161	7	673.25	208	8	965.50				109	4	532.00	119	6	553.75	146	9	679.50							743	34	3304.00
	11 & 12	35	2	157.50	126	5	598.50										20	1	110.00							181	8	866.00
Total		196	9	830.75	359	14	1682.75				126	5	625.50	141	7	674.75	213	12	1012.75							1035	47	4826.50
Retailing	N.R.	46	3	172.50																						46	3	172.50
	11				88	4	371.00																			88	4	371.00
	12	20	1	75.00	70	3	370.75							41	2	182.75				34	2	187.00				165	8	815.50
	10 - 11	28	1	105.00																						28	1	105.00
	11 - 12	512	18	1920.00	302	10	1209.75										43	2	161.25							857	30	3291.00
Total		606	23	2272.50	460	17	1951.50							41	2	182.75	43	2	161.25	34	2	187.00				1184	46	4755.00
Secretarial Practices	N.R.				16	1	76.00																			16	1	76.00
	12	37	2	162.75	10	1	37.50										10	1	47.50							57	4	247.75
Total		37	2	162.75	26	2	113.50										10	1	47.50							73	5	323.75
Shorthand	N.R.													20	1	95.00	17	1	93.50							37	2	188.50
	10													14	1	52.50										14	1	52.50
	11	722	27	2745.50	1085	41	4361.25				147	8	771.75	128	7	502.00	293	12	1250.00				21	1	115.50	2396	96	9746.00
	12	147	7	592.50	482	20	1837.50				20	1	110.00	33	3	120.75	188	10	857.75							870	41	3518.50
	10 - 11	49	2	269.50	19	1	71.25																			68	3	340.75
	11 - 12	74	4	366.75	124	7	620.25							113	8	511.50	115	6	517.50							426	25	2016.00
Total		992	40	3974.25	1710	69	6890.25				167	9	881.75	308	20	1281.75	613	29	2718.75				21	1	115.50	3811	168	15862.25
Notehand (Personal Use)	11 & 12	41	2	153.75	162	5	754.50										24	1	90.00							227	8	998.25
Transcription	N.R.																23	1	86.25							23	1	86.25
	7				32	1	120.00																			32	1	120.00
	11																34	2	157.25							34	2	157.25
	12	77	3	288.75	421	17	1643.50							27	2	101.25	121	5	567.00							646	27	2600.50
Total		77	3	288.75	453	18	1763.50							27	2	101.25	178	8	810.50							735	31	2964.00
Typewriting	N.R.	40	2	190.00	12	1	45.00							251	11	1227.50	73	3	359.50							376	17	1822.00
	7				80	3	160.00																			80	3	160.00
	8	244	7	1037.00	108	4	279.00							90	3	382.50	40	1	170.00							482	15	1868.50
	9	1195	39	5024.75	489	17	1997.00				59	2	324.50	643	19	2750.25	817	24	3472.25							3203	101	13568.75
	10	1180	38	4563.50	3099	96	11890.75	271	9	1382.50	109	4	529.50	255	9	1161.75	517	17	2118.50							5431	173	21646.50
	11	383	15	1570.00	1144	39	4481.75				53	2	291.50	261	10	1177.25	271	11	1117.75							2112	77	8638.25
	12	146	6	664.75	205	8	876.50	35	1	192.50	83	3	418.25	95	6	454.25	88	5	403.50							652	29	3009.75
	8 & 9	36	1	153.00										48	1	204.00										84	2	357.00
	9 & 10													137	5	542.75										137	5	542.75
	9 - 11	89	3	490.00																						89	3	490.00
	9 - 12				208	7	988.00							161	5	813.50	204	7	969.00							573	19	2770.50
	10 & 11	240	7	1124.00	73	3	314.00							131	6	532.25	145	6	670.25							589	22	2640.50
	10 - 12	317	10	1538.75	238	8	1200.25							110	4	559.25	298	10	1592.75				108	3	594.00	1071	35	5485.00
	11 & 12	206	9	902.75	559	19	2280.25							136	7	556.00	185	9	921.50							1086	44	4660.50
Total		4076	137	17258.50	6215	205	24512.50	306	10	1575.00	304	11	1563.75	2318	86	10361.25	2638	93	11795.00				108	3	594.00	15965	545	67660.00

TABLE 14

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree Major-Minor[2]									Neither[3]								
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	10	77	3	288.75				550	18	2062.50							627	21	2351.25
	11							352	17	1479.00							352	17	1479.00
	12							34	2	149.50							34	2	149.50
	10 & 11							26	1	123.50							26	1	123.50
	10 - 12							130	5	534.50							130	5	534.50
	11 & 12				17	1	63.75	207	10	978.50							224	11	1042.25
Total		77	3	288.75	17	1	63.75	1299	53	5327.50							1393	57	5680.00
Business Economics	11 & 12							59	2	221.25							59	2	221.25
Business English	N.R.[7]							137	4	513.75							137	4	513.75
	12							21	1	78.75							21	1	78.75
Total								158	5	592.50							158	5	592.50
Business Law	N.R.							20	1	110.00							20	1	110.00
	12							229	7	858.75				33	1	181.50	262	8	1040.25
	11 & 12							57	2	213.75							57	2	213.75
Total								306	10	1182.50				33	1	181.50	339	11	1364.00
Business Mathematics	8													65	3	276.25	65	3	276.25
	10				69	2	258.75	784	24	2940.00				49	2	183.75	902	28	3382.50
	11							44	1	209.00							44	1	209.00
	11 & 12													23	1	109.25	23	1	109.25
	10 - 12							84	3	382.50							84	3	382.50
Total					69	2	258.75	912	28	3531.50				137	6	569.25	1118	36	4359.50
Business Organization	N.R.													25	1	137.50	25	1	137.50
	10 - 12							51	2	280.50				28	1	154.00	79	3	434.50
Total								51	2	280.50				53	2	291.50	104	4	572.00
Cooperative Training for Distributive Occupations								55	2	278.50				36	1	288.00	91	3	566.50
Cooperative Training for Office Occupations	N.R.							100	4	518.75							100	4	518.75
	12							128	2	1024.00							128	2	1024.00
Total								228	6	1542.75							228	6	1542.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 14 - Continued

Courses	Grade Level	Advanced Degree Major-Minor: Less than 5 yrs. experience S	C	H	5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Neither: 5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Total S	C	H
Distributive Education	11							45	2	213.75							45	2	213.75
Economic Geography	10 - 12													61	3	335.50	61	3	335.50
Filing	10				21	1	78.75										21	1	78.75
	12	25	1	93.75				35	2	166.25							60	3	260.00
Total		25	1	93.75	21	1	78.75	35	2	166.25							81	4	338.75
General	N.R.							26	1	143.00							26	1	143.00
Business	8							31	1	131.75				29	1	123.25	60	2	255.00
	9				36	1	135.00	296	9	1108.00							332	10	1243.00
	10							41	2	194.75							41	2	194.75
Total					36	1	135.00	394	13	1577.50				29	1	123.25	459	15	1835.75
Merchandising Information	11 & 12							120	3	660.00							120	3	660.00
Office Machines	N.R.							15	1	82.50							15	1	82.50
	11							35	1	131.25							35	1	131.25
	12							313	14	1423.00							313	14	1423.00
	11 & 12							25	1	93.75							25	1	93.75
Total								388	17	1730.50							388	17	1730.50
Office Practices	12							79	4	317.25				67	3	318.25	146	7	635.50
	11 & 12							55	2	230.25				19	1	90.25	74	3	320.50
Total								134	6	547.50				86	4	408.50	220	10	956.00
Retailing	N.R.							26	1	97.50							26	1	97.50
	12							37	2	138.75							37	2	138.75
	10 - 12													57	2	270.75	57	2	270.75
	11 - 12							73	3	298.75							73	3	298.75
Total								136	6	535.00				57	2	270.75	193	8	805.75
Secretarial Practices	12							59	3	258.25							59	3	258.25
Shorthand	10							89	3	333.75							89	3	333.75
	11				19	1	71.25	642	24	2649.00				166	8	803.50	827	33	3523.75
	12							354	18	1562.50				130	5	609.75	484	23	2172.25
	10 & 11							17	1	72.25							17	1	72.25
	10 - 12							28	1	133.00							28	1	133.00
	11 & 12				5	1	18.75	144	7	690.00				63	3	299.25	212	11	1008.00
Total					24	2	90.00	1274	54	5440.50				359	16	1712.50	1657	72	7243.00
Notehand (Personal Use)	11 & 12							36	1	135.00							36	1	135.00
Transcription	12							181	8	755.75	14	1	77.00	49	2	207.75	244	11	1040.50
Typewriting	8													26	1	110.50	26	1	110.50
	9	134	4	569.50				621	19	2529.50				76	3	323.00	831	26	3422.00
	10	201	6	753.75	53	2	198.75	1557	49	5890.00				153	5	698.00	1964	62	7540.50
	11							708	20	2655.00				50	3	253.25	758	23	2908.25
	12							190	6	835.50				27	1	148.50	217	7	984.00
	8 & 9													52	2	221.00	52	2	221.00
	9 & 12													128	4	608.00	128	4	608.00
	10 & 11							25	2	118.75							25	2	118.75
	10 & 12							806	27	3811.75							806	27	3811.75
	11 & 12				15	1	56.25	199	8	895.25							214	9	951.50
Total		335	10	1323.25	68	3	255.00	4106	131	16735.75				512	19	2362.25	5021	163	20676.25

TABLE 14 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Regular Degree Major-Minor[2]									Neither[3]								
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	N.R.[7]							107	4	469.75							107	4	469.75
	10							162	5	607.50				65	3	327.50	227	8	935.00
	11							300	10	1425.00				19	1	90.25	319	11	1515.25
	12							110	6	514.50							110	6	514.50
	10 & 11							92	3	437.00							92	3	437.00
	10 - 12				26	1	143.00	29	1	108.75							55	2	251.75
	11 & 12				70	3	318.50	185	10	805.25							255	13	1123.75
Total					96	4	461.50	985	39	4367.75				84	4	417.75	1165	47	5247.00
Business English	N.R.				36	1	135.00										36	1	135.00
	10							20	1	95.00							20	1	95.00
	12							212	9	1007.00							212	9	1007.00
Total					36	1	135.00	232	10	1102.00							268	11	1237.00
Business Law	11							23	1	86.25							23	1	86.25
	12							31	1	147.25							31	1	147.25
	10 - 12							14	1	77.00							14	1	77.00
Total								68	3	310.50							68	3	310.50
Business Mathematics	7																		
	8													61	2	259.25	61	2	259.25
	9													95	4	438.25	95	4	438.25
	10	79	3	375.25				54	2	202.50				84	3	443.25	84	3	443.25
	11							59	2	280.25				50	2	187.50	183	7	765.25
	10 - 12							24	1	132.00							59	2	280.25
Total		79	3	375.25				137	5	614.75				290	11	1328.25	24	1	132.00
																	506	19	2318.25
Business Organization	9													31	1	131.75	31	1	131.75
	10 - 12							84	3	462.00							84	3	462.00
Total								84	3	462.00				31	1	131.75	115	4	593.75
Economic Geography	11							72	2	342.00							72	2	342.00
Filing	10							26	1	97.50							26	1	97.50
General Business	8							67	2	284.75	176	5	748.00				243	7	1032.75
	9	135	5	742.50	27	1	101.25	238	10	1010.50				244	10	1032.00	644	26	2886.25
	10				37	1	175.75	52	4	252.50				28	1	105.00	117	6	533.25
	9 - 10							14	1	52.50							14	1	52.50
	10 - 11							70	3	285.50							70	3	285.50
	10 - 12							111	5	536.25							111	5	536.25
	11 - 12							35	1	192.50							35	1	192.50
Total		135	5	742.50	64	2	277.00	587	26	2614.50	176	5	748.00	272	11	1137.00	1234	49	5519.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 14 - Continued

Courses	Grade Level	Regular Degree Major-Minor: Less than 5yrs. experience S	C	H	5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Neither: 5-10 yrs. experience S	C	H	Total S	C	H
Merchandising Information	12							72	2	270.00				72	2	270.00
Office Machines	11 - 12							49	2	183.75				49	2	183.75
Office Practices	N.R.	20	1	75.00										20	1	75.00
	12							81	5	376.50				81	5	376.50
	11 & 12				26	1	123.50	21	2	83.75				47	3	207.25
Total		20	1	75.00	26	1	123.50	102	7	460.25				148	9	658.75
Retailing	11	78	3	370.50										78	3	370.50
Shorthand	N.R.							64	3	152.00				64	3	152.00
	11				30	2	162.00	357	15	1624.75				387	17	1786.75
	12				19	1	104.50	179	11	838.25				198	12	942.75
	9 & 12							7	1	26.25				7	1	26.25
	10 & 11							74	3	362.00				74	3	362.00
	11 & 12				37	2	184.75	205	11	945.25				242	13	1130.00
Total					86	5	451.25	886	44	3948.50				972	49	4399.75
Transcription	11							2	1	6.50				2	1	6.50
	12				19	1	104.50	112	5	570.25				131	6	674.75
	11 & 12							23	1	86.25				23	1	86.25
Total					19	1	104.50	137	7	663.00				156	8	767.50
Typewriting	N.R.	20	1	75.00				274	9	1174.50				294	10	1249.50
	8							164	6	697.00				164	6	697.00
	9				226	6	960.50	294	11	1282.00				520	17	2242.50
	10	39	1	146.25	50	2	187.50	810	26	3458.50				899	29	3792.25
	11	101	3	378.75	89	3	365.25	235	9	1073.25				425	15	1817.25
	12				39	2	198.75	196	12	856.50				235	14	1055.25
	9 & 10							24	1	132.00				24	1	132.00
	9 & 12				42	2	199.50							42	2	199.50
	10 & 11							140	6	659.50				140	6	659.50
	10 - 12				73	2	401.50	928	30	4109.00				1001	32	4510.50
	11 & 12				79	4	375.25	622	31	2635.75				701	35	3011.00
Total		160	5	600.00	598	21	2688.25	3687	141	16078.00				4445	167	19366.25

TABLE 14 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Non-Degree Major-Minor[2]						Neither[3]					
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	N.R.[7]							50	2	237.50				50	2	237.50
	11							66	3	313.50				66	3	313.50
	12							19	1	90.25				19	1	90.25
Total								135	6	641.25				135	6	641.25
Business Mathematics	10				34	1	127.50							34	1	127.50
Filing	11 & 12				39	1	146.25							39	1	146.25
General Business	9										56	2	266.00	56	2	266.00
	10				35	1	131.25							35	1	131.25
	11							15	1	82.50				15	1	82.50
	10 - 12							40	1	220.00				40	1	220.00
Total					35	1	131.25	55	2	302.50	56	2	266.00	146	5	699.75
Office Practices	12							35	2	179.75				35	2	179.75
Shorthand	N.R.							18	1	99.00				18	1	99.00
	11							6	1	28.50				6	1	28.50
	12							25	2	127.75				25	2	127.75
Total								49	4	255.25				49	4	255.25
Transcription	N.R.							80	4	380.00				80	4	380.00
Typewriting	N.R.				32	1	120.00	210	6	1011.75				242	7	1131.75
	10				34	1	127.50	61	2	310.75				95	3	438.25
	11				33	1	181.50	23	2	109.25				56	3	290.75
	12							6	1	28.50				6	1	28.50
	9 - 12	90	3	427.50										90	3	427.50
	10 - 12							27	1	148.50				27	1	148.50
	11 & 12							45	2	247.50				45	2	247.50
Total		90	3	427.50	99	3	429.00	372	14	1856.25				561	20	2712.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students

[5]Classes

[6]Hours

[7]Grade level not reported.

TABLE 15

TEACHERS OF BUSINESS EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH YEARS OF EXPERIENCE AND EDUCATIONAL BACKGROUND UNREPORTED ACCORDING TO NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

GRADE LEVEL

Courses	Unknown[2]			7			8			9			10			11			12			7-8		
	S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Accounting and Bookkeeping	4003	157	19382.00										2335	82	10764.00	1679	69	7836.50	1412	60	6615.75	25	1	137.50
Business Economics																			189	7	948.00			
Business English	512	21	2372.50										100	5	475.00	36	2	171.00	729	28	3296.50			
Business Law	495	20	2422.25										64	3	305.75	228	7	1083.00	864	34	3872.00			
Business Mathematics	761	28	3890.75				28	1	119.00	464	19	2050.50	1136	39	5237.25	70	3	352.75	205	8	894.75			
Business Organization																			89	3	395.75			
Cooperative Training for Distributive Occupations	120	5	570.00																35	2	247.50			
Cooperative Training for Office Occupations	531	26	3563.25																321	12	1823.75			
Distributive Education	60	3	285.00																44	2	183.00			
Economic Geography	338	12	1511.75	63	2	299.25				32	1	120.00	44	2	219.50									
Filing	88	3	359.00										130	4	617.50									
General Business	2163	74	9924.00				86	3	318.25	4422	158	19319.75	1559	55	7145.75				31	1	147.25			
Merchandising Information	28	1	182.00													12	1	66.00	58	2	247.50			
Office Machines	662	41	3214.25													78	4	381.00	751	38	1108.75			
Office Practices	700	37	3349.50							20	1	95.00				35	2	166.25	2079	107	9764.00			
Retailing	579	19	2736.25	32	1	152.00							13	1	61.75	212	7	996.00	342	12	1628.00			
Secretarial Practices	127	7	687.50													11	1	52.25	173	9	865.75			
Shorthand	2321	105	11140.00	16	2	76.00				18	1	85.50	264	13	1257.00	3374	153	15912.75	2222	134	10432.75	15	1	82.50
Notehand (Personal Use)																			22	7	104.50			
Transcription	626	31	2802.75													234	10	1065.50	506	22	2257.25			
Typewriting	11529	416	55145.25	127	4	539.75	569	18	2169.50	1223	45	5569.75	5390	196	24817.50	4927	196	22743.00	2838	119	13141.25	29	1	123.25
Introduction to Distribution													310	9	1472.50	933	30	4414.75	304	13	1444.00			
Unknown													11345	409	52373.50	11829	485	55240.75	13214	620	59418.00	69	3	343.25
Total	25643	1006	123538.00	238	9	1067.00	683	22	2606.75	6179	225	27240.50												

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Grade level not reported.

[3]Students.

[4]Classes.

[5]Hours.

TABLE 15 - Continued

GRADE LEVEL

Courses	7-9			8-9			8-11			9-10			9-11			9-12			10-11			10-12			11-12			Total		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H			
Accounting and Bookkeeping	21	1	99.75										114	4	632.50	77	3	401.75	421	20	1959.75	1241	44	5930.75	3258	125	15015.50	14586	566	68775.75
Business Economics																						23	1	109.25	47	2	152.75	259	10	1210.00
Business English																									44	3	209.00	1421	59	6524.00
Business Law																26	1	123.50				110	5	486.00	305	14	1460.00	2092	84	9752.50
Business Mathematics							21	1	99.75	73	3	346.75	31	1	147.25	330	13	1607.25	74	3	407.00	442	15	2060.25	386	14	1877.25	4021	148	19090.50
Business Organization																									69	3	342.50	158	6	738.25
Cooperative Training for Distributive Occupations																									13	1	61.75	168	8	879.25
Cooperative Training for Office Occupations																									51	3	216.75	903	41	5603.75
Distributive Education																						26	1	123.50	149	6	588.00	279	12	1179.50
Economic Geography																20	1	95.00	33	2	147.75	36	1	171.00	52	2	242.25	618	23	2806.50
Filing																			28	1	119.00	42	2	191.00	95	3	380.25	383	13	1666.75
General Business							424	16	1958.00							375	14	1659.75	356	13	1693.00	336	15	1650.00	149	6	696.25	9901	355	44512.00
Merchandising Information																						28	1	133.00				126	5	628.50
Office Machines																									113	6	464.75	1604	89	5168.75
Office Practices																						13	1	52.25	475	24	2142.75	3322	172	15569.75
Retailing																34	1	161.50				22	1	104.50	187	8	839.50	1421	50	6679.50
Secretarial Practices																												311	17	1605.50
Shorthand							14	1	66.50							28	1	133.00	88	4	430.00	233	9	1049.00	2404	118	11309.25	10997	542	51974.25
Notehand (Personal Use)																									54	2	202.50	76	9	307.00
Transcription																						17	1	72.25	72	4	344.25	1455	68	6542.00
Typewriting				656	20	2553.00	458	19	2027.50							598	23	2687.50	1906	71	8928.00	5272	192	25149.25	6228	253	29486.75	41750	1573	195081.25
Introduction to Distribution																												1560	53	7393.00
Unknown																						13	1	61.75						
Total	21	1	99.75	656	20	2553.00	21	1	99.75	969	39	4398.75	145	5	779.75	1488	57	6869.25	2906	114	13684.50	7854	290	37343.75	14151	597	66032.00	97411	3903	453688.25

TABLE 16

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Advanced Degree Major-Minor[2]						Neither[3]					
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Care & Guidance of Children	11 - 12							28	1	91.00				28	1	91.00
Clothing & Textiles	10										16	1	76.00	16	1	76.00
Home & Family Living	N.R.[7]				128	4	608.00							128	4	608.00
	11 - 12							39	1	126.75				39	1	126.75
Total					128	4	608.00	39	1	126.75				167	5	734.75
Homemaking & Health	8	39	2	146.25				90	5	389.50				129	7	535.75
	10 - 12	15	1	71.25										15	1	71.25
	11 - 12	17	1	80.75				32	1	104.00				49	2	184.75
Total		71	4	298.25				122	6	493.50				193	10	791.75
Hospital Service[8]	10 - 12				22	1	176.00							22	1	176.00
Unknown	10 - 12				22	1	176.00							22	1	176.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

[8]Taught in the Trade & Industrial curriculum.

TABLE 16 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Regular Degree

		Major-Minor[2]												Neither[3]								
		Experience not indicated			Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Less than 5 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Clothing & Textiles	8													45	3	247.50				45	3	247.50
	9				10	1	42.50							25	1	137.50				35	2	180.00
	10				26	2	97.50													26	2	97.50
Total					36	3	140.00							70	4	385.00				106	7	525.00
Foods & Nutrition	8													38	1	209.00	12	1	66.00	50	2	275.00
	9				50	2	237.50							37	2	203.50	16	1	88.00	103	5	529.00
	10				65	3	342.50													65	3	342.50
	12				10	1	55.00													10	1	55.00
	8 - 9				34	1	161.50													34	1	161.50
	9 - 12	27	1	128.25	28	1	133.00													55	2	261.25
	10 - 12	80	3	380.00	19	1	90.25													99	4	470.25
Total		107	4	508.25	206	9	1019.75							75	3	412.50	28	2	154.00	416	18	2094.50
Home & Family Living	8				53	2	225.25													53	2	225.25
	12				27	1	101.25	24	1	114.00										51	2	215.25
	10 - 12				29	1	137.75													29	1	137.75
	11 - 12				24	1	90.00	24	1	114.00										48	2	204.00
Total					133	5	554.25	48	2	228.00										181	7	782.25
Homemaking & Health	N.R.[7]	40	2	150.00																40	2	150.00
	7				176	8	749.50				66	3	247.50							242	11	997.00
	8	29	2	137.75	229	13	1014.75	76	2	361.00	42	3	157.50							376	20	1671.00
	9				318	16	1462.50	81	4	384.75										399	20	1847.25
	10				181	10	926.75	78	4	370.50										259	14	1297.25
	11				25	1	118.75	43	3	204.25										68	4	323.00
	12							68	4	323.00										68	4	323.00
	7 - 8							33	1	156.75										33	1	156.75
	9 - 10				9	1	42.75	13	1	61.75										22	2	104.50
	9 - 12							50	2	237.50										50	2	237.50
	10 - 11				14	1	59.50													14	1	59.50
	10 - 12							48	3	228.00										48	3	228.00
	11 - 12				114	7	530.75	15	1	71.25										129	8	602.00
Total		69	4	287.75	1066	57	4905.25	505	25	2398.75	108	6	405.00							1748	92	7996.75
Home Furnishings & Equipment	12													25	1	137.50				25	1	137.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

TABLE 16 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Non-Degree

		Major-Minor[2]									Neither[3]								
		Experience not indicated			Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Less than 5 yrs. experience			10 or more yrs. experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Clothing & Textiles	8	30	1	165.00																30	1	165.00
	9	20	1	110.00																20	1	110.00
	9 - 11													25	1	200.00				25	1	200.00
	9 - 12										142	6	461.50							142	6	461.50
	10 - 12													20	1	160.00				20	1	160.00
Total		50	2	275.00							142	6	461.50	45	2	360.00				237	10	1096.50
Commercial Cooking, Baking, Etc.[7]	12	12	1	96.00																12	1	96.00
	10 - 11																21	2	153.00	21	2	153.00
	11 - 12	13	1	104.00																13	1	104.00
Total		25	2	200.00													21	2	153.00	46	4	353.00
Foods & Nutrition	9 - 11	24	1	192.00																24	1	192.00
	9 - 12	35	2	162.50													20	1	65.00	55	3	227.50
	11 - 12	32	2	236.50																32	2	236.50
Total		91	5	591.00													20	1	65.00	111	6	656.00
Health[8]	8	28	1	133.00																28	1	133.00
Home & Family Living	11	25	1	118.75																25	1	118.75
	11 - 12										19	1	90.25							19	1	90.25
Total		25	1	118.75							19	1	90.25							44	2	209.00
Homemaking & Health	7							18	1	76.50										18	1	76.50
	8							18	1	85.50				22	1	82.50				40	2	168.00
	9	11	1	52.25				27	1	128.25	29	2	137.75	15	1	56.25				82	5	374.50
	10				29	2	159.50				23	1	109.25							52	3	268.75
	11				22	1	121.00				9	1	42.75							31	2	163.75
	12				7	1	38.50													7	1	38.50
	7 - 8				29	1	108.75													29	1	108.75
	9 - 12				37	2	138.75													37	2	138.75
	11 - 12	12	1	57.00	14	1	77.00													26	2	134.00
Total		23	2	109.25	138	8	643.50	63	3	290.25	61	4	289.75	37	2	138.75				322	19	1471.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Taught in the Trade & Industrial curriculum.

[8]Usually not considered as a specific Home Economics course but taught in Physical Education or Science.

TABLE 17

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PROVISIONAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Advanced Degree						Regular Degree								
	Grade	Major-Minor[2]			Neither			Major-Minor			Neither[3]			Total		
Courses	Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Care & Guidance of Children	10 - 12							58	2	188.50	36	1	117.00	94	3	305.50
	11 - 12	22	1	71.50				38	1	123.50				60	2	195.00
Total		22	1	71.50				96	3	312.00	36	1	117.00	154	5	500.50
Clothing & Textiles	N.R.[7]							20	1	110.00				20	1	110.00
	8	284	9	1284.00	45	2	247.50	423	14	1953.75	82	4	333.00	834	29	3818.25
	9	15	1	71.25				149	8	650.50	102	5	552.75	266	14	1274.50
	10				28	2	154.00							28	2	154.00
	11							22	1	104.50				22	1	104.50
	7 - 8							20	1	85.00				20	1	85.00
	8 - 9							28	1	119.00				28	1	119.00
	8 - 10							69	3	417.00				69	3	417.00
	9 - 11							61	3	222.25				61	3	222.25
	9 - 12	70	2	455.00				281	11	1149.75				351	13	1604.75
	10 - 11							93	4	362.25				93	4	362.25
	10 - 12	55	2	310.25										55	2	310.25
	11 - 12							36	2	117.00				36	2	117.00
Total		424	14	2120.50	73	4	401.50	1202	49	5291.00	184	9	885.75	1883	76	8698.75
Commercial Cooking, Baking, etc.[8]	9 - 10	42	2	236.25										42	2	236.25
Cosmetology[8]	11							50	2	400.00				50	2	400.00
	10 - 12							38	2	304.00				38	2	304.00
Total								88	4	704.00				88	4	704.00
Foods & Nutrition	7							70	3	273.00				70	3	273.00
	8	60	2	285.00				369	13	1596.75	305	12	1601.00	734	27	3482.75
	9	33	2	136.75	39	2	214.50	167	8	730.00	61	3	316.00	300	15	1397.25
	10	27	1	128.25							32	2	159.50	59	3	287.75
	11							25	1	162.50				25	1	162.50
	8 - 9							40	2	190.00				40	2	190.00
	8 - 10							44	1	352.00				44	1	352.00
	9 - 10							32	1	176.00				32	1	176.00
	9 - 12							141	6	592.50	57	2	270.75	198	8	863.25
	10 - 11	57	2	234.75				5	1	32.50				62	3	267.25
	10 - 12	87	4	478.50				250	11	1378.25				337	15	1856.75
	11 - 12	13	1	61.75										13	1	61.75
Total		277	12	1325.00	39	2	214.50	1143	47	5483.50	455	19	2347.25	1914	80	9370.25
Home & Family Living	N.R.							56	3	238.00				56	3	238.00
	8	198	6	842.50				301	7	1372.50				499	13	2215.00
	9							100	4	446.50				100	4	446.50
	12							124	6	560.50	78	3	313.50	202	9	874.00
	9 - 11	20	1	65.00										20	1	65.00
	10 - 12	88	4	433.00				105	4	406.50				193	8	839.50
	11 - 12	154	5	564.00				220	8	846.50				374	13	1410.50
Total		460	16	1904.50				906	32	3870.50	78	3	313.50	1444	51	6088.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

[8]Taught in the Trade & Industrial curriculum.

TABLE 17 - Continued

Courses	Grade Level	Advanced Degree Major-Minor S	C	H	Advanced Degree Neither S	C	H	Regular Degree Major-Minor S	C	H	Regular Degree Neither S	C	H	Total S	C	H
Homemaking & Health	N.R.							108	7	538.50				108	7	538.50
	7	93	3	395.25				1191	48	4819.00				1284	51	5214.25
	8	232	11	1097.50				1768	81	5307.50	54	3	229.50	2054	95	6634.50
	9	235	8	1042.25				1197	66	5465.75				1432	74	6508.00
	10	26	3	123.50				577	35	2724.50				603	38	2848.00
	11							72	5	336.25				72	5	336.25
	12	5	1	23.75				39	4	189.00				44	5	212.75
	7 - 8							98	3	458.50				98	3	458.50
	8 - 9	73	2	310.25				92	3	506.75				165	5	817.00
	9 - 10							107	5	494.25				107	5	494.25
	9 - 12							138	5	655.50				138	5	655.50
	10 - 11							42	3	213.00				42	3	213.00
	10 - 12	22	2	104.50				530	26	2484.25				552	28	2588.75
	11 - 12	33	2	119.25				353	26	1576.25				386	28	1695.50
Total		719	32	3216.25				6312	317	25769.00	54	3	229.50	7085	352	29214.75
Home Furnishings and Equipment	12							68	2	194.75	83	3	330.50	151	5	525.25
	11 - 12	18	1	85.50				37	1	120.25				55	2	205.75
Total		18	1	85.50				105	3	315.00	83	3	330.50	206	7	731.00
Unknown	7							54	2	256.50				54	2	256.50
	8							62	2	294.50				62	2	294.50
Total								116	4	551.00				116	4	551.00

TABLE 18

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Advanced Degree											
		Major-Minor[2]						Neither[3]					
		5-10 yrs. experience			10 or more yrs. experience			10 or more yrs experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H
Care & Guidance of Children	10	26	1	84.50							26	1	84.50
	11	25	1	81.25	63	2	204.75				88	3	286.00
	12	31	1	100.75	50	2	162.50				81	3	263.25
	9 - 12	31	1	100.75							31	1	100.75
	10 - 11	25	1	81.25							25	1	81.25
	10 - 12				104	4	375.00				104	4	375.00
	11 - 12	29	1	94.25	75	2	243.75	58	2	188.50	162	5	526.50
Total		167	6	542.75	292	10	986.00	58	2	188.50	517	18	1717.25
Clothing & Textiles	7				32	1	152.00				32	1	152.00
	8	227	7	923.75	232	9	1225.00				459	16	2148.75
	9	111	5	381.75	29	1	123.25				140	6	505.00
	10	53	2	172.25	107	5	340.75				160	7	513.00
	11				28	1	182.00				28	1	182.00
	12				81	3	504.50				81	3	504.50
	7 - 8							100	5	425.00	100	5	425.00
	8 - 9	34	1	161.50							34	1	161.50
	9 - 10				100	4	449.75				100	4	449.75
	9 - 11				96	4	448.50				96	4	448.50
	9 - 12				485	19	1928.00				485	19	1928.00
	10 - 11				64	3	352.00				64	3	352.00
	10 - 12				595	21	2408.75				595	21	2408.75
	11 - 12				133	5	789.25	14	1	91.00	147	6	880.25
Total		425	15	1639.25	1982	76	8903.75	114	6	516.00	2521	97	11059.00
Commercial Cooking, Baking, etc.[8]	N.R.[7]	105	7	446.25							105	7	446.25
	9	14	1	59.50							14	1	59.50
	10 - 11				28	1	224.00				28	1	224.00
	10 - 12	19	1	152.00	47	1	176.25				66	2	328.25
Total		138	9	657.75	75	2	400.25				213	11	1058.00
Cosmetology[8]	12							49	2	392.00	49	2	392.00
Foods & Nutrition	7				62	2	263.50				62	2	263.50
	8	104	4	419.00	223	11	991.75				327	15	1410.75
	9	9	1	33.75	121	5	523.75				130	6	557.50
	10				123	6	582.25				123	6	582.25
	11				104	4	637.00				104	4	637.00
	12				147	5	756.25				147	5	756.25
	9 - 12	56	2	266.00	234	10	1097.50				290	12	1363.50
	10 - 11	23	1	109.25							23	1	109.25
	10 - 12	44	2	209.00	71	3	350.75				115	5	559.75
	11 - 12				22	1	104.50				22	1	104.50
Total		236	10	1037.00	1107	47	5307.25				1343	57	6344.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

[8]Taught in the Trade & Industrial curriculum.

TABLE 18 - Continued

Courses	Grade Level	Advanced Degree Major-Minor 5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Home & Family Living	8	134	4	566.00	115	4	472.75	178	5	756.50	427	13	1795.25
	10				33	2	181.50				33	2	181.50
	11				57	2	195.25				57	2	195.25
	12	98	3	379.50	282	10	922.75				380	13	1302.25
	9 - 12	65	2	211.25							65	2	211.25
	10 - 12	66	2	214.50	146	5	659.00				212	7	873.50
	11 - 12	184	5	598.00	269	9	874.25	101	3	361.75	554	17	1834.00
Total		547	16	1969.25	902	32	3305.50	279	8	1118.25	1728	56	6393.00
Homemaking & Health	N.R.				9	2	58.50				9	2	58.50
	7	84	5	261.75	159	6	591.00				243	11	852.75
	8	657	26	3102.25	1846	73	8654.25				2503	99	11756.50
	9	213	12	902.25	353	17	1621.50				566	29	2523.75
	10	51	2	198.75	149	7	728.75				200	9	927.50
	11	163	7	774.25							163	7	774.25
	12				23	2	116.00				23	2	116.00
	8 - 9				36	1	135.00				36	1	135.00
	9 - 12				114	5	541.50				114	5	541.50
	10 - 11	48	2	215.00							48	2	215.00
	10 - 12	57	3	270.75	313	13	1439.50				370	16	1710.25
	11 - 12	83	4	299.25	194	9	932.50				277	13	1231.75
Total		1356	61	6024.25	3196	135	14818.50				4552	196	20842.75
Home Furnishings and Equipment	11				29	1	108.75				29	1	108.75
	12	7	1	29.75	427	15	1414.00				434	16	1443.75
	10 - 12	72	3	246.00	57	2	185.25				129	5	431.25
	11 - 12	54	2	190.00	40	1	130.00				94	3	320.00
Total		133	6	465.75	553	19	1838.00				686	25	2303.75
Hospital Service[8]	10 - 12				129	3	795.50				129	3	795.50
Unknown	9	32	1	208.00							32	1	208.00
	10				25	1	81.25				25	1	81.25
Total		32	1	208.00	25	1	81.25				57	2	289.25

TABLE 18 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Regular Degree Major-Minor[2]									Neither[3]								
		5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs. experience			Experience not indicated			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Care & Guidance of Children	10 - 12				66	2	214.50										66	2	214.50
	11 - 12	138	5	552.50													138	5	552.50
Total		138	5	552.50	66	2	214.50										204	7	767.00
Clothing & Textiles	8	222	8	974.50	244	9	1148.50	108	4	594.00							574	21	2717.00
	9	244	11	1082.00	158	7	686.00	68	4	374.00							470	22	2142.00
	10	118	5	496.00	74	3	263.50										192	8	759.50
	11	30	2	138.75				19	1	104.50							49	3	243.50
	8 & 9	31	1	147.25													31	1	147.25
	9 - 10	18	1	58.50													18	1	58.50
	9 - 12	193	7	646.75	174	6	841.75										367	13	1488.50
	10 - 12	259	10	1325.50	23	1	126.50										282	11	1452.00
	11 - 12	100	4	404.50	24	1	156.00										124	5	560.50
Total		1215	49	5273.75	697	27	3222.25	195	9	1072.50							2107	85	9568.50
Commercial Cooking, Baking, etc.[8]	N.R.[7]	90	6	495.00													90	6	495.00
	10 - 11	15	1	82.50													15	1	82.50
Total		105	7	577.50													105	7	577.50
Foods & Nutrition	8	260	8	1105.50	106	4	487.50	32	1	176.00	24	2	132.00				422	15	1901.00
	9	111	4	510.75	147	5	574.25				8	1	44.00				266	10	1129.00
	10	181	7	859.75	111	4	639.25										292	11	1499.00
	11	127	5	748.50													127	5	748.50
	7 - 8	120	6	510.00													120	6	510.00
	9 - 12	26	1	84.50	96	3	456.00										122	4	540.50
	10 - 11				26	1	110.50										26	1	110.50
	10 - 12	22	1	104.50													22	1	104.50
Total		847	32	3923.50	486	17	2267.50	32	1	176.00	32	3	176.00				1397	53	6543.00
Home & Family Living	8	114	3	446.50													114	3	446.50
	9	33	1	123.75							36	1	153.00				69	2	276.75
	10	21	1	68.25	59	1	221.25										80	2	289.50
	11				69	2	246.75										69	2	246.75
	12	50	2	292.00	97	5	332.25										147	7	624.25
	10 - 12				21	1	68.25										21	1	68.25
	11 - 12	194	6	686.00	60	2	195.00										254	8	881.00
Total		412	13	1616.50	306	11	1063.50				36	1	153.00				754	25	2833.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

[8]Taught in the Trade & Industrial curriculum.

TABLE 18 - Continued

Courses	Grade Level	Regular Degree Major-Minor: 5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	5-10 yrs. experience S	C	H	Neither 10 or more yrs. experience S	C	H	Experience not indicated S	C	H	Total S	C	H
Homemaking & Health	N.R.	118	7	617.50	8	1	44.00										126	8	661.50
	7	152	6	583.00	342	15	452.75							42	2	178.50	536	23	1214.25
	8	1528	71	6665.00	1651	73	6661.25				27	1	114.75				3206	145	13441.00
	9	480	27	2264.00	865	44	3960.00										1345	71	6224.00
	10	330	15	1476.00	271	16	1230.00										601	31	2706.00
	11	47	2	204.25	87	4	371.25										134	6	575.50
	12	24	1	114.00	17	1	80.75										41	2	194.75
	7 - 8	19	1	104.50	27	2	122.25										46	3	226.75
	9 - 10	52	3	256.00													52	3	256.00
	9 - 12	81	3	303.75	209	10	992.75										290	13	1296.50
	10 - 11	55	4	253.25													55	4	253.25
	10 - 12	111	5	527.25	147	5	850.75										258	10	1378.00
	11 - 12	177	11	894.00	205	14	909.25										382	25	1803.25
Total		3174	156	14262.50	3829	185	15675.00				27	1	114.75	42	2	178.50	7072	344	30230.75
Home Furnishings & Equipment	11				22	1	71.50										22	1	71.50
	12	164	5	533.00	156	5	562.00										320	10	1095.00
	10 - 12				21	1	52.50										21	1	52.50
Total		164	5	533.00	199	7	686.00										363	12	1219.00
Hospital Service[8]	12				51	1	191.25										51	1	191.25
Unknown	7	122	4	565.50	58	2	275.50										180	6	841.00
	8	36	1	171.00	62	2	294.50										98	3	465.50
Total		158	5	736.50	120	4	570.00										278	9	1306.50

TABLE 19

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Advanced Degree

		Major-Minor[2]						Neither[3]					
		5-10 yrs. experience			10 or more yrs. experience			10 or more yrs experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H
Clothing & Textiles	7							120	4	510.00	120	4	510.00
	8							61	3	283.00	61	3	283.00
	9				22	1	55.00	26	1	143.00	48	2	198.00
	10				21	1	68.25				21	1	68.25
	11							17	1	93.50	17	1	93.50
	12				22	1	71.50	10	1	55.00	32	2	126.50
	10 - 11				29	1	123.25				29	1	123.25
	10 - 12				120	5	683.00				120	5	683.00
Total					214	9	1001.00	234	10	1084.50	448	19	2085.50
Commercial Cooking, Baking, Etc.[7]	9 - 11							24	1	78.00	24	1	78.00
	11 - 12							20	1	160.00	20	1	160.00
Total								44	2	238.00	44	2	238.00
Consumer Ed. & Housing	8							29	1	159.50	29	1	159.50
Foods & Nutrition	8							48	2	264.00	48	2	264.00
	9				25	2	62.50	29	1	159.50	54	3	222.00
	10							18	1	99.00	18	1	99.00
	9 - 12				48	2	228.00				48	2	228.00
	10 - 12				17	1	80.75				17	1	80.75
Total					90	5	371.25	95	4	522.50	185	9	893.75
Home & Family Living	8				40	1	130.00				40	1	130.00
	9							24	1	102.00	24	1	102.00
	12	27	1	148.50	122	5	474.50				149	6	623.00
	11 - 12							123	3	584.25	123	3	584.25
Total		27	1	148.50	162	6	604.50	147	4	686.25	336	11	1439.25
Homemaking & Health	7				245	9	1023.75				245	9	1023.75
	8	83	3	346.75	523	22	1893.75				606	25	2240.50
	9	61	3	276.75	388	17	698.75				449	20	975.50
	10				254	11	1212.25				254	11	1212.25
	11				21	1	99.75				21	1	99.75
	12				82	5	389.50				82	5	389.50
	7 - 8	18	2	45.00							18	2	45.00
	9 - 12				46	2	218.50				46	2	218.50
	10 - 12	13	1	48.75	47	2	223.25	86	4	408.50	146	7	680.50
	11 - 12				188	8	910.25				188	8	910.25
Total		175	9	717.25	1794	77	6669.75	86	4	408.50	2055	90	7795.50
Home Furnishings & Equipment	12							24	1	132.00	24	1	132.00
Unknown	7							60	2	285.00	60	2	285.00
	9							54	2	256.50	54	2	256.50
Total								114	4	541.50	114	4	541.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Taught in the Trade & Industrial curriculum.

TABLE 19 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Regular Degree

Courses	Grade Level	Major-Minor[2] Less than 5yrs. experience S[3]	C[4]	H[5]	5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Total S	C	H
Care & Guidance of Children	12							23	1	109.25	23	1	109.25
	11 - 12							20	1	95.00	20	1	95.00
Total								43	2	204.25	43	2	204.25
Clothing & Textiles	7							144	5	628.50	144	5	628.50
	8							194	8	775.00	194	8	775.00
	9				61	3	300.50	96	4	413.00	157	7	713.50
	10	25	1	137.50							25	1	137.50
	7 - 8							100	5	425.00	100	5	425.00
	10 - 12				78	3	507.00	53	3	251.75	131	6	758.75
	11 - 12							112	5	532.00	112	5	532.00
Total		25	1	137.50	139	6	807.50	699	30	3025.25	863	37	3970.25
Commercial Cooking, Baking, Etc.[7]	N.R.[6]							30	2	127.50	30	2	127.50
	8							29	2	157.00	29	2	157.00
	9							35	2	148.75	35	2	148.75
	8 - 9							24	1	102.00	24	1	102.00
Total								118	7	535.25	118	7	535.25
Foods & Nutrition	N.R.							20	1	75.00	20	1	75.00
	7							266	8	28.50	266	8	28.50
	8							28	2	79.00	28	2	79.00
	9							102	3	464.50	102	3	464.50
	10	21	1	115.50	46	2	211.00	45	2	213.75	112	5	540.25
	12							24	1	60.00	24	1	60.00
	10 - 12				47	2	223.25	275	11	1420.50	322	13	1643.75
	11 - 12				21	1	99.75	33	2	156.75	54	3	256.50
Total		21	1	115.50	114	5	534.00	793	30	2498.00	928	36	3147.50
Health[8]	N.R.				60	2	285.00				60	2	285.00
	8							23	1	86.25	23	1	86.25
Total					60	2	285.00	23	1	86.25	83	3	371.25
Home & Family Living	N.R.							40	2	190.00	40	2	190.00
	9							26	1	97.50	26	1	97.50
	10	35	1	192.50				25	1	118.75	60	2	311.25
	11							27	1	128.25	27	1	128.25
	12							127	5	476.25	127	5	476.25
	11 - 12							99	4	470.25	99	4	470.25
Total		35	1	192.50				344	14	1481.00	379	15	1673.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Students.

[4]Classes.

[5]Hours.

[6]Grade level not reported.

[7]Taught in the Trade & Industrial curriculum.

[8]Usually not considered as a specific Home Economics course but taught in Physical Education or Science.

TABLE 19 - Continued

Regular Degree

Courses	Grade Level	Major-Minor: Less than 5yrs experience S	C	H	5-10 yrs. experience S	C	H	10 or more yrs. experience S	C	H	Total S	C	H
Homemaking & Health	N.R.							57	5	237.75	57	5	237.75
	7				63	2	267.75	826	34	3137.00	889	36	3404.75
	8	203	9	956.00	171	6	749.75	1092	43	4707.50	1466	58	6413.25
	9	49	3	259.75	227	14	1077.75	648	38	3076.00	924	55	4413.50
	10	29	2	159.50	93	6	437.25	589	32	2794.50	711	40	3391.25
	11	13	1	48.75	61	3	289.75	314	16	1463.00	388	20	1801.50
	12	12	1	45.00	24	1	114.00	247	12	1192.00	283	14	1351.00
	7 - 8				34	2	123.50	146	8	638.50	180	10	762.00
	9 - 10							101	5	548.50	101	5	548.50
	9 - 12				28	1	56.00				28	1	56.00
	10 - 12							94	5	454.50	94	5	454.50
	11 - 12				42	3	193.00	302	19	1462.25	344	22	1655.25
Total		306	16	1469.00	743	38	3308.75	4416	217	19711.50	5465	271	24489.25
Home Furnishings & Equipment	10	10	1	55.00							10	1	55.00
	11							31	1	116.25	31	1	116.25
	12							47	2	223.25	47	2	223.25
	10 - 12							52	2	247.00	52	2	247.00
	11 - 12							28	1	154.00	28	1	154.00
Total		10	1	55.00				158	6	740.50	168	7	795.50
Unknown	N.R.							40	2	190.00	40	2	190.00

TABLE 19 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Regular Degree Neither[2]							Non-Degree Major-Minor[3]					
		Less than 5 yrs. experience			5-10 yrs. experience			10 or more yrs experience			10 or more yrs experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Clothing & Textiles	8	28	1	133.00				197	8	851.00				225	9	984.00
	9							50	3	254.00				50	3	254.00
	10							30	2	165.00				30	2	165.00
	7 - 8							100	5	425.00				100	5	425.00
Total		28	1	133.00				377	18	1695.00				405	19	1828.00
Home & Family Living	9				37	1	157.25							37	1	157.25
Homemaking & Health	7										19	1	61.75	19	1	61.75
	8							64	4	273.50	28	1	91.00	92	5	364.50
	9										23	1	109.25	23	1	109.25
	10										8	1	38.00	8	1	38.00
	7 - 8										19	1	71.25	19	1	71.25
	9 - 12										20	1	95.00	20	1	95.00
	11 - 12										5	1	23.75	5	1	23.75
Total								64	4	273.50	122	7	490.00	186	11	763.50
Home Furnishings & Equipment	12	22	1	104.50										22	1	104.50
Unknown	12	24	1	114.00										24	1	114.00

[1]Students hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[3]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

TABLE 20

TEACHERS OF HOME ECONOMICS COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH YEARS OF EXPERIENCE AND EDUCATIONAL BACKGROUND UNREPORTED ACCORDING TO NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Grade Level

Courses	Unknown[2] S[3]	C[4]	H[5]	7 S	C	H	8 S	C	H	9 S	C	H	10 S	C	H	11 S	C	H	12 S	C	H
Care & Guidance of Children	54	2	256.50																		
Clothing & Textiles	460	21	2441.75	198	10	843.75	164	8	655.50	119	6	536.25	162	8	805.50	56	3	308.50	30	2	151.50
Commercial Cooking, Baking, Etc.[6]																					
Consumer Ed. & Housing																					
Cosmetology[6]							26	1	110.50												
Foods & Nutrition	237	15	1255.00	121	6	512.75	147	8	636.25	100	5	341.25	110	6	567.50	78	4	383.50			
Health[7]	71	3	346.25																		
Home & Family Living	1403	56	6980.50	234	11	1111.50	384	17	1736.50	153	7	726.75	186	6	1023.00	28	1	133.00	2184	90	10166.00
Homemaking & Health	4447	172	21724.75	3780	172	16355.00	6330	321	27203.50	9855	491	47154.50	4968	289	20171.50	1665	92	7291.75	1351	78	6516.50
Home Furnishings & Equipment	32	5	612.25				70	3	352.00	41	2	194.75	20	1	95.00	42	2	157.50	138	6	644.00
Hospital Service[6]																					
Unclassified or Unknown																					
Total	6704	274	33617.00	4333	199	18823.00	7121	358	30694.25	10268	511	48953.50	5446	310	22662.50	1869	102	8274.25	3741	178	17645.00

Courses	7-8 S	C	H	8-9 S	C	H	9-10 S	C	H	9-11 S	C	H	9-12 S	C	H	10-11 S	C	H	10-12 S	C	H	11-12 S	C	H	Total S	C	H
Care & Guidance of Children																									54	2	256.50
Clothing & Textiles	21	1	78.75										39	2	185.25	12	1	57.00	95	6	381.00	93	6	423.75	1449	74	6868.50
Commercial Cooking, Baking, Etc.																											
Consumer Ed. & Housing																											
Cosmetology																						10	1	55.00	36	2	165.50
Foods & Nutrition	22	1	82.50																								
Health													27	1	114.75				165	10	718.75	40	3	190.00	1047	59	4802.25
Home & Family Living							31	1	170.50																71	3	346.25
Homemaking & Health	714	32	3247.25	162	6	680.00	553	30	2616.25	145	7	688.75	478	27	2328.00	551	30	2616.50	25	1	106.25	821	36	3918.50	5492	228	26289.50
Home Furnishings & Equipment																			776	46	3308.25	2742	163	14591.50	38517	1956	176494.00
Hospital Service																						23	1	97.75	366	20	2153.25
Unclassified or Unknown																											
Total	757	34	3408.50	162	6	680.00	584	31	2786.75	145	7	688.75	629	34	3076.00	563	31	2673.50	1061	63	4514.25	3729	210	19276.50	47112	2348	217773.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Grade level not reported.

[3]Students.

[4]Classes.

[5]Hours.

[6]Taught in the Trade & Industrial curriculum.

[7]Usually not considered as a specific Home Economics course but taught in Physical Education or Science.

TABLE 21

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree									Regular Degree														
		Major-Minor[2]									Major-Minor									Neither[3]					
		5-10 yrs experience			10 or more yrs experience			Experience not indicated			Less than 5 yrs experience			5-10 yrs experience			10 or more yrs experience			10 or more yrs experience			Total		
Courses*	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	9													74	3	351.50							74	3	351.50
General Shop	N.R.[7]							20	1	75.00													20	1	75.00
	7										30	2	122.50										30	2	122.50
	8							40	2	170.00													40	2	170.00
	9													75	3	356.25							75	3	356.25
	10													48	2	228.00							48	2	228.00
	9 - 10										18	1	85.50										18	1	85.50
	10 - 12													19	1	90.25							19	1	90.25
	11 - 12										10	1	65.00										10	1	65.00
Total								60	3	245.00	58	4	273.00	142	6	674.50							260	13	1192.50
Wood Shop	N.R.							20	1	75.00													20	1	75.00
	10										31	1	201.50										31	1	201.50
	10 - 11													25	1	118.75							25	1	118.75
	10 - 12													17	1	80.75							17	1	80.75
Total								20	1	75.00	31	1	201.50	42	2	199.50							93	4	476.00
Machine Wood-Work	11 - 12										88	3	572.00										88	3	572.00
Metal Shop & Metal Fitting	10										25	1	162.50										25	1	162.50
Machine Shop	10										22	1	104.50										22	1	104.50
	10 - 11										40	2	260.00										40	2	260.00
	10 - 12										30	1	195.00										30	1	195.00
	11 - 12				17	1	136.00										24	2	192.00				41	3	328.00
Total					17	1	136.00				92	4	559.50				24	2	192.00				133	7	887.50
Welding	N.R.							16	1	76.00													16	1	76.00
Electricity	10										30	1	112.50										30	1	112.50
Drafting	7										25	1	106.25										25	1	106.25
	8										35	2	148.75										35	2	148.75
	9										20	1	85.00										20	1	85.00
Total											80	4	340.00										80	4	340.00
Mechanical Drawing	10										26	1	169.00										26	1	169.00
	12																			1	1	3.25	1	1	3.25
	10 - 11	90	3	427.50																			90	3	427.50
	10 - 12													19	1	90.25							19	1	90.25
Total		90	3	427.50							26	1	169.00	19	1	90.25				1	1	3.25	136	6	690.00
Auto Mechanics & Shop	10										86	4	408.50										86	4	408.50
Bump & Paint Shop - Auto Body	11 - 12																44	2	352.00				44	2	352.00
Co-Op Training T & I	12																			11	1	60.50	11	1	60.50

[1]Student hours were computed bv multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 16 for Hospital Service.

TABLE 21 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH SPECIAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Non-Degree

		Major-Minor[2]									Neither[3] More than 10 yrs. experience			Total		
		Experience unknown			Less than 5yrs experience			More than 10yrs experience								
Courses*	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
General Shop	N.R.[7]							99	6	470.25				99	6	470.25
	7				28	1	119.00							28	1	119.00
	8	38	1	95.00	89	5	399.75	61	3	437.00				188	9	931.75
	9				31	2	147.25							31	2	147.25
	10				21	1	99.75							21	1	99.75
	11				21	1	99.75							21	1	99.75
	12				13	1	61.75							13	1	61.75
	7 - 8							21	1	89.25				21	1	89.25
	8 - 9										12	1	45.00	12	1	45.00
	9 - 12							7	1	29.75				7	1	29.75
	10 - 12				12	1	57.00							12	1	57.00
	11 - 12				21	1	99.75							21	1	99.75
Total		38	1	95.00	236	13	1084.00	188	11	1026.25	12	1	45.00	474	26	2250.25
Wood Shop	9 - 10							63	2	267.75				63	2	267.75
	9 - 12							56	2	238.00				56	2	238.00
	11 - 12							24	1	102.00				24	1	102.00
Total								143	5	607.75				143	5	607.75
Pattern Making	10										18	2	85.50	18	2	85.50
	11										25	2	118.75	25	2	118.75
	12										7	1	33.25	7	1	33.25
Total											50	5	237.50	50	5	237.50
Bench Metal	9 - 11										14	1	52.50	14	1	52.50
Foundry	10										23	3	109.25	23	3	109.25
	11										32	2	152.00	32	2	152.00
	12										13	1	61.75	13	1	61.75
Total											68	6	323.00	68	6	323.00
Machine Shop	9										19	1	152.00	19	1	152.00
	10							52	2	247.00	42	3	199.50	94	5	446.50
	11				36	2	153.00				23	2	109.25	59	4	262.25
	12				45	3	191.25				23	2	167.75	68	5	359.00
	11 - 12							99	4	470.25				99	4	470.25
Total					81	5	344.25	151	6	717.25	107	8	628.50	339	19	1690.00
Power Machinery	10										25	3	118.75	25	3	118.75
	11										18	2	85.50	18	2	85.50
	12										7	1	33.25	7	1	33.25
Total											50	6	237.50	50	6	237.50
Welding	N.R.							16	1	28.50				16	1	28.50
	10							40	2	190.00	28	3	133.00	68	5	323.00
	11										26	2	123.50	26	2	123.50
	12										12	1	57.00	12	1	57.00
	9 - 10				25	1	200.00							25	1	200.00
	9 - 12										63	3	394.75	63	3	394.75
	10 - 12				23	1	184.00							23	1	184.00
	11 - 12							20	1	160.00				20	1	160.00
Total					48	2	384.00	76	4	378.50	129	9	708.25	253	15	1470.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 16 for Commercial Cooking, Baking, etc.

TABLE 21 - Continued

Non-Degree

Courses	Grade Level	Experience unknown S	C	H	Major-Minor Less than 5yrs experience S	C	H	10 or more yrs experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Electricity	10							16	1	76.00				16	1	76.00
	11 - 12							18	1	144.00				18	1	144.00
Total								34	2	220.00				34	2	220.00
Drafting	8							32	1	256.00				32	1	256.00
	10										24	3	114.00	24	3	114.00
	11										40	2	190.00	40	2	190.00
	12										16	1	76.00	16	1	76.00
	9 - 10										16	1	60.00	16	1	60.00
Total								32	1	256.00	96	7	440.00	128	8	696.00
Mechanical Drawing	N.R.										23	1	86.25	23	1	86.25
Printing & Print Design	11										27	3	128.25	27	3	128.25
Paint Shop	N.R.										23	1	184.00	23	1	184.00
Painting & Decorating	10 - 12										46	2	368.00	46	2	368.00
Commercial Art	9 - 12							40	2	320.00				40	2	320.00
Auto Mechanics & Shop	9 - 10										21	1	78.75	21	1	78.75
	12							66	3	280.50				66	3	280.50
	11 - 12							171	8	785.25				171	8	785.25
Total								237	11	1065.75	21	1	78.75	258	12	1144.50
Bump & Paint Shop - Auto Body	9 - 12				41	2	328.00							41	2	328.00
Power Plant	12				28	5	126.25							28	5	126.25
Air Frame	11 - 12				10	2	80.00							10	2	80.00
Shoe Repair	N.R.										19	2	152.00	19	2	152.00
Shop Mathematics & Industrial Construction Mathematics	N.R.										46	2	172.50	46	2	172.50

TABLE 22

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL EDUCATION COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PROVISIONAL CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

		Advanced Degree						Regular Degree								
	Grade	Major-Minor[2]			Neither[3]			Major-Minor			Neither			Total		
Courses*	Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	N.R.[7]							22	1	104.50				22	1	104.50
	7							529	16	2432.25				529	16	2432.25
	8	63	2	283.25				730	34	3649.75	60	2	280.50	853	38	4213.50
	9	17	1	110.50				310	14	1388.50				327	15	1499.00
	10							60	3	277.50				60	3	277.50
	12							13	1	61.75				13	1	61.75
	7 & 8							58	3	236.50				58	3	236.50
	8 - 9							34	1	127.50				34	1	127.50
	9 - 10							28	2	144.00				28	2	144.00
	9 - 11	19	1	123.50										19	1	123.50
	9 - 12							18	1	117.00				18	1	117.00
	10 - 11							36	2	166.50				36	2	166.50
	10 - 12							49	3	235.00				49	3	235.00
	11 - 12							113	6	488.75				113	6	488.75
Total		99	4	517.25				2000	87	9429.50	60	2	280.50	2159	93	10227.25
General Shop	N.R.							197	11	944.00				197	11	944.00
	7	36	1	171.00				252	12	883.25				288	13	1054.25
	8	136	6	555.00				1773	80	7821.25				1909	86	8376.25
	9	16	1	76.00				1205	63	5365.75	35	3	166.25	1256	67	5608.00
	10	19	1	90.25				368	22	1689.50				387	23	1779.75
	11							95	6	424.25				95	6	424.25
	12							51	3	233.25				51	3	233.25
	7 - 8							141	7	614.25				141	7	614.25
	8 - 9							58	3	374.75				58	3	374.75
	8 - 10							92	4	536.25				92	4	536.25
	9 - 10							62	3	241.00				62	3	241.00
	9 - 12							15	1	82.50				15	1	82.50
	10 - 11							123	7	565.25				123	7	565.25
	10 - 12							116	8	554.25				116	8	554.25
	11 - 12							256	19	1174.75				256	19	1174.75
Total		207	9	892.25				4804	249	21504.25	35	3	166.25	5046	261	22562.75
Wood Shop	7							202	8	857.00				202	8	857.00
	8							728	32	3075.50	27	2	148.50	755	34	3224.00
	9	23	1	86.25				389	18	1659.00				412	19	1745.25
	10							220	11	1065.25				220	11	1065.25
	11							42	2	199.50				42	2	199.50
	12							43	2	204.25				43	2	204.25
	8 - 9							22	1	93.50				22	1	93.50
	9 - 12	117	4	438.75				146	6	693.50				263	10	1132.25
	10 - 11	38	2	180.50										38	2	180.50
	10 - 12	90	4	427.50				48	2	228.00				138	6	655.50
	11 - 12	40	2	190.00				24	1	114.00				64	3	304.00
Total		308	13	1323.00				1864	83	8189.50	27	2	148.50	2199	98	9661.00
Bench Wood	9 - 10							52	3	195.00				52	3	195.00
Cabinet & Furniture Making	11										16	1	88.00	16	1	88.00
Carpentry (Building Construction)	9 - 12	16	1	60.00										16	1	60.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 17 for Commercial Cooking, Baking, etc.; and Cosmetology.

TABLE 22 - Continued

Courses	Grade Level	Advanced Degree Major-Minor S	C	H	Advanced Degree Neither S	C	H	Regular Degree Major-Minor S	C	H	Regular Degree Neither S	C	H	Total S	C	H
Metal Shop & Metal Fitting	N.R.	20	1	130.00										20	1	130.00
	8	228	11	922.00				656	27	2828.50				884	38	3750.50
	9	168	7	721.50				1000	36	4172.00				1168	43	4893.50
	10							312	13	1377.75				312	13	1377.75
	11							15	1	56.25				15	1	56.25
	12							12	2	56.00				12	2	56.00
	9 - 12							92	4	437.00				92	4	437.00
	10 - 11	73	3	346.75										73	3	346.75
	10 - 12	50	2	275.00				90	5	420.50				140	7	695.50
	11 - 12	28	2	133.00				31	3	192.75				59	5	325.75
Total		567	26	2528.25				2208	91	9540.75				2775	117	12069.00
Bench Metal	10							26	1	84.50				26	1	84.50
	9 - 10							85	4	293.25				85	4	293.25
	9 - 12							16	1	60.00				16	1	60.00
Total								127	6	437.75				127	6	437.75
Machine Hand Tools	10							20	1	95.00				20	1	95.00
	12							21	1	99.75				21	1	99.75
Total								41	2	194.75				41	2	194.75
Machine Shop	8							122	5	457.50	33	2	156.75	155	7	614.25
	9							25	1	137.50	43	2	204.25	68	3	341.75
	10	87	5	474.50				186	10	916.00	18	1	85.50	291	16	1476.00
	12							17	1	80.75				17	1	80.75
	9 - 12							116	7	507.25				116	7	507.25
	10 - 12							471	20	2750.50				471	20	2750.50
	11 - 12	24	1	156.00				212	11	1282.50				236	12	1438.50
Total		111	6	630.50				1149	55	6132.00	94	5	446.50	1354	66	7209.00
Machine Metal Work	11							26	1	110.50				26	1	110.50
	11 - 12							37	2	114.75				37	2	114.75
Total								63	3	225.25				63	3	225.25
Power Machinery	N.R.							23	1	109.25				23	1	109.25
	9	36	2	153.00				48	2	204.00				84	4	357.00
	10							79	4	375.25				79	4	375.25
	11 - 12							163	7	901.00				163	7	901.00
Total		36	2	153.00				313	14	1589.50				349	16	1742.50
Welding	N.R.							25	1	200.00				25	1	200.00
	9 - 12							58	3	217.50				58	3	217.50
	10 - 12	40	2	320.00				45	3	278.25				85	5	598.25
	11 - 12							15	1	71.25				15	1	71.25
Total		40	2	320.00				143	8	767.00				183	10	1087.00
Electricity	8							20	1	85.00	62	4	341.00	82	5	426.00
	9										23	1	126.50	23	1	126.50
	10							230	9	1056.25				230	9	1056.25
	11										15	1	82.50	15	1	82.50
	9 - 12							48	2	228.00				48	2	228.00
	10 - 11							22	1	104.50				22	1	104.50
	10 - 12							38	2	180.50				38	2	180.50
	11 - 12							27	2	117.25				27	2	117.25
Total								385	17	1771.50	100	6	550.00	485	23	2321.50
Radio Electronics	10							25	3	118.75				25	3	118.75
	11							39	3	185.25				39	3	185.25
	10 - 12				30	1	142.50	88	4	418.00				118	5	560.50
	11 - 12				22	1	104.50	18	1	85.50				40	2	190.00
Total					52	2	247.00	170	11	807.50				222	13	1054.50

TABLE 22 - Continued

Courses	Grade Level	Advanced Degree Major-Minor S	C	H	Advanced Degree Neither S	C	H	Regular Degree Major-Minor S	C	H	Regular Degree Neither S	C	H	Total S	C	H
Electrical Mechanics	11 - 12	25	1	200.00										25	1	200.00
Drafting	7							101	4	416.75				101	4	416.75
	8	353	11	1649.25				470	15	2098.00				823	26	3747.25
	9	192	7	797.75				956	32	3951.75				1148	39	4749.50
	10	186	5	1142.75	87	3	367.25	156	6	828.00				429	14	2338.00
	11	66	2	232.00				7	1	33.25				73	3	265.25
	12	114	4	402.00										114	4	402.00
	8 - 12							16	1	128.00				16	1	128.00
	9 - 10							85	4	306.25				85	4	306.25
	9 - 11							115	4	373.75				115	4	373.75
	9 - 12	34	1	110.50				319	11	1443.25				353	12	1553.75
	10 - 11	26	1	84.50				18	1	85.50				44	2	170.00
	10 - 12	148	5	664.75				41	2	133.25				189	7	798.00
	11 - 12							53	3	297.75				53	3	297.75
Total		1119	36	5083.50	87	3	367.25	2337	84	10095.50				3543	123	15546.25
Mechanical Drawing	N.R.							107	6	473.25				107	6	473.25
	7							90	3	382.50				90	3	382.50
	8							127	4	619.75				127	4	619.75
	9							169	8	758.75	89	4	489.50	258	12	1248.25
	10	74	4	313.50				103	4	489.25	23	1	126.50	200	9	929.25
	11	64	3	304.00				15	1	82.50				79	4	386.50
	12							16	3	265.00				16	3	265.00
	8 - 9							66	2	280.50				66	2	280.50
	8 - 10							71	3	266.25				71	3	266.25
	9 - 10							50	2	218.50				50	2	218.50
	9 - 11							72	3	270.00				72	3	270.00
	9 - 12							35	3	157.25				35	3	157.25
	10 - 11							62	3	305.00				62	3	305.00
	10 - 12							39	2	185.25				39	2	185.25
	11 - 12							159	11	756.50				159	11	756.50
Total		138	7	617.50				1181	58	5510.25	112	5	616.00	1431	70	6743.75
Blue Print Reading	7							29	1	123.25				29	1	123.25
	10										46	2	172.50	46	2	172.50
Total								29	1	123.25	46	2	172.50	75	3	295.75
Architectural Drawing	11										14	1	77.00	14	1	77.00
	12							16	1	32.00				16	1	32.00
	9 - 12							24	1	78.00				24	1	78.00
Total								40	2	110.00	14	1	77.00	54	3	187.00
Machine Drafting & Drawing	N.R.							20	1	95.00				20	1	95.00
	11	32	1	152.00							17	1	93.50	49	2	245.50
Total		32	1	152.00				20	1	95.00	17	1	93.50	69	3	340.50
Graphic Arts	8	129	4	533.25				407	13	1640.25				536	17	2173.50
	9							127	5	577.25	20	1	110.00	147	6	687.25
	10										12	1	66.00	12	1	66.00
	11										14	1	77.00	14	1	77.00
Total		129	4	533.25				534	18	2217.50	46	3	253.00	709	25	3003.75
Printing & Print Design	8	34	1	144.50				146	5	578.50				180	6	723.00
	10	41	2	211.25				20	1	95.00				61	3	306.25
	11	12	1	66.00				41	2	194.75				53	3	260.75
	12	44	2	242.00				11	1	52.25				55	3	294.25
	8 - 9	34	1	144.50										34	1	144.50
	10 - 12	27	1	128.25										27	1	128.25
Total		192	8	936.50				218	9	920.50				410	17	1857.00

TABLE 22 - Continued

Courses	Grade Level	Advanced Degree Major-Minor S	C	H	Advanced Degree Neither S	C	H	Regular Degree Major-Minor S	C	H	Regular Degree Neither S	C	H	Total S	C	H
Auto Mechanics & Shop	10	23	1	109.25				24	1	114.00				47	2	223.25
	11	64	3	304.00				36	2	192.00				100	5	496.00
	12	8	1	44.00				96	5	473.25				104	6	517.25
	9 - 10							42	2	246.75				42	2	246.75
	9 - 12							146	5	693.50				146	5	693.50
	10 - 11							90	4	314.50				90	4	314.50
	10 - 12	161	8	711.50				44	2	267.50				205	10	979.00
	11 - 12	35	2	192.50				170	10	1168.00				205	12	1360.50
Total		291	15	1361.25				648	31	3469.50				939	46	4830.75
Auto Theory	12							34	1	161.50				34	1	161.50
Bump & Paint Shop - Auto Body	11 - 12							24	2	192.00				24	2	192.00
Industrial Mechanics	9							69	2	396.00				69	2	396.00
	10							60	2	211.00				60	2	211.00
	9 - 11							25	1	200.00				25	1	200.00
	9 - 12							33	1	214.50				33	1	214.50
	10 - 12							54	2	351.00				54	2	351.00
Total								241	8	1372.50				241	8	1372.50
Applied Physics	11	13	1	61.75										13	1	61.75
Shop Mathematics & Industrial Construction Mathematics	N.R.							25	1	93.75				25	1	93.75
	10	63	3	316.50				17	1	93.50				80	4	410.00
	11							15	1	71.25				15	1	71.25
	9 - 12							43	2	204.25				43	2	204.25
	10 - 11							8	1	44.00				8	1	44.00
	10 - 12							13	1	42.25				13	1	42.25
Total		63	3	316.50				121	7	549.00				184	10	865.50
Co-Op Training T & I	12	15	1	71.25				25	2	118.75				40	3	190.00
Misc.- (Industrial History, Related Social Science)	N.R.							25	1	93.75				25	1	93.75
Unknown or Unclassified	7							57	2	242.25				57	2	242.25

TABLE 23

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Advanced Degree

		Major-Minor[2]						Neither[3]								
		5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs experience			Total		
Courses*	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	N.R.[7]				93	4	406.25							93	4	406.25
	7	266	8	1248.50	34	1	161.50	72	2	342.00				372	11	1752.00
	8	682	29	2779.75	696	32	3800.50							1378	61	6580.25
	9	149	5	577.25	52	2	205.00				17	1	80.75	218	8	863.00
	10				76	3	277.00							76	3	277.00
	11				30	1	97.50							30	1	97.50
	12				47	2	250.50							47	2	250.50
	8 - 9				21	1	78.75							21	1	78.75
	9 - 10	50	2	325.00										50	2	325.00
	10 - 11	20	2	107.25										20	2	107.25
	10 - 12	53	2	250.25										53	2	250.25
Total		1220	48	5288.00	1049	46	5277.00	72	2	342.00	17	1	80.75	2358	97	10987.75
General Shop	N.R.				101	5	495.50				25	1	93.75	126	6	589.25
	7	74	3	343.25	84	3	357.00							158	6	700.25
	8	602	26	2854.75	484	20	2051.00				101	3	747.50	1187	49	5653.25
	9	374	19	1662.25	103	6	441.25							477	25	2103.50
	10	248	12	1318.25	107	5	493.75							355	17	1812.00
	11	10	1	55.00	48	3	193.00							58	4	248.00
	12				28	2	114.00							28	2	114.00
	7 - 8	180	9	765.00				120	6	510.00				300	15	1275.00
	9 - 10	30	2	131.75	177	7	935.00							207	9	1066.75
	10 - 11				28	1	154.00							28	1	154.00
	10 - 12				54	3	228.50							54	3	228.50
	11 - 12	54	3	229.00										54	3	229.00
Total		1572	75	7359.25	1214	55	5463.00	120	6	510.00	126	4	841.25	3032	140	14173.50
Wood Shop	N.R.	20	1	85.00	40	2	205.00				25	1	93.75	85	4	383.75
	7	94	3	446.50	335	13	1287.25							429	16	1733.75
	8	186	7	790.50	382	14	1624.00	50	3	259.25				618	24	2673.75
	9	64	3	272.00	457	16	1913.75	59	3	303.50	71	4	390.50	651	26	2879.75
	10	50	3	275.00	318	12	1340.25	33	2	165.00	48	2	816.00	449	19	2596.25
	11	5	1	27.50				28	1	133.00				33	2	160.50
	7 - 8	22	1	93.50										22	1	93.50
	7 - 9	28	2	119.00										28	2	119.00
	8 - 9				47	2	198.25							47	2	198.25
	9 - 11				56	2	364.00							56	2	364.00
	9 - 12				31	2	176.75							31	2	176.75
	10 - 12	182	9	818.25	370	15	1712.75							552	24	2531.00
	11 - 12				66	3	257.50							66	3	257.50
Total		651	30	2927.25	2102	81	9079.50	170	9	860.75	144	7	1300.25	3067	127	14167.75
Cabinet & Furniture Making	10	51	2	242.25										51	2	242.25
	11 - 12	21	1	168.00										21	1	168.00
Total		72	3	410.25										72	3	410.25
Machine Woodwork	10	13	1	48.75										13	1	48.75
Pattern Making	10				34	2	161.50							34	2	161.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 18 for Commercial Cooking, Baking, etc.; Cosmetology;and Hospital Service.

TABLE 23 - Continued

Advanced Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs. experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Carpentry (Building Construction)	10				28	1	182.00				63	2	308.75	91	3	490.75
	11	46	2	299.00	21	1	136.50							67	3	435.50
	12				20	1	65.00							20	1	65.00
	11 - 12										24	1	156.00	24	1	156.00
Total		46	2	299.00	69	3	383.50				87	3	464.75	202	8	1147.25
Building Materials	11				32	1	136.00							32	1	136.00
	10 - 12				15	1	63.75							15	1	63.75
Total					47	2	199.75							47	2	199.75
Residential Development	11 - 12				24	1	192.00							24	1	192.00
Metal Shop & Metal Fitting	N.R.	31	1	131.75	54	3	256.50							85	4	388.25
	8	225	9	913.75	338	12	1572.75							563	21	2486.50
	9	334	14	1464.50	984	35	4259.00							1318	49	5723.50
	10	59	3	311.75	143	5	656.50							202	8	968.25
	11	33	2	181.50										33	2	181.50
	8 - 9				26	1	123.50							26	1	123.50
	9 - 10	22	1	143.00										22	1	143.00
	9 - 11	21	1	136.50										21	1	136.50
	9 - 12	20	1	130.00	104	4	676.00							124	5	806.00
	10 - 11				35	1	227.50							35	1	227.50
	10 - 12	27	1	128.25	107	5	563.25							134	6	691.50
	11 - 12	39	2	214.50	32	2	176.00							71	4	390.50
Total		811	35	3755.50	1823	68	8511.00							2634	103	12266.50
Bench Metal	10				88	3	319.75							88	3	319.75
Sheet Metal	11 - 12				31	1	147.25							31	1	147.25
Machine Hand Tools	N.R.	13	1	48.75										13	1	48.75
Machine Shop	N.R.															
	8										25	1	93.75	25	1	93.75
	9							17	1	93.50				17	1	93.50
	10	120	7	712.00	27	1	175.50	42	2	231.00				69	3	406.50
	11	58	3	425.00	112	5	776.00	34	2	187.00				266	14	1675.00
	12				37	2	193.75							95	5	618.75
	9 - 10	15	1	120.00	32	2	152.00							32	2	152.00
	9 - 11													15	1	120.00
	9 - 12	97	4	460.75	26	1	169.00							26	1	169.00
	10 - 11	22	1	143.00	64	3	370.50							161	7	831.25
	10 - 12	173	8	1162.50	355	15	2306.00							22	1	143.00
	11 - 12	53	3	238.75	88	4	585.50							528	23	3468.50
Total		538	27	3262.00	741	33	4728.25	93	5	511.50	25	1	93.75	141	7	824.25
														1397	66	8595.50
Machine Metal Work	10 - 11	17	1	63.75										17	1	63.75
Machine Working	10 - 11	25	2	93.75										25	2	93.75
Power Machinery	9	98	5	416.50										98	5	416.50
	11 - 12				67	3	368.50							67	3	368.50
Total		98	5	416.50	67	3	368.50							165	8	785.00

TABLE 23 - Continued

Advanced Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs. experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Welding	N.R.										25	1	93.75	25	1	93.75
	11	30	3	206.00	20	1	130.00							50	4	336.00
	12				34	2	161.50							34	2	161.50
	8 - 11				24	1	192.00							24	1	192.00
	9 - 12				87	3	565.50							87	3	565.50
	10 - 12	20	1	95.00	123	7	559.25							143	8	654.25
	11 - 12	9	1	72.00										9	1	72.00
Total		59	5	373.00	288	14	1608.25				25	1	93.75	372	20	2075.00
Electricity	9							17	1	93.50				17	1	93.50
	10	49	2	232.75				40	2	220.00				89	4	452.75
	11	61	3	396.50	75	3	487.50	15	1	120.00				151	7	1004.00
	12	130	5	768.00										130	5	768.00
	9 - 11				28	1	224.00							28	1	224.00
	10 - 12	51	2	280.50	27	1	216.00							78	3	496.50
	11 - 12	32	2	223.50										32	2	223.50
Total		323	14	1901.25	130	5	927.50	72	4	433.50				525	23	3262.25
Radio Electronics	10 - 12				97	4	484.50							97	4	484.50
Electrical Mechanics	10	50	2	325.00	26	1	169.00							76	3	494.00
	11	22	1	143.00	17	1	110.50							37	2	253.50
	12				46	2	299.00							46	2	299.00
	10 - 11				52	1	416.00							52	1	416.00
Total		72	3	468.00	141	5	994.50							213	8	1462.50
Drafting	N.R.				20	1	85.00							20	1	85.00
	7	43	2	182.75										43	2	182.75
	8	295	9	1184.25	777	28	3508.25							1072	37	4692.50
	9	216	8	872.00	500	18	2082.25							716	26	2954.25
	10	287	12	1510.00	887	33	3227.25				76	3	247.00	1250	48	4984.25
	11	6	1	33.00	188	7	675.00				21	1	136.50	215	9	844.50
	12				371	15	1305.75				19	1	123.50	390	16	1429.25
	7 - 8	22	1	93.50										22	1	93.50
	7 - 9	27	1	114.75										27	1	114.75
	8 - 11				25	1	200.00							25	1	200.00
	9 - 10	53	2	215.75	36	1	117.00							89	3	332.75
	9 - 11				233	8	792.25							233	8	792.25
	9 - 12	141	5	659.25	294	10	957.50							435	15	1616.75
	10 - 11				132	5	485.00							132	5	485.00
	10 - 12	34	2	161.50	790	31	2972.50							824	33	3134.00
	11 - 12	102	5	476.00	324	13	1276.00							426	18	1752.00
Total		1226	48	5502.75	4577	171	17683.75				116	5	507.00	5919	224	23693.50
Mechanical Drawing	N.R.	12	1	57.00	38	3	209.00							50	4	266.00
	7	145	5	616.25										145	5	616.25
	8	48	2	216.50				117	5	643.50	13	1	61.75	178	8	921.75
	9	270	10	1213.50	61	3	228.75	69	3	379.50	26	2	123.50	426	18	1945.25
	10	172	9	775.00	113	4	364.50							285	13	1139.50
	11	13	1	61.75	41	2	140.25							54	3	202.00
	12	18	1	85.50										18	1	85.50
	8 - 11				49	2	183.75							49	2	183.75
	9 - 11	26	1	84.50										26	1	84.50
	9 - 12	34	1	110.50										34	1	110.50
	10 - 11				54	2	198.50							54	2	198.50
	10 - 12	79	3	375.25	173	6	838.25							252	9	1213.50
	11 - 12	90	5	401.50	37	2	175.75							127	7	577.25
Total		907	39	3997.25	566	24	2338.75	186	8	1023.00	39	3	185.25	1698	74	7544.25

TABLE 23 - Continued

Advanced Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Blue Print Reading	7	28	1	119.00										28	1	119.00
	11				20	1	75.00							20	1	75.00
	11 - 12				13	1	42.25							13	1	42.25
Total		28	1	119.00	33	2	117.25							61	3	236.25
Architectural Drawing	10	37	2	175.75				16	1	88.00				53	3	263.75
	11	15	1	71.25	45	2	211.25							60	3	282.50
	9 - 12	11	1	35.75										11	1	35.75
	10 - 12	51	2	240.50										51	2	240.50
	11 - 12	27	1	128.25	46	2	149.50							73	3	277.75
Total		141	7	651.50	91	4	360.75	16	1	88.00				248	12	1100.25
Machine Drafting & Drawing	10	79	3	375.25										79	3	375.25
	11	23	1	109.25										23	1	109.25
	12	75	3	356.25										75	3	356.25
Total		177	7	840.75										177	7	840.75
Graphic Arts	8	60	2	285.00	105	3	446.25	108	4	594.00	90	3	472.50	363	12	1797.75
	9				40	1	170.00	43	2	236.50	29	2	159.50	112	5	566.00
	10										20	1	110.00	20	1	110.00
	11							12	1	66.00				12	1	66.00
	10 - 12				24	1	114.00							24	1	114.00
	11 - 12				10	1	47.50							10	1	47.50
Total		60	2	285.00	179	6	777.75	163	7	896.50	139	6	742.00	541	21	2701.25
Printing & Print Design	N.R.				15	1	71.25							15	1	71.25
	8	78	2	350.50	161	5	699.75							239	7	1050.25
	10	98	4	399.75	45	2	198.25							143	6	598.00
	11	23	1	149.50	59	4	319.50							82	5	469.00
	12				42	3	240.50				11	1	88.00	53	4	328.50
	9 - 12				81	5	341.75							81	5	341.75
	10 - 12				121	7	589.00	48	5	264.00	61	5	343.25	230	17	1196.25
	11 - 12				280	15	1672.25							280	15	1672.25
Total		199	7	899.75	804	42	4132.25	48	5	264.00	72	6	431.25	1123	60	5727.25
Photography	10 - 12				15	1	71.25							15	1	71.25
Auto Mechanics & Shop	N.R.				29	1	159.50							29	1	159.50
	10	93	4	658.50	99	4	675.00							192	8	1333.50
	11	18	1	99.00	156	8	1082.25							174	9	1179.25
	12	32	2	146.25	43	2	224.50							75	4	370.75
	9 - 12	17	1	63.75	37	2	296.00							54	3	359.75
	10 - 12	302	14	1434.50										302	14	1434.50
	11 - 12	58	4	362.00	27	2	216.00							85	6	578.00
Total		520	26	2764.00	391	19	2653.25							911	45	5417.25
Industrial Mechanics	9				36	1	117.00							36	1	117.00
	10				82	3	307.00							82	3	307.00
	9 - 10	80	3	520.00										80	3	520.00
	9 - 11				24	1	156.00							24	1	156.00
	10 - 12	21	1	136.50										21	1	136.50
Total		101	4	656.50	142	5	580.00							243	9	1236.50
Power Plant	9				25	1	81.25							25	1	81.25
Air Conditioning & Refrigeration	10 - 12				16	1	104.00							16	1	104.00

TABLE 23 - Continued

Advanced Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Total S	C	H
Astronautics	10	21	1	136.50	48	2	312.00							69	3	448.50
	11	32	2	104.00										32	2	104.00
	12	27	1	175.50										27	1	175.50
	11 - 12	30	1	195.00										30	1	195.00
Total		110	5	611.00	48	2	312.00							158	7	923.00
Aircraft Power Plant	11 - 12				28	1	224.00							28	1	224.00
Automation	12	23	1	184.00										23	1	184.00
Applied Physics	11	42	3	199.50	14	1	66.50							56	4	266.00
Shop Mathematics & Industrial Construction Mathematics	7	29	1	123.25										29	1	123.25
	9	24	1	102.00										24	1	102.00
	10	85	4	467.50	157	5	745.75							242	9	1213.25
	11				53	2	172.25							53	2	172.25
	8 - 11				24	1	90.00							24	1	90.00
	9 - 11	60	2	195.00										60	2	195.00
	9 - 12	28	1	133.00	126	4	428.50							154	5	561.50
	10 - 11	48	2	156.00	18	1	58.50							66	3	214.50
	10 - 12	31	1	147.25	125	5	464.75							156	6	612.00
	11 - 12				49	2	159.25							49	2	159.25
Total		305	12	1324.00	552	20	2119.00							857	32	3443.00
Co-Op Training - T & I	N.R.	15	1	120.00										15	1	120.00
	12				34	1	272.00				11	1	60.50	45	2	332.50
	10 - 12				26	3	123.50							26	3	123.50
Total		15	1	120.00	60	4	395.50				11	1	60.50	86	6	576.00
Misc. - (Industrial History, Related Social Science)	10				21	1	68.25							21	1	68.25
Unknown or Un-Classified	7				28	1	119.00							28	1	119.00
	9				17	1	80.75							17	1	80.75
Total					45	2	199.75							45	2	199.75

TABLE 23 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH PERMANENT CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

Regular Degree

		Major-Minor[2]						Neither[3]											
		5-10 yrs. experience			10 or more yrs. experience			5-10 yrs. experience			10 or more yrs experience			Experience unknown			Total		
Courses*	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	7				114	4	369.25										114	4	369.25
	8	141	5	834.25	186	7	678.75										327	12	1513.00
	9	62	3	251.50													62	3	251.50
	8 - 9	32	1	152.00													32	1	152.00
	9 - 12	27	1	175.50													27	1	175.50
	10 - 12				28	1	91.00										28	1	91.00
Total		262	10	1413.25	328	12	1139.00										590	22	2552.25
General Shop	N.R.[7]	61	3	335.50	14	1	66.50										75	4	402.00
	7	274	11	1055.50	283	11	876.00										557	22	1931.50
	8	505	30	2173.50	695	30	3079.50										1200	60	5253.00
	9	427	21	2025.00	216	9	1046.50										643	30	3071.50
	10	65	4	308.75	26	2	131.00										91	6	439.75
	11	35	2	166.25	16	1	88.00										51	3	254.25
	12				25	2	137.50										25	2	137.50
	7 - 8	16	1	32.00	36	2	199.00										52	3	231.00
	7 - 9				48	2	215.50										48	2	215.50
	8 - 9	35	2	148.75	25	1	106.25										60	3	255.00
	9 - 10	17	1	80.75	33	3	144.75										50	4	225.50
	9 - 12	32	2	142.00													32	2	142.00
	10 - 11	59	3	280.25	5	1	18.75										64	4	299.00
	10 - 12	12	1	57.00													12	1	57.00
	11 - 12	33	4	152.75	46	4	250.00										79	8	402.75
Total		1571	85	6958.00	1468	69	6359.25										3039	154	13317.25
Wood Shop	N.R.	51	3	242.25													51	3	242.25
	7	20	1	85.00													20	1	85.00
	8	552	18	2228.00	59	2	311.50										611	20	2539.50
	9	136	5	555.00	55	3	230.75	88	4	484.00				28	1	154.00	307	13	1423.75
	10				91	4	443.50	21	1	115.50							112	5	559.00
	11				37	2	175.75	20	1	110.00							57	3	285.75
	12				31	2	147.25										31	2	147.25
	8 - 11				69	3	454.25										69	3	454.25
	9 - 10				24	1	156.00										24	1	156.00
	9 - 11				25	1	162.50										25	1	162.50
	9 - 12	150	7	712.50	23	1	149.50										173	8	862.00
	10 - 12				52	3	247.00										52	3	247.00
	11 - 12	14	1	77.00													14	1	77.00
Total		923	35	3899.75	466	22	2478.00	129	6	709.50				28	1	154.00	1546	64	7241.25
Bench Wood	9 - 11				30	2	240.00										30	2	240.00
Machine Woodwork	10	25	1	118.75													25	1	118.75
Pattern Making	10				52	3	247.00										52	3	247.00
	9 - 12				36	2	94.50										36	2	94.50
	10 - 12				15	1	120.00										15	1	120.00
Total					103	6	461.50										103	6	461.50

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 18 for Commercial Cooking, Baking, etc.; and Hospital Service.

TABLE 23 - Continued

Regular Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yrs experience S	C	H	Neither Experience unknown S	C	H	Total S	C	H
Carpentry	11				21	1	115.50										21	1	115.50
Metal Shop & Metal Fitting	N.R.	39	2	185.25													39	2	185.25
	7	140	6	770.00													140	6	770.00
	8	252	11	945.00	23	1	57.50										275	12	1002.50
	9	233	9	990.25	17	1	42.50				24	1	132.00				274	11	1164.75
	10	118	5	515.50	48	2	192.00				24	1	132.00				190	8	839.50
	7 - 9	42	2	178.50													42	2	178.50
	11 - 12	83	4	445.25													83	4	445.25
Total		907	39	4029.75	88	4	292.00				48	2	264.00				1043	45	4585.75
Machine Hand Tools	10				23	1	109.25										23	1	109.25
Machine Shop	9										71	3	390.50				71	3	390.50
	10				80	3	380.00				21	1	115.50				101	4	495.50
	11				24	1	114.00				21	1	115.50				45	2	229.50
	10 - 11				23	1	109.25										23	1	109.25
	11 - 12				28	2	224.00										28	2	224.00
Total					155	7	827.25				113	5	621.50				268	12	1448.75
Power Machinery	11				40	3	190.00										40	3	190.00
	11 - 12	39	2	214.50													39	2	214.50
Total		39	2	214.50	40	3	190.00										79	5	404.50
Welding	10	15	1	48.75													15	1	48.75
	12				46	2	218.50										46	2	218.50
	9 - 12				51	3	242.25										51	3	242.25
	10 - 12	27	1	101.25	45	2	213.75										72	3	315.00
	11 - 12				68	4	323.00										68	4	323.00
Total		42	2	150.00	210	11	997.50										252	13	1147.50
Electricity	10	20	1	130.00													20	1	130.00
	10 - 12	26	1	169.00													26	1	169.00
	11 - 12	22	1	143.00	37	3	195.25										59	4	338.25
Total		68	3	442.00	37	3	195.25										105	6	637.25
Electrical Mechanics	10				13	1	84.50										13	1	84.50
	11				22	1	143.00										22	1	143.00
	10 - 12							25	1	200.00	19	1	152.00				44	2	352.00
	11 - 12				21	1	136.50										21	1	136.50
Total					56	3	364.00	25	1	200.00	19	1	152.00				100	5	716.00
Drafting	7	17	1	72.25													17	1	72.25
	8	193	7	784.25	127	5	632.50										320	12	1416.75
	9	314	10	1353.50	130	5	503.50				52	2	169.00				496	17	2026.00
	10	70	3	322.00	16	1	76.00										86	4	398.00
	11	50	2	217.75	20	1	130.00										70	3	347.75
	12	44	2	159.00	30	1	195.00										74	3	354.00
	8 - 9	25	1	118.75													25	1	118.75
	9 - 10	20	1	65.00	89	3	289.25										109	4	354.25
	9 - 11				35	2	172.25										35	2	172.25
	9 - 12	15	1	71.25	137	4	650.75										152	5	722.00
	10 - 12				45	2	146.25										45	2	146.25
	11 - 12	14	1	77.00	45	2	213.75										59	3	290.75
Total		762	29	3240.75	674	26	3009.25				52	2	169.00				1488	57	6419.00

TABLE 23 - Continued

Regular Degree

Courses	Grade Level	Major-Minor 5-10 yrs. experience S	C	H	Major-Minor 10 or more yrs experience S	C	H	Neither 5-10 yrs. experience S	C	H	Neither 10 or more yr experience S	C	H	Neither Experience unknown S	C	H	Total S	C	H
Mechanical Drawing	N.R.	41	3	194.75													41	3	194.75
	7				21	1	99.75										21	1	99.75
	8	73	3	346.75	18	1	85.50	82	3	428.50				24	1	132.00	197	8	992.75
	9	30	2	142.50	40	2	190.00	26	1	143.00				12	1	51.00	108	6	526.50
	10				158	8	776.00	22	1	121.00							180	9	897.00
	11	28	1	91.00	72	4	342.00	31	1	170.50							131	6	603.50
	12				14	2	59.50										14	2	59.50
	9 - 11	122	4	671.00													122	4	671.00
	10 - 11	28	1	133.00													28	1	133.00
	10 - 12	64	4	285.00													64	4	285.00
	11 - 12	52	2	271.00	23	2	117.50										75	4	388.50
Total		438	20	2135.00	346	20	1670.25	161	6	863.00				36	2	183.00	981	48	4851.25
Blue Print Reading	10				25	1	81.25										25	1	81.25
Architectural Drawing	11	42	2	199.50													42	2	199.50
	11 - 12				25	1	118.75										25	1	118.75
Total		42	2	199.50	25	1	118.75										67	3	318.25
Machine Drafting & Drawing	11 - 12				13	1	104.00										13	1	104.00
Tool Design	12	18	1	117.00													18	1	117.00
Graphic Arts	8				132	5	561.00				65	3	332.75				197	8	893.75
	9										44	2	225.50				44	2	225.50
	11										29	2	143.00				29	2	143.00
	8 - 9	63	2	281.25													63	2	281.25
Total		63	2	281.25	132	5	561.00				138	7	701.25				333	14	1543.50
Printing & Print Design	N.R.	45	3	213.75	12	1	57.00										57	4	270.75
	8	53	2	225.25													53	2	225.25
	9	11	1	46.75	64	4	262.25										75	5	309.00
	10				88	4	473.50										88	4	473.50
	11				33	2	181.50										33	2	181.50
Total		109	6	485.75	197	11	974.25										306	17	1460.00
Auto Mechanics & Shop	10	77	4	453.00													77	4	453.00
	11	34	2	237.50													34	2	237.50
	12	19	1	123.50	108	4	513.00										127	5	636.50
	10 - 12	25	1	118.75													25	1	118.75
	11 - 12	133	8	674.00	14	1	112.00										147	9	786.00
Total		288	16	1606.75	122	5	625.00										410	21	2231.75
Industrial Mechanics	10 - 12				83	3	253.25										83	3	253.25
	11 - 12				24	1	78.00										24	1	78.00
Total					107	4	331.25										107	4	331.25
Power Plant	12	6	1	22.50													6	1	22.50
	10 - 12	43	2	344.00													43	2	344.00
Total		49	3	366.50													49	3	366.50
Industrial Hydraulics	11	77	3	500.50													77	3	500.50
Air Frame	12	5	1	18.75													5	1	18.75
	10 - 12	21	1	168.00													21	1	168.00
Total		26	2	186.75													26	2	186.75
Shop Mathematics & Industrial Construction Mathematics	N.R.	15	1	71.25													15	1	71.25
	10	26	1	84.50													26	1	84.50
Total		41	2	155.75													41	2	155.75
Unknown or Un-Classified	8	16	1	76.00													16	1	76.00

TABLE 24

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61[1]

		Advanced Degree						Regular Degree											
		Major-Minor[2] Less than 5 yrs experience			Neither[3] 10 or more yrs experience			Less than 5yr experience			Major-Minor 5-10 yrs experience			10 or more yrs experience			Neither 10 or more yrs experience			Total		
Courses*	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	7	123	4	307.50																123	4	307.50
	8				138	5	655.50							70	2	265.50				208	7	921.00
	9				82	3	389.50							18	1	85.50				100	4	475.00
	8 - 9													20	1	50.00				20	1	50.00
Total		123	4	307.50	220	8	1045.00							108	4	401.00				451	16	1753.50
General Shop	N.R.[7]													33	2	156.75				33	2	156.75
	7	34	1	161.50										19	1	47.50				53	2	209.00
	8	167	9	691.75										188	9	836.00				355	18	1527.75
	9	172	9	759.50							18	1	85.50	495	26	2278.75				685	36	3123.75
	10	49	3	222.75							15	1	71.25	47	4	239.25				111	8	533.25
	11	17	1	80.75										14	1	66.50				31	2	147.25
	12	23	2	109.25																23	2	109.25
	9 - 10													28	2	99.25				28	2	99.25
	10 - 11													49	3	252.25				49	3	252.25
	10 - 12													116	6	521.50				116	6	521.50
	11 - 12													160	10	791.75				160	10	791.75
Total		462	25	2025.50							33	2	156.75	1149	64	5289.50				1644	91	7471.75
Wood Shop	7													57	2	242.25				57	2	242.25
	8	53	2	222.75										304	12	1314.50				357	14	1537.25
	9	102	4	382.25	29	2	159.50							192	8	896.25				323	14	1438.00
	10	88	3	467.00										287	13	1402.25				375	16	1869.25
	11				12	1	66.00							78	4	422.00				90	5	488.00
	12													34	3	161.50				34	3	161.50
	9 - 12	26	1	97.50																26	1	97.50
	10 - 11	21	1	78.75																21	1	78.75
	10 - 12	94	3	446.50										171	7	810.50	28	1	133.00	293	11	1390.00
	11 - 12	117	5	537.75										71	4	360.50				188	9	898.25
Total		501	19	2232.50	41	3	225.50							1194	53	5609.75	28	1	133.00	1764	76	8200.75
Metal Shop & Metal Fitting	8													50	3	212.50				50	3	212.50
	9	36	2	135.00										64	2	272.00				100	4	407.00
	10	151	6	611.50										112	5	570.50				263	11	1182.00
	10 - 11	54	2	202.50																54	2	202.50
	10 - 12													75	3	356.25				75	3	356.25
	11 - 12													22	1	104.50				22	1	104.50
Total		241	10	949.00										323	14	1515.75				564	24	2464.75
Machine Hand Tools	10													38	2	180.50				38	2	180.50
	12	20	1	75.00																20	1	75.00
Total		20	1	75.00										38	2	180.50				58	3	255.50
Machine Shop	8				12	1	66.00													12	1	66.00
	9	144	5	619.50	18	1	99.00										48	2	264.00	210	8	982.50
	10	148	6	903.75	10	1	55.00										49	2	269.50	207	9	1228.25
	11	58	3	308.75													27	1	148.50	85	4	457.25
	12	55	3	261.25																55	3	261.25
	9 - 12	73	3	346.75																73	3	346.75
	10 - 12	59	3	280.25																59	3	280.25
	11 - 12	200	11	1099.00							40	2	320.00	131	6	820.50				371	19	2239.50
Total		737	34	3819.25	40	3	220.00				40	2	320.00	131	6	820.50	124	5	682.00	1072	50	5861.75

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

*Note: See Table 19 for Commercial Cooking, Baking, etc.

TABLE 24 - Continued

		Advanced Degree												Regular Degree											
		Major-Minor																							
		Less than 5yrs experience			Neither 10 or more yrs experience			Less than 5yrs experience			5-10 yrs experience			10 or more yrs experience			Neither 10 or more yrs experience			Total		
Courses	Grade Level	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Power Machinery	N.R.													15	1	71.25				15	1	71.25
	9	22	1	93.50										18	1	76.50				40	2	170.00
	10 - 12	26	1	123.50																26	1	123.50
	11 - 12	17	1	63.75																17	1	63.75
Total		65	3	280.75										33	2	147.75				98	5	428.50
Welding	10 - 12	73	3	473.50																73	3	473.50
	11 - 12													37	2	175.75				37	2	175.75
Total		73	3	473.50										37	2	175.75				110	5	649.25
Electricity	9	32	2	128.00																32	2	128.00
	10	66	2	413.25																66	2	413.25
	11	27	1	216.00																27	1	216.00
	12	59	1	221.25										21	1	99.75				80	2	321.00
	10 - 12	107	4	508.25	67	3	318.25													174	7	826.50
	11 - 12	46	2	218.50	38	2	180.50							21	1	99.75				105	5	498.75
Total		337	12	1705.25	105	5	498.75							42	2	199.50				484	19	2403.50
Radio Electronics	9 - 12													56	2	266.00				56	2	266.00
Drafting	N.R.													15	1	56.25				15	1	56.25
	7	15	1	37.50										78	3	331.50				93	4	369.00
	8	123	5	553.75										248	9	1102.00				371	14	1655.75
	9	260	10	1081.50	86	3	408.50							354	15	1549.50				700	28	3039.50
	10	269	11	1141.25	116	4	377.00							315	13	1135.50				700	28	2653.75
	11	46	3	203.50										114	4	348.75				160	7	552.25
	12	61	3	356.50										46	2	149.50				107	5	506.00
	8 - 9	28	1	119.00																28	1	119.00
	9 - 10	33	1	107.25																33	1	107.25
	9 - 12	141	5	669.75										188	6	729.00				329	11	1398.75
	10 - 11	54	2	297.00																54	2	297.00
	10 - 12	408	17	1889.25																408	17	1889.25
	11 - 12	169	8	870.50										20	1	95.00				189	9	965.50
Total		1607	67	7326.75	202	7	785.50							1378	54	5497.00				3187	128	13609.25
Mechanical Drawing	8																45	2	226.50	45	2	226.50
	9	28	1	133.00										67	3	321.00	73	4	383.50	168	8	837.50
	10	146	6	574.50				165	6	783.75				36	2	142.00	201	8	969.00	548	22	2469.25
	11													33	1	156.75	86	4	418.25	119	5	575.00
	12													20	1	95.00				20	1	95.00
	10 - 11													24	1	114.00				24	1	114.00
	10 - 12													14	1	52.50	38	2	180.50	52	3	233.00
	11 - 12	46	2	172.50										94	6	425.25	28	1	133.00	168	9	730.75
Total		220	9	880.00				165	6	783.75				288	15	1306.50	471	21	2310.75	1144	51	5281.00
Blue Print Reading	7													55	2	233.75				55	2	233.75
	10				20	1	65.00													20	1	65.00
Total					20	1	65.00							55	2	233.75				75	3	298.75
Architectural Drawing	10	74	3	315.50										29	1	137.75				103	4	453.25
	11	40	2	190.00																40	2	190.00
	12													16	1	76.00				16	1	76.00
	9 - 12	25	1	118.75																25	1	118.75
	11 - 12																31	1	147.25	31	1	147.25
Total		139	6	624.25										45	2	213.75	31	1	147.25	215	9	985.25

TABLE 24 - Continued

Courses	Grade Level	Advanced Degree: Major-Minor, Less than 5yrs experience S	C	H	Advanced Degree: Neither, 10 or more yrs experience S	C	H	Regular Degree: Major-Minor, Less than 5yrs experience S	C	H	Regular Degree: Major-Minor, 5-10 yrs experience S	C	H	Regular Degree: Major-Minor, 10 or more yrs experience S	C	H	Regular Degree: Neither, 10 or more yrs experience S	C	H	Total S	C	H
Machine Drafting & Drawing	10													86	3	360.50				86	3	360.50
	11	30	1	142.50	22	1	55.00													52	2	197.50
	12													17	1	80.75				17	1	80.75
Total		30	1	142.50	22	1	55.00							103	4	441.25				155	6	638.75
Tool Design	11 - 12													20	1	160.00				20	1	160.00
Graphic Arts	8	132	4	561.00													62	2	341.00	194	6	902.00
Printing & Print Design	N.R.	15	1	71.25																15	1	71.25
	7	158	7	615.50										107	3	454.75				265	10	1070.25
	8	147	5	751.75																147	5	751.75
	9	116	5	493.00																116	5	493.00
	10	40	2	190.00										85	6	427.00				125	8	617.00
	11	24	1	114.00																24	1	114.00
	12	16	1	76.00																16	1	76.00
	7 - 8	20	1	50.00																20	1	50.00
	8 - 9	13	1	55.25										35	2	148.75				48	3	204.00
	9 - 12	86	6	460.50																86	6	460.50
	10 - 11	16	1	76.00																16	1	76.00
	10 - 12	244	11	1211.50										19	1	90.25				263	12	1301.75
	11 - 12													71	6	529.00				71	6	529.00
Total		895	42	4164.75										317	18	1649.75				1212	60	5814.50
Auto Mechanics & Shop	N.R.																20	1	160.00	20	1	160.00
	10	82	3	389.50													47	2	223.25	129	5	612.75
	12													56	3	398.00				56	3	398.00
	10 - 12	14	1	66.50																14	1	66.50
	11 - 12	20	1	95.00										20	1	110.00				40	2	205.00
Total		116	5	551.00										76	4	508.00	67	3	383.25	259	12	1442.25
Bump & Paint Shop - Auto Body	9 - 12	18	1	67.50																18	1	67.50
	10 - 12	22	1	82.50																22	1	82.50
Total		40	2	150.00																40	2	150.00
Industrial Mechanics	9	114	4	370.50																114	4	370.50
	10 - 12	29	1	94.25																29	1	94.25
Total		143	5	464.75																143	5	464.75
Shop Mathematics & Industrial Construction Mathematics	7													26	1	110.50				26	1	110.50
	9													69	2	292.50				69	2	292.50
	10	354	14	1493.00										45	2	213.75				399	16	1706.75
Total		354	14	1493.00										140	5	616.75				494	19	2109.75
Co-Op Training T & I	N.R.	15	1	120.00																15	1	120.00
	12	44	2	352.00																44	2	352.00
Total		59	3	472.00																59	3	472.00
Unknown or Un-Classified	12	11	1	52.25																11	1	52.25

TABLE 24 - Continued

EDUCATIONAL BACKGROUND OF TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH LIFE CERTIFICATES ACCORDING TO YEARS OF EXPERIENCE, NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Non Degree

		Major-Minor[2]						Neither[3]					
		Less than 5yr experience			5-10 yrs experience			10 or more yrs experience			Total		
Courses	Grade Level	S[4]	C[5]	H[6]	S	C	H	S	C	H	S	C	H
Industrial Arts	8				86	2	688.00				86	2	688.00
General Shop	N.R.[7]				32	1	152.00				32	1	152.00
	8				16	1	88.00				16	1	88.00
	9				61	4	311.75				61	4	311.75
	10				19	2	95.50				19	2	95.50
	11 - 12				10	1	37.50				10	1	37.50
Total					138	9	684.75				138	9	684.75
Machine Shop	8 - 11				70	3	462.25				70	3	462.25
	9 - 12				30	2	240.00				30	2	240.00
Total					100	5	702.25				100	5	702.25
Drafting	9				14	1	59.50				14	1	59.50
	11				24	1	114.00				24	1	114.00
	10 - 11				91	3	432.25				91	3	432.25
	10 - 12							149	6	598.75	149	6	598.75
	11 - 12				29	1	137.75				29	1	137.75
Total					158	6	743.50	149	6	598.75	307	12	1342.25
Mechanical Drawing	8				27	1	101.25				27	1	101.25
	9				43	2	161.25				43	2	161.25
	11 - 12	46	4	172.50	19	1	104.50				65	5	277.00
Total		46	4	172.50	89	4	367.00				135	8	539.50
Printing & Print Design	N.R.				25	2	118.75				25	2	118.75
	11				60	3	285.00				60	3	285.00
Total					85	5	403.75				85	5	403.75
Shop Mathematics & Industrial Construction Mathematics	N.R.				15	1	71.25				15	1	71.25

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Includes teachers who are instructing in subject areas in which they hold a major or minor.

[3]Includes teachers who are instructing classes in subject areas in which they do not hold a major or minor.

[4]Students.

[5]Classes.

[6]Hours.

[7]Grade level not reported.

TABLE 25

TEACHERS OF TRADE AND INDUSTRIAL COURSES IN MICHIGAN K-12 SCHOOLS FOR GRADES 7-12 WITH YEARS OF EXPERIENCE AND EDUCATIONAL BACKGROUND UNREPORTED ACCORDING TO NUMBER OF STUDENTS ENROLLED, NUMBER OF CLASSES, AND TOTAL STUDENT HOURS PER WEEK, 1960-61.[1]

Grade Level

Courses	Unknown[2]			7			8			9			10			11		
	S[3]	C[4]	H[5]	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	352	16	1490.50	861	36	3531.00	1511	72	6185.50	1312	62	6064.25	669	33	3247.00	488	25	2466.00
General Shop	2943	153	14367.00	2464	115	10549.75	4581	220	19550.25	6676	329	31919.75	2074	114	10000.25	665	41	3091.00
Wood Shop	1996	94	10144.25	255	13	1224.75	338	15	1513.50	730	35	3347.75	984	49	4792.75	398	21	1922.00
Cabinet & Furniture Making	8	1	38.00													16	1	76.00
Machine Woodwork	74	5	313.50										8	1	34.00	35	2	166.25
Carpentry (Building Construction)	39	3	185.25															
Metal Shop & Metal Fitting	1250	69	6527.25	168	8	924.00	282	13	1294.25	312	15	1472.75	485	23	2267.75	284	15	1374.50
Bench Metal													22	1	104.50			
Sheet Metal	23	1	126.50															
Machine Shop	850	51	4768.75							79	4	375.25	191	9	962.75	317	14	1544.00
Machine Metal Work																		
Machine Working	90	6	427.50															
Power Machinery	151	9	734.50										15	1	71.25	72	4	377.50
Welding	393	20	1853.75															
Electricity	81	4	384.75							20	1	110.00	56	4	266.00			
Radio Electronics	43	3	190.25	19	1	80.75	36	2	153.00	22	1	104.50						
Drafting	1383	60	6755.25	315	15	1454.25	421	18	1959.00	643	29	2914.75	572	26	2629.50	345	16	1606.75
Mechanical Drawing	3014	139	14653.25	326	16	1432.75	538	22	2311.50	1403	63	6262.75	1178	59	5549.25	630	33	2989.00
Blue Print Reading	155	7	784.00							53	2	251.75	16	1	76.00			
Architectural Drawing	170	11	901.00							19	1	90.25	28	2	133.00	53	3	251.75
Machine Drafting & Drawing	80	4	410.00													12	1	57.00
Graphic Arts													45	3	213.75	12	1	57.00
Printing & Print Design	407	22	1911.75				77	3	327.25				88	6	438.25	34	2	172.00
Auto Mechanics & Shop	648	48	3347.50										189	10	897.75	484	22	2390.50
Auto Theory	36	2	153.00															
Industrial Mechanics																		
Plastics	57	3	270.75				40	2	190.00									
Shop Mathematics & Industrial Construction Mathematics	333	13	1601.50							82	4	339.50	482	19	2212.25	65	2	243.75
Co-Op Training - T & I	110	9	636.25															
Unknown or Unclassified	92	4	437.00															
Total	14778	757	73413.00	4408	204	19197.25	7824	367	33484.25	11351	546	53253.25	7102	361	33896.00	3910	203	18785.00

[1]Student hours were computed by multiplying total number of students enrolled by mean hours per week for each course offered.

[2]Grade level not reported.

[3]Students.

[4]Classes.

[5]Hours.

Note: See Table for Commercial Cooking, Baking, etc.; Cosmetology; and Hospital Service.

TABLE 25 - Continued

Grade Level

Courses	12			7-8			7&9			8-9			9-10			9-11			9-12		
	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H	S	C	H
Industrial Arts	185	11	1009.00	101	3	474.25															
General Shop	449	30	2077.00	839	37	3795.25	45	2	213.75	70	2	332.50	19	2	90.25	17	1	80.75	20	1	95.00
													527	28	2536.25				461	22	2203.00
Wood Shop	56	3	281.00																		
Cabinet & Furniture Making										143	6	651.75	42	2	215.25	94	4	521.25	357	19	1645.25
Machine Woodwork																					
Carpentry (Building Construction)	57	3	339.00																		
Metal Shop & Metal Fitting																					
Bench Metal	105	6	513.00	20	1	95.00				81	3	344.25	59	3	280.25	55	3	316.50	176	8	836.00
Sheet Metal																					
Machine Shop	190	10	978.00																		
Machine Metal Work	60	3	52.00										22	1	104.50				136	10	613.00
Machine Working																					
Power Machinery	224	10	1054.25																		
Welding	14	1	66.50																		
Electricity	30	2	135.50																		
Radio Electronics																					
Drafting	216	13	1013.50																		
Mechanical Drawing	249	16	1153.75	64	3	261.50	24	1	114.00	170	5	728.00	93	5	381.75	150	6	787.25	349	18	1608.75
Blue Print Reading	52	2	237.00										115	5	546.25				448	20	2104.00
Architectural Drawing	31	2	159.25																		
Machine Drafting & Drawing	9	1	42.75																23	1	109.25
Graphic Arts																					
Printing & Print Design	35	3	177.50																		
Auto Mechanics & Shop	358	19	1801.50																105	8	498.75
Auto Theory													86	4	473.00				130	7	609.50
Industrial Mechanics	43	2	292.00																		
Plastics																					
Shop Mathematics & Industrial Construction Mathematics	18	1	85.50																		
Co-Op Training - T & I	34	3	180.25													19	1	152.00	104	5	491.50
Unknown or Unclassified																					
Total	2415	141	11648.25	1024	44	4626.00	69	3	327.75	464	16	2056.50	963	50	4627.50	335	15	1857.75	2309	119	10814.00

TABLE 25 - Continued

Grade Level

Courses	10-11 S	10-11 C	10-11 H	10-12 S	10-12 C	10-12 H	11-12 S	11-12 C	11-12 H	Total S	Total C	Total H
Industrial Arts	29	1	137.75	126	5	598.50	276	15	1311.75	5966	283	26781.50
General Shop	335	19	1635.00	751	43	3497.75	1271	69	5749.00	24151	1224	111517.50
Wood Shop	117	6	555.75	524	28	2519.50	433	24	2115.50	6467	319	31450.25
Cabinet & Furniture Making				47	2	223.25	72	4	334.00	143	8	671.25
Machine Woodwork										117	8	513.75
Carpentry (Building Construction)							15	1	82.50	111	7	606.75
Metal Shop & Metal Fitting	73	3	346.75	490	27	2277.00	320	18	1455.00	4160	215	20324.25
Bench Metal										22	1	104.50
Sheet Metal										23	1	126.50
Machine Shop	187	8	993.75	149	8	746.00	274	14	1497.25	2395	129	12583.25
Machine Metal Work										60	3	52.00
Machine Working							35	2	192.50	125	8	620.00
Power Machinery	52	2	221.00	25	2	118.75	47	2	223.25	586	30	2800.50
Welding							58	3	307.00	465	24	2227.25
Electricity	97	4	630.50	79	4	364.75	125	7	575.50	488	26	2467.00
Radio Electronics							42	3	178.50	162	10	707.00
Drafting	220	10	1031.25	541	25	2482.00	753	37	3646.00	6195	284	29112.00
Mechanical Drawing	346	18	1637.00	940	51	4435.25	1444	88	6782.75	10695	533	50119.00
Blue Print Reading	22	1	121.00	68	3	374.00				366	16	1843.75
Architectural Drawing				18	1	85.50	99	7	488.25	441	28	2218.25
Machine Drafting & Drawing							42	2	212.25	143	8	722.00
Graphic Arts							12	1	57.00	69	5	327.75
Printing & Print Design				170	9	739.50	84	6	376.00	1000	59	4641.00
Auto Mechanics & Shop				430	22	2149.75	299	15	1518.00	2624	147	13187.50
Auto Theory										36	2	153.00
Industrial Mechanics										43	2	292.00
Plastics										97	5	460.75
Shop Mathematics & Industrial Construction Mathematics	25	1	118.75	235	8	1090.75	98	4	439.00	1461	58	6774.50
Co-Op Training - T & I							51	2	343.00	195	14	1159.50
Unknown or Unclassified							45	3	213.75	137	7	650.75
Total	1503	73	7428.50	4593	238	21702.25	5895	327	28097.75	68943	3464	325215.00

Appendix C

METHODOLOGY

Appendix C

METHODOLOGY

The original data on vocational curricula and on teacher education and experience were gathered in cooperation with the General Education Division of the Department of Public Instruction, using the Self-Survey Supplements I and II, 1960-61, part of the Self-Survey for Instructional Progress required of all school districts approved by the Superintendent of Public Instruction for the collection of tuition. Those school districts which were not required to fill in these forms were contacted and requests were made of them to provide us with the same information for purposes of our research. The returns from these school districts was one hundred per cent, making our research much more valid since these school districts represent the large city systems.

The data so gathered was coded, punched onto IBM cards, and processed, providing the materials found in Appendix B and the basis for our discussion of curriculum in the body of the report. Since the data provided the Department of Public Instruction was not specifically directed to our research, some materials needed for our analyses were incomplete. In the total curricula listed in Appendix B, we estimated the number of students and the hours taught for many school districts, basing our estimate on the mean number of students, and hours for the particular grade, curriculum, and course. We made no estimates for teacher experience since this was not necessary for our purposes.

In the analysis of the curricula by counties we felt that it would be more accurate to omit those school districts which did not provide complete enough returns. The school districts omitted are found in Table 1.

The data on curricula could not have been gathered and processed without the generous help of persons in the Department of Public Instruction. Of especially assistance were Leon J. Alger, Ferris N. Crawford, David C. Fitch, and Robert M. Winger.

Several decisions had to be made concerning curricular analysis. After long discussion with members of the Executive Committee it was decided not to separate office education from distributive because of inherent difficulties in classification involved in the data. While we recognize the importance of home economics to the educational process, we felt that its value was less in the vocational field as such than in the field of general education. As a result, many of our analyses dealt only with agriculture, business, and trade and industry. In a similar fashion, counseling data which was originally gathered as part of our research design was omitted because of the inadequacy of defining hours, number of students, or even grade levels at which counseling is offered.

Another problem concerned the distinction between industrial arts and vocational education. Here again, the Executive Committee suggested that no attempt be made to distinguish between these types of courses. In our analysis we did omit courses offered at the pre-high school level as being essentially industrial arts.

The labor market data and the projections for Michigan were based almost exclusively on the census materials for Michigan. Most of the techniques used are described in the body of the report. The demographic data is almost exclusively derived from Dr. Thaden's study of Michigan census materials and saved the project a great deal of time, effort, and money.

Table 1

School Districts Not Included in Vocational Curriculum Analysis Because of Incomplete Data

County	School District	Number of Students in Grades 9-12*
Berrien	Benton Harbor	2047
Calhoun	Albion	721
Chippewa	Rudyard	244
Eaton	Charlotte	820
Hillsdale	Hillsdale	600
Houghton	Portage Township	388
Ingham	East Lansing	1049
Kent	Caledoni	334
Lenawee	Adrian	1187
Mackinac	Garfield Township	116
Macomb	Van Dyke	1285
Manistee	Manistee	628
Marquette	Negaunee	468
Mecosta	Remus	215
Muskegon	Orchard View	199
Oakland	Southfield	1851
	Walled Lake	1669
Ottawa	Holland	1267
St. Clair	Marysville	659
Washtenaw	Lincoln	427
	Ypsilanti	1241
Wayne	Lincoln Park	2737
	Romulus	1082
	Southgate	405
	Taylor Township	2364
Wexford	Cadillac	787

* Fourth Friday Membership, September 30, 1960.

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An Evaluation Study of the JIMMA AGRICULTURAL TECHNICAL HIGH SCHOOL in Ethiopia

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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An Evaluation Study of the JIMMA AGRICULTURAL TECHNICAL HIGH SCHOOL *in* Ethiopia

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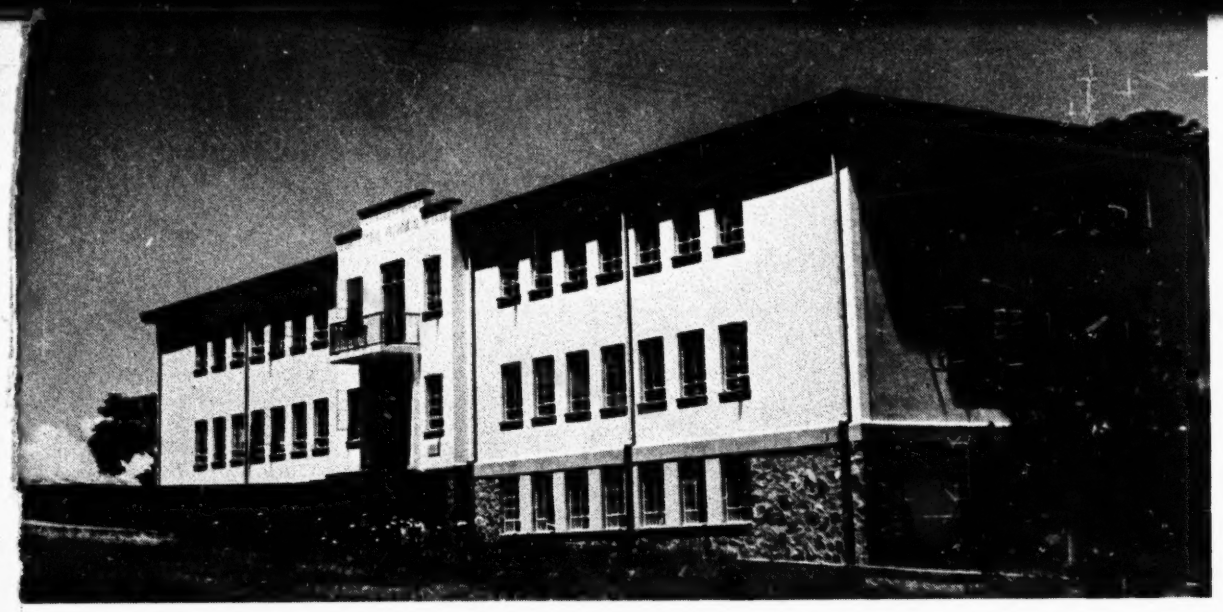


The Jimma Agricultural Technical School in Jimma, the capital city of Kaffa Province. The student body represents all fourteen provinces of the Empire. Students live in the dormitory shown above. One of the valuable learning experiences at Jimma is students from many and varied backgrounds learn to live, work and learn together.

INTRODUCTION

The purpose of this study was to evaluate the effectiveness of the instruction of the Jimma Agricultural Technical School in Ethiopia. The three major areas included are (1) an evaluation of phases of the school program by the graduates, (2) a rating of certain phases of the graduates' work by their supervisors and (3) a study of the performance of the graduates in their college work.

Information for the first phase of the study was obtained from questionnaires received from the graduates of the school.

The second phase was made by visits to the supervisors of the graduates who did not attend college. These supervisors rated various phases of the graduates' training as a result of their performance on the job.

The transcripts and records at the College of Agriculture Haile Selassie I University were studied to obtain the information for the third phase of the project.

The program at the Jimma School has been in operation since August, 1952. The student body is selected from eighth grade graduates scoring in the upper ten or fifteen percentile of the Ministry of Education leaving examination and represent most of the fourteen provinces in Ethiopia. Therefore, the students at Jimma come from differing ethnic, cultural, and religious backgrounds. They may speak different languages and have other varying personal characteristics arising from their backgrounds. Many graduates have gone into farming or agriculturally related occupations directly upon completing high school, others have completed college and are now employed in agriculturally related occupations, while a number are presently enrolled in college. The graduates are now in a position to look back upon their high school training and offer their opinions as to its value to them in their present occupation or educational pursuits.

Ethiopia is in critical need of trained people to assist in planning, implementing and maintaining strongly functional programs for social and economic development. Agriculture will play a major role in bringing about the prosperity needed for such development programs. Other schools similar to the Jimma School are needed to supply additional agriculturally trained people to assist in the expansion of agricultural development in Ethiopia. Jimma is the only school of its kind in Ethiopa. Representatives of the two governments, when initiating the original agreement, indicated that expansion of such training was one of the goals of the agricultural institution. Before undertaking or even planning such an expansion of the Jimma program, however, it is obviously necessary to evaluate the effectiveness of the program in meeting its stated objectives. A critical study of the post-high school performances of graduates should go far toward substantiating validity of the program.

Evaluation for the improvement of student selection, of instruction, of guidance programs, and of the testing of broad educational objectives is one of the major problems of education. As increased emphasis is centered on the need for providing agricultural education to rural people in Ethiopia, attention is focused on the obligation of educators to improve the quality and quantity of educational offerings.

A study of the graduates from the Jimma School will provide occupational and employment status records that can be useful to Ethiopian government officials in planning long-range developmental programs for the country. Also, such a study should provide information of value for revision of the present curriculum as well as the development of other similar schools in Ethiopia.

Farmers in the area are invited to visit the Jimma Agricultural Technical School at any time to see the work being done. Annual field days are held to demonstrate results of experimental work. Here a group of farmers hear a student explain the proper feeding and management of the school poultry flock.

TABLE I

Occupational Distribution of the 445 Jimma Graduates

Department	Number	February, 1965* Total	Percent
I. MINISTRY OF AGRICULTURE			
A. Animal Science			
1. Production	14		
2. Diseases	20		
B. Plant Sciences		34	7.7
1. Forestry	8		
2. Pest Control	5		
3. Agronomy	9		
C. Teaching or Staff		22	4.9
1. Jimma	10		
2. Ambo	6		
3. Agricultural College	3		
D. Research		19	4.3
1. Debra Zeit	13		
2. Economics and Statistics	5		
E. Extension		18	4.0
1. Agents	40		
2. Trainees	13		
3. Specialists	3		
4. Scholarships	2		
F. Other		58	13.0
1. Agricultural Education	2		
2. Provincial Officers	2		
3. Special Projects	2		
II. INSTITUTIONS OF HIGHER LEARNING		6	1.3
A. Haile Selassie U. Agri. College			
1. Freshman	20		
2. Sophomore	10		
3. Juniors	13		
4 Seniors (National Service)	13		
B. Other Ethiopian Colleges		56	12.6
1. Army	4		
2. Navy	3		
3. University	8		
C. Scholarships Outside Ethiopia		15	3.4
1. United States of America	25		
2. Communist Block Countries	12		
3. Other European and Asian	20		
III. MINISTRY OF COMMERCE AND INDUSTRY		57	12.8
A. Coffee Board	31		
B. Planning Board	4		
C. Director General	1		
IV. MINISTRY OF COMMUNITY DEVELOPMENT		36	8.1
A. Field Agents	15		
B. Awossa Project	8		
C. Central Office	3		
D. Awash Valley Project	6		
E. Arba Mintch Project	4		
V. LAND DEVELOPMENT BANK		36	8.1
A. Main Office	6		
B. Provinces	4		
VI. FARMING-PRIVATE EMPLOYMENT		10	2.3
A. Private Farming	5		
B. Farm Managers	10		
C. Wonji Sugar Estate	5		
D. Tobacco Monopoly	4		
E. Ethiopian Airlines	5		
VII. MINISTRY OF EDUCATION		29	6.5
A. Teaching	9		
B. Central Office	4		
VIII. MISCELLANEOUS		13	2.9
A. Other Government Ministries	10		
B. No Information	9		
C. Deceased	5		
D. One Each Peace Corps, Ras Hotel, A. Besse Co., Asst. to American Agri. Attache, National Cash Register Co., and Nutrition Section Hospital	6		
E. Present Position Unknown	6		
		36	8.1
		445	100.0

***Compiled at Oklahoma State University from previous lists and with the assistance of former Jimma graduates presently enrolled at Oklahoma State University.**

An Evaluation of the Jimma Program by Graduates of the High School

The method of collecting the data was through a combination of personal contact and by mailing a survey schedule to as many of the former graduates from Jimma as possible. Two hundred forty-two of the three hundred fifty-eight graduates during the first ten years of operation of the Jimma School were contacted and formed the sample of this study. Data pertaining to academic achievement were obtained from official transcripts from both the Jimma Agricultural Technical School, Jimma, Ethiopia, and the Haile Selassie I University College of Agriculture, Alemaya, Ethiopia. Data regarding the total population of Jimma graduates related to this study were obtained from office records kept at Jimma and Alemaya.

Table I lists a complete occupational distribution pattern of all graduates from Jimma. The findings compiled for the 445 graduates in Table I show 275 (61.8 percent) of the graduates are now engaged in agricultural occupation. Currently 113 (25.4 percent) of the Jimma graduates are students in institutions of higher learning working on degrees in some phase of agriculture. There are 31 (7.0 percent) of the former graduates working in occupations closely related to agriculture and 26 (5.8 percent) working in occupations not related to agriculture. Ninety-four percent of the Jimma graduates are in agricultural occupations or pursuing an education in preparation for agricultural ocupations and less than six percent are in occupations not related to agriculture.

Additional findings reveal 157 (35.2 percent) of the Jimma graduates are working for the Ministry of Agriculture and 95 (21.3 percent) are employed by other ministries of the Ethiopian Government. Forty-one (9.2 percent) of the graduates are in private employment. Of this number, five are in private farming for themselves, and ten are managing farms for other people. A total of 15 (3.4 percent) of the graduates are farming or assuming the managerial responsibility of production agriculture.

The findings in Table II give the occupational distribution of Jimma graduates by tribes to which they belong. The findings in regard to this question indicate there is little correlation between the tribe students belong to and their occupations after high school. Approximately half of Jimma graduates are employed by the government. The number of employed when grouped by tribes very closely resembles the occupational distribution of all the graduates as listed in Table I. The only exception was the Guragie tribe which had less than approximately half of the graduates working for the government. Only 20 percent of the graduates from this tribe reported working in governmental jobs and 70 percent were students in institutions of higher learning.

The findings indicate a difference does exist between the type of occupations graduates belonging to the Tigre tribe are engaged in and the averages established by the sample group and the total population. Twenty-one (72.4 percent) of the graduates belonging to the Tigre tribe are working for the Ethiopian government and 7 (24.1 percent) are enrolled in institutions of higher learning. The number of graduates belonging to the Tigre tribe in government represents approximately 20 percent more than graduates belonging to other tribal groups.

The discrepancy that exists between the sample of 42 percent reported to be in institutions of higher learning as compared to the total population percent of 25.4 percent of all Jimma graduates classified into this category can be explained by the fact that a greater number of students in institutions of higher learning responded to the survey schedule than did graduates not classified in this category. Jimma graduates in institutions of higher learning were much more readily accessible to mail and other lines of transportation and communication than were graduates working in more remote areas of Ethiopia.

The type of jobs held by Jimma graduates are classified into four general categories: agricultural agents, administrators, technicians, and teaching. Some graduates are engaged in occupations difficult to classify in specific agriculture job title categories and are listed in a classification of "others."

The types of jobs available to Jimma graduates are influenced by the Ethiopian government planned programs for social and economic development. Various ministries are in the process of organizing bureaus to carry out their proposed developmental projects. At the present time, a majority of Jimma graduates hold positions with the Ministry of Agriculture, Ministry of Commerce and Industry, and the Ministry of Community Development. Graduates without college training work as agents or technicians. Generally, graduates employed as agents serve in similar capacities as agricultural extension agents, whose purpose is to extend the knowledge and findings of educational institutions and research stations to the farmers and coffee growers.

The Ministry of Agriculture employs agricultural extension agents to work in provincial areas with farm people in the improvement of agriculture in general. The Ministry of Commerce and Industry employs National Coffee Board agents for the purpose of assisting coffee producers with the improvement of yield and market quality of coffee.

The Ministry of Community Development employ Jimma graduates to work in project centers of land resettlement or in existing communities or villages that are attempting to improve community life in general.

Jimma graduates employed as administrators are usually those who have attended agriculture college and earned a baccalaureate degree. They are working as supervisors in charge of agents and trainees in the various projects or as specialists in a particular field. Jimma graduates are employed in technical phases of agriculture such as animal disease control, pest control, agriculture research work, or various departmental jobs for the ministries of the Ethiopian government.

One of the questions prevalent among both American and Ethiopian educators has been whether or not students attending Jimma would accept work as a part of their training experiences. In an inquiry with regard to the student evaluation of practical work training in relation to their present job or position, all the students responded to the survey. Graduates who are working and those in institutions of higher learning were asked to rate their work training as great, moderate, little, or of no value to them.

Data in Table III indicate the seven tribal groups rated the value of their work training approximately the same. The findings show 57.9 percent of the graduates rated their work training as being of great value; 27.7 percent, of moderate value; 10.3 percent, of little value; and 4.1 percent, of no value.

A slightly smaller percent of the Guragie tribe rated their training as being of great value to them. Only 40.0 percent of this tribe rated the training in the top category, representing a deviation of 17.9 percentage points from the average of this category. Also the percent rating their training in the lower two categories (of little or no value) was somewhat higher than the average for the group.

In addition to obtaining the graduates' evaluation of practical work training, the Jimma graduate had an opportunity in the survey to express an opinion on the emphasis placed on work training. Graduates were asked to check whether they thought more, same, or less emphasis should be placed on this type of training. The training program in which they participated consisted of working twelve hours a week.

A summary of responses given in Table III shows 53.3 percent of the graduates though more emphasis should be placed on work training; 31.4 listed the same emphasis; 6.1 percent suggested less emphasis; and 9.0 percent did not respond to this question. Further examination reveals that no meaningful differences exist between tribes and the graduates' expressed opinions on the emphasis on work training. The consensus of graduates would appear to favor leaving the work training the same or perhaps slightly increase the emphasis in this phase of the training offered at Jimma.

The courses taught at Jimma were grouped in the following subject matter areas for the former graduates to appraise: (1) Agriculture I, II, III, IV; (2) Languages; (3) Mathematics; (4) Sciences; and (5) Social Sciences. They were given an opportunity to evaluate each of the separate courses included in the subject matter areas. Agriculture is taught as sixteen separate block courses of nine weeks each in the four years of high school.

The graduates were asked to evaluate the various areas of the course work phase of the training received at Jimma as to its extent

TABLE II

Occupational Distribution of Jimma Graduates Grouped by Tribes

Tribe	Gov. Employee No.	Gov. Employee Percent	College Student No.	College Student Percent	Private Emply. No.	Private Emply. Percent	Other No.	Other Percent	Total No.
Amhara	74	63.3	35	29.9	1	00.9	7	5.9	117
Amhara & Galla	5	50.0	5	50.0	0	0	0	0	10
Galla	19	54.3	14	40.0	0	0	2	5.7	35
Eritrian	9	42.9	11	52.4	1	4.7	..	..	21
Tigre	21	72.4	7	24.1	1	3.5	..	..	29
Guragie	2	20.0	7	70.0	1	10.0	..	..	10
Other	12	60.0	6	30.0	2	10.0	..	..	20
Total	**142**		**85**		**6**		**9**		**242**

TABLE III

The Opinions of Jimma Graduates Concerning the Value of Practical Work Training of Their Present Employment or Educational Status

Tribe	Great Value No.	Great Value Percent	Moderate Value No.	Moderate Value Percent	Little Value No.	Little Value Percent	No Value No.	No Value Percent	Total No.
Amhara	70	59.8	30	25.7	11	9.4	6	5.1	117
Amhara & Galla	5	50.0	4	40.0	..	..	1	10.0	10
Galla	19	54.2	12	34.3	3	8.6	1	2.9	35
Eritrian	14	66.7	5	23.8	2	9.5	..	..	21
Tigre	17	58.6	6	20.7	5	17.2	1	3.5	29
Guragie	4	40.0	3	30.0	2	20.0	1	10.0	10
Others	11	55.0	7	35.0	2	10.0	..	..	20
Total	**140**		**67**		**25**		**10**		**242**

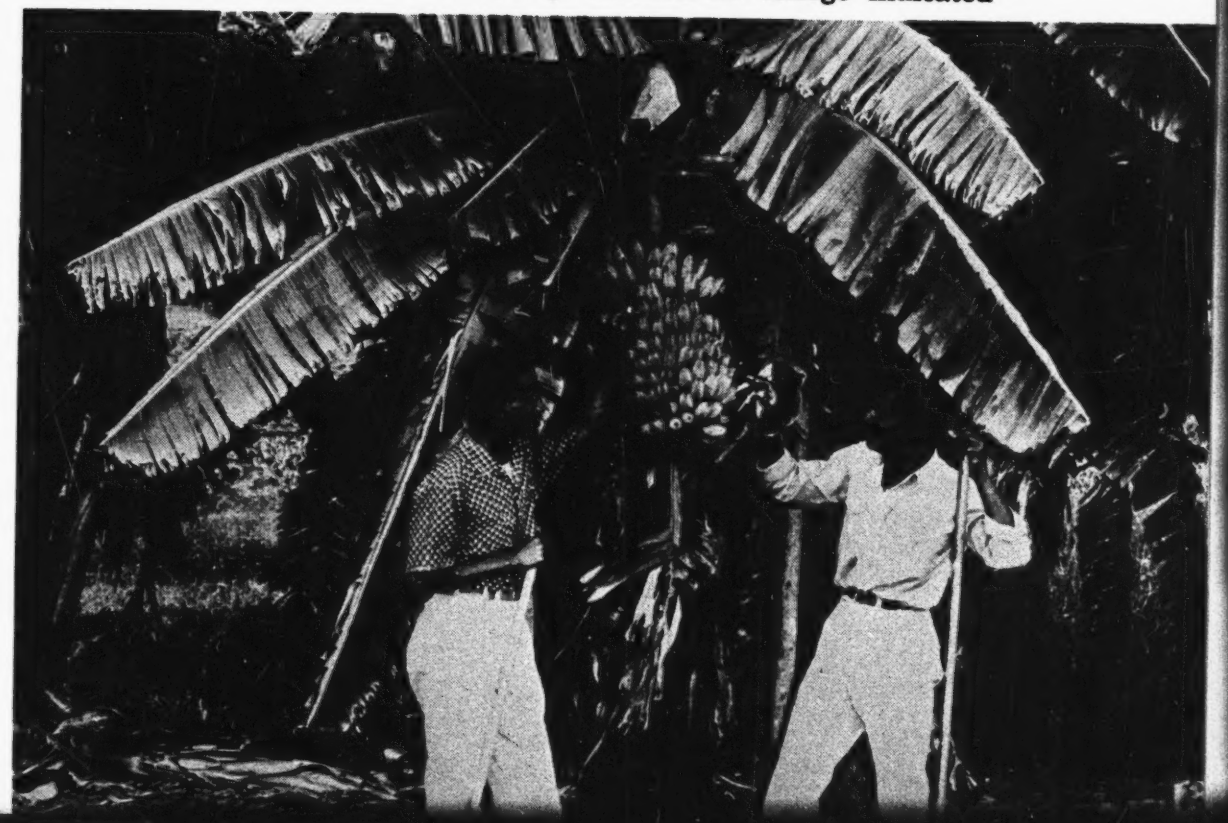
Extension Agents hold hundreds of adult educational meetings each year. They also hold meetings with provincial school teachers to explain their program and give the teachers basic information which can be used in classroom work with students. The picture shows an adult farmer meeting in progress at the Extension center at Ficho, some 50 miles north of Addis Ababa.

of usefulness to them on their present job or as students of higher education. The extent of usefulness was listed as great, moderate, little, and none. In order to obtain an average numerical rating for each course area the degrees of usefulness were valued as four, three, two, and one, respectively.

In addition to grouping former graduates by their home province this section of the study attempts to check the relationship of the student's educational status with his rated evaluation of the areas of course work taught. The groups listed as "college" includes former Jimma graduates who are presently in colleges as well as those who have graduated from college. The "no college" group are Jimma graduates who took employment after high school graduation.

The four nine-week courses taught in Agriculture II are dairy production, feeds and feeding, woodworking, and vegetable production. As shown in Table IV, there is a difference between the mean rating of twenty-seven graduates from "other" provinces of Ethiopia. The graduates from Shoa and Wollega rated dairy production lower than the group mean of 2.80. The data also indicate graduates generally did not widely disagree as to the value of the other three block courses of Agriculture II. However, the majority of all groups considered vegetable production as the most useful block course in Agriculture II and woodworking the least useful to them in their present job or position. The "no college" group expressed an opinion that all four block courses were more useful to them than the "college" group.

The four nine-week block courses taught in Agriculture III are field crops and coffee production I, poultry production, animal power and application, and tractor maintenance. Data presented in Table V show there were no meaningful differences in the rating of individual block course areas in Agriculture III when comparing the graduates grouped by provincial areas, with the exception of tractor maintenance. Graduates of Harar Province rated tractor maintenance of greater value to them than did graduates from other provinces. The data indicate a difference between average individual block course ratings. Coffee and field crops production were considered of more value than animal power and tractor maintenance, and slightly higher than poultry production. The mean ratings for the four block courses were as follows: field crops and coffee production 3.41, poultry production 3.05, animal power and application 2.39, and tractor maintenance 2.50. A comparison of the course evaluation between the "college" and "no college" group in Table V shows the "no college" Jimma graduates thought most block courses of more value to them than the Jimma graduates with college training (except for tractor maintenance). Graduates with a college education or currently enrolled in college indicated



Students at the Jimma Agricultural Technical School inspect a stalk of hybrid bananas growing on the school farm. Practical work training is an integral part of the learning experiences offered at Jimma.

TABLE IV

Average Rating by Graduates of Agriculture Two in the Curriculum at Jimma

	Dairy Production		Feed & Feeding		Woodworking		Veg. Production	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	4	3.00	5	3.20	5	2.40	5	3.40
Eritrea	28	2.96	29	2.89	30	2.56	31	3.19
Harar	15	3.00	13	2.38	18	3.00	16	3.37
Shoa	99	2.67	97	2.70	101	2.72	104	3.04
Tigre	15	3.00	18	2.77	17	2.64	18	2.83
Wollega	11	2.55	8	2.87	10	2.70	7	3.00
Other	27	1.96	25	2.92	28	2.53	28	3.42
College	118	2.71	114	2.76	123	2.65	125	3.04
No College	81	2.93	81	2.76	86	2.76	84	3.26
Total		**2.80**		**2.76**		**2.69**		**3.13**

tractor maintenance of more benefit to them than did the Jimma graduates with no college training.

Data presented in Table VI list the evaluation of block courses included in fourth year agriculture. Graduates evaluated field crops and coffee production II and soils management more useful to them in their post-high school pursuits than they did beef and sheep production and the shop course of metal work. The low rate graduates gave metal work can be explained by the general attitude toward this and other types of skill jobs in Ethiopia.

When graduates were grouped by home provinces, there was very little difference in the average ratings of the block courses in Agriculture IV. One exception was the rating given to metal work by graduates from Tigre Province. The graduates from Tigre Province rated metal work 3.23 as compared to an over-all average of only 2.55 by all Jimma graduates.

Table VI reveals a highly important point in this study in the comparison of the "college" and "no college" groups. Jimma graduates with no college training considered their over-all course work in agriculture block courses consistently of greater value to them in their post-high school pursuits than did the Jimma graduates with college training, with the one exception of courses taught in the shop block courses of metal work. This difference in attitude toward having skills taught in shop work substantiates the finding revealed in the higher rating the college group gave tractor maintenance in Table V. There is some indication that the more education students receive, the greater is

TABLE V

Average Rating by Graduates of Agriculture Three in the Curriculum at Jimma

	Field Crops & Coffee Production I		Poultry Prod.		Animal Power & App.		Tractor Maint.	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	5	3.40	6	3.33	5	2.40	6	2.50
Eritrea	30	3.50	31	3.12	26	2.53	31	2.61
Harar	16	3.62	14	3.21	13	2.53	16	3.12
Shoa	105	3.40	101	3.01	95	2.32	102	2.53
Tigre	17	3.23	16	3.50	14	2.21	18	2.33
Wollega	10	3.70	10	3.20	7	2.42	9	2.33
Other	27	3.33	29	3.06	26	2.53	26	2.07
College	126	3.25	124	2.90	106	2.25	126	2.58
No College	84	3.67	83	3.28	80	2.58	82	2.39
Total		**3.41**		**3.05**		**2.39**		**2.50**

the psychological separation from some of the prejudices toward this type of learning experiences.

The data in Table VII indicate little difference in students' opinion of the usefulness of various language courses taught at Jimma. One exception noted is the average rating of Amharic grammar and literature. Graduates from Eritrea indicated Amharic (the official language of Ethiopia) was of less value to them than did graduates from other provinces of Ethiopia. Eritrea is a northern province only recently federated with Ethiopia. Very few students admitted to Jimma from Eritrea know Amharic as well as students admitted from other provinces. Also another possible reason for the low assessment is that many Jimma graduates from Eritrea return to work there after leaving high school and work among people in the province who do not speak Amharic.

Jimma graduates with college training regard English language and grammar as being more useful to them than did graduates who terminated their education after high school. This is easy to understand because students attending the agricultural college are instructed in English, and most of their reference material is in English.

The findings listed in Table VIII, pertaining to Jimma graduates' evaluation of the usefulness of mathematics to them, show there is little difference when graduates are grouped according to home provinces. It is interesting to note, however, there are differences of opinion as to the usefulness of mathematics when the educational status of graduates is considered. Graduates with no college training considered the introductory mathematics course of agricultural arithmetic more

TABLE VI

Average Rating by Graduates of Agriculture Four in the Curriculum at Jimma

	Filed Crops & Coffee Production II		Beef & Sheep Production		Metal Work		Soil Mgt.	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	6	3.00	6	2.66	5	2.22	6	3.17
Eritrea	27	3.37	28	2.53	31	2.64	29	3.20
Harar	13	3.69	13	2.84	15	2.86	14	3.71
Shoa	95	3.40	99	2.61	104	2.73	103	3.10
Tigre	17	3.23	16	2.62	17	3.23	19	3.00
Wollega	9	3.55	11	2.54	10	2.40	11	3.36
Other	25	3.20	27	2.85	26	2.30	26	3.15
College	110	3.23	117	2.64	126	2.72	124	3.05
No College	82	3.54	83	2.65	82	2.28	84	3.33
Total		**3.36**		**2.64**		**2.55**		**3.16**

beneficial to them than alegbra and geometry. Graduates who were in college or had attended college thought the higher mathematics more useful to them in their careers.

The basic science courses at Jimma are as follows: general science, hygiene, biology, chemistry, and physics. The data in Table X follow the general patterns established in previous tables where former graduates were asked to evaluate their course work training received at Jimma. No important differences were noted when graduates were grouped by home provinces. However, graduates from Arusi provinces were of the opinion that all areas of course work were of less use to them than graduates from other provinces of Ethiopia. Also, as noted in previous tables, the evaluations show Jimma graduates with college training deemed the more difficult science courses (chemistry and physics) as more useful to them than did graduates with no college training. Biology and general science were ranked as of approximately equal value to both groups, a deviation from the general pattern where the more basic or introductory courses were thought to be of more value by the "no college" groups of Jimma graduates. Hygiene was listed as being more useful to former graduates with no college training.

The courses of social science taught at Jimma are world history, Ethiopian history, and agricultural economics. The data in Table IX indicate the graduates deviated slightly in the general patterns established in other tables. It is interesting to note that graduates with no college training evaluated all three courses in social science slightly higher than did graduates with college training. The evaluation of

TABLE VII

Average Rating by Graduates of the Language Courses in the Curriculum at Jimma

	English Grammar		English Literature		Amharic Grammar & Lit.	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	5	3.00	6	2.50	5	2.20
Eritrea	29	3.34	29	3.10	32	1.96
Harar	19	3.42	17	3.11	18	2.61
Shoa	108	3.46	104	2.86	98	2.52
Tigre	17	3.29	17	2.58	17	2.64
Wollega	12	3.41	11	2.90	12	2.08
Other	29	3.10	27	3.14	26	2.50
College	134	3.47	131	3.12	128	2.08
No College	85	3.21	81	2.58	80	2.95
Total		**3.37**		**2.90**		**2.53**

TABLE VIII

Average Rating by Graduates of the Mathematics Courses in the Curriculum at Jimma

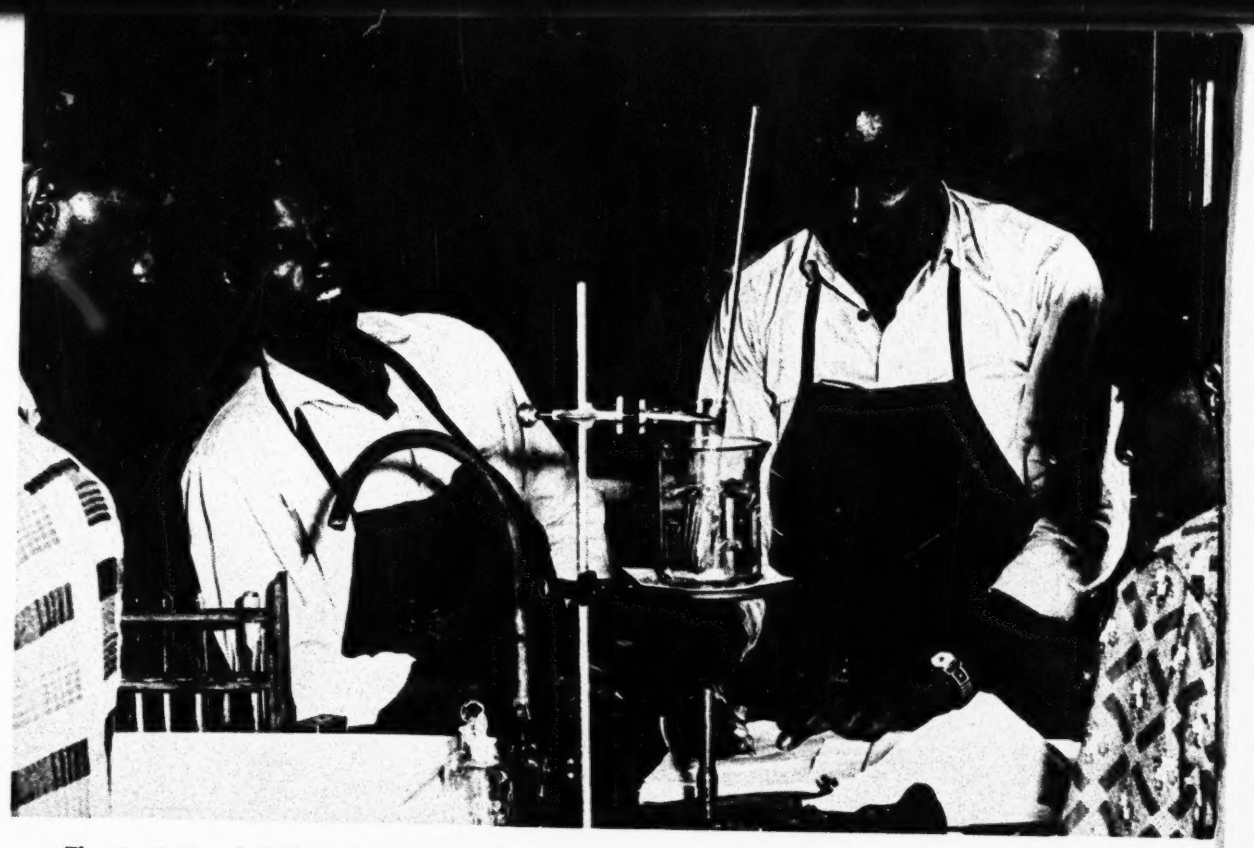
	Agricutural Arithmetic		Algebra		Geometry	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	5	2.40	6	2.50	6	2.50
Eritrea	25	2.28	30	3.13	31	2.90
Harar	17	3.29	18	3.27	17	2.82
Shoa	99	2.83	107	3.05	107	2.89
Tigre	18	2.50	17	2.29	17	2.35
Wollega	8	2.75	13	3.07	11	2.63
Other	25	2.88	28	2.96	28	2.50
College	119	2.86	136	3.18	135	2.80
No College	78	3.00	83	2.69	82	2.73
Total		**2.91**		**2.99**		**2.77**

social sciences deviates from the general pattern where graduates with no college training considered the least difficult courses more beneficial to them and the more difficult courses less beneficial to them. All Jimma graduates represented in this study appraised social science courses more useful to them in their post-high school pursuits than did the former graduates who had received college training. This, of course, is based on the premise that agriculture economics is "more difficult" than the Ethiopian history and world history. This idea would perhaps be accepted by both staff and students at Jimma, since agricultural economics is a senior level course while world history and Ethiopian history are sophomore courses.

TABLE IX

Average Rating by Graduates of the Social Science Courses in the Curriculum at Jimma

	World History		Ethiopian History		Agricultural Ec.	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	5	2.00	5	2.20	3	3.00
Eritrea	31	2.51	30	2.23	30	3.13
Harar	15	2.33	16	2.25	16	2.93
Shoa	99	2.26	103	2.25	97	3.19
Tigre	15	2.40	16	2.18	14	3.00
Wollega	12	2.83	10	2.20	10	3.50
Other	28	2.39	28	2.39	27	3.11
College	122	2.22	126	2.11	117	2.97
No College	83	2.55	82	2.48	80	3.41
Total		**2.35**		**2.25**		**3.14**



The Agricultural Technical School provides four years of training on a secondary and High School Level. Such technical agricultural subjects as animal husbandry, crops and farm mechanics are emphasized. However, students also are trained in such subjects as chemistry, physics, biology and mathematics as well as the two official languages of Ethiopia, Amharic and Engilsh. The picture shows a group of students at work in the chemistry laboratory.

TABLE X

Average Rating By Graduates of the Science Courses in the Curriculum at Jimma

	General Science		Hygiene		Biology		Chemistry		Physics	
	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating	No.	Av. Rating
Arusi	5	3.00	6	2.66	6	3.16	6	2.16	5	2.80
Eritrea	26	3.26	29	3.24	32	3.37	31	3.16	30	3.00
Harar	16	3.56	15	3.46	15	3.60	17	3.05	14	3.00
Shoa	90	3.28	91	3.07	102	3.35	100	2.88	17	3.11
Tigre	16	3.31	18	3.27	18	3.50	18	2.88	17	3.11
Wollega	7	3.57	10	3.10	9	3.77	9	3.00	10	3.10
Other	25	2.96	27	3.25	28	3.35	29	3.10	29	2.93
College	114	3.27	115	3.00	125	3.40	130	3.08	123	3.00
No College	71	3.26	81	3.39	85	3.40	80	2.73	79	2.74
Total		**3.26**		**3.16**		**3.40**		**2.94**		**2.90**

Ratings Given To Non-College Jimma Graduates By Their Supervisors

Graduates with no college training checked all courses in social sciences more useful to them than did graduates with college training.

Supervisors of the non-college Jimma graduates were interviewed to determine the adequacy of their high school preparation for the occupations they are now engaged.

TABLE XI

Number of Jimma Graduates Rated by Supervisors by Type of Employment

Type of Employment	Number Graduates	Number Supervisors Interviewed
Extension Agent	30	6
Veterinary Trainee	13	2
Coffee Board Agent	22	2
Technician at Jimma Agricultural-Technical School	11	4
Plant Protection	5	1
Community Development	5	2
University Agriculture Experiment Station	2	2
Livestock Specialist	4	2
Research Farm Manager	2	1
Veterinary Assistant	2	1
Forest Ranger	1	1
Farm Worker	1	1
Automobile Salesman	1	1
Total	99	26

A total of 26 persons were interviewed who hired or supervised 99 Jimma graduates who had not continued their formal education. This sample is 51 percent of the 195 graduates of Jimma who did not continue further formal education at the college level. Of those interviewed only one was not in an agricultural occupation. Five other graduates were located in the Ministry of Education but it was impossible to contact immediate supervisor who felt qualified to rate them. One was employed as a teacher of vocational agriculture in a comprehensive high school and the other four were not working in agriculture.

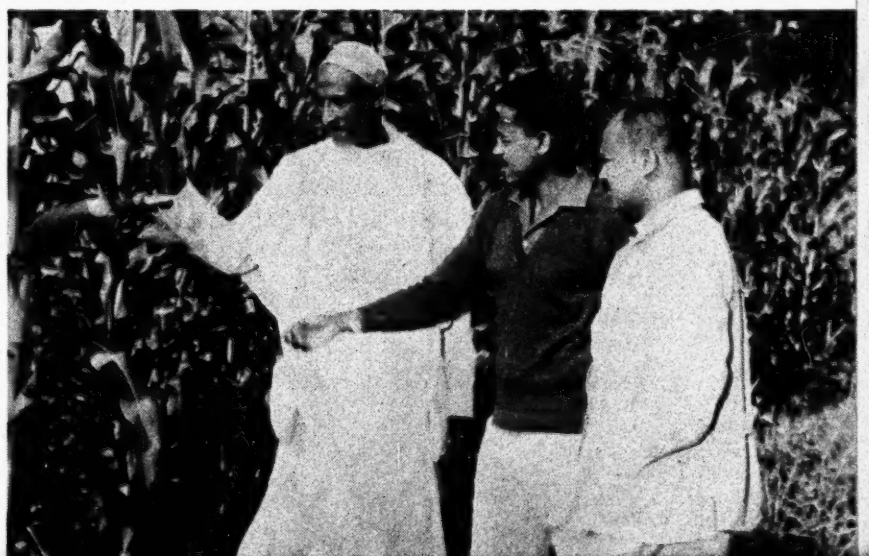
TABLE XII

Rating Given by Supervisors of the Adequacy of Preparation in Technical Agriculture of Jimma Graduates Who Terminated Their Formal Education After High School

Area of Technical Agriculture	Number of Graduates Rated Superior	Adequate	Inadequate
Entomology	3	30	40
Horticulture	12	85	2
Field Crops and Coffee	15	81	3
Soils	3	84	12
Poultry	8	85	6
Livestock	11	82	6
Farm Shop	7	66	26
Farm Management	6	77	16

As a general rule the majority of the supervisors felt the training at Jimma was adequate for the positions which the graduates held. The area of greatest inadequacy was that of entomology. Originally when the survey form was prepared entomology was not included because it was not offered as a course at Jimma but after a few interviews it was added at the suggestion of the supervisors. For this reason there are fewer responses than on the other areas. The supervisors did not necessarily feel that a separate course in entomology was needed but more stress could be made on this area in the crops and livestock classes. Positions for which entomology was indicated as inadequate were largely in the veterinary trainees, coffee board agents and employees of the plant protection department.

Some indication of inadequate preparation were found in farm shop, farm management and soils areas. The more adequate preparation was in horticulture, field crops and coffee, poultry, and livestock. With the exception of entomology a large majority of the graduates were rated either adequate or superior in all areas.



Former Jimma graduates are assuming leadership roles in Ethiopia's rapidly developing agricultural economy. Here an area supervisor and an extension agent discuss with a Kaffa Province farmer ways of improving corn production through selection and improved cultural practices.

TABLE XIII

Rating Given by Supervisors of the Adequacy of Preparation in Academic Courses of Jimma Graduates Who Terminated Their Formal Education After High School

Academic Course	Number of Graduates Rated		
	Superior	Adequate	Inadequate
Botany	2	88	9
Zoology	2	82	15
Chemistry	2	72	25
Physics	2	74	23
Mathematics	2	93	4
Social Science	3	89	7
English	14	64	21

The training of a majority of the graduates was rated adequate or superior in each of the academic courses. Those courses in which some were rated inadequate were zoology, chemistry, physics and English. Each of the thirteen veterinary trainees were rated inadequate in chemistry, physics and English. It is interesting to note that a greater number of the students were rated superior in their English than any of the other academic course areas and that a sizable number was also rated inadequate in this course.

TABLE XIV

Number of Jimma Graduates Who Terminated Their Formal Education Who Needed Special Training in Their Present Occupation

Requirement	Number
Needed Additional Training	81
Type Required:	
1. Training School	68
2. In-Service	39
No Additional Training Required	18

The supervisors were aware that the training at the secondary school level is general in nature and that more specific training must be given for each job. A majority of those needing additional training received it in special training schools. Nearly half were given in-service training on the job. Some received both in-service training and attended a special school. Many of the extension agents were sent to Biruit for a year of additional training.

TABLE XV

Opinions of Supervisors Concerning Where Emphasis Should be Placed in Training Jimma Graduates Who Terminate Their Education at the Secondary Level

	More Academic	Same Type of Program as Present	More Vocational Technical
Member Rating	0	2	9

A group of the supervisors were asked what type of training they felt more desirable for those students who terminated their formal education at Jimma. Table XV gives their responses.

Although the supervisors indicated a need for more technical training for those graduates who terminated their formal education with Jimma most of them felt the same type of program which is presently in operation should be provided for those graduates continuing college.

Possibly a two-track system should be used during the last year or year and a half giving those students who will probably be continuing their education in college the type of program now offered, and those who will terminate their education experiences of a more practical and technical nature.

Performance of Jimma Agricultural Technical School Graduates In the College of Agriculture, Haile Selassie I University

One of the classic issues in American agricultural education has been about which kind of high school curriculum best prepares students for academic success in agricultural colleges. This issue is also prevalent among Ethiopian educators. It is not the intent of this study to attempt to answer questions in this controversy. Rather, a comparison of the agricultural college drop-out, admittance, and graduation rates will provide additional means to evaluate the Jimma graduates.

The Ambo School is the only high school, in addition to Jimma, that offers agriculture in its curriculum. The other Ethiopian high schools offer liberal arts college preparatory curriculums. (The high school background of agricultural college graduates from other African nations is unavailable.)

For the purpose of this study, the agricultural college graduates from Ethiopian high schools with less than eight students represented are grouped as "others." Schools grouped in this classification are as follows: (1) Medhane Alem, Harar; (2) Tafari Makonnen, Addis Ababa; (3) Prince Makonnen, Asmara; (4) Ethiopian Evangelical College; (5) Haile Selassie I, Addis Ababa; (6) Prince Makonnen Secondary School, Asmara; and (7) Haile Selassie I, Asmara.

The data presented in Table XVI indicate a considerable difference does exist between the number of students from high schools admitted, graduated and dropped from the agricultural college. However, for the purpose of this study, one of the more important comparisons is the percentage of students dropped from the college because of academic deficiencies. An average of 27 percent of all students admitted to the college are dismissed because of low grades.

The percent of Jimma graduates dismissed is slightly less than the average. The percent of Jimma graduates dismissed for this reason is considerably less than the other Ethiopian high school offering agriculture in its curriculum. A smaller percent of students from Menelik II, Addis Ababa, other Ethiopian high schools, and other African nations were dropped for academic reasons than Jimma graduates; however, the total number of students admitted for these three schools combined is less than Jimma graduates admitted to the college. Graduates from Jimma account for 40.7 percent of the students admitted to the agriculture college and 50.4 percent of their graduates.

Data presented in Table XVII show the curriculum areas in which the sixty-five Jimma graduates dismissed from college received grades of "D," "F," or "WF." A greater number of deficient grades were reported in the physical sciences. A total of 56 (81.2 percent) of the deficient grades in the physical sciences were in chemistry and 13

Approximately fifty percent of Jimma graduates continue their formal agricultural education at the Haile Selassie I University College of Agriculture located near Alemaya in Harar Province. Two college students are receiving further training in poultry.

(18.8 percent) in physics. Fewer deficient grades were reported in English, and technical agriculture courses of plant and animal sciences. The total deficient grades reported for the biological sciences was slightly larger than the other six curriculum areas. Thirty-four (16.2 percent) of the two hundred ten deficient grades reported for Jimma graduates were in botany and zoology.

Grade point averages of the graduates of the College of Agriculture, Haile Selassie I University were compared by high schools they attended to determine if there were significant differences. These were studied by year in college and by different course areas.

During the freshman year the course areas which showed a difference at the one percent level of significance were Humanities and Social Sciences. At the five percent level there was a difference among the graduates of the different high schools in Animal Sciences and Mathematics. In each course area except mathematics the grade points of the Jimma graduates were average or above. Those graduates which consistently had higher grade point averages in a majority of the course areas were from Jimma, General Wingate and other African nations.

Grade point averages for the sophomore year were significantly different at the one percent level for humanities. The averages for basic sciences and agricultural engineering were significantly different at the five percent level. The Jimma graduates had average grades in the basic sciences and humanities and were above average in agricultural engineering. Those graduates which had higher grade point averages in a majority of the course areas during the sophomore year were from Jimma, Teacher Training-Harar, General Wingate, and other African nations.

At the junior level the students' grade points were significantly different at the one percent level for humanities, agricultural engineering and mathematics. There was a significant difference at the five percent level for plant sciences. The Jimma graduates were above average for the humanities and below in mathematics. Those schools whose graduates were above average in a majority of course areas during their junior year were Jimma, General Wingate and the students from other African nations.

During the senior year many of the differences had disappeared with grades in the animal sciences and social sciences being significantly different at the five percent level. Those students which were consistently above average for this level were those from Jimma, Teacher Training Harar, Medhane Alem-Addis Ababa, and other African nations.

TABLE XVI

Number Admitted, Graduated, Currently enrolled, and Dropped or Withdrawn at Haile Sellassie I University College of Agriculture by High Schools

High School	Number Admitted	Number Graduated	Currently Enrolled	Number Dropped or Withdrawn: Health & Other	Transfer	Academic	Percent Dropped For Academic Reasons
Ambo General	100	33	24	5	..	38	38.0
Wingate Jimma Agri.	41	15	9	5	..	12	30.0
Tech. School	256	125	48	9	9	65	26.0
Medhane Alem (AA)	21	7	1	2	5	6	27.3
Menelik II (AA)	13	8	2	..	..	3	23.3
Teacher Training School, Harar	43	19	4	7	..	13	36.1
Other Ethiopian High School	126	26	50	15	9	26	19.7
Other African Nations	19	8	3	1	3	4	19.0
Total	**625**	**241**	**141**	**44**	**26**	**167**	

TABLE XVII

Agricultural College Curriculum Areas in Which the Jimma Graduates Dismissed for Academic Reasons Showed Scholastic Deficiencies

Curriculum Area	Number of Deficient Grades Reported	Percent
Animal Sciences	20	9.6
Animal Husbandry	18	8.6
Poultry	2	1.0
Plant Sciences	19	9.0
Field Crops	12	5.7
Forestry	4	1.4
Horticulture	4	1.9
Biological Sciences	34	16.2
Botany	14	6.7
Zoology	20	9.5
Physical Sciences	69	32.9
Chemistry	56	26.7
Physics	13	6.2
Mathematics	23	10.9
English	26	9.0
Social Sciences	26	12.4
Total	210	100.0

TABLE XVIII

Mean Grade Points at the Freshman Level for Graduates of the College of Agriculture, Haile Selassie I University

Course Areas	Jimma Agri. Tech.	Ambo Agri.	Teacher Trg. Harar	General Wingate	Medhane Alem AA	Menelik II AA	Other Eth. H. S.	Other African Nations	Total	F Value
Basic Sciences	2.58(125)	2.43(33)	2.54(19)	2.91(15)	2.46(7)	2.44(8)	2.46(26)	2.71(8)	2.56	1.04
Plant Sciences	2.93(91)	2.77(19)	3.05(13)	3.09(9)		2.00(1)	2.17(5)	2.50(2)	2.90	1.40
Animal Sciences	2.87(124)	3.00(33)	2.96(19)	2.59(15)	2.14(7)	2.00(8)	2.62(25)	2.86(7)	2.80	2.61*
Humanities	2.58(125)	2.29(33)	2.85(19)	2.96(15)	2.13(7)	2.63(8)	2.37(26)	2.73(8)	2.56	2.99**
Agricultural Engineering	3.33(48)	2.93(18)	3.17(6)	2.67(3)			3.00(1)		3.22	1.94
Social Sciences	2.90(108)	2.33(29)	3.13(15)	2.90(10)	2.00(2)	2.56(4)	2.44(10)	2.00(3)	2.78	2.44*
Mathematics	2.55(91)	2.29(30)	2.33(15)	3.17(12)	2.86(7)	2.59(8)	2.88(25)	2.96(8)	2.66	3.48**

*Significant at .05 level
**Significant at .01 level

TABLE XIX

Mean Grade Points at the Sophomore Level for Graduates of the College of Agriculture, Haile Selassie I University

Course Areas	Jimma Agri. Tech.	Ambo Agri.	Teacher Trg. Harar	General Wingate	Medhane Alem AA	Menelik II AA	Other Eth. H. S.	Other African Nations	Total	F Value
Basic Sciences	2.67(125)	2.85(33)	2.77(19)	3.04(15)	2.50(7)	2.52(8)	2.41(26)	3.08(8)	2.70	2.10*
Plant Sciences	2.84(121)	2.83(26)	3.00(19)	2.81(15)	2.50(7)	2.25(8)	2.56(26)	3.33(8)	2.82	1.64
Animal Sciences	3.09(68)	2.99(24)	3.63(11)	3.00(8)		3.00(1)	2.86(4)		3.11	1.71
Humanities	2.71(125)	2.35(33)	2.83(19)	2.90(15)	2.39(7)	2.19(8)	2.59(26)	3.38(8)	2.67	4.21**
Agricultural Engineering	2.97(108)	2.58(29)	2.87(15)	2.90(10)	2.50(2)	2.13(4)	2.63(9)	2.80(3)	2.87	2.10*
Social Sciences	2.53(124)	2.09(33)	2.50(19)	2.80(15)	2.59(7)	2.40(8)	2.35(26)	2.88(8)	2.50	1.65
Mathematics	2.52(75)	2.09(24)	2.71(12)	2.60(11)	2.33(2)	2.00(1)	1.73(6)		2.43	1.80

*Significant at .05 level
**Significant at .01 level

TABLE XX

Mean Grade Points at the Junior Level for Graduates of the College of Agriculture, Haile Selassie I University

Course Areas	Jimma Agri. Tech.	Ambo Agri.	Teacher Trg. Harar	General Wingate	Medhane Alem AA	Menelik II AA	Other Eth. H. S.	Other African Nations	Total	F Value
Basic Sciences	2.58(111)	2.33(33)	2.85(13)	2.44(11)	2.50(2)	2.33(3)	2.44(6)	3.13(8)	2.56	1.09
Plant Sciences	2.68(123)	2.54(33)	2.75(19)	2.68(14)	2.65(7)	2.33(8)	2.61(26)	3.36(8)	2.68	2.56*
Animal Sciences	2.69(124)	2.57(33)	2.71(19)	2.77(15)	2.81(7)	2.14(8)	2.52(26)	3.00(8)	2.66	1.50
Humanities	2.90(33)	1.93(12)	3.33(4)	3.00(2)		2.00(1)	3.00(1)		2.77	3.52**
Agricultural Engineering	2.79(118)	2.55(33)	2.72(19)	3.07(14)	3.12(7)	2.63(8)	2.55(25)	3.26(6)	2.78	3.77**
Social Sciences	2.60(66)	2.47(9)	2.57(11)	3.00(6)	2.80(6)	2.75(7)	2.82(12)	3.00(4)	2.68	.66
Mathematics	2.35(43)	2.03(8)	2.14(7)	3.25(8)	2.40(5)	2.20(5)	2.20(15)	3.80(4)	2.44	3.98**

*Significant at .05 level
**Significant at .01 level

TABLE XXI

Mean Grade Points at the Senior Level for Graduates of the College of Agriculture, Haile Selassie I University

Course Areas	Jimma Agri. Tech.	Ambo Agri.	Teacher Trg. Harar	General Wingate	Medhane Alem AA	Menelik II AA	Other Eth. H. S.	Other African Nations	Total	F Value
Basic Sciences	3.50(4)								3.50	
Plant Sciences	3.09(112)	2.85(28)	3.08(17)	3.00(11)	3.36(6)	3.19(3)	3.07(26)	3.56(6)	3.08	1.58
Animal Sciences	2.94(103)	2.67(25)	2.72(14)	2.82(10)	3.15(6)	2.33(5)	2.73(19)	3.12(7)	2.86	2.06*
Humanities	2.98(36)	2.83(7)	3.14(6)	2.67(5)	3.00(3)	3.00(3)	3.00(14)	3.00(4)	2.97	.30
Agricultural Engineering	2.85(111)	2.59(30)	2.89(18)	3.06(13)	2.80(7)	2.53(7)	2.53(26)	3.10(7)	2.79	1.67
Social Sciences	2.65(122)	2.33(33)	2.70(19)	2.92(15)	2.91(7)	2.56(8)	2.70(26)	3.35(7)	2.68	2.37*
Mathematics	3.00(1)		4.00(1)	4.00(1)			3.00(1)		3.50	

*Significant at .05 level

TABLE XXII

Over-all Grade Point Averages for Graduates of the College of Agriculture, Haile Selassie I University

High School Attended	Number From Each School	Grade Point Average
Jimma Agricultural Technical School	125	2.75
Ambo Agricultural School	33	2.59
Teacher Training, Harar	19	2.81
General Wingate	15	2.91
Medhane Alem, Addis Ababa	7	2.74
Menelik II, Addis Ababa	8	2.53
Other Ethiopian High Schools	26	2.63
Other African Nations	8	3.23
Total	**241**	**2.74**
F-Value		**2.51***

*Significant at .05 level

Jimma Agricultural Technical High School Curriculum 1963 Subjects Offered

Sixteen units of credit listed below must be completed for graduation. One additional unit of credit may be earned in music, which cannot be substituted for any of the required subjects. The music grade will not be averaged with other grades. One credit is given for any subject taken daily for two semesters. One-half unit of credit is given for any subject taken two or three hours a week for one year, with the exception of music. Although pupils may enroll in music every semester, no more than one unit of credit may be earned for music over the four year high school period.

All students given a high school diploma from the Jimma Agricultural Technical School will be considered to have a major in agriculture. The high school program as outlined is college preparatory.

Four-Year Curriculum

	Subject	Hours per Week	Units Credit
Class 9	English I	5 (full year)	1
	General Science	5 (full year)	1
	Agriculture I	3 (full year)	1/2
	Amharic I	3 (full year)	1/2
	Practical Math	5 (semester)	1/2
	Hygiene	5 (semester)	1/2
Class 10	English II	5 (full year)	1
	World History	5 (full year)	1
	Amharic II	3 (full year)	1/2
	Biology	5 (full year)	1
	Agriculture II	6 (full year)	1
Class 11	Ethiopian History	5 (semester)	1/2
	Farm Mechanics	5 (semester)	1/2
	Chemistry	5 (full year)	1
	Algebra	5 (full year)	1
	Agriculture III	6 (full year)	1
	(Two afternoons with three full periods each)		
Class 12	Agriculture Economics	5 (full year)	1
	English IV	5 (full year)	1
	Geometry	5 (full year)	1
	Physics	5 (full year)	1
	Agriculture IV	6 (full year)	1
	(Two afternoons with three full periods each)		

Summary and Conclusion . . .

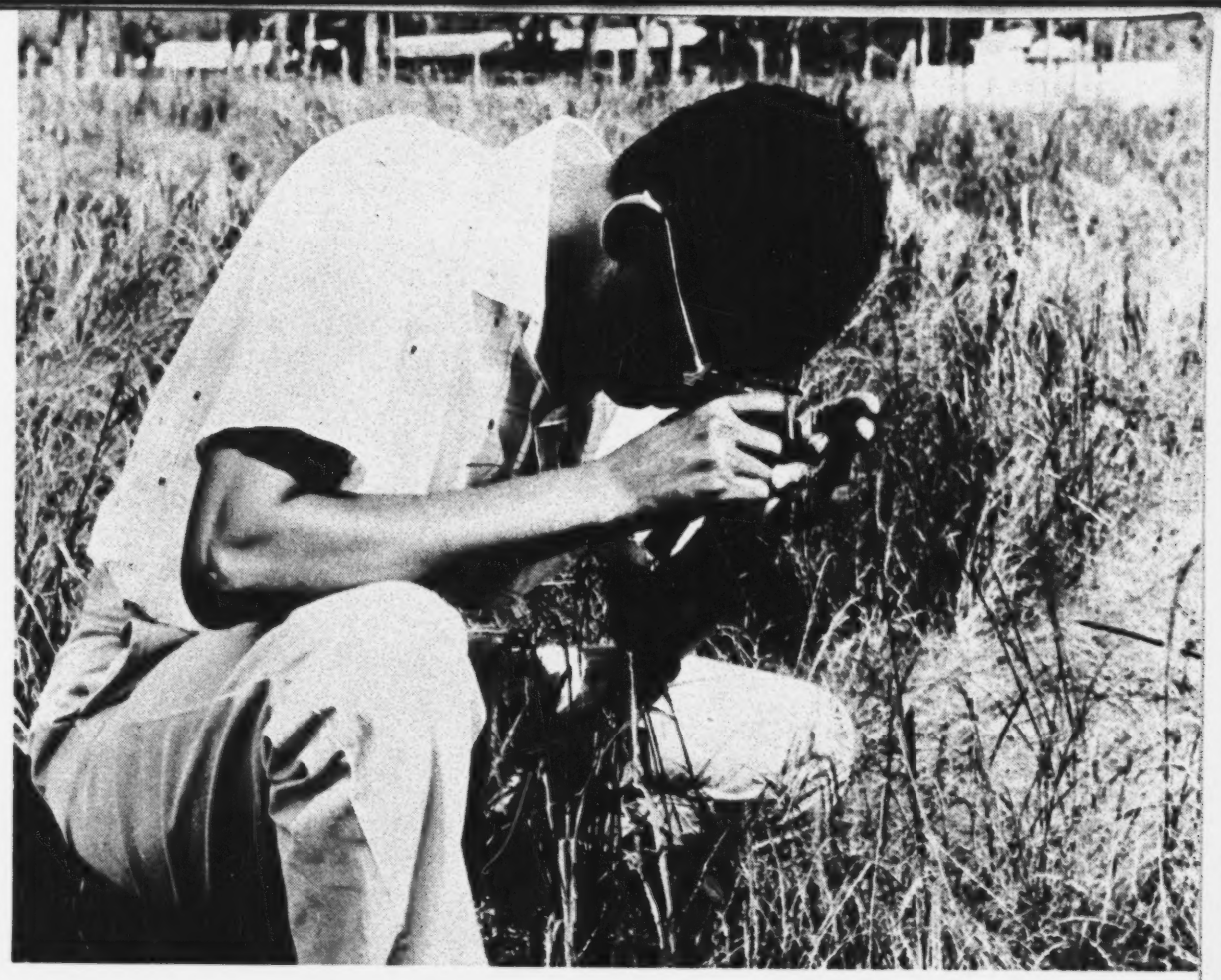
The study was undertaken as a beginning of an evaluation of the agricultural education program of the Jimma Agricultural Technical School in Ethiopia. In no way should any of the results be considered final or evaluation of the Jimma School completed. It is hoped this study will provide information that might be useful to other evaluation studies of a more detailed nature.

Inferences which may be drawn from the results of this study indicate the broad over-all objectives of the Jimma School are being met. Approximately fifty percent of Jimma graduates are continuing in higher education, and approximately fifty percent of the former graduates terminate their formal education after high school graduation. It is rather doubtful at the present time if the objective which states that farming is the aim for training at Jimma is legitimate since so few of the former graduates are actually farming. However, in the near future as government bureaus are filled with trained young men to carry out their planned programs for social and economic development, and as land tenure programs become functional, more Jimma graduates will have the opportunity to farm.

The results of the investigations show that very little association exists between the former graduate's tribal background; his home province; and factors such as his occupational experience, type of job he holds, his expressed opinion of work as a part of training, and the courses studied in high school. The administration and guidance personnel or others involved in student selection should not allow a student's tribe or geographic area to become a criteria for selection of students for the Jimma School.

If there are implications in the results of the study toward a change in the present training program, it would be toward increasing the amount of practical work training. Over half of the former graduates expressed opinions that practical work training should be increased. In the course of the interviews, graduates revealed a desire to have received more practical training in such skills as pruning coffee, processing coffee and other crops, and identifying and controlling disease and insects of both plants and animals. Graduates repeatedly emphasize they would like to have had the additional time spent in practical application of such skills without additional theory.

The over-all opinion of former graduates was favorable toward the courses offered at Jimma. There was difference in opinion as to where the emphasis might be placed when graduates were grouped by



Dr. Melak Haile Mengesha was among the first Jimma graduates. He is shown inspecting a plant of tef (Eragrastis Abyssinica) at the Haile Sellassie I University College of Agriculture where he is now an agronomy professor, teaching and conducting research in plant science.

educational status. The college groups would emphasize the academic subjects, and the terminal graduates would emphasize the technical agricultural courses in the curriculum.

It may be determined from results of this study that, with few exceptions, former graduate's tribal and home province background have little association with his post-high school pursuits. Jimma agricultural high school graduates are meeting a real need in providing Ethiopia with trained young men to establish and carry on programs for social and economic development. In view of the importance of agriculture in Ethiopia, this study would reveal what appears to be justification of the need to expand the type of agricultural educational offerings given at the Jimma School.

As a general rule the supervisors of the Jimma graduates indicated they were satisfied with the training they had received during their high school careers. The area of technical agriculture which showed

the greatest inadequacy was entomology. Other areas showing some inadequacy were soils, farm shop and farm management.

In the academic areas the supervisors indicated that the graduates were more inadequate in chemistry, physics and English. In nearly all cases for both the academic and technical areas a great majority of the supervisors felt the training was adequate or superior. The only exception to this was entomology.

The supervisor recognized that high school training is not terminal and that many of the graduates should continue education after graduation. Those students who did not enter college attended special training schools and received in-service training on the job.

The supervisors indicated that for those graduates entering employment after high school the program should contain more vocational and technical training.

The Jimma Agricultural Technical School graduates were adequately trained for college work when compared with graduates of other high schools who attended the College of Agriculture, Haile Selassie I University. Their average grade point for four years of college work was near the mean for all graduates of the college. Their greatest area of weakness was in mathematics when compared to the other graduates. However, even in this area they performed consistently better than the graduates of some of the high schools. The drop-out rate for the Jimma students was much lower than for graduates from most of the other high schools who attended the agricultural college.

A comparison of the over-all grade point average shows that the Jimma graduates were very near the mean for all graduates. Schools whose graduates had grade point averages above the mean were Teacher Training-Harar, General Wingate and the students from other African nations. Schools below were Ambo Agricultural School, Menelik II-Addis Ababa, and the students from other Ethiopian high schools.

The schools which had graduates consistently above the mean grade point average for each of the four years were Jimma, Teacher Training-Harar, General Wingate and the students from other African nations.

The grade points in humanities show the greatest significant differences over a number of years while the basic sciences and plant sciences the least. Mathematics and agricultural engineering grades show highly significant differences for two of the four years. The only area where there was a significant difference, and the Jimma graduates were below the mean, was that of mathematics. This was true both the freshman and junior years.

The high school at Jimma has been doing an adequate job of preparing students for further work at the College of Agriculture. This should continue to be an important function of the Jimma Agricultural Technical High School. One area where more emphasis could be placed is in mathematics.

The terminal training for agriculture workers should also continue to be an important function of the school. It is recommended that by the middle of the third year the students who are probably going on to college be identified and continue a course of study similar to the present while those who will not likely continue their formal education past high school be placed in a more technical type curriculum. This may cause some social problems for the students but would better train them for their future employment.

SUGGESTED METHODS OF EVALUATION FOR AGRICULTURAL EXTENSION AND EDUCATION PROGRAMS IN DEVELOPING NATIONS

It is agreed by most persons contacted during this project that evaluation of such educational programs in the developing areas of the world should be continuous in nature. Evaluation should be an integral part of the program and be included as a portion of the basic plan. Means should be provided so that each of the objectives could be measured to determine how well they are being met. All too often evaluation is an after-thought in such programs with a plan being devised years after the program has been started.

A plan for placement and follow-up of students should be built into the project. Contact should be maintained with both the graduate and his employer to determine if the training is adequate to prepare them for duties assigned to them.

Dr. L. F. Miller, Dean, College of Agriculture, Haile Selassie I University, has conducted a project where he worked with individual farmers near the college. He maintained a continuous account of their transactions during a two-year period. Doctor Miller feels that it would be helpful to work quite intensively over a long period of time (2-3 years). The farmer should be visited at least once or twice a week to keep a record of his activities. He indicated this was very time consuming, but a very worth while method of measuring change in their operations.

Hugh F. Rouk, Director of Research for the Oklahoma State University A.I.D. Program in Ethiopia, said that one individual should have the responsibility of keeping a continuous record of changes in a country, especially those in agricultural practices. These could, in part, be contributed to the agricultural extension research and education purposes initiated in the developing nation.

All agreed that evaluation should be a basic part of any such program and be initiated at the beginning.

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SCHOOL OF EDUCATION

Exploration of the Problem of Training and Retraining the Unemployed

(A Summary Report)

MUGITCH A. KARAGEUSIAN

A PART OF THE MICHIGAN VOCATIONAL EDUCATION EVALUATION PROJECT

Sponsored by:

State Board of Control for Vocational Education
Lansing, Michigan
through
Michigan State University
East Lansing, Michigan

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Administered through:

April 1963

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EXPLORATION OF THE PROBLEM OF TRAINING AND RETRAINING THE UNEMPLOYED
(A Summary Report)

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FOREWORD

In the fall of 1958 the State Board of Control for Vocational Education authorized a three year study and evaluation of vocational education in Michigan. In June 1960 The University of Michigan was requested by the Executive Committee (see Appendix A for list of members) to take the responsibility for that portion of the Michigan Vocational Education Evaluation Project having to do with organization, administration, and supervision of vocational education in Michigan.

In September 1960 Willard C. Olson, Dean of the University's School of Education, appointed an advisory committee (see Appendix B for list of members) to assist with this phase of the project. The advisory committee has met six times during the two years. At the first meeting the committee identified a list of problems having to do with organization, administration, and supervision of vocational education which they felt needed special study and consideration. This list was later reduced to a list of ten problems arranged in rank order of importance.

The sixth of these problems was "To determine the essential characteristics and organization of a program for retraining displaced adult workers". The resources available did not permit a special research effort, but Mr. Karageusian, a doctoral candidate who was enrolled in one of my seminars, became interested in the problem and agreed to do some exploratory work on it. He was motivated partly by the possibility of finding a thesis topic somewhere in this area.

This report is, therefore, an exploration of the problem of training and retraining the unemployed. While it does not attempt to provide solutions, it does point up certain facets of the problem which need further investigation.

This report represents the outcome of one study done as a part of the overall Michigan Vocational Education Evaluation Project; it has not been approved by the Executive Committee for the Project.

Ralph C. Wenrich
Project Director

PART I. INTRODUCTION

THE PROBLEM

For the past five years there has been growing concern about the problem of unemployment. Some of the reasons for this unemployment are listed in a U. S. Department of Labor bulletin, Meet the Over-40 Worker[1]; they include (1) lay-offs due to cutbacks in production, completion of project, or shortage of materials; (2) plant mergers and subsequent staff reductions; (3) technological changes directly affecting operations (automation); (4) relocation of plant; and (5) long-term shutdowns.

Although measures have been taken to improve the economy of the nation and thereby decrease the percentage of unemployed, the percentage of the total labor force unemployed has remained at a rather high level over an extended period of time. A study by the Bureau of Labor Statistics, U. S. Department of Labor[2], reported 6.8% of the total labor force unemployed in the United States in April 1961. Comparable figures for each of the preceding three years were 1960, 5.1%; 1959, 5.4%; 1958, 7.5%.

The manufacturing industries have been hardest hit by unemployment. Conditions in the automobile manufacturing industry are probably typical of the situation in manufacturing generally. Technological changes and other causes of unemployment have certainly had their impact on the automobile industry, which is so important to the Michigan economy. In April 1961 the percentage of the total labor force unemployed in the United States was 6.8, whereas the percentages of unemployed in selected Michigan cities as reported by the Michigan Employment Security Commission[3], were as follows:

City	Percent Unemployed
Bay City	15.2
Detroit	11.0
Port Huron	10.3
Flint	9.4

The persistent high rate of unemployment throughout Michigan and the United States can be attributed to (1) automation and other technological

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1. Meet the Over-40 Worker. Washington, D. C.: U. S. Department of Labor, 1960. p. 20.

2. Who Are the Unemployed? Spring 1961. Washington, D. C.: U. S. Department of Labor, Bureau of Labor Statistics, Bureau of Employment Security, April 1961. p. 3.

3. Michigan's Labor Market. Detroit: Michigan Employment Security Commission. Vol. XVI, No. 9 (September 1961). p. 5.

improvements which have reduced the number of unskilled workers needed, and (2) the fact that people are entering the labor market faster than jobs are becoming available[1]. More and more industries are turning to new technologies as means of solving production and marketing problems, and these along with foreign manufacturers present competition which can no longer be met by old-fashioned production methods. The result is an increasing need for skilled workers in many areas and in new occupations, and a generally decreasing need for unskilled workers.

Much has been written about automation and other technological developments, and the effect these changes will have upon our economy and our society. Most of the writers are quite optimistic. Mann and Hoffman, in Automation and the Worker[2], summarize the situation as follows:

> "...the prospect of automation in the future seems to offer a tremendous potential for the workers and companies involved. There are, however, sizable obstacles to be overcome and numerous precautions which must be taken before these benefits can be achieved.
>
> "The greater efficiency of the new production units is substantial, and the continuing advances of science should make the efficiency gains even greater. Productivity per man hour and per any other cost can be expected to continue to augment the profits of companies employing the new equipment.
>
> "The reduction in size of the work force needed should simplify the organizational problems by eliminating supervisory levels and bringing the top and bottom of the organization closer together. Communication both from above and from below should prove easier.
>
> "The workers in the reduced labor force in the automated factory can have highly interesting jobs, in terms of the satisfactions arising both from the work itself and from the opportunity for freer associations with working colleagues."

In the long run the situation for society may thus be enhanced, but the immediate problem of what to do about workers who cannot adjust to the requirements imposed by technological change remains unsolved. The new jobs created by automation and other technological advances tend to be in occupations which require more education and more specialized training than were required in the occupations which characterized the older economic order.

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1. Manpower--Challenge of the 1960's. Washington, D. C.: U. S. Department of Labor, 1960. pp. 3-8.

2. Floyd C. Mann and L. Richard Hoffman. Automation and the Worker. New York: Henry Holt and Company, 1960. p. 213.

The general consensus is that some solution must be found for the current unemployment problem. The solution most frequently proposed is that of further education and training for the unemployed.

SOME FACTS ABOUT THE UNEMPLOYED IN MICHIGAN

Although not many statistics about the unemployed are available, we do have a few. At the time of this study (fall 1961) there were approximately 300,000 unemployed in Michigan; about half of these were located in the Detroit Metropolitan area. Of these approximately 150,000 unemployed 73.1% were males and 26.9% were females. Table I shows the distribution of unemployed by age groups. An analysis of the statistics in Table I shows that more than 70% of the unemployed are under 45 years of age, and more than 50% are under 35 years of age.

It is also informative to look at the unemployed population in Michigan in terms of the number of years of education completed. Ilene Pawlicki of the Michigan Employment Security Commission reported some studies which give us the information presented in Table II.[1] It should be noted that while only 29.9% of the total unemployed population had graduated from high school, 54.9% of the 18-19-year-old unemployed and 45% of the 20-24-year-old unemployed had graduated from high school. In comparison with the unemployed over 45 years of age, more than twice as many of the unemployed under 45 years of age had graduated from high school (16.6% and 35% respectively).

It should also be noted that of the 61.8% of the unemployed who did not complete high school, nearly half (30.1%) dropped out during grades 9 through 11, which means that the remainder (31.7%) have had eight years or less of education.

The unemployment problem is larger than the actual number of unemployed persons at any given time would indicate. In considering this problem we must, to be sure, consider those who are currently unemployed; but we must also consider those who will become unemployed in the future. Certainly we cannot ignore the large number of youth who leave our schools annually, hoping to find employment but without the necessary preparation to do so.

1. Ilene Pawlicki. "Studies Made to Determine the Type and Education of the Unemployed". Detroit: Michigan Employment Security Commission, 1961. (Unpublished)

TABLE I. DISTRIBUTION OF UNEMPLOYED BY AGE GROUPS

Age Group	Percent of the Total Unemployed
Up to 25 years	29.5
25-34 years	24
35-44 years	18.1
Over 45 years	28.4

TABLE II. NUMBER OF YEARS OF EDUCATION COMPLETED BY THE UNEMPLOYED IN MICHIGAN AS OF JULY 1961, BY AGE GROUPS

	Number of Years of Education Completed						
Age Group	0-7 Years	8 Years	9-11 Years	Trade or High Sch. Grad.	College Attend. Only	College Grad.	Total
Total Unemployed	12.2%	19.5%	30.1%	29.9%	6.6%	1.7%	100%
18-19	2.0	4.1	32.9	54.9	6.1	0.0	100
20-24	2.4	7.9	34.7	45.0	8.8	1.2	100
25-34	8.3	15.8	32.8	33.0	8.0	2.1	100
35-44	13.8	22.2	31.0	25.3	5.6	2.1	100
Under 45	8.3	15.2	32.6	35.0	7.2	1.7	100
45-54	19.1	28.8	26.8	19.5	4.9	0.9	100
55-64	25.9	33.6	20.3	12.8	5.1	2.3	100
65 and over	32.3	34.8	14.5	12.1	4.3	2.0	100
45 and over	22.6	30.9	23.5	16.6	4.9	1.5	100

PART II. SOME ATTEMPTS TO RELIEVE THE UNEMPLOYMENT SITUATION

THE MICHIGAN EMPLOYMENT SECURITY COMMISSION

The Michigan Employment Security Commission has been working on problems of placement (and to some extent on problems of training) of the unemployed for a long time. Since 1939 this state agency has had the authority to extend unemployment benefits to individuals enrolled in approved vocational classes.[1] The provision of the Michigan Employment Security Act which allows it to do so was not used extensively until 1958, however, when the Commission intensified its interest in vocational training. Since then it has participated in programs throughout the state for the training of waitresses, clerical workers, retail sales personnel, and workers in the manufacturing industry. Many of these programs have failed to attract a sufficient number of trainees, however.

Under the provisions of federal legislation described at the end of Part II, substantial funds are available to the Commission for use in training of the unemployed; but before these funds can be used, the Commission must have reasonable assurance that the trainee will be able to find employment. With technological changes modifying our basic economic structure so rapidly, it is extremely difficult to identify the occupations for which there will be a continuing shortage of workers. Mary Manning of the Detroit office of the Michigan Employment Security Commission reported in an interview that in some cases an apparent need for training workers turns out to be spurious upon further investigation. For example, the new do-it-yourself laundry and dry-cleaning business seemed to open opportunities for maintenance and repair men, but upon investigation it was found that there was no real shortage.

The Commission conducts studies continuously in an attempt to determine the needs and conditions of the labor market. At the time of this writing the Commission is endeavoring to determine possible areas of training under the Area Redevelopment Act. The evidence gathered to date suggests that there are some real needs, but that they are primarily for highly skilled and professional workers. The Commission has also been working with local schools and has made available to high school youth certain testing and counseling services.

MOTT FOUNDATION RETRAINING PROGRAM IN FLINT

Flint was one of the hardest-hit cities in the nation during the 1958 recession. On July 22, 1959, a group of citizens met as the Employment Advisory Committee, with Frank Manley acting as chairman. The purpose of the meeting was to bring together the resources of industry and education to cope with the serious problem of unemployment. At the time of that meeting, national unemployment had gone below 5%, whereas Michigan unemployment was 8.3% and unemployment in Flint was 11%. Gustave A. Reis, Manager of the Flint office of the Michigan Employment Security Commission, was a mem-

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1. Michigan Employment Security Act, Section 28(e), p. 26.

ber of the Employment Advisory Committee, and the Committee worked very closely with his office. Mr. Reis reports[1] that the following questions were raised by the Committee:

1. What kinds of jobs are open?

2. What kind of training should the unemployed have?

3. How can we make the best use of available facilities, both public school and college, for purposes of retraining?

4. What human resources are available for this training?

5. How can we determine people's aptitudes in relation to the available jobs?

6. How can we make Flint a model for this purpose?

Additional facts which were brought out during this meeting and reported by Mr. Reis are:

1. There isn't much hope for workers with semi-skilled training.

2. There is a possibility of training more people for the service industries.

3. There is a large decrease in the laborer classification.

4. Eighty percent of the unemployed in Flint are in the semi-skilled or laborer category, with roughly 40% in each.

5. While there are 65 trade and service jobs plus 36 "other" jobs for every 100 manufacturing jobs in Michigan as a whole, Flint has only 48 trade and service jobs and 20 "other" jobs for every 100 manufacturing jobs.

6. About half the Flint high school graduates have the capacity for technical training or retraining.

The Employment Advisory Committee decided to begin with a pilot program for retraining the unemployed. Edward T. Ragsdale, who had just retired from the position of General Manager, Buick Division, General Motors, became interested in the problem and served as chairman of the Mott Foundation Committee on the Retraining Project. Applicants were enrolled in general high school courses for adults and in classes where mechanical skills were taught. The retraining program was set up not only to train people cur-

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1. Gustave A. Reis. Summary Report on the Retraining Program in Flint. Flint, Michigan: 1960. pp. 1-3. (Unpublished)

rently unemployed, but also to train currently employed, thereby upgrading them and giving them greater assurance of continued employment.

It was soon found that the major problem was one of motivation. According to Bob Kelly, Executive Secretary of the Retraining Project, "People are spoiled. They don't want to be retrained. They don't want to look for a job. They want the job to come to them. People don't want to accept jobs that pay less than their former jobs."[1] Mr. Kelly believes that any valid solution must be broad and flexible and capable of individualization, since all too often the solution that "works" for one person does not work for another. It was also found that most people, even if they have skills, can profit from instruction on getting and keeping a job. Many don't know how to dress for and act during an interview; many don't know how to fill out application forms; and many, even if they get a job, are likely to lose it inadvertently. As a result, classes on getting and holding a job were formed.

As of September 1961, the total number of enrollments in the Flint Retraining Program over a two-year period was 300. This is a very low figure considering the fact that from 12,000 to 15,000 people have been unemployed every year in Flint from 1958 to 1961. Classes were formed for instruction in auto diagnosis and tune-up, auto mechanics, waitress training, automatic washer repair, automobile transmissions, auto bumping and painting, shorthand, business machines, selling techniques, and many other skills. When it was found that many unemployed people are not sufficiently literate to function effectively in a wage-earning role, those of the 300 who fell into this category were encouraged to supplement their training in specific job skills with general adult education classes.

The aim of the Retraining Program is not only to train unemployed people for jobs that are currently available, but also to upgrade workers so that they can qualify for more highly skilled positions. The applicant is not told what positions are available, but is asked about his interests. The counselor then attempts to steer him into areas for which he has capabilities. It is believed that if a person is skilled and knows how to find a job he will be successful. Classes in this program are not free; the enrollee pays a nominal fee.

UNION-MANAGEMENT AGREEMENTS

The labor unions have been concerned with the unemployment problem because it directly affects their members. They are working toward job security in every new contract negotiation and in two instances, described below, have negotiated retraining agreements with management.

The Automation Committee, formed under agreements of September 1, 1959 between Armour and Company and the two unions involved, has been meeting monthly in order to study the problems of automation, report its findings, and make recommendations to the Company and to the unions. This committee is composed of four representatives of the Company, two representatives from each of the two unions, and an impartial chairman.

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1. Interview with Mr. Bob Kelly, Executive Secretary, Mott Retraining Project, Flint, Michigan, October 1961.

The meat packing industry has been undergoing major technological changes which have caused many plants throughout the country to be closed down. One such plant was the Armour plant in Oklahoma City, Oklahoma, which closed in July 1960. The committee obtained the services of a University of Wisconsin faculty member, Professor Edwin Young, to help former employees obtain employment. Lists of former Armour employees and their qualifications were carefully drawn up and made available to interested employers. While the campaign for immediate jobs was going on, steps were taken to enable former employees to acquire training for jobs which might open up in time. The Oklahoma State Employment Service agreed to co-operate in giving aptitude tests to all former employees who were interested. An invitation was sent to 431 former production workers (353 men and 78 women) to take advantage of the testing and counseling offered and enter an appropriate training course. Only 60 took advantage of this service and started training; of this 60, only 5 completed the course and were placed on jobs. Training was given in typing, office methods, air conditioning, and auto mechanics.[1]

On September 20, 1961, the UAW-CIO made an historic agreement with the American Motor Car Company, Article IX of which dealt with a Career Employment Planning Program. The purpose of this program is to prepare the individual employee to meet the requirements of more desirable jobs and of new jobs arising from automation and other advances in technology. The program is designed to enable the employee to improve his knowledge and skills, thus enhancing his opportunity for advancement and reducing the danger of layoff due to inability to meet job requirements.[2]

The union has also attempted to guarantee that employees would have the right to move with the job when plants are re-located.[3]

FEDERAL LEGISLATION

The Federal Government has recognized the fact that the need for unskilled labor is diminishing, and considers any area with an unemployment rate of 6% or more a distressed area. On May 1, 1961 the President signed into law the Area Redevelopment Act, which appropriates funds for vocational training and for the expansion of vocational training facilities in distressed areas. The U. S. Labor Department is responsible for allocating funds to train the unemployed in the skills necessary for employment in occupations which indicate a shortage of labor. A weekly subsistence allowance equal to the amount which would be paid under unemployment compensation, is provided during the training period. Any area in the United States which has had over 6% of its labor market unemployed over a specified period can qualify for the use of these funds.

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1. Clark Kerr; Robblen W. Fleming, Progress Report-Automation Committee, Chicago Ill., Armour and Company and Unions, 1959. pp 1-8.

2. UAW-CIO, American Motors Corp., "New Collective Bargaining Agreement." Article IX, September 30, 1961.

3. Interview with George A. Weaver, Research Associate, Research and Engineering Department, UAW, Solidarity House, Detroit Michigan, October 10, 1961.

An area can qualify under the Area Redevelopment Act if it has a condition of substantial and persistent unemployment or underemployment. After being certified as a redevelopment area, it is the responsibility of the area to prepare its own Overall Economic Development Program. This program is then submitted to the appropriate State agency for review and approval before it is sent to the Area Redevelopment Administration for final approval.[1]

Under this program a plan of training must be submitted which should include:

1. The work experience, aptitudes, and other qualifications of the individuals in need of training.

2. The occupations which offer promise of jobs for those workers after they complete training courses.

3. The amounts and types of training it is feasible to provide.

4. The training facilities which exist or can be established.

The first job training program under the Area Redevelopment Act was started in Huntington, West Virginia. This program is training people in small appliance repair, stenography, nursing aid, automatic transmission repair, typing, route salesmanship, and table waiting. Each trainee is getting about $23 a week subsistence pay while in training.[2] The program got off to a slow start due to lack of response; out of 7,000 unemployed, only 479 were interested enough to take aptitude tests. Most of the unemployed prospects contacted about the retraining program gave one of these three answers:[3]

1. I'm just not interested.

2. I expect to be called back to work soon.

3. I'm too old to be starting all over again.

Several Michigan cities have had programs approved under this act.

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1. The Manpower Development and Training Act of 1962 extends retraining to areas other than those of continued high unemployment.

2. Peter Braestrup, "Huntington, West Virginia, Project to Retrain Unemployed," New York, The New York Times, October 11, 1961.

3. "First U. S. Retraining Plan Starts Sluggishly," The Pontiac Press, December 28, 1961. p. 4.

PART III. THE PROBLEM OF MOTIVATION AMONG THE UNEMPLOYED

The lack of response to training opportunities by the great majority of Huntington unemployed clearly indicates that there are serious problems of motivation. The question is: Why don't these people take advantage of the opportunity to make themselves employable, especially since training is in most cases provided at no cost to the trainee and since under certain conditions he can get a weekly subsistence allowance?

In an effort to learn more about the outlook of unemployed, the writer had casual conversation with 14 unemployed persons who live in the Detroit-Pontiac area. Nine of them are under 30 years of age, four are in their 40's, and one is in his 50's. Six of the 14 are Negroes. Twelve are married and have from one to six children. From this contact with the unemployed and interviews with people in training programs, the writer has gained the following insights.

The person who is out of work recognizes that a course of training would be valuable, but at the same time he feels the far more compelling pressure of having to buy food and pay rent. This means, of course, that he must have a job at once. A man in such a position tends to lose his motivation toward training when he finds even a temporary job that permits him to meet his obligations. Although he may recognize that training could lead to a better kind of job, without the spur of immediate necessity his motivation is weakened. It is like the old story of the leaking roof which can't be repaired when it's raining, and in dry weather doesn't need repair.

Closely related to the problem of motivation is the problem of dealing with the particular kind and degree of pride possessed by each individual. Many people show consistent preference for maintaining their self-sufficiency, and take great pride in doing so. As a nation we pride ourselves on our "rugged individualism", and it is indeed a source of strength and creativity. Yet in an extreme form this attitude can operate to the detriment of the individual. The person who takes excessive pride in his self-sufficiency will not seek out those who can be most helpful in assisting him to qualify for and secure employment suitable to his capacities. Others take excessive pride in one particular skill they have developed, which is often a narrowly limited and outdated skill. They reason that if this skill has become unmarketable, there is no use learning another for which the demand could also disappear.

Many of the unemployed are spoiled. They have enjoyed prosperity so long that they refuse to believe it will not continue. They have the feeling that eventually they will be called back to work, and refuse any employment which pays less than they had been earning. They receive their unemployment benefits and in some cases their welfare checks, and "get along". When they receive an offer of employment or training they weigh the advantages against the disadvantages, and unless the new job pays considerably more than the benefits they are receiving, refuse the offer.

The older person is often reluctant to take advantage of training opportunities because he knows that employers resist hiring workers in his age group, frequently for economic reasons (e.g., higher costs for some of the more common fringe benefit items, such as retirement pensions, group life, accident, and health insurance, and workmen's compensation).[1]

1. Meet the Over-40 Worker. Washington, D. C.: U. S. Department of Labor, 1960. p. 23.

PART IV. THE ROLE OF VOCATIONAL EDUCATION

No program designed to relieve the unemployment situation can be carried on successfully by a single agency. A successful effort requires the co-operation of the schools, the business and industry (including both management and labor), and the governmental agencies directly involved. The schools might very well take the lead, because they have available facilities and in some cases a cadre of personnel with the know-how.

Regardless of who does the job or how the program is structured, the unemployed must always be treated as individuals, since no two of them are alike in aptitudes, interests, experience, goals, and aspirations. Programs should operate on the theory that if a person has a skill and can sell himself, he can find a job. Counselors must attempt to fit the unemployed applicant into a field in which he is capable of succeeding, but the applicant himself must decide upon the type of training he will pursue.

The proper relationship of the school to the community was well described by Dr. James B. Conant in a speech titled "Social Dynamite in Our Large Cities".[1]

> "The community and the school are inseparable....There are those who would say that what goes on in the schools should not have any direct connection with the community or the employment situation. I completely reject this idea. The school, the community, and the employment picture are and should be closely tied together. ....What goes on in the school ought to be conditioned in large measure by the nature of the families being served, the vocational plans and aspirations of the students, and employment opportunities. To sum up, I submit that in a heavily urbanized and industrialized free society the educational experience of youths should fit their subsequent employment....To my mind, guidance officers, especially in the large cities, ought to be given the responsibility for following the post-high school careers of youth from the time they leave school until they are 21 years of age....It appears that the only jobs available for unskilled workers in the decade ahead will be in service occupations, a fact of considerable importance in educational planning....Adult education courses, work-study programs of various sorts--these are all evidence of a continuing interest of the schools in furthering educational opportunities for out-of-school youths and ought to be expanded....But even if the schools were to improve their services drastically, there would still remain what seems to me the crux of the situation--the presence or absence of employment opportunity...."

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1. James B. Conant. "Social Dynamite in Our Large Cities". A speech to the Conference on Unemployed, Out-of-School Youth in Urban Areas, sponsored by National Committee for Children and Youth, Washington, D. C. May 24, 1961.

The vocational training facilities and the personnel in our public schools have served society well during several emergencies. Perhaps the most notable effort was the War Production Training Program during World War II. There is no reason why these same resources could not be effectively used to help alleviate the present unemployment "emergency".

Since many of the unemployed between the ages of 18 and 25 dropped out of high school before graduation, we might very well look to vocational education as a means of improving the holding power of our schools. In a study by the U. S. Department of Labor[1] the reason most frequently given by students for dropping out of school was dissatisfaction, as expressed by their "boredom with school subjects". The second most frequently given reason was to get a job--yet the majority of these students enter the labor market with no special preparation for the world of work.

To assure that our work force is adequate, well qualified, and fully used in the 1960's, the U. S. Department of Labor believes the following steps must be taken:[2]

1. Expand and improve all forms of training on the job, including apprenticeship for the skilled trades.

2. End all forms of discrimination in hiring and use of manpower.

3. Develop and use increasingly effective placement services.

4. Support and strengthen our school systems.

5. Expand and improve guidance and counseling services.

6. Improve health and safety in the work place.

7. Develop better national and local information on manpower resources and requirements.

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1. School and Early Employment Experiences of Youth. Washington, D. C.: United States Department of Labor, Bulletin No. 1277. August 1960. p. 3.

2. Manpower--Challenge of the 1960's. Washington, D. C.: U. S. Department of Labor. p. 23.

PART V. SUMMARY AND CONCLUSIONS

Automation and other technological advances are rapidly bringing about changes in the country's labor market. The need for unskilled labor is decreasing, whereas the need for skilled, technical, semi-professional, and professional workers is increasing. This along with the fact that more people are entering the labor market than are needed is creating an unemployment problem which demands attention.

With unemployment figures at such a high rate and the decreasing demand for unskilled workers, there is no doubt that programs to train the unemployed are needed. The immediate problem is finding areas in which there are employment opportunities which require only short-term training and for which the unemployed can be trained.

The low response by the unemployed in the programs for training now in existence clearly indicates a problem of motivation. Something must be done to make these people interested enough to take advantage of opportunities for training.

Any program for the training of the unemployed must be undertaken with the co-operative efforts of the school and the community. This program must be widely publicized and must reach the individual. The courses must be organized so that the person can start a course of training at almost any time. The idea of the program should be to upgrade the individual for more highly skilled employment. This means that the unemployed worker must elevate himself into a higher occupational class. Upward occupational mobility usually creates upward social mobility, which is resisted by people who are satisfied with their occupational class. This resistance to social and in consequence to occupational mobility must be overcome before the unskilled unemployed worker will accept training for employment.

Many of the out-of-school youth between the ages of 18 and 25 years have the capacity for and could be influenced to continue their education and training. In a speech to the 1961 AFL-CIO National Convention, President Kennedy said that there are over one million unemployed youth in the United States under 25 years of age.

Much can be achieved through short-term training programs, but public school education has a greater responsibility in relieving the unemployment problem. It is here that help can be given to the millions of future drop-outs and to the high school graduates who will be unemployable unless they acquire the skills necessary for employment. The reason most frequently given by students who drop out of high school is "boredom with school". As they are presently organized, many of our schools do not meet the needs and therefore fail to hold the interest of the drop-outs. The schools must be reorganized to meet the needs of both students and society at large. Only when schools are helping to motivate students and to equip them with marketable skills will the unemployment percentages be substantially reduced.

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APPENDIX A

MICHIGAN VOCATIONAL EDUCATION EVALUATION PROJECT

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Wenrich, Ralph C. - Director, Vocational Teacher Education, The University of Michigan

Winger, Robert M. - Assistant Superintendent for Vocational Education, Department of Public Instruction

APPENDIX B

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(in co-operation with the Michigan Vocational Education Evaluation Project)

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CONNECTICUT'S NEED FOR TECHNICIANS

1963-1973

Division of Vocational Education
CONNECTICUT STATE DEPARTMENT OF EDUCATION
HARTFORD, CONNECTICUT

VT000343

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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CONNECTICUT'S NEED FOR TECHNICIANS 1963-1973

by

Herbert Righthand
Chief,
Bureau of Vocational Services

Division of Vocational Education
Connecticut State Department of Education
Hartford, Connecticut
November, 1964

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FOREWORD

A good vocational-technical program must be based on the needs of industry. These needs must be evaluated periodically and identified according to quantitative and qualitative standards. This study of Connecticut's need for technicians sought information concerning the State's present and projected manpower requirements. In addition to estimating the number of technicians needed, these needs were identified according to technologies, geographic areas, level of educations, and opportunities for women. Based on the results of this study, the State Department of Education can plan its technician program according to the demands set forth by State industries.

The contributions of this type of study extend beyond the compilation of statistics and the indications of the pattern of technician growth. It is hoped that the promising outlook for trained technicians will become known to the many capable young men and women seeking technical careers.

This survey of technicians provides information for just one area of vocational education, that of engineering technicians. In a rapidly changing society, it is vital that education fit into the dynamic pattern. In order to do this, studies such as this must be continued and expanded into other areas.

Joseph F. Murphy, Director
Division of Vocational Education

PREFACE

In order to conduct a survey of this sort, a high degree of cooperation must exist between the educators involved and the representatives of industry. The use of personal contacts as a survey technique not only increases the size of the sample and the accuracy of the responses, but provides an excellent means of communication between those who provide the educational program for technicians and those who employ them. Comments on the interview forms indicated that frequently more transpired than the completion of the survey form. Employers inquired about the nature of the program offered in the State technical institutes, the caliber of the students, the success of the graduates, as well as asking questions and making comments concerning various other phases of technical education.

A great deal of credit must be extended to the interviewers drawn from the technical institute and vocational-technical school staffs, who participated in this study. This is especially true of the four area supervisors, Arthur J. Myers, Carmelo S. Greco, James Meade and Donald Welter, who organized and administered the surveys.

The Connecticut Association of Manufacturers, and the State Department of Labor also contributed to the conduct of this study. Finally, it must be pointed out that without the cooperation of the personnel men, supervisors, and employers representing industrial concerns, this survey could not have succeeded.

Herbert Righthand, Chief
Bureau of Vocational Services

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1. INTRODUCTION

Education faces the necessity of assessing the technological changes in terms of their influence on industrial occupations. These changes result in an emergence of new occupations and a revision of job responsibilities. In order to provide a quality program for the education of technicians and to assure that this program meets the needs of the State of Connecticut, it is necessary to observe and measure these occupational changes. In a state such as Connecticut, regional studies fail to take into consideration the comparatively small size of the state and the mobility of technicians. In order to obtain an overall view of the types of technicians employed, and the present and expected future needs for these technicians, the Connecticut State Board of Education recommended, in its January 1963 meeting, that a statewide survey be conducted by the Division of Vocational Education.

In October, 1963 a committee was formed, consisting of personnel from the Connecticut State Technical Institutes and the Connecticut State Department of Education, Division of Vocational Education. This committee was responsible for the development of the survey instruments, the definitions of geographic areas, the identification of survey responsibilities, the development of a list of companies to be surveyed, and the selection of personnel for the conduct of the survey. The survey was conducted from January, 1964 to June, 1964 and the results were

compiled during the period from June to October of 1964.

Objectives. This study sought to determine:

1. The annual needs of industry for engineering technicians for the next ten years.
2. The extent to which the present Connecticut State Technical Institute facilities were able to meet these needs.
3. The employment opportunities for women in the technician field.

Other studies. A study[1] of the need for technical institutes in Connecticut proposed the establishment of three institutes in addition to the Hartford State Technical Institute. These institutes have now been built and are presently in operation. They are the Norwalk State Technical Institute opened in 1962, the Thames Valley State Technical Institute in the southeastern part of the State, opened in 1963, and the Waterbury State Technical Institute opened in September of 1964.

A subsequent study[2] for the need of a technical institute in Bridgeport failed to find justification for a new institute in this area.

Many studies have been conducted in other states and nationally; these will be referred to subsequently in the discussion of results. Their findings in relation to expansion and replacement percentages are relevant to this study.

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1 Gordon M. Harrington. Technicians for Connecticut Industry. A Study of Need for Technical Institutes. Bulletin 82. Hartford: Connecticut State Department of Education, February, 1957. 52 p.

2 Connecticut State Department of Education. A Study of the Need for a New State Technical Institute in the Bridgeport Area. Hartford, Connecticut. the Department, 1962. 86 p.

2. SURVEY PROCEDURES

Organization. The conduct of this study was under the supervision of the Research Consultant of the Division of Vocational Education, with the assistance of four regional supervisors. The four supervisors representing the four technical institutes were assisted in the survey by staff members of these institutes (Appendix I). Prior to making the necessary contacts with industry, the cooperation of the Manufacturer's Association of Connecticut was obtained. An announcement of this sruvey appeared in the "Business Roundup Bulletin" of November 4, 1963 (Appendix II). On November 5 a statewide newspaper release was issued dealing with this study (Appendix III).

The state was divided into four major districts using the state institutes as the center of operations. Each district was in turn subdivided into labor market areas as determined by the Connecticut State Department of Labor. These districts and the areas included in each district are shown in Appendix I and Appendix IV.

The scope of a study of all technicians without delimitations would be far too broad and would not be feasible under the conditions of this survey. It was therefore necessary to limit the study in terms of concerns to be surveyed and type of technician to be identified. This study dealt with manufacturing industries and research concerns. Only in surveying the need for civil engineering technicians were some architectural, construction and highway concerns contacted.

Definitions. The term technician has many meanings. Many previous studies have collected these definitions and directed

their study around a specific definition. This particular study was concerned with the engineering technician. The engineering technician, in this study, was identified on the basis of his training. The training requirement for this type of technician is described by Schaefer and McCord in the following phrase, "Formal, field-oriented, received at an institute of higher learning such as technical institutes, junior colleges, etc."[3] While industry was asked to identify all technicians employed, the interviewer sought the essential information that would enable him to identify the position according to the educational level desirable. He also associated the particular occupation with the appropriate technology as taught in the Connecticut institutes. When the job description did not fit any of the present technologies, it was so listed and tabulated. The variety of job titles and the different meanings contained in a job title made it necessary to classify jobs according to educational requirements and technology rather than title.

Methods. The companies to be surveyed were selected from the Directory of Connecticut Manufacturing and Mechanical Establishments[4] Companies consisting of fifty or more employees were considered for the survey. Soft goods manufacturers and other concerns, where the number of technicians employed tended to be relatively low, were not included in this study. This survey was primarily limited to manufacturing and research firms, except that construction companies and the State Department of Highways were included in order to

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3 Carl J. Schaefer, and Robert E. McCord. "The Technician: Some Definitions." Technician Education Yearbook 1963-1964. Ann Arbor, Michigan: Prakken Publications, Inc., 1963. Section 1, p.5.

4 Connecticut Labor Department. Directory of Connecticut Manufacturing and Mechanical Establishments. Wethersfield: the Department, 1963. 218 p.

obtain data concerning civil engineering technicians. Another criterion for the selection of companies to be surveyed was based on the experiences the State technical institutes had in placing their graduates.

In order to obtain a good sampling and in order to be able to obtain on the spot clarifications concerning job titles, job duties, selection standards, the study was conducted by personal interview. Through this technique it was possible to clearly identify such titles, as laboratory assistant, into the appropriate technology (chemical, electrical, mechanical, etc.) and at the time time it was possible to ascertain whether the technician was required to complete a baccalaureate, two year post-secondary or high school program. The interviewers were instructors and administrators of the State technical institutes. Where necessary, staff members from the State vocational-technical schools were also utilized. Briefing sessions were held with the interviewers in order to acquaint them with the objectives and techniques of the survey.

A survey instrument (Appendix V) was used to obtain the basic data. Each data sheet was coded to identify the geographic area. In addition to this form, an Interviewer's Instruction Sheet (Appendix VI) was furnished. The survey forms were collected by the district supervisors and forwarded to the research consultant for compilation and analysis. Additional data concerning the current and future graduates and the availability of qualified and interested students were obtained directly from the institutes.

3. DATA ANALYSIS

The information obtained from the survey forms made it possible

to obtain the:

1. Number and type of technicians employed in Connecticut.
2. Identification of technician positions with engineering technologies.
3. Number of vacancies existing at the time of the survey.
4. Reported annual replacement needs for the various types of technicians.
5. Expected expansion for a ten year period ending at the close of 1973.
6. Estimated number of technicians needed by industry according to technology and geographic district.
7. Estimated number of technician positions available annually to qualified women.
8. Extension of results of sample surveyed to total State needs.

Items 1 to 5, inclusive, were obtained through direct summarization of the survey returns. In order to obtain the information for the annual needs, the opportunities for women, and an extension of the data to the larger population, it was necessary to:

1. Estimate the actual separation rate due to withdrawal from the technician labor market.
2. Identify the total engineering technician population and project the sample results accordingly.

Separation rate. Since the replacement rate as reported by industry on the survey form included company separations as well as separations from the technician field, it was necessary to estimate the replacement needs on the basis of occupational field terminations only. For purposes of this study it is important to identify the number of annual replacements needed to replace technicians who leave the field. It was previously pointed out that the replacement estimates (10%) presented by the survey included company to company movement. The newness and rapid growth of the technician field make this estimate a difficult one. A publication[5] of the New York State Department of Labor stated that replacements of technicians who die or retire will be few, while there is expected to be a relatively high degree of shifting to engineering and other professional levels. A study[6] conducted in New York State in 1945 placed the replacement rate at 5%. Subsequently this rate was used in a study of automotive technicians[7]. Other studies have ranged from no special treatment of replacements to the utilization of the company replacement rate.

In this present study, 5% of the current employment was used to provide an annual replacement need. This was deemed a conservative rate since:

1. It was applied to a status quo economy and no provision for expansion was included. In view

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5 New York State Department of Labor. Jobs 1960-1970 The Changing Pattern. Albany, New York: the Department, 1960. p. 25.

6 New York State Education Department. A Survey of Technical Occupations in Selected Upstate Industries of New York. University of the State of New York. 1945. p. 11.

7 Melvin C. Kavieff. Report of a Survey of the Need for Technicians in the Automotive Manufacturing Industry in the Detroit Metropolitan Area. Detroil, the Board of Education of the School District of the City of Detroit, 1962. p. 96-97.

of the expansion indicated in this survey, the value used with current employment was comparable to a 4% rate when expansion is included.

2. It was felt that the average replacement rate of 10% as reported by industry may have included a degree of expansion and cannot be attributed entirely to "job jumping" or replacement.
3. Several companies had reported high replacement rates and justified these in terms of promotions and mobility outside the technician field or outside the State.

Extension of Data. Since the selection of firms was not based on random sampling, it is not possible to project the data on the basis of the number of companies surveyed. The companies selected for study were those expected to employ technicians and thus are not representative of the total population of manufacturing. However, U.S. Census data concerning the employment of technicians in 1960 were available.[8] Table 1, shown below, provides a comparison of the numbers involved in the 1963 sample and those employed in 1960.

TABLE 1

EMPLOYED TECHNICIANS

Category	Census (1960)	Study Sample
Electrical and Electronic	1684	2109
Engineering and Physical Science	4755	3371
Technicians (Not Elsewhere Classified)	1025	204
Total	7464	5684

8 U.S. Bureau of the Census. U.S. Census of Population: 1960. Detailed Characteristics. Connecticut. Final Report PC (1)-8D. U.S. Government Printing Office. Washington, D.C., 1962.

Since the Census and study sample data are three years apart, extension to these figures would be a conservative estimate of State needs. In view of the fact that the survey reported more employed as electrical and electronics technicians than found in the 1960 Census, no expansion of the data was made for the Electrical and Electro-Mechanical Technologies. The actual reported annual needs of the sample were felt to adequately predict the needs of the State in these fields.

The same procedure was applied to the Computer Technology. Those employed in this field plus other miscellaneous fields were considered in the Technicians (NEC) category. Since the specific areas covered in the Census report under this classification were not identified and projection would not be justifiable, actual sample results were used.

The remaining technicians were employed as engineering and physical science technicians. Since the Census data was approximately 40% higher than the employed found in the present survey, the annual needs as determined in the sample were increased by 40% for the chemical, civil, mechanical, tool, metallurgical and nuclear technologies.

Determination of annual needs. The annual needs were determined by adding the current employment needs to the ten year expansion estimate and dividing this amount by ten to provide an annual statistic. Five per cent of the number employed in 1963 was deemed to provide a conservative estimate of the annual replacements. This replacement number was added to the annual statistic for expansion. The results thus obtained were used as such in the electrical, electro-mechanical and computer fields. The annual needs obtained

for the engineering and physical science fields were increased by 40% to include the positions not covered in the survey.

Numbers available for employment. The size of the 1964 graduating class and the projected graduating class sizes were obtained from the Directors of the four State Technical Institutes. Since their records showed that approximately 85% of the graduating class entered the technician field, the number of graduates available for employment was adjusted accordingly. In the same way, the problems of recruitment and selection for the State technical institutes were obtained from the same Directors and the Chief of the Bureau of Technical Institutes.

4. RESULTS

The results of this study must be judged in terms of the environment in which they were obtained. The spring of 1963 was a period of governmental contract cancellations and conservatism in the forecasting expansion. This was evident in the reports of two large companies which indicated little or no expansion but which have, since then, reported rather extensive expansion. The general pattern of statistical treatment of this study has been conservative, preferring to err in that direction rather than to overestimate needs.

Extent of study. This survey resulted in 585 company contacts. In addition to these original contacts, a number of follow-up contacts were made when additional data or clarification was needed. Of this number 366 companies reported the employment of technicians and provided data for interpretation. The number of companies approached and providing technician information according to district

is shown below:

TABLE 2

COMPANIES SURVEYED

District	Companies	Companies Reporting Technicians
Southern	124	89
Central	270	160
Northern	114	67
Eastern	77	50
Total	585	366

The 366 companies reported the employment of 5684 engineering technicians. This survey does not include technicians who do not need a two year post-secondary preparation nor does it include technician jobs requiring a Bachelor's degree. When companies indicated that they were only interested in obtaining technicians through on-the-job training, their needs were not included in this study.

Graduates available for employment. The information concerning estimated graduates of the State technical institutes and the numbers available for employment are shown in Appendix VII. These projections are based on the original building plans. However, Institute Directors have indicated that the number of classrooms are insufficient to meet these requirements. Additional graduation data was obtained from the Ward School of Electronics and the Bridgeport Engineering Institute. The Ward School reported 65 graduates in communication electronics and 65 in industrial electronics. Since this study

was limited to industrial establishments, only the number available for industrial electronics was included. This number was reduced by 85% to allow for those who went into professional fields by continuing their education or failed to enter the technician field for other reasons. The resulting contribution of industrial electronics technicians was 55. Bridgeport Engineering Institute reported 15 graduates in Mechanical Technology and 12 in Electrical Technology. Since these programs are evening programs, it was assumed that all graduates entered the technician field. Other sources of trained personnel, such as evening programs and small, specialized schools, were difficult to assess because of the unpredictability and variability in enrollments. However, these programs may provide a source for some of the existing and future shortages.

State-wide needs. Appendix VIII provides the basic data obtained in this study. This table is organized according to technology and by district within each technology. This data is limited to the sample surveyed and the graduations of the State technical institutes. A summary of this table is provided in Appendix IX, which is organized on the basis of technologies. The State totals of this table indicate a ten year expansion of 3274 technicians, or 58% increase. Other reports and studies have indicated comparable expansion percentages. The National Science Foundation and the Bureau of Labor Statistics predicted an expansion of 67.3% for the decade from 1960 to 1970.[9] The New York State Department of Labor estimated a percentage increase of 62.2% for engineering and physical

9 Theodor Schuchat. "Employed Technicians Today-- and in 1970." Technician Education Yearbook, 1963-1964. Ann Arbor, Michigan: Prakken Publications, Inc. 1963. p. 66-68.

science technicians for the period from 1957 to 1970.[10] This study also estimated a 54.4% increase for electronic technicians and a 56% increase for tool designers. Other studies reported comparable expansion rates ranging from 50% to 65%.[11]

Utilizing the data of Appendix VIII, and extending the information to include the total needs of the State, and including the predicted graduates of the two private schools, indicated previously, provides the basis of the summary shown in Table 3.

TABLE 3

TECHNICIAN NEEDS AND
ESTIMATED GRADUATES ENTERING FIELD

Technology	Annual Needs (Sample)	Annual Needs (State Estimate)	Graduates Entering Employment 1964	Graduates Entering Employment Future	Net State Needs
Chemical	91	127	12	50	-77
Civil	21	29	20	25	- 4
Computer	19	19		73	+54
Electrical	245	245	130	197	-48
Electro-Mechanical	42	42	9	35	- 7
Mechanical	126	176	87	149	-27
Metallurgical	21	29	7	35	+ 6
Tool	66	92	53	65	-27
Nuclear	7	10			-10
All Technologies	638	769	318	629	-140

On the basis of this table, the total State annual needs (638) as found in the sample have been increased to 769 in order to include unreported companies. To meet these annual needs of 769, only 318 were graduated

10 New York State Department of Labor, op. cit. p. 25

11 Lynn A. Emerson. Technical Training in the United States. Mimeo. Prepared for the Panel of Consultants on Vocational Education, Chevy Chase, Maryland. 1962. p. 19-36.

in 1964 while 629 are expected to be graduated when the State institutes are filled to capacity. The total shortage of 140 technicians may be met through other existing training programs. However, the variability of needs according to technology presents a different problem.

Needs according to technology. Three areas show comparatively large discrepancies between industrial needs and educational output. These are computer, electrical and chemical technologies. Because this study was limited to manufacturing concerns the data obtained concerning the needs for programmers may be considered incomplete, and this "excess" of graduates over opportunities is questionable. Though present facilities appear to meet only 80% of the electrical and electronic technician needs, the extent of training programs in private schools and in evening programs would indicate that no major expansion effort is needed to produce more graduates in these fields. However, the shortage in the chemical field is an acute problem. Since the only programs for chemical technicians within Connecticut are offered at three of the State technical institutes, the flexibility of training expansion is not available. The shortage of chemical technicians, whether taken for the sample only (41) or for the extended data (77), is considerable and one not readily resolved without some expansion of facilities.

The discrepancies occurring in the other technologies tend to be of a minor nature and do not indicate a need for expansion. An exception to this may be found in the Nuclear Technology. Since companies do not tend to identify technicians as nuclear, preferring the categories of mechanical, electrical, etc., the data obtained in this study is minimal and may not be representative.

Regional requirements. An analysis of the employment opportunities and graduates, as appearing in the four geographic areas used in this survey, does not show any marked geographic discrepancy. Table 4 identifies the regions, local needs, number of graduates entering employment and the net annual regional shortages.

TABLE 4

TECHNICIAN SHORTAGES AND GRADUATES
BY
GEOGRAPHIC DISTRICT

District	Annual Needs	Graduates Entering Employment: State Technical Institutes	Graduates Entering Employment: Other Schools	Shortages
Southern				
Norwalk State Technical Institute	264	187	27	50
Central				
Waterbury State Technical Institute	194	162		32
Northern				
Hartford State Technical Institute	213	119	55	39
Eastern				
Thames Valley State Technical Institute	98	79		19
Entire State	769	547	82	140

The present locations of institute facilities seems to provide a balanced distribution. However, problems such as exist in the field of chemical education may have greater implication to one region than another.

Student availability. The number of students capable of becoming technicians could easily fill the educational facilities available. However, the interest of students and parents in this type of education is not sufficient to supply the institutes with a student body of appropriate numbers and of adequate capability. This is most acutely felt in Chemical Technology which does not have the drawing power or attractiveness to enable the State technical institutes to fill present facilities. The problems of student admissions are represented in Table 5.

TABLE 5

TECHNICAL INSTITUTE APPLICATIONS AND ACCEPTANCES

Technical Institutes	Applied	Accepted & Registered	Accepted Failed to Report	Total not Accepted	Not Accepted Qualified
Hartford	472	215	87	170	-
Norwalk	607	338	144	125	-
Norwich	358	194	54	106	4
Waterbury	456	193	59	203	1
Total	1893	940	344	604	5

This data indicates that 68% of the applicants were accepted, with only 5 qualified applicants not accepted. However, of great concern is the fact that 27% failed to report to the school after being accepted. This may be attributed to acceptances from other types of institutions.

Opportunities for women. The findings of this study show that technician education provides excellent opportunities for women. Employers were asked whether they would hire women for the specific

positions they listed. On the basis of the number of expanding positions available to women a percentage was obtained, which in turn was applied to the total annual needs. The resulting percentages and annual needs are shown in Table 6.

TABLE 6

TECHNICIAN OPPORTUNITIES FOR WOMEN

Technology	Total Annual Needs	Available to Women	Percentage
Chemical	127	89	70%
Civil	29	—	0%
Computer	19	11	58%
Electrical	245	121	49%
Electro-mechanical	42	18	43%
Mechanical	176	55	31%
Metallurgical	38	20	52%
Tool	92	25	27%
Nuclear	10	—	0%
All Technologies	769	339	44%

This table would indicate that there are many doors open to girls in the technical fields, particularly in the chemical field.

5. SUMMARY OF FINDINGS

Total annual needs for all technologies, based primarily on industrial requirements, are 769. The number of institute graduates available for employment annually is expected to reach 629. This number would be reached

when all four State institutes are operating at capacity.

The more extreme shortages appear to be in the Chemical and Electrical--Electronics fields. Annual shortages of 77 and 55, respectively, are indicated for these fields. Approximately 39% of the Chemical technicians openings can be met by the graduates of the institutes, while 80% of the electrical openings will be met by these graduates.

An excess of graduates in the field of computer technology over the opportunities reported may be attributed to the recent developments in this field and the limitation of this study to manufacturing concerns. The adaption of the present computer technology to meet the needs of business should provide many new openings for employment for the graduates of this program.

Approximately 44%, or 339, of the annual technician openings may be filled by qualified women. The chemical and computer fields provide the best opportunities for women.

The number of graduates available for employment in June of 1964 was 318. This included the State technical institutes and the two largest private technical institutes.

In a survey of 585 concerns, 366 were found to employ engineering technicians. The total number of technicians employed at these concerns was 5,684. The number employed as technicians, exclusive of medical, dental and draftsmen was reported as 7,464 in the U. S. Federal Census of 1960.

The total number of technicians employed by the end of 1973 was expected to increase by 3,274 or 58%. Extending this projection to include companies not covered in the survey would indicate an expansion of approximately 4,000 over the ten-year period.

Replacement needs, as reported, showed an annual turnover of 581 or approximately 10%.

The results of this study indicate that the facilities of the State institutes can be made more adequate for the engineering technician needs of this state. However, there are no facilities for extension of technician programs to distributive, office, medical, or industrial technician fields.

Admission records indicate 68% acceptances. With programs still below capacity, the records show a general dearth of qualified applicants. An additional problem appears in the high percentage (27%) of accepted applicants who fail to report.

6. RECOMMENDATIONS

Since the projection of State technical institute graduates is based on maximum enrollments, steps must be taken to provide the necessary expansion of physical space. This expansion, essential to provide the number of graduates indicated in this study, is a result of curriculum changes due to the addition of Computer Technology, meeting accreditation standards, and the changing requirements of technologies.

Student admissions in the Chemical Technology program do not meet the physical capacities of the schools or industrial needs. An extensive guidance and recruitment program must be instituted to acquaint boys and girls with the opportunities existing in this field.

Despite the apparent shortage in the field of electrical and electronics technology, it is felt that the graduates of evening programs and private schools may make up the deficit. It is therefore recommended that no special expansion program be considered for this field.

With the exception of the shortage in the chemical field, it is felt that projected graduates may meet the needs of industry. This may be realized by an increased number of graduates from the evening programs, private schools, and by improving the holding power of the day program.

The public guidance counselors and female students should be made cognizant of the many opportunities available to girls in the technical fields.

In view of the newness of Computer Technology, a special survey of this field should be made. This should include a job analysis of this technology and the expansion of this study to non-manufacturing fields.

In view of the over-lapping of nuclear technicians and other categories, a clarification of this job description should be obtained from the companies involved in nuclear work.

Through appropriate publicity, with the help of industry, and with the cooperation of guidance personnel and other educators, the image of the role of the technician must be placed in its true focus so that the field will be recognized and accepted by students and parents.

It is recommended that industry cooperate in providing a clearer delineation of the classification, duties, and role of the technician.

APPENDIX

Appendix I

TECHNICIAN SURVEY

1963-1964

Area Distribution

1. Southern District

Labor Market Areas

11 Stamford
12 Norwalk
13 Bridgeport
14 Danbury

Supervisor - Arthur J. Myers
Norwalk State Technical Institute

Assisting Schools-Henry Abbott Tech. School, Danbury
Bullard-Havens Tech. School, Bridgeport
J.M. Wright Technical School, Stamford

2. Central District

21 New Haven
22 Ansonia
23 Waterbury
24 Meriden
25 Middletown

Supervisor - Carmelo S. Greco
Waterbury State Technical Institute

Assisting Schools-Eli Whitney Tech.School, Hamden
Warren Kaynor " " , Waterbury
Vinal " " , Middletown
Wilcox " " , Meriden

3. Northern District

31 New Britain
32 Bristol
33 Torrington
34 Hartford

Supervisor - James Meade
Hartford State Technical Institute

Assisting Schools-Wolcott Technical School, Torrington
Howell Cheney Tech. School, Manchester

4. Eastern District

41 New London
42 Norwich
43 Willimantic
44 Danielson

Supervisor - Donald Welter
Norwich State Technical Institute

Assisting Schools-Windham Tech.School, Willimantic
Ellis Tech. School, Danielson

APPENDIX II

THE MANUFACTURERS ASSOCIATION OF CONNECTICUT, INC.

Business Roundup Bulletin

928 Farmington Avenue ° West Hartford 7, Connecticut

No. 427 November 4, 1963

1. Technicians in Connecticut Industry - Dr. Joseph T. Nerden, Director of the Division of Vocational Education, State Department of Education, announces that his division will begin a survey this month of the need for technicians in Connecticut industry. Interviewers will visit state factories seeking data on the type and number of technical employees used at each company and will also try to determine projected needs for technicians due to expansion and replacement. It is hoped the survey will be completed by the spring of 1964. One purpose of the survey is to provide direction to expansion problems of the state technical institutes.

Appendix III

CONNECTICUT STATE DEPARTMENT OF EDUCATION
P.O. Box 2219
Hartford, Connecticut

Theodore Powell
Jackson 7-6341, Ext.2898

Release: Tuesday, November 5, 1964

Hartford, Nov. 5, 1963: --- A state wide study of the need for technicians to serve Connecticut industry will be initiated this month, State Education Commissioner William J. Sanders announced today. This survey will be conducted by the Vocational Education Division of the State Department of Education. The study was recommended by the State Board of Education.

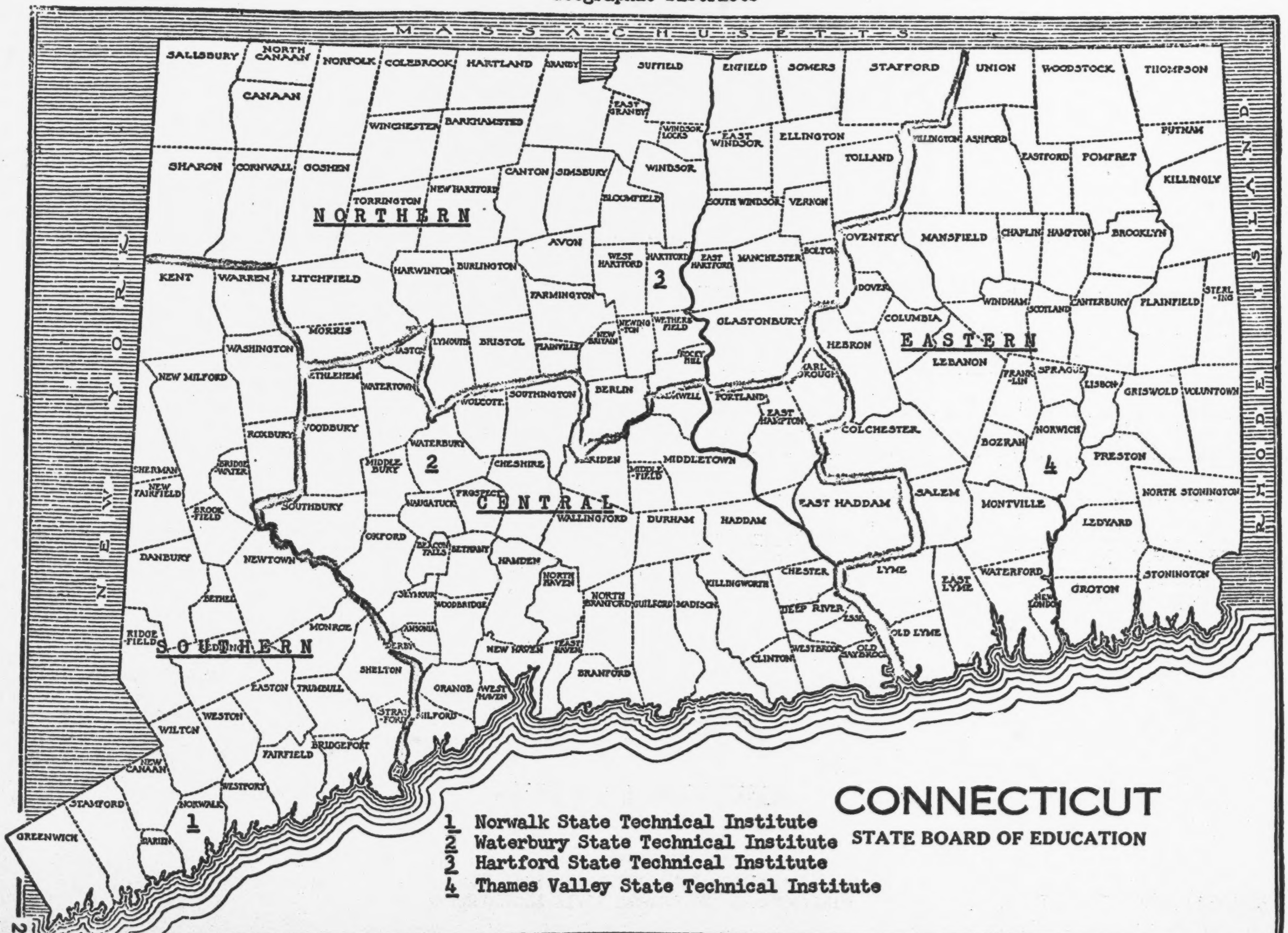
Industries in the state will be visited by interviewers who will seek information about the type and number of technicians currently employed, as well as projected needs due to replacement and expansion. Other information will be sought about the use of women as technicians and the necessary educational preparation.

Organizational plans and arrangements for cooperation with consulting committees, chambers of commerce, manufacturers' associations, personnel associations and other groups are now being developed. The study should be completed by the spring of 1964.

The information is needed for planning expansion of technical institutes, additions or modifications of technologies, as well as to provide guidance personnel with an estimate of the job opportunities expected in technician fields.

Supervising the state-wide study will be Herbert Righthand, Research Consultant for the Department. He will be assisted by Arthur J. Myers, Norwalk State Technical Institute; Carmelo S. Greco, Waterbury State Technical Institute; James Meade, Hartford State Technical Institute; and Donald Welter, Norwich State Technical Institute.

Appendix IV
Geographic Districts



Appendix V

CONNECTICUT STATE DEPARTMENT OF EDUCATION
Division of Vocational Education
Hartford

Confidential Questionnaire

CONNECTICUT TECHNICIAN SURVEY

COMPANY

DATE

TYPE OF INDUSTRY

ADDRESS

PERSON INTERVIEWED

INTERVIEWER

1	2	3	4	5	6	7		8
Code	Type of Technician	Number Employed	Present Vacancies	Annual Replacement Needs	Expected Expansion By 1973	Can Women Be Used? Yes	No	Minimum Educational Requirement *

COMMENTS

* H - High School T - Technical Institute or Junior College C - 4 Year College

Appendix VI

CONNECTICUT TECHNICIAN SURVEY

1963 - 1964

Interviewer's Instruction Sheet

1. Data for the technician survey should be obtained directly through personal interviews with key personnel.

2. Arrangements for such interviews should be made in advance in preference to just "dropping in."

3. Large companies may require some time to obtain information. In this case, the survey form may have to be left there. Careful explanation of the procedure of filling out this form should be presented.

4. Column 1 should be filled in by the interviewer. The code should represent his judgement of the appropriate existing institute educational program providing preparation for the specific job title.

Code	Technology
1	Chemical
2	Civil
3	Computer
4	Electrical
5	Electro-Mechanical
6	Mechanical
7	Metallurgical
8	Tool
0	Other

5. Column 2. The company's official job title should be used.

6. Column 3. This should indicate the number employed in the specific job title.

7. Column 4 reflects immediate needs.

8. Column 5. This should indicate the number of technicians sought to replace those leaving the employ of the company. If a percentage is quoted, please convert into numbers.

9. Column 6. This should contain an estimate of the number of employees to be added during the next decade (1973). Do not include those enumerated in Columns 3, 4, and 5.

10. Column 7 should indicate the employer's willingness to consider female personnel (if available).

11. Column 8 should indicate the minimum educational level preferred. This information should help us assess the level of technician required, industrial or engineering. It is not expected that a four-year college program should be required for a technician level job, however, some companies may describe professional positions as technician.

12. Any remarks related to technical education should be noted in the space alloted for comments. These comments may refer to needed educational programs, evaluations of former graduates or suggested programs.

13. If the company position title does not clearly describe the duties, please indicate characteristics of job in comment column or on attached sheet.

APPENDIX VII

ESTIMATED STATE TECHNICAL INSTITUTE GRADUATES[1]

Technology	NORWALK		WATERBURY		HARTFORD		NORWICH		TOTAL	
	Graduates	Available for Employment	Graduates	Available for Employment	Graduates	Available for Employment	Graduates	Available for Employment	Graduates	Available for Employment
Chemical	20	17	21	18	0	0	18	15	59	50
Civil	0	0	0	0	30	25	0	0	30	25
Electrical	60	51	42	36	35	30	15	13	152	130
Electro-mechanical	20	17	21	18	0	0	0	0	41	35
Mechanical	60	51	42	36	35	30	20	17	157	134
Metallurgical Option	20	17	21	18	0	0	0	0	41	35
Tool	20	17	21	18	15	13	20	17	76	65
Computer-Data Processing	20	17	21	18	25	21	20	17	86	73
TOTAL	220	187	189	162	140	119	93	79	642	547

1 Based on capacity enrollments.

APPENDIX VIII

ENGINEERING TECHNICIAN DATA BY TECHNOLOGY AND DISTRICT
(Survey Sample)

January 1964 - December 1973

Area	Employed 1964	Vacancies 1964	Reported Annual Turnover	Estimated Annual Replacement	Ten Year Expansion	Annual Needs	1964 Graduates	Estimated Future Graduates
				CHEMICAL				
Southern	314	13	26	15.7	162	33	12	17
Central	287	12	23	14.4	110	27	--	18
Northern	48	1	4	2.4	12	4	--	--
Eastern	290	5	34	14.5	115	27	--	15
Total	939	31	87	47.0	399	91	12	50
				CIVIL				
Southern	---	--	--	----	---	--	--	--
Central	34	2	--	1.7	19	4	--	--
Northern	215	49	37	10.8	10	17	20	25
Eastern	---	--	--	----	---	--	--	--
Total	249	51	37	12.5	29	21	20	25
				COMPUTER				
Southern	5	--	2	.3	5	1	--	17
Central	72	13	5	3.6	75	12	--	18
Northern	75	6	8	3.8	9	5	--	21
Eastern	7	1	1	.4	8	1	--	17
Total	159	20	16	8.1	97	19	--	73
				ELECTRICAL				
Southern	747	36	86	37.4	859	127	32	51
Central	361	15	39	18.1	388	58	--	36
Northern	504	13	36	25.2	250	52	31	30
Eastern	107	3	12	5.4	26	8	--	13
Total	1719	67	173	86.1	1523	245	63	130

APPENDIX VIII Continued

Area	Employed 1964	Vacancies 1964	Reported Annual Turnover	Estimated Annual Replacement	Ten Year Expansion	Annual Needs	1964 Graduates	Estimated Future Graduates
				ELECTRO-MECHANICAL				
Southern	110	1	14	5.5	60	12	9	17
Central	104	8	10	5.2	79	14	--	18
Northern	58	8	2	2.9	49	9	--	--
Eastern	118	1	7	5.9	13	7	--	--
Total	390	18	33	19.5	201	42	9	35
				MECHANICAL				
Southern	258	7	25	12.9	153	29	22	51
Central	124	10	13	6.2	83	16	--	36
Northern	574	18	41	28.7	286	59	50	30
Eastern	229	14	29	11.5	93	22	--	17
Total	1185	49	108	59.3	615	126	72	134
				METALLURGICAL				
Southern	104	2	15	5.2	46	10	7	17
Central	49	14	6	2.5	29	7	--	18
Northern	34	1	5	1.7	9	3	--	--
Eastern	---	4	1	----	10	1	--	--
Total	187	21	27	9.4	94	21	7	35
				TOOL				
Southern	171	3	8	8.6	83	17	19	17
Central	197	17	31	9.9	134	25	--	18
Northern	275	10	19	13.8	64	21	34	13
Eastern	38	1	7	1.9	12	3	--	17
Total	681	31	65	34.2	293	66	53	65
				NUCLEAR				
Southern	---	--	--	----	---	--	--	--
Central	---	--	--	----	---	--	--	--
Northern	6	--	1	.3	---	1	--	--
Eastern	124	--	10	6.2	---	6	--	--
Total	130	--	11	6.5	---	7	--	--
				OTHER				
Southern	10	1	4	----	6	--	--	--
Central	17	2	--	----	8	--	--	--
Northern	6	3	2	----	3	--	--	--
Eastern	12	--	1	----	6	--	--	--
Total	45	6	7	----	23	--	--	--

APPENDIX IX

STATE TECHNICIAN NEEDS BY TECHNOLOGY
FOR SAMPLE SURVEYED

January 1964 - December 1973

Technology	Employed 1964	Annual Replacements	Ten Year Expansion	Annual Needs
Chemical	939	47	399	91
Civil	249	13	29	21
Computer	159	8	97	19
Electrical	1719	86	1523	245
Electro-mechanical	390	20	201	42
Mechanical	1185	59	615	126
Metallurgical	187	9	94	21
Tool	681	34	293	66
Nuclear	130	7	—	7
Other	45	—	23	*
All Technologies	5684	283	3274	638

* Variety of areas included make this figure meaningless.

BEGIN

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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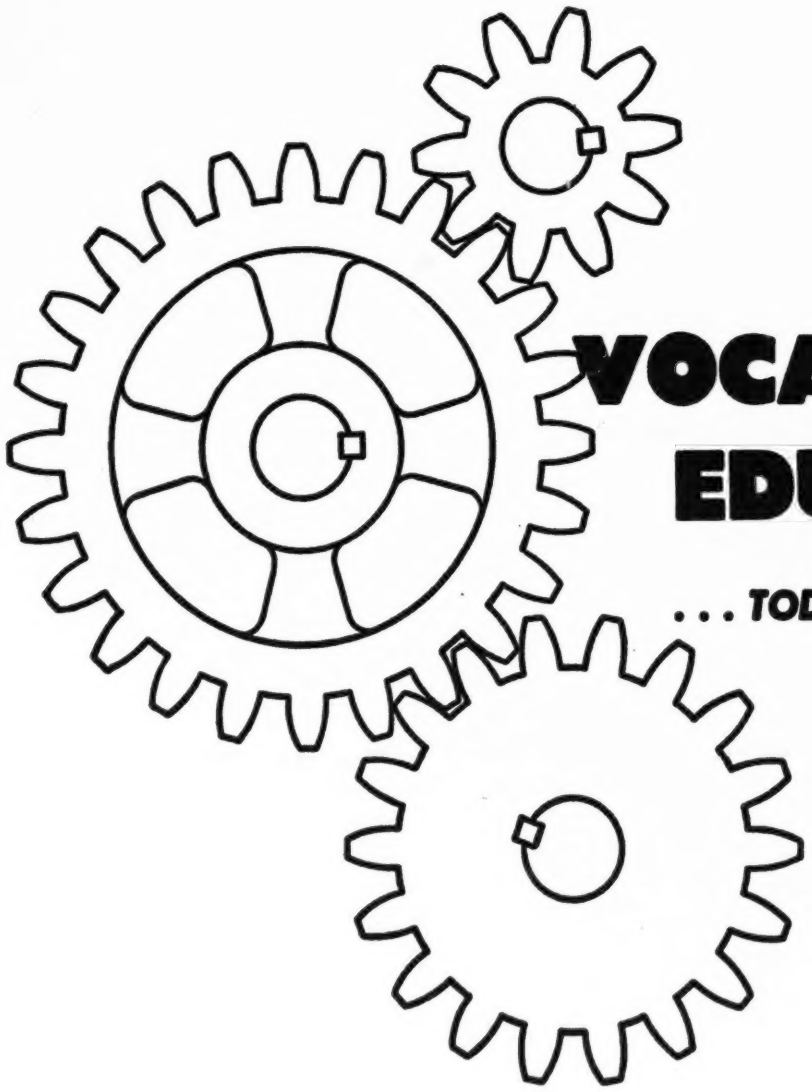
A CONFERENCE ON VOCATIONAL EDUCATION



VOCATIONAL EDUCATION

. . . TODAY AND TOMORROW

BENJAMIN FRANKLIN HOTEL

February 25-26, 1966

SCHOOL DISTRICT OF PHILADELPHIA

VT000344

PROGRAM

FRIDAY, FEBRUARY 25, 1966

9:00 a.m.-9:30 a.m. Registration—Mezzanine

9:00 a.m.-9:45 a.m. Exhibits—Franklin Suite

9:45 a.m.-noon Opening Session—Franklin Suite

Chairman: Arthur Hertzfeld
Director of Vocational Education

Welcome: Robert L. Poindexter
Deputy Superintendent of Schools

Address: Vocational Education In The Decade Ahead

Charles DeCarlo
Director of Automation Research
IBM Corporation

Panel: John N. Patterson, *Moderator*

David Bushnell *Director, Division of Adult and Vocational Research U.S. Office of Education*

Terry C. Chisholm *Executive Director Commission on Human Relations City of Philadelphia*

Eli Cohen *Executive Director National Committee for the Employment of Youth*

Roslyn Kane
Manpower Development Specialist
Community Action Program
Office of Economic Opportunity

Edward J. Meade, Jr.
Program Associate, Education Program
Ford Foundation

12:30 p.m.-1:30 p.m. Luncheon—Garden Terrace

2:00 p.m.-4:00 p.m. Afternoon Session

Meetings of Discussion Groups

SATURDAY, FEBRUARY 26, 1966

9:00 a.m.- 9:30 a.m. Exhibits—Franklin Suite

9:30 a.m.-11:45 a.m. Morning Session—Franklin Suite

Chairman: Arthur Hertzfeld
Director of Vocational Education

Remarks: Reverend Henry H. Nichols
Board of Education

Report of Discussion Groups: Ernest O. Kohl, *Superintendent, District No. 6*

Panel: David A. Horowitz, *Moderator*
Associate Superintendent in Charge of Planning

Walter R. Chapel
Executive Secretary, Manufacturers Association of Greater Philadelphia

Charles P. Connolly *Asst. District Manager Pennsylvania State Employment Service*

Russell M. Leonard
Associate Superintendent for Area Schools

H. Halleck Singer
Director of Vocational Teacher Education
University of Pennsylvania

John W. Struck
Director of Vocational Education
Pa. Department of Public Instruction

Reverend Leon Sullivan
Chairman, Board of Directors
Opportunities Industrialization Center, Inc.

Robert C. Taber
Associate Superintendent for Special Education and Pupil Personnel Services

Edward F. Toohey
President, Philadelphia Council AFL-CIO

12:15 p.m.- 2:30 p.m. Luncheon Meeting—Garden Terrace

Address: Herman Niebuhr, Jr., *Director—Center for Community Studies, Temple University*

FOREWORD

A two-day conference on vocational education sponsored by the Philadelphia School System was held on February 25 and 26, 1966. Two hundred and thirty five persons, representing the senior high and technical high schools, the administrative staff of the school system, business and industry, labor, governmental agencies, universities, and community organizations attended and participated.

The theme of the conference was "Vocational Education - Today and Tomorrow." While the problems and posture of vocational education today were examined, the main hope was that guide-lines and broad principles would emerge for the vocational education program of tomorrow.

The cost of the conference was approved for funding by the Commonwealth of Pennsylvania under the Vocational Education Act of 1963.

This report is a transcript of the proceedings. It is a complete record except for the discussions of the thirteen break-up groups of the Friday afternoon session. These discussions were summarized in the report delivered by Dr. Ernest O. Kohl, and this summary is included herein.

Deep appreciation is acknowledged to all persons who planned and participated in the conference.

C. TAYLOR WHITTIER
Superintendent of Schools

ARTHUR HERTZFELD
Director, Division of Vocational Education

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A CONFERENCE ON VOCATIONAL EDUCATION

"VOCATIONAL EDUCATION TODAY AND TOMORROW"

FEBRUARY 25–26, 1966

SCHOOL DISTRICT OF PHILADELPHIA

ARTHUR HERTZFELD, presiding

FRIDAY, FEBRUARY 25, 1966

CHAIRMAN HERTZFELD: Ladies and gentlemen, in opening this Conference on Vocational Education I am pleased that so many of you are here today to help make this meeting a success. We are hopeful that through this conference we will be able to set guide-posts that will establish a program for vocational education in Philadelphia and that will point the way to the solution of some of the perplexing problems facing vocational education today and tomorrow.

Recently I attended a meeting of a planning group of the Research Council of the Great Cities Program for School Improvement where such problems as the following were identified: the image of vocational education; the question of flexibility; early or late choice; general or specialized vocational preparation; the selection of programs; the question of who does the training and where; the question of teacher and counselor preparation for vocational education; the determination of program success; the provision of facilities for new programs; the question of pre-vocational exploration; and the role of guidance in vocational education. These are formidable questions to tackle.

Although what we say may be particularly identified with the public schools of Philadelphia, other cities over the country facing similar problems will be deeply interested in our deliberations.

At this time I am honored to introduce our Deputy Superintendent of Schools, Mr. Robert L. Poindexter, who will say a word of welcome.

MR. ROBERT L. POINDEXTER: Thank you very much, Mr. Hertzfeld.

Ladies and gentlemen, it is my very happy task to bring a word of greeting to you on behalf of Superintendent Whittier, who is in Harrisburg in conference with the State Superintendent, Dr. Rackley. He did want me to communicate to you his deep interest in what happens here today and tomorrow.

All of us realize full well that what comes out of these two days might well chart the course of vocational education in our Philadelphia public schools. We think this is entirely possible because we represent here quite an array of talent, making this conference I think somewhat of a red-letter day in that we do have so many people from business, industry, law and government, and from the school system itself meeting here to deliberate on this very vital topic.

So I am very happy to greet you on behalf of the Superintendent, the distinguished members of our Board of Education, some of whom are here, and hope that out of your deliberations will come, as Art Hertzfeld has said, some guideposts and guidelines and maybe a blueprint to help us chart our course.

Thank you very much for coming and I wish you very fruitful deliberations.

CHAIRMAN HERTZFELD: Our speaker this morning is Dr. Charles R. DeCarlo, Director of Automation Research of International Business Machines Corporation. He joined this company in 1951 in Pittsburgh as a sales trainee. Then he became a representative for their Applied Science Division. In 1954 Dr. DeCarlo was promoted to Assistant Director of Applied Science, and the following year was made Director in the Data Processing Division. After serving as an Assistant Divisional General Manager he was named IBM Director of Education in May 1961. He was advanced to IBM Director of Systems Research and Development in October 1963. In July 1965 he was appointed Director of Automation Research.

Dr. DeCarlo holds a B.S. degree in Engineering and a Ph.D. degree in Mathematics from the University of Pittsburgh. He's a veteran of World War II and he served as a Naval officer in charge of a rocket-launching team.

Dr. DeCarlo is a distinguished person in his field. He has a deep interest in vocational education. I am sure his message this morning, his keynote speech for this conference, is going to be a stimulating one.

DR. CHARLES DeCARLO: Mr. Hertzfeld, ladies and gentlemen: This long list of jobs that was just outlined underscores the fact that you change careers often, both at IBM and in our society. I think it would have been probably more meaningful to describe the only thing or one of the few things which I feel is really relevant to my being here: I am a member of a school board and I have seen the problems of school administration. So I am coming with not a complete ignorance of the realities of life.

However, my job here is not to talk about the practical problems, but to suggest a view for the future against which the panelists will consider the practicalities.

One theoretical and practical note, however, before I start. I am convinced (I am an optimist) that we can change in education. I believe that unfortunately there is an image extant that public education is just a conservative, stick-in-the-mud, slow-changing, high inertia process, but if you really look at what the situation was fifty to sixty years ago you're impressed with the enormous changes that have taken place when measured against ordinary human change.

Fifty years ago the average length of school for a person was four and a half years. The average individual attended school less than five months. Ten percent of the population was illiterate.

I don't mention these figures in any way to justify what we have today, but only to put into historical perspective that change is taking place which I believe will take place even faster in the future.

With the acceptance or that belief in change let me comment about vocational education, and I want to take up the two aspects of it: vocation and education. I want to comment about the nature of this problem. I'd like to describe what I think are the fundamental assumptions of vocational education as it is practiced today.

First of all, I think there is a belief that a series of trades, crafts or skills actually exists for which you can be trained. Secondly, it is generally believed that these trades are stable over a person's working career; that one learns to be a plasterer, an electrician, an automobile mechanic, an engineer or a doctor and that once he qualifies at a certain level of practice the rest of his life he has essentially a stable career, craft or profession.

I think there is the notion today in public school systems that the earlier the adolescent makes his career decision the better are his chances for becoming a fully organized and successful member of the working community.

I think we have also in our educational system an implicit assumption that it shall continue to be reasonable to expect the socio-economic and cultural differences which lead some people to go on to be "college material," other people to be "general education material," other people to be "vocational educational material," and some to be dropouts and some to be problems. I think we perceive, as I say, a sort of stability in accepting the notion that somehow or other people are destined.

And, finally, I think we hold to the notion that to be involved in the process of vocational education a high priority must be placed upon the individual teacher's practical experience above other teaching and other educational qualifications.

This would say that what vocational education proceeds from is in a large sense a view of the world which suggests that it's stable, a view of the world which suggests that trades, crafts, etc. will endure, and a view of the world which says that the present social environment will be projected into the future.

I want to challenge those, and I challenge them on two bases: first, the nature of work -- what it is people really do; secondly, the nature and the role of what the educators do.

Let me say that work today is something that a lot of people do and very few know much about. We have a work ethos, as it is called, that goes back to original sin -- Adam being ousted out of the garden, being told to gain his bread essentially by the sweat of his brow; and that ethical basis of work underlies an awful lot of our everyday view. I want to describe what I think are the characteristics of even today's world, but, much more importantly, the characteristics that I foresee in the world of twenty-five years from now which is where the people we're really concerned with are going to live.

First of all, work is becoming increasingly abstract, increasingly demanding that the individual deal with symbols, and it's increasingly organized in human systems. I'll put it this way. If you try to characterize the age of today or the age of the future, people have used such terms as "the information explosion," "the second industrial revolution." I have a much more simple way of looking at it. The real difference between the world today versus a hundred or fifty years ago is that we are now applying techniques of rationalization of axiomatic thinking to practically all human processes. This has a lot of benefits, I might note in passing, and a great many dangers.

The world is a smarter place; that is, the western world. We do use logic. We do use rationality. And we have to face up to it. An instance of the pain of doing this, for

example, is the resistance -- sometimes emotional resistance -- that such programs as "the new mathematics" engenders among parents. The new mathematics isn't new mathematics at all. It's just a new way to teach logical thinking by articulating the axiomatic method. We have always felt that education was something in which you were aiming to produce reasonable people, and in new mathematics basically we're trying to draw a blueprint for how you think logically, and yet the disturbance between generations I think underscores the difference between what our kids are going to be and how they're going to look at things and the way we do. They're going to be more logical and they're going to have to work in a more rationalized environment.

Secondly, the increased productivity that you get out of machines and technique -- and I'll just lump that all together as automation -- leads to a situation where the individual's input is increasingly characterized by lower energy levels. Very few people in the work process work hard physically. Now, I know you're going to say, "He's just a theorist up there and all he has worked with are computers and paper." But compare the work today with what went on in the English coal mines a hundred fifty years ago and try to fill in the gap between individual energy expended. Another way to look at this is to plot the reverse curve: the amount of energy per capita that has grown over the last hundred years so that today in the United States our energy per capita is about six times our nearest competitor and each of us has appliances, motors -- mechanical slaves.

The next effect of this is that the individual has to put less physical energy into what he's doing, but he has another function which follows from the first. He has got to be able to follow patterns. He has got to be able to detect differences in the environment. For example, if you're working a power saw you have to be very sensitive to the nature of that machine and the delicacy of following the pattern. This is a different kind of skill than using the total musculature system in sawing a piece of wood in a single straight line.

The third aspect of the work world as a result of the first two -- rationalization and lower energy levels -- is that you find work being organized into larger groups. You have the bureaucracies -- IBM, General Motors, Gimbels, Macy, the public school system, etc. Work will be organized in larger units as a result of the first two. This means that we are moving to a situation in which the work experience becomes much more a role experience than a job experience. The work defines at a given instance in a person's career who he is

by the roles he plays in the various organizations which his job directly impinges upon. And this notion of role rather than job contribution has many, many important consequences in the training of children that I hope to get to later.

Another corollary of the nature of work in the future is that we are going to have more leisure time. We're going to have more free time. We're going to have more time away from the job and also more time on the job in which you are not intimately involved in the work process. One simply has to walk through an office or a plant and observe the behavior at the coffee break to realize how much free time, how much gossip, how much "fooling around" there is in the work process.

I happen to think this is a very important thing to encourage in the work department because it builds in the reserve energy that an organization needs when it has to put out under a crisis or emergency. But there is leisure time on the job and there is leisure time off the job, and how people behave when they are not confronted directly with the work experience is an important aspect of their training and personality.

I guess I would summarize this by saying that as the individual perceives his job and his role in the future it's going to be increasingly in a white collar environment, an environment where he has much more, in a sense, free or non-connected time. It's going to be an environment where he will find -- I hate the term, but it's probably the best one that covers it -- the notion of middle class values. I don't think that middle class values are so bad, as other people do; I think the fact that everybody is aspiring to them is probably a good thing. But this means that you're going to have a role rather than a job or work centered kind of existence.

I would say you see this if you look at the way people work today. I'll take two kinds of work by what seems to me to be a very simple definition: that which is done under a roof and that which isn't. If you look at jobs that are done under a roof you find by and large they make high demands on reasoning ability. You've got to be able to read a sign and understand what it means when it says "high voltage - danger." You've got to know how to read blueprints or procedures. You have to take orders. You have to participate in a rational environment. You have to involve yourself in an environment where machines and men are interposed each with the other; for instance, the environment of this hotel: the elevators, the kinds of machinery that are in the kitchens, the vacuum cleaners, etc. Men and women are in an environment of machines. You have to accept the notion, as I said, that there is

systemization going around all about you, and you have to accept the fact that your physical senses are not fully utilized in the job, that you operate essentially at a low level of physical exertion.

In outside jobs, where you don't have a roof over your head, I find not too much difference. In a lot of these jobs you have tools basically which are extensions not simply of the muscle but of the hand, the eye and the brain. Working with hand tools in the construction trade, working with machinery in a garden, you have the coordination of hand, eye and brain. There is really very little brute labor left in the western world. Most of it is hand, eye and brain.

You have the requirement that you follow patterns. For example, a bulldozer operator has an enormous amplification factor as he moves his various gears or cranes. He has to be very sensitive to what we call pattern recognition, understanding what it is he's trying to do in the environment, responding to change in the environment and knowing the sensory equipment of the engine so he can maneuver it. He has what appears to be for the guy that works under the roof a more free life. This may be a romantic notion because he's outside, has the air, and the guy that is inside gets only what is called by the architect outside awareness. But I don't think there is much romance in being outside, particularly on cold days.

I would point out that in both these job environments several things have happened in the last twenty years. First of all, there aren't many jobs that you can take now and just by imitating someone else learn the job. You can't do it by imitation. This means that you really can't use the scheme of apprenticeship in its totality. You don't learn by observing. It means that there aren't many so-called entry jobs available whereby you get a job, watch what other people do, imitate, and then move up. Entry jobs tend to be fixed and not important with respect to the next step.

The net of this effect means that you have to question essentially what it is you tell children in kindergarten, pre-kindergarten, first, second and third grades about the world of work. If you believe in the fall of man and the idea that work is a punishment and that you have to sweat to make a living, you're going to say one thing. Maybe you've got to say part of that, but I think if you look around at the future world "it ain't that way at all." We've now past East of Eden and we're somewhere toward Jerusalem -- not quite there. But life is different and you have to communicate the importance of the brain, the importance of hand-eye-brain motion, and the importance of dealing in an environment of people and machines.

This leads me then to a rather heretical statement: that the educator must basically raise the issue constantly through the educational process of just how important is work. Is it the end-all and purpose of education? Obviously it has practical implications -- and, remember, I'm now talking for the kids twenty-five years from now. But he has to ask this question: How important is vocation versus education? How important is what he will do compared to what he is or what he will be.

This, by the way, is a question that means a lot to the child and it means a lot to the adult and it means a lot to society at-large.

There are very few people I know that have challenged the nature of work, that have raised the question of what are we really doing to our children.

It is obvious that I think the world of work has changed and will be even more pronouncedly changing in the future. I would put my final underscoring on this by pointing out to you the enormous gradient or difference between the western world and the non-western world. As we go ahead in the next twenty-five years if we don't have a citizenry that understands the nature of what it's doing and is committed to it totally, then our dealings with the rest of the world where we have to, I hope, communicate what is best about our system of work and society and ameliorate what isn't -- if we don't do this, then I think we are headed for chaos.

I see the work environment in this country as being affected in the future in a profound way by what goes on in India, Asia, Africa, and other parts of the world.

I guess you might ask since I don't consider work very important what I do consider important, and I want to now talk about the other half of the phrase, about education. I have a very simple definition for education that I've accepted; it's by Steckel: The purpose of education is simply to surmount the past, to utilize the present, and to prepare for the future.

I think that's almost a cliche; you can't argue it. And if you accept it then one must analyze what is it we're doing to children in education. I raise the question: Are you being fair to children to expect them as a result of the educational process to go out and become valid working members of the community? I think that vocational education or education itself starts at birth, and that the most important years are probably up through the age of seven or eight, the so-called medieval age of reason. What you do there and the resources you put there will pay off, in my personal view, a thousandfold rather than trying to solve the problem by the time the child is a high school dropout.

If I look at the child in kindergarten or nursery school today what do I think he needs? What are his needs to live in the future? First of all, he must have what I will call a

minimum white-collar literacy. I'm not talking about reading and writing; I'm talking about the whole ability to deal in the white-collar environment, and I use "white-collar" because that's the easy way to symbolize rationalization, application of mental powers. You have to have this, and when I say you have to have it I mean he has to want to have it. You just can't dump this stuff into his head; he has to want it.

Secondly, he has to have as he grows a minimum understanding of the importance of family relationship, of the family in society, individual responsibility to others. Only by understanding the family unit, which I look forward to as being a great bulwark for preserving values in the future, can he participate in a world of the future. This means that you have to teach the things that all the old educators say you have to teach.

He has to have the ability and we have to help him preserve the ability to stay alive and conscious and curious. He has got to be open, and this means that teachers have got to quit feeling that they have to have every answer to every question that the child raises. It's a wonder sometimes that any curiosity is left by the time the child reaches seventh grade because every adult you meet seems to want to be smarter than you are. As a matter of fact, my experience is that most children have some area at least where they are considerably brighter than the adult.

I think we need a minimum seeding in the child of what I will call a sense of culture and play--the non-work, non-useful aspects of education. In other words, it's almost to the point where we ought to throw out of education the idea that you're studying this because it's useful. I'm talking about early childhood education. In early childhood you study because it's curious and it's fun. What this will lead to, it seems to me, as they grow older is the importance of life rather than the importance of work. I think it was Freud that concluded that the two great drives or two great abilities were to work and to love, and I think vocational education in one very real sense negates that quality of love. It only can come out of self-consciousness and being a different kind of human being as a result of the process of education.

I am very serious about making the importance of life and self-consciousness the end of the educational process rather than the usefulness of what you've learned. I know you think this is a crazy ideal and that we have all the problems of the cities and the schools, but if you don't have these values the way you solve tomorrow's problems will probably come out of the past and not advance the bail. So I am going to say them anyway.

This means that educators have got to raise the sights and they've got to quit the terrible and arrogant assumption that some people can't work, that some people just aren't good enough to do some things. They've just got to get over that. It's built into everyone. Every man that has taken one degree more than another, one course more, the way we're taught you can't help but get a little bit of this arrogance built into you, and you've got to constantly work it out.

This means, if I can put it another way, that you have to treat children with respect. That's a very difficult thing to do because they have more energy than you do, they have more freedom in a sense, and they get you in trouble. But you've got to treat them with respect.

In a practical sense this leads me to the following kind of assertion. I have listened now for five or ten years to the hand-wringing on the problem of high school dropouts. But I have another facet to bring to this, and that is that maybe the high school dropout isn't a dropout but is a societal shutout; and this is a very different point of view because it removes from the educator the need to justify and to take on his back the correction of other ills which the community must share with him.

I think educators, and particularly vocational educators, are too prone to accept I won't say responsibility for the problem, but at least responsibility for a major share of its correction or amelioration. I think it has to be constantly drummed into the community consciousness that this is a total community problem; that it is not an educational thing, that he is not an educational dropout but that the community has shut him out.

I happen to believe in the notion that obviously what you do with very, very young children is the most important thing. You know this idea that as the twig is bent the tree grows. To use that metaphor, it seems that it is wrong for educators to look at a landscape of stunted trees and try to go through horticulture without reminding the garden owners that maybe they didn't provide the right environment.

Let me summarize my ideals and then I'll come to some specific recommendations which people can argue with. My ideals are very simple. Everything that I have seen in the research work that I've been involved with in machines--when we try to understand the learning process and try to build systems that are the most beautiful manifestations of the axiomatic method--lead me to several human conclusions.

Number one, we have grossly underestimated the importance of getting the right kind of resources, attention and direction given to the very young. I'm not just harping on Project Head Start and all the other things that have become fashionable. They're great and I'm not against them. But just on a pure technical systems basis, just looking at the problem and treating the child simply as an information mechanism, the payoff in working early and working well will more than offset the effort expended with the children.

I happen to believe that machines have their place in education; obviously, working with IBM I do. But at this level I would point out that what is needed is not machinery, not programmed instruction, and not computers, but just vastly revised teacher-pupil ratio. There has to be more superb adult-child contact. The family has to take a bigger hand in this thing.

It's a rather curious thing that at a time in history when the family really should be the most important element in the development of the future because of this notion of the child's importance there is a general acceptance that they're somehow or other losing this importance. It's a very strange paradox.

If I leave, then, the notion with you that I really believe you must get to the child first, then let me talk about after the child has developed, what I think we can do in the way of recommendations. I would recommend to educators in general that they draw in the total community to share their problems and to quit being the agents on which other people can discharge their lack of responsibility.

In specific terms I will make the following kinds of statements for this conference to consider. I think we need an enormously expanded technical junior college, technical institute program, and it has to be geared to work experiences of a wide variety and a wide degree of complexity. I hope that we will have not compulsory education beyond the twelfth grade (because I'm not very happy about compulsory education beyond the eighth) but I think we ought to have it available for anyone that wants to take it.

I think we've got to find ways to make a whole new set of degrees and make it fashionable to terminate an education at a particular point in time and give it the stamp of approval. We have to develop that these things are very important. I think we have to find ways so that at each level of education after the sixth or seventh grade the child may find new ways or we may get to him and stimulate him to branch out. In other words, we've got to almost reverse our traditional notion of asking "what are you going to be when you grow up?" Growing

up, we should say, is to not be anything. It's to always be available to something new. So at the end of a technical institute if we do the job properly some people will continue to learn, continue to go on.

I think it would make sense to have some kind of GI Bill. My personal view of the GI Bill as it came out of the last world war is that it did more (probably more than any other single event in American education other than maybe the founding of the land grant colleges) to shape and change the nature of this country by simply raising educational expectations and opening the horizons of people. There is also, by the way, the practical concomitant that it raised the skill and technical and intellectual level of the work force which enabled us to move rapidly.

I think quite seriously that a subsidy on the basis of those who can compete and want to go on and make this competition highly desirable would be a wise expenditure of both federal and state money.

I think industry could do quite a bit by making available--or I don't think industry should carry these things as charity--I think these should come as a result of national and fiscal policy that we encourage industry to do these things, but I think there are people in industry who are going to be retired, who want to retire. The retirement age in industry is coming down and I think before too long fifty-five will very much be the expected age of retirement. This is a set of resources that could be used in what is now called vocational education. These are people who could be brought.in. Added to their work experience if they could be given a two-year training period, let's say, they could then contribute in a meaningful way to ongoing life.

I have interviewed too many men in high and middle and lower management positions where after they have sort of made their mark they're looking around for something more meaningful to do, and I think there is a great fund of people available--a resource which is not being tapped.

In the same way, for early childhood education if we could relax some of the prescriptive agencies of education and take advantage of many of the women who are available we would have another untapped resource. I don't mean we should denegrate them by calling them teachers' aides, because, as a matter of fact, many of them may have much more to teach than the teacher herself. I think industry can do quite a bit by joining--and this has to be done on the basis of industry interest and cannot be done as charity and should not be done

as charity. I think we must find ways to draw the organized industries, that is, where you have fairly large plant investment, where you have organized management teams and sets of resources that create a work environment--to integrate the company, the school system and the public so that we guarantee a variety of work experiences without making the forced commitment on the part of the company to hire the person after he has the experience.

I think we've got to be reasonable about what you ask industry to do, but I think you can ask them to do much more than they are doing. There is very little done in the way of developing creative community-industry-school situations. Each side is going to have to give a little in this triangle to make it stable.

I think in the long run we have to put more emphasis on the notion of (I hate to call it this) learning for fun. I know that's something about which educators say, "By the time the kid gets to high school it's dead." We've got to find a way to do this, and maybe the way to do this is to go through the agency of sports or music. I'm not quite sure how to do it, but we ought to restore the openness of intellectual curiosity because that will be a great elasticity barrier, so to speak, for us to change in the future. We are going to have to change and it would be nice to have people who are curious, because curious people are people who are willing to accept change.

Then the final two recommendations I would make are these. Somehow or other we have to admit back into the educational process the full physical development and animal development of the human being. This involves many more kinds of intramural sports. This involves a moving away from the idea of the sport being the institution's hallmark. I'm talking about really developing the human animal senses, because these are the things that are in a sense falling into disuse because of the low energy nature of work.

Max Frisch had a wonderful epigram about this. He said that technology is the art of organizing the world so we don't have to experience it. Well, it's up to the educators to find creative programs which will truly involve, again educational cliches, coordination of the child, extension of his physical capabilities, and so on. And this has to be something that continues.

I submit it can be made part of a work experience. I think even in our own case, in working around electronics, there is an awful lot of sensory stimulation (if you're open to it) that you get out of fooling around with oscilloscopes and working with soldering irons. (If you've ever been burnt by solder you know it's a sensory experience.) But we have to think about these things. They don't occur without some guidance.

The final recommendation I would make, and a practical one (though I don't know how to implement it) is that in some way we have to get to ourselves. I'll put myself right about the middle of the age group of the people in this room. Probably more than any single factor in the next five to ten years we've got to change. I've been so many times with vocational educators when if you suggest that the future is going to be different or that what we're doing isn't right you can almost see the backs go up and the ears close down. We really are faced with too much opportunity and too much risk not to admit the requirement to change, and I would suggest that the way to create that change would be to take vocational educators, to take the vocational staff people, give them time, give them money to go out and find out what is really going on--not to sit in their guidance offices and have people from industry come in and tell them. The man who is recruiting is going to tell you something that is different from what is actually going on in the offices and in the plants and in the laboratories and in the stores.

I think vocational educators have got to realize that life is different, and I submit that the changes that will come are already here in a very real way. I find it an appalling lack of sensitivity on the part of individual adults to change themselves in response to this. How to do that I think is something for the panel and others to suggest.

Thank you very much.

CHAIRMAN HERTZFELD: Thank you, Dr. DeCarlo.

We have with us this morning a distinguished and high-powered panel to react to Dr. DeCarlo's talk and to give us their own ideas on the subject. John N. Patterson will serve as moderator of this panel. Mr. Patterson is a graduate of the Philadelphia Normal School and the University of Pennsylvania. His experience includes teaching, partner in a management service company, and top management posts in government and industry. He has long been active in groups interested in promoting the improvement of education in Philadelphia and is presently Chairman of the Task Force on Manpower and Programs of the Philadelphia Board of Education.

David S. Bushnell is Director of the Division of Adult and Vocational Research of the U.S. Office of Education, and is responsible for the allocation of grant monies authorized under the Vocational Act of 1963 in the support of research, pilot and demonstration programs. He has also served as Research Social Psychologist at Stanford Research Institute, and has worked with the IBM Corporation as Personnel Administrator and consultant on management

communications. He has had wide experience in teaching and in research at various universities, and has written extensively on innovation in education and on the problems of manpower development and vocational education.

Terry Chisholm is Executive Director of the Commission on Human Relations of the City of Philadelphia. He is a member of the National Association of Intergroup Relations Officials, and is Past President of the Philadelphia Chapter of this organization. He is a graduate of Payne College and holds a degree of Master in Sociology from the University of Pennsylvania.

Eli Cohen has served as the Executive Secretary of the National Committee for the Employment of Youth since 1958. Currently he is a member of the President's Committee on Youth Employment and the Mayor's Committee on Youth and Work in New York City. He is also a lecturer in Education at New York University and has been a consultant on youth employment to the U.S. Department of Labor. He has been Chairman of the Young Worker Section of the National Vocational Guidance Association and President of the New York Vocational Guidance Association.

Roslyn Kane is Manpower Development Specialist of the Community Action Program of the Office of Economic Opportunity. Mrs. Kane has had wide experience in this field, particularly in the City of Detroit, and has represented the Department of Labor in setting up youth employment programs throughout the country. She has also served as training director for VISTA.

Edward J. Meade, Jr., is Program Associate for Funds for the Advancement of Education of the Ford Foundation. He received his A.B. and A.M. degrees from Montclair State College and his Doctor of Education degree from Harvard University. He is a member of the Panel on Mental Health in Education, National Institute of Health, Department of Health, Education and Welfare, and of the Defense Advisory Committee on Education in the Armed Forces. He has served as consultant to the U.S. Commissioner of Education. He has many professional affiliations, honors and offices. He has traveled widely and is the author of numerous articles and books which include the subject of industrial arts and vocational education.

Until noon the program is yours, Mr. Patterson.

MODERATOR PATTERSON: Thank you, Mr. Hertzfeld.

Ladies and gentlemen, I'd like to suggest two physical changes in our accommodations here. Apparently the relationship of men and machines hasn't worked out particularly well to produce a good climate here this morning. I imagine the machines have us licked and the windows won't work, but I'd like some of the gentlemen over there to see if they can get us air in here.

I think I am right by saying as I listened to the occupational careers of all the panelists and the speaker of the day that there isn't one of them who started out to perform the work in which he is now engaged. I think it's a pretty good illustration of the change-making effect of modern life on many of us from the occupational standpoint.

Secondly, I think if we took a vote on the many, many important points raised by our speaker, Dr. DeCarlo, I am sure we'd have division of opinion on all of them. I doubt very much if we'd have any division of opinion on the simple premise that as a kickoff speech to get people to think in terms that are new and different and stimulating this was a superb start for us and had all of the elements in it necessary to give us a good panel follow-up. We are very appreciative, Dr. DeCarlo, for your making such a contribution to our discussion.

I am going to summarize Dr. DeCarlo's remarks to refresh your minds on what he has said, and the summary is quite simple. He is saying that industry is not too interested in buying more machines--they already have enough machines--and they particularly are not interested in machines in human form; that they would prefer people who are fairly broadly developed, who have personalities of their own, who have aspirations that go beyond just the job; that these represent better capacities to tie to the non-physical machines that are already available in the plant. From that point of view I think it's an extremely interesting challenge to throw out to a group such as we have here today in terms of what the meaning of that is in specific application.

I agree with Mr. Hertzfeld that if you spent a month trying to find more capable people to act as panelists on this subject you could not better the panel that we have today.

I thought it might be interesting, since all of you do not know all these people, to give the panelists a quick chance to say a few words in reaction to what the speaker has presented--a two-minute fast reaction to what was said. We'll reverse the usual procedure and instead of having the lady heard from after the men really express all the good opinions we'll ask the lady to start. We'll ask Ros Kane if she'd give us a two-minute reaction to the points raised by Dr. DeCarlo.

MRS. KANE: I found the one statement Dr. DeCarlo made most challenging that schools should be more interested in role experience than in job experience. The role experience seems to be a major factor in a young person's ability to view himself as part of the world in which he will be moving, and it has been in this area that perhaps educators and those who work with youth have been least successful.

We talk a great deal about the motivation of youth. The problem is not always that of motivation. It is rather their self-perception that they are destined to fail among so large a percentage of our young people that brings about failure before they have had perhaps the opportunity to find themselves.

MODERATOR PATTERSON: Thank you, Ros.

Terry, how about a reaction from you?

MR CHISHOLM: I was tremendously impressed with the reoccurring assertion that we need to get to our young people very, very early. I was very happy that we are making strides in that direction in Philadelphia. I am at the same time quite alarmed that we may be getting started late and we may have to start moving more rapidly than any of us would have anticipated or possibly more rapidly than we might desire. Notwithstanding that I am afraid we will have to do this. The youngsters in our communities are diverse. They do not come from homogeneous backgrounds. Our schools to a large extent over the past, while doing a Herculean job, have generally been organized for youngsters who come from homes that are well organized, that are well supplied with literature.

This is far from the reality of our community. We have a lot of homes in Philadelphia where there are not books. We have a lot of homes where the parents are not able to provide this intellectual curiosity or stimulation toward this. I think we have to organize our schools--and I am sure this is true in the vocational areas--so that the school and the community and industry begin to provide through some new organizational changes the kind of environment that many of us like, that many of us have not brought to the school system. I'm afraid we've got to find some ways to make our community institutions the backdrop of that kind of environment.

I would like to see schools that make it possible for the youngsters to get this kind of assistance that they need, that they don't bring from home, and that will also provide an opportunity for his parents to get the kind of things that they haven't gotten in that same environment as a family unit.

I'd like to see us start planning new community institutions so that they serve this kind of function.

Let me end by saying that I know a number of things are going on in the city and I know that we are making decisions daily about how we're going to spend the city's dollars. In the Fairmount-Spring Garden area the school system presently is thinking about some building. The Health Department is thinking about the new facilities. The Department of Recreation is thinking about a new facility. This is all within the range of a few blocks. To some extent they're thinking about these things separately. My question is: Should they?

MODERATOR PATTERSON: Thank you, Terry.

Ed Meade, what is your general reaction to Dr. DeCarlo's remarks?

DR. MEADE: Charlie is always quotable and I picked up a quote: "The world is a smarter place." And I'd like to add to that that really it's a smarter place. And another message that I got is not only is it a different world, but it's a world that is so different that we in education don't completely understand it. We heard references to getting people out--not only ourselves but the pupils as well--so that we have a better understanding of the changes that are taking place.

When Dr. DeCarlo first said those words I thought we could throw out a lot of what we now call vocational education and just apply our pursuit of excellence material or nonsense that we've read about for some time. But then he tricked me up and said there is a relevance to all of this, and he talked about using vocational educational experiences in a different way: the extension, for example, of one's physical senses by using a vocational type experience. To my way of thinking it was a refreshing innovation--not a job-oriented experience, but an experience that relates to reality, that shows a child what it's all about on the outside.

I just think that one of the major contributions made in his talk was the sense of a changing world of work--I don't particularly like that phrase--perhaps a changing scene on the outside. (I tend to think schools are too much on the inside) and how we can take even traditional experiences in vocational education and use them differently so that we can help youngsters prepare themselves for this kind of reality--not necessarily for that kind of job.

MODERATOR PATTERSON: Thank you, Ed.

Let's hear from the money man down at the far end of the table: Dave Bushnell.

MR. BUSHNELL: I find myself in substantial agreement with a large number of Charlie's notions, but the one I wanted to challenge was the assumption that most personality

formation and orientation takes place at this younger age level. I think there is a lot of change that can occur at adolescence and adult levels. A lot of learning goes on during this period of adolescence and young adult level, and it's here, I think, that vocational education has its greatest contribution to make.

I would agree with Ros Kane that we need to design successful learning experiences that will create greater self-confidence, that will allow that student to go on and accept change as a challenge to pursue new careers. I perhaps disagree with Dr. DeCarlo that we ought to emphasize at the early age levels the literacy skills and the building of adaptive orientation through games and role playing. I think this can be focused at every age and developmental level throughout our career. Perhaps one suggestion is that there is a recycling process going on, but we also need to begin opening up the other sensory organs and tapping those as reasonable ways of learning about the world. There is too much emphasis on verbal learning today. We need a great deal more emphasis on factual and visual learning ability. I think perhaps there is too much attention to the academic orientation of our younger students. They need to be aware that there are opportunities, by gosh, short of the academic level.

What I'd like to conclude on is the note that we can and should be radically expanding our continuing educational potential. To do that, however, we need to draw upon a base of learning skills, fundamental learning skills, that will make that adult capable of entering into adult education programs and benefiting from them. It's here that I think vocational education has fallen down the most, that is, providing these basic learning skills that make the individual adaptable and capable of taking on additional education.

MODERATOR PATTERSON: Thank you, David.

Lastly we'll hear from Eli Cohen.

MR. COHEN: I don't need to tell you that that was an exceedingly thoughtful speech and expressed a great many basic truths. I would like to hit lightly on a few of them and then take off a little more heavily on a couple.

First, it's perfectly clear that we are in a process of change, a process of accelerating change. I think most of us are aware of it. I think what Dr. DeCarlo was saying is that we ought to become a part of it and not just be interested outside observers.

I think likewise he made an exceedingly important point when he implied or actually started that we should not rush our kids into early, premature vocational choices, get them frozen at certain levels and find that it's difficult to unblock that situation.

Thirdly, I think he put his finger on a very sensitive area here: a tendency for all of us when things go wrong to blame the kids and not ourselves and not our society. Sure, there are plenty of things wrong with the kids with whom we deal, but if we tend to look solely at what is wrong with the kids and not at what is wrong with us or our society, our schoolrooms, our employers, etc., we're going to miss the boat and not do the job that needs to be done.

I would quarrel with or challenge some of his notions about the family. My reading of what is going on today would indicate some weakening rather than strengthening of the family; that we have particularly among our disadvantaged groups a real breakdown in the family, as Mr. Crisholm pointed out. I'm not so sure that I want to ram the middle class values down their throats and if I were I'm not sure how I could do it.

I think essentially what we have here is a sound model for the future, what life and work and school will be or ought to be like in the future. Our problem here, I think, or the family problem is how you translate this future model in terms of a transition period that may extend for the next decade or longer around the business of how you prepare kids for work.

MODERATOR PATTERSON: Thank you, Eli.

We've had a rough acquaintance with our panel members now, but this conference is your conference and we want to open this out to you.

The usual rule in these kinds of things is that you're only allowed to ask a question because you always run into the danger of long-winded people getting off on too much of a hobby-horse. We're going to relax that a little bit this morning because I think it's almost impossible to ask a meaningful question if you don't have a minute at least in advance to build a little background for what you're after. So we're going to give you a minute to give us a little better insight into the question that you're pulling for. You can address any individual member of the panel or allow me to use my discretion and put the question to different people.

MR. RUFUS COX (Friends Guild): One part of the speech that struck me was the responsibility of the rest of the community for the planning of an educational program such as this. My question is: What are some ways of communicating this urgency to especially the Philadelphia community--their responsibility in helping to improve our vocational programs?

MODERATOR PATTERSON: Does any panelist want to take a crack at that?

MR. COHEN: This conference itself is obviously one of the ways. If you get good press and TV coverage it's an extension of that.

MR. BUSHNELL: I might comment on what we are attempting to do with industry to involve them more in the vocational education realm. One major approach, of course, is to open up industry's doors so the teachers and guidance counselors can enter and see what jobs are viable today, and find out more not only about the manipulative skills required but some of the cognitive skills.

We are also interested in perhaps having greater access to some of the industry equipment such that the schools don't have to duplicate this cost but could on appropriate scheduling go in and use this more modern equipment for the training of students.

MODERATOR PATTERSON: I'd like to mention, if you haven't already seen it, the Task Force Report recently submitted to the Board of Education in which considerable attention is given to the whole question of reopening for a new look our career development program in the Philadelphia schools. It incorporates a number of suggestions that were made by the speaker today and the Board is on the verge of arranging through contract arrangements with outside agencies to work in tandem with our own school people in the vocational field to take a whole new look at opening up the entire subject for re-examination.

MR. DONALD HILL (Phila. Urban League): This is directed to any panel member. One of the problems that to me seems apparent when we talk about developing new vocational educational programs is the concept that students themselves have somehow decided that vocational education is just not the type of thing that they want; and the same concept as far as parents are concerned. I don't know whether it has something to do with our earlier years of feeling that vocational education is for those who are lower on the so-called intelligence scales, or what. However, whatever programs we develop I think they have to have something to do with the promotion of a new idea toward vocational education. I'd like to know how the panel thinks we can go about handling this most important aspect for whatever programs we eventually develop.

DR. MEADE: Traditionally the institutions of higher education have not seen fit to give much credence to a vocational experience in the way of credit for admission to college, and there is no doubt that here is where Dr. DeCarlo's middle class values come in. All of us have that middle class value of wanting our kids to go on to something or other. So the vocational education programs have been dead-ended either by design (I am convinced that

a number of them are--dead-ended in the sense that they don't prepare for very much at all) or even if they have been more imaginative and more real and more open-ended the institutions of higher education just don't have any capability or understanding of how they can accept this kind of product and do something with it.

I'm citing two problems: an internal problem--that many of our programs just are job-entry oriented, period. The placement record of most vocational programs is astoundingly good because they are aiming at job entry. Or, on the other hand, the education Establishment--I mean the Establishment in higher education--just doesn't see this as a way to their doors.

There are some promising developments, however. There are some programs now that are being designed by people representing all segments of education--the schools, the community colleges and the four-year colleges and universities--and they're designing programs in such a way that when they get this youngster out of the graphic arts curriculum he can indeed go on to the four-year program because they helped design and shape it and understand it. I guess I'm pleading for some more involvement on the part of the individuals from higher education in developing programs with the schools.

In addition, there are some attempts now of merging vocational experiences, vocational education, with academic education or general education (whatever the term is) so that a youngster is not denied opportunities for the best English instruction, let's say, any more than the academic student is denied the best shop instruction.

I might as well put a bias on the table. I frankly can see very little value in separate schools. You can say that we're a big enough city that we can support them and we have some fine separate schools here in a vocational sense, but I still think you've denied a number of youngsters an opportunity to say, "I don't want to be a draftsman; I think I'll be a poet" even though he's only in the tenth grade--just as I think you've denied a kid who wants to go to Temple to study literature opportunities to maybe be an auto mechanic.

I know people will refute that and I hope they will, but in the main the separateness, even while there may have been provisions to transfer from school to school, has said in effect, "When you make up your mind in the ninth or tenth grade, sonny, you stay there."

MRS. KANE: I think part of this problem is based on a misunderstanding. I think over and over again when the question is raised people answer it with a duality of college preparatory programs versus vocational education; and they rather lump commercial education in

with vocational education, which has a certain amount of rationale. But the fact is that in most major school systems one-third to one-half of the youngsters are in a so-called general curriculum, and I do not think that the educators or those people in the community who are really interested in education have appropriately defined what a general curriculum is or defined exactly what the end of general curriculum is; or that the duality is not between vocational education and college preparatory, but rather what is happening to the vast number of young people, and particularly the disadvantaged young people, who end up in a general curriculum that is generally defined as that curriculum for those people who have not as yet made up their minds--and that means that the schools have not made up their minds what to do with them.

MR. COHEN: I would say that the problem of the poor image of vocational education stems only in part from this duality or tripartite kind of split in the school system as between academic and vocational, or academic, vocational and general. I think this has added, of course, to the stigma of vocational education, but I think it is reflecting something a good deal deeper in my opinion--and it is which Dr. DeCarlo was talking about. It is reflecting again society's attitudes toward vocational education which are in turn reflected by the schools themselves.

So long as we're living in a middle class world (Dr. DeCarlo made his contribution to that as well) so long will the so-called vocations--even where they have the white collar tinge of the office occupation--be sneered at and so long will we look down our noses at those kinds of occupations. I think nothing short of a major restructuring of our values with respect to the kinds of work that people do and a more non-judgmental attitude will achieve the kind of thing that the questioner asked.

MODERATOR PATTERSON: Does any other panelist want to react to this question? I would like to say, Don, that I think people are entitled to react the way they do because that's the way we pretty well educated them to think. What I gather from what the panelists have been saying and Dr. DeCarlo's address is that your college-bound need this kind of experimental exposure to the world of work and to work experience as much as youngsters who are not going to college, and until we begin to treat the total population in terms of a career development program, accepting the fact that all of them need exposures of these types and would profit from them, and change the image of what we do it is going to be very hard to change the image of what we want people to think.

I think the first step to getting people to change the image of what they perceive about some kind of program is to change the program so that it can be judged on its own terms as a real thing and not something you're trying to tell in words. It seems to me that Dr. DeCarlo and some of the panelists are suggesting that we need a larger role for what we traditionally have called vocational education and which we are now thinking of in broader terms as career development education, where many more youngsters get a sample experience and we tend to work away from the situation of giving relatively smaller numbers a more intensive experience in exposure to work samples or to work experience.

A PARTICIPANT: I don't think we're being entirely fair about this public image. If you were to take a census in this room of the people who had initially started out in a trade I think you'll find that at least half of the people in this room have changed positions three or four times so far in their lifetime and perhaps they haven't reached their final goals even as yet. So what is wrong with providing this vocational education? Is there anything wrong?

MODERATOR PATTERSON: From the standpoint of somebody who has made a success in a trade, his view of the desirability of that outcome is quite different from what the panel has been indicating is the general view. What is wrong, the questioner asks, with the image of a successful trades person? Hasn't that been a good adjustment? Isn't he a good citizen at the end? Is it fair to say that most of the parents in the city would look somewhat down their noses at this somewhat less desirable aspiration than the academic?

MR. BUSHNELL: I'd like to comment on that. I think our failure has been that we've only reached about 10% of the student population who are being trained for trades through parent programs or professionalized vocational programs. The question raised by Eli Cohen and Ros Kane is: How do we reach this other 75% to 80% of the student body who will not go on to complete a baccalaureate degree or higher? It's our feeling, and certainly mine, that we have got to create the kind of awareness and career exposure while the student is in school that will lead him to be aware that there are not only jobs in one area but there are related jobs with related skills that he can qualify for should he find himself in an obsolete or dead-ended position.

The question then comes up: How do we give them that kind of orientation that will allow the student to reach out and qualify for these related jobs? We're emphasizing in our research development effort the building of a curriculum which will in fact train for a core curriculum which will identify a cluster of skills related to a cluster of jobs and hopefully this

will give that student if he leaves before high school graduation or at high school or after junior college or an institute program--will give him the basic set of skills that will allow him to qualify for a related number of jobs.

One additional hope is that we can build in the kind of success experience, the kind of confidence in himself that will enable him to go on with his own training in education; and it is, I think, here that we find the real difference. A person who is challenged with change and with a positive attitude that "this is an opportunity" will probably continue to adapt and become more than a person in one specialized area.

MR. COHEN: I think this is one of the kinds of questions that you throw back at the questioner. I don't mean to be personal, but what is wrong? You and all the other people you're referring to here in this room have moved out from these occupations into white collar and professional occupations. Why have you done so?

SAME PARTICIPANT: Through the recycling process and upgrading and being associated with the finer things in life. We made an honest living at it and I don't regret it. I think it's a good foundation, good background training.

MR. COHEN: Yes, but you didn't want to stay there for some reason.

SAME PARTICIPANT: I moved out of it because I am able to influence more people now than under the previous circumstances.

MR. CHISHOLM: It seems to me that we're kind of begging the question and the fact remains that no matter how you visualize it society does place a stigma on people in the trades and the vocations, and the only time we look up to them is when they by dint of the sweat of their brow become millionaires or when plumbers start making $7.50 an hour. Maybe the only way you will be able to get society to look up to the trades is when everybody in the trades makes $7.50 an hour.

The fact of the matter is that no matter what labels you use everybody wants to somehow make sure that those people who will go into the trades appreciate the contributions that they are going to make and that they are able to find some personal satisfaction out of it; and are going to be happy for them and not look down on them.

I guess I would have to come to the conclusion that the only time trades are going to be acceptable to everybody is when they pay the same kind of rates as we get as we move up the scale and change professions.

DR. MEADE: I retreat because I guess if I were to be taught Physics I'd like to have it taught by a physicist and if I were taught metal work I'd like to be taught by a metal worker. But I hate to have to think that the physicist or the metal worker is teaching me to be like him. Maybe that's the concern that some of us have. The mentor method of teaching is kind of old hat. It's useful as a model to know what it's like in the world of physics or in the sheet metal work world, but I'd hate to think that the man is creating in a sense his own image; and this is somewhat disturbing.

I'm not criticizing vocational education; I'm criticizing a good deal of education. I had an English teacher who was in love with Silas Marner, and there is nothing worse in my opinion than Silas Marner; and because she loved Silas Marner we loved Silas Marner, and if we didn't love Silas Marner we spent countless hours after school learning to love Silas Marner.

This is the thing that I gather. There is nothing wrong with a man coming from a business. Dr. DeCarlo intrigued me when he talked about getting these retired men back in some way in relation to working with youngsters. I like the idea because the man who has had a career--if he can recall the many changes he has made and the way his work styles had to change in order for him to be a successful man at a career, to translate this to a youngster would be much more vital and of better use, I think, than where you say, "I've been a successful personnel manager. I'm going to tell you how to become a personnel manager."

I wouldn't knock the idea that a man comes out of a career and then exposes youngsters to it. I question how you do it; that's the thing that concerns me--that you don't try to create another sheet metal worker because you're not one today.

MR. JOSEPH E. CASEY (Leeds and Northrup Co.): I've been active in various Philadelphia projects and I feel, therefore, that I have a pretty good perception of what has been kicked around here. Speaking with industry all the time, I certainly do endorse the implication of the panel so far that we should attack this problem of a career development. However, I think the discussion is getting to the point of where it is being implied that if we change the name from vocational education to career development that then there will be no more problems with vocational education. I don't think this is what I'm supposed to understand.

I do want to reinforce Dr. DeCarlo's point that as we are all part of a very affluent society we seem to think that the only unbound youth are those that have gone through a general curriculum in a school. Yet any of us in industry know that there are just as many

unbound youth--in other words, they don't know where they're going and they probably will never get there--who are also going into the higher educational system. Therefore, rather than just change the name of vocational education, which seems to be implied here, I wonder if in some of these deliberations that are going to take place this afternoon, with all this brainpower we have here, we should not address ourselves at least to some degree to the recognition that there are unbound youth who are also products of higher education. Therefore, this career development emphasis which you're thinking about here, while it certainly can start in the primary, secondary, post-high school level--I think we should bias our consideration with a broad implication so that it could be reflected to the total problem of the unbound youth.

MODERATOR PATTERSON: Thank you.

Any reaction from the panel? I have one I'd like to get in later.

MR. COHEN: I am not so much worried about unbound youth. I think being unbound is a kind of healthy thing. I think this is some of what Dr. DeCarlo was trying to say to us. If I can take myself as a horrible example, I didn't know what I wanted to do until after I left college about a hundred years ago.

No, I don't think that's the issue. I think the issue is: How do we help young people to develop so that they not only become unbound, but become unbound in a sound, constructive kind of way. I don't think this is just a question of labels.

Let me explore for a couple of minutes my view of the career development approach to vocational education as distinguished from the way it's done in most places. I am associated with a national organization, so I always have the out of saying "this is the picture nationally; I don't know what it's like here in Philadelphia" and if you're an exception you won't throw me out of town.

The notion of career development, as I understand it, is that you give youngsters the opportunity to explore sufficiently through various types of exposures the kinds of activities that they are likely to be interested in and in this way to help them make up their minds at an appropriate time as to what direction or directions they are going to go.

It obviates the necessity, for example, of making a choice at the point of the ninth grade as to a course program and a very specific kind of course program when the youngster obviously is not ready for this. It operates on the assumption that youngsters grow up vocationally the same way they grow up physically, the same way they grow up intellectually and

emotionally, and that the problem of vocational choice is not, to use a cliche, an event but a process; that vocational counselors are not diagnosticians but they are counselors; that you don't give a youngster a battery of tests and get the pattern from those tests and this is the answer for the youngster and this is what he should be, ergo and forever, but that rather as he experiences and as he is exposed he learns about different things and has reactions and is able to incorporate and use these experiences to help him develop himself and to become less and less unbound.

The New York City School system (and this is the worst example to use anywhere outside of New York) is reorganizing, as you know, its high schools and really the whole school system, and they're moving in the direction of a comprehensive high school. There will not be any specific trade training in New York until the eleventh grade. The ninth and tenth grades will be used for exploratory purposes. The attitude of the Superintendent of Schools is that if you need more than two years for the kind of trade training the high school is required to give (and he's not so sure you do) there is nothing wrong with adding a thirteenth year to the high school curriculum rather than try to force the youngster into some mold at the tenth grade when he's not ready for it.

MRS. KANE: The assumption is that the choice is available, and I would suggest that to many, many young people there is no choice either in school or after school. Part of the problem is that very few adults who have been working for any length of time can name more than one hundred of the 26,000 occupations listed in the dictionary of occupations. There is very little in our present society to permit young people to find out what business is all about, what human services are all about, what technical occupations are all about. The lower in the economic and social scales you go, the less likelihood there is for young people to have had any opportunity to even explore what is involved in work.

I think this is what is missing in our total approach in the exploratory programs that are presently offered. They receive a handbook and they read about the telephone company and the various jobs that are involved in the telephone company, and this is about as real as reading about Asia. I think that what is really needed is exposure and, what is more, not only exposure through verbal learning but exposure through actually trying out, through visiting, through getting a feel for what production is about, for what research and development is about, for what human services are about.

I don't see how we can make choices unless there are relevant choices to be made, and I think that this more than anything else is the need that must be built into the career

development approach: the opportunity for our young people to learn what the world is about. Without that any suggestion that they're being given a choice is really only the opportunity to go out and get the first job that they find, and either like it or don't like it, and thereby to change.

DR. MEADE: I don't offer any answer just to confuse you all the more, because we're all pounding on reality and the need for us to understand it; and even understanding that is hard. I will relate an experience that occurred within the past six weeks to me.

I visited the George C. Marshall State Center in Huntsville, Alabama in exploring vocational education and school improvements. Officials of the industry there said, "The trouble is that we can't take the traditional graduate of trade programs because he is geared for the assembly line and we don't have any assembly line. We need craftsmen. We need people who can be flexible and make decisions. We need a man who will make maybe only two things and then all of a sudden he has to make something entirely different. We don't make thousands of the same thing here." And this is an area where there is an acute labor shortage.

I then went out to Los Angeles and visited the Aircraft Workers out there, and the Personnel and Training Director said, "No, we just can't fill our jobs because we need people who are geared to the assembly line." The war in Viet Nam has created an upsurge in traditional processes of manufacture--the helicopters and the other aircraft that are being used. I don't know what this does to anybody in the business of trying to train youngsters, but it certainly reinforces Dr. DeCarlo's plea for us to be ever ready to change.

Here are two viable work situations, both of which exist, both of which are in not a crisis stage but certainly they are demanding more labor and both of them have different realities to them.

DR. EDWARD FEE (Principal, Bok Technical High School): I'd like to take exception to Dr. Meade's remarks. In our school we have 1,700 of high school age, but there are 7,000 additional people a year, so vocational education is not something that occurs just on the high school level. It occurs for the rest of your life.

I'd like to take exception to the remark that was just made that vocational education has been geared to the assembly line. We never do that in the vocational school. That's the manufacturer's job.

DR. MEADE: I was quoting a manufacturer.

DR. FEE: If you're keeping a record, that will go in the record and contribute to an image that we are trying to live down, because it's an erroneous thing to do when you bring that out in a meeting such as this.

DR. MEADE: This was a direct quote from a manufacturer who said, in effect, that the traditional products of vocational schools in the area were not suitable for his industry.

MODERATOR PATTERSON: I'd like to get things in just a bit of perspective before I call on the next speaker. You must remember that the panel is now addressing itself to the concept of an overall view of career development for all children, so in a sense vocational education as we've known it traditionally is an obvious and important part of that process. But what we are addressing ourselves here to at the moment is not to define the place and the values of specific skill training. It seems to me we're going to come to that as we go through our discussion, but at the moment we're centering on the question that if you're going to have career development for young people you obviously cannot depend on a part of the school system to accomplish it and we're addressing ourselves to the broad question: Have the rest of the general schools in our system relaxed or failed to explore to the fullest extent what they can contribute to career development because there is a certain tendency on the part of all of us when we have a specialized function set up to say "that takes care of that, so we don't have too much responsibility in connection with it."

I think it's at that point that we're addressing our remarks at the moment, so we shouldn't get ourselves abrasively concerned that the panel believes there is no function for skill education at all, or skill training.

I just wanted to give it that little setting to get it back on the track a little bit.

DR. FEE: I have a real problem as principal of a school. They have made expensive surveys of Philadelphia and this meeting is conducted at taxpayers' expense, and I'd like to know what the panel has to suggest in proceeding on a post-high school level. That's a real problem to me. With sixteen pages of male help-wanted ads in last Sunday's Inquirer I'd like to know how the panel would suggest at this time to proceed in that level.

The main speaker indicated there should be an enormous post-high school development--which is true--but between the Army pulling one way and the employers screaming the other way where are we going to go? I'd like the reaction of the panel on that.

MODERATOR PATTERSON: Very good. We'll get it for you. I'd like to be sure that we've explored this first element and then we'll come back and pick that up as a specific thing to pursue.

MR. JAMES KILLOUGH (Principal, Frankford High School): Throughout the discussion various people have spoken about the notion that vocational education is disrespectable. I'll tell you this: I think it's the fault of the people in the vocational field because, first, they've appropriated vocational education and now you're going to appropriate career development, and you confine it to the trades. If you're studying to be a poet you're not engaged in career development and you're not engaged in a vocation.

You ought to forget about this particular distinction. The educational system should be for everybody. We shouldn't be thinking particularly in specific terms this way certainly in the first three or four or five or even six years of the child's development.

Secondly, you've taken the courses and you've made them permanent, so that in itself places a stigma upon them if a third of the school or half of the school is going on to college and the kid is going out to work.

I think you should get rid of that particular idea. I think Dr. Fee has made an excellent suggestion here--the idea that you don't just go to high school and go into a cabinet-making job.

And then, third, it has been made impossible to hire men and women who can teach simply because they haven't been to college and because they don't have a teaching certificate. For example, right now in my school they're trying to get somebody to teach electricity and electronics for the last three years, and all we get is substitute after substitute, with the results that you would expect. The kids aren't getting anything, and I say to you it isn't the fault of Frankford High School. Yet by the same token there are men who can teach electricity or mechanics and they can do it well (and we can find out if they can) and they don't have to have a certificate to be a good teacher.

Somehow or other you've got to relax that situation so you can get people in who know the trade, who know the work, and can do a good job. Let's forget about the fact that they don't have seventeen, twenty-eight or thirty-hours of vocational education. If they can get it afterward, okay; but let them in first.

MODERATOR PATTERSON: The panel says "amen."

MR. JAMES E. WILLIAMS (President, Council for Equal Job Opportunity): Dr. DeCarlo set forth an idea of the world of work, which the panel seems to have accepted in part; at least that's the way I interpret their reaction. But I feel certain that his concept was not accepted in toto, that is, there were probably some who felt a little bit of surprise and a little bit of disbelief in the way he described some of the aspects of the world of work.

I think that there is a difference in the way we think about the world of work and the way we act about it. Consequently, while we may be doing vocational training in one way, when the youngster goes to be screened or placed he faces a different set of conceptions about his eligibility for employment and the employer is looking for somebody who can fit a much more narrowly described mold than the speaker seemed to envision.

We are in a period of transition between what we had and what he envisioned as a model for the future, and that brings me down to the question. In this period of transition what practical steps can be taken to make vocational education, apart from trades training, a practical preparation for the demands of the world of work as it is now?

MODERATOR PATTERSON: The speaker wants specific suggestions as to how to make more applicable the transition period between the traditional employment picture, which is fairly narrow in choice, and the broader picture given by Dr. DeCarlo.

Would you like to get in it, Dr. DeCarlo?

DR. DeCARLO: I won't make another speech, but I thought I'd like to respond to two or three questions. I do have some specific recommendations, but let me precede them by saying that I know that people have to go out of this room today and run schools tomorrow and face all the problems we have. I'm not unrealistic. I think if you don't have some vision of the future pretty well established--it may not be the right one, but if you don't have some vision nothing new will happen.

I would point out in passing that the traditional function of all education, the historical function--whether you deal with the tribal or the Middle Ages or the Age of Enlightenment or today--has been a conservative function: to preserve the values of the past. We are living in an age when the generations are suffering fracture throughout the world. We have to try to assess what shall we keep as conservative and what shall we change. And that ain't easy.

I am a realist and now I want to give you some real suggestions. I start out with the fundamental conviction that it's going to cost a lot of money, unbelievably large amounts of money, to do anything to change the situation. If you accept that it's going to cost money, then I would submit these for your consideration.

First of all, I think we ought to have not just plant visits where you take a class out for a one-day tour through a hat factory. That's all right, but we ought to have an arrangement where you could have work assignments; and I mean work assignments at

relatively young age--adolescent or preadolescent, where a child could spend some time--maybe three or four days--in a work environment and see what goes on. I'm not suggesting repeal of child labor legislation, but we've got to make this a more meaningful experience.

Industry has to be paid to do this. They can't do this as charity. This is going to be an extra cost. They have to be paid to do it. We have to quit looking at education as though it's a charitable afterthought. In an intellectual age it's going to be the principal function of many of the society. That's number one: real plant visits, real work assignments.

By the way, I would also go along with paying the child for this work assignment, teaching him that work leads to money which leads to survival.

I think there ought to be programs of education within the major cities where you would try to reach the parents of the children to explain to them what is really going on in the world of work. I think we ought to have a series of television programs, seminars, so that parents who have admittedly led these very narrow lives we speak of (who came to a job and haven't broadened out) can see what faces their children as opportunity enriched. Educate the parents so that they're not a negative influence.

This, let me point out, is not only a problem in the so-called culturally deprived groups. This is a problem of the total adult population: the doctor that wants his son only to be a doctor. These are problems of the generation split.

The second point is to have an education program for parents as to what the world really is, to shake them up.

The third one is to have people from industry come in to schools not with the typical idea of recruiting or puffing up the image of their particular company, but have them come in and be admitted for, say, a two or three week assignment as teachers. The gentleman mentioned the state education requirements. The educational bureaucracy has got to be shaken up to take advantage of what talent is there. I suspect I couldn't teach in the public education system in this country, and I think I was a fairly decent teacher. So education is going to have to change, so industry people would be available for you.

I think there needs to be an education program in the community sponsored by the kinds of groups in this room to bring in the executive leadership of business, of labor, of professional organizations in an adult education program where you can say, "Look, you're the leaders. You're responsible for a society that's undergoing a severe change. You can't duck it." Get them out and have adult education for the people who think they don't need it--the very successful.

I think you need a reconsideration at every level in the schools of this conflict between industrial arts and vocational education. To me it is criminal that people get out of the educational system with such little visual perception, with such little understanding of what the nature of music is. I'm not talking just high-hat and long-haired culture, but in the industrial arts instead of making a shelf that looks ugly have them try to build over a period of time musical instruments; have them paint; have them really feel their senses involved in the manipulation of the hands and the brain. This is what I think is meant by craft.

But today what do you find in the school system? The industrial arts is over here and vocational education here and they won't talk together. I think they have to be synthesized. I charge this right at the educational bureaucracy. We've got to shake up and allow for mobility within the system.

Finally, the last thing I would point out is that we're going to have to indulge--not indulge--it is going to be severely required for the same level of expenditure for in-service training of school administrators and teachers and board members and community leaders of the various groups that are trying to effect change--we're going to have to give them in-service, paid-for development in the same way that industry develops its technicians, its managers and its executives, and the same way that the medical profession invests in continuing education of the doctor.

This idea that somehow or other the educational community once it gets qualified is in a sense left on its own to pick up its skills and relate those skills to seniority systems has a very negative effect on the development of the very people we need.

These are practical suggestions which when implemented tomorrow would mean drive to change legislators, would mean drive to create programs, would mean educational programs to trap and to attract industry people. But the idea of throwing up your hands and saying that nothing can be done and that we have to kind of come at the amelioration of social ills by patched up programs I think is all wrong if you don't have a vision of the future. And that vision of the future is an intellectual age where the brain is just going to be so much more important than the hands.

If we fail to take cognizance of that and put that as our target then I think we are really doing a disservice to our children.

MODERATOR PATTERSON: Thank you, Dr. DeCarlo.

We still are on the subject of specific suggestions and I think the panel ought to be let in before we go to the next question.

MRS. KANE: As a practical suggestion, I think that the first thing that is needed is that business corporation executives and business personnel people ought to talk to each other. I have participated in many panels and I have heard one business corporation executive after another who states broad educational background and no specific education is needed for admission to a specific job, and if you read a want-ad, a work order or any personnel man's specifications they want four years of high school, three years of Math, two years of machine shop.

I think the first group of people that should start talking to each other are the corporation executives and their own personnel people. I think this is a very practical thing.

The second thing, as a practical suggestion, is the fact that we have a great belief theoretically in involving industry in our vocational education system, but our tendency is to set up panels or advisory committees from a broad segment of industry, and this simply is so broad that it ceases to be practical. What we really need is a small advisory committee from specific industry to go into the schools, to take a look at the kind of training that is being conducted specifically for specific industries, and start letting them help to redesign the curriculum.

You go into the training programs in industry and you find they are exciting. They use all kinds of audiovisual aids, training techniques that simply are not being utilized in the schools. It's as though they were a totally different system. There is so little interchange between those who are training in industry and those who are training in the schools it's as though they were two different systems entirely.

Although the advisory committees that are broadly representative have great advantage in simply opening the schools to industry, I think we could get a great deal more accomplished if specific industries were brought in to look at specific kinds of programming.

I would recommend also that many of these industries require that we involve unions on these panels who have had the very practical experience of working with or themselves working in these specific areas. I think this could be very helpful.

I think also we should be able to start viewing the so-called cluster of activities--to re-examine how broadly we can train people rather than how narrowly we can train people. It is extremely rare for any employer to train for a typist or a stenographer. Somehow or other the schools have managed to figure out how to do that specific task. If they can figure out how to do that specific task, they can also figure out how to do all other specific tasks,

but the problem has been that the schools have really not adjusted to the industry approach to cluster of skills and have tried to train for so narrow an occupation that the occupation rarely still exists.

MR. BUSHNELL: I have one argument with the New York City school system, and that is I think it's premature to give up vocational training at the high school level. Certainly there are many students who will be leaving before high school graduation and those who are leaving at high school graduation who will have to go to work. It's a fact that many high school dropouts in Job Corps centers are getting specialized training to qualify them for work. In fact, it has been said that the dropout is far better off than the kids who stay in school today.

MR. COHEN: May I say that that is not the intent of the New York City public school system.

MR. BUSHNELL: Let me add one additional thought to this. It seems to me that if we're going to implement a continuing educational system we have got to allow the child to find work, to qualify for the inter-level job, but once he has qualified to then find resources (his own, or governmental or industry resources) to enable him to continue with his education.

One of the strongest recommendations, I felt, of Dr. DeCarlo's presentation was the suggestion that we expand the GI Bill to permit this alternative of continuing education so that perhaps we can articulate a career ladder, an individual entering at a lower level skill and then getting some economic help to permit him to go back to school, continue his education, qualify for a higher level job and then enter into such a job that will command higher pay. I think it's this kind of career ladder I would hope could be implemented.

MR. COHEN: I don't want to oversimplify a very complicated problem, but it seems to me that there are some four or five basic questions that need to be answered in order to develop the kind of vocational education program we're talking about here. You in Philadelphia may have the answers, for all I know. I will be saying essentially what others have been saying, particularly Ros Kane, but in a somewhat different way.

What are the goals of vocational education at the secondary school level? Are they to train generalists or specialists or something in between?

What occupations are the ones to train people for?

Who should do the training? To what extent should it be the schools? To what extent the employers? To what extent the unions?

When do you train? At what point? At secondary school or post-high school?

What is the content or what should be the content of that training?

It's easy enough to raise the questions. The difficult part is to answer them, and here I think we need to look for both what has been said at this meeting and what is represented at this meeting. As I look through the attendance here I see representation from all segments of the community. There are employers here, unions, school people, etc., and if we can truly get together and start talking among ourselves in a very serious way around these kinds of questions I think we would be a long way toward solving the specifics of these problems.

MODERATOR PATTERSON: We are coming up to our deadline. I will recognize one more speaker and then I'm going to reserve the remaining time to come back to Dr. Fee's point which he raised earlier and which I promised we would deal with.

DR. FEE: I just want to clarify one point that was raised about the state requirements for teachers. I have on my desk about six applications for electrical teachers that would very well fill the position at Frankford High School. These men are making from $8,000 to $12,000 a year. The requirements are high school graduation and eight years in the trade. Now, if you can send me a man with those requirements who will come to work for $5,500 I'll hire him. That seems to be our problem.

MODERATOR PATTERSON: Can I bring the panel back to Dr. Fee's point and deal with the point raised by Eli Cohen: When do you do what kind of training? The implicit question earlier was if we aren't going to do this earlier in the secondary school shouldn't we take it on up a couple of notches and find the role for it at a higher age level.

What is the panel's view on that question?

MR. COHEN: Just one part of an answer: There is no question in my mind that the way to the future is obviously vocational training at the post-high school level. I think it's only a matter of time when this is going to be it. How long I don't want to predict. However, I think it would be a serious mistake if the secondary schools were to abdicate any responsibility for training at this point, if only for the reason that there are many youngsters who are not going to get into your post-high school program and the schools have an obligation to provide them with something that they can use in an employment situation.

DR. MEADE: I'll modify that in a way. It's easy to say, and numbers of people have come out with great reports, that what we need is a decent general education and then we can send them off to community college and they can learn something about working. New York City had a report and they feel pressured to do that, but they haven't done it, fortunately.

I want to see vocational experiences throughout the whole sequence in education, and not the job orientation--but to bring about a reality. One of the strengths of vocational type education is the way it's evaluated. It's evaluated on the basis of performance. When I was taught to work in the field of auto mechanics I didn't write out how you grind a valve and why you grind a valve and what difference it makes when you do it. I had to do it.

That's a lot different from what happened in my English class when I was asked about Beowulf, what I think about him. I really didn't know much about Beowulf. I just put down what the teacher had told me.

The great value, then, of the vocational experience is in the fact that it's evaluated on the basis of performance. I would like to see in the secondary schools, and even in the elementary schools, that this type of performance criteria that you now apply in your traditional programs of vocational education be applied to our traditional programs in the academic world. It would be interesting, I should think, for a biology teacher or math teacher to know if indeed what he has taught has been learned--if he can see youngsters not responding with paper and pencil, but actually performing.

I would hate to see the schools say, "Well, we're in the business of general education"--indeed they are, but part of that is a vocational experience for all youngsters.

MR. CHISHOLM: It seems to me that if there is any justification for my being here today on this panel it has to be in connection with the disadvantaged. I don't share the expertise that has been garnered by the other members of the panel. So let my parting remark be this.

It makes not much difference to me whether or not you are going to concern yourself with starting your career development program at a lower level, whether you're going to expand it, whether you're going to deal with this question at a post-high school level. It does concern me that as you reach meaningful decisions about the administrative and the programmatic arrangements that you are going to implement that you carefully take into consideration what exists in our major cities today and what exists in Philadelphia: the fact that there are a number of people in our society who do not have the kind of background that is even going to get them to the ninth and tenth grades where they start through this career development program.

We've got to concern ourselves with a number of people who are adults and who lack certain skills and who because of automation, cybernation, and what-have-you are finding themselves on the scrap heap and who need to be reclaimed or else we're going to have problems with them.

As you reach these kinds of conclusions that you have to reach, let us carefully examine the makeup of our communities and design programs imaginatively that will also reclaim and involve in meaningful fashion all of our society.

MODERATOR PATTERSON: Thank you, Mr. Chisholm.

At this time, ladies and gentlemen, I'm going to return the meeting to Mr. Hertzfeld. First, on your behalf I'd like to thank the panel members for their contribution to today's discussion and particularly Dr. DeCarlo for his inspirational first address.

CHAIRMAN HERTZFELD: Thank you, Mr. Patterson and panel. I'm sure the afternoon groups are going to have a lot to mull over and talk about.

(Announcements)

SATURDAY, FEBRUARY 26, 1966

The session was convened at 9:35 by Arthur Hertzfeld.

CHAIRMAN HERTZFELD: Welcome to this second day of our Conference on Vocational Education. I believe everyone will agree that yesterday's session was provocative, interesting, and from the reactions we received from the afternoon discussions they were lively; and I think the report we're going to hear this morning on those sessions will be most interesting.

We are indeed happy and privileged this morning that Dr. Whittier was able to fit this program into his schedule. I am taking advantage of his presence here this morning to ask him to say a few words and to introduce Reverend Henry H. Nichols, Vice President of the Board of Education.

DR. C. TAYLOR WHITTIER: Thank you, Mr. Hertzfeld.

It is indeed a pleasure to be here this morning and to extend again the welcome of our organization. I know Mr. Poindexter did this yesterday, but I do wish now to express my own appreciation to all of you who participated in this and particularly to those who have given of their time and energy in planning the various panels and coordinating the effort that is so necessary to make this a worthwhile conference.

I think there is a tremendously vital need in our total city to bring together the forces which can make an effective program of preparing these young people to be economic assets in the community, and it behooves all of us to give not only our best thinking but time and energy and ultimately funds to make this possible. How best to make this an effective program I know is one of the points of this conference.

From talking to a number of you who took part yesterday I have gathered there are many good ideas that developed in the panel and the various group discussions and the speakers who brought their messages to us; and all of this bodes well, I think, for ~~our~~ discussion here today and I am looking forward, as you are, to this report from the discussion groups prepared by Ernie Kohl (I know he had a busy night last night bringing all these things together) and ultimately to the participation of the panel here this morning.

It is a real pleasure for me to have this opportunity to present the Reverend Henry H. Nichols, Vice President of our Board of Education, who has been actively interested in the youth of the community for many years. He is, of course, one of our leading ministers in the community and has been for a good long time, and I think he is very sensitive to the needs of all the boys and girls in our city.

I was very happy that he was able to join with all of us yesterday in learning something further about the vocational program and making his contribution, and we're very happy this morning to have the Reverend Nichols with us and to hear from him at this time.

REVEREND HENRY H. NICHOLS: Dr. Whittier, Mr. Hertzfeld, members of the panel, Dr. Kohl: Dr. Kohl is one of the great District Superintendents. He's up in District 6. We work and live in District 6, but I try to be impartial and say that I think he's a great fellow and so are all the other District Superintendents.

I am basically here because Mr. Dilworth could not be here today, and so perhaps many of the things that you would rather hear you'll have to wait for until he speaks to you. But on behalf of the Board I would like to express appreciation to all the members of yesterday's panel, our guest speaker, the leadership of this conference, and all of you for your participation, and for the very fine panel who will react to the report of yesterday.

Yesterday was a learning experience for me, particularly at the luncheon table, for I think some of the coordinators from the technical high schools perhaps appreciated an opportunity to educate a Board member. So I had a real interesting experience and I suggested to them that perhaps in the future they should work out some type of public relations so that we will differentiate between vocational training in the high schools as such and the vocational training in technical high schools.

I know I'm in trouble for saying this, but at least they left the table feeling a lot better and I think we made some friends. But, frankly, I think there is a need to educate the community as well as your Board as to the kind of programs that are in our technical high schools and the fact that our comprehensive high schools are striving to perhaps reach the goal of our technical high schools.

I was having some fun with a poster that you have in the back of the room because underneath that poster you have a pair of shoes, indicating that the deaf and the partially blind and the retarded disciplines, whoever they are--the retarded educables--ought to be in the shoe repair business. At least that's where the sign is. So if I were you I'd change some of these signs around, particularly the folks at Dobbins, because we were kidding them about the possibilities of having a shoe repairing course at Dobbins. I'm not here to get it; that's George Hutt's area and I'm afraid to tread on his toes. But it was interesting to look at those signs back there and, remember, you said one sign is worth a thousand words--so be careful in the future.

Basically we're here to encourage industry and to thank industry for the part that they are playing in our vocational programs, and to suggest that industry should become more involved in our work in this area. It is our hope as a Board from the discussions that have been held thus far that many of our industries will take the opportunity of sharing with us in our program planning and curriculum development, and also that industry's shops will be open so that our boys and girls might go to those shops and learn how to use the more modern equipment which industry can well afford and we cannot in our school system at the present time.

We are looking forward to greater involvement on the part of industry in program planning, curriculum development, and sharing with us in this total spectrum. You know what the Odell Report has to say. You know the reactions of the Task Force, and I am sure that some of that perhaps will come out in the discussion. I think also that we are appreciative of the fact that we do have some cooperation with our unions, but we must bear in mind that there are still some problems relating to non-discrimination in their apprentice programs, and this Board is committed to integrated quality education.

This Board is committed to following the mandate of the Commission on Human Relations and others that have called to our attention some of the inequities in our school system.

This Board is also committed to the fact that we expect that our boys and girls who are in vocational training when they graduate will have a marketable skill and we look to you to help these boys and girls, inspire them, motivate them so that we will have the kind of skills that industry needs today, that we will stop sending girls out as secretaries who can neither spell nor type. I am not picking on the girls, but last night somebody said nothing was said about women in this whole affair yesterday and we are concerned that so many of our graduates are not adequately prepared to go out to the labor market and do a good job.

It's not all our fault, of course; there are many reasons. But when we put our stamp of approval on them then we must share whatever criticism there might be.

This Board is hoping for and looking for new ideas and new programs, and we welcome suggestions from the grass roots as well as from our administrators as to how we might be able to develop programs that will meet the needs of the total community.

One of the indictments of our program is the fact that here in the City of Philadelphia we have OIC, but I'm sure Leon does not mind this since OIC now will be getting

$10,000 in April--I mean Leon will get $10,000 in April because of what we have been doing in OIC which should have been done in our school program. I think we must bear this in mind.

You're doing a great job. We are happy to have the privilege as members of the Board to share with you. All of the reports that appear in the newspaper are not necessarily accurate quotes from members of the Board. We do have a concern and we are in the learning process, but we are looking for new programs.

When we were appointed as the new Board and the city voted to revise and amend the charter so that we might have this new look in the field of education, they are expecting some new innovations. They are expecting a program that shall reach the needs.

I would like to close by illustrating this. There were a group of dissatisfied parishioners of a certain church that decided that they would pull out from that church and organize their own church. In doing so they could not find another church building, but they did find a tap room that was going out of business and they worked out a deal with the owner of that tap room to purchase that building and use the tap room for their temporary headquarters.

The minister and the disgruntled group of members worked very hard to clean up the tap room and got everything ready for the Sunday morning service, but the owner of the tap room forgot and left his parrot in the building. That Sunday morning when the congregation gathered and the minister got up to speak, the parrot flew into the room and lit on the minister's shoulder. He began to squawk, squawk, squawk and the minister said, "Sh.... This isn't a tap room now. This is a church."

The parrot squawked some more and said, "New bartender but same old crowd."

We can't say "a new Board but same old program."

CHAIRMAN HERTZFELD: Thank you, Reverend Nichols.

I couldn't help but feel that it is strange that when something gets into the public eye it is so noticed that nothing else commands any attention. Back there under the sign there are also examples of printing, of upholstery, and of tailoring done in the special schools; made by youngsters who have special problems. Their courses are not on the same basis as similar programs in the technical high schools or in the comprehensive high schools, but the pair of shoes hits the eye.

I'm going to take the privilege of saying one more thing, too, in regard to secretaries who graduate from our schools who may not have perfection in their skills. This is possible, but every youngster who graduates from a business education program receives a certificate and that certificate tells exactly what her accomplishments are. If employers would ask for these certificates before they test a youngster they might avoid a lot of trouble and disappointment. For example, if they want a youngster who must type 60 words a minute and the certificate says she types 40 words a minute (enough to get through our program) it is not a sufficient speed for the particular job that he has in mind.

We have tried to publicize these certificates, but employers don't always ask for them.

It is most appropriate that Dr. Ernest Kohl, Superintendent of District 6, now will summarize and give us a report on the discussion groups of yesterday afternoon. Dr. Kohl has had broad and deep background in the field of vocational education, and I was tremendously pleased when he accepted this assignment. It is with much pleasure that I introduce Dr. Kohl.

DR. ERNEST O. KOHL: Thank you, Arthur.

Welcome to Dr. Whittier and Dr. Nichols and to this honorable panel. I am inclined to feel that if I didn't know wiretapping was illegal in the State of Pennsylvania that our Vice President of the Board had taps in all the room where the meetings were going on yesterday afternoon.

In the folders which we were given by the chairman and the group who organized and planned this program there were listed thirteen different groups. I would like, if I may, to make the report for the fourteenth committee first before I make the report for the other thirteen, and I think you will understand my reason.

The fourteenth group constituted the twenty-six recorders and secretaries, and they would like to express a word of appreciation to the participants of the conference in the name of the participants: to those who planned and promoted it; to the source of funds which made it possible; for the privilege of the group of active and free discussion; for the information imparted by fellow schoolmen, but more especially to the representatives of labor and industry who gave of their time to be here with us; and for the thought-provoking panel of Friday.

We were provoked, justly, to think about things, but we were also provoked that we had not made things clear as educators to industry and to one another the extent of the work we have been doing.

As the summararian, or whatever you wish to call me, I'd like to express appreciation to the chairmen and recorders of the thirteen sessions for their prior cooperation, calm and personal control and direction during the discussion periods, and for the excellent organization of the material presented to me.

As I listened to the panel yesterday morning which set off the discussion groups I was aware that we were impressed with change, progress, renewal, reformation, rethinking, updating. And as we look at professional literature as well as these meetings it seems that nearly every book or article that we read about some situation in this country today is clamoring for something new.

Throughout our discussion groups emphasis was placed also upon the fact that we are doing many good things and this is one of the things that provoked some of the groups: a failure to realize that many good things are being done, or a failure to capitalize upon the many good things that we are doing.

As we look at literature and are again reminded by these committees, we have been told again and again that this is the age of rapid and bewildering change and never before has history moved so fast. Science and industry are racing ahead in areas that are beyond the imagination of most of us, and we know that what science discovers today may radically affect our lives tomorrow and has already effected industry. The industrial picture is changing with such speed that in a few years the market will be flooded with products that at the moment have not been invented.

As we gathered together in groups and worked--the recorders and chairmen in subcommittees and then finally fed the material through--it seemed that the discussion centered about three major areas, if you please: that of the schools, that of the communities, and that of industry. But I'd like to break them down a little bit differently, if I may, and follow through with some of the thoughts which were expressed.

These are the major areas--and I take full responsibility for them as the collater of the material: communication and its need; guidance; curricular changes; post-high school; industry responsibilities; staff development; state and federal concerns; research and evaluation.

Communications. Many of our committees laid emphasis upon the fact of lack of communication within the school system, with one another, between schools and even within schools, between state and federal levels; a lack of understanding of the needs of industry on the part of schools, but also a lack of awareness on the part of industry of the efforts being made by the school people. Emphasis was placed upon the need for industry to communicate to the schools, and they do in many ways through their trade committees and their specific skill committees which we have, the minimum proficiency standards that they wish for introduction to placement in industry; that there should be a positive approach developed by both industry and the schools to the press and other media supporting and publicizing the work of the schools and the continuing cooperation of industry and the schools.

It was also emphasized that there should be an increased cooperation with agencies. This was directed to federal and state programs that seemed to be in competition with one another when they reached the level of the schools.

Also, that more publicity should be the responsibility of industry on the need for retraining and for the upgrading of their employees. And I am reminded that one of the large contracting companies in the city is advertising every day about the advantages of working for them and they will provide you with your college education through to a Master's Degree.

I think also we need to publicize (and this was brought out) that there are similar problems common throughout the country; that Philadelphia for the most part is not only aware of them, but is also ahead of many of the big cities in moving toward their solutions.

As we move from the item of communication I think it is closely tied in with the second area which I have prepared here, and that is the importance of guidance. This rests not only with the school, but rests with the community and it rests with industry. The school, however, has a direct responsibility to begin early with better informed counselors and teachers.

This came to us from one of the industrial leaders and came to us as part of the thought-provoking panel we had yesterday morning, but may I submit to you that if you analyze the courses of study from kindergarten on through you will find emphasis laid upon guidance. It's the corner store that operates in the kindergarten with the tin cans that the youngsters bring from home which is an introduction in some way to the facets of employment possibilities in their area, including visits to the fire house and things of this nature.

We agreed that these should be included in all grades. We also agreed that counselor service should be available in the evening schools to provide service to the

communities. As I recall, counseling service has been a part of the evening school for many years, especially to work with the students of evening schools; but the counselors are also there to work with the community.

To develop positive attitudes to all forms of useful work is the responsibility of a counselor. And may I say that this should not be limited to only useful work because there is other work that some of us question as to its being useful, but I am sure people can convince us that it is useful--that all work has some use to someone.

There should be a continuous meaningful flow of information regarding occupational opportunities. Reference was made yesterday to sixteen pages of advertising in the Sunday newspaper. Many of these jobs I do not even recognize, as I think many of us do not.

There was emphasis upon free choice, which I will refer to later, of school and course--a free choice by pupil and parent. This carries over, too, to the thought of guidance responsibilities to the community.

There was discussed a community responsibility for those youth who receive only limited help from parents and peers, and this is one of the problems that I think confronts all of us and was recognized by several of the committees.

Guidance from industry participation. Mention was made of the importance of plant visitation as part of career programs. We do have, as many of us know, the cooperative programs of work experience and other natures.

Career planning, both guidance and curricular. There is one thing that many of our industry friends here forget, and that is the revolving population of our schools where we have turnover in some elementary schools of 150% in one year. Picture the guidance program and the counselor's responsibility in such a school.

Guidance as it affects course selection was mentioned in a number of cases; also, greater flexibility of course offerings or changeover. It was suggested that we investigate the possibility of clusters. I would like to submit to you--and Dr. Struck will probably build upon this from the state level--that there is practically no form or combination of education that cannot under the guise of technical or vocational or business education be introduced in the state of Pennsylvania within the seven areas which we now have plus the Manpower Training Program. Cities of less than 25,000 have clusters and they have permission to do it under the state plan.

Early grade emphasis was made by groups on the importance of work and work competency, with special attention to completion of the job given at all grade levels; and,

again, guidance, referring back to industry's need to share in removing a stigma of a blue collar worker. It was mentioned yesterday morning that we are striving out to white collar positions.

It was noted that industry is basically and apparently deeply interested in the same basics as the schools, and they're not so much interested in course offerings. They aren't interested in psychological methods of approach and changes in methods we use, which I will refer to under curriculum.

We were all concerned about the increased efforts to overcome dropouts, and one group suggested to pay the pupils to remain. I'm not quite sure (and I'm interjecting my own thought here, which I shouldn't do) as to how you determine who is going to drop out that you should pay to stay in and the other kid who is going to stay anyhow. Maybe he ought to get a bonus; I'm not quite sure.

Reference was made, too, to making a study of the unbound or undecided pupil. Again the emphasis was made that industry, community, school should provide the student with a real image of man's importance and his need for labor.

In curricular offerings, industry stressed as did the schools the basic skills of reading, or computation, in addition to the craft skills in order to maintain steady employment and to permit ready adjustment from one level to another.

Character building was stressed, and you'll find this in the industrial arts courses of study--personal qualities, social relationships one to another, punctuality, honesty, study of attitudes, interests, abilities and work habits.

Emphasis was laid also on the importance of concepts versus things; a progression from broad skill areas to specifics--broad skill areas in the early stages and specifics immediately before employment or immediately after employment.

A wider variety of offerings--from technical to skill to occupational; short range and long range planning, involving clusters of jobs and training which would be adaptable to many jobs.

Subject selection was discussed versus curricular selections; four-year high schools to be broken into units of ninth and tenth for exploratory, and eleventh and twelfth for specialization. And increased emphasis was placed upon the importance of specialization in the thirteenth and fourteenth grades with the development of one marketable skill, and emphasis was placed upon an extended school day in which the technical high schools and the shops and

trade preparatory courses in the high schools could provide supplementary instruction for pupils in courses other than the trade preparatory and related groups.

To carry on the thoughts of curricular offerings (and it was to be expected that the majority of our suggestions would rest in this area) schools must meet the immediate pressing needs of a large body of our student population who are lacking basic skills, providing them with saleable skills, and upgrading them to meet industrial needs.

One of our industrial leaders projected the thought that the shortages in 1970 should intensify our immediate needs and goals.

Emphasis was made again on subjects rather than courses, on possible introduction in the high school of some offerings limited to the technical high school because the current demand exceeds the supply.

There was a discussion also of the comprehensive high school versus the specialized high school, and mention was made that the technical high schools at 13th and 14th level could become the magnet schools mentioned in the Task Force and many feel that they are already the magnet schools or part of the magnet school programs in the city. And I include Girls High and Central High School as vocational schools in this. I have to.

Continued education for all beyond twelfth grade was emphasized.

Then here is a thought I think we should look at. We have shared time at the present time between the parochial and the public schools, and this program is especially prevalent in the technical high schools--a shared time program from technical high schools to service several high schools. If you're familiar with the recent program in Montgomery and Bucks Counties, this is already being done, where pupils attend both schools and faculty serve in some cases in both schools.

Industry has a responsibility in curricular changes and they should bring to our attention the feeling that course content has kept pace with industry but that in some areas it has lagged.

An expansion of programs in the evening schools, and industry demands can only be met in this area with industrial help.

In the session that I attended yesterday the apprentice carpenter supervisor mentioned that their teachers teaching at night are paid the foreman rate of pay as teachers. They are supplemented. They have selected and may they continue to select the excellent instructors that they do to help us with this program.

Plan to invite dropouts to return to complete their work. May I point out that this has met with a limited degree of success when it has been tried. We have it in the Standard Evening High School for college entrance requirements, but I think we should look into it as a possibility for completion of work in the technical high schools at this point.

Apprentice training usually is post-high school. We decry the fact that there is but a limited recognition of technical training for those in the apprentice programs. Note I said a limited recognition.

The importance of retraining programs was stressed and the responsibility of industry varies from concern to indifference. Schools have great responsibility to pick up where industry ends.

It was also suggested that we might extend the vocational technical experience to high school pupils in industrial arts and trade preparatory if you wish through the summer programs to provide experience for high school pupils. New and improved methods must be found to teach these students, to handle and to integrate new facts in totally new situations.

We recognized in all the committees that this will require adjustments in the schools to meet the needs of both ends of the intellectual scale, and also both ends of the skilled scale for which we train.

Post-high school education, or higher education, is the next step. There was emphasis, as mentioned previously, in many committees the need for publicity in the 13th and 14th grades, for greater flexibility for admission to college rather than limitations of state and college boards. Many of us know there is a committee that will aid in the placement of a graduate of any accredited or approved high school in college, and they have never failed to place people that were interested in going.

Job preparation should be given both at secondary and post-high school level. Emphasis should be placed on post-high school courses taught by recognized skilled craftsmen, technical leaders, with programs planned by cooperative T & I coordinators and school committees. And emphasis was made upon the fact that we need adults who are receptive to new ideas and techniques. We need school people that are receptive also to new ideas and techniques. We need to recognize the psychological problems of the displaced worker, retraining--the degree of training for upgrading and downgrading necessary. And this is one phase I think we have forgotten.

We need a program maybe in a school other than in a high school because the return to the high school was stressed as just another school to the dropout. I think Leon Sullivan and his group have something, and we have something in the Kennedy Center.

Industry Responsibilities. Industry should be charged with the training for specific skills. Schools should be charged with the training of basic and general skills.

Expansion of cooperative programs with two-week looks at business and work experience and plant visitation are the responsibility of industry. Industry should contact the schools. Schools should request and industry should offer to increase cooperation, through the operation of not only the general advisory committee but through the operation of the specific skilled craft committees which are in effect in every skill in the technical high schools in the City of Philadelphia.

The general advisory committee should be expanded for the overseeing, but the skill committees, the individual trade committees, should have their direct responsibility. This puts part of the burden upon industry to provide the time within their budgets to help the schools develop, and emphasis was placed upon the fact that industry and the schools have a dual responsibility. I think we also have a triple responsibility there, if I may add my own personal viewpoint. The community has a responsibility to foster such programs.

Industry should continue their emphasis on upgrading, and many do so through subsidized college classes and specialized in-plant training programs. It is suggested that in-service training of teachers by industry be expanded. It has been very widely done by the automotive industry, providing the same training to many of our shop teachers as is given to their service managers. There should be an emphasis upon continuous cooperation programs between school and industry: by providing a closer relationship; by providing a sampling experience; by providing a flow of information regarding work opportunities, needed qualifications, and changes in processes.

Staff development. Both industry and school recognize the need for the instructors to keep abreast of changes. Suggestions were made that teachers should be paid for such training during the summer, and 12-month pay has been offered as one of the solutions for this particular area.

I would like to make, if I may, a very personal observation here: that if we are a profession we as teachers should seek out experiences to better train ourselves for the position.

Federal funding. There is an increase in funds available to improve standards of instructor preparation, to provide for cooperative work and study relationships with industry and business; to provide for industry and college sponsored seminars; to provide for training and preparation of administrators.

It was suggested, too, by one committee that there be a reactivation of programs in which the staff members actively study industry during their summer months. I submit this to the Board member and to the superintendent as a program we had some years ago that was of definite benefit to the staffs of our schools, and I hope it will be reactivated.

State and federal controls through funding. There apparently was no fear expressed as to federal or state control through funding processes; at least it didn't come out in the meetings. There seemed to be a general plea for one area, for a relaxation of state and federal controls of the high school and technical shhool programs, and for a redefinition of terms on the part of our schools and state and federal level of technical, vocational, trade preparation, industrial arts, and occupational education.

Reverend Nichols told me earlier that table certainly gave him a working over yesterday in that area, but this is one of the things they would like to have redefined.

A federal statement regarding funding submitted with the reports lays emphasis upon training for work being a fundamental aspect of all education; that the goals should reflect the economic and social problems present and projected; that it should reach everyone; that it should encourage the appreciation of ideas as well as the performance of techniques.

No educational program can ever end unless we have something on research and evaluation:

Employment statistics, present and projected. It was felt that we have to refine these techniques because in some areas the projected have changed so rapidly that we have to have a refining of our methods of projecting them, especially with the skills that are needed.

An analysis of the skills applicable to a number of employment possibilities. This could be a research study as to what skill could be used in a number of these cluster units.

A reactivation of planning and evaluation is another important thing, but we recognize the need for staff in this area and that has limited this work in the past.

Coordination and assistance in expansion and unification of state and regional research and development. This is already under way, as we are well aware.

A close examination of all vocational, business, technical processes and elimination of the invalid ones in light of the present time.

I would like to close with a thought of a philosopher--and this is the problem I think we're all confronted with: To determine specifically just what the school's distinctive responsibilities are each school must find answers to the following questions, each industry must find answers to the following questions, each community must find them:

What knowledge, what values, what skills do children and youth in our culture need to learn? Which of these goals can best be achieved by the schools? What knowledge, what values and what skills can best be taught by the home, the church and other social institutions? Which learnings require the joint efforts of the school and the agencies?

One last thought, which was expressed by Gardner in much more flowing terms than I expect to use today: If our plumbers are not well trained or our philosophers are not grounded, we'll be in an awful mess.

CHAIRMAN HERTZFELD: Thank you very much, Ernie.

Reacting to yesterday's proceedings and to Dr. Kohl's recapitulation we have a panel this morning of people representing all phases of activity in the city of Philadelphia: the school system, management, labor, the community, and our colleges.

Mr. David A. Horowitz will be Moderator of the panel. Mr. Walter R. Chapel, Executive Secretary of the Manufacturers Association of Greater Philadelphia represents industry. Mr. Charles P. Connolly is Assistant District Manager of the Pennsylvania State Employment Service. Mr. Russell M. Leonard is Associate Superintendent for Area Schools. Dr. H. Halleck Singer is Director of Vocational Teacher Education at the University of Pennsylvania. Dr. John W. Struck is Director of Vocational Education for the Pennsylvania Department of Public Instruction. Reverend Leon Sullivan is Chairman of the Board of Directors of the Opportunities Industrialization Center, Inc. Mr. Robert C. Taber is Associate Superintendent for Special Education and Pupil Personnel Services. Mr. Edward F. Toohey, the President of the Philadelphia Council AFL-CIO, didn't get here this morning, so labor is not represented.

I shall now turn the meeting over to Mr. Horowitz and we will deliberate until noon. We have an hour and a half for discussion, after which luncheon will be served.

MODERATOR HOROWITZ: We have an hour and a half to draw together the thinking and, hopefully, guidelines of this conference. It's a big task, but let me quickly set the stage for it and then ask our panel members to react along two lines, if they would; to Ernie Kohl's statement, and also to give their views as to where we ought to be going in future planning in not only vocational education but career development as well.

If I were to strip all that has occurred here and has been said by speakers and by participants, I could do it in three or four different ways. We talked about the present, the problems of the present, where we might go in the future, and what our problems are in transition. We have tried to distinguish between vocational education and career development. We have, as Ernie has lined up for us, seven or eight areas of discussion which he gleaned from the thirteen or fourteen discussion groups: communication; guidance; curricular change; the opportunities in post-high school education and planning in that area; the responsibility of industry; staff development; research; state, local and federal government relationships with respect to the problems that we are discussing here today; and, of course, the whole area of research and evaluation.

I think it is for us now in one hour and fifteen minutes to try to do, I think, three things if we possibly can within the limits of our time: to try to clarify some of our definitions, if at all possible; to resolve, if at all possible, some of the differing points of view that have been expressed both yesterday and today; and, most importantly (and this one I would like to emphasize and underscore if I may), to try to pick out and actually point to guidelines that we ought to keep in mind and that we ought to consider in planning for what we face now and where we ought to be going and leading to for the future.

Because of the limitations of time may I ask that all participants limit themselves to as brief statements as possible. I'll ask that in no case shall they be more than two minutes in length, and we'll start off by asking if any of the panel members wish to make a contribution.

MR. LEONARD: Maybe I'll make the first one. I was very much impressed, Ernie, with what you did. I think you did a beautiful job.

There were some very positive things stated and some questions answered. I hope that we will leave here today, as I expressed yesterday at our group meeting, with one or two very definite thoughts and ideas as to how we may proceed.

You mentioned the fact that someone suggested that we pay pupils to remain in school. Maybe it isn't such a bad idea: perhaps not to pay them, but subsidize them to make it possible for them to remain in school. I have a feeling that many of our young men and young women leave school because of economic necessity. We do award scholarships to the academically talented in order that they may continue their education. Maybe this is an idea that we should explore in the future for those who are not as academically talented.

I have many questions, Dave, but I'll save those.

MR. TABER: Dave, you said this conference symbolizes that vocational education cannot be a separate entity, and Ernie Kohl's very able summary indicated how to cut across curriculum, community, state, business and labor.

Always there is a dividend or byproduct of a conference, and this came at a very good and strategic time for me. On Friday during my lunch hour I met with some parents of the blind in our Logan School. They have been yearning for shops and for vocational education, and they have just reached the point where we are working out along with members of our own staff and the community a program jointly which will really meet the needs. The parents are excited about it and funds are available for this purpose.

DR. STRUCK: May I comment about some things? I would like to take a little bit of license here. Since you were kind enough to invite me to participate I think I ought to say a few of the things I believe in. I'd like to react to some of the things said yesterday morning rather than limiting my remarks to reactions to Dr. Kohl's very fine summary.

Yesterday morning when Dr. DeCarlo'opened up with his address I thought I was listening to a student of Admiral Rickover. Admiral Rickover, as you know, uses the technique of gross overstatement in order to get people to act and in order to get people to move, and I believe that this is what Dr. DeCarlo must have been doing yesterday. I can't believe anything else. I made a list of things which were quite overstated, but perhaps this resulted in getting reactions from the groups yesterday afternoon.

For instance, he ridiculed practical experience. He stated that schools assume that no changes will take place in a man's work life. He implied that nearly all jobs deal mostly with abstractions. He said that few people work hard physically. He said that people don't get work experience any more, that they just play a role in a large organization. He dismissed apprenticeship as merely imitation and mostly useless in today's work world. He said that the educators must ask themselves how important is work and how important is job training or skill training compared to educating the whole person, and I want to come back to that one. I don't know what he thinks vocational education is if it doesn't educate the whole person.

He stated that it's a wonder that any child has any curiosity at all left by the time he reaches seventh or eighth grade. My experience has found just the opposite. We have some very excited people in high school who are very thrilled at the kinds of things going on.

He said that educators assume that some people can't learn. I haven't run into anybody that assumes this at all.

The thing that really bugged me was he said he maintained that vocational education people won't change, won't listen, won't admit that things are changing and that life is different. And he claims to have met an appalling lack of sensitivity "to the need for change." I simply can't believe that Dr. DeCarlo believes these things. He couldn't be so misinformed. I know he was simply trying to arouse the group and I want to react to some of those things.

I was very happy to hear Dr. Kohl emphasize this morning that many good things are going on in vocational technical education but deplored the fact that this wasn't made very clear yesterday and nobody had a chance to say so. I'm glad he brought that out at this morning's summary. For a time yesterday I thought everybody was going to throw the baby out with the bath water because nothing good was said and it was all very negative.

I was wondering yesterday why the feeling was expressed or implied that few youngsters choose to enroll in vocational education, when Philadelphia has a very enviable record of having over half the people in high school enrolled in some phase of vocational education. I think this is a very commendable record. We do need to make changes and we do need to improve in all phases of education--vocational education, of course, and general and academic education also.

When Dr. Nichols was referring to the secretaries that couldn't spell and were criticized--this wasn't because of a failure of vocational education, ladies and gentlemen, but this is because the English classes didn't experiment. But we catch the blame for it. Nobody criticizes girls for not being able to type, but that they couldn't spell and then they say "What's the matter with vocational education?"

I would like to make the plea that we do need to make improvements in all phases of education and we're the first to admit it. And we want to have community leaders and industrial leaders and business leaders of the community and of the city and of the state help us to do this. Let's not have vocational education take all of the blame for all of the ills that happen to these youngsters. And this was brought out by several of the panel members yesterday morning.

Most of the discussion yesterday morning seemed to be on industry, and I would like to make the plea that all of us involved in education at all levels most certainly must look at all of the needs for trained workers. We have many new occupations emerging in the

health service field, in home economics, in child care, homemaker services, institutional services of all kinds, marketing and merchandising, wholesaling and retailing, in the whole business field of new skills that are developing--data processing, and so on.

My experience is that a great many vocational education teachers and leaders are anxious to change, are receptive to new things, and do keep up to date. My experience also is that industry must be more willing to tell schools what their needs are, what their future needs for trained people will be. Industry has been most reluctant in a lot of cases to protect their future needs for training people to the schools. This is for many reasons: for competition, and also many times they don't know where they're going because new products will be developed that they'll be working on. At the same time the schools get criticized quite often for not setting up or preparing for the future.

This is a joint problem, ladies and gentlemen, between the school people, the community and industry. In spite of all this, I am still very optimistic. We have capable educational leaders, teachers, and we will be getting many, many more. We have to expand into many new things and we're ready. We have very capable industrial and community leaders, and we have increased funds to do many new things. So I am thoroughly convinced that by working together and by communicating often and even constantly we can build an educational system that will far better than in any time in the past provide the kinds of varied educational experiences needed by all of our children.

REVEREND SULLIVAN: I would like to say a word here about the community and how it looks at vocational needs. The community in Philadelphia (and I imagine this is true in most of our urban centers) realizes the extraordinary importance of vocational preparation. This is true particularly in the colored community. In a city such as Philadelphia it is anticipated, I believe, by 1975 perhaps 35% to 40% of our population will be colored. It is also true we can anticipate that by 1975 perhaps 70% to 75% of your public school system will be colored.

The concomitant problems of colored youth in terms of securing employable skills becomes an empirical need. We recognize the importance of this in terms of vocational education as far as our public schools are concerned as it relates to our young people, and we have every confidence that our vocational system in Philadelphia will meet that need. We believe that the vocational system even now is going through a period of reevaluation that will lead toward specific determinable and significant changes that will meet the needs of this dramatic kind of experience that has pushed the need for vocational education so forcibly into the throats of our public school system.

We are sympathetic to the problems of the public school system in this regard and we are delighted to see this kind of effort as indicated in this kind of conference.

I have been somewhat concerned as to where OIC fits into the whole role of public education. You must realize that OIC came into the field by necessity, our problems being compounded and geometricized with each day. Every day more colored children as well as white poverty children are born in our urban centers, and each day we are living longer. And in the middle there is the problem of automation. This meant that we could not wait for any programs of adult education to come to the community. It meant that the community had to create a program of self-help.

It had in no way been intended to restrict or to constrict the work of the public school education. It came about as a clear necessity, as something that had to be done now, right now. OIC would like to thank the public school administration of our city, and particularly the employment services so well symbolized in the person of Mr. Connelly who made trip after trip with us to Washington to interpret this need to our bureaucrats in the federal governments.

And also we cannot at all minimize the extraordinary support that has come to us from industry. Industry has been the key to our success. Industry has supplied us with equipment. Industry has assisted us in the evaluation and the preparation of our curriculum. Industry has supplied us with resources, financial as well as other. Industry has supplied us with jobs.

In OIC the median group that we serve is twenty-eight years of age. The median grade that people who come to our program have attained is approximately the ninth year. These are people who are not going back to school, but are going forward, and they are the ones that comprise the complexities of our community's problems, because integration without preparation is frustration and we realize that a frustrated community is the kind of community that can explode anywhere and at any time. Therefore, the movement of integration that came about because of the great civil rights push, of which I have been a very close and very significant part, has necessitated that we either prepare or renew our frustration.

We are happy with the kind of success that OIC has had. There are those who say our figures are not true. For this reason our Research Department has been engaged in the last several months in developing a true research picture. More than 80% of the people who passed through our skill centers have been employed. As a matter of fact, the percentage is

much higher than that, but no one believes the 80% so I wouldn't go beyond that. We have placed more than a thousand people in jobs, many of whom had been in prison. Many of the girls had had severe problems. One-third of our people had been on public assistance. Ninety-seven percent of our people who came to our program are categorized as poverty people.

This is only the beginning in Philadelphia and the OIC program will continue to spread to serve the total community regardless of race, color or creed.

Finally, let me say we have an extraordinary opportunity of partnership with the community program of OIC form of preparation with the public school system. One of the founders of OIC happens to be Vice Chairman of your Board, Reverend Henry Nichols, in whom we have explicit confidence as a member of the Board. May the time soon come when those of us in the community who have organized and created OIC may sit down in some meaningful dialog and discuss the relationship of OIC in the context of the work of the public school system.

OIC programs have developed already in sixteen cities and by the end of this year there will be fifty-six all over the country. What we do in Philadelphia will establish a prototype of procedure. Because of the kind of confidence we have in our public school administration and particularly in your Board of Education as now constituted, we believe that we are in a communications stage and this we would welcome at the proper time so long as OIC will remain a program of the people, by the people and for the people--as long as no structure ever preempts the role of the community in maintaining and moving and establishing the motivation so necessary in the OIC self-help concept.

The people must always own OIC, for it is only through this kind of ownership that the people can be motivated into a program and help the Board of Education in all aspects of its programming to become more dynamic in the community for the good of the whole community--young and old, white and black.

MODERATOR HOROWITZ: Thank you very much, Reverend Sullivan.

DR. SINGER: Ernie Kohl did a wonderful job of telling us what went on yesterday, and expressed our basic belief in vocational education so well that I would like to just confine my remarks to a couple of highlights that occur to me, even though at one o'clock this morning I was real concerned about what I might want to say and had some ten or twelve items that I thought were important as to what Philadelphia should be thinking about in vocational education.

First of all, let me say I believe wholeheartedly in vocational education itself and, secondly, that I believe wholeheartedly in the vocational education program here in the City of Philadelphia. We know that our program isn't all good, but it isn't all bad either.

I think that one of the points that I would have made would have been this: that there needs to be a degree of flexibility in education as a whole, but in particular in vocational education. The need for occupational training changes rapidly and this has been indicated, but our schools can't respond to this need quickly enough. This is a point at which we can commend Reverend Sullivan for identifying the need and meeting that need quickly, and I am sure as he works with the staff now he discusses the problem and the solution is implemented quickly, whereas, as we all know, in the public schools (this is no criticism of Philadelphia because it's typical of the public schools) sometimes it takes weeks and months and even years to accomplish the thing we know we need now, not later.

Reference was made to the dramatic, and I thought I had an item which went along with that. I hope I don't embarrass anyone and I would certainly apologize if anyone thought this was my intent because it isn't. Yesterday at the conclusion of the conference I heard someone say (not an educator, but one of our good friends from industry) that this conference has been a waste of time. He wasn't being critical of the conference; he was merely saying that he believed that the total educational program in Philadelphia was in his opinion and so far as he was able to contribute satisfactory. I think this was a wonderful thing for him to say, but you had to know what he said before to recognize what he meant when he made this point.

I get the impression from the conference that there are a number of things which we can agree upon generally, and one is that there is a need for and a desire for vocational education. We have it. We can improve it. Secondly, we can agree it should serve all persons of all abilities who wish it: girls as well as boys, women as well as men. It does in Philadelphia.

It should cooperate with industry, and industry, it was pointed out yesterday, should cooperate with the schools. And if we have any point at which criticism can be pointed at us and at industry, I suppose this is one of the points. We have not cooperated as we should to reflect the needs of industry and meet the needs of persons as industry would like to hire them.

It was also pointed out that vocational education should not necessarily be a dead-end program, but should give in addition to certain occupational skills and knowledge a chance

to grow to post-high school educational opportunities. To the best of my knowledge, this exists and in most cases since 1917, since the beginning of formal vocational education, has existed. It has never been a dead-end program. It is not intended to be a college-preparatory program, but it does permit persons to go on if they wish to do so.

Another point that was made is the need to make work respectable and, in turn, the preparation for work, which is vocational education in general, respectable. By the way, we haven't done too good a job at making it respectable, but it isn't our fault for I don't think we can do it alone. This is a responsibility of society to recognize that all work is respectable regardless of what it is. I wish I had time to tell a few stories I know about this. One is an old German story about whether a doctor is more important or whether a chimney sweep is more important, and they finally conclude that the chimney sweep is because he could keep people well when the doctor could only make them well after they got sick.

Last, but not least, we have a need for good communications within the total city educational program. Part of our problem is that we don't know each other well enough, and this is something we could do something about without too much difficulty.

On February 10 the Pittsburgh press published a sketchy outline of some research that has been done recently in vocational education. We haven't had much research and we haven't done a good job of telling what we haven't done and need to do. But I would like to share just a couple of these points with you.

It pays if you are not going to college to go to a vocational high school and, contrary to the popular conception, graduates of vocational schools are just as well rounded as other high school graduates, the report says. This is a study of some 13,000 graduates of vocational schools made by a research group in Pittsburgh.

Vocational graduates get jobs quicker and enjoy greater job security than students who took the academic course in high school and did not go to college.

Vocational graduates accumulated greater earnings over the 11-year period covered by the survey than did academic graduates with no college education.

About half of the vocational graduates entered trades for which they were trained. Another 15% entered related occupations.

I think this is all on the plus side.

MODERATOR HOROWITZ: Thank you.

Our time is running out on us. Mr. Connolly, we'll hear from you and then turn to the audience.

MR. CONNOLLY: I would like to talk from the public employment service standpoint. Let me talk first about the training of youth and adults out of school. Since September of '62 we have had a big manpower program in conjunction with the School Board, and there have been problems in it. One of the things we've heard stressed time and time again at this meeting is greater community participation. This, I think, is a very worthwhile thing. Reverend Sullivan mentioned earlier that the State Employment Service had supported his program, that we had gone to Washington.

We have felt and do feel it is a very worthwhile program. We think OIC can do a job uniquely well in terms of motivation of people to take training. Our concern, of course, was with the group who did not have a saleable skill and many of whom had lost hope. So if this conference succeeds in developing a conception that each organization will do what it can do best, we in the public employment service feel that OIC can better motivate people than we. We have a counseling staff and we have community staff, but they can do the job better than we. We participate with them.

We feel that this ought to be the concept that governs the training of unemployed people. The school does the educating. The Employment Service, along with the other community groups--the Mayor's Manpower Commission and whatnot--does the job of trying to reach people with organizations--the out-reach concept.

What can be done to strengthen the program? The point was made by Dr. Kohl that OIC had an advantage and that the School Board, hopefully, would have that soon in having an adult training center in the Kennedy Center. This was one of the weaknesses of the program up to this point. There needs to be a center where youth will not return to their normal day school; there needs to be an adult training center.

I think there has to be created a climate of urgency in getting this done now. There has been talk about it for a decade, but nothing has materialized to the extent that we can put on program to the degree they are needed. I think the School Board needs great help from the community in this area.

Some of the discussants also mentioned quality teaching. I am thinking about the manpower program here. There was talk about the carpenters' program. They have to supplement the teacher's salary to get a really qualified foreman-carpenter to do the training. I think there has to be greater flexibility given the school system in terms of manpower training in getting teachers who can do the quality job needed.

Further, one of the problems in operating a state program or a federal program is that you have to come up quickly with curriculums and budgets. Philadelphia is competing, for example, in the state with Pittsburgh and the state is competing with forty-nine other states. For what? For federal monies, under MDTA, RAR, and whatnot. I think then there has to be sufficient staff given to MDTA from the School Board standpoint to really come up quickly with the curriculums and budgets.

The Employment Service has the responsibility for developing demand and supply. We do that. I think we work well together, particularly in recent years in terms of community participation, working with employers, sitting down with them and the unions--getting their help in developing curriculum, looking at the equipment to be sure it's not obsolete, selection of the teacher and help in the placement of people. These areas I mention are those I think we ought to concern ourselves with.

From the standpoint of those who are actually in schools what is the problem? Mention was made yesterday by one of the speakers that New York is now concentrating on the eleventh and twelfth grades for specific skill training. I think this would present a problem in that a great number (I do not know what the percentage is, but I am sure it's quite large) do not reach the eleventh and twelfth grades and these people are of great concern to the employment service.

What can be done? We have a few suggestions we'd like to offer. We realize it's a mammoth problem, but, number one, we feel that labor market information is available. This does not mean it's one hundred percent valid, but the United States Department of Labor does have valid occupational information and we of the Public Employment Service could relate this to the Philadelphia labor market.

We would know, for example, from our national statistics what are the growth occupations, and we could pinpoint this to the Philadelphia area and see if the same national trends have application in the Philadelphia area. Normally they do because, as you know, we live in a city where the industries are well diversified.

In the area of testing we have worked with both the diocesan and the public schools in this area for many years. We feel that some of this use of general aptitude test battery, the new dictionary of occupational titles which was just released this month, could be of great help.

One other point. Our Supervisor of Counseling for Youth Opportunity Centers has had the idea for a number of years about a course in occupations. I know this is the function

of the junior high school exploratory period, but he was thinking in terms of perhaps one period a day before there is course or subject selection--that this might be one of the methods by which youth, all youth, could become much more aware of the diversity of occupations, demands, needs, and whatnot.

MR. CHAPEL: I don't propose to represent by any means all of industry in this area. I wish there were more representatives here from industry. A lot has been said. We feel we have a partnership from the standpoint of the manufacturers of Greater Philadelphia and I would like to recommend to the School Board that they steal Leon Sullivan's public relations man because he has gotten better public relations than this whole school program and it's time we told our story on what the good things are to let the community know.

MODERATOR HOROWITZ: I would like our conference group now to react to statements made here, to any thoughts they may have gathered and want to react to in terms of yesterday's sessions and today's. But may I ask this, please. Will you take just a little bit of time for your statement and try to focus it on what we ought to be doing, what action we ought to be taking now for the future in planning and developing. Try to make it as sharp a focus as you possibly can on this kind of approach.

MR. JOSEPH CASEY (Leeds and Northrup): I'll be real specific and I'll link right on to Mr. Chapel's statement. As an industry representative and active participant in industry, and as an understander of educational legislation, I am quite aware that the advisory committee concept is supposed to bring together interested industry, labor, schobl and government. However, it does not. Yet we all know, and it has been expressed here, that without industry's participation, dynamic industry participation, you'll not get the acceptance, you'll not get the economic growth, you'll not get the Philadelphia economic development. Therefore, my specific recommendation is that our Vice President of the Board of Education take back to the Board of Education a specific suggestion from industry that they dynamically recruit industry's interest and industry's activity. At the present time they do not. In other words, all industry participation that I know of is voluntary, but I think the Board should recruit industry's participation at all levels.

MODERATOR HOROWITZ: Thank you, Mr. Casey.

MR. POLLOCK: Yesterday Dr. DeCarlo told us that all of the things we're going to have to do in the next twenty-five years are going to cost a lot of money. In Dr. Kohl's report he alluded to the receptivity of everybody to federal funds, the need for industry to put

some more money aside in their budgets, but even if we get all of the federal funding that would be our fair share and even if creatively we get or latch on to all the foundation funds that are floating around, I am concerned about what level of support we're going to be looking for for our program.

Dr. Odell told us that our school system was spending about $500 per pupil. We're now up to $565 per pupil in our general program. We're spending about $680 per pupil in our vocational technical high schools. What level of support are we going to need and where are we going to get the money to translate many of the wonderful ideas that we've had after we get a good publicity program going? Where are we going to get the money to implement these wonderful ideas?

MR. LEONARD: I had some questions as a result of my meetings yesterday. Should the choice be early? There was some contradiction, as I saw it. One person said the choice should be early and mentioned kindergarten, and another person said the choice can be too early and you shouldn't be fixed in your program. What is the thinking?

Let me ask that and then I'll participate again.

MISS HELEN FAUST (Director, Division of Pupil Personnel and Counseling): All the studies that have been made on vocational development and maturity to make wide choices indicate that our present practices are much too early; that all that can be reasonably expected of youth in the eighth or ninth grade is the beginning of a sound curiosity of inquiry about occupations. So on that basis our choice is too early.

DR. STRUCK: People mature at different ages. They arrive at decisions at different ages. I think we've got to have a system which makes it possible for those who do make some decisions early, and they may change them later on; as was brought out by the panel yesterday, many people do make up their minds early and we should provide them with the opportunity to have some kind of specialized experience at an early date but not criticize those who do not make up their minds. As was brought out, some people don't really know what they want to do at all until after high school or in the middle of college or after college or later in life.

We've got to have a very flexible system which will take care of people at different levels, but to delay all specialized education until a later date just because some people don't make up their minds or can't make up their minds until a later date would be a mistake.

MR. HARRY ORTH (District Superintendent): Dr. DeCarlo was making quite a point for starting the concept of vocational education lower than it now exists; in other words,

that there should be a concern for providing experiences, activities with industry, at the elementary level. I think what he was saying here is that the Vocational Division, for instance, of our public schools should not be concerned only at the secondary level, but should make teachers and the community aware of the concern of the school for this kind of experience for children.

MODERATOR HOROWITZ: Once again the question arises: What is vocational education? What is career development? I hope we can get some further clarification here today on this question.

MR. LEONARD: The other contradiction, it seems to me, is that on the one hand we have the person who says that every child should leave school with a marketable skill, while one of the speakers mentioned the fact that it was a false assumption that there are trades and crafts for which you can't be trained. Which is correct? Have we a responsibility to give every child a marketable skill when he leaves school, or is it impossible?

MR. RUDDER (Vice Principal, Mastbaum Technical High School): Industry spends at least $25,000 for each employee in the way of equipment, and in the public schools if we don't produce a finished skilled craftsman we can produce a boy or girl who is well on his way to being a highly skilled craftsman or technician.

MR. CHAPEL: I'd like to comment on that. You made the point that you need both approaches here because we're talking about a gamut of skills. There are certain skills in manufacturing plants that I think can be definitely trained for and specifically guided to. Industry representatives have often said to me, "If we could only get a boy (or a girl) that is partly down the road; we'll take them and complete the job."

MISS CATHERINE GRANT (Assistant Director, Vocational Education): Last week I spent four days in Washington on a health occupation program. Forty states were represented. We were talking about industry all the way through, but we have forgotten that there are service trades, health occupations, and other fields that we ought to give consideration to. In the health field alone they are going to need ten thousand people a month. The hospitals feel that they are not educational institutions, that the schools should help to do some of the education.

MR. BENJAMIN T. RODINI: I think we should immediately relate job training going on in our schools to projected employment needs. This would answer a lot of our questions.

MISS M. ESTHER HILL (Director, Home Economics Education): There are a great many services needed for families and through our home-related occupation training we are going to help those things--such as child care services and food services.

MODERATOR HOROWITZ: Esther, I'm afraid people did not hear you on that end of the room. Would you repeat what you said, please?

MISS HILL: Much is in the current professional literature that points the need for introducing the study of home and family living in the lower grades and continuing on through high school. Let us not lose sight of the fact that home economics programs provide education for personal development and family living as an area of study important to all students. An expanded program in vocational homemaking, grades 10-12, can provide training for saleable skills in home-related occupations.

MR. MAURICE FAGAN: You asked earlier for practical possibilities. In watching the reservations in the minds, for example, of persons as to whether advisory groups would work and watching the concern about the obsolescence of the skills being taught, I am wondering what are the possibilities of an ongoing rather than an ad hoc relationship between the school system and industry.

For example, suppose the two were to jointly finance and jointly operate four or five or six work tryout centers where a thousand persons from industry would join with a thousand persons in the school system (it would be team teaching in that sense). Industry would staff or equip these facilities with the latest equipment. They'd be in a position to anticipate changes. The teachers would be able to take that back to the other teachers in the school system and industry would be able to take back some of the problem. The communication would be built into the operation so that obsolescence of both the teachers and the equipment would be avoided by this constant interplay.

The financial end could be borne by industry as a whole as distinguished from one or two segments of it better than the school system alone could do it. Would that not in itself be worth an experimental try?

DR. MARECHAL-NEIL E. YOUNG (District Superintendent): My question is directed to you, Dr. Sullivan. We are all greatly impressed with the tremendous acceptance your program has had in the community generally. We are hoping to expand very greatly the vocational opportunities for young people within the comprehensive high school. We know that there are many presently in the schools who need saleable skills.

You know that we are confronted with resistance on the part of many people in the community--parents and others--to understanding the need for expansion of vocational opportunities. You know that in this group there are many people in the counseling field who have met the individual opposition of parents to considering these opportunities. We're concerned with how we might build the kind of trust which you have in the community generally for your program.

You spoke of the persons involved in this as being twenty-eight years of age on the average, and many of them have been on assistance rolls. They're people who have had no failure, so they're accepting this; but we need not have failure if we have people trained within the school program so that when they are adults they're equipped.

How can we reach the community, the parents who are concerned in the guidance of their children so that they accept these programs and participate in them with trust?

REVEREND SULLIVAN: One way would be to put you on television and let you make that speech.

I think we in the community have a responsibility to try to identify the kind of motivation we're talking about, and in the projection of OIC I hope we will get this kind of motivation to parents of young people to interpret the values of the public school system and what is being done in that area so we can help.

MODERATOR HOROWITZ: We have with us Dr. Walter Arnold, who is the Assistant Commissioner of Education of the U.S. Office of Education, and he's been trying to say something to us.

DR. ARNOLD: As a federal bureaucrat I thought I might add a little bit, the legal aspect of this question of generalized versus specialized training. As you know, the federal acts are bringing increasing aid to the states and it appears to me there is not any particular limit to what it might be provided the program proves to be very successful.

If you examine all the acts you will find that one of the requirements placed in the acts by the Congress is that the training program be involved with and concerned with so-called recognized occupations. This is interpreted in the broadest manner in the regulations, but they do require that the programs be geared to labor market demands, that is, prospective job opportunities that are in fact recognized occupations. Although you can consider clusters of occupations it is not presumed that you could develop some kind of broad general catch-all kind of training and expect to have the funds to apply to it.

MR. WM. FERGUSON (Acme Markets): We've talked a lot about skills; we haven't talked much about attitudes. Only lately some of these things have come in. There are feeder programs for OIC which concern themselves with the attitudes of people, false impressions from parents and friends and neighbors that do not exist in fact. They've put a good deal of time on this in the feeder program.

Now, there is an anti-business feeling among many college graduates. There is an article in the Fortune Magazine of February on this, and pinpointed to some degree. Why? Perhaps industry deserves this. Maybe they haven't gone all out to educate people. Perhaps the teachers have not been brought in to see industry in its true light so they can interpret these things properly.

I think we should think about the development of attitudes toward work, toward the employer, toward our fellowman. This is more important. If I have a choice I will choose a person with a good attitude over the amount of their skill. We can train hands more easily than we can train minds. This takes time and it needs this kind of development of attitudes in the public schools. I know you're doing a great deal about it, but perhaps we haven't done enough.

MR. GEORGE HIGHSMITH (Principal, Germantown High School): Going back to what Dr. Young asked Dr. Sullivan: We must think in terms of the dignity of work. To be very specific, we have many opportunities to help young people in our comprehensive high school. For instance, in home economics if we offer this sort of training to people the parents say that "you are training our children for domestic work." They rebel against it. I want to know what we can do to open all these avenues for the children in the comprehensive high schools. We're talking about a large majority. When we speak of vocational education we're talking not only about three high schools; we have many more students to reach.

MODERATOR HOROWITZ: Many of the people here are facing this kind of problem and recognize it as a very critical one.

REVEREND NICHOLS: This is dangerous, but I must say it. Part of our problem lies in the fact that for many years we have referred to our vocational programs and our technical programs, or mostly the vocational programs, as programs for the dumb, for those who cannot achieve. As long as we permit this kind of image to remain in our programs, partially the fault of us in the school system from the kind of guidance counselors and the kind of guidance our boys and girls receive, the number of substitute teachers that we use

even in your vocational programs--when you have an English teacher trying to do a woodwork job when he has no idea what it's all about--you're going to find resistance in the community to our children being in these various courses.

I feel that once we lift the dignity of work, once we point out that it is just as honorable to be a good housekeeper, more so than to be a poor teacher or poor preacher, then we're going to begin to get somewhere. But part of our problem lies in the fact that we have for a number of years systematically shuffled a segment of the community over into vocational programs and they have resisted. I know that this will provoke a good bit of argument perhaps, but see me some time and I'll be glad to speak about it with you.

We in OIC (if I may put on a different hat) have tried to point out the dignity of work, and this is important--plus what our friend from Acme has said: to realize that attitudes toward our employer and toward work are important.

We have a real job in the school system to change the image of a homemaker course. I sympathize with a mother when she comes in and says "they want my child to go over to the nurses' aid program" or the homemakers or the like. It's a feeling that you're downgrading that child's ability.

Yesterday I believe our speaker said that we must think in terms of this middle class society, and until we can help the entire community realize that you can be a homemaker and still be a part of a middle class society and part of an affluent society we're defeated.

DR. SINGER: Dr. Nichols has referred to this in light of our current reference of work related to vocational education, but let me also remind you that this goes back literally thousands of years in our society. People who work with their hands have been looked down upon, even though the beauties of these artisans that have come down from Greece and Rome, etc. are the work of these people. My thought is that even though we are very intense in our recognition of the problem let's not get discouraged if we don't solve it today or tomorrow.

MR. ROBERT WELCH (Shop Coordinator, Bok Technical High School): Dr. Nichols mentioned substitute teachers. We have many dedicated shop teachers. They work a longer school day in the school shops than the high schools do. That's fine. But many of our classroom teachers are substitutes for academic subjects. They receive the same pay as the person working a shorter day in the high school, so the older ones have transferred out. If the School Board would arrange a schedule so that the classroom teachers could stay

in that school we could get teachers and keep them there and do a better job for the classwork part of our schools.

REVEREND NICHOLS: We'll do it if your union will cooperate.

MR. CRUMB (Training Director, ARA Service): I'd like to add a little bit to what the man from Acme Markets has said about attitudes, and I would like to connect this with the specific manifestation of a bad attitude when a young lady or gentleman applies for a job. We have our corporate headquarters in Philadelphia and we use the clerical and secretarial services of many hundreds of people. Our employment manager has mentioned several times that he can immediately identify especially a girl graduate of a parochial school over a girl graduate of a public school when she applies for a job.

This may be very cruel, but it's a fact. You want people in industry to tell you what happened. This happens. I know this is a combination of school and home influence, but very frequently these young ladies come in with outlandish hairdos and very unsuitable dress and are in fact rejected before they open their mouths. Of course, we don't say "turn around and go home; we don't want you." We go through some of the procedures, but the person has already been rejected.

I go along with this gentleman from Acme who says that if you can give us a young person who has the proper attitude toward work and who is willing to apply himself, we can go a very long way in developing the skills that we need.

Another thing that gets me sometimes is the fact that you folks expect us to project very specifically what we're going to need, and as a training man I cannot project very specifically what we will need because the executives who are running the company are playing it by ear. So how can I say that we're going to need 150 people with these skills and 200 people with these skills? But I will say if you want to do something very worthwhile you can try in conjunction with the home to give this young person an understanding that he has to work for a living in a field for which he is qualified. Then we can pick up the ball from there.

MR. JAMES E. WILLIAMS (President, Council for Equal Job Opportunity): I was formerly the Commissioner of Human Relations. In that capacity I met and talked with many personnel men from various companies, and I doubt that many of them would, if they were operating in the best interests of their company, reject somebody at first glance on outlandish hairdos, and so on. This can be corrected with a few interviews after employment if you have a good prospect for a job.

I think we can find lots of subjective impressions as bases for rejecting people if we look for them, but I think if we take the personnel function in its proper perspective we would look for those skills which the company can use, we would talk then with the individual and test the individual and look below the surface before we reject. All youngsters now seems a little outlandish, depending on how old you are!

MR. CRUMB (ARA Service): May I defend myself slightly? I am putting myself in the position of the person who is conducting the selection interview. He has three candidates for a job who have similar qualifications, so the young person who is dressed suitably and who is wearing a suitable hairdo will probably be selected. The fact that this young person is dressed in this way is sometimes an indication that there might arise some other problems later on once this person is employed.

MODERATOR HOROWITZ: We have about fifteen min[illegible] --

MR. J. McG. HINCKEN, JR. (Principal, Bartram H[illegible]ool): I think one of the things we might do to improve the situation would be to glamorize some of the names we give to our courses. Home Economics is a deadly name. I think we could do much better if we put our brains to it.

MODERATOR HOROWITZ: What would you suggest?

MR. HINCKEN: I don't know, but compared to Cosmetology it doesn't mean anything. I think if we use the brains of our business community and the brains of our school system we could come up with something. Let me cite you an example. We have a young man in DE working in a supermarket. We asked him what his job was and he said he was a customers relations man, and he was very proud of it, but what he was doing was helping the customer load his packages into his car.

MODERATOR HOROWITZ: May I impose this on you? We have about ten minutes left and from as many as possible we would like one or two sentences about what you think we ought to be doing and where we ought to go.

MRS. CLIO REINWALD (Pennsylvania Department of Public Instruction, Supervisor of Home Economics Education): Why are there no women represented on this panel?

MODERATOR HOROWITZ: All I can do is laugh and say nothing.

MR. MAX HOMELSKY: (Franklin High School): I'd like to recommend to the U.S. Office of Education that they have a national public relations effort to sell the dignity of labor and the value of vocational education.

A PARTICIPANT: I would like to recommend we spend more of our effort and money in elementary education because without fundamentals and correct attitudes we can't get anywhere.

A PARTICIPANT: I'd like to recommend that we pick conclusions, make a list of objectives and see what the reactions of the entire group are now.

A PARTICIPANT: I'd like to recommend that we provide as many more work experiences for youth as we possibly can similar to the community laboratory situation--for instance, at Kensington High, another one at Roxborough, where youngsters are not necessarily being paid but where we have gotten together with hospitals, with libraries and other agencies of that kind (even the government) and where they are provided as part of their school day a few hours of working on something and learning the disciplines of work, developing attitudes, good habits and personal grooming that goes with it.

MR. WM. DONOVAN (Dobbins Technical High School): I would like to see one of these conferences at least every two to five years in this city, and I think it will be of tremendous help.

MR. CHAPEL: I'd like to recommend them more often than that.

MR. MORRIS MILLER: I'd like to recommend that we each get a copy of Dr. Kohl's presentation today, and that the schools begin to make preliminary plans in the light of what was said yesterday, what was presented by Dr. Kohl, and what was discussed here today.

MODERATOR HOROWITZ: The proceedings are being taken down in stenotypy and all participants in the conference will get full reports on the notes taken.

MR. RUFUS COX (Project Threshold Friends Guild): I think it might help families to accept more readily vocational opportunities if they could be reassured that the youngster is not being sent up some blind alley which would limit his choices later.

MR. MILTON SUSSMAN (Mastbaum): Let us keep closer contact with our graduates to age 21 and publicize their accomplishments.

A PARTICIPANT: Would it be a good idea to have as part of the regular vocational classes (as I know it is in at least five different high schools where I've been associated) guidance on how to take care of your job opportunity. I'm sure many of them in the commercial course have been told that "although your speed in typing is important, since you're going to compete with at least five or ten other people equally trained the way you look and the way you speak are equally as important." So should that not be part of the course, as I know it is in all of the schools I've ever had anything to do with.

DR. SAUL LESHNER: I'd like to suggest that we give some consideration to overcoming the effects of mass education and a movement back to the smaller group, so that we could reach the individuals better and perhaps there would be less of a percentage loss.

MR. VINCENT LUISI (Assistant Director, Industrial Arts Education): I'd like to recommend that we develop a curriculum development center that would be primarily interested in and concerned with developing instructional material for the slower learners so they can better understand and get their technical work.

MISS GRANT: I'd like to recommend that our teacher training institutions, for especially our shop teachers, be a little more liberal and allow our shop teachers to go back into industry more often and to give them credit so that they can come up to date on new techniques.

A PARTICIPANT: I'd like to suggest that more attention be given to the adult education program. I'm interested in Mr. Connolly's comments. I'd like to see provision made for the fathers of our youth who are finding it necessary to change their jobs, with not the same security for their families; also credit given in many evening high school situations throughout the city offering credit for graduation, not only in one place or in scattered places but more widespread.

MR. ALBERT GLASSMAN (Assistant Director, School Extension): I'd like to recommend a considerable expansion of the occupational practice shop program in our comprehensive senior high schools.

MR. MURRI (Bartram High School): I'd like to recommend that we have a better follow-up group which will measure the effectiveness of our teaching and our objectives.

MR. ORIENTE (West Philadelphia High School): I would like to recommend that at different times, whenever it seems feasible and possible, an inspection be made of all the shops in the city to see to it that they are kept up to date with our changing times, so that in time the student doesn't seem to look upon them as an old antiquated place with machines used twenty-five or thirty years ago. This will improve the image of vocational education.

MODERATOR HOROWITZ: In line with our time schedule I would like to recommend that we move towards adjourning this session and I wish to thank all the participants and all those panel members who took part.

LUNCHEON MEETING - SUMMARY STATEMENT

DR. HERMAN NIEBUHR, JR.: The responsibility of summarizing an important conference always leaves me anxious. When earlier this week I was asked how the summary

was proceeding my anxiety moved closer to panic. After all, my credentials in vocational education are non-existent. I come rather as an informed outsider who knows enough to be critical but probably not enough to be helpful. On the other hand, I rationalized that in a fast changing field, indeed a revolutionary field, perhaps the informed outsider may sense an emerging perspective even if he is short on the detail. In any event, I attempted to anticipate certain outcomes of the conference and then checked them out against the reality of your deliberations during the past two days.

I anticipated that the tone of the conference would be critical and urgent. It was. It is the very characteristic of a fast changing and revolutionary field that aspirations run far ahead of achievement, leading inevitably to a sense of dissatisfaction and alarm. Even though present performance may be far superior to the achievements of only a few years ago, the accelerating aspirations invite criticism. Such criticism often seems unfair and ill-tempered to the hard-working professional who knows that he has helped bring about solid achievement.

Perhaps it is well to recall John Kenneth Galbraith's comment on social criticism. He suggests that in a noisy world the critics in any given field or endeavor must shout a little louder in order to be heard. Hence it appears to be in the social nature of things that effective criticism will tend toward exaggeration. Once professionals in vocational education, or in any other field, understand this social dynamic, and recognize that it is more a function of heightened aspirations than destructive criticism, their tolerance level should be improved.

If social criticism is society's way of re-defining tasks and inducing change from the outside, why is the field of education so beleagured today? The performance of public education by any criterion has never been better than it is today. It has the lowest dropout rate in history, it has the highest college entry rate in history. In the field of vocational education in Philadelphia and other cities, it has never had more varied programs. Obviously the shifting demands of society, and more particularly, the manpower requirements of today's economy are relevant factors. Since society's educational system is functional to the economy, it is inevitable that as the economy changes so must the educational system.

Robert Heilbroner in a recent article in the SATURDAY REVIEW put it well. In examining the employment pyramid, Heilbroner suggests that there is no room left at the bottom. In contrast, the top of the employment pyramid is bursting at the seams. Everyone at this conference can quit his job tomorrow and undoubtedly get another that is just about as good or better. An examination of today's labor force reveals that there are nine million

professional and technical workers, and this will increase by 40% by 1975. There are now eight million managers and proprietors, and this will increase by 25% by 1975. This will mean that almost one in four in the labor force in 1975 will be in these two categories. By contrast, these two categories accounted for only one in ten at the turn of the century. If you are well educated and have marketable skills, you have it made. You are in the system and enjoy the affluence of our era.

At the bottom of the employment pyramid, it is another story. During 1965 three-quarters of a million youngsters dropped out of school. In the decade ahead with 26 million new workers coming into the labor force it is anticipated that seven million, five hundred thousand will be dropouts. Dropouts are neither educated nor have marketable skills because the old entry jobs have dried up and because of the simple truth that machines are cheaper and more reliable than muscles. Even the Army is more selective; they have found that dropouts cause more than their share of trouble, and are loathe to draft them. Conant has talked to "social dynamite". In some of our ghetto neighborhoods unemployment of energetic and healthy teen-agers ranges from 40% to as high as 80%. Thus, although there is much talk of a need for a re-training and upgrading mechanism at all levels of the labor force, there is considerably more urgency in effective training mechanisms for the bottom of the pyramid than there is at the top.

It is hard to remember when we were not so aware of these unfomfortable statistics, but our concern is really less than a decade old. With the freshness of moral concern that comes with a new discovery, we have instituted a number of stopgaps.

The Vocational Rehabilitation Act of 1954 although initially geared to the physically handicapped, constituted an early concern for the planned increase of employability in a selected population. The very definition of the handicapped has broadened considerably in the past decade.

The Manpower Development and Training Act of 1962 constituted a major step forward. From the rather vague national aspirations of full employment as manifested in the Employment Act of 1946, MDTA was the first real step in developing a systematic and rational manpower policy. In addition to the regular retraining and upgrading programs sponsored by MDTA, the brash Special Programs Division of OMAT developed a host of demonstration programs for some of the hard core problems of youth and adults.

Then we had the Redevelopment Act with its early attempt to develop sectional and regional approaches to hard core unemployment. This was followed by the Economic

Opportunity Act with its special programs for hard core youth via the Job Corps, the Neighborhood Youth Corps, and the Work Experience programs. The Vocational Education Amendment of 1963 and more recently the Elementary and Secondary Education Act of 1965 provided education with a new mandate and enormously expanded resources to get the job done.

Just a few days ago Senator Joseph Clark introduced a new bill which will expand the public manpower development function by reorganizing the public employment service into a comprehensive manpower agency.

The listing of these legislative landmarks reveals how we have moved from the stopgap stage to the more basic overhaul of our educational system. As all of you know very well, the tasks of education are being expanded enormously. In your own field, that is within the present vocational education framework, you are faced with the refinement of existing programs and enormous expansion of new programs. The fact that Pittsburgh has over 30 vocational programs in a comprehensive high school would not have been conceived by the wildest dreamer a decade ago. In addition to such expansion, vocational education is also faced with a newer frontier area: the preparation for work of the culturally disadvantaged.

It has been suggested during this Conference that Operation Headstart was basically a manpower development program. If you take the view that competence and basic skills is a prerequisite to all employment I can only concur. Yet if we really accept this notion, the implications for vocational education are startling. Preparation for the world of work is a long developmental process and not just the skill training toward the end of the line.

Alright you say, success in the mastery of the basics as a necessary prelude to skill training is pretty obvious and not very revolutionary. But I would suggest that the long developmental process includes other aspects:

(1) It includes the kind of life-long vocational indoctrination that begins with the question, "what are you going to be when you grow up, little boy?" or little girl? Ask yourself what basis kids have to answer such a question. Further, ask yourselves what basis middle class youngsters have in contrast to lower class youngsters for their answers. It is obvious that their answers are a function of their exposure to the adults and culture around them. Although you may not expect much of a range of occupations from a three or four year old, my guess is that the average high school sophomore has a very limited fund of occupational information as well. In this sense, suburban and ghetto youngsters are equally deprived.

(2) It also includes the kind of confident expectation that comes with employment stability in the adults around us. Where do we learn our future time orientation, our capacity to tolerate the long developmental period? Middle class culture very concretely conveys the conclusion that there is a payoff to education. There is no such reinforcement in ghetto culture.

(3) It also includes the kind of confidence and expanded motivation to achieve that comes with graded success experiences at home and in school. More and more educators are now convinced that without knowing it we confront far too many children with systematic and graded failure experiences. Is it any wonder that many need to escape as soon as possible.

(4) It also includes the development of the study and work skills that come with graded and sympathetic allocation of responsibility. Education has yet to profit from the kind of work adjustment training that has been so successful in the vocational rehabilitation field.

(5) It also includes the expansion of interests that comes with sampling the various leisure and hobby activities, and exposure to the variety of the real world.

I would argue that most of these developmental experiences come out of the non-school environment at present. If they are critical to success, and do not occur in the home or in the neighborhood, what are we to do? Obviously we must program them into some other aspect of life experience, and I mean the school. Is the programming of these developmental experiences the responsibility of the vocational educator? Clearly no one is an expert in this field because it only is now emerging as an educational imperative. But if I had my choice to allocate responsibility I would put my money on the vocational educator rather than any other specialist in education. Neither he nor I nor anyone else can as yet lay out a fully developed program. The research in this field is very sketchy, and we only have the early beginnings of a program. The rehabilitation field is very suggestive, and it is no surprise that the rehab people are moving into vocational habilitation. Programs like Reverend Sullivan's OIC is also suggestive, for he has somehow unlocked the key to motivation when it appeared to have been locked forever.

If I were to speculate about the significant additions and modifications to educational programming that will occur at all levels of the educational process I would make the following comments:

(1) At the lower or elementary school level, I would program more experiences related to economic institutions. This is, in my view, a part of cultural enrichment, and is

as significant in the full development of a youngster as a visit to a museum or a concert hall. Parenthetically I'd like to reinforce David Bushnell's view that all of us are entirely too word-oriented. We have somehow come to view the word and a printed page as being a more adequate representation of reality than reality itself. This is nonsense, and we need to program far more experiences for all children.

At the middle or junior high school level, we will need to move from the more casual experiences of the early years to a more systematic sampling of work tasks. Roslyn Kane has elsewhere suggested that the industrial arts program needs to be overhauled to provide such a systematic sampling. I expect rather creative work to come out of such explorations, particularly as our economy moves more and more into a service area and as we consider work preparation more in the light of work roles than work skills.

Vocational preparation at the high school level is probably going to become more complicated than ever. If we take Dr. DeCarlo's view that our goal ought to be to postpone skill training as long as possible and perhaps even leave this to business and industry, we must also recognize that our goal is some years away. To reach this goal we must assume that youngsters can delay the acquisition of a work role, and this is just not true for many of our inner-city youngsters. It also assumes that industry is willing to take responsibility for such training, and this is also clearly unrealistic at the moment. I would rather suggest an intermediate strategy.

This intermediate strategy depends on several reality factors:

(1) There are an amazing range of youngsters coming into high school today. There are the college bound who are high achievement oriented. There are those who have college capabilities but who need an extra push such as will be provided by Project Upward Bound. And at the other end there are those quite ready to drop out at the earliest moment. Between these two end points are youngsters with a wide variety of interests, talents, and motivations.

(2) As Dr. Dauwalder said last evening, it is imperative that we serve this entire range.

(3) Hence we can conclude that the comprehensive high school and/or the specialized vocational high school must develop a range of programs to meet all of these needs. The range of the need is such that the long-held democratic goal of individualized

instruction may also become a practical necessity. Within a comprehensive high school we may accommodate:

(a) the bright achievement-oriented, future time-oriented, conceptual youngster who can profit from an enriched academic program.

(b) the youngster with the hand-eye-brain approach described by Dr. DeCarlo who will do well in one of your technical programs. For this youngster we must constantly revise curricula in order to be relevant to the emerging demand of the economy.

(c) the pre-drop-out needs something else. The usefulness of paid work or rehabilitative experience as an incentive to do better in basic skill learning has been demonstrated. Moreover it is clear from several demonstration programs around the country that the continuity of interest on the part of the school is also imperative. It may well be that such a youngster will stub his toe three or four times on a job, or in a training program, before he finally catches hold. If we are not to give up on such a youngster the continuity of interest is essential.

(d) if we are to take the manpower development role seriously, we must organize to start with each youngster at his present level of development and do what is required.

In my view, the implications of the developmental strategy in vocational education will result in a radical reorganization of the total concept of secondary education. The present dichotomy between general education and vocational education is no longer relevant to our time and a more integrated concept and curriculum seems inevitable. What I am suggesting is that vocational education will move from its inclave to the mainstream of public education as the key force to implement the manpower development function in the various senses we've discussed. There is no question in my mind that there is a real openness to such an expanded function. Although there is never enough money to do everything we would like to do, there is ample demonstration money in Washington and within private foundations for those who care to pursue it.

Briefly now, I'd like to discuss some of the specific steps we might take to implement the new look:

(1) We need a more effective data system which can translate economic projections into manpower characteristics and then a future-oriented curriculum.

(2) We need far more effective assessment techniques which can help predict the appropriate developmental experiences for every youngster.

(3) We need far more, and better trained, counselors who can relate to this process.

(4) We need to have more than advisory committee participation from industry; specifically we need the kind of continuing cooperation which will allow us to expose all of our youngsters to facets of business and industry. We will also need paid work experiences for in-school youth and we ought to allow for the exchange of personnel between the schools and industry as a way of getting the kind of necessary understanding for a functional partnership. Some direct or indirect Federal carrot may be needed here.

(5) Parallel to this kind of pre-work experience and program, we need to develop a far more effective continuing education mechanism in our society. As the society accelerates in its change patterns, all of us will need to be retrained and upgraded several times during our working years. Clearly the concept of terminal education is dead.

(6) The universities and especially the colleges of education must become far more relevant and responsive to the needs of public education if they are to continue to earn public respect. Universities pride themselves on being the seminal knowledge generators and transmitters in our society. Although this may be true in some areas, they should feel no pride in the deplorable lag they have manifested in the field of education. Almost all of the new ideas in education are emerging from the practice field itself, and it is a rare college of education which produces teachers appropriately equipped to work in the inner-city. I also believe that the academic mind is hostile to vocational aspects of education and it is the rare secondary teacher who has been oriented to this rather fundamental aspect of life.

And I don't need to remind any of you that teacher preparation for vocational education is a stepchild at best. As someone from the university world, I would like to see the time when we are a decade ahead rather than a decade behind.

Finally, what about Philadelphia? Do we have the ingredients to do the job?

(1) Clearly business and industry are far more sophisticated today than those who work in the non-profit fields give them credit for, Appropriately involved, I think we will be surprised at their response.

(2) What about the Employment Service? The old separation between the public school system and the public employment service is no longer tolerable. With the opening of the Youth Opportunity Centers, and the pending re-shaping of the employment service, a very functional partnership will need to come about. Here, too, I think that both sides have a new openness to work together.

(3) In the last five years, we have seen Philadelphia's Negro community and other minority groups on the march. Although the pressure on community institutions is oftimes trying, it is also challenging. In Philadelphia and elsewhere throughout the country, the Civil Rights Movement has turned the corner, and is now investing substantial parts of its resources and energy in fuller human resource development in a very positive way.

(4) Philadelphia also has a new School Board which is dedicated to massive upgrading of the schools and as important is dedicated to providing the plant and budget necessary to do the job.

(5) Finally, it is up to you, the line professionals who will need to respond to the challenge with vigor and creativity.

The old dichotomies must give way to a new integration. Let me conclude with Alfred North Whitehead's comment:

"The antithesis between technical and liberal education is fallacious. There can be no adequate technical education which is not liberal, and no liberal education which is not technical; that is no education which does not impart both technique and intellectual vision. In simpler language education should turn out the pupil with something he knows well and can do well."

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PROFESSIONAL GROWTH WEEK

STATE BOARD of VOCATIONAL, TECHNICAL and ADULT EDUCATION
C.L. Greiber, Director

MINUTES of CONFERENCE

held at

AMERICAN BAPTIST ASSEMBLY
GREEN LAKE, WIS. AUGUST 23-27, 1965

VT000345

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GENERAL SESSION
Monday, August 23, 1:30 P.M.

Chairman: Esther Brown Recorder: Beatrice K. Palen

WELCOME AND CHALLENGE
Mr. C. L. Greiber

Chairman Esther Brown presided and after making some announcements, she introduced Mr. Greiber, Director, Wisconsin State Board of Vocational and Adult Education.

Mr. Greiber extended welcome to the participants. He stated that the conference was a result of the many requests from the directors for a meeting of the coordinators before the school year began; also to familiarize the participants of the financial aid available now because of recent legislation enacted by the federal government.

The challenge in general is to find the answer to the many problems facing us in vocational and technical education.

General observations and trends in vocational, technical and adult education:

--Importance of keeping the staff updated in the vocational and technical education was stressed. Some significant developments in the last decade were noted.

--Recognition of Vocational, Technical and Adult Education's role in the socio-economic life in the community. Appointment of a panel to study education in relation to labor, management, agriculture, etc., was made by President Kennedy. The committee consisted of 25 members representing many different groups and interested citizens. The task force's report is available. They recommended great expansion of federal aids. They reported that the most rapidly expanding occupations required more education and training.

In 1959 the average education required was:

16.2 years for professional and technical field
12.4 years for proprietary and management
12.5 years for clerical and sales
9.9 semi-skilled occupations
9.7 for service occupations.

--1963 - Public Law 88-210 Vocational Bill - The Perkins Bill was passed by Congress. Purpose was to provide:

1. Vocational education for any and all attending high school, as well as post-high school to prepare for an occupation or a cluster of occupations.

2. Vocational education for those who dropped out of high school, for those who need to be upgraded in an occupation, or who need to be trained in a new occupation.

3. Vocational education for persons with a socio-economic or other handicaps.

4. Construction for area vocational facilities, Kenosha is the first in the state; Eau Claire will be next, etc.

5. For the same need which has been served since 1911 in the present system of vocational education.

6. Ancillary services and facilities to insure quality in vocational education.

7. Student Loan Fund based on attendance in a vocational school on a full-time basis (not settled yet in Congress). Funds are obtained from Smith-Hughes Act, George-Barden Bill, Practical Nursing Act, Title VIII of National Defense Education Act and Manpower Development and Training Act. The latter provided for 100% reimbursement for programs this year and 90% next year.

State Legislation

Appropriations have increased as follows:

1960--$420,000	1964--$2,900,000
1961--$1,785,000	1965--$3,800,000 - 1st biennium
1963--$2,500,000	$5,400,000 - 2nd biennium

Bill 501A provides for a new plan of administration. It has been passed by both houses and is now waiting for Governor Knowles signature.

1. Provides for the establishment of area schools subject to the approval of the Coordinating Committee for Higher Education and the Board.

2. All areas in the state should be in vocational and technical districts by 1970. Provides for disposal of assets and liabilities of existing facilities and districts when new district is formed.

3. Addition of two public members to the Board making a seven member board for vocational and technical education.

4. Levy of 2 mills on equalized evaluation (not assessed evaluation) including capital improvement.

What brought about this tremendous change for Vocational Education?

1. Report of task force on the national level

2. On state level was the interest specifically shown by Governor Knowles

3. Attitude and action through President Johnson's programs, rapidly changing economy, creation of new jobs, automation and need for more skilled and technical workers and shortened work week.

4. Fifty per cent of people reside outside of vocational district. All people should participate equally in benefits and taxation.

5. Wisconsin State Employment Service states that future needs will be for:

   18% professional
   50% technical
   26% skilled -- requiring two years high school
   6% unskilled--on the job training.

PURPOSES OF CONFERENCE
Mr. R. W. Whinfield

Mr. R. W. Whinfield outlined the purposes of the conference after introducing the state staff and guests who will serve as resource people.

He stated the need for planning before the school year starts since programs are no longer isolated and overlap to some extent. We depend upon local level leadership for program development and growth resulting in expansion and improvement in service to the community.

Objectives of the conference were:

1. Learning new concepts
2. Exchange of ideas--sharing and creative ideas
3. Planning as a result of learning
4. Inspirational--quiet conducive to learning and thinking

Procedures of conference were outlined according to the program.

LEGISLATION, POLICIES, ADMINISTRATION
Mr. C. L. Greiber

I. Legislation

A. Bill 230A extends full-time school attendance law to 18 years of age. Eliminated part time school attendance provision.

B. Bill 284A. Increased mill tax levy for vocational and adult purposes to 2 mills on equalized valuation. Amended to 3 mills on assessed valuation for the city of Milwaukee.

C. Bill 501A.

1. Provides that all areas in the state shall be in vocational and adult, technical education districts by 1970 in accordance with State Board and Coordinating Committee for Higher Education plans. To achieve this objective it:

a. Enables a contiguous combination of counties, municipalities or school districts operating high schools or any combination thereof to establish an area district subject to approval by the State Board of Vocational and Adult Education and the Coordinating Committee for Higher Education.

b. Provides for the method of disposing of assets and liabilities of existing districts when new districts are formed.

c. Provides that the new districts shall be administered by a board consisting of seven members, two employes, two employers and two additional members, and a school administrator from within the district.

d. Authorizes the district board to levy a tax upon all of the taxable property in the district for the purpose of capital improvements, operating and maintaining schools in an amount not to exceed two mills on each dollar of equalized valuation.

e. Provides that if additional funds are required for building purposes, they shall be made available only after a referendum.

f. Grants power to the local board of vocational, technical and adult education to employ an administrator and necessary staff, purchase machinery, tools and equipment, etc.

g. Outlines the method to be used when contracts are made for construction work.

h. Provides for the formation of advisory committees.

i. Provides mandatory retirement of administrators and teachers at age 70.

j. Permits local schools to provide transportation to students.

k. Makes changes in the statutes correcting terminology to conform to new legislation as follows:

(1) Changes title of State Board of Vocational and Adult Education

(2) Changes the minimum entrance age to a school from 14 to 16 years of age

(3) Gives authority to the State Board to classify schools and designate their titles

(4) Amends the law as it relates to tuition payment for residents of vocational and adult school cities to other schools of vocational, technical and adult education for courses not available in city of residence.

(5) Enables the local board to charge course fees in lieu of tuition for courses not approved for state aid.

l. Extends full-time school attendance law to 18 for all persons residing in a school district which includes a vocational and adult school. Eliminates part-time school attendance in state statutes.

m. Authorizes Coordinating Committee for Higher Education to determine collegiate transfer programs and qualifications therefore in schools of vocational and adult education. Limits liberal arts collegiate transfer programs to cities with a population of 150,000 or vocational and adult schools located in cities where there is no existing public institution of higher learning.

n. Requests utilization of existing buildings and equipment of county colleges to the extent possible.

o. Provides that the local board shall charge tuition at 20% of instructional costs for state-wide full time collegiate transfer courses designated and approved by the State Board.

p. Beginning with instructional salaries for the 1966-67 school year and thereafter reimbursement of the full cost of instructional salaries incurred in state-wide full time collegiate transfer programs designated and approved by State Board.

D. Bill 797A. Changes membership of the Coordinating Committee for Higher Education and authorizes employment of a staff. The committee will be composed of 17 members, 2 from the University Regents, two from the State College Regents, 2 from the State Board of Vocational and Adult Education, 9 citizens, the Superintendent of Public Instruction and one member of a county teachers college board appointed by the Governor.

Provides for the employment of an executive director and staff for the Coordinating Committee for Higher Education.

E. Bill 595A. Appropriates $30,000 annually for technical training scholarships for Indians. Scholarships will be granted under rules and standards established by the State Board for needy Indians.

F. Chapter 163, Budget Bill

1. Appropriates for

	1965-1966	1966-1967
	$ 16,893,900	$19,923,400 state and federal funds
State Aid	$ 3,824,100	$ 5,392,700

2. Amends tuition law, enabling local boards to charge tuition for non-resident students in an amount sufficient to pay the cost of training.

3. Provides that tuition shall be charged for the following classifications:

   a. State-wide full time training
   b. Other

4. State Board shall establish tuition refund policies.

5. Provides that reimbursement shall be made of 80% of instructional salaries incurred in state-wide full time programs designated and approved by State Board.

II. Policies

A. State aid policies are affected by Chapter 163, The Budget Act. Aid of 15¢ per student hour for part time courses and courses which are not designated as full time state-wide vocational and technical programs.

B. 30¢ per student hour reimbursement is changed to 80% of instructional cost for all full-time vocational and technical programs and 100% of instructional costs beginning with the school year 1966-67 for full-time collegiate transfer programs.

C. Federal aid policies were affected by the passage of P.L. 88-210

   1. Construction
   2. Equipment
   3. Extension
   4. Ancillary services

   Policies require annual revision because of changing needs and changing amount of appropriations.

III. Administration

A. Additional state staff authorized and provided for in budget

B. Operating structure will incorporate three major divisions

   1. Program operation including additional programs of trade and industrial education, home economics, agriculture, business education, distributive education, etc.

   2. Program development to include teacher training, research, work-study, special programs, etc.

   3. Administrative services

C. Increased state and federal aids and changed policies will require revisions in local administrative structure.

D. Additional attention to administrative services, budget and finance.

E. Additional emphasis upon program development and curriculum change to meet changing needs.

F. Program Operation.

Questions and Answers:

1. As a result of Bill 230A, will there be an increase in the number of students under 18 years of age in our full-time programs?

Answer: If high school programs result in the kind of programs they envision and if they meet the needs of preparing young people for jobs, it may not affect the numbers in vocational schools.

Part-time school attendance will be eliminated. The greatest impact will be felt in Milwaukee and Racine.

2. How will this legislation affect transportation for students?

Answer: Transportation will be provided on the same basis for all students.

Meeting adjourned at 4:00 P.M.

GENERAL SESSION
Tuesday, August 24, 9:00 A.M.

Chairman: Walter Chojnowski Recorder: Merle W. Bodine

COOPERATIVE SERVICES

Panel: Jean Carlson, Charles Winegarner, Clem Wisch

CARLSON: As Vocational, Technical and Adult Educators, our major concern should be to make as much education available as possible to as many people as we can without regard to race, color or creed.

This is a task that no one person or no one department can accomplish alone anymore than one person or one department could have built Gemini V.

This task requires the contribution of each person within a department and the team work of all departments within a school. In addition, we must call upon the resources of local community agencies and involve these organizations in the total educational program.

Mrs. Carlson presented five guidelines for the development and launching of educational programs.

(1) Watch it - your public relations is showing!
(2) The curtain is going up!
(3) Success or failure!
(4) The work begins!
(5) The proof is in the pudding!

An explanation of the five guidelines is as follows.

(1) Watch it - your public relations is showing! This is the molding of public opinion - it goes on every minute of every day.

Public relations is the application of the Golden Rule in a modern practical way. If we treat others the way we want them to treat us, we have discovered public relations and put it to work.

Public relations is not something you turn on and off like a water faucet. It is something you soundly build and slowly turn on and keep running.

This constant flow of good public relations must begin within our own school departments - for instance:

a. Cooperating and respecting our co-workers.
b. Understanding each others departmental aims and objectives.
c. Developing a sense of unity in working toward a common goal.
d. Sharing each others ideas and learning experiences.
e. Maintaining a high morale through good communications.

(2) The curtain is going up! Once the stage is set for cooperating with outside agencies through effective public relations, we are ready to raise the curtain. This involves the following:

a. Studying the needs of the community
b. Keeping abreast with the efforts and results of all departments in the school on their cooperative public endeavors. This will avoid unnecessary duplication of effort and everyone can profit from the trials of the others.
c. We must keep abreast of what other educational organizations are doing in the community and combine our forces with them to produce a more effective program.

(3) Success or Failure! As a coordinator launching his first program, one should try to select a venture that can be reasonably expected to succeed. Success builds from success!

Always build a good sound foundation for your proposed program. Be sure to keep the following items in mind:

a. Have a clear set of objectives
b. Remember that goals must not only be clear but they must be identified as short or long term
c. Do not forget to use your objectives as a blueprint for action!

Although success should be definitely sought, keep in mind that not every program or class can be a "howling" success.

(4) The work begins! With the public relations piped to the community and the curtain successfully raised we are ready to:

a. Educate the community about the proposed plan
b. Recruit and promote through all medias of advertising such as: radio, newspaper, T.V., bulletins, brochures, and public appearances.

(5) The proof is in the pudding! This is a very important guideline which should not be overlooked for it is through this procedure that success or failure is determined:

a. A vital step in any project is the evaluation
b. Every program whether it be 2 year, 1 year, 1 semester, 6 weeks, or 1 day should be thoroughly evaluated
c. Evaluation serves as a learning device and can provide short cuts in the development of the next program
d. It can open your eyes to improved methods which will result in the building of a stronger foundation for future projects
e. Share your evaluation with cooperating departments and/or community agencies.

Mrs. Carlson made the following suggestions and recommendations which are worthy of study by all coordinators.

(1) We must be aware of "professional togetherness." We must all work outside our own professional group and work with and contribute to other departments and

agencies if we expect to build strong educational programs.

We are beyond the stage where we can say this is "my" project or "my" area and that I need no outside help. We should not only solicit support from other departments and agencies but we should by all means give those organizations proper recognition for their contributions.

(2) It should be the responsibility of each state and local department to keep all other state and local departments informed of their activities. By so doing, a total picture of the entire Vocational, Technical and Adult Education program can be visualized by the public and unity of purpose will result!

(3) There should be a Community Coordinating Committee for educational services to keep each organization informed. This could well be done on a county or area basis as well as a municipality.

Through experience Mrs. Carlson emphasized that it was a real challenge to work with and make the most of cooperative agencies. She concluded with the following significant statement:

"LET'S DARE GREATLY AND DREAM GREATLY AND LET OUR WORK CATCH UP WITH OUT DREAMS."

WINEGARNER: Mr. Winegarner presented the theme - "We must muster support from others." There are several methods by which this can be accomplished such as:

1. Direct contact
2. WSES reports
3. Telephone calls
4. Advisory committees
5. Chamber of Commerce
6. County agents
7. Home service associations
8. Trade association and service clubs
9. Labor temple representatives
10. Union meetings
11. Bulletin boards in industry
12. Bulletin boards in school
13. Mailing list for each trade or occupation
14. Jobber salesman
15. Manufacturing representatives
16. Newspaper announcements
17. Radio news releases.

Mr. Winegarner re-emphasized a quotation made long ago by Mr. Fairbrother:

"ANYONE CAN GO JUST ABOUT SO FAR ON HIS OWN EFFORTS, BUT YOU CAN GO TO THE TOP VERY EASILY IF YOU CAN GET OTHERS TO HELP YOU ALONG."

WISCH: Mr. Wisch explained the method of enlisting assistance from community services in promoting and developing "capsule" courses. The program objectives of "capsule" courses are as follows:

1. To help persons measure their accomplishments and appraise their needs.

2. To create a better understanding in specific areas of work.

3. To provide personnel with an opportunity to hear outstanding men and women in the fields of business, education, government, home economics, industry and labor.

4. To provide those attending such programs an opportunity to exchange items, experiences, and opinions.

5. To further cooperation between the Vocational, Technical and Adult Schools and business, government, industry, and labor.

The community services program in the Milwaukee Vocational, Technical and Adult School served 32,238 persons during the 1964-65 school year. There were a total of 118 sessions conducted involving 222 speakers and panelists. Eighty-six community organizations collaborated with the Milwaukee School in the development of these programs. 217 printed news items were published describing the various clinics, institutes, and workshops. A few of the 86 cooperating organizations which contributed to the success of these short intensive programs follow:

American Automobile Association - Wisconsin Division
County Extension Service
Milwaukee County Sheriff's Department
Milwaukee Post Office
Milwaukee Safety Commission
State Board of Vocational and Adult Education
Wisconsin Council of Safety
Wisconsin Department of Taxation
Wisconsin State Motor Vehicle Department

A few of the 118 sessions were entitled as follows:

Cook Managers' Workshop
Law for Women
The Magic of Fashion and Fabric
Sales Clinic
Freeway Driving Seminar
Postal Classification and Rate Clinic
Auto Refinishing Clinic
Postal Wrapping and Packing Workshop
Fire Prevention School
Gift Wrapping for All Occasions
State Income Tax Forum
Federal Income Tax Forum
Alaskan Movie Trails
Purchasing Clinic
Heart Forum
Gagin Seminar
Know the Meat You Buy
Automotive Service Tips
Garden Clinic
Outboard Motor Clinic
Foreman's Safety School
Photo Instrumentation Seminar

GENERAL SESSION
Tuesday, August 24, 7:00 P.M.

Chairman: Donald M. Brill Recorder: John R. Plenke

RESEARCH IN THE NEW DESIGN FOR EDUCATION

Dr. Robert Swanson, Dean
Applied Science and Technology
Stout State University

This seminar is appropriate to the increasing interest shown in research generally and in educational research specifically. We have become a nation impressed with research. Each of the new federal acts dealing with education makes rather extensive provision for research. For example, the Elementary and Secondary Education Act of 1965, now before Congress adds $45 million to the $25 million contained in the Cooperative Research Act of 1954. The Vocational Education Act of 1963 provides $225 million annually.

The effects of broad scale research are being felt in the classroom. The massive changes in the curricula for math and science are examples.

In my discussion, I'd like to deal with both ends of the continuum of research. For certain purposes, large, broad scale, coordinated projects are essential. I'd like to discuss this kind of research. At the other extreme there is great need for specific, individual research on the part of the classroom teacher. I am assuming that a majority of this group will be more directly concerned with the latter.

WHAT IS RESEARCH?

A term as general as research warrants definition. For my purposes, I will regard research as "a quest for new knowledge or a more useful interpretation of facts which are already known."[1] Note that this encompasses the two aspects of research often thought of as "basic" and applied."

BROAD SCALE RESEARCH IN VOCATIONAL EDUCATION

The idea of the lone scientist doing research in his laboratory is not very realistic today. Research has become a team activity and calls for the coordinated efforts of many. In discussing this phase of research I'd like to limit my remarks to research in vocational education, because this has received increased attention in the past few years with President Kennedy's Panel of Consultants on Vocational Education and the subsequent Vocational Education Act of 1963 and President Johnson's War on Poverty. Suddenely vocational education has come to be thought of as an extremely important means of solving our national problems. A close look at vocational education can do a great deal to sharpen our focus on the problems of other types of education as well.

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[1] Footnotes at end of paper

Qualitative as well as quantitative data must be sought. Adequate procedures call for following up the non-response error--checking with graduates who do not generally answer questionnaires. Random interviews of a portion of the group should be carried out to validate mailed questionnaires.

Evident Trends in Vocational Education Research. Activities in vocational education research seem to indicate two trends:

(1) Studies will be broader in scope both in terms of area covered and involvement of kinds of researchers. Research teams of psychologists, economists, sociologists, and educators will be the common practice.

(2) Evaluation of the effectiveness of programs will become more extensive and realistic.

As illustrations, let me cite two studies, one completed in 1963 and the other just now underway.

The Pittsburgh, Pennsylvania, Study[3]

Illustrative of an intensive system-wide study was one carried out for the Pittsburgh Public Schools in 1962-63.

Scope. All basic employment areas and industries representing the entire employment field were covered to determine present and projected labor forces and requirements.

Objectives.

(1) To determine present and future student population in terms of ability, aptitude, interest, and educational needs.

(2) To determine the extent to which the present vocational program is meeting needs.

(3) To determine present and future employment requirements and practices.

(4) To review the function and content of vocational programs and their relations to other high school programs.

Methods: The study gathered its data largely from surveys of various types and with various groups.

(1) Review all publications, school and industrial, pertaining to education of occupational, vocational, or technical workers, training and recruitment of employees in various occupational groups, training requirements and opportunities.

(2) Personal interviews with industrial people involved in recruiting, training, job classification, and supervision as a means of validating #2.

(3) Personal interviews with educators.

Areas of Research

Brandon and Evans[2] have identified three basic areas of research in vocational education:

(1) program planning
(2) operations research
(3) evaluation

They comment that all too often the research has been restricted to one of these activities, program planning. Further, there has been a tendency to perform the study only to justify inaugurating a program. This has resulted in the criticism that vocational programs often continue to prepare workers for jobs long since extinct.

Program planning. Vocational education has always been extremely sensitive to needs, perhaps more than most fields of education. As a result, program set-up and planning have always had a prominent place. The "tools of trade" for program research have been:

(1) the occupational survey, usually community in scope
(2) recommendations of advisory committees, usually local, and
(3) occupational analyses.

These basic research tools are still sound but changing social and economic conditions have called for modifications in their application. Two basic characteristics of the population and occupations have combined to compound the problems of program planners and require broader procedures:

(1) Increased population mobility has rendered the community occupational survey too narrow for most courses and required more broadly representative advisory committees.

(2) The breakdown of unit trade boundaries in occupations and the rise of a diversity of technical specialties requires new means of analyzing occupations. The technical occupations generally have less manipulative content and greater amounts of knowledge. For example, it is not uncommon to find the study of calculus a part of occupational training on less than college grade.

Operations Research. Many schools of all types use operational procedures based on "logical" or convenience factors. Qualifications for instructors, requiring so many years of occupational experience, are set arbitrarily; of course when supply is short and demand is great, qualifications are modified. Length of school period efficient for learning is seldom tested. Costs per student are often required by governing bodies but not used as extensively as possible for increased operational efficiency.

Program Evaluation. Perhaps a most important aspect of research in any kind of education is the determination of the degree to which the program accomplished its objectives. This is especially important in vocational education and the Vocational Education Act of 1963 places further emphasis on it. Do they get and hold jobs for which they were trained? Did they continue to improve on the job?

(4) Comprehensive review of vocational and industrial education in the public schools, including course outlines, methods, coordination among programs.

(5) Review of industry training programs.

(6) Study of student availability for technical-vocational programs, junior high, senior high, and adult.

(7) A validation study of the student survey by contacting a random sample of parents.

(8) Study of availability and interest of industrial personnel to offer courses in industry or the school.

(9) Questionnaire to all labor unions.

Conclusions: Though it is not my purpose here to report extensively on the results of this study, several conclusions and recommendations for action are interesting:

(1) The analysis of industrial employment requirements indicates that more than 50% of all subject matter necessary to qualify for entry level employment is common throughout all jobs within a family grouping. Examples of family groupings were technical jobs and semi-skilled jobs.

(2) It was deemed necessary to give at least 60% of the current and future high school population some occupational training. They found only 3% of the high school students in vocational schools. They proposed that vocational work be limited to grades 11-12.

(3) A number of "core" programs were proposed:

a. Academic

b. Business

c. Occupational (semi-skilled and service)

d. Vocational (trade and industry)

e. Technical (semi-professional and technical)

The Vocational Research Program at the University of Wisconsin[4]

In the past year, the Industrial Relations Center of the University of Wisconsin received a grant from the Ford Foundation of about $800,000 "to

develop and foster research, experimental, and developmental activities which will significantly contribute to the strengthening of programs of vocational-technical education and training."

The study, just getting started, will deal with many individual problems organized around three general areas:

(1) the changing world of work
(2) the human dimension
(3) educational programs and processes

The Changing World of Work. Research in this field will study occupational trends and the job market; the analysis of human skills and knowledge required for current and developing occupations; the match or lack of match between job requirements and training programs; the adequacy of job information and counseling practices; and techniques of occupational surveys. Studies of the mobility of labor and factors inducing or inhibiting mobility are included.

The Human Dimension. Research in this field will examine programs of vocational technical education and training for their demands upon aptitudes, skills, knowledge, and other human characteristics. It will examine the requisites for "employability" in terms of general and specialized training and personality factors. Evaluation of procedures for selection of trainees, their job placement, and follow-up studies after employment are included. The problems of disadvantaged groups of workers will have special attention.

Educational Programs and Processes. This area of activity is concerned with the translation of the knowledge about (a) job trends and needs and (b) about human resources into effective programs of education and training. The research and evaluation activities will center around:

(1) the organization of vocational-technical programs of education and training
(2) curriculum planning
(3) development of instructional materials
(4) selection and preparation of teachers
(5) counselling programs
(6) work-study programs
(7) on-the-job training.

The research goals call for participation by economists, sociologists, psychologists, curriculum specialists, counselling experts, and specialists in vocational-technical aspects of agriculture, commerce, engineering, home economics, industrial arts and other fields.

Individual Problems. Illustrative of some of the individual problems to be included in this broad study are the following:

(1) Follow-up studies of vocational trainees and high school students.

(2) Evaluation of methods of course election in vocational education.

(3) An evaluation of procedures for the selection of vocational school instructors and the strengthening of instruction.

(4) Evaluation of the procedures for selection of vocational school trainees.

(5) An evaluation of placement procedures for vocational school trainees.

(6) An evaluation of the vocational school system for retraining the unemployed.

(7) An evaluation of the relationship of vocational education to on-the-job training.

(8) An evaluation of experiments in internship, work-school, and youth consideration training programs.

(9) An evaluation of guidance and counseling related to vocational education.

(10) Research and experimentation in improved curricula.

Establishment of Vocational Education Research Centers:[5]

The Division of Vocational and Technical Education of the U.S. Office of Education has announced a program to establish regional centers for research and development in vocational and technical education. Planning funds are available for the development of proposals by universities or university consortia, but the deadline for proposals to be considered for funding this year was April 1, 1965.

The Division is expected to use almost $12 million for research and special projects (including the regional centers) in vocational and technical education during the present fiscal year, and the President's budget message requested $17.7 million for this program in 1966. The Office of Education plans to establish about three of the proposed regional centers with fiscal '65 funds, with additional ones to be added in subsequent years if the plan proves to be as successful.

The range of activities for the proposed centers includes basic and applied research; curriculum review and organization; learning theory research and methods development ("as related to subject matter and to various socio-economic characteristics and individual differences of learners"); development of new instructional materials, techniques and equipment; and R & D in educational administration, planning and economics. Proposals should indicate cooperative arrangements with school systems and other institutions for testing, evaluating, and demonstrating new materials, techniques, etc., as well as plans for advanced training and retraining of instructional, research, and administrative vocational-education personnel.

INDIVIDUAL RESEARCH BY THE CLASSROOM TEACHER

It is interesting and inspiring to hear of such grand scale research proposals, but the classroom teacher can come away rather awestruck and thinking that there is little place in the pattern for him.

Let us turn our attention to the other end of the spectrum--to the part that the individual classroom teacher can and must play if there is to be widespread improvement as a result.

It is easy to point out that teachers should be aware of and study research findings and put them into practice. Many lists of sources of such reports are available. I would suggest that all teachers study them. But I am very wary of the prospects of sweeping changes resulting from merely reading research reports, even very fine ones. For example, John Fuzak[6] was given the top research award in 1958 by the American Technical Society for a study of a simple means of predicting success with manipulative activity in junior high industrial arts. The study was publicized widely in clear, concise terms. Yet I doubt that it has influenced practice to any extent.

I believe that it is necessary for teachers to take a different view of research if they are ever going to become involved with the process (as well as the products) themselves. This is the view of research as "the process by which practitioners attempt to study their problems scientifically in order to guide, correct, and evaluate their decisions and actions." This kind of research has been variously termed "action research" by Corey,[7] "classroom research" by the American Council on Industrial Arts Teacher Education,[8] and "research for the practitioner" by Barnes.[9]

For those interested in greater detail, I commend these three references to your study.

A number of developments have encouraged this kind of research.

(1) The tools of research, notably statistics, have been developed to deal with groups which do not fit a known distribution. Techniques of dealing with small groups have been developed.

(2) Teachers today generally have more preparation in research procedures.

(3) Research has gained popularity generally and practitioners are more concerned with attempting to solve their problems scientifically.

<u>Why Should the Classroom Teacher be Involved with Research?</u>

The practitioner in education is constantly faced with new proposals in content, method, and organization. He asks the question,"Is this approach better?" When he looks at research reports, he often runs up against the term "no significant difference."

"For example, the <u>Review of Educational Research</u> for April, 1962 reviewed research completed on new educational media for the preceding six years. The overall verdict about instructional television

was 'no significant differences' when televised instruction was compared with ordinary classroom instruction. In regard to self-teaching devices and programmed materials (teaching machines), the most popular finding again was 'no significant differences' compared with ordinary instruction. Language laboratories came out somewhat better, chiefly because the amount of research being done was so sparse, and the review ended with the observation that much more controlled research is vitally needed."[10]

When one looks at individual researches, however, he often finds that in a particular case, with a particular teacher, and a particular class, a given method does produce superior results. Professional evaluation is likely to say that such results are invalid because they cannot be generalized beyond the confines of the experiment. However, the fact that a method works better for a particular teacher in a particular class is extremely important to that teacher and those students. A continuous evaluation of results by the individual teacher may produce no new general theory but it can result in his teaching being improved. The main point of this research is to carefully assay results--something that many of us never do. I would guess that most people do not really know whether their innovations were successful or not.

People in the fields of industrial, vocational and technical education are proponents of student involvement in the learning process. Similarly, instructor involvement with the research process is important. This may seem to imply that we must discover everything for ourselves; such is not the case. But it seems to me that those who become involved with research are more likely to become aware of other research, too. This is an untested hypothesis on my part.

Why is the Classroom Teacher in a Good Position to do Research?

The situation in which the individual teacher operates possesses many characteristics facilitating research of one type which are not commonly available to professional researchers.

Proximity to Educational Problems. The individual teacher is at the point of contact with educational problems of at least some types. He is in a position that forces him to be concerned with many practical problems of class organization and control, content selection and presentation, and evaluation.

Possibility of Longitudinal Studies. In so much research done for a graduate degree, the individual is primarily concerned with finishing the degree and modifications in design or longitudinal studies are ruled out. It is doubtful if many graduate advisers would recommend that a candidate do an "eight-year study." The result has often been investigation of extremely short-term projects; for example, a ten-minute lesson with an immediate test and a retention test ten days later.

Reality of the Experimental Situation. So many graduate studies are performed in sterile and artificial situations where controls unlike those in practice are used. Some of the studies where taped or filmed instructions are

used to insure uniformity of treatment are not typical of the practical situation and while they may add to the general fund of knowledge they are not of very direct help in the solution of problems.

A fertile Source of Data. In his normal activity, the teacher collects data daily. He keeps records, records observations, and makes judgments and evaluations. Care in collecting these data can provide vast amounts of useful research materials.

The Research Process

How to go about it? We may well agree that there is a need for research, but just never get at it. As a first step, I recommend that every teacher have an on-going research project of some type. This need not consume great amounts of time. In fact, once the framework is set up, the collection of data need involve little time other than that which is a normal part of teaching.

A formalized procedure can aid our thinking in deciding on researchable problems and means of attacking them. Remember that our purpose here is "to study problems scientifically in order to guide, correct, and evaluate decisions and actions." An adaptation of Dewey's process of reflective thinking can serve as a guide:

(1) Specification of a problem - development of a hypothesis
(2) Design of the approach
(3) Collection of data
(4) Summarization and analysis of data
(5) Drawing of conclusions for action.

Certainly everyone is aware that research does not proceed neatly in these categories or in this precise order. The outline does, however, provide a good basis for consideration of the various facets of problem development.

Specification of the Problem -- Development of a Hypothesis. An important beginning in any investigation, no matter how informal, is to specify the problem as clearly as possible. If this is not done, it is doubtful that pertinent information will be collected. Often the identification of the problem is one of the most difficult aspects of research.

A clear concise method of accomplishing this is to state a hypothesis for test. Barnes[11] identifies two kinds of hypothesis, the research hypothesis and the null hypothesis.

The research hypothesis is often stated in "if-then" terms -- "If the teacher uses programmed learning for Unit A, then the students will learn more."

The null hypothesis is stated when statistical procedures are to be employed. The null is the hypothesis of "no difference" -- there will be no difference in the learning of students in Unit A taught by programmed learning or by lecture-demonstrations.

Design of the Approach to the Solution of the Problem. Decide who will be involved in the study. What will be considered data and how will it be gathered. On what basis will results be regarded as accepting or rejecting the hypothesis?

Collection of the Data. Follow the design in assembling data.

Summarization and Analysis of the Data. Place data in the form to best show how it bears on the problem. Employ statistical or other devices to decide whether the hypothesis was an adequate precition of results.

Drawing Conclusions for Action. Look back on the original problem; should some action be taken as a result of the findings? Does the hypothesis need restatement for further investigation?

In an attempt to avoid pure abstraction, let me illustrate with several examples of classroom research with which I am familiar. I have purposely chosen rather simple examples to show how little time is required to conduct such research.

An Administrative Problem--Utilization of Facilities.[12]

Industrial, vocational, and technical subjects employ facilities that are among the most expensive in the school. It is, therefore, doubly important that we make maximum possible use of them. This study was conducted at Stout State University to determine how much time was spent by various teachers of the same shop course in classroom type activities such as lecture, discussion and testing; shop demonstrations; and supervised lab work. The intent was to determine how much of the instruction could be conducted in a classroom to free the laboratory for additional lab sections.

The hypothesis formulated was that all instructors of a given course were using approximately equal amounts of time for each of the activities.

A data form was developed and each instructor recorded the time spent in each activity. Records were made at the end of each class period. A trial run lead to a revision of the data form. The study was then carried out for three quarters and involved 36 classes taught by 7 different instructors. Following is a summary of the data for 14 sections of one class taught by 4 different instructors.

TABLE I

PERCENTAGES OF TIME SPENT ON THREE TYPES OF ACTIVITIES BY FOUR INSTRUCTORS OF MACHINE WOODWORKING (IE 131) DURING THE SECOND, THIRD, AND FOURTH QUARTERS, 1961-62

Instructor	Quarter Taught	Percentages of time spent in:		
		Classroom	Demonstration	Laboratory work
A	2	24.2%	16.1%	59.7%
A	3	24.4	14.2	61.4
A	4	22.4	17.6	60.0
D	2	32.1	18.1	49.8
D	3	30.6	7.7	61.7
D	4	19.4	7.4	73.2
D	4	19.9	7.2	72.9
E	2	29.1	16.5	54.4
E	3	32.9	14.1	53.0
E	4	26.2	18.4	55.4
E	4	24.5	19.2	56.5
F	2	31.6	8.2	60.2
F	4	27.2	8.2	64.6
F	4	29.7	6.1	64.2
Medians		28.5%	14.15%	60.1%
Ranges		13.5%	13.1%	23.4%

It is interesting to note that three of the instructors were extremely consistent in the percentages of time used for the various activities in their different sections. A possible cause for the variability of Instructor D was that he was teaching the course for the first time and possibly had not stabilized his pattern.

There seems to be a definite bi-modal distribution of percentages of time spent in demonstrating with Instructors A and E using 16-18% of their time and Instructors D and F using 7-8% of their time in this manner. The distribution of times spent in classroom type activities appears more rectangular and the distribution of times spent in laboratory work seems tri-modal.

It was concluded from this study that there was a fair degree of consistency within instructors in their patterns of time usage with some variation in the pattern followed by the various instructors. There was now a basis for an overall analysis of the instructional pattern used by the department members.

This study led to the idea for an improved method of determining time utilization within a class. Another experiment[13] investigated the effectiveness of an industrial technique known as "work sampling." The resulting study proved the method to have great accuracy without involving the teacher's time for administration.

Several changes were the eventual result of the studies:

(1) A new system of scheduling classes which resulted in a lower contact hour load for teachers.

(2) Proposed new laboratory design

(3) A revised course outline

A Limited Classroom Problem--How Do We Judge Design?

Let me explain briefly a typical teacher's problem, one which was done strictly within the confines of a course with data provided in a normal classroom situation.

The Problem. In recent years, the teaching of design has received increased attention in industrial arts. The basis for judging good design and the ability of the student to make such judgments is a common teacher's problem. This brief classroom study dealt with the problem of personal likes and dislikes versus application of design principles in making judgments of what constitutes good design. The null hypothesis tested was "abstract drawings 'liked' by a student and those he regards as following 'principles of good design' will be the same."

Procedure of the Study. Participants were 16 students in a course titled "Design in Wood." A "Design Taste Quiz" was used as the instrument to evaluate the ability to recognize good design. The quiz consists of 13 pairs of abstract line drawings projected on the screen. The student picks one or the other as better. The scoring key is based upon the opinion of established industrial designers.

Students took the quiz first with the instruction to choose which of each pair appealed to them more. Their reactions were collected and the quiz administered again. This time they were instructed to choose which of each pair seemed to them to best apply the principles of design. At this point in the course no instruction in design principles had been given, though most college students have had some contact with such principles elsewhere.

Analysis of the Data. The following table shows the scores on the quiz. Each choice that agreed with expert opinion was awarded one point. The possible score was thus 13.

TABLE II

DESIGN TASTE QUIZ SCORES FOR SIXTEEN STUDENTS UNDER TWO CONDITIONS

Student Number	Score Based on "Likes"	Score Based on Application of Principles
1	9	8
2	8	11
3	8	8
4	7	9
5	5	7
6	7	8
7	8	8
8	9	12
9	10	9
10	6	8
11	8	10
12	4	7
13	6	7
14	9	8
15	4	8
16	9	9

Here is a problem in which simple statistics can be employed through a concept called a "test of significance." Without attempting to teach a course in statistics here, let me as simply as possible explain the theory of this idea.

Suppose there were no difference in the students' choices on the basis of the criterion applied--likes or design principles. We would expect each person to get the same score each time or at least that approximately the same number would get higher scores as got lower scores the second time. A simple test, called the "sign test," can be used in this analysis.

To make this test we develop a third column on the data sheet. If the scores are the same both times we place a zero in the column. If the second score is higher we place a "+" and if it is lower we place a "-".

Determine the number of instances in which there was a difference, 13 in this case, and the frequency of the least common sign, 3 minuses in this case.

TABLE III

APPLICATION OF THE SIGN TEST TO PAIRS OF SCORES ON A DESIGN TASTE QUIZ FOR SIXTEEN STUDENTS

Student Number	Score Based on "Likes"	Score Based on Application of Principles	Direction of Differences
1	9	8	-
2	8	11	+
3	8	8	0
4	7	9	+
5	5	7	+
6	7	8	+
7	8	8	0
8	9	12	+
9	10	9	-
10	6	8	+
11	8	10	+
12	4	7	+
13	6	7	+
14	9	8	-
15	4	8	+
16	9	9	0

No. of cases where a difference exists ---------- 13

No. of cases where difference favors "likes" ---------- 3

No. of cases where difference favors "principles" ------ 10

Probability of this difference due to random choice ---------- .046
(from Table 3 in Classroom Research in Industrial Arts)

If the differences were purely chance happenings we would expect about six or seven of each sign. How far can we deviate from this before we can conclude that a chance happening has not occured?

We refer to a table of probabilities that has been developed for this purpose.[14]

In this example there are 13 cases where a difference exists and in only three of them did it favor the personal likes. Entering the table at 13 and 3, we find a probability of .046. This means that a chance happening of this kind would occur only 46 times out of 1000.

Conclusion. Since the chance possibility of this occurence was so small, I concluded that, for these students, their use of design principles was superior to their personal likes in identifying good design. Or we could say that what the students like and what they regard as "good design" is different. This lead to an interesting discussion of why this was the case.

A More Extensive Classroom Problem--Which Method Is Better?[15]

The Problem: Educational psychology tells us that knowledge of results is an important spur to learning. The following is a classroom study to apply this theory to a technical course in electricity. The instructor developed an electrical device, called an automatic comparator, by means of which a student can immediately check the accuracy of his work upon its completion. The null hypothesis tested was: "there is no difference between the learning of students who receive immediate knowledge of the accuracy of their work and the learning of those who receive delayed knowledge."

Procedure of the Study. Students involved were four sections, 95 students in all, of college freshmen taking a required course in basic electricity. Half of each class was randomly selected to use the immediate checking device to determine the accuracy of their classwork. The other half turned in their work for grading at the end of each period and received it corrected the next day. All students received the same instruction and took the same test.

Analysis of Data. The final test scores of all 95 students were placed in rank order. The student receiving the highest score was awarded a rank of 95 and the student with the poorest score a rank of 1. (This is a reverse of the common ranking procedure). Table IV shows the rank scores of students according to the method employed with each group.

TABLE IV

RANK ORDERS ON A FINAL TEST IN ELECTRICITY FOR 45 STUDENTS USING AN AUTOMATIC COMPARATOR FOR IMMEDIATE KNOWLEDGE OF RESULTS AND 50 STUDENTS RECEIVING DELAYED KNOWLEDGE

Ranks of Group Using Auto-Comparator		Ranks of Group Receiving Delayed Knowledge	
87	91.5	73.5	6
91.5	82	85.5	95
49.5	83	76.5	23.5
67	64	85.5	73.5
42	81	53.5	49.5
88	64	55.5	64
58	23.5	26	36
59	84	6	12
14.5	49.5	55.5	1
53.5	60	76.5	57
49.5	71.5	9	28
45	93.5	2	49.5
93.5	79.5	69.5	49.5
79.5	89.5	39.5	71.5
89.5	36	42	14.5
36	67	28	69.5
67	36	61.5	39.5
36	3.5	16.5	42
33.5	31.5	76.5	28
31.5	19.5	45	61.5
19.5	31.5	19.5	16.5
31.5	12	23.5	76.5
12		9	45
			19.5
			23.5
			9
			6
	2457.5		2102.5

Total of Ranks of 45 students using automatic comparator----------2457.5

Total of Ranks of 50 students receiving delayed knowledge results---2102.5

Here, again, fairly simple statistics can be used to determine the effect of the different treatments. The Mann-Whitney U test is appropriate. If there were no difference in the methods, we would expect to find approximately the same average rank in each group. A test of significance was employed to determine if the deviation from this chance probability was sufficient to warrant concluding a real difference.

Without going into the details of the arithmetic, it was found that an arrangement of ranks like that observed would happen due to chance alone less than 2% of the time.

Conclusion. Because of the low probability of chance occurence, it was concluded that immediate knowledge of results by means of this device was effective in providing improved learning.

Further Action. The instructor now uses this means of checking problems with his classes. The experience with this experiment lead him to another experiment which is now underway. It is investigating the effectiveness of replacing the lecture with a programmed text.

The Point.

It is not my purpose to convince you that classes should operate with separate lecture and lab sections, or that students' judgments of good design and their personal tastes are different, or that an "automatic comparator" is a fine teaching device. I am sure that the studies I reported do not "prove" these facts in any general sense. In all cases they did provide us with some scientific facts to aid in making educational decisions--and that was their purpose.

Footnotes

[1]Brandon, G. L., and Evans, Rupert N. Research in Vocational Education. In Vocational Education. 64th Yearbook of National Society for the Study of Education, 1965, p. 263.

[2]Brandon and Evans, pp. 263-266.

[3]Vocational Education in the Pittsburgh Public Schools, The Pittsburgh, Pa., Board of Education, April, 1963.

[4]"Vocational Research Program" a mimeographed report from the Industrial Relations Center, University of Wisconsin, Madison, Wisconsin, 1965.

[5]"Circular Letter No. 7", National Association of State Universities and Land-Grant Colleges, March 3, 1965, p. 14.

[6]John A. Fuzak, Research Report on the Role of Physical Maturation in Determining the Ability of Junior High School Boys to Perform Complex Finger Coordinative Activities in Industrial Arts, and an Index to Level of Ability. Chicago, Ill.: American Technical Society, 1958.

[7]Stephen M. Corey, Action Research to Improve School Practices, New York: Teachers College, Columbia University, 1953.

[8]American Council on Industrial Arts Teacher Education, Classroom Research in Industrial Arts, Bloomington, Ill.: McKnight & McKnight Publishing Co., 1964.

[9]Fred P. Barnes, Research for the Practitioner in Education, Washington, D.C.: Department of Elementary School Principals, National Education Association, 1964.

[10]Barnes, p. 3.

[11]Barnes, p. 31.

[12]"An Analysis of the Utilization of the Laboratories of the Woodworking Department at Stout State College," A Staff Study. Mimeographed report at Stout State College, Menomonie, Wisconsin, July, 1962.

[13]"Worksampling: A Model for Analyzing Classroom Teaching Activities," A Staff Study. Mimeographed report at Stout State University, Menomonie, Wisconsin, 1963.

[14]Classroom Research in Industrial Arts, p. 171.

[15]Classroom Research in Industrial Arts, pp. 67-73.

GENERAL SESSION
Wednesday, August 25, 9:00 A.M.

Chairman: Lorran C. Celley Recorder: Arnold Potthast

STUDENT SERVICES
Dr. Evelyn Rimel, Professor
Education and Psychology
Stout State University

Mr. Chairman, Members and Friends,

With the exciting news concerning the expanding state-wide programs under vocational and technical education, this growing system has a chance to prevent errors which have choked standard patterns of higher education in its severe bands of traditionalism.

Let us welcome reconsideration: Let us ponder that which we appraise--- The richness of background experiences, let us assess: The emotional state of self: The teachings of the culture norms --- these three together, let us examine: what do they lead us to say and feel about student services.

Today a future faced by the vocationally incompetent is a future of social failure and economic suicide. But a vocationally competent person is not merely a machinist, a clerk, or a typist. He is a person who responds to others, who, in turn respond to him. Out of this daily interaction, there develops a complex set of feelings.

So this vocationally competent person is:

First, a human being who feels
Second, a unique person with his own likes and dislikes
Third, a family member who associated smiles with approval and frowns with disapproval
Fourth, a friend who perceives himself adequate or inadequate
Fifth, a citizen who has learned the relationship between cause and effect
Sixth, a co-worker who respects the integrity and dignity of others
Seventh, a married partner who knows that marriage involves a lot of giving
Eighth, a parent who has learned to be concerned about others and assumes the role of example for children's learning
Ninth, a learner who seeks to understand the constant interplay between social and individual factors and to coordinate these in our changing times
Tenth, a lover of life who knows people cannot go it alone and is concerned not only with the interior state of his own soul, but about the state of all men.

To me it is the responsibility of Student Services to help each student, assess his own individualism, and collaborating with him, develop a program for growth in becoming, or the fulfillment of the developmental tasks outlined by Havihurst some thirty years ago. In our beautiful figure neurosis, we have not done so!

1. Accept one's own body.
2. Learn an appropriate sex role.
3. Learn how to inter-relate with friends of both sexes.
4. Become emotionally independent of adults.
5. Select and prepare for an occupation.
6. Prepare for marriage and family living.
7. Acquire attitudes and concepts necessary for intelligent citizenship.
8. Build conscious values to fit a technological world.

Obviously No. 5 is the avowed purpose for Vocational, Technical Schools (Select and prepare for an occupation), but do we prepare only 1/8 of each student or do we help a"whole person grow in the process of becoming."

Two individuals may under-go the same home, the same schoolroom, the same church, the same community, but as an adolescent they will show diverse or even opposite reactions to all these experiences. The self within, the inner core, which sifts all experiences through its own inner strainer, and selects the personally meaningful ones, internalizes the significant feelings peculiar to a person and erects a sun dial of values, which becomes the functioning measurement for appraisal of all future happenings for that person. For example, no matter how many tried to teach Johnny how to enjoy reading, through all the tortures, strain, pressures, criticism, and controls, many Johnnies learned to hate reading. These attitudes are but the verbal expressions of inner held values. Who failed to learn to read? Could it have been the adult leaders, who refused to profit by the basic import in the adage - "You can lead a horse to water, but you can't make him drink." Johnny, by his failure to like reading, said, "I don't like how you are trying to do this to me." He was never felt out (why he so acted). In his felt disrespect for himself, he smoldered resentments, which may flair anytime. This powder keg of passive resentment and hostilities are all around us today.

Until recently children were considered born bad and dumb and if ground hard enough in the family school meat grinder might emerge scarred but adequately conforming adults. With no felt respect between elders and young, no expressed trust, no basic belief in their humanness, no collaboration in their growing process, reared schizophrenically, they grew up schizophrenic and they act schizaphrenically.

People didn't realize that personality began to form immediately with birth and that the ability to inter-relate, love, or grow equilibrium comes from living, working and playing in a meaningful way with real people. The kind of experiences the baby has with its resultant feelings and sensations influence his fundamental attitudes and expectations and become a part of his value system.

It is not what we know, but what we do that counts. Living is doing and we learn this from parents and family, neighbors, ministers, teachers, friends, employers, colleagues. A student does:

What he believes
What he has experienced
What he has internalized.

If he does wrong, he usually does so, thinking he is right. He usually acts habitually rather than deliberately, but in our fast changing world this keeps him out of tune!

What are we doing in Student Services to understand

What students believe and why
What students have experienced
What students have internalized

This is the raw material which academicians and technicians work with, not so many hands high, so high an I.Q., so many courses taken or such and such grade average. Calderone has said - " He who knows the why of living can surmount the how."

Last Saturday in Frederic Collins' column on "Leadership Gap" he headed his article Discipline Needed to Avoid Violence, but he wasn't writing about external discipline. He wrote about self discipline, group developed. He stated the indictment that the Negro part of the American Society possesses no built-in system of "self punishment."

But it has been on smug middle-class college campuses, predominantly white, that we've had panty raids, sit-downs, sit-ins, riots and what have you. It would seem maybe that college campuses possess no built-in system of "self-punishment."

Collins continued:

A system of self-punishment means that almost every group has devised some means of internal policing by itself to discipline its struggle against discrimination.

Is the struggle of the Negro negatively oriented against discrimination or positively oriented toward right to become meaningful, free, useful, creative members of a democratic society? To experience not I - it relations, but I - thou relations.

Is the struggle in the paternalistic controlled colleges today of students negatively oriented against administration or positively oriented toward the demand for mutually stimulating and satisfying relationships where their full creative potential may blossom, and they become free to be self respecting, other centered meaningful citizens.

Collins continued:

The problem the Negro faces in attaining assimilation (neat avoidance of term integration) is different than that of white minorities. The Negro community has built elaborate organizations for maintaining militant pressure on the rest of society in behalf of full equality which society seems to want, but the talent for organization has stopped there. They should now devote their skill and energies to organize systems of internal self discipline and internal self help.

Turning to institutions of higher training, we have a well organized administrative system often top heavy; effective classroom lecture silos; adult controlled shops, laboratories; methods of policing and punishing student recalcitrants, but our talent for organization has stopped there.

Perhaps it's time we devote our skill, energies, psychological understandings, research know-how concerning the roles of attitudes and values and how they may be modified to the development of internal self help with students, and discontinue treating them as though they were uncouth animals requiring only physical comfort, adequate nourishment and crammed with facts.

Isn't it too bad that we didn't learn how to do this when our bodies were smaller? But it was so easy to persuade them that it was all for their own good.

Now they are so large in massed numbers that the Power of Mere Bodies is on their side and we do not have the skill to cope adequately either with holding the lid on firmly or letting go gradually in a face saving way!

Let's talk turkey about what student services have perpitrated on students

1. Cooped them up in prescribed housing
2. Fenced them in by predetermined curricula
3. Assigned a T score roost
4. Charcoaled them in the school rotissiere

    a. Dressed through paternalism
    b. Stuffed with facts
    c. Trussed by traditionalism
    d. Seasoned with conflicting demands
    e. Charred by anxiety
    f. Garnished through failure
    g. Served up a just job
    h. Carved by the academicians

What is the future prognosis

When banded by the past
Turned loose on the present
To peck at an unknown future

They become swallowed by eagle craving sprout money mad ulcers. Expected to gobble yes-yes my boss and parade with the best foot forward? What real chance for self realization have they ever really had? Is there any wonder why massed student riots, like turkey stampedes, take place?

Havihurst has written that there are qualities which develop a person who carries his share of responsibility for making tomorrow's world better than today. They are:

1. Is basically friendly, sees the world as a good place and people as good.
2. Has intellectual autonomy and can cope with the unforeseen, the unknown
3. Has learned to like to do things well
4. Has built up a strong inner system of controls

5. Has maintained the ability to create and be spontaneous about putting things and ideas together in new ways - he dares to be himself
6. Has developed the ability to foresee consequences
7. Has developed a tolerance for ambiguity
8. Has a wide moral horizon which includes people here and now and also people far away in space and far ahead in time
9. Has a comprehensive and meaningful view with respect to the physical world and the nature of man.

Notice these are persons who know "why" not merely "how!"

What would happen if Student Services encouraged students

1. To be researchers in becoming human
   a. self awareness
   b. other centeredness
   c. Actualized uniqueness
   d. Achieved self-discipline

2. To become comfortable in interpersonal relations growing trust in people in relationships dissolving inner barriers

3. To create zest for living through understanding, communication, sharing, evaluating, hoping. Experiencing coop attitudes, enhancing self respect.

Do we, the vocational-technical adults, alone try to whip this tiger into shape and pressure youth into conforming, which cold war we are destined to lose in my humble opinion, or do we, together, collaborating with the youth at our various institutions, stand tall with them as equals, creating something new and unique. Exploring freely this process of becoming!

In a book on healthful school living, I found this definition.

Healthful School Living is where there is provision for a mentally healthy environment in which a feeling of self-respect and self-confidence is fostered in each individual, where the establishment of meaningful interpersonal relationships favorable to the best emotional, social and personal health of the students are implemented; where counseling both individual and group recognition of and adjustment to individual differences, preventive programs of good morale building and cooperative participation were daily functioning concerns in helping students fulfill themselves at Maslow's six levels of need.

1. Creativity needs (self productivity)
2. Self realization needs (uniqueness)
3. Needs for respect
4. Felt loved, wanted and belonging
5. Safety needs
6. Psychological needs.

Yet what is safety, if not a feeling of self respect and confidence in one's own power to meet the demands of daily living.

Researchers have now indicated that self esteem and school success (self realization) stem from the individuals' harmonious relationship to the group, so how do we help each person grow an adequate integration into the group, and achieve self respect in the process?

Life in a group is always a person-to-person activity. We must not categorize by groups--this is rejection of the individual.

Why do we so feverishly build on four story monument after another -- oh, dorms in popular jargon, but to me they will serve as monumental remains to testify to our lack of faith in democracy and in the uniqueness of the individual.

Isn't it ludicrous that research has proven the value of the cottage system, or small living units so that under ideal planning we provide such services to those whom society has already crushed -- delinquents, psychotics, TV ridden, etc. Would it not be possible to build a series of motel-like cottages, even row on row and perhaps triple decked, where a cooperative living plan for around 20 students, each with a student manager and rotating jobs, with a grad student in a counseling intern program as adviser, could simulate an enlarged family living unit, even to cooking their own meals, learn to live, plan execute and evaluate chores attached to small group living, and participate in an around the clock human relations lab where students could grow adept at communications. These could become centers for orientation, registration, personal records, discussion groups both formal and informal. College life would take on real meaning, democracy would be experienced and the feeling of belonging acceptance, usefulness and self realization achieved. The individual would be unique and important, even en masse.

Whoever said that the army barracks system was for anything but turkeys and military emergency efficiency; not everyday, meaningful, intellectually geared emotionally satisfying experiences for college living and becoming real persons.

As the classes get larger and the huge lecture business more entrenched, more and more the series of smaller discussion groups, where students can explore the meaning behind the words are musts. Faculty must be secure themselves to risk themselves in meaningful through relationship with small groups of students and more and more smaller lab units, like rows and rows of small kitchens, where groups of inquisitive, researching students may explore, test, observe, generalize, assimilate on their own.

Our physical plant monstrosities must provide such areas. Student Services must be involved in the living experiences, the learning experiences, the creating experiences.

If teachers wish to be withdrawn intellectual leaders, the Student Services must provide real social leaders who have become intellectually autonomous, liberalized in thinking about man, and with wide moral horizons to work among students, who exemplify how to live comfortably with others and how to work cooperatively creatively without self suicide.

In the small group a person can learn to accept reality, tolerate frustration, inhibit self and accept one's own inadequacies.

We must remember that we've moved drastically from the small, hardworking, friendly rural family and community to the unfriendly, large person swallowing impersonal urban area and at colleges the horrible ghettoes of en masse impersonality. This process has gone on long enough so that students today have no more memory of the well-knit family unit than they have of the model T, the gas light, the street car. They must be helped to grow and experience why getting along with people is important, so they can find the how; why to ease tensions in interpersonal relations so they can experiment with techniques for so doing; why life is synonymous with living with frustrations so that sharing and communicating are such wonderful safety values; Grow self respect, feel its rich uniqueness, and wish to help all others find it too; achieve self realization so that they can lose themselves in creating for others.

We can make no assumptions about past learnings! One method, one plan, one pattern is not enough.

Why do some students get better and better as they go through school and others get worse and worse?

Dr. Maccoby has said, "The key to the matter seems to lie in whether, and how soon, a child is encouraged to assume initiative to take responsibility for himself, to solve problems by himself, rather than rely upon others for the direction of his activities. And if he didn't learn these before 18 what then?

How will he learn how to help his own children if he has not learned how he came to be assessed his value patterns, exchanged attitudes, beliefs, and concepts with others, built on effective inter-relationship system, grew zest for living.

Only persons, who have experienced and know real personal selves, can rear children, who know themselves.

Therefore, we in Student Services must get each student involved in meaningful personal experiences -- with other students, with faculty, with community leaders, with people of other lands. Students must be involved--not as rubber stamps, but in equal numbers as equals, on administrative planning committees and programs; in building programs which meet students search for meaning; in curriculum planning and activities so that the whys become illumined and the continual discare of the no longer needed will not threaten but new hows are found in an exciting, creating way.

Student Services must not be fifth wheels but an integral, functioning part of real life learning situations. Not psychiatrists who try to mend cracked nerves but mention hygienists who provide for physically and mentally healthy experiences in becoming.

As I see it, we must provide each student with an employable skill, a creative hobby, an appreciation of culture, acceptance of human nature, a transparent self, skill in problem solving technique, identification with all mankind, ability to inter-relate harmoniously, to love, discriminate between means and ends, reality oriented. With freshness of appreciation glowing with philosophic humor.

> We are all blind until we see, That in the human plan, Nothing is worth the making, If it does not make the man. Why build these cities glorious, If man unbuilded goes?

GENERAL SESSION
Thursday, August 26, 9:00 A.M.

Chairman: Donald M. Brill Recorder: Jack W. Smythe

Teacher Education
COMPREHENSIVE PROGRAMS IN PROFESSIONAL DEVELOPMENT
Dr. A. Donald Beattie, Dean
School of Business and Economics
State University, Whitewater, Wisconsin

I. Exploring Current Developments

A. Team Teaching

1. Definition

An effort to improve instruction by reorganization of personnel in teaching. Two or more teachers are given responsibility of working together for all or a significant part of the instruction of the same group of students.

2. Specific Characteristics

a. Larger number of students taught than in a regular classroom situation
b. Larger number of teachers and teacher aides
c. Horizontal and vertical alignment of teachers

3. Advantages

a. Allows competent teachers greater influence
b. Greater monetary award
c. Frees teachers from routine and clerical duties
d. Provides flexibility in teaching aids available
e. Stimulation of the teacher

4. Research Relative to Team Teaching

a. Student achievement is not reduced in team teaching
b. Students seem to have more self-sufficiency as a result of team teaching
c. Apparently the slow student progresses as well as the good student

5. Problems in Teach Teaching

a. The demand of working together as a member of the team
b. The necessity for volunteer members on the teaching team
c. The enormous amount of staff time necessary in team teaching

6. Unanswered Questions in Team Teaching

   a. Does improved student learning result?
   b. How are the students selected?
   c. What happens to student creativety in team teaching?
   d. How does one fit this program into existing facilities?
   e. Is modular scheduling required on team teaching?

B. Teacher Internship

   1. Clinical experiences as a replacement for students or practice teaching

   2. Typically offered as a post-baccalaureate program but increasingly being considered on the under-graduate level

   3. John Guy Foulkes remarks

      In Wisconsin associated with the Teacher Improvement Program directed by John Guy Foulkes

   4. Characteristics of an Internship Program

      a. Pre-service training session
      b. Intern assumes full responsibility in the classroom
      c. Teachers selected usually on basis of a 2.75 grade point average or better
      d. Interns are reimbursed by local school and hold a special license
      e. Considerable on-the-job supervision by senior teacher

   5. Research Findings

      a. Interns are credited with recognizing individual differences in students more quickly than conventional practice teachers
      b. Interns tend to experiment with greater variety of teaching techniques

   6. Questions on Teacher Internship

      a. Is the intern ready to assume full classroom responsibility at the beginning of the semester?
      b. Does the intern need a pre-internship period of a simulated teaching situation?

   7. Advantages

      a. Fewer off-campus supervisors from the teacher education institution are needed
      b. Problem of teacher recruitment by the cooperating school is eased
      c. Special status is provided for the senior teacher (faculty associate or salary differential)

C. Programmed Instruction

1. Developed by psychologists not educators

   a. Pressey
   b. Skinner

2. Based on Requirements for Efficient Learning

   a. Attention to stimuli (motivation)
   b. Relevant response
   c. Sequential order of subject matter
   d. Immediate feedback
   e. Rate of presentation must be appropriate to individual learner

3. Primary basis is reinforcement of correct behavior

4. Two current types of programming

   a. Linear (Skinner)
      student constructs short answer and compares it with model, then goes on
   b. Branching (Crowder)
      student selects one answer from several provided; if incorrect referred to proper location for review before going on

5. Questions

   a. Are programs better than teachers?
   b. Which is better - linear or branch?
   c. What subject areas can be taught this way?
   d. How should programmed learning be used?

6. Research

   a. Zero correlation between achievement scores and I.Q.
   b. Valuable for both low and high ability students

D. Educational Television

A media with promise for handling large numbers of students. Not fully utilized because of cost in time and money for preparing good lessons.

E. Creativity

1. Early research (1898) brought conclusion that creativity and intelligence are not the same thing

2. Definition of term difficult if not impossible to secure agreement on

3. Recommendation:

   a. Goal is creative teaching!
   b. Encourage teachers to read on this topic
   c. Give support to experimental approach

F. The Up-grading of Professional Staff in Vocational, Technical and Adult Education

   1. Emphasis on more formal education and additional degrees

   2. Need for providing in-service supervision.

GENERAL SESSION
Friday, August 27, 8:30 A.M.

Chairman: George R. Kinsler Recorder: Mrs. Mildred Doss

DIVISION REPORTS

The week's accomplishments were presented by representatives of the various divisions. See reports under Division Meetings.

"A LOOK AHEAD" (Comments)
Mr. C. L. Greiber

Looking Backward

- Schools housed in discarded buildings
- Equipment was poor
- Visual aids were few
- Enrollments were composed of:
  Day--many part time enrollments
  Youth of secondary school age
  Adults during evening
- Annual aids amounted to $255,000
- State staff constituted 15 members

Looking to the Future

Changes to occur:

- Larger administrative units
- Larger comprehensive schools
  Will not eliminate our schools part-time offerings
- New and updated methods of instruction
  Data processing
  More and better teacher education
  Greater use of educational television
- More year round use of facilities for Vocational and Technical Programs
- Better utilization of buildings and facilities
- Buildings and equipment must be modern, economically and efficiently operated
- We will need to expend a minimum of $7 million every year until 1980 (Department of Resource Development)
- We will need adequate land for parking, dorms, etc.
- Uniform standards for developing programs

Those Things That Will Not Change

- Develop strong programs for occupational training
- Define area of instruction

- Redirect definition of technical program
- Continued accelerated programs

Future enrollment projection (From Department of Resource Development)

Full Time	Low Projections
1963-64	9,934 enrollees
1970	25,400 enrollees
1980	54,900 enrollees

Evening	Low Projections
1963	94,031
1970	144,778
1980	263,547

Part Time	Low Projections
1963	35,660
1970	47,170
1980	65,142

- To continue to increase
  Student Services
  Housing

Bill 501A

Originally enabled transition of vocational schools into community colleges on an evaluation basis.

Example: Milwaukee and Madison are working toward this.

- Certain vocational schools will evolve into comprehensive colleges, but in moving we must keep attention focused on basic responsibilities established by law.

- Need to provide adequate staff for expansion.

- It is hoped and believed that a conference and meeting such as this will prepare us for challenges.

- New legislation will provide things we have dreamed about to meet all needs and help all people.

VOCATIONAL AND TECHNICAL EDUCATION IN THE YEARS AHEAD

Dr. Lynn Emerson

It is indeed a pleasure for me to come to Wisconsin and talk to you on Vocational Education. What I am going to do is just remind you of some of the things that you already know - maybe bring in a few things from other states as to what is happening and talk to you a little bit about it. What I wanted to do here is look back a little bit because a study of history will help us learn of the future. Things have changed a lot in the last 100 years.

The United States in 1865 - 100 Years Ago

Lighted by gas flame and coal oil lamp
Warmed by the stove and the open fireplace
No electrical industry - no electric light, heat, power
Limit of power transmission - length of belt on pulley
No motor car industry
No chemical industry of synthetic type
No concrete highways
No movies
No radio, No television
No trolley cars, No subways
No aviation

What would your teenage youth think of a time like that? Yet that was the situation that we had a hundred years ago.

Now let us look at the period fifty years ago.

The United States 50 Years Ago

Beginning of automotive industry:

Brush, EMF, Model T Ford - No starters. Tops and windshields as extras
Tires good for 500 miles
Few paved roads
Chains and repair tools carried in the car
Gasoline - 8¢ per gallon. (Auto Blue Books) (Road signs in Wisconsin)

Aircraft was just beginning to come into being.

Aircraft:

First flight in 1903
First Army plane - 42 miles per hour (bonus for over 40)
1911 - first transcontinental flight 82 hours in the air
No commercial airlines

Electrical industry:

Carbon incandescent lamps - two-phase motors - 500 v. DC trans.
Beginnings of commercial radio (Titanic) - No broadcasting

Machine industry: simple machine tools - carbon steel tool bits - caliper and scale - basic micrometer.

No income tax - hair cut cost 25¢

Now, let us look at what happened in the last fifteen years.

Technological Change in Past 15 Years

Unprecedented rate of acceleration.

No computers in 1950 - More than 22,000 now with thousands more on order
Numerical controlled machine tools
Automated factories
Transistors - lasers - instrumentation - miniaturization - cryogenics
Supersonic aircraft - communication satellites (pictures from Mars) - space travel
Atomic energy applied to commercial use

Lead time of new product steadily decreasing: telephone 56 years; transistor 5 years (Training interval)

There is becoming less and less lead time to prepare trained people for new developments in business and industry.

Let us take a moment to talk about cybernetics. It is relatively a new term.

Cybernation defined - A combination of automation and computers (Donald Michael)

Automation - Automatic production of material products which has freed man's muscle of routine operations.

Computers - Sophisticated analyzers and interpreters of complex data which have freed man's mind of routine thinking.

A combination of the two is known as cybernation.

"The electronic computer may have a more beneficial potential for the human race than any other invention in history." (Rader - G.E. Co.)

Computers:

Control flow of electric current
Route long distance telephone calls
Set newspaper type
Navigate ships, planes, satellites
Diagnose human and machine ailments
Plan production schedules
Decipher ancient languages
Check available airline space
Control machine tools
Check income tax returns.

It is diagnosing human and machine ailments. A central facility at a university is collecting data from hospitals all over the United States. This data is stored in computers. Doctors from all over the country can send in symptoms and receive prognosis of diseases.

A recent community college in St. Louis was designed by computers at a saving of several million dollars.

Computers operated as separate units, with varied programming, or tied in with specific production equipment such as oil refining or machine tools.

Impacts of cybernation: Donald Michael--"Cybernatics: The Silent Conquest"

"Cybernation presages changes in the social system so vast and so different from those with which we have traditionally wrestled and it will challenge to their roots our current perceptions about the viability of our way of life."

Cybernation as a whole may have impacts that are so far reaching that it will be momentous.

Michael indicates that cybernetics will wipe out so many jobs that society will have to provide for persons who don't work in much higher degree than at present.

There are people who disagree with him.

Silberman disagrees with Michael. Says "There is no technological barrier to full employment."

Impacts of cybernation will be heavy in certain fields. (What is the future of detailed drafting?)

Today, computers are doing detailed drafting and some of the big companies are throwing out all the detailed drafting. Some say it is impossible, but it is happening.

It won't be long before we will be teaching the language of the computer in our schools - teaching Fortran. The computer language consists of "one" and "zero." It knows only "one" and "zero." That is all it can take care of. It either switches on or it is off. But it can operate the switches a million times faster than a person can, but you have to put it in the right language. So in computer language, what is 101? Well, that happens to be 5 in one of the languages. What is 1001? That happens to be 9. 10001 happens to be 17. You can transfer any number into computer language of ones and zeros if you stay with it long enough. It is interesting to see children in grade school today doing this sort of thing. They are learning the language of tomorrow.

Now I would like to disgress a moment on: What the factory of tomorrow will look lik

Automation in high degree will be limited to plants with sufficient standardization of product and sufficient volume to warrant the high investment cost. I think we design things a lot different for automatic equipment. For example, instead of a chair being made of legs, rungs, bars, etc. we will design it to be molded in one piece, plastic, a different design, and the like.

Some plants will be entirely automatic, or nearly so.
Some plants will have automated departments.
Some plants will have automated units - with considerable human labor- where product is diversified and of small volume.

Low volume but repetitive operations will be done with profiling or tape controlled machine tools, or other tape controlled machines.

Several operations will be combined into one.
100 holes drilled at a time instead of one, or five, or 20.
Multiple surface broaching.

More processes will be converted from batch to continuous flow.

Materials handling will increasingly be integrated with the processing itself.

Preventive maintenance will become of increasing importance.

The huge automated machines will be custom built, but will use standardized component parts.

Instrumentation will play an increasingly important part in the operation of machines.

And, so we look at some of the things that are ahead in the factory.

Changes in the Labor Force in the Years Ahead

Now, what about the labor force? I am always interested in looking at the labor force. You folks concern yourself with setting up training programs. The first place you look is to see what the job market is. One difficulty with many school people is they set up our books and forget about what the job market is. What is the job market going to be like in the years ahead? What changes are going to take place?

Many machine operators will be replaced by instrument and machine watchers. Alertness will be important, for the cost of human errors will be greater.

Maintenance technicians will increase in numbers, and the level and complexity of the jobs will rise. Maintenance teams may be needed on large machines. A team would be composed of a technician specialized in different areas, or we might train men to be more diversified so that he can do the whole works.

Instrument maintenance and repair will be of great importance.

Fewer workers per unit of output will be needed, but these will have to be better trained than today.

The range of technician jobs will increase considerably. Some jobs that today are classed as skilled trades will change into jobs of technician type.

Many present jobs will have been eliminated or changed in character; new ones will have emerged. But a high proportion of our present types of occupations will still be with us. I think this is a wholesome thing - a lot of present jobs will still be with us. I am not so sure we will find an automated way of doing haircutting. Members of certain fields are going to decrease rapidly.

Numbers of workers in farming will continue to decrease, but at a somewhat slower rate. The parts man will decrease.

Numbers of workers in production in existing plants will continue to decline; but be offset somewhat by emerging new plants. Certain geographical areas and certain industries will be affected to a greater degree than others.

Numbers of workers in professional and technical fields will grow rather rapidly.

Some increase will be found in clerical and service occupations. Many of the clerical occupations will be changed in character. I wonder if you appreciate what Xerox and some of the other equipment is doing to typists.

Job entry qualifications will demand more education.

Entry age into most occupations will be higher; young persons seeking jobs will be at greater disadvantage than at present time.

(Increase in minimum wage will affect job opportunities for youth)

Raising the minimum wage to $1.25 and $1.50 per hour throws people out of work because nobody is going to pay them. So I think sometimes the people concerned with minimum wage forget some of these impacts. Maybe some exceptions should be made in connection with this.

Mobility of certain types of workers will rise, especially technical workers. Mobility will be influenced by company pension plans and government social security. If you have a big stake in a pension plan, you don't want to move even though the job may be better.

More paid time - off-the-job and on-the-job - will be given to education at all levels, to keep workers abreast of changing conditions.

An increasing share of the GNP will be devoted to services to the aged - medical care, housing, etc. - and to recreational services. Lots of money will be flowing into the construction of these facilities, and in the operation. Some new jobs will be emerging in these fields; many, if the Great Society is to fully emerge.

As changes in job requirements become more prevalent, workers will be desired who have flexibility, the ability to adapt to change. - Now Days no one stays educated very long. So we are faced with the proposition of tomorrow then of something different.

Occupational Education Needs for the Years Ahead

Now let us look at occupational education for the years ahead. To prepare persons for working and living in an automated age, will require three things:

a. Preparation of youth for entry into work life - their first job.

b. Preparation of youth for anticipating and meeting change. A young person in the work force today must expect three or four job changes during his life.

c. Provision for adults to meet change through part-time or full-time attendance at appropriate educational programs for updating or upgrading for present jobs, or for preparation for entirely new jobs. The Vocational Education Act of 1963 permits this. Funds can be transferred from Smith-Hughes and George-Barden Acts.

Occupational training programs for youth are needed at the high school level and the post high school level. Much of the vocational education formerly offered in the high school is moving into the post high school years - in area vocational schools, technical institutes, community colleges.

(Gleaser - in the 725 junior colleges, from 1963-1964 the total enrollment increased 18 per cent; the enrollment in occupational curriculums increased 38 per cent)

Dr. Arthur S. Adams, President of the American Council on Education, in 1961 said: "We are approaching the time when two years of college, either to develop a vocational skill or to prepare for further college education, will be as necessary and commonplace as is graduation from high school."

Secretary of Labor Wirtz advocates two years of education beyond high school to keep youth off the labor market that much longer.

Higher proportions of youth in the corresponding age bracket will attend high school; a higher proportion will enroll in either basic or specialized occupational curriculums; higher proportions will graduate; more will go on to higher education.

Occupational education will increasingly become more fully accepted in the total school system, through the community college; and on a par with college preparatory programs.

Overall programs of occupational education will begin with basic information about occupations in the grades, articulated at the various grade levels, with basic programs at the lower levels culminating in specialized programs at the higher levels.

Specialized occupational education adapted to the abilities and interests of a wide range of students will be made available just before they leave

full-time school. I think occupational training should take place just before a person leaves full-time school whether it is before he drops out at the end of the 10th grade, or whether he is to become a medical doctor at the end of 7 years of post high school training. For some students this will be during the high school years; for others it will come in the post high school institution.

Basic occupational programs in the high school will provide orientation in selected occupational fields, basic instruction in the skills and knowledges underlying clusters of closely knit occupations, culminating in specialized instruction in a more limited occupational field.

For some youth the total program will be in the high school; for others, the orientation and basic programs will be in the high school, with the specialized programs in post high school institutions. Orientation should not be just industrial arts, but business arts, para-medical arts, and others. Training for clusters, basic training for clusters of occupations should continue. Many common tools belong to a lot of occupations. We should make an honest job analysis to find out what common elements are - as to tools, materials, and the basic things involved.

The high school of tomorrow may thus have "tracks" leading to specialized post high school curriculums in the technical area, skilled crafts areas, medical areas, business areas, etc.

Increased attention will be given in the years ahead to occupational education programs for girls, with much wider range of occupational choice than at present. In most all occupations, girl technicians are accepted and in some preferred.

The range of occupational curriculum offerings available to every youth will expand, made possible partly by increase in the size of the educational institutions. The trend toward larger educational administrative units will accelerate this. The people of the farmlands of Wisconsin should have the same opportunity as one who lives adjacent to Milwaukee. Some fields will not need a large volume of graduates; therefore, the curriculum will have to be put in one center and the students brought in.

Research will show us how to educate for change, and research findings will be incorporated into occupational curriculums.

The total program of the educational institution will be concerned as much with course offerings for employed adult workers as for pre-employment training of young students.

A lot of schools are so concerned with day programs that evening training programs are forgotten. The evening schools will become increasingly important in these times of change as folks need to be retrained for new fields of work.

Increased comprehensiveness will be needed in occupational education programs, with somewhat higher proportions of appropriate general education required in the curriculums. This looks toward the comprehensive high school and the comprehensive community college as the best agencies in the years ahead.

Occupational education has reached a place of such importance in the total education of the individual that it no longer should be separated from the main stream of education - in separate vocational schools - unless these schools can provide all the assets found in the large comprehensive high school or comprehensive community college.

Wide range of general education offerings for wide ranges of student ability, varied occupational curriculum offerings, easy transfer of more suitable curriculums, co-educational activities, well-equipped library, etc.

Many schools established as area vocational schools for high school students will have changed their programs to serve only adult and post high school students. Later these institutions will broaden their programs to become community colleges. I like to see it come from the standpoint of the occupational training growing into a community college rather than a junior college growing into adding on the occupation because you have leadership from the first program that is occupationally minded. But God help you on the program of that sort if you don't expand comprehensively with it and develop the leadership ability to cope with the transfer part of the program.

Increased public concern for and support of community colleges will develop in most sections of the country, and these institutions will increase their occupational offerings to meet a large share of the post high school occupational education needs.

This, then I think is the direction in which we are moving ahead.

South Carolina and North Carolina have developed a series of area vocational schools. Georgia has a number of junior colleges, 15, I think it is, and they have 28 area schools either constructed, on paper, or provided for. And they are facing real problems in tying them together. They developed a state pattern or plan that has legislation which says this: No new area vocational school shall be established in the community where there is a junior college. No new junior college shall be established in that community which has an area vocational school. Communities that have both will share the program and get together. If Georgia were to move back to 1955 today, they would set up their plan differently. They would move to community colleges right at the start. Well, now these things are happening. The Wisconsin evolution will take its own way and I'm sure it's in good hands with Clarence Greiber and his associates, from the vocational standpoint and the support that you'll get in the increased appropriations.

Well, occupational education has reached the place of such importance in the total education of the individual that it no longer should be separated from the main stream of education, as separate vocational schools, unless these schools can provide all the assets found in the high schools and the community college. That means a wide range of general education offerings because we have to help this person prepare himself for change and if we can give him some background of math and science and some social studies as well as specific skills in the related occupations and the specific curriculums, we will help him out considerably.

Well, something happened in the country as a whole, I mentioned South Carolina and North Carolina. Massachusetts recently set up a board of regional community colleges which I am working with at the present time to set up a master

plan. I am very much interested in a master plan curriculum-wise. If you can look at a state and say that it needs three chemical technology curriculums, where should they go? This is one of the tasks to be faced. South Carolina got the employment service to make a state-wide survey of occupational needs, actually put several labor market analysts on the road to find out what these needs were. We then determined the need state-wide and translated these into three curriculums needed. The data indicated three cities where they should be placed.

A state plan curriculum-wise should be developed to minimize difficulties in assigning certain curriculum to specific areas. Texas is interested in getting into this field. Texas had a lot of good junior colleges. The occupational education had difficulty but the transfer program was fine. Then along came MDT programs for technicians; they began to accept them. I was very pleased to see there last year the beginning of community colleges. So they are moving along. In Massachusetts the Ford Foundation has given them a large amount of money for developing comprehensive high schools. Canada in the last four years since 1961 has spent 600 million dollars for vocational education.

In spite of the fact that we have some of the finest schools in the country, if you haven't seen one outstanding school you ought to head for Alberta. Alberta Institute of Technology started out with 11 1/2 acres floor space, not ground, floor space, at a million an acre at the end of one year their enrollment was so high that they had to add three more acres of floor space so they had 14 1/2 floor acres at 14 1/2 million dollars. I saw medical technology equipment that I never knew existed. They had two x-ray rooms, medical x-ray not industrial x-ray.

Let me close with a quotation. "The conditions in modern life where rule is absolute; the race that does not value trained intelligence is doomed. Not all your heros, not all your social charms, not all your wit, not all your victories on land and sea can move back the finger of fate. Today, we maintain ourselves, tomorrow science will have moved forward yet one more step, and there will be no appeal from the judgment which will then be pronounced on the uneducated." That was Alfred N. Whitehead in 1917, but it is just the same today.

Thank you.

CURRICULUM DIVISION MEETINGS
Tuesday, August 24, 10:30 A.M.

Roland J. Krogstad, Chairman

The purpose of the meeting was to develop a procedural plan involving the Curriculum Coordinator in cooperative services activities. However, only the first step was accomplished. This consisted of listing some of the major duties and responsibilities of a Supervisor of Instructional Services. These were categorized as follows:

STUDENTS

1. Make out program and class schedules
2. Coordinate program and course changes
3. Counseling with students as to educational offerings.

TEACHERS

4. Recruit and interview teachers
5. Coordinate and verify teacher programs and loads in accordance with school policy
6. Coordinate, develop and conduct in-service teacher training
7. Counsel with teachers as to certification.

ADMINISTRATIVE

8. Maintain communication with personnel within and outside of school affected by curriculum planning and development
9. Supervise the course numbering system in the school
10. Coordinate development of teachers handbook
11. Coordinate with supervisors, department heads, teachers and other personnel on preparation of curriculum materials
12. Cooperate with State Board personnel
13. Coordinate articulation with other schools
14. Coordinate establishment of course fees and costs
15. Work with supervisors, department heads, guidance personnel and others in making recommendations for establishing entrance requirements.

PUBLIC RELATIONS

16. Attend meetings and describe over-all educational offerings
17. Coordinate preparation of school catalogue of offerings
18. Attend advisory committee meetings as appropriate.

CURRICULUM MATERIALS

19. Keep up-to-date on new ideas in subject matter, methods, techniques, media and other instructional materials
20. Coordinate maintenance of excellence and rigor where appropriate
21. Coordinate maintenance of a comprehensive balanced program of educational offerings

22. Coordinate maintenance of an up-to-date resource learning center including audio-visual aids, library, study carrels, etc.

23. Coordinate maintenance of up-to-date instructional aids in classrooms, laboratories, and shops

24. Coordinate evaluation of content in terms of school philosophy and objectives, psychology of learning, organization of learning experiences, labor force trends and needs, and student interests and needs.

GUIDANCE PERSONNEL

25. Keep guidance personnel informed of offerings

26. Obtain reactions to curriculum offerings from guidance personnel

27. Work with guidance personnel in preparation of student handbook and school catalogue

28. Work with guidance personnel in evaluations of courses requiring follow-up information.

Tuesday, August 24, 1:30 P.M.-4:30 P.M.

Chairman: Roland J. Krogstad

Mr. Brill presented objectives of the conference and reviewed the December meeting. Miss Doris Hanson presented a progress report on the data processing system being established in Wisconsin Vocational, Technical and Adult Schools. She explained the following card forms: assignment card, class card, grade card, master course card, accounting card, and control card. Packets of materials are available at the State Board. Program codes were also discussed. Mr. McConnell and Mr. Krogstad presented some of the problems involved in the establishment of a state-wide standard course numbering system. Some of these problems involved inconsistencies in course credits, hours of instruction, placement of courses in different departments, and definitions of courses. Some schools added a 000 series, 200 series, and a 600 series to the last three digits.

Wednesday, August 25, 10:30 A.M.-12:00 A.M.

Roland J. Krogstad, Chairman

Identification and analysis of problems continued from previous session. Summary of statements made were: (1) The mechanics of bringing these numbers together at state level may not be what we want. (2) Maybe we shouldn't be concerned with courses but only departments at state level. (3) If the state honors numbers that local schools retire, we may run out of numbers. All schools would have to retire the same course number before the state could retire the number. (4) The state office should provide the interpolative function.

Wednesday, August 25, 1:30 P.M.-4:30 P.M.

Chairman: Roland Krogstad

Identification and analysis of problems continued from previous session. Summary of statements made were: (1) If the number must be obtained from the state office ahead of time, there must be about 9-10 months lead time to facilitate inclusion in school catalogues. (2) Schools could be assigned blocks of numbers. (3) A master list would be prepared where there is agreement. Each school could submit a supplementary list of added courses. The state would end up with 20-25 supplementary lists. Over a period of time this would lead to more divergence.

Thursday, August 26, 10:30 A.M.-12:00 A.M.

Donald M. Brill, Chairman

Identification and analysis of problems continued from previous session. Summary of statements made (1) The State Board has to deal with each school separately on Annual Report, (2) We could call this system a central index, (3) We don't want to be "locked in," (4) The system should be flexible enough to facilitate development of courses on local level, (5) Course outlines should be on file at state level, (6) A curriculum person should be designated in each school, and (7) Computer print outs can indicate students, their employment, etc.

Thursday, August 26, 1:30 P.M.-4:30 P.M.

Donald M. Brill, Chairman

State office personnel, Mr. Brill and Mr. Krogstad, developed rationale for a course numbering system on the state level and the curriculum committee developed a list of objectives and recommendations involving data processing and course numbering from the standpoint of the local school. The consensus of these reports are as follows:

PREAMBLE

The development, implementation, and improvement of occupational and related technical and general educational programs in terms of peoples interests, needs and capabilities; and in terms of business and industrial needs is the prime function of the State Board of Vocational, Technical and Adult Education.

However, increasing demands upon the educational system threaten to overwhelm the professional concern of the individual and his instruction with those of administration, control, reporting and financing.

In order to keep the professional concerns pre-eminent, educators must lay hold of each opportunity to simplify their administrative concerns and maintain appropriate emphasis upon the function and proper control of the devices of implementation.

It is imperative that tools and procedures provided by technology be used only to the extent that they contribute to the function and to its improvement.

Data processing offers tremendous potential to accomplish a number of tasks which now impede the educational process or other tasks not previously accomplished under existing procedures.

If administration is to fulfill its obligation of supporting the prime educational function, data processing functions and procedures must be established upon guidelines which give pre-eminence and flexibility to the improvement of the function of education. The merits and the contributory functions of the system design must be clearly defined here.

Essential Professional Considerations

1. Flexibility at the local level
2. Accommodation of change
3. Continuous inventory
4. Communication between schools
5. Information retrieval
6. Continuous evaluation
7. Research

Concomitant Supportive Concerns

1. Reporting
2. Reimbursement
3. Stewardship

A program that includes the above concepts will involve:

1. A central index of courses and numbers with provisions for recording local deviations
2. A procedure of number adoption which is locally operated, incorporated in the central index through a process of recognition rather than assignment
3. A procedure for communication and a disposition for identification of common denominator descriptions for the central index of courses
4. A procedure of review which will assure the involvement of teachers and representatives of business and industry in curriculum change
5. Expandability
6. Integrity of number
7. A procedure for assessing qualification by course for reimbursement
8. Definitions
   a. Extent of course description
   b. Span of a given number
   c. Kinds of deviations
9. Long range goals
   a. Short range goals - additive

Objectives and Recommendations

I. Objectives in Data Processing and Course Numbering

A. Systematize the content of your instructional program into an organized structure

B. Analyze existing curriculum (analyze future needs and trends)

C. Expedite student records

D. Facilitate transfer of students from one school to another or within the school

E. Expedite the clerical work in student registration

F. Access to information on curriculum material through a State Department Course Index System on a current day to day basis

G. Accreditation by accrediting agencies would be facilitated through comparison with non-accredited and accredited programs

H. Facilitate job placement and student follow-up techniques

I. Develop a course numbering program that represents a similar body of knowledge with various amount of credits

J. Provide assistance in assigning teaching load

K. Minimize instructor clerical work

L. Provide more information to administration, supervisors, and instructional faculty

M. Provides a permanent record of the instructional program of the school

N. Assists in the preparation of the annual report

O. Expedites student scheduling

P. Transfer teacher personnel information in relation to course numbering

Q. Facilitate ease of transfer from one-year feeder programs

II. Recommendations Pertinent to Implementation and Changes

A. A state-wide liaison committee of local curriculum personnel be developed. The committee should be consulted concerning the state-wide system as it relates to local curriculum.

B. After implementation of the data processing system, the state-wide curriculum committee would be available for consultation on changes in policy effecting local curriculum.

C. Implementation of the data processing system be further developed in accordance with the objective set up at the August 23, 1965, Professional Growth Week Conference.

D. Any local vocational, technical and adult school wishing to go on to data processing systems consult the State Board of Vocational, Technical and Adult Education for the developed "package" system for records.

DISTRIBUTIVE EDUCATION DIVISION MEETINGS
Tuesday, August 24, 10:30 A.M.

Panel Discussion: Moderator Howard Ford, Loan Specialist
Small Business Administration, Madison
Clinton Clark, Community Relations,
Sears-Roebuck Foundation, Minneapolis
Edward Storey, Business and Industry Specialist
SBA, Madison
A. I. McDermott, McDermott Wholesale Plumbing
Oshkosh

Clinton Clark, Community Relations, Sears-Roebuck Foundation, Minneapolis, defined public relations as "all activities that an organization engages in to operate in a more favorable climate." He further stated, "the main tool is communications with the public and people we work with, using spoken and written words."

After reviewing typical assignments in public relations, he suggested that distributive educators be aware of those activities in public relations that portray the best image of the school program to the general public.

A. I. McDermott, McDermott Wholesale Plumbing, Oshkosh, spoke on the subject "What to Look for in a Sales Applicant." General characteristics such as appearance, personality, military status, health and work experience were cited. The perfect applicant is rarely found. In closing he stated, "Take care of the obvious details and then come in and talk."

Edward Storey, Business and Industrial Specialist, Small Business Administration, Madison stated that management studies should include both operational and administrative aspects. Twenty per cent of businesses being established each year are failures before completing a full year of operation. As Distributive Educators you face the challenge of assisting small businesses toward success. Mr. Storey announced that he was being transferred to Iowa and expressed appreciation for past cooperation given in the sponsoring of small business institutes.

The panel was adeptly moderated by Mr. Howard Ford, Small Loan Specialist, Small Business Administration, Madison.

Tuesday, August 24, 1:30 P.M.

Review and Progress Report of DECA Financial Plan:

H. A. Schatz, Director
Sales and Public Relations
West Bend Company

The DECA Diamond Financial Plan progress report was given by Harold Schatz, Chairman, State Distributive Education Advisory Board. The goal of $5,000 is reaching the half-way mark. It is expected to be completed by early fall. Local advisory members are assisting in making this activity a state-wide effort.

Coordinators were cautioned to give attention to all aspects of marketing, thus not neglecting areas of potential interest to students. To insure the practicality of instructions, use business people as resource speakers. Advisory committee members are usually most willing to serve in this capacity.

The excellent achievements of students at the National Leadership Conference reveals the quality of instruction available to marketing students. Distributive Education teachers and coordinators are to be commended for their efforts in this regard.

Tuesday, August 24, 2:30 P.M.

Program Evaluation Review Techniques (PERT)

David Mrotek, Systems Engineer, Scientific,
International Business Machines
Madison

Program Evaluation Review Techniques, sometimes referred to as PERT, was presented by David Mrotek of IBM. This system is being used in launching space ships, presidents' budgets, etc. It provides a plan whereby one must regiment his time and also visualizes the entire operation of a project from the starting point to the completion. Criteria for the use of PERT is:

1. Number of people involved (the more the better)
2. Critical completion date
3. Testing of the plan
4. Constant state of change

The PERT network depicts:

1. Plan to be used
2. Time required
3. Critical path
4. Other paths that might limit the completion date

PERT - Advantages of PERT:

1. Inter-relationships easily seen
2. Scope of project easily visualized
3. Responsibilities pinpointed
4. Critical activities identified
5. Potential problem areas pointed out

Wednesday, August 25, 1:30 P.M.

Developing State and Local Program Plans

Section A: Karl Holbrook, Wausau
Section B: Robert Way, West Allis
Section C: Robert Duxstad, Oshkosh

STATE STAFF PLANS FOR DISTRIBUTIVE AND OFFICE EDUCATION FOR 1965-66

I. Liaison with Local Staff

A. Conferences with Directors, Coordinators and Teachers

B. Supervising Local Program

1. General Activities

a. Community needs; surveys, studies, etc.
b. Advisory committees
c. Publicity and promotion
d. Records and reports
e. Planning
f. Teacher supervision
g. Instructional program

2. Curriculum

a. Program objectives
b. Preparatory Programs
c. Extension programs
d. Circuit programs
e. Resource speakers and materials
f. Texts

3. Professional Growth Activities

a. Professional affiliations
b. Community affiliations
c. Instructor qualifications
d. Professional reading
e. Professional writing
f. In-service education
g. Research and development
h. Conferences, Institutes, Seminars

4. Student Services

a. Student selection
b. Placement
c. Follow-up
d. WBEC, DECA Clubs
e. Housing
f. Health

5. Facilities and Equipment

a. Furniture
b. Building, fixtures
c. Equipment
d. Layout, space utilization
e. Safety

C. Provide Teacher Training

D. Adopt Regional Supervisor Assignments

State Supervisor Regional and School Assignment

Region I Chojnowski

Ashland	Chippewa Falls
Eau Claire	New Lisbon
La Crosse	Prairie du Chien
Rice Lake	Richland Center
Superior	Sparta
Menominee	Tomah

Region II Smythe

Antigo	Baraboo	Tomahawk
Rhinelander	Marshfield	
Stevens Point	Merrill	
Wausau	Portage	
Wisconsin Rapids	Reedsburg	

Region III Smythe

Appleton	Beaver Dam	Sturgeon Bay
Fond du Lac	Brillion	Two Rivers
Green Bay	Kaukauna	Waupun
Manitowoc	Kimberly	Oconto
Marinette	Menasha	
Oshkosh	Neenah	
Sheboygan	New Holstein	
Watertown	Niagara	

Region IV Chojnowski

Beloit	Cudahy
Fort Atkinson	Hartford
Janesville	Monroe
Kenosha	Oconomowoc
Racine	Port Washington
Stoughton	Shorewood
West Allis	Wauwatosa
Waukesha	West Bend
S. Milwaukee	Whitewater

Smythe 13 day - 18 evening
(9 Technical)

Chojnowski 13 day - 16 evening
(9 Technical)

(Madison - Milwaukee - joint assignment)

II. Extension Programs

A. Encourage increased utilization of circuit instructors.
B. On school visits emphasize the need for extension training.
C. Urge the need and continuous use of advisory committees in local communities.
D. Encourage Small Business Institutes, Secretarial Seminars, Office Machine Institutes, etc.
E. Cooperative planning with other vocational education areas.
F. Inaugurate and promote: Hotel and Motel Training, Consumer Credit, Nursing Home Administration, Credit Union, Real Estate, etc.

III. Post Secondary Education

A. Tentative Evaluation and Re-Evaluation Schedule 1965-66.

Evaluations

September	21-22	La Crosse	Accounting	
October	6-7	Racine	Marketing	
October	19-20	Sheboygan	Accounting	
October	26-27	Manitowoc	Secretarial	(P)
November	9-10	Fond du Lac	Accounting	(P)
November	16-17	La Crosse	Secretarial	
November	30-Dec. 1	Sheboygan	Secretarial	
January	11-12	Waukesha	Marketing	
January	18-19	Fond du Lac	Secretarial	(P)
February	8-9	Wausau	Data Processing	(P)

Re-Evaluations

September	28	Superior	Accounting
September	29	Superior	Secretarial
November	22-	Madison	Data Processing
February	14	Green Bay	Accounting
February	15	Green Bay	Secretarial
February	16	Green Bay	Data Processing
February	17	Green Bay	Marketing
February	21	Appleton	Data Processing
February	22	Appleton	Accounting
February	23	Appleton	Secretarial
March	8	Racine	Accounting
March	22	Eau Claire	Marketing

(P) Pre-Evaluation to be scheduled.

B. Continue to review state standard in one and two year programs
C. Explore new emphasis and curriculums

Service Station Mid-Management	Swenson
Real Estate	Swenson
Florist	Swenson
Furniture Merchandising	Swenson
Credit	Chojnowski
Office Mid-Management	Chojnowski
Conference and Court Reporting	Smythe
Legal and Medical Secretarial	Smythe
Traffic and Transportation	Swenson
Insurance	Smythe
Engineering Secretarial	Smythe

D. Compile list of available business leaders for evaluation activities.

IV. State Advisory Committee

A. Distributive Education

1. To assist in further development of total program.
2. To assist WDEA.
3. To work through subcommittees for special activities.
4. To complete DECA financial plan.

B. Office Education

1. To organize a state advisory committee or committees.
2. To assist in further development of total program.
3. To assist WBEC.

V. Educational Materials to be Developed

A. Update bulletin, "Business Administration - State Standards."
B. Prepare vocational curricula in distributive and office education.
C. Continue business education newsletter.
D. Update business texts resource bulletin.
E. Provide DECA week kit.
F. Prepare WBEC and WDEA State Leadership Bulletin.

VI. Conferences

A. Professional Growth Week, August 23-27, Green Lake, Wisconsin.
B. Regional Distributive Education Teacher Education Conferences (to be scheduled).
C. Circuit Teachers Workshop (to be scheduled).
D. Accounting Teachers Seminar (to be scheduled).

VII. National Committees

A. Mr. Swenson as member of DECA Board of Trustees will continue to serve as chairman of the post-secondary committee.

B. Mr. Swenson will serve as consultant to national committee developing Post-Secondary Guidelines in Distributive Education.
C. Mr. Chojnowski is consultant for the educational committee of International Consumer Credit Association.
D. Mr. Smythe will continue to be active in State Data Processing Association.
E. Mr. Chojnowski, Chairman of study committee to organize National Office Education Youth Organization.

VIII. Youth Organizations

A. Wisconsin Business Education Clubs

1. Executive Board Meeting, September 20, Madison.
2. Regional Leadership Conference, October 4, Antigo; October 5, Racine.
3. WBEC State Leadership Conference, May 6-7-8, 1966, Green Lake.
4. Review State Leadership Conference format.

B. Wisconsin Distributive Education Association

1. Executive council meeting, September 21, Madison.
2. DECA Week, November 7-13.
3. State Leadership Conference, March 13-14, 1966, Green Lake.
4. National Leadership Conference, April 28-30, 1966, Chicago.
5. Review State Leadership Conference format.

IX. State Universities and the University of Wisconsin

A. Continue close relationships with office and distributive education departments.
B. Assist in development of teacher training in distributive and office education.
C. Assist office and distributive teacher internship programs.
D. Determine needs for specialized summer programs for office and distributive education instructors.

X. State Department of Public Instruction

A. Cooperative use of state advisory committees.
B. Assist in development of high school DECA program.
C. Serve as a consultant in developing vocational curriculum in office and distributive education.

GUIDANCE DIVISION MEETINGS

Tuesday, August 24, 1:30 P.M.

Chairman: Lorran C. Celley

Houghton Mifflin Test Proposal

The Houghton Mifflin Company has recently published a test battery entitled The Daily Vocational Tests. This battery contains the following sub-tests: Technical and Scholastic, Spatial Visualization, Business English. Sub-scores can be obtained from the Technical and Scholastic Test in the following areas: Electricity, Electronics, Mechanics, Science, Arithmetic, Algebra.

Based on information in the test manual published by Houghton Mifflin, the reliability of these tests is quite high. The normative sample for these tests were obtained from twenty-two private trade and business schools in fifteen states.

The Houghton Mifflin Company would like to obtain a normative sample from our Schools of Vocational, Technical and Adult Education. They would provide the following: (1) Test booklets on a loan basis, (2) Answer sheets, (3) Scoring with list reports, frequency distribution, and percentiles, (4) Editorial assistance in the development of a state manual, (5) Estimated cost to the participating schools would be about $.30 for each student tested.

This proposal has the following potential:

1. Could provide our schools with a valuable guidance resource
2. The University of Wisconsin Center for Studies in Vocational and Technical Education has indicated an interest in correlating this testing program with a proposed motivational study of our students.
3. Could provide Wisconsin secondary counselors with valuable normative data for counseling students interested in vocational-technical education.
4. Would provide Houghton Mifflin with normative data which would enhance the sale of this test.

Please see "Workshop Summary Reports - Group A" later in this report for the group action on this proposal.

The Work Study Program — Bruce McConnell

The work study program is a program for all full-time vocational education students aged 15-21 who are in financial need. The program, although federally financed, is administered locally and the school is responsible for the identification of needy students and the placements of these students on suitable jobs.

The work study program did not start until the middle of January last year. From that date until mid-June over 200 students were employed in jobs ranging from laboratory aide to custodial aide. This year there may be 1500 students employed in Wisconsin Vocational Schools. Some of these will be students whose

home is more than 15 miles from school who could earn up to $500 during the school year. Others who live closer could earn as much as $350 during the school year. In addition some of these students will also be employed during the summer on a full-time basis and will earn several hundred dollars during this period. Summer earnings in the work-study program can be in excess of the $350 or $500 maximums that can be earned during the academic year.

Last year, $100,000 was allocated for this program and less than $50,000 was used. This year slightly over $500,000 was allocated for the Wisconsin work-study program. Undoubtedly the most important factor in the work-study program is the school guidance counselor. He is the best informed person in the school regarding student problems. He will be able to identify those students who are in need and who should be employed under the work-study program.

Students who have been employed in the work-study program to date were students who had already enrolled in a vocational school. These students must have felt that they had some chance to finance their education. What about the student who feels that he cannot afford to continue his education. If he feels that there is no chance, he will never apply at a vocational school. How do we reach these people? High school guidance counselors and employment service counselors have been informed of this program and can certainly be of help in referring needy students. I'm not sure that this is enough. How can we reach the student who can't afford to go to school but both he and society would benefit from his further education?

At this time there are at least 16 schools planning work-study programs at an estimated cost of $90,000. Add to this figure the cost of a summer program for the month of June and you will have a rough estimate of the size of this program. Actually whether we spend 1% or 100% of the $500,000 allocation is not important. What is important is that we attempt to identify and to help every student who needs financial assistance so that he may stay in school. If it is necessary that we return $50,000 in unused funds this year, this money may represent 50-75 young people who either dropped out of school or never started because they didn't have enough money.

Panel Discussion on Guidance for Sale

Moderator: Ted Sather; Panel: Milton Ness, Duane Stevens, William Campbell

Introduction: With all the possibilities that a leadership conference has and what could be done, one of the things that appeared to me and one of the things that I have reiterated over and over again is that I think the last thing we come to a session such as this is to listen to speeches. We have problems. I think the only way we can get to solutions of these problems is by taking specifics from these problems and then backing up and doing something about them. So it is not the purpose of our panel this afternoon to try to act as experts who are giving you solutions, but rather to act as a group that might be trying to centralize or localize the areas in which some of the problems can and will occur, so we can get to work on them in the various guidance or workshop sections that will follow.

We selected the topic "Guidance for Sale;" although I don't think that there is a great need for selling guidance, though we have to do it at times to faculty members and to members of our student body. But before anybody can sell a product I think that we probably have to know a little bit about what the product is. You don't go out and sell a tractor until you understand what the tractor can do, what its drawbar capacity is, etc. And guidance is, I think, one of the things that has so often gotten away from us. It started out one place and it has different meanings to a different number of people. We get it confused with counseling; we get it confused with student services whereas these are all areas that come under guidance. I would like to call on one of our panel members to give us his definition of guidance.

Response: The definition that I like best, even though it has been sophisticated, semantics have entered into it, and adjectives have been deleted and added to it was given by Dr. Tracy from Marquette University a number of years ago in a talk on counseling. This definition is, "Counseling is a personalized assistance to an individual's problem through interviewing." It's rather general, but I think it will hold up to any type of a counseling technique that you would choose to use.

Moderator: This is a definition with which you may agree or disagree, but nonetheless you are dealing with a problem. It doesn't say an educational problem, an emotional problem, it doesn't specify, it just says a problem. So I suppose in that sense this could be a housing problem, an economic problem, a romantic problem, and all of these then come within the area of counseling.

A short time ago one of our panelists entered our vocational system as a counselor. I would like to ask him, what were you hoping your job of guidance was going to be? What did you look for?

Response: Well, I looked for something a little bit different than I really found. Guidance in my estimation is any way that you can help a student to develop himself, his potentials and everything else to the utmost of his ability. One of the big things that I found that guidance in my school really was student personnel services. I had thought some of recruitment and some of the angles of administration and things like that, but I didn't think I would be getting into these areas as much as I actually did. The whole aspect of the guidance program that I have gotten into is just about 100% student services and I don't spend as much time counseling as I thought that I might. I do quite a bit of counseling, but it is of a different nature than I had thought I would be doing. Actually, anyone that does admission work and talks to students who are coming into the school spends a good deal of time counseling with these people.

Moderator: I'm going to throw a real curve-ball at the next panelist. "What is your criticism of the vocational organization as it exists in the state at the present time?"

Response: I'm glad you asked this question because there are a few things that do need to be clarified and this is probably the time and place to discuss them. I started out on a job that was basically a new job and I presume several of you people have started much the same way in the last two or three years, so you probably faced the problem relative to: "Where do I fit into the total organization?" "Whose job am I taking something away from?" In this regard, I am

thinking basically of the school coordinator. These people have done this type of thing in the past and they may feel that you're infringing on some of their responsibilities. We've heard student services mentioned, guidance, counseling. My point is, and I think it should be brought out in a group like this, that we should define ourselves to a certain degree as to where we fit into in the total organization. We as a unified group should come up with something in the form of a guideline as to where counselors fit into the organizational structure of the school. This does not mean that we should dictate to our director where we fit or how we will be labeled, but a basic guideline to help the director. They know that they want a counselor in the school. They have some jobs that are at loose ends, they want somebody to do something with these jobs, but they don't know how to put them together.

Moderator: We talk about the counseling ratio of 1 to 400 which seems to be the figure that is somewhat accepted. Do you as a counselor feel that some counseling should be done by the school faculty?

Response: To clarify this 400 to 1 ratio and how that was evolved, at the present time the number of Wisconsin public school counselors amounts to a little over 1000 and they serve something like 359,000 students in the public high schools. On this basis, the Department of Public Instruction has set the ratio at 400 to 1. To get back to your question, I think that basically to have a good counseling and guidance program you have to have an administration that understands what guidance and counseling is and is 100% behind it. Secondly, you have to sell the staff on guidance and counseling. Many of our staff in vocational education are skilled craftsmen and even though they have taken a course in guidance, it is necessary to keep them and the rest of the staff aware of your program. Basically we should sell the need for guidance and counseling to our directors, not just on paper, but in actuality. Secondly, we have to sell the staff as to what we do as well as our purpose so they will get behind us and work with us.

Moderator: There is a great deal of discussion going on relative to the utilization of group counseling as opposed to individual counseling. Can you think of any guidance areas that particularly lend themselves appropriately to the handling of group situations?

Response: I think you're talking about an orientation program where you are orientating students as to activities the first day of school and thereafter. This kind of group guidance can be given by almost anyone on the staff or several members of the staff; it doesn't necessarily have to be the counselors in the school although they are in as good a position to do it as anyone else. I think that when you talk about the group guidance you are referring to a group of individuals that have a common problem. You sit down with these people in a group and attempt to have inter-group action solve their problem. Some groups never solve their problem collectively while other groups solve their problems by individual solutions.

Moderator: Earlier we have mentioned the broad area of student services. Just how does this fit into the total guidance picture?

Response: I think the guidance person should be in student services because under student services you will find the following areas: housing, admissions,

testing, registrar, record keeping, transcripts, student activities, programming, placement, full and part-time placement, work with the WSES, work-study, etc. If you would rule one of these out of guidance, what would guidance be?

Moderator: One of the other things that our panel talked about and discussed prior to this presentation was the method of referring students to the guidance office. We are talking about selling a product now. How does a person buy? The student who recognizes that you have a product and wants guidance comes to the guidance office. How do you go about getting students into the guidance office at your school?

Response: We have a system in which we have a full-time secretary so if I'm not there for one reason or another, she takes appointments. All my counseling is done by appointment or by having the student walk into the office.

Moderator: During or after the counseling session, what kind of records do you keep?

Response: I am sorry to say that we don't do a better job than we do. It is just a matter of taking the time to make a notation of what kind of an interview the counselee had. Many times I am sorry I didn't keep better records because when these people would come back again, it was difficult to recall what had happened the previous session. I think with the experiences I have had, I would recommend that everybody take notes, but not necessarily during the counseling session.

Moderator: Jim Jones is sitting in my classroom and I feel that Jim needs counseling. Jim doesn't know that he may need counseling; in fact, he doesn't want it and may resist it. How in your school do I get Jim to you, the counselor?

Response: We have a sort of centralized system in which we use the coordinators of each department to assist students in their departments. If they get a situation that is beyond their background and training, they refer to the counselor. The same thing is true of the classroom teacher.

Moderator: We haven't presented answers or solutions to you, but merely some of the things that are being done in some places. Are there any questions or statements?

Response: I would like to mention one problem that we will be confronted with this year. One of our big problems is under Bill 501 A concerning the part-time students. We're going to have to have a class of full-time compulsory boys and girls in our school. We have found that our trade competent teachers are not oriented enough in the teaching the special problem student such as the compulsory student. This fall when we have a teacher orientation program, we are going to call in the probation officer, the juvenile officer, and the head of the child service center of the public school, the counselors of the public schools and all the teachers of our school system are going to be involved in continuation students. The parole officer, the probation officer, and anyone else concerned are going to follow these cases through as to what actually happens when a boy goes to Wales, when he comes back, how to rehabilitate the individual and we're going

to try and have our instructors see that its costing taxpayers money to incarcerate him, to bring him back, rehabilitate and get him back into society. We're going to try to get our instructors to change their attitude toward this type of person.

Moderator: Summary

What is guidance and what are the areas of guidance that we should be concerned with? Just what is the job of the counselor? How many of these services fall within the scope and in the realm of the guidance department, whether it is guidance, student services or whatever it might be. We have touched briefly on some of these areas that are included in this and there are many more that we have not had time to discuss. One of the other areas that I wanted to get into very badly, and I'm going to pose it as a problem for our workshops is whether there is a need for state-wide standardization? We touched on this a little bit this morning in the area of tests. Is there a need for standardization in admissions? Should there be definite standards in prior credit? In other words there is another 6 or 7 hours of material that we could be going into and just how much you are going to have time to discuss at your various workshops, I don't know. However, I think it will be at your various workshops that solutions are going to come. They're not going to come from a panel. They're not going to come from saying this is the way it should be done. They're going to come from mutually working them out and then coming back with recommendations. We cannot go to our director or our Directors' Association and say this is the way it is going to be. But we can recommend to the Directors' Association that this is what we think it should be and I think a group as large as this and as powerful as the guidance group can be and should be able to carry quite a bit of weight. If we are going to work toward state-wide standardization, it will be necessary to have these people behind us so we will all be able to operate within the same realm.

Workshop Section A Report

Chairman: Ted Sather
Recorder: Shirley Sweet

We talked about how to educate our staff concerning the services and responsibilities of a guidance department, and we wrote this up in our division, first considering how we would educate our regular staff concerning the services and responsibilities of the guidance department. The first consideration was how we would educate our full-time teachers and these were the suggestions given: That if a school has a pre-school in-service week or two days, we would try to use at least two hours of that time or more. This time basically we would introduce to the general assembly the objectives of our department. We would introduce the various forms that our department might be using and in which they would come in contact and we would also try to teach them some of the more basic principles of guidance. We would also alert them to the problems of the department. If your school has regular teachers meetings and if your director has not filled those completely with programmed activities, we would try to use some of this time. It was suggested that it would be better to have ten minutes or so at several meetings rather than be assigned a full hour at a designated meeting. This would enable us to bring them up to date on what is going on and the current problems we were running into in the department.

Further, we felt that the personal contact of the teaching staff is of prime importance and however this can be done in your school is not of consequence, but that some effort and real effort on your part to get out and meet these people face to face to explain away some of their questions. Then if your school has periodic coordinators conferences in which the local school department coordinators participate, you too should sit in on this conference. This will enable you to keep the coordinators aware of what you are trying to do and listen to what they are trying to do. We also have another group of teachers in the schools which all of you have, I am sure, and that is call staff. Here is where we have a difficult problem because if we try to get them in for pre-school in-service training and don't pay them, they're likely not to come. Some schools do pay their call staff people to come in for a few hours for an orientation period and this should be encouraged. If you don't already do so, we would suggest that you do have such a meeting for the evening and day school call staff people. The second method might be through a publication of some sort to graphically show or explain the guidance function. An additional method of using the guidance department in the evening school program is to pass out a plain sheet of paper and have the enrollees who are interested in coming to the guidance office for help put their names down. The counselor then worked with these people as a counselor on a call-staff basis. The group felt that the guidance division should have some definite recommendations to put before the Directors' Association meetings.

Workshop Section B Report

Chairman: Duane Stevens
Recorder: Kenneth Gordon

At the Kenosha School we are trying to develop a system of self-referrals. One of the most effective ways to develop an effective method of self-referral is through teacher cooperation and by having your teachers report to the counselor any students that they feel are in need of counseling. We discussed how teachers should support the counseling system and how they might better enhance the students' image of counseling. In conjunction with this, we discussed the methods a teacher could use for a student who has a possible problem with the idea of getting that student into the guidance office. Sometimes it is a little difficult, especially when the teacher approaches the student on the basis of, "I think it is a good idea if you would go down to the counselors."

How serious must it be before a teacher refers to the counselor? When the teacher feels she is not progressing with the student she should refer to the counselor. Just because a teacher refers to a counselor, it does not mean that the teacher is incompetent. Counseling and teaching is a team effort. Follow-up to the teacher is important on teacher referrals. Too many times a counselor does not give any feed-back to the referring teacher. This feed-back should not be in the form of a telephone call to the teacher, rather go see the teacher in person. Counselors should talk to the whole student body during the orientation period to emphasize the counseling services available.

Workshop Section C Report

Chairman: Milton Ness
Recorder: Ronald Krumm

The role and function of Student Personnel. If the guidance program is to meet the needs of all students involved in the institution, guidance services

should provide the following services: admissions, testing, counseling, orientation, research, student activities, referrals, educational, occupational and vocational information, placement, public relations, in-service training, housing, students programs, food services, transportation, scholarships and loans.

Wednesday, August 25, 10:30 A.M.

Group Counseling

Chairman: Leonard Klappauf
Recorder: Edward Zahn

Leonard Klappauf, a psychologist on the staff of the Community Counseling Center in Racine, describes group counseling in this manner, "Group counseling is a mild form of group therapy." It differs from individual counseling in that it provides a give and take which is much more like real life than individual counseling. It is particularly effective in dealing with social problems. Group counseling is being used at the Racine Technical Institute. This method or approach in working with groups can be very effective for it affords a good approach to some problems that are difficult to approach by other methods. In this method, in-depth inter-action is developed within the group. In short, it is a form of therapy through orderly group discussion. Topics are not assigned to the groups. In addition, little structuring is then done by the counselor except to tell the group what each member and the counselor is expected to do. It has been his experience that a group of five to eight members is the most effective group size. Participants should consist of people who are emotionally stable, possess average to above average intelligence, and feel a need to broaden their perceptual field. They must possess the following three qualities:

1. The ability to work in a group
2. The ability to express weaknesses before a group, and
3. The ability to express aggressiveness coupled with a fair tolerance for tensions produced by hostile expressions on the part of the self and others toward the self.

Mr. Klappauf indicated several prime benefits that may be experienced by members of the group. They are:

1. It will help the individual to realize that others have difficulties similar to his
2. It provides support and assistance in working through group one's problems
3. It improves the individual's techniques of personal relationships
4. It provides a basis for reality testing.
5. Eventually it may move to the stage where the individual develops increased insights, a resolution of underlying interal conflicts, and an expansion of his perceptual field which will allow the personality to grow toward maturity and independence.

The five stages of group counseling are: establishment, social, transitional, regression, and work.

The establishment stage is the period during which time the groups goals, rules of conduct, rules and so forth are discussed and agreed upon. This is the introduction for the group. The second, the social stage, is the stage in which

the participants are very sociable, friendly and over-accepting. It is a production time but often false in nature. Some groups do not get beyond this stage and consequently fail. The transitional stage sometimes called the test stage is one in which only minor confidences are made, so as to test the group and not to risk all. Rapport between the members must be established here to enable the group to proceed further. The regression stage is the crucial, pivotal point and involves real emotional testing. If the group has solidified depending upon it's sensitivity, it progresses to the final or work stage. If it does not become cohesive the group regresses to the safe, social stage. The final stage called the work stage is the one in which the bulk of the benefits from group counseling evolves. Understanding sensitivity and confidence are descriptive of this period. Some groups get to this stage in six to eight sessions and for others it takes 12 to 14. The role of the counselor is one of real significance as he must help the group progress through the five stages, develop group solidarity, consider and adopt guidelines for actions such as confidentiality, free expression, and mutual trust. Further, by use of the usual non-directive counseling techniques, greater understanding and accomplishment of individual goals is categorized. It has been Mr. Klappauf's experience that in selecting his groups that he now stacks the deck by grouping participants according to sex, problems, age, and ability level in order to speed up the development of the group process. This assignment has been done after in-depth individual interviews so as to tentatively identify key individual problems. In other instances, groups are pre-determined such as those who are failing, those having poor attendance and so forth. He further suggested using testing to aid in the selection process. He has made use of the Wechsler Adult Intelligence Scale, the 16 PF, the Mooney Problems Check List and many others.

Considerable discussion ensued relative to stacking the deck. Dr. Rimel of Stout State University disagreed with the assignment to groups by sex, age, etc. as this creates an artificial group. This is contrary to what the group participants would normally experience in life, and she further stated that this could be an excellent experience on learning to inter-relate with all kinds of people. Some of the techniques that were employed in these group counseling sessions were silence, when it's a comfortable silence for all; in other cases, having each member introduce himself and tell why he is in the group. In either case a counselor must guard against becoming and staying as the center of attention and authority.

Group counseling has been used for long periods of time for a few groups at the Racine Technical Institute. These groups were held during the students free periods. The counselor spent about two hours in addition to the one hour group session to play back the tape, evaluate and prepare for the next session. Notable of the other schools using this technique has been the extensive practice by the Milwaukee School in working with the compulsory age student. Dr. Stockey explained to the group some of the experiences they have had with this particular technique. Due to the extensive interaction between Dr. Klappauf and Dr. Rimel, it was necessary to carry this meeting into the afternoon. The afternoon section was spent in listening to a tape that Mr. Klappauf had prepared and a general group discussion of the group counseling technique. The carry-over into the afternoon did not allow time for the regularly scheduled workshop session.

Thursday, August 26, 10:30 A.M.

The Tool Shed - ACT Testing Chairman: Dr. Merrel Stockey

It was suggested to me that some of you may never have used the ACT and if I talked about something you have never seen, it wouldn't be very effective so I brought along some copies. The Milwaukee School has been using the ACT for about three years. Every entering student must take the test, but there are, of course, some exceptions. The ACT is administered six times a year throughout the United States in selected test centers. Residual testing can be done during the summer by the local school and scored by the local school. For entering freshmen at the University of Wisconsin - Milwaukee, the 50th percentile on the ACT is a raw score of about 22+. Incoming freshmen students at the Milwaukee School in 1962 had a mean composite score of 16.8. In 1963 this mean score was 17.4. The standard deviation on this test is about 5 points. Entering students at the Milwaukee School have a mean score one standard deviation score below that of incoming freshmen at the University of Wisconsin - Milwaukee.

Counselors attempt to dissuade students in the lower percentiles from entering MIT programs. No student is denied admission to MIT if he is a high school graduate. If the ACT standard score is below 13 these students are admitted on probation. Mean ACT scores of the graduates for this past June were comparable to the mean scores of entering freshmen at the University of Wisconsin - Milwaukee. The Milwaukee Institute of Technology program in Milwaukee loses about two-thirds of its original enrollees. There are a lot of factors other than scholastic ability in the drop-out problem at the Milwaukee School. Grade point averages at the Milwaukee School are computed on the basis of credits earned. A standardized method of computing grade point averages should be established. In terms of the ACT, the poorer scores are obtained on the English sub-test. A high score on the English sub-test does not necessarily mean success at MIT.

In comparing Milwaukee Institute of Technology students with other two-year terminal students, the Milwaukee Institute of Technology students have fairly good scores in mathematics and natural science. No one graduated from Milwaukee Institute of Technology who had an ACT standard score below 9. If a student's composite score falls below 13 on the ACT, there is one chance in 200 that he will finish the program. Students who graduate from the Milwaukee School come from the lower half of their high school graduating class. Individual counseling seems to indicate that many students who have no intention of going to college, tend to hurry through the ACT test and not do the best job that they are capable of doing, and this of course, would reflect in these figures. High school grades do not always correlate with the students ability at MIT. Faculty rating sheets are distributed to five or six staff members, and these are returned to the placement office for placement purposes. The average age of the graduates in the general education division is 27 years of age. Forty per cent of the students in the business division were transfer students from other schools. Age is certainly a factor in the cumulative grade point average of Milwaukee Institute of Technology students.

Placement Chairman: Mr. Robert Braun

Placement and follow-up will be playing an increasingly large role in our schools, especially when we go to the junior college technical program as envisioned in Bill 501 A. Two people at the Milwaukee School are presently working in placement. The placement division gets into each of the departments at the beginning of the school year during the orientation period. This was done to make these students aware of the current job picture. They are told what to expect two years hence, in regard to working conditions, starting salary, job responsibilities - this is the initial contact. We are developing a library of company literature which enables a student to study the literature of the various companies where he might seek employment. Invitations to interview were sent out to the various employers in the Milwaukee area. This invitation to interview brochure which was sent out lists the Milwaukee Schools various programs and resulted in 59 employers coming into the Milwaukee School to interview graduates. Prior to the employment interviews each student is brought into the placement office for an individual conference to talk about personal things such as dress, good grooming, etc. Follow up studies are conducted once each year with five year follow-up being contemplated. A local school in the Milwaukee area on the basis of a recent follow-up made some changes in their curriculum for those students who were pointed toward the Milwaukee School. The placement office will be working more closely with local industry in the Milwaukee area as it applies to placement of the Milwaukee School graduates. Placement becomes a part of the total picture of selling our product. Individual interview booths will be provided at the new facility at the Milwaukee School and, in addition to this, there will be a small conference room where movies can be shown.

Workshop Summary Reports - Group A Chairman: Edward Zahn
Recorder: Richard Hogstad

During the period of discussion we spent on the Daily Tests, some of the things that we brought out were:

1. It is going to be difficult to sell the directors on the test.
2. None of us have had any experience with this particular test.
3. Our knowledge of it is inadequate. This test might be good for certain programs in the technical areas, but which ones we wouldn't know.
4. The business English test is mis-named.
5. The spatial relations test was short of examples.
6. The group felt that the test should be one which would determine one's ability to learn.

The implication of accepting this proposal would be that if we did we would have to do the same thing with other companies that came up with the same proposition. We took a vote and it was almost unanimous that the group rejected the testing proposal that Houghton Mifflin had made. Those that want to go on with this test on an individual school basis and report the results back a year from now would be encouraged to do so.

We then discussed the ACT program and what type of testing program we would like for a state-wide testing program. There are several factors about the ACT test which made many of us consider it as the best test to use on a state-wide basis. First of all there are state norms available. Secondly, many of the students in the technical program transfer to state colleges and their having had the test would be an advantage. Another factor is that it is possible for a school to test those that do not get into the regular six test periods of the year. It is possible to have several tests on hand which you might use for a late enrollee. We recommend the ACT test for use on a state-wide basis for the technical areas only. Our group is also on record on recommending specific tests for specific areas such as the IBM test for data processing. The group encouraged each school to give specific tests for specific programs, and it was recommended that schools using specialized tests in specialized areas submit their test data to the State Board and this information then would be distributed to all of the schools.

The group felt that not only tests but dismissal procedures, drop-out procedures, registration, etc. should all be standardized. We would like a survey of the schools in the state to find out exactly what type of testing programs they have. Perhaps at future meetings we can take certain tests, review them and perhaps recommend a state-wide testing program in the specialized areas.

<u>Summary Report Group B</u>

Chairman: Shirley Sweet
Recorder: Milton Ness

Mr. Krumm gave our group a very fine detailed report on the Daily Vocational Test. We discussed each test in length and we thought of using the CQT and various select Daily Tests to be made up in specific batteries for specific two-year technical courses. For instance, we could use the CQT for the intelligence test and then use the Daily Business English Test plus the Spatial Combination for data processing students. But after much discussion, no recommendations were made. The group went on record to send in CQT test scores to the state office plus the total GPA for the first 34 credits taken on students tested since 1960 to the present time. Likewise it should include this fall term and that's to develop state CQT norms. Schools should use the CQT if they do not have it in their testing program for the two-year students. We also recommended that if the Houghton Mifflin Company wants to use the vocational schools in Wisconsin for norming, that arrangements should be made with individual schools interested in cooperating with this program.

Increase of enrollments and the availability of the ACT scores make it desirable to adopt this test as the recommended test throughout the state for our technical programs. The ACT English test apparently is doing a good job in predicting the reading ability of the Milwaukee students. This would eliminate one test that many schools are presently giving.

Division Action

It was suggested that the group should start thinking about developing a role and function statement relative to counselors in Vocational, Technical and Adult Education. The purpose of this statement would be informational for members of the local board, director and teachers. No action was taken.

It was moved, seconded and passed that the ACT be used as a standardized test for all two year technical students.

It was moved, seconded and passed that our group take steps to affiliate with the Wisconsin Personnel and Guidance Association. The meeting was adjourned.

HOME ECONOMICS DIVISION MEETINGS

Tuesday, August 24, 10:30 a.m.

Reaction to panel - "Cooperative Services"

The home economists broke into four groups to discuss one phase of cooperative service--

Group I - Developing a workshop for teachers. Each year a different area of home economics would be pursued. "Tailoring the Unfaced Suit" was one suggestion.

Group II - Organizing a series of Six Lessons as versus the Capsule lesson.

Group III - Resource persons and methods of obtaining qualified people.

Group IV - Developing a Consumer Education Course
- -Management of Law
- -Getting the Most for Your Money
- -Cutting Your Cost of Living
  - Six lessons might include:
    - -Clothing Dollar
    - -Food Dollar
    - -Money Spending

Our triple role in Home Economics--

1. Our new homemakers
2. Our present homemakers
3. Training for occupations, knowledge and skills

It is to be kept in mind that it is necessary to utilize the many resources within the community.

Tuesday, August 24, 1:30 p.m.

The Occupational Training Program in Home Economics - Challenges and Opportunities was presented to the group by Dr. Margaret Alexander from the U. S. Office.

Dr. Alexander opened by saying that today we find ourselves in social, technological, and economic change. The following have implications for Home Economics Education:

- Vocational Education Act - 1963
- Economic Opportunity Act
- Civil Rights
- Elementary, Secondary Act
- Amendment to Social Security Act

- Head Start Programs (underway this summer)
- Community Action Programs
- Day Care Centers
  Staffing and training for different job levels
- Parent Education in Home Management
- Enrichment Programs
  Home and Family Life
  Consumer Economics

Home Economics Education Programs

Preparation for Homemaking

Preparation for Gainful Employment (Home Economics Knowledge and Skills)

Where are we going?

1. Need to strengthen Occupational Training Programs.

2. Preparation for gainful employment is a new emphasis for each school.

   a. Just beginning to develop instructional material for gainful employment.
   b. Need to work out a job analysis within our field.

3. Explore career possibilities of certain occupational programs.

4. Help teachers to prepare for teaching of occupational training programs.

   - Work experience
   - Teaching experience

5. Determine findings available from research.

   - How do we use these findings?

6. Resolve to make a great effort to keep up-to-date.

7. Participate in research studies.

8. Work with others on joint program planning in two or more education fields.

9. Assuming a dual role--that of wage earner and homemaker.

   - Courses in Home Management.
   - Courses in Personal Development

10. Preparation for homemaking still a very important phase of program.

A panel entitled, "Occupation Training" was presented by three coordinators; Valeria Miller, Mildred Porter, and Maybelle Ranney. They attended the two week workshop conducted at Stout this summer under the direction of Rua Van Horn from Washington, D. C.

The highlights were:

- Qualifications of teachers for Occupational Classes as developed in Rua Van Horn's workshop this summer were:

  1. Must be a high school graduate
  2. Mature
  3. Good attitudes
  4. Willing to work with people
  5. Good judgement, realistic, practical
  6. Background in occupational training

- The steps in establishing a class

  1. Need
  2. Watch want-ads, surveys, etc.
  3. Advisory group
  4. Screening
  5. Job analysis
  6. Place of training
  7. Budget

- Analyze the 1960 census for county and draw implications from this.

Examples of Pilot and Other Occupation Programs
Dr. Margaret Alexander

Area - Child Care and Guidance
High School Program--Child Care Worker
Westinghouse High School, Pittsburg, Pennsylvania

Purpose
To prepare for employment in nursery schools, day care centers and private homes.

Length of Program

3 school years, 3 periods a day

Schedule
10th grade--pre-requisite courses in nutrition, food preparation, family health and typing.
11th grade--intensive study and practical experience in care, guidance, and understanding of pre-school children.
12th grade--intensive study and work experience in planning and guiding programs for pre-school children.

11th and 12th grade--1st period - Study of principles of child discipline
2nd period - Small groups for individual (during day) instruction and to observe children in laboratory and to work with children and parents.

Area - Child Care and Guidance
Post High School - Child Care Assistance
Woodrow Wilson, Branch, Chicago

Purpose
To train persons who would be qualified to work in child care centers in the area (over 200).

Length of Program
2 years, 65 semester hours

Requirement for Enrollment
A high school graduate or non-graduate, who has passed the general educational development examination, is eligible to apply.

Curriculum includes the following courses:

1st Term	Hr.	2nd Term	Hr.	3rd Term	Hr.	4th Term	Hr.
English	3	Speech	3	Humanities	3	Humanities	3
Sociology Science	3	Sociology Science	3	Introducting Sociology	3	Sociology--Marriage & Family	3
Biology or Natural Science	3	Biology or Natural Sc.	3	Child Psychology	3	Psychology--Exceptional Child	3
Home Economics Nutrition	3	Psychology--General	3	Literature pre-school	3	Educational Participation in Nursery School	6
Home Economics Child Care	2	Music--pre-school	2	Educational principles & practices of nursery school	3	P.E.	1
Art--pre-school	2	P.E. First Aid & Safety	1	P.E.	1		
P.E. Play Activities for pre-school	1	P.E.	1				
	17		16		16		16

Area - Child Care and Guidance
Adult Program - Day Care Center Worker
Portland Community College, Portland, Oregon
Adult and Family Life Education Department

Length of Program
12 weeks, 48 hours of class work and 36 hours observation and practice in day care center.

Objectives

- An understanding of needs of children and each age level.
- A knowledge of developmental stages of children.
- An understanding of method of guidance and discipline of children.
- An appreciation of children with special problems and how to meet them.
- An understanding of children's play as a means of learning and growth.
- An awareness of health, safety and nutritional needs of children.
- Some ability in the use of art materials, stories, music, science, rhythms, and other techniques of enriching children's lives.
- A professional attitude toward teaching responsibilities and professional relationships with employees, parents, fellow employees and children.
- An understanding of the requirements of good day care facilities.

Teacher Qualifications

Education - B. A. in Home Economics, M. A. with major in Child Development Graduate Work at Merrill Palmer

Working Experience

Nursery school work in Oregon and Ohio

Area - Food Management, Production and Service

Supervised Food Service Worker for Hospital or Nursing Home
Highland High School near Seattle, Washington

Length of Program

26 high school students enrolled in a year's class.
Meets 3 hours a day; other 3 hours spent in regular high school classes to meet requirements for graduation.

Supervised experience provided in school lunchroom. Teacher trained as dietition.

Area - Food Management, Production and Service

Adult Food Service Aides in hospitals, school lunch, day care centers, nursing homes or other non-profit institutions. Hoke Smith Technical School, Atlanta, Georgia

Length of Program

235 hours on-the-job experiences are a part of the training

Recruitment procedures include:

- Advertisements in local newspapers
- County Welfare Service
- Former class members

Placement

80% of first trainees in following types of jobs:

- Food Service Supervisor
- School Lunch Manager
- Food Service
- Day Nursery
- Food Service Supervisor in Hospital

Area - Institutional and Home Management

High School - California has several high school classes to train homemaker's assistants and several to train hotel, restaurant, and institutional service workers.

Out-of-School Youth and Adult Program
Homemaker assistant provided in a number of communities in State of Washington

Occupational Experience
Provided by members of local unit of home economics association.

Area - Clothing Management, Production and Service

Adult-Clothing Alteration--2 classes
Fargo, North Dakota

Length of Program
27 hours - Vists to alteration departments in stores were included as part of instruction.

Purpose of Course
To keep experienced sewers prepare for a regular job as alteration workers in stores, laundries, dry cleaning establishments, or in own homes.

Number Enrolled
50 women, only one dropped due to illness.

Similar programs in Chicago and Detroit

Home Economics Course for Special Group of Adults
Homemaker's Assistant Course for ADC Mothers
Vah-Ki Episcopal Center, Coolidge, Arizona

Length of Program
Six weeks, 3 hours daily

Course Content
Orientation to Work
Home Cleaning and Laundry Procedures
Preventing of Accidents
Home Care of Sick
Food Preparation and Serving
Care of Children and Handling Emergencies

A Day Care Center was staffed and run concurrently.

Purpose
1. To increase the employability in occupations requiring home economics knowledge and skills.
2. To up-grade the quality of home life in homes of trainees.

Home Economics Coop Program for Special High School Students
Harlingen, Texas

Program started by efforts of curriculum director, principal and home economics teacher. A business woman, social worker, and two homemakers assisted in an advisory capacity.

Program

Classwork and on-the-job training in cooperating homes and business establishments. Paid prevailing wage.

Schedule

Last two years of high school
- 3 hours in regular school program
- 1 hour in conference with teacher coordinator
- Lunch and on-the-job training from 1 p.m. - 3 p.m.

Job Placement

- Assisting in the home
- Linen mending in hospital
- Assisting in nursery schools
- Hand sewing in drapery shops
- Hostessing for tourist organization

Wednesday, August 25, 10:30 a.m.

Dr. Margaret Alexander suggested a Nine Point System for getting Occupational Training Programs off the ground.

1. Explore needs of the community. Can be done through--
   a. Personal Contact
   b. Surveys
   c. Employment Services
   d. Reading Want-Ads
   e. Community Organizations

2. Set up Advisory Committee - Involve resource people from the school and community.

   Included might be:
   a. County Welfare
   b. Homemakers
   c. Mayor
   d. Professional Women
   e. Employment Agencies

   Some other purposes of this Advisory Committee might be to:
   Determine need
   List and identify learnings
   Explore facilites
   Publicize

3. Analyze the needs and decide on the occupation(s) for which to provide training.

4. Develop a plan for a training program or course.
   - Title of occupation
   - Length of course
   - Job analysis
     - Identify competencies, skills, knowledge.

5. Develop curriculum or outline
   - Desired learnings, content
   - Appropriate work experience and how it is to be supervised
   - Determine qualifications of teacher
   - Determine minimum standards of enrollees
   - How are studies to be selected
   - Facilities, equipment, budget and teaching aids to be included.

6. Publicize and recruit

7. Placement

8. Follow-up (on-the-job and in later years)

9. Evaluation of the program

Another step forward in our program is the State Curriculum Study. The State Curriculum Committee, comprised of 12 coordinators met in Madison last March. At that time they recommended that the 1965-66 Curriculum Study for all full-time and part-time home economics teachers in Schools of Vocational, Technical, and Adult Education be directed toward the development of Occupational Training Programs. The purpose of the Curriculum Study is to better get acquainted with the community, its resources and potential for employing trained women and to involve the part-time staff in assisting the coordinator.

Wednesday, August 25, 1:30 p.m.

Dr. Schubert shared with the group of home economists materials prepared under her direction at a four week workshop she conducted this past summer. Her students prepared materials under the title--"Developing Curriculum for Occupational Training Programs." A copy of all these materials will be sent to coordinators attending this meeting.

Thursday, August 26, 1:30 p.m.

Concepts and Generalizations as applied to adult education were discussed. Illustrations were given of concepts and generalizations developed in curriculum workshops in the area of family relations, human development, home management and family economics, housing and home furnishings, foods and nutrition, and clothing and textiles.

If we do a good job of teaching, the end product for which we were teaching will be the final result. An example of this might be the Concept, "Health." When we have taught Health, the result will be good health. The teacher's job is to supply the learning experiences.

It was felt that the implications put forth at this Workshop will direct our future planning. The following work will need to be done by all of us:

1. Continue to work cooperatively in joint programs with other fields of Vocational and Adult Education
   - An example of this might be Distributive Education and Home Economics in saleswork in yard goods department, drapery and accessories department, ready to wear department, household appliances or furniture department.

2. Help the disadvantaged youth enrolled in school--
   Youth who have dropped out
   Post-high school group
   And adults.
   to fit them for gainful employment.

3. Sharpen our dual focus of home economics education for home and family living and expand into home economics and wage earning.

4. Transmit a sense of job pride resulting from skillful performance.

5. Keep up-to-date in knowledge, teaching skills and an understanding of the problems confronting contemporary American families.

6. Bringing into focus the relationship between educational programs in our schools and the economic realities of today and tomorrow.

Although the challenge appears formidable, the responsibility of solution must be assumed and action taken to satisfy urgent needs.

OFFICE EDUCATION DIVISION MEETINGS

Tuesday, August 24

Group A: National Secretaries Association--Miss Patricia Doyle, S. C. Johnson & Son, Inc., Racine, Wisconsin (Resource Person)
Chairman--Richard Duffy, Coordinator, Business Education, Oshkosh

Subjects Discussed:

1. Procedures for organizing local N.S.A. chapter
2. Possibility of associate membership for teachers
3. C.P.S. courses
4. Youth groups

Recommendation:

The State Board Staff institute efforts to provide one day clinics for Secretarial Instructors to meet with representatives of N.S.A.

Group B: Administrative Management Society--Mr. Robert Ristau, Department of Public Instruction, Madison and Mr. Frank Utecht, West Bend (Resource Persons)
Chairman--Russell Paulsen, Business Education Coordinator, Wausau

Subjects Discussed:

1. A.M.S. feels Business Teachers do not have enough practical experience.

   Solutions suggested: Pay incentive system, sabbatical leaves, grants by firms, credit for special classes, and to meet certification requirements, work experience credit toward certification.

2. Businessmen are not utilizing the educational services available.

   Solutions suggested: Hire those that have already had education, company pays all or part of course costs, certificate programs, office management courses, proper planning.

3. Organizing a local A.M.S. chapter
   a. Instructors help organize
   b. Promote and offer mid-management courses through A.M.S.
   c. Instructors contact A.M.S. for summer jobs and organizing chapters.

For Information write: Robert Ristau, State Department of Public Instruction
Frank Utecht, West Bend Aluminum Company, Inc., West Bend, Wisconsin

Group C: Data Processing Management Association--Mr. James Adams, Educational Director, D.P.M.A. (Resource Person)
Chairman--Mr. Harold Sahakian, Coordinator of Business Education, Racine

1. Short Course Development
   a. Six sessions on concepts for high school teachers, vocational school staff, and administrators.
   b. Survey or introductory course for adults, 10 hours.
   c. Review of course offerings of other schools.

2. Teacher Selection and Recruitment
   a. Train own teachers and recruit advanced teachers from industry.

3. Changes in types of processing data may cause curriculum changes; online processing, direct access, and internal storage.

Wednesday, August 25

Group A: Local Supervisory Practices
Chairman--Mr. Russell Slicker, Antigo (No report)

Group B: Local Supervisory Practices
Chairman--Mr. Joseph Gunderson, Coordinator, Business Education, Appleton

1. Weekly departmental meetings.
2. Teachers do not always understand why superviosrs are visiting classes.
3. Encourage teachers to visit other classes.
4. Improve instruction through team approach.
5. Do not try to tell teachers how to teach.
6. Teachers realize they have problems with students.
7. Teachers are encouraged to attend advisory committee meetings.
8. Take school time for supervisors to meet with teachers if possible.
9. Supervisors would like to discuss teacher load at some future meeting.

Group C. Local Supervisory Practices
Chairman--Mr. Edward Matchett, Department Head, Business Education, Fond du Lac

1. Variety of supervisory duties.
2. Controlled by school directors.
3. See that qualified instructors were on the job.
4. Surveys needed to be made in the area of curriculum

Recommendations:

1. Administrator should be freed from clerical duties--need secretarial help.
2. Advisory committees should be used chiefly as a means of advising the schools.
3. Coordinators should make classroom visitations on a planned schedule.

Thursday, August 26

Group A: Classroom Visitations
Chairman--Mr. Willard Pynn, Eau Claire

1. Discuss visitation with teacher before and immediately after.
2. Number of visits depends on supervisory teacher and class.
3. Teacher should know the purpose of the visitation.
4. Supervisor may be called in by teacher to help or observe.
5. Look for facilities in order, student reaction, type of group, monotone teaching, personal characteristics, habits, etc.

Group B: Instructional Improvement
Chairman--Mr. O.T. Henkel, Distributive Education Coordinator, Fond Fond du Lac

Discussion Areas:

1. Course outlines kept complete, up-to-date and useful.
2. Role of in-service teacher training in supervision.
3. Teacher meetings and their role in in-service training.
4. The role of the State Staff in instructional improvement.

Action:

Standardized requirements for formal lesson planning should be eliminated. Teachers and supervisors should be allowed to decide upon the best methods of daily planning.

Group C: Self Evaluation Criteria
Chairman--Mr. Robert Germer, Rhinelander

Criteria:

Do they stay through the entire course?
Do they stay after class for consultation?
Is the teacher enthusiastic? Professional?

Professional organization membership is not a guarantee of professionalism.

Professionalism:

What is attitude of teacher
Student centered
Interesting to students

Personality

Ability to communicate, plus effort, sincerity, consistency, receptive to ideas, creative, standards, confidence, loyalty.

Growth

Active in organizations

Evaluation by peers (teachers with tenure)

TRADE AND INDUSTRY DIVISION MEETINGS

Monday, August 23, 1965 4:00 p.m.
Chairman: Mr. George Kinsler

Mr. Kinsler opened the meeting welcoming the T&I Coordinators and Supervisors and introducing Mr. Robert Ristau who is the vocational education supervisor for the Department of Public Instruction for Wisconsin.

Mr. Kinsler then called upon Mr. Plenke, Chief of T&I, who oriented the T&I Coordinators to the procedure to be followed in all T&I Sectional meetings. Mr. Plenke stated that we arein a crucial era of vocational education. He pointed out that the U. S. Office of Education has reorganized. This may, to some degree, affect the program on the state level as well as the local level. Mr. Plenke further stated that it is important that a proper distribution of effort be made to each facet of our responsibilities for T&I. In projecting into the future it may be possible that we may divorce ourselves completely from extraneous assignments. Especially with the help of 88-210 which gives schools aid for ancillary services. He also pointed out that in the discussions the Governor has had on pending legislation the terms presented and used by the Governor were generally in skills for the industrial work force, therefore, our emphasis in the promotion and implementing of our program should follow this concept. In reviewing the 1964-65 year, Mr. Plenke stated that we should show a gain in our enrollments, to a figure of about 59,000. He urged that we make every effort to keep this growing in the ensuing year and years to come.

At this point Mr. Kinsler divided the T&I Coordinators into three groups explaining that the division was made for balance of experience. A pre-evaluation form was distributed and each coordinator was asked to fill out and turn in this pre-evaluation. The Coordinators were also informed that a final evaluation will be forthcoming at the conclusion of the week.

Sectional Meeting for T&I Tuesday, August 24, 1965 - 10:30 a.m.
Joseph W. Bachnik, George Kinsler, Arnold Potthast: Discussion Leaders

"The Role of the T&I Coordinator Today and Tomorrow"

The problems to be discussed were the problems of T&I Coordinators, Apprenticeship-Trade extension, institutes, preparatory vocational, technical.

The T&I Coordinators were divided into three sections. In each of the sections the discussions were held on the topics cited above. In discussing T&I Coordinators' problems, the majority cited the problem of discovering new courses or topics for short term training programs. As a result the discussion centered around these type of programs.

The following topics evolved from this discussion:

1. Plumbers

   a. Code
   b. Pumps
   c. Septic tanks

2. Electrical codes
3. Medical Assistants
4. Electricity for supervisors
5. Law enforcement
   a. Investigations
   b. Mob control
6. Administration and command for law enforcement
7. Chrysler tune up clinic
8. Medical terminology
9. Mercury Motors tune up (small engines)
10. Health occupations
11. Fire Administration and Command
12. Communications for Supervisors
13. Service Station Attendants - tune up clinic
14. Nursing Home Administration
    a. Business Administration
    b. Personnel problems and employee motivation
15. Overage, Shortage and Damage Clinics for Truck Terminals
16. Child Care Center Workers
17. Concrete Technology (using the manual prepared by the Ready Mix and the Portland Cement Association.)
18. Maintenance Welding (This could center around silver, aluminum, and special welding). (One man to teach course with several others brought in to demonstrate special welding processes.)
19. Woodworking - care of tools, etc.
20. Furniture Manufacturing - teach machine operating and methods of sharpening jointer blades, etc.
21. Digital Systems RCA Institute, (a program for engineers - note instructor can be obtained from AC Spark Plug)
22. A course called "Getting Along with Others."
23. Management of Money
24. How to Fix up Hair
25. Numerical Control
26. A program to assist oil burner servicemen from the petroleum industries
27. Ceramic Tool Cutting
28. Air Balancing
29. Hydraulics
30. Hot Water Tank Welding
31. Service Calls for Plumbers
32. Repair of Instruments
33. Basic Fundamentals of electrical installations
    Mobile Home - Note: (Be cautious not to interfere with electrical unions or organized labor in this area.)

The discussion then led to the devising of a form which could be used to organize, develop, promote, and conduct extension programs. It was generally agreed that the sample form given the group was good. It was suggested that a follow up of publicity was advantageous and a spot check in the form could guarantee this. In addition, it was felt that a list of required audio-visual equipment should be listed on this form. Other suggestions were cautioning the use of newspaper advertising for classes of the extension nature. This would eliminate the average do-it-yourself-er coming into the program. Promotion would be directed to the avenue which the tradesman could be contacted directly. Newspaper advertising could be utilized after the program was concluded.

The discussion leader emphasized the fact that coordinators should set up a calendar of institutes at the beginning of the year. If he does this, he will meet his plan and possibly add other programs as he goes along.

The discussion then turned to "How needs for extension courses are established." The ones discussed were as follows:

1. Survey
2. Personal contact - by request
3. Shown need through analysis
4. Individual contact
5. Through advisory committees

Sectional Meeting for T&I Tuesday, August 24, 1965 - 1:30 p.m.
Joseph W. Bachnik, George Kinsler, Arnold Potthast: Discussion Leaders

Trade and Industrial Coordinators were again split into three sections to continue their discussion and projection of problems in the role of T&I Coordinators. The following short unit programs suggestions were made in this meeting.

1. TIG and MIG for welding supervisors
2. Health Occupations
   a. Ward Assistants
   b. Executive housekeeping
3. Tool and Die Making upgrading
4. Estimating (construction - architectural drafting)
5. Model making

The discussion then centered around "How To Seek Out Trade Extension Offerings." The following suggestions were made:

a. Visiting plants and industries
b. Through advisory committees
c. Through surveys

In the discussion on short cuts on promotions of trade extension classes, the following was submitted:

a. Working with committees - lead them into brainstorming for ideas
b. Make up a class from a company with each company promoting the class throughout the company.

How can MDTA help trade extension? It was brought up that MDTA through on-the-job training may help promote apprenticeship due to its assistance in monitary value to cover the first year expense in training on the job.

What experiences both good and bad have been encountered in the promotion of trade extension classes?

a. The lack of facilities and qualified teachers
b. In obtaining instructors a survey may be made of the personnel directory or of industry
c. Salary schedules sometimes may be low. They should follow a professional level, not a high school schedule.

d. A demand for upgrading plumbers existed.
e. Getting the highly trained engineer who cannot teach. The following safeguards may be built in to assist the engineer in teaching.
   (1) Control the class by watching daily enrollments
   (2) Develop an outline before classes start to give guidelines to follow.
f. Provide an annual workshop for public school counselors to inform them on what we are doing and how they may assist us.
g. Standardize the apprenticeship program and trade extension programs.

The following laundry list was developed on new courses:

1. New concepts in electrical fields
2. Template drawings for pipe trades
3. Digital systems
4. Implications of numerical control
5. Design for manufacturability
6. Cost estimating in any field

T&I Sectional Meeting - Tuesday, August 24, 1965 3:15 p.m.
Speaker: C. Raymond Durkee, Personnel Superintendent
Research and Development Division
Kimberly Clark Corporation
Neenah, Wisconsin

"What Industry Needs and Expects from Vocational, Technical and Adult Education"

"I wonder if your experience with speakers or conference leaders has been anything like mine. How many times have you heard a speaker say, 'This is the topic I have been assigned, but I am going to discuss something just a little bit different.' It happens surprisingly often, doesn't it? Well, chalk up another one because I am about to do the same thing.

The liberty I am about to take with my topic concerns the word 'industry.' I do not feel qualified to speak authoritatively about the needs of all 'industry' in the State of Wisconsin. Neither do I feel qualified to speak about the broad needs and expectations of even our own paper industry. What I would like to do this afternoon, is share with you some of the experiences and some of the needs of one company, Kimberly-Clark. We are one of the State's largest companies and associated with one of the State's largest industries. Because of these factors, perhaps our experience can be considered as representative of industry's needs in this State. That judgement you will have to make after I have concluded.

Some brief background information about our company may be helpful to your understanding of my comments. I hope that most of you know that Kimberly-Clark is one of the country's largest paper companies with sales this last year in excess of $577,000,000. From our headquarters in Neenah, we operate 94 production and distribution facilities in 25 different countries. Our products are now available around the world in some 125 countries. Of the approximately 21,000 people who make up the Kimberly-Clark organization, more than 5,300 are located in Wisconsin. This makes Kimberly-Clark one of the State's largest employers.

The Research and Engineering Division, with which I am associated, is located in Neenah, employing approximately 460 engineers, scientists, technicians, maintenance and clerical employees.

About 1 1/2 years ago a committee of Research and Engineering managers embarked on a detailed study to determine ways to increase the effectiveness of our Research and Engineering Division. Their study included an opportunity for each professional employee to express his needs for improving his own professional effectiveness as well as that of the division. One conclusion drawn from this study was that considerable improvement had to be made in up-dating the skills of our staff. We identified four fundamental needs that had to be met:

1. Get present skills up to date
2. Keep present skills up to date
3. Broaden present skills
4. Add new skills

What are our specific needs and how can you help us to meet them? The two broad areas of need are (1) degree or credit-oriented programs, and (2) programs directed toward skill improvement, up-dating or retraining, the latter being non-credit, non-degree work.

In the degree or credit area, we feel that local colleges and universities (such as Wisconsin State University-Oshkosh, Lawrence University, St. Norbert College, Marquette University, University of Wisconsin-Madison, the University Extension at Menasha and others) are best equipped to provide our people with the help they need. The people participating in this kind of program fall into two categories. The first category is the recent high school graduate or college dropout who is working toward a bachelor degree. For example, we have two technicians who have now exhausted all of the courses that they are able to take for credit at the Menasha Extension. Now they must go somewhere else to complete their degrees. Both of these men are married and have children. Kimberly-Clark has been encouraging their efforts through financial assistance and revised work schedules. The latter was necessary because their courses at the Menasha Extension were only offered during the day.

The second group looking for degree or credit oriented programs represents those employees who want to work toward advance degrees. We have members of our staff who are working on such programs now through the University of Wisconsin-Madison and the University of Minnesota. One of our engineers just finished taking 7 hours of credit work at Minnesota during their 5-week summer session. This is a man 51 years old with 28 years of experience taking modern courses in thermodynamics and calculus. Commendable, isn't it?

There is another aspect of degree or credit oriented work which, in terms of future needs, is becoming of even greater interest to us. It's in this area where we feel the Vocational, Technical and Adult Educational system can render a much needed service. Our requirements for technicians are changing. Today we need fewer pilot equipment operators and technicians who perform only routine testing procedures than we did ten to fifteen years ago. What we do need are men and women who are equipped, through post high school training and experience, to be true extensions of the engineers and scientists. They must be capable of providing skillful and knowledgeable technical assistance. They must be flexible enough to swing with the needs of a dynamic scientific world. To meet this changing need in recent years, we have been hiring one or two year college dropouts. An

even better candidate would be one with a two year Associate in Applied Science degree in chemical process or chemical technology. Since the Fox River Valley is the heart of the nation's paper industry and since the paper industry is basically a chemical process industry, we are hopeful that a technical school providing this training in chemistry, mathematics, physics, mechanics and English beyond the high school level is a necessity for technicians to become and remain effective in today's technical world.

In addition to chemical process or technology, there are two other sizeable needs in the two year degree area. One is the field of electronics. Madison now offers a program that provides excellent training in this field. The other need is the field of electronic data processing, our 'friend' the computer. Some schools (Appleton is an example) are already meeting this need. The future need for programmers and operators in business information and process control will stagger us all. Systems analysis, data transmission, and who knows what other new developments, will have explosive affects on this need.

You might say, why all the interest in the two year degree? Can't these people get sufficient training with just a few courses? In our opinion, the two year post high school trained technician is substantially better equipped to meet the changing needs of science and technology than his counterpart who does not have the additional solid background in science and math. He simply has a broader and deeper base on which to build. His flexibility has been increased immeasureably. He has significantly increased his value to us while at the same time insuring against his own technical or economic obsolescence.

We have just been discussing some of the needs in the degree or credit area. Now let's turn to the need for skills improvement, or non-degree programs.

It is in this field that I feel you can be of the most help. This concerns present employees who are fully employed and would be part-time students in either day or evening programs. These needs can be divided into two categories. The first category takes in the professional engineers and scientists whose needs for skills improvement are generally at the college or university course level. These can be met by attending brief refresher courses, seminars, correspondence study, or personal association with someone in their field of interest. Your facilities have been helpful in the past and can be of even greater help in the future in sponsoring short technical up-dating or review courses in various areas. Such fields as electronics, mathematics, physics, materials, etc., are fields where short courses can help to keep our people up-to-date on new developments or techniques.

However, the greatest need exists with our present technicians. The job requirements are rapidly pulling away from their skills. This is a classic example of the job requirements being upgraded and some of our people not keeping pace. Most of these technicians came from our local mills where they displayed considerable more potential than their hourly-paid production jobs required. Nine out of ten of these men and women have only high school educations. When we needed technicians for operating pilot equipment, routine testing, or simple laboratory procedures, they were very satisfactory. Today, some ten to fifteen years later, our needs are different. As the cost of professional talent sky-rockets, it becomes more and more economically essential that we keep our professionals fully occupied on truly professional level work. This means that technicians must pick up many of the "doing," lower level activities formerly done by engineers and scientists.

It is with this group that your services are sorely needed. These are loyal, conscientious, hardworking, interested people whom technology has passed by. We need your help to provide training facilities to help them remain productive workers in a rapidly changing world. We must develop ways to help them at least keep pace with the times. Hopefully, we would like to have them grow and take on even greater responsibility. They have many years of practical experience, but they need modern training in the fundamentals of chemistry, physics, math, etc. We must remember in planning courses for them that they have been out of high school for 10 to 25 years. Many of them have never taken a classroom course since that time.

As a step in meeting this need, last winter Jim Malotke and I worked out a program to offer a high school chemistry course to technicians in our community. The response was so great that Jim had to run the course in two sessions. Even though attendance was excellent, most of our men found the course to be extremely difficult. Here were men with many years of practical experience around chemical equipment and laboratories and yet they had considerable difficulty with a basic high school chemistry course. Why? One reason is that men who have been out of school this long find classroom discussion of theory very difficult to absorb. This is particularly true when there are few practical job related examples to go along with the textbook theory. Yet they must get this theory. Another good reason for the difficulty is that 1965 science is just plain tough. I will make some suggestions as a result of this experience a little later on.

We feel that the employee and his employer share in this responsibility for up-dating of skills. The initiative must rest with the employee. The employer can only create a climate that stimulates, encourages, assists and rewards self-development. At Research and Engineering we have a schedule of allowances, based on appraised present job performance, that provides an allowance for our best technicians of up to $300 a year and two weeks paid time away from work per year to participate in up-dating programs. One of our biggest problems in implementing this program for technicians has been in finding the facilities, programs and courses that they need. The cost and time can be worked out. The designing of the course is difficult and requires considerable skill and experience.

You might say, "If you are so concerned, why don't you develop and conduct inplant courses? Lots of other companies have done this." Our feeling on this is that we are not in the educational business. We are not trained teachers. We cannot keep up with all of the modern teaching techniques and tools. We <u>are</u> in the business of researching, developing and designing new products and process improvements for our company. We do not want to impose on our staff or take time away from their primary duties to prepare class material and instruction for inplant courses.

On the other hand, you are in the educational business. A very special type of education at that - Vocational, Technical and Adult Education. You can be all of the things I just mentioned that we are not.

I would like to conclude now by summarizing a few points:

1. In preparing new people for our payroll, we would very much like to see a two year program available through the Vocational and Technical school system, offering an Associate in Applied Science degree in chemical process or chemical technology. Many schools throughout the country, including the Milwaukee School of Engineering, have such a program now. Obviously, we feel an excellent location for such a program would be in the Fox River Valley.

2. In my opinion, a more urgent need for the Technical, Vocational and Adult Educational System lies in the field of retraining. Many people, regardless of their previous training or occupation, need assistance in protecting their economic future. The rapidly changing world of science and technology, acting in an atmosphere of increased competition, seriously challenges any employee's ability to continue to perform productive work. All of us must be dynamic and flexible to meet these challenges. You must become experts in the field of retraining. This requires thorough study, analysis, and planning. We have a great deal to learn in the field of retraining. You must develop new and better ways to teach these people, people who have entirely different motivations, fears, and apprehensions than the post high school student.

3. You must be equipped to teach theory, but be able to relate theory to job experience or requirements. Use the best 'teachers' to teach the theory, but use industry representatives as advisors. Providing advisors is where we can be of the most assistance, not by supplying professionals to be part-time teachers. The industry advisors can relate the theory to job-related situations and problems, which we feel is absolutely essential for people involved in retraining. Retraining study is tough, painful work for many of these people. Many of them have never taken a classroom course since their high school days. The secret in retraining is to gear the material to the level of the class. This takes considerable skill and experience on the part of the instructor. Be certain your instructors are able to do it. The students won't go through all the 'agony' unless they can understand the material and see its practical value and somewhat immediate application.

4. Use experts, don't get just anybody to teach a course. This is particularly true of refresher courses for professionals. They need and expect top caliber people. The principal criticism we have heard over the years about your programs focuses on the caliber of instruction. It is better not to give a program at all than to run a poor one. You must search for and develop outstanding instructors. People from industry may know their field but they are often very poor instructors.

Gentlemen, I have been honored by your invitation to share some of my thinking and experiences with you. I am not sure I have told you anything that you didn't already know. Maybe it has been helpful, though, to hear some of these needs expressed in a different way and from the standpoint of a typical large Wisconsin manufacturer.

We need each other's assistance in meeting this problem - one of society's toughest. We expect you to provide the expert know-how. You should expect us to provide encouragement, support and cooperation. We will accept our challenge. Are you ready to take up yours? Thank you."

The second speaker was Mr. Ted Jochem, Technical Personnel Supervisor, Cutler-Hammer, Milwaukee, Wisconsin.

"Technician Levels in an Industrial Organization"

"I deeply appreciate the opportunity of discussing with you industry's view of the technological world and, particularly, the technician's position and role in this complex structure. The close relationship which is developing between educational circles and industry is heartening. It is obviously imperative that we understand one another, recognizing each other's problems and needs in developing our common goals. This mutual interest is concerned not only with the initial and formal educational efforts, but also with expansion in the complex and, as yet, somewhat inadequately defined continuing education activity.

It would be repetitious for me to dwell at any great length on the complexity of the technological world. You are aware of this. However, it is complex, not only in its scientific achievements, but in the implementation of these in terms of products. The significant factor here is the reduction of the time between discovery and implementation--that is, translating ideas into products and services. In the past, this implementation was at first centuries and then years behind the scientific discovery. Ideas lay dormant for long periods of time before they were translated into products. Today, the time interval has been reduced to such a degree that the two events appear to be almost simultaneous. Take, for instance, the semi-conductor field. Ten years ago, semi-conductor physics was in its infancy. An understanding of interactions at the sub-atomic level in intrinsic semi-conductors and at the interfaces of extrinsic semi-conductors was incompletely developed. And yet, the transistor radio appeared almost immediately. The use of static elements in logic systems and switching circuits was proceeding hand-in-hand with the development of the physical knowledge of transistors. Today, we are working with SCR's, three-junction devices.

These considerations serve to illustrate the changing character of our technological world. Obviously, training and education are changing as well. Basic principles in science and engineering still must provide the fundamental approach to education in these areas. However, the field of knowledge has expanded, more bits must be mastered. In industry, products have changed, but also increased in number and complexity. In the control field, practically all components made available in the past 75 years are still in use; obviously, not in the same form and certainly more sophisticated and better designed. They are all a part of the engineer's kit of products. As a result, the demand on an engineer's time, both in relation to maintaining contact with the field as regards new developments in science, in materials and techniques and in remaining aware of current products, has made it impossible to operate as he has in the past. Industry has responded by spreading the activities previously handled by an engineer over a larger number of specially trained people. As a result, responsibilities have been realigned and individuals with different educational backgrounds have appeared on the industrial scene.

1940, the engineer was expected to be, and frequently was, an individual with a wide variety of technical capabilities. He was required to carry out a design function, an application function, as well as an overall product management activity. At that time, though technology was not standing still, it was moving at a leisurely enough pace to allow the engineer to acquire adequate skill and knowledge to serve these various areas. He was a very busy man. Not only did he conceive the design, but he frequently translated his ideas into drawings--not just sketches, but complete working production drawings. Not only did he analyze

his designs from a theoretical viewpoint, but he was also expected to evaluate the designs by laboratory and field testing. Finally, he supervised and frequently determined the production methods and tooling. He did the entire job, from determination of product need, through the process of creating the design and the implementation of the idea. He also found himself involved in application engineering, fitting the product to use in various ways and situations.

As technology expanded, stimulated at that time by the pressing need for finding new and improved ways of protecting our own lives and possessions while destroying those of the enemy, the engineer was no longer able to handle all of these activities. Yet he necessarily was forced to remain cognizant of the entire process because of the integrated nature of the product design activity. The obvious solution was the delegation of certain phases of the activity to specifically trained individuals. Industry spawned a new breed of technical individual--the technician--skilled in specific technical areas and activities, and, because of continuing and pointed attention and effort, more effective in these activities than the engineer. The technician, with a recognized, permanent position in the technological world, was born. I do not wish to imply that some such individual did not exist prior to this. He did, but his position was somewhat anomalous and most frequently was achieved solely through native ability and experience rather than by an integrated educational and job training program. Today, the technician is an important and indispensable member of the technological spectrum. In passing, it is heartening to note that the rate of technological advance is increasing rather than decreasing, and that this explosion is stimulated by peaceful pursuits, space technology, rather than by needs devoted to destruction. This is somewhat unprecedented in recorded history.

Recognition of the technician's position in industry is evidenced, not only by the many job oriented curricula in technical schools, but also by professional recognition of this class of individual. The N.S.P.E. sponsors the Institute for Certification of Engineering Technicians. This parallels the registration pattern for engineers. Though, at present, this is an inter-professional activity, it may not be very long before it achieves legal recognition. The definition of the engineering technician is one which identifies the broad activity area in which he performs.

This definition brings together many skills and, obviously, many different educational background. It might be difficult, from this definition, to associate particular industry needs with specific training activities. To clarify this, we will look at the technological world first in terms of educational requirements and activity areas. Following this, we can explore the various positions which the technician occupies in industry, and, later, devote some attention to the educational background of the technician.

The chart represents the education areas in the technical spectrum. This is broken down in a way which, I suspect, will not receive complete acceptance. However, it attempts a more definitive approach to these position and education areas. Let me call your attention to one aspect of this chart. The order of the chart is not intended to define hierarchy of position. It does fall into an educational pattern. The scientist or engineer is not a craftsman and, by education, is not capable of doing a craftsman's job.

Likewise, engineering assistants have particular skills, which are generally outside the effective accomplishments of an engineer or scientist. Looking at it another way, the chart does not represent a progression. An individual would not generally start out as a craftsman or engineering assistant and move along the

chart to become an engineer or scientist. Obviously, this could be done, but each division on the chart represents a separate educational activity which, in only a limited way and in only a few instances, can be assumed to be applicable to another division.

The choice an individual makes as to the technological area in which he wishes to participate is based on many things. It would be completely erroneious to draw as a generalization the conclusion that a choice of area is indicative of an inability to achieve highly satisfactory goals in another area. The characteristic of 'wanting' to do certain things is a most important motivating factor in the choice of activity.

The Chart indicates varied activities for these areas. There was a time when the engineer was expected to handle the activities we now assign to an engineer-assistant and a technician, in addition to the design activity we normally associate with engineering. This is no longer true. The engineering curriculum no longer has room or time for the teaching of skills in these other areas. The engineer today is usually not a good draftsman, nor does his training prepare him for this. The man trained as an engineering assistant, particularly when operating as a laboratory assistant, is much more competent in his field than the present day engineer--and engineers are not good welders and testers. Self-learning may make them reasonably good TV repairmen--at least many of them think they are.

There is a closer relationship between the technician and the skilled specialist. I have made this distinction on the basis of the difference in training. There is a considerable distinction on this basis between the engineering assistant and the technician. Many industries fail to recognize this. This has caused some confusion in educational circles. The difference shows up more pointedly in the curricula followed by these two grades. We will discuss this more in detail a little later.

Where do these people fit in industry? The second chart shows the general area of applied activity, the technical world. Space relationships of these boxes is not definitive of the importance of the individual in the technical world--nor does it indicate a chain of command. It only shows relationships. Since we are talking about industry, the engineer, who is the implementor, assumes a central position for ease of developing these associations.

I had mentioned previously that the separation of activities that have been usually grouped under the term, 'technician' was determined, to some degree, by the direction of educational effort. This third chart illustrates this point. The data for the chart developed from studies of curricula in various vocational and technical schools. There is some variation, and not all schools are as definitive in these areas. This chart is not to scale; this nicety bowing to readability. The 'relative hours' on the chart are based upon an evaluation of hours per week spent in the particular areas. Engineering assistants spend 157 weekly hours divided as shown. Though it is not shown on the chart, the division of time matches, fairly closely, the engineering curriculum. Exclusive of Math, the engineering assistant devotes about 71% of his time to his technical specialty and to basic science. The technician spends 81% of his time in similar areas and the skilled specialist, 87%. Placing mathematics into the picture, these figures become 83%, 97 1/2% and 100%. Saying it another way, the three classes of individuals devote outside their specialties time values of 17%, 2 1/2% and 0%.

Engineering figures were not charted, but these are:

Specialty	42%
Related	20%
Math	13%
Humanities	25%

Listing these comparatively, we obtain:

	Engineer	Engineering Assistant	Technician	Skilled Specialist
Technical	75%	83%	97 1/2%	100%
Non-Technical	25%	17%	2 1/2%	0%

I make no claims for the universal accuracy of these figures. There are too many variations in curricula. However, I believe the general trend as indicated by the listing above is correct. I might pose the obvious question concerning the considerable disparity in non-technical subjects. These people are educated people in the sense that for the most part, they have gone beyond high school. The positions they assume in industry do carry some impact for this reason and will affect, in some measure, general attitudes. We might consider that some understanding, particularly of business and economics, would be helpful in an appreciation of the complex operation that is U. S. industry. We must necessarily build specialists. The specialized demands of industry dictate this.

Sectional T&I Meeting on Wednesday 10:30 a.m. August 25, 1965
New Technologies - a panel presentation by Art Carlson, Phil Stoll, John Plenke, Glenn Fiedler, and Beatrice Palen

Mr. Plenke made some general remarks and set up guidelines for the panel's presentation, and discussion giving areas of coverage.

The first panel member was Art Carlson on instrumentation. He defined instrumentation as an elaboration of components in automatic controls. The speaker stated that the early surveys indicated little need for technicians in the first five years of the program. The emphasis in the curriculum by subject matter is as follows:

Electronics	50%
Hydraulics	10%
Pneumatics	10%
Mechanical Technology	10%

The program must be coupled with three to four semesters of math. The instrumentation program is a rigid program and a difficult curriculum which is geared for the better students only. Mr. Carlson then summarized the chemical technology program which has been in operation for the past ten years. He described this program as a sort of a 'lame-duck' curriculum very similar in content to the metallurgical technology, but now being differentiated. He pointed out that chemistry is undergoing constant changes especially in plastics. These changes will require revisions in curriculum and course content to keep up-to-date.

Glenn Fiedler spoke on "Industrial Model Making." The inception of this program occurred about ten months ago through an inquiry by one of the industries for training in this area. The Green Bay School has had some experience with this type of training from on-the-job training through the veterans' programs in the early 50's at which time three model makers were trained.

In following up on these completed trainees, it was learned that they are still in the model making trade and considered key personnel in their respective industries. The next step in developing this program was a formation of an advisory committee with the approval of the program, the pilot course will begin with 8 students. Mr. Fiedler pointed out that there are no textbooks which directly apply to this technology, and that there is a limited need for this type of technician. As a result, the Green Bay Technical and Adult School has been designated for the pilot program.

Mr. Phil Stoll spoke on Numerical Control. He felt a better title for this program might be a Machine Tool Programer. He stated that the Fond du Lac School is an ideal location because of its relationship to industry which incorporates the use of numerical control in its production and the product they are developing. Mr. Stoll pointed out that Giddings and Lewis is presently using machinists journeymen and converting them to programers with additional training. The study made of a number of companies involved in automated machine tools disclosed that there were 52 companies using three different processes numerical control. Surveys made of users and manufacturers indicated a considerable need for programers. The Fond du Lac School appointed an advisory committee and a number of meetings were held. Mr. Stoll pointed out that a limited number of technicians of this type would be needed. Therefore, there should be a limit in terms of schools involved. Also, a considerable amount of hardware is involved which is very costly. He stated that the school would be given a numerical control drill press when this program gets underway. In assessing the power technology, Mr. Stoll stated that this curriculum started through a need for technicians by small engine manufactuers in the area namely Tecumseh, Mercury and others. This was followed up by a survey over a large area of the United States. The production technology followed the same pattern in establishing the program.

Mr. Curt Gehling reported on the Conservation Technology which started out as a forestry course. The curriculum at its conception included Ecology and surveying for forestry. The technician program started with four students who had had previous lumbering experience. It was expanded to include lumber grading with field work and land management. Marshland was added which will allow for wild life and game management. The present program is believed to have a broad base. Graduates will be available to government agencies as well as the paper industry and lumbering industry. Graduates are also in demand by utilities such as the telephone and electrical utilities. Mr. Gehling pointed out that 1/2 day per week is spent in the field in study of soil, plant and animal growth. He added that students usually supplement training with experience through summer employment with private and government agencies.

Miss Beatrice Palen reported on Health Occupations. She stated health occupations are in their infancy with rapid developmental possibilities. The program started with the Licensed Practical Nurse program. At present there are eight schools involved in this form of training. Another school is considering an addition. There are medical assistants in training at five schools. The Nurse's Assistants program could be held by many schools as an extension program. Miss Palen pointed out that the dental laboratory assistant program will be started in Milwaukee as will a medical laboratory assistant. It was disclosed

that the medical lab assistant program was delayed because it was proposed under the MDTA programs which are as yet unfunded. The optician program is in the planning stages. The speaker stated that ward clerks should be established in large cities such as Madison and Milwaukee. Extension training could be done by the smaller communities to fit needs for ward clerks.

Programs which may be established in the future are:

1. Occupational Therapy Assistants
2. Radiological Assistants
3. Electronic Assistants Maintenance
4. Operating Room Assistant (for large cities only)
5. Dental Hygienist

The speaker stated that the problem in many areas of health occupations is finding qualified faculty to instruct the programs.

Mr. Plenke remarked briefly that the State Board of Vocational, Technical and Adult Education's favorite expression, when called upon to establish priorities for certain programs was, "yes, go ahead," but, "be careful," "are we sure we are ready now?" but "wait." He stated that these are only precautionary expressions. He further stated that there are many program possibilities in the health occupations. Mr. Plenke further disclosed he was meeting with the law enforcement committee on other program possibilities also initial meetings with the morticians, computronics, and food service.

Panel Presdentation August 25, 1965 1:30 p.m., Wednesday Presentation by Messrs. Plenke, Bodine, Schantz, Bachnik and Dr. Swanson and Mr. Kinsler

This panel discussed Associate Degree programs, production of trade extension classes.

Mr. Plenke opened the session by stating that T&I coordinators can report to the State Board on their quarterly and annually report accomplishments for that period of time and can plan their programs on the basis of the year. Mr. Plenke also showed slides which were a cross-section of programs representing areas schools with their lab equipment and classroom situations. The speaker welcomed any good slides from all schools. The slides that were shown represented business education, barber training, food preparation, shoe repair, hydraulics, fire fighting, practical nurse training, REA line training, machine shop, drafting, related subjects, police training.

Mr. Bodine reported on MDTA at the local level. He pointed out that several things make MDTA unique:

1. Funding is a "rags to riches" type of operation. The program grows from complete inactivity to a buzzing massive type short term programs. There is no control over the amount of funds. These funds are completely controlled by the Department of Labor. The Department of Labor can reallocate funds. This program is a full-time short intensive program with narrow objectives, less than one year, mostly 25 weeks. The program consists of 35-40 hours per week of training.

The speaker stated that a two year program is possible, but it would conflict with our two-year full-time programs. WSES selects the students and places

the students and determines whether or not they will draw a subsistance during their training period. The Department of Labor has final say over the program. He pointed out that the placement record was 80% and drop-outs occurred at a 30% ratio. He cautioned that coordinators should not be involved with MDTA supervision for they have a full-time job with the T&I coordination. He suggested that supervision be handled by employment of additional personnel.

The next speaker was Harold Schantz. The title of his presentation was "Construction and Remodeling of Facilities." The following points were presented by the speaker.

1. Vocational schools have not kept pace as far as construction is concerned.
2. Other than Milwaukee there has been very little construction in our system over a long period of time.
3. Our vocational program has always been caught in some sort of emergency NYA, WPA, War Training and Post War Training and Retraining.
4. Aid for construction will be limited as it is presently focused on 19 schools.
5. Design classrooms, labs and shops not specifically for any group for utilization in a set design for an overall school picture.
6. We can't justify classrooms in a shop any longer.
7. We can't justify offices in a shop any longer.
8. Instructor offices should be grouped together.

The next panel speaker was Joseph Bachnik. He spoke on the "Production of Trade Extension Programs." He reported that:

1. There were some 4,000 apprentices attending school in the state of Wisconsin during the 1964-65 school year.
2. That the composite enrollment in the trade and extension aidable programs was 12,376. A handout sheet showing each classification of training was passed out and each coordinator was asked to review statistics and to determine how he stood in comparison to other schools in the state. It was emphasized that trade extension programs are the life-blood of the vocational training movement. It was here that we learn of new technologies and it is through this means that we are able to determine where the tradesmen are and where they should be. We have a great responsibility to update and upgrade tradesmen across the board in their respective trades.

The next panel member was Dr. Robert Swanson.

"What Role Stout State University can play towards training teachers for the Technical Institute."

Dr. Swanson stated that:

1. At the present time, there are no <u>good</u> answers to this problem.

2. Stout University has made it possible for students to earn 10 credits in another institution and still graduate at the end of four years. Stout University has given one credit for one week of full-time attendance for programs given by industry for valid types of industrial training.

3. Another source of teachers might be the people coming through the two year program of vocational, technical and adult education who may transfer some credits to Stout in hopes of receiving as much credit as possible.

Mr. Kinsler, speaker - "Evaluation of Technical Programs"

His experience and findings are:

1. Schools are not making use of evaluation procedures.
2. He advises that schools meet with committees often. That the committees serve as advisory nature only. He recommends that a technical coordinator be appointed to offer assistance.

"State Oriented Programs"

1. On these programs the need and justification must be made.
2. A suggestion was made that the school work with the Employment Office in placement and follow-up and in survey work which may be very time-consuming.
3. In the process of pre-evaluation and evaluation, he offered these precautionary measures:

   a. Teachers are not informed or are not a part of the total development of the curriculum. Be sure these people are fully informed.

   b. Keep in mind that we have adequate resource material.

4. Schools should request the state office as quickly as possible as to their need of evaluation of a new tech program.
5. State advisory committee and ad hoc meeting - Mr. Kinsler pointed out that basically there are poor responses to these meetings from the local schools. When we in the state office receive no response, to us this means the local school is not interested.

Sectional Meeting August 25, 1965 3:15 p.m. Speaker: A. C. Larsen, Occupational Extension Coordinator

"The Circuit Relation Program, Its Policies and Procedures"

Mr. Larsen stated that the key to the success of the circuit program committee was the policy and procedure of the circuit relations committee which is an association of directors committee of nine.

He pointed out to the coordinators that bulletin #1, "Policies and Procedures on Circuit Relations Program" contained the complete policies and procedures and that a copy could be obtained by writing his office if the school did not have one on file.

The speaker stated that the portion of payments made for services of the circuit program was based on the assessed evaluation of the community. The speaker stated that he had a request on the carpenters trade for teacher of resilient tile and floor covers. This teacher will not be appointed until a sufficient number of schools can make utilization. Mr. Larsen divided the group

of coordinators into four sections to buzz out some of the problems. The coordinator and circuit teachers may have mutual problems such as: "How can a coordinator help a circuit teacher do a better job?" The suggestions made by the coordinator were:

1. Acquaint circuit teacher with school policy and procedure and changes. Other remarks will be filled in when they are obtained from the circuit relations coordinators.
2. How can the services of the circuit teacher be improved?

The following were suggestions from the group:

1. Circuit should attend advisory committee meetings whenever possible.
2. Advise the school, T&I coordinator on trade extension possibilities in terms of offerings.
3. Teach trade extension if possible in the evening school.

Sectional Meeting Thursday, August 26, 1965, 10:30 A.M. Mr. Glenn Fiefler, Chairman

Mr. Robert Gillette, Secretary of the Wisconsin Council of Safety spoke on "Off the Job Safety." Mr. Gillette stated that his office is anxious to work with us in vocational education to help in this important training need. He stated that the T&I Coordinators are in a strategic position to work with industry and others, in implementing this type of program. The speaker used 35MM slides in his presentation that followed depicting cost and frequency of accidents. He pointed out that plants employing small numbers of employees have a larger frequency rate for they don't have a safety director or a supervisor nor do they have a formal program for safety.

The off-the-job injury accidents affect employers in group benefit plans and cost employers approximately 70 dollars per worker per year. The big question or decision is do we want to pay for accidents or do we want to pay for prevention of accidents?

Mr. Gillette introduced the SOK program "Share Our Knowledge" which is one of the programs the Wisconsin Council of Safety is offering. He informed the group that educational poster flyers are available through the National State Council of Safety. The other services include operation SOK, field service, public inspection service, legislation service, organizational service. He stated that there are 30 local safety councils in the state and that the most active programs which are joint efforts are:

1. Punch press safety program
2. Driver improvement program
3. Accident investigation (Police training).

The new programs include "How to do it" Manual

1. Police recognition program
2. Wisconsin Canners Association Program
3. The Mid-Winter Safety Conference.

It was stated at this time that the traffic accidents contribute to 50% of the number of injuries occurred each year and 80% of the cost of injuries. Another point was made by Mr. Gillette on the accomplishments of the Wisconsin Council of Safety.

1. Uniform accident reporting
2. A state subsidy for driver education training
3. Seat belts - Mr. Gillette reported that the Mid-Winter Safety Conference held on January 19, 20, 21 at the Pfister Hotel in Milwaukee. Mr. Gillette and Mr. Plenke urged the coordinators to make every effort to attend the Mid-Winter Safety Conference because of its benefits in terms of contact and the instructional program contained in this conference.

The next speaker was Mr. Leight, Public Information Director with the Wisconsin Council of Safety. His topic: "Commercial Vehicle Driver Improvement."

He reported that the National Safety Council was a prime mover in the driver improvement program. He stated that the standardized course in better driving resulted in 50% better drivers as a result of the program by those trained. This program also gave insight to the recognition of a pattern of accident occurrance. The program is geared for commercial drivers and all other drivers who make use of the automobile in their daily work. The program is an eight hour program which could be broken down to two 4 hour sessions or four 2 hour sessions. It follows a standard accident prevention formula. Mr. Leight recommends that about 25 persons would be the total in a class. A kit costing approximately $125 has been developed with films which total another $125. The films may be rented free of charge from the Employers Mutual of Wausau. Included with the kit is a flip chart, flannel board, a magnetic chalk board, an instructors manual, student hand-outs, pamphlets and sheets, a billfold size certificate and student outline and notetaking booklet. The instructor wishing to teach this course must take the four hour course and a teacher training session as well.

The speaker pointed out reasons why we must sell this program. It was found that commercial drivers did not score better than the average driver as a whole on the TV test. Commercial drivers drive more mileage than any others. They are behind the wheel more often and for longer periods of time and as a result they sometimes get into a matter of fact attitude. The speaker advocated this promotional approach.

1. Convince employers of the need for training and the benefits that may be derived. That the instruction can be given at a convenient place and need not be in a school. This is a National activity. There is a ready-made flyer that sells for $2.65 per 100 flyers that is available through Wisconsin Council of Safety. This may also be promoted through women's groups.

The coordinators then viewed one of the seven films "Preventable or not."

August 26, 1:10 p.m. Business meeting, Chairman: James Malotke

Two planning committee members for the coordinators conference were to be selected - one to replace Mr. Roesler and one to replace Mr. Winegarner. The names of Robert Sorenson and Carl Kuklinski were nominated as planning members of the Coordinators Planning Committee. A motion made and seconded that a unanimous ballot be cast to elect the above two. Motion seconded and passed unanimously. It was agreed that Mr. Humphrey would replace Mr. Fiedler as the Green Bay representative on the committee.

Mr. Fiedler reported on the survey on post high school training for pre-apprenticeship training in carpentry. Following is the full report:

"This is a report on our survey regarding "Post High School Training for Apprenticeship for the Carpenter Trade" conducted among thirteen schools in the state.

"The following committees have responded:

Appleton	Interested in further study
Eau Claire	No action for or against
Fond du Lac	Interested in further study
Green Bay	Interested in further study
Janesville	Interested in further study
Madison	No committee action
Manitowoc	Interested in further study
Marinette	No committee
Oshkosh	Interested in further study
Racine	Left open for future study
Sheboygan	Interested in further study
Sturgeon Bay	No reply
Wausau	Interested in further study

"The joint apprenticeship advisory committees were contacted to see whether there was any interest in having some sort of post high school training in the Carpentry Field. This training must meet the approval of the Carpentry Trade and the schools.

"Of the 13 schools contacted, 9 were interested in further study; 1 committee was not active; 1 committee did not reply; and 2 committees would take no action for or against.

"This report was made at the Coordinators' Conference in Eau Claire last May with a request that each coordinator not already contacted take this matter up with his committee and send us the report. To date we received only one reply which was from Janesville.

"The survey indicates that most committees felt that some further study should be made.

"A copy of this complete report will be turned over to State Joint Carpenters' Advisory Committee, the Industrial Commission, and the State Board of Vocational, Technical and Adult Education. It will be up to them to discard this report or carry on a further study."

Mr. Malotke suggested that a committee of three be selected for future plans to develop a standard outline for the training of machine operators. The names of Harold Thomas of Beloit, Bernard Ridden of South Milwaukee, and Norbert Schell of West Allis were submitted and selected. A meeting in the near future will be called with these people to begin the standardized outline.

Mr. Nye, Director of Apprenticeship State of Wisconsin Speaker:
"Apprenticeship and Its Relation to Vocational, Technical and Adult Education"

Mr. Nye stated that the law provides that some public school will provide the related instruction other than that specification. No other particulars are shown. The speaker said that schools usually provide good instruction.

The speaker pointed out that at times technical training appears to be in conflict with some of the objectives and purposes of the apprenticeship program. He further stated that conversations of these conflicts are conducted with members of the State Vocational Board staff.

The speaker noted that a general exploratory program would be one approach for post high school education. After completing this exploratory program, the graduate could then enter into apprenticeship or other occupational endeavors. On the subject of related instruction, Mr. Nye pointed out that this is one of the keys to good apprenticeship and encouraged the coordinators to work with their instructors in developing good high quality related programs.

Sectional Meeting T&I, Thursday, August 26, 1965, 2:15 P.M.
Topic: "Labor Point of View on Apprenticeship"
Speaker: John Heidenreich, Directing Business Representative
District No. 10, International Association of Machinists
Milwaukee

FIRST, A GENERAL ASSESSMENT OF APPRENTICESHIP THINKING

From the earliest civilization to the present, apprenticeship has survived innumerable technological developments. Unfortunately, many self-styled students of this aspect of industrial training seriously believe that apprenticeship is now obsolete. It is because of this thinking we must re-evaluate our policy and program concerning apprenticeship training because our human resource requirements for an automated technology will not be met by our existing, inadequate programs. Is apprenticeship training a viable form of training for the preparation of skilled persons for tomorrow's needs? Assuming that apprenticeship training is still appropriate, what changes are indicated in our public policy for skilled manpower training?

It is almost impossible to measure results of an activity so complicated as apprenticeship training. For one thing, it is difficult to find a criterion for success. For another, the training involves two interested parties, employers and organized labor, whose goals in apprenticeship training may not be completely compatible. Typically, a union is interested in limiting the number of people in

a given occupation in order to control jobs and to raise wages, whereas employers are interested in the reverse. Nevertheless, an evaluation is necessary. It should be made by assessing the results obtained in our apprenticeship training programs as viewed by organized labor, by industry and by persons who have completed apprentice programs. I won't cover industry's views. I attempt to cover the union views.

THE UNION VIEWS

Unions always have been and currently are very much concerned with the skilled occupations. Concern with skilled occupations leads inevitably to a concern with training procedures and with practices associated with entry to the skilled occupations. Historically, unions in this country, and indeed all over the world, have worked with employers to train craftsmen despite employer apathy or opposition. However, not all unions train, and not all unions are interested in encouraging apprenticeship as a method for maintaining an adequate supply of skilled craftsmen. But without consistent union support there would be no federal policy or program on apprenticeship training.

Union attitudes toward training vary considerably, depending on the employment conditions and the technology of the industry in which their members work. Over the years, the Building Trades and the Graphic Arts unionists have been the strongest advocates of formal apprenticeship training. Unionists in the mass production industries, with the exception of some like the International Association of Machinists, have not been overly concerned with such training. Within the last 2 or 3 years the attitude of the industrial unionist have changed slightly because rapid technological changes have wrought so many changes in occupations and in occupational relationships. Job security, for example, is becoming the foremost issue in collective bargaining. However, it is still accurate and unfortunate that I must say, unions' attitudes toward apprenticeship range from complete disinterest to almost passionate interest.

Unions concerned with apprenticeship have usually assumed one or all of the following objectives to be attainable through such a program: to protect the journeymen's wage from being undercut; to assure apprentices a good chance to learn the trade; to assure apprentices a reasonable rate of pay; to prevent the trade from being flooded with too many journeymen. More recently, there is a noticeable trend that some unions have been encouraging training programs, not to reduce the number of craftsmen but for the opposite reason, namely, to build up an adequate supply of craftsmen so that their craft can compete for work. Faced with excessively high wage costs or possible schedule delays because of the shortage of well-qualified craftsmen, industrialists and contractors may decide that new products and processes which do not require skilled craftsmen may be good long-term solutions. Some unions are aware that they are not in a position to control these technological changes so they strive to be competitive with the new technology and the changed labor costs.

EVALUATION

How successful have unions been in the pursuit of their goals? The answer is that successes have been moderate and failures numerous. One method unions use to attempt to control entry into trades and wages in the trades is to prescribe the ratio of apprentices to journeymen. It is a common impression that these apprentice-journeymen ratios are effectively preventing entry into a trade. There is evidence that this is not the case and that the ratios are quite irrelevant. Very few unions are strong enough to insist that persons can become journeymen only by serving an apprenticeship. Perhaps the best evidence that apprentice-journeymen ratios are irrelevant is the fact that they are simply not used. There are long waiting lists to be sure. A long waiting list may imply a tight adherence to apprentice-journeymen ratios but more often than not it signifies declining total job opportunities. Usually when employers need craftsmen, unions have stretched apprentice-journeymen ratios. "Taking the country as a whole, there were not as many apprentices as the unions allowed" is the way Senator Paul Douglas put it 40 years ago, and what was true then seems to be true today.

In those situations where there are formal apprentice training programs, it can be argued that unions have attained their basic objective of teaching all the skill and related elements of their trade. On the other hand, there is no reason for excessive jubilation when from 30 to 80 per cent of apprentices drop out of training before completion. Moreover, unions have evidenced conflicting attitudes about training. They have said, for example, that we must improve the quality of related training because the theoretical aspects of a skilled trade are extremely important. But time after time they have permitted apprentice programs without any related training. And while unions have been concerned with training they have also permitted partially trained or untrained persons to join their ranks as journeymen. This is not to say that there were not extenuating circumstances, but simply that, although organized labor is very concerned about the training of skilled craftsmen, controlling the nature of the training is not always within its power.

Thus far, it would appear that unions are having limited success in attaining their apprentice training objectives. Is this their perception? Are trade unionists really concerned? What attitudes do they indicate in their current statements? Answers to these questions are clearly and consistently indicated by the AFL-CIO as an amalgamated trade union movement. George Meany, speaking as president of the AFL-CIO has said, "There is general agreement that the demand for skilled workers will grow very rapidly in the next decade, while the opportunities for unskilled workers will continue to shrink. Therefore our interest - and the national interest - must look to an across-the-board increase in apprenticeship training."

Throughout its history, the AFL - CIO has endorsed the concept of apprenticeship training. Resolutions of support appear during almost every convention. In 1959, for example, resolution 98 read: "The AFL-CIO wholeheartedly endorses the national apprenticeship and training program and urges the Congress to provide more adequate funds to permit the Federal Bureau of Apprenticeship and Training to extend this work in the interest of our technical progress and national security."

During this same convention, delegates expressed concern about the supply of skilled craftsmen by pointing out that "Recognized apprentice programs are failing to turn out anywhere near the number of skilled journeymen needed each year to offset even the number of skilled workers leaving the labor force through death or retirement, let alone to meet the increasing demand for additional skilled workers." Similar statements, viewing with alarm the declining number of apprentices in training, and statements indicating moral support of the national policy can be found in the convention proceedings of the craft unions and the railroad brotherhoods. Clearly, many trade unions believe that the only way to obtain skilled journeymen is to train them in apprentice training programs.

Apprenticeship, as far as organized labor is concerned, is still a viable institution for training journeymen and for realizing trade union purposes. In spite of the declining number of apprentice training programs and of apprentices in training, most unions still believe that apprenticeship is desirable. Unionists are still inclined to berate employers for neglecting their responsibility to train their employees. Even under severe criticism of racial discrimination in apprenticeship, we see no signs that the training programs will be eliminated. And there are hopeful indications that even the knotty problem of eliminating discrimination, if any, in apprenticeship will be overcome within a reasonably short time.

We see, finally, additional signs of at least a small scale renaissance of apprentice training. Some unions are experimenting with pre-apprenticeship training programs which offer youths an opportunity to learn some of the basic skills of their trade. A number of advantages accrue to all parties: the union can select and screen applicants for apprentice training; the employer receives production from his apprentices from the very first day of employment; and the pre-apprentice learns the skills basic to a job.

Another recent significant development is the emergence of union training coordinators or training directors to supervise, to plan, and in general to promote apprenticeship training or the newer skill improvement training (Journeymen upgrading and improvement). Some unions have negotiated with employers to establish educational funds to finance training.

In summary, although some believe that apprenticeship is moribund, many unions feel just the opposite and so strongly that if the Federal government discontinued its modest programs, these unions would continue to develop apprenticeship training as they have over the years. It needs to be re-emphasized that not all unions share the views just described. The basic position of many industrial unions is that apprentice training is largely irrelevant for them because the majority of the occupations which their members hold are attained by progression on a strict seniority basis. There are, of course, skilled craftsmen in industrial unions, and although their wages and working conditions relative to unskilled workers have been the subject of bitter intra-union squabbles, their training has not posed any great problem. Although apprenticeship training programs are subject to collective bargaining, most unions have not sought to interfere too much with long established apprentice training programs.

Sectional Meeting of the T&I Coordinators, August 26, 1965, 3:15 P.M.
Speaker: Charles J. Blanchard, Industrial Relations Director
National Metal Trades Association
Chicago, Illinois
Topic: "New Industrial Programs for Management, Mid-management and Apprenticeship Training"

Chairman of the meeting: Robert Sorensen

Speaker informed the group that the National Metal Trades Association is a non-profit organization founded in 1898. It's an association of manufacturers and the purpose of this organization is to provide services that may be needed by the associated group. The association consists of 1,500,000 employees in plants of 50 to 200 employees in each plant. The prime educational objective and programs are job rating programs wage and salary rating programs, employment assistance which was one of the original functions. Also executive rating system. In discussing the management development training program, Mr. Blanchard pointed out the Presidents Round Table for presidents of various companies holds six meetings per year. Each member contributes $250 annually for these dinner meetings which are restricted to 25 people per session. There was also a manufacturers executive round table which has a similar pattern discussing problems on that level. There is also a foremans supervisory meeting once a month on Saturday night which consists of 200-250 foremen supervisors who meet and discuss new materials operations and technology. In the supervisory training program approximately 3,000 are involved annually on a one to two day seminar conference. Mr. Blanchard noted that the association he is representing is now called the American Association of Industrial Management.

In discussing the apprenticeship program Mr. Blanchard pointed out that Wisconsin has an outstanding program. Since Illinois is not a duel system it cannot rely on a public funds of apprenticeship training since the funds needed are seldom available. Standards for apprenticeship in the American Association of Industrial Management are high school graduates, age 18-21, and test requirements via George Spear a member of the Illinois Institute of Technology who has compiled a battery of tests in mental maturity, mechanical aptitude, interests and personalities. This is a seven and a half hour test. The related instruction for apprentices is given on 8 hours per week each week with 50 hours per week of homework assignments.

They have 22 tool and die apprentices who are indentured with 16 remaining in training. Six were predicted of marginal value through these test interpretations made by Dr. Spear and these did drop the indentures for four years with 640 hours of related instruction.

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THE AREA VOCATIONAL SCHOOL

a summary report

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- FOREWORD -

New Mexico is on the "growing edge" in vocational education. Results of the Statewide Study of Occupations in New Mexico reveal that more than 60,000 vocationally prepared personnel are needed within the next five years. Area vocational schools can and must play a vital role in meeting many of these needs which are post high school in nature.

This report presents a focus as to where we are nationally and in New Mexico with respect to the development of post high school programs. The challenge presented in an immense one.

J. D. McComas, Head
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CHAPTER I

INTRODUCTION

The unprecedented demands on education and the greater expectancies of today's populous society from education forces the leaders of education to make a stringent evaluation of existing educational programs and institutions. Are the demands placed upon education by youth and adults being adequately met? As the area of vocational education is viewed, a person could hardly conclude that the demands are being satisfied.

The problem in vocational education is not only what to teach, but how to teach most effectively and through which institutions should vocational educational education be conducted. Area vocational schools have been developed as one approach by which vocational education is conducted. The extent of the development of area vocational schools by the fifty states, District of Columbia, and Puerto Rico in providing vocational education is the object of this research report.

I. THE PROBLEM

Statement of the problem. The study was conducted to determine how extensively area schools for vocational education are being used in the fifty states, District of Columbia, and Puerto Rico.

Purpose. The purpose of the study was to develop some background information concerning area vocational schools and a general overview of area vocational schools in all states, District of Columbia, and Puerto Rico.

Vocational education programs are rapidly increasing in size and scope across the nation. As a result, the number and type of programs are constantly changing. The institutions offering vocational education vary among and within states. Since there is a wide variation in vocational programs, there is a need for information relating to the different types of institutions.

Specific Objectives. The following are the specific objectives of the study:

1. To determine the extent of the development of area vocational schools by states.
2. To determine projected increase in the number of area vocational education programs by states for a five year period.
3. To determine basic organizational patterns of area vocational schools.
4. To determine the age limits and the sex of clientele served by area vocational schools.

5. To determine the range and types of courses offered by area vocational schools.
6. To review enabling legislation for area vocational schools in New Mexico.
7. To determine population served, enrollment by courses, total enrollment, and financial structure of each area vocational school in New Mexico.

II. METHOD OF INVESTIGATION

On November 1, 1965, a letter was mailed to all state directors of vocational education. The purpose of this letter was to determine if area vocational schools existed in the state, the name of the state director of area vocational schools if there was such a person designated in the state, and to secure brochures or printed material concerning area vocational schools.

Limitations. The study was limited to the 45 states, Puerto Rico, and District of Columbia which responded to the letter of inquiry mailed to them requesting selected information concerning area vocational schools. States responding included: Alabama, Alaska, Arizona, California, Colorado, Conneticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania,

Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

III. DEFINITION OF TERMS

Terms used in this study were defined as follows:

Vocational Education: Education and experience for specific occupations, or a group of occupations, which necessitate less than a baccalaureate degree.

Technical Education: A highly specialized segment of vocational education.

Technical Institutes: Schools which provide technical education in a systematic, highly specialized, and organized manner for the purpose of training students to become technicians.

Vocational Schools: Schools which provide vocational education in a systematic, organized manner for the purpose of preparing students for a specific occupation or occupations.

Vocational-Technical Schools: Schools which provide both vocational and technical education.

Area Vocational Schools: Schools which are organized to provide vocational education or a combination of both vocational and technical education to the students in a specific geographic area usually designated as the attendance area.

IV REVIEW OF THE LITERATURE

The literature was reviewed with the following purposes in mind: (1) to review Federal legislation directly affecting vocational education programs; (2) to determine the importance and implications of the Vocational Education Act of 1963 upon the establishment of area vocational schools; (3) to review the history of vocational schools in the United States and; (4) to establish the importance of area vocational schools in the United States, District of Columbia, and Puerto Rico.

Review of Federal Legislation. Prior to 1917, the National Congress enacted a number of laws providing Federal aid for educational programs in or under the control of institutions of higher learning in the United States. The Smith-Hughes act of 1917 was the first act which provided for allocations of Federal funds for vocational education in significant amounts.[1]

The Smith Hughes Act of 1917. An act providing a continuing appropiation for vocational education in agriculture, trades and industry, homemaking, and for teacher training in each of these fields. The funds appropriated reached a maximum in 1921 of $7,200,000 with additional funds appropriated to insure that each state received a minimum of $10,000 each for the teaching of agriculture, of trades and industry, and for teacher training.[2]

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[1]Roy W. Roberts, Vocational and Practical Arts Education (New York: Harper and Row Publishers, 1965), p. 131.

[2]Ibid., p. 132.

The George-Reed Act. This Act authorized an annual appropriation, beginning in 1929, for vocational home economics education and for vocational agricultural education for a period of five years. The sum of $500,000 was authorized in 1929 with an increase of $500,000 each year for the next four years.[3]

The George-Ellzey Act. Basically, the Act was a continuation of the George-Reed Act. It provided three million dollars each of the years 1935, 1936, and 1937 to be equally divided among vocational education in agriculture and home economics.[4]

The George-Deen Act. Since the George-Ellzey Act would expire in 1937, leaders of vocational education petitioned Congress through the American Vocational Association to provide additional supplementary funds for vocational education. Accordingly, Congress passed the George-Deen Act which became effective July 1, 1937.[5] An estimated sum of $14,413,000 was authorized by this Act. It provided $12,000,000 annually, to be divided equally among agricultural education, home economics education, and trade and industrial education. One million dollars was provided for teacher training. Funds for administration, distributive education and minimum allotments to states made up the balance. A sliding scale of matching Federal funds, by state funds,

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[3] Ibid., p. 133.

[4] Ibid., p. 134.

[5] Ibid., p. 135.

by state funds, over a ten-year period was provided until all Federal funds were matched for the fiscal year beginning July 1, 1946, and thereafter.[6]

The George-Barden Act. This Act, an amendment to the George-Deen Act, became effective August 1, 1946. This Act authorized increased appropriations for programs of vocational education and provided more flexibility in the use of these funds. Annual authorizations were included in the amount of $8,000,000 each for home economics and trade and industrial education, $2,500,000 for distributive education and $10,000,000 for agricultural education. These authorizations were also available for vocational education programs to the territories of Alaska, Hawaii, the Island of Puerto Rico, and the District of Columbia on the same basis as allocations to the states. Minimum allocations were also included in the act.[7]

The Vocational Education Act of 1963. This Act was designed to: (1) extend present programs of vocational education;(2) encourage research and experimentation; and (3) provide work-study programs to enable youth to continue vocational education. This Act also amended the Smith-Hughes, George-Barden, and National Defense Education Acts.[8]

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[6]Ibid.

[7]Roberts, op. cit., p. 136.

[8]Ibid.

Authorizations beginning at 60 million dollars for the fiscal year 1964, and increasing each year to a maximum of 225 million dollars for the fiscal year 1967, and thereafter were made for extension of present programs, development of new vocational programs and for research and experimentation.[9]

Ninety per cent of the funds were distributed to the states by a formula based on population ratios and per capita income. These funds may be used by the states for: (1) vocational education programs for persons of various levels of achievement and various occupations except those requiring the baccalaureate degree; (2) for teacher education, administration, and other ancillary services; and (3) for the construction of area vocational education school facilities. Funds must be matched on a dollar for dollar basis for the fiscal year 1965 and thereafter.[10]

Implications and Importance of the Vocational Education Act of 1963. Prior to 1963, Federal funds for vocational education could not be used by the states for construction purposes. This act not only allows part of the funds to be used in this manner, but specifies that one-third of each state's allotment prior to July 1, 1968 and 25 per cent thereafter must be used for youths who have left school and/or for the construction of area schools.

The Vocational Education Act of 1963 had a tremendous impact upon the construction of new area vocational schools and the expansion of existing facilities. A report by the U. S. Office of Education, entitled,

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[9] Ibid., p. 137.

[10] Ibid.

"Summary Report of Vocational-Technical Program Development by States"

stated:

> The pursuit of excellence is fast becoming a way of life in vocational and technical education. No better indication of this is available at the present writing that the following compilation of recent preliminary reports from the states and territories.
>
> A review of these state-by-state reports shows rapid progress in expansion and improvement of both facilities and programs in the field as a direct result of the Vocational Education Act of 1963.
>
> The speed with which most states acted, despite the late disbursement of Federal money in fiscal year 1965, was most impressive.
>
> Now--less than two years after the broad Vocational Act became law-there is strong evidence that an efficient system of schools, designed to train and retain adults and youth of all ability levels for all kinds of non-professional occupations will soon become standard operating procedure in the United States.
>
> A nation-wide chain of state and locally-operated vocational-technical schools accessible to men, women, and youth is fast giving American education a new look.[11]

History of Area Vocational Schools. Concerning area vocational schools, Alger reported:

> The concept of area vocational education programs is not new. The state of Connecticut established a system of state trade schools in 1909. In 1920, Maine was conducting agricultural courses by using circuit teachers. Through this program, the Maine State Board of Vocational Education provided 'unit courses' of instruction covering four to six weeks.

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[11]Summary Report of Vocational-Technical Program Development by States, A Report Prepared by the U.S. Office of Education (Washington: U.S. Government Printing Office, 1965), pp. i - ii.

> These itinerant instructors carried their specialized instructional equipment with them. Maine, Pennsylvania, Ohio, and Wisconsin used circuit teachers primarily in agriculture and industrial arts, but also in such special fields as music and programs for the handicapped. These were an early form of area vocational education programs and illustrate one organizational pattern for such programs --that of itinerant teachers serving a relatively large area.[12]

Some southern and eastern states have organized their entire vocational education programs on an area basis, many of which started with the passage of the Smith-Hughes Act in 1917.

After a nation-wide study of area vocational programs and schools, the American Vocational Journal reported in the September, 1963, issue that nearly one-half million persons were being served in more than 300 schools in 33 states and the District of Columbia.[13] During fiscal 1963, 71 new area vocational-technical schools were opened, 37 more were under construction, and 69 schools were in the planning stages. Fifty-three schools were planning to increase their offerings in technology during 1964.

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[12]Leon J. Alger, "Background Information Concerning Area Vocational Education Programs" (Lansing, Michigan: Department of Public Instruction, 1963), p. 7. (Mimeographed.)

[13]"States Expand Area Schools and Programs," American Vocational Journal, 38:13, September, 1963.

Dunbar reported, "In 1956, twenty-eight states had such (area vocational) schools, mostly providing a two-year training program for post-high school students."[14]

While there are new programs and some in new fields, the area vocational school is merely a more efficient way of providing many of the educational services which have been offered for many years.

Importance of Area Vocational Schools. There are many ways in which vocational education is being conducted at the high school and post high school level in the nation today.

The writer feels that the institutions offering vocational education are by no means meeting the full quota of skilled craftsmen and technicians demanded by industry and agriculture today. The Presidents Panel of Consultants on vocational education indicated in their report that only one-fifth of the high school students were enrolled in vocational education. Schools are preparing only one-fifth of the high school population for occupations when more than two-thirds of the high school population will never finish college.[15] In addition to those students terminating their education upon high school graduation, there are another 35 per cent of the high school population who drop out of school and who need vocational training.[16]

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[14]John D. Dunbar, "Area Vocational Schools" (Lansing, Michigan: North Central Extension Public Affairs Subcommittee, 1965), p. 1.(Mimeographed.)

[15]"Summary Report of the Panel of Consultants," American Vocational Journal, 37:12-18, December, 1962.

[16]Dowell H. Williams, "A Study of Present and Projected Vocational and Technical Education Needs in Las Cruces, New Mexico" (unpublished Specialist in Education thesis, New Mexico State University, Las Cruces, New Mexico, 1965), p. 22.

It is believed that area vocational schools can improve the nation's economy by producing more persons with salable skills and thus decrease the unemployment rate among persons under 21 where the rate of unemployment is five times as high as among nature married men.[17]

Dunbar reported:

> The trend toward these (area vocational) schools has been given impetus by public recognition that today most people must have specialized training to qualify for a job in our modern, complex, mechanized, automated factories, shops, warehouses, offices, hospitals, and on farms. Even janitors and dishwashers must operate specialized expensive machinery.[18]

Since it is being recognized by most educators and the general public that persons who enter the labor market in the future must have marketable skills to sell to his prospective employer, the question is raised, "Where and how should these skills be provided?"

If it is to be at the post-high school level, the writer feels we should also make the program available to school dropouts as well as adults and high school graduates.

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[17] Fred T. Wilhelms, "Vocational Education," The Bulletin of the National Association of Secondary School Principals, 49:4, May, 1965.

[18] Dunbar, loc. cit.

The U. S. Commissioner of Education, Francis Keppel, recently estimated:

> Several million young people will enter the work force in the next ten years without the benefit of a high school graduation, unless steps are taken to provide programs designed to meet their needs, interests, and motivations.[19]

During the summer of 1963 the nation launched a crash program to recapture "dropouts", to bring young Americans back to the mainstream of education. It is already marked by success. Among the replies to President Kennedy's 5,000 letters which were sent to school administrators and teachers throughout the country were many which pointed specifically to vocational education as a key to the school's ability to hold its students.[20]

If vocational education is to be provided at the high school level with provisions for students and adults at the post-high school level, by what means should it be provided? Some educators believe the so-called "comprehensive" high school is the answer to the problem. This may be the answer to the larger high schools with enrollments of approximately 500 students or more, but many of the high schools across the nation cannot meet this standard.

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[19]Joseph T. Nerden, "Vocational Education for a Dynamic Economy," The Bulletin of the National Association of Secondary School Principals, 49:10, May, 1965.

[20]"Vocational Education, A Promise for Tomorrow," American Vocational Journal, 39:17, February, 1964.

In his study of aspects of American education, Conant stated:

> ...a third of the high school population still attends high schools, generally in rural areas, that are too small to offer satisfactory education, particularly to the more able students. Though enrolling only a third of the student population, these schools represent eighty per cent of all public high schools in the United States.[21]

Conant further explained:

> The capital outlay for equipment, as well as salaries of the special vocational instructors, adds up to such a large figure in terms of the few enrolled as to make vocational programs almost prohibitively expensive in schools with a graduating class of less than 100.[22]

Alger, in his study of area vocational schools, stated, "In 1959, 70 per cent of the secondary schools in the United States had enrollments of less than 500 students."[23]

From the preceding, the writer concludes that most of the high schools across the nation either cannot or will not afford the capital outlay necessary for adequate vocational programs.

In an article published by "The Bulletin", Nerden stated:

> Since few (if any) truly 'comprehensive' secondary schools are available for examination as examples of sucess of the 'comprehensive' concept, there is much doubt concerning the feasibility of the comprehensive high school as a device for providing a quality level of vocational education.[24]

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[21]Alger, op. cit., p. 5.

[22]Alger, op. cit., p. 6.

[23]Ibid.

[24]Nerden, op. cit., p. 10.

Nerden further wrote:

> A major and continuing effort must be made to examine with much more care and certainly with a great deal more caution, the trend toward the 'comprehensive secondary school.' Most of the major quality programs in vocational education during the past fifty years have been provided in separate area or special schools. By contrast and during the same period of time (almost without exception), where vocational programs have been conducted as a part of a comprehensive secondary school, the vocational offerings have suffered in regard to status and respect, operating funds, and even administrative and supervisory attention. A fully comprehensive program of education is highly desirable for all secondary school students, but certainly not at the expense of the student's self-respect and status among friends, family, and even teachers. In a great many instances where the vocational offerings are part of the 'comprehensive' secondary school program, they may be found in Quonset huts, in the rear of the school, in separate buildings, or the far end of the school site, in the basement, or, at best, in a wing of the school quite apart from all other educational, social, and student activities. "Separateness' is intended, yet 'comprehensiveness' is claimed. Much of the study for the future should be directed toward the feasibility of achieving comprehensiveness of vocational education but within the separate area or unit vocational school. To achieve comprehensiveness in this kind of secondary school education, the vocational programs need not be merged with others in the regular academic high school; instead, the vocational curriculums offered in the separate schools need only be augmented by others; then each may be expanded to include all of the required elements of a broad and comprehensive program of liberal education.[25]

From the limited material available concerning follow-up studies of area vocational-technical school graduates, the writer concludes that the schools have been doing an excellent job of preparing graduates for employment.

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[25]Nerden, op. cit., p. 13.

A ten-year follow-up study of the 1953 class of Middlelsex County Vocational and Technical High Schools located in New Jersey, showed a 90 per cent employment rate upon graduation. In 1963, concerning the 98 out of 108 who responded to the questionaires, 67 were working full time for pay, three were working part-time (all women), two were in school full time, twelve were housewives, eleven were in business for themselves, two were unemployed and one was permanently disabled.[26]

Other reports indicate that employers are well pleased with the graduates of area vocational-technical schools.

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[26]Burr D. Coe and J. Henry Zanzalari, "Vocational Technical School Graduates, Ten Years Later." American Vocational Journal, 40:17, April, 1965.

CHAPTER II

GROWTH AND POTENTIAL OF AREA VOCATIONAL SCHOOLS

The survey conducted included the fifty respective states, District of Columbia, and Puerto Rico. Out of the 51 letters sent, excluding New Mexico, 47 responses were received for a 92 per cent response to the correspondence.

The writer found there was no specific institutional pattern by which the states were conducting vocational education. Some states were employing the use of area vocational schools, others a system of community or junior colleges, and still others were relying on technical and vocational high schools to provide education for persons seeking vocational or technical training.

Of 45 states, one district and one territory, 35 states and Puerto Rico reported the existence of area vocational schools. All 45 states, Puerto Rico and Washington D. C. reported either area vocational schools, technical and/or vocational high schools, community colleges or junior colleges in which vocational courses were being taught, or a combination of the preceding were being used to provide vocational education. Data in Table I reveal a break-down by states according to the number and type of institutions providing vocational education. Data in Tables I and II were implemented by material from a report by the U. S. Office of Education.[27]

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[27]Summary Report of Vocational-Technical Program Development by States, A Report Prepared by the U. S. Office of Education (Washington: U.S. Government Printing Office, 1965), p. 10.

TABLE I

THE NUMBER AND TYPE OF INSTITUTIONS CONDUCTING VOCATIONAL EDUCATION BY STATES

States	Area Vocational Schools	Colleges	Vocational High Schools	Total
Alabama	40	0	9	49
Alaska	1	1	0	2
Arizona	0	4	0	4
Arkansas	5	0	0	5
California*				
Colorado	0	7	3	10
Connecticut	14	0	4	18
Delaware	3	0	0	3
District of Columbia	0	0	5	5
Florida*				
Georgia	29	0	0	29
Hawaii	1	4	0	5
Idaho	0	4	0	4
Illinois	2	0	0	2
Indiana	3	0	0	3
Iowa	0	5	0	5
Kansas	12	0	0	12
Kentucky	12	0	0	12
Louisiana	35	0	0	35
Maine	4	0	0	4
Maryland	0	6	10	16
Massachusetts	4	0	0	4
Michigan	0	19	0	19
Minnesota	19	0	0	19
Mississippi	0	10	0	10
Missouri	5	7	0	12

*Information not available for these states.

TABLE I (continued)

States	Area Vocational Schools	Colleges	Vocational High Schools	Total
Montana	0	0	0	0
Nebraska	6	0	0	6
Nevada	0	0	0	0
New Hampshire	3	0	0	3
New Jersey	5	0	4	9
New Mexico	3	4	0	7
New York	6	0	0	6
North Carolina	18	12	0	30
North Dakota	1	0	0	1
Ohio	13	0	0	13
Oklahoma	4	8	11	23
Oregon	0	10	0	10
Pennsylvania	17	0	0	17
Puerto Rico	1	1	6	8
Rhode Island	1	0	0	1
South Carolina	9	0	0	9
South Dakota	2	0	2	4
Tennessee	12	0	0	12
Texas	0	5	0	5
Utah	3	0	0	3
Vermont	7	0	0	7
Virginia*				
Washington	10	19	0	29
West Virginia	4	3	0	7
Wisconsin	5	0	0	5
Wyoming	0	5	0	5
Totals	319	134	54	507

* Information not available for these states.

The survey, together with the aforementioned report, revealed that 507 vocational and technical programs are now in existence. Three states were not included in the preceding number because pertinent information was not available.

Area vocational-technical schools represented the major portion or 62.9 per cent of the total number of programs. Many of these schools were developed as a result of the Vocational Education Act of 1963. Increases made by states in the number of area vocational education programs since 1963 are shown in Table II. A total of 134 programs have been developed over the two year period, 1964 through 1965.

Area vocational schools and area vocational education programs are expected to continue to grow. Data in Table II reveal the proposed increase in the number of area vocational education programs by states over the next five year period. The total number of 262 proposed schools represents a 51 per cent increase over the total number of programs now in operation.

Of the thirteen states which reported no area vocational schools, five states were either interested in establishing such schools or already had facilities under construction.

The following is a brief resume' of each of the thirteen states' activities:

Arizona. Four junior colleges serve as area vocational schools within the state and post secondary preparatory technical training is provided at five colleges throughout the state.

TABLE II

THE INCREASE SINCE 1963, THE PROPOSED INCREASE THROUGH 1970, AND THE OPERATIONAL STRUCTURE OF AREA VOCATIONAL SCHOOLS BY STATES

States	Increase Since 1963	Proposed Increase	State Operated	Locally Operated
Alabama	15	UK	40	
Alaska	1	1	1	
Arizona	0	UK		
Arkansas	2	7	5	
California*				
Colorado	10	4		
Connecticut	2		14	
Delaware	2	UK	3**	
District of Columbia*				
Florida*				
Georgia	12	14		16
Hawaii	0	1	1	
Idaho	1	2		
Illinois	2	UK		
Indiana	3	UK	3	
Iowa	0	16		
Kansas	12	1		
Kentucky	5	UK	12	
Louisiana	3	1	35**	
Maine	0	UK	4	
Maryland*				
Massachusetts	2	2		4
Michigan	0	5		
Minnesota	4	5		19
Mississippi	10	UK		
Missouri	0	16		5

* Information not available for these states.

** Information inferred but not stated in the material received.

UK - Unknown

TABLE II (continued)

States	Increase Since 1963	Proposed Increase	State Operated	Locally Operated
Montana	0	2		
Nebraska	1	3	5	1
Nevada	0	3		
New Hampshire	0	6		3**
New Jersey	0	7		5
New Mexico	2	5	1	2
New York	0	5		6
North Carolina	12	UK		
North Dakota	0	UK	1	
Ohio	4	12		13
Oklahoma	0	12		
Oregon	0	13	1	9
Pennsylvania	11	23		17
Puerto Rico	0	2	1**	
Rhode Island	0	12		
South Carolina	0	9		9**
South Dakota	2	2		2**
Tennessee	13	13		12**
Texas	0	17		
Utah	1	UK	3**	
Vermont	0	12		7**
Virginia	0	4		
Washington	2	8		
West Virginia	0	2		4
Wisconsin	0	15		
Wyoming*				
Totals	134	262	130	134

* Information not available for these states.

** Information inferred but not stated in the material received.

UK - Unknown

Colorado. A combination of junior colleges, four-year colleges and secondary school districts, are being used to provide vocational education within the state.

District of Columbia. All five high schools within the district are vocational and technical in nature, but the vocational staff is contemplating constructing a single, consolidated, vocational-technical complex.

Idaho. Idaho State University and the junior colleges are providing vocational-technical education in Idaho.

Iowa. Presently five of the community and junior colleges are designated as area vocational schools, but construction is underway on two area vocational-technical schools.

Maryland. The vocational education programs exist in both community colleges and vocational-technical high schools within the state of Maryland.

Michigan. Area vocational education studies are now being developed in 21 areas of the state to determine how vocational programs should be developed. Currently, vocational programs are being conducted in the community colleges.

Mississippi. The state has no area vocational-technical programs at the present, but much progress is being made in developing area technical schools in conjunction with the junior colleges within the state.

Montana. Plans are now underway to develop two area vocational-technical schools within the state. Currently, technical education is provided at selected high schools and colleges.

Nevada. Nevada is currently in the process of developing two area vocational-technical schools within the state. Considerable growth is taking place in all phases of vocational education in the state of Nevada.

Oregon. A state-wide system of community colleges is being used to provide vocational and technical education within the state.

Texas. Approximately 75 per cent of the allotment to the state under the Vocational Education Act of 1963 in fiscal 1965 was used in the construction of area vocational school facilities. Some of these facilities are located on public junior college campuses and others are on the campuses of public high schools.

Wyoming. Presently, three junior colleges have programs in vocational and technical education. An interpretation of existing tax statutes now allow local school districts to tax for vocational education and adult education programs.

Organizational structure. There were many patterns of organization of area vocational schools some differing only slightly from others. No attempt was made to categorize the patterns except by state or local control. Table II gives the pertinent information available for each state.

The number of state-operated schools was 130. This number compared very closely with locally-operated schools totaling 134. Both the state-operated and locally-operated schools in most cases received funds from local, state and Federal sources, with the differences existing in the percentage received from the various sources.

The state-operated area vocational school is a common form of organization with the state operating the school and providing most of the finances. The remaining funds come from the Federal government and the local school districts in the area. In this type of organization, students may or may not be charged tuition. Usually out-of-state students are charged tuition and in some states, students from outside the cooperating districts but within the state are charged a small tuition fee.

The locally-operated area vocational school may be one of two kinds: the joint-district or county wide area vocational school.

The joint-district organizational pattern consists of two or more school districts jointly supporting and administering an area vocational school. The school is financed by the local governments with some reimbursement from the Federal and State governments. A school board selected from all districts represented is the usual governing body of the school.

The county-operated system of area vocational schools is much less extensive than the joint-district organizational pattern, with only 15 schools out of the 134 reporting this type of organizational structure. In this form of organization, all the school districts within a county jointly support and administer the area vocational school which receives reimbursement from the County, State and Federal governments. Schools located in West Virginia, New York, and New Jersey are organized in this manner.

The minimum age limit for students to enroll in area vocational schools varied from 14 to 16 years of age. Most schools do not have

maximum age limits nor are the courses open only to one sex. Most of the curriculum is so designed to enable high school students to enroll during the school day.

Again there was no pattern encountered regarding the curricula offered by area vocational schools except that there were at least five curriculum courses offered in almost all schools. Usually, especially in the larger schools, the courses encompassed the five major fields of vocational education, namely: agriculture, trades and industry, home economics, distributive education, and business occupations. The vocational-technical schools, however, did not hold to this pattern but offered more specialized occupational courses. There was a very comprehensive range of courses offered by area vocational schools.

The enabling legislation for area vocational schools in Iowa, Pennsylvania, and Wisconsin are briefly reviewed to reveal existing variation among states regarding procedures used in organizing area vocational schools.

Iowa. Iowa is in the process of developing a statewide system of area vocational schools and/or community colleges. If the area decided to become a community college, it must have as part of its program vocational-technical education. Presently, Iowa has sixteen areas applying for area vocational school designation.

These schools would be open to (1) students of high school age while enrolled in a local high school, (2) students and adults of post-high school age who desire completion of high school programs, (3) adults and students who

desire vocational and technical training, (4) adults and students who desire retraining in vocational and technical education and (5) students desiring the first two years of college work including pre-professional education.

Under the Iowa state plan any two or more counties or parts of counties, with proper approval, may plan for the merger of county school systems for the purpose of providing an area vocational school or area community college. However, no area which has less than 4,000 public and private pupils in grades nine through twelve shall be approved by the state board as a merged area.

If two or more Iowa counties desire to become a merged area they must submit the plans formulated for the merged area including, among other pertinent information, (1) the geographic area description, (2) population statistics, (3) school population statistics, (4) description of present post-high school educational facilities within fifty miles of the center of the area, (5) identification of educational programs needed in the area, (6) location of the proposed school, and (7) such additional information of the state board may, by administrative rule, require.

County boards of education may expend public funds for the purpose of formulating plans for a merged area. Upon receipt of the proposed plan the Iowa State Board may either accept or reject it. If it is rejected, the county boards of education are notified with provisions of repeal.

If both the county board and the state board approve the merger plan then special elections are held to elect a board of directors for the merged area. The board of directors has much the same power as a county board of education.

No tax in excess of three-fourths mill shall be levied in the merged area for the operation of an area vocational school or community college. However, Iowa voters may at the annual school election vote a tax not to exceed three-fourths mill on the dollar, in any one year, not to exceed five years, for special purposes.

In addition to revenue derived by the tax levy, the schools receive funds from the Federal government, State government and tuition from persons who reside outside the area and persons over twenty-one years of age living within the area.

The Iowa State Plan calls for not more than twenty such areas to be designated within the state.

Pennsylvania. The procedure used in establishing area vocational schools in Pennsylvania is very similar to Iowa. The major difference exists in the type of administrative board. The area vocational school may have a county board or a joint board committee.

The first step in organizing an area vocational school in Pennsylvania is to determine the attendance area. This area may be on a county wide basis or consist of parts of one or more counties. The county superintendent of schools is responsible for the promotional activities in developing the attendance area.

If the vote to establish an area vocational-technical school is approved by a majority of all the school directors of the interested school districts within the attendance area, the county board of school directors shall secure approval from the Pennsylvania Department of Public Instruction of the attendance area and the official establishment procedures.

Following department of public instruction approval, the county board of school directors shall proceed to direct, establish, and operate an area vocational-technical school in the area. This procedure includes (1) determination of the type of operating board, whether county board or joint board committee, (2) develop an operating policy or agreement, and (3) officially organize the operating board.

Pennsylvania presently has seventeen area vocational-technical schools in operation with twenty-three new schools proposed.

Wisconsin. Under an Act which became effective September 30, 1965, any county, municipality, school district which operates a high school, or any contiguous combination of the preceding may form vocational, technical, or adult education districts. Six board members are then appointed by executive officers of the governing bodies of the units of government included in the district. Local board members slected appoint one school administrator from within the school district to serve as an ex-officio member of the board.

The local board has power and authority very similar to boards of education for public schools. The board may incur indebtness for the acquisition of sites, buildings and equipment for the operation of the school

and levy taxes for such capital outlay and interest not to exceed two mills on each dollar of equalized valuation in any one year.

Students in Wisconsin school districts where area vocational-technical schools are operated are required to attend school until they are 18 years of age, or until they have graduated. However, students that are 16 years old may attend the vocational school in lieu of regular high school.

Students attending vocational schools are transported in the same manner as those attending regular high schools.

Varying amounts of tuition are charged in relation to the type of courses taken by the students.

Summary. While the enabling legislation for developing and maintaining area vocational schools in Iowa, Pennsylvania and Wisconsin differ considerably from the New Mexico State Plan, there are some similarities in the procedures for instituting area vocational schools. An overview of these state plans will serve as background information for a comparison with other state plans.

CHAPTER III

STATUS OF AREA VOCATIONAL SCHOOLS IN NEW MEXICO

Presently there is only one vocational-technical institute in New Mexico and one state-supported vocational school. One additional junior college which will have a strong program of vocational education is presently under construction.

The Northern New Mexico State School at El Rito is open to students from within the state. While the Albuquerque Technical-Vocational Institute is available primarily to students living within the Bernalillo Tax District, non-resident students may attend by paying an additional tuition fee. The New Mexico Junior College, presently under construction, will serve the surrounding area encompassing Hobbs, Lovington, Eunice and Tatum school districts in addition to students from outside the supporting district.

I. REVIEW OF ENABLING LEGISLATION FOR AREA VOCATIONAL SCHOOLS IN NEW MEXICO

Area vocational schools in New Mexico are operated under the provisions of the 1963 "Junior College Act" (73-33-1 to 73-33-18) and the "Technical and Vocational Institute Act" (73-34-1 to 73-34-12). Since an area vocational school may be operated under either of these two Acts, a brief resume' of each is given.

Junior College Act. This Act defines a "junior college" as "a public educational institution which shall provide not to exceed two (2) years of training in the arts, sciences and humanities beyond the twelfth grade of

the public high school curriculum, or in lieu of such training or in addition thereto, not to exceed two (2) years of a vocational and technical curriculum and appropriate courses of study for persons who may or may not have completed the twelfth grade of public high school".[28]

Junior College District. This district comprises the territory of one or more school districts within the State of New Mexico. The school districts do not necessarily have to be in the same county, but they must in all cases, be contiguous.

Purpose. The purpose of the Junior College Act is to provide for the creation of local junior colleges and to extend the privilege of a basic vocational, technological or higher education to all persons who are qualified to pursue the courses of study offered.

Board Duties. It is the duty of the junior college board to determine financial and educational policies of the college. The board is responsible for the management of the junior college and excution of such policies by selecting a competent president, administrative personnel, instructional staff, and other personnel as may be needed for the operation, maintenance and administration of the college.

The college board has the power to fix tuition and fee rates for resident and non-resident students of the district, to accept Federal aid, to purchase,

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[28] 73-33-1 Stat. 219 (1963).

hold, sell and rent property and equipment, and to promote the general welfare of the institution for the best interest of educational service to the people of the junior college district.

Bond Provisions. The junior college board may borrow money for the purpose of constructing, purchasing, remodeling and equipping buildings and utility facilities, or purchasing grounds, exclusive of dormitories and stadiums. To carry out these purposes, the board may issue negotiable coupon general obligation bonds of the district. These bonds are subject to approval by the state board of educational finance and approved at an election by a majority of the qualified electors voting on the issue. The bonds may not create a total indebetdness in excess of three per cent (3%) of the assessed valuation of taxable property within the junior college district.

The principal and interest on general obligation bonds are payable from the proceeds of general property taxes levied without limitation as to rate or amount, except to the extent other revenues are made available for this purpose.

Operational Levy. An election must be held every six years and may be conducted every two years to determine the mill levy for the operation and maintenance of the junior college. Taxes levied for operation and maintenance may not exceed five mills. Levies, assessments and collections authorized for junior college district financing are made at the same time and in the same manner as levies, assessment and collections for ad valorem taxes for school districts are made.

Transportation System. Transportation systems subject to the limitations set forth by the Act, may be operated by the college. These may be of two kinds: (1) a nonstop bus route between the college and outlying population centers, or (2) a cooperative agreement between the junior college and the public schools or other colleges in the area, to provide transportation for junior college students by existing transportation systems operated by the public school or other colleges in the area.

Technical and Vocational Institute Act. This Act defines a "technical and vocational institute" as "a public education institution which shall provide not to exceed two-years of vocational and technical curriculum and, in addition some appropriate courses in the arts and sciences".[29]

Formation of the District. A technical and vocational institute district may be formed upon the petition of qualified electors who have paid a property tax during the preceding year in any school district or group of districts, to the number of ten per cent (10%) of the vote cast for governor in each school district in each county, in the last preceding general election.

The petition is then filed with the state board of education which immediately makes a survey of the proposed district to determine the need for the proposed institutes and the prospects for its adequate support. Three criteria must be met before the state board will approve the petition. These are:

(1) The proposed district boundaries are suitable geographically;

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[29] 73-34-2 Stat. 132 (1963).

(2) The existence of adequate school population and other factors indicate the proposed institute will develop to the point where it will serve an enrollment of at least two-hundred full-time student equivalents; and

(3) The financial positions of the proposed district is adequate to provide the necessary supporting funds for current operations, including maintenance and direct charge, and the necessary capital outlay for physical plant and equipment.

Election on Proposal to Create District. Upon approval of the state board of education, each board of the school district or districts shall present the proposal for the creation of a technical and vocational institute district on a separate ballot at the time of the next school board election or at any election called for that purpose. If the majority of the qualified ad valorem tax paying electors voting in the election, vote in favor of establishing a technical and vocational institute district, the district is legally established.

Characteristics of the Board. The governing board of the technical and vocational institute district is composed of the board of the initiating school district if one school is involved. If more than one district is involved the board is composed one member delegate from each participating governing board. In the event there is an even number of participating school districts, the boards of all participating districts jointly appoint an additional member who serves as a member at large.

The powers and duties of the board are almost identical to the powers and duties of the boards of junior colleges and as such will not be enumerated.

Bond Provisions. Again, the bond provisions are very similar to the provisions set forth in the Junior College Act. However, the amount of total indebtedness that may be created by negotiable coupon general obligation bonds is limited to two per cent, (2%) of the taxable property within the district as shown in the preceding general assessment.

The writer feels there are no other important differences in the Technical and Vocational Institute Act and the Junior College Act that warrant explanation.

II. REVIEW OF AREA VOCATIONAL SCHOOLS IN NEW MEXICO

Northern New Mexico State School. As was indicated previously, the Northern New Mexico State School is a state-operated vocational school open to any student residing within the State of New Mexico. The school is not operated under either the Junior College Act or the Technical and Vocational Institute Act. The Institution is financed much the same way as the State Colleges and Universities, from funds appropriated directly by the legislature.

The spring semester (1966) enrollment by courses is presented in Table III. Of a total enrollment of 121 students, 27 were in auto mechanics, while barbering had the least number of students enrolled with 14.

Albuquerque Technical-Vocational Institute. Operated under the Technical and Vocational Institute Act, the Albuquerque Technical-Vocational Institute is supported by a two mill levy on the Bernalillo Tax District.

TABLE III

ENROLLMENT BY VOCATIONAL COURSES FOR THE 1966 SPRING SEMESTER AT THE NORTHERN NEW MEXICO STATE SCHOOL

Vocational Course	Number Enrolled
Barbering	14
Building Trades	22
Auto Mechanics	27
Intensive Office Education	20
Clerk - Steno	20
Beauty Operator	18*
Total	121

* Interpolated from past enrollments since the course was between programs at the time of the survey.

Persons who attend from outside this area must pay a tuition charge of $67.50 per trimester, for attendance in full time programs. Other financial assistance is derived through the funds granted to operate various government projects and through matching state and Federal funds under the Vocational Education Act of 1963 and various other vocational education acts.

The Albuquerque Technical - Vocational Institute is serving a large portion of the northern half of New Mexico primarily through the various projects under the Manpower Development and Training Act, Rural Area Redevelopment, and Title II-B and Title V of the Economic Opportunity Act.

The 1966 spring trimester enrollment by curricula is divided into enrollment in various courses offered through governmental programs, full time and apprentice programs, and the skill improvement program.

Data in Table IV concern enrollment under the various government programs. The data reveal that courses under Title V of the Economic Opportunity Act encompass the largest matriculation of all government programs with 320 students enrolled in such courses as clerical (86), pre-vocational (50) and nurse's aide (40). Of the 258 students enrolled in courses under Title II-B, adult basic education accounted for 150 students. Students matriculated in courses under the Manpower Development and Training Act totalled 142, with the largest numbers of students studying in classes of nurse aide - orderly (35), sales (32) and clerical occupations (30). Electronic assemblers (40) and silversmith (19) classes constituted

the total 59 students enrolled under the Rural Area Redevelopment program.

Enrollment by courses in full time and apprenticeship programs at Albuquerque Technical - Vocational Institute are presented in Table V. Of the total 169 students in full-time programs, secretarial specialist (54) and electronics technology (48) encompassed the majority of the enrollees. The instructional areas of plumbing (194), carpentry (107) and electrical (82) accounted for over one-half of the 466 students participating in the apprenticeship program.

Data in Table VI concern matriculation by courses in the skill improvement program for the 1966 spring trimester. A total of 1833 persons was being served by skill improvement courses, with 1092 students in trimester II of the various courses. Instructional areas indicating the highest number of enrollments were typing (473), shorthand (250) and office machines (141). This indicates there is a need for improving the skill of clerical and secretarial help within the State at the present time.

Data in Table VII concern a summary of the enrollment in various programs at the Albuquerque Technical - Vocational Institute. Of the 3,247 personnel enrolled in vocational programs, 1833 students were in part-time skill improvement courses, while MDTA, RAR and EOA programs matriculated 779 personnel. The full time and apprenticeship programs served the remaining 635 students.

TABLE IV

ENROLLMENT BY COURSES IN MDTA, RAR, AND EOA GOVERNMENT PROGRAMS AT ALBUQUERQUE TECHNICAL-VOCATIONAL INSTITUTE FOR THE 1966 SPRING TRIMESTER

PROGRAM	COURSE	ENROLLMENT
Manpower Development and Training Act		
	Service Station Auto Mechanic	22
	Machine Tool Helper	12
	Sales	32
	Clerical Occupations	30
	Groundskeeper and Grounds Maintenance	11
	Nurse Aide - Orderly	35
Rural Area Redevelopment		
	Silversmith	19
	Electronics Assemblers	40
Economic Opportunity Act		
	Title V	
	Clerical	86
	Nurse Aide	40
	Building Maintenance Custodian	22
	Licensed Practical Nurse	7
	Bookkeeping	26
	Household Specialist	12
	Sales	37
	Multi-Occupations	40
	Prevocational	50
	Title II-B	
	Citizenship	18
	English (for non-English speaking people)	90
	Adult Basic Education	150
TOTAL		779

TABLE V

ENROLLMENT BY COURSES IN FULL-TIME AND APPRENTICESHIP PROGRAMS AT ALBUQUERQUE TECHNICAL-VOCATIONAL INSTITUTE FOR THE 1966 SPRING TRIMESTER

PROGRAM	COURSE	ENROLLMENT
Full-Time Programs		
	Drafting Technology	27
	Electronics Technology	48
	Licensed Practical Nurse	40
	Secretarial Specialist	54
Apprenticeship Programs		
	Bricklaying	14
	Carpentry	107
	Electrical	82
	Ironworking	22
	Painting	14
	Plumbing	194
	Sheet Metal	33
TOTAL		635

TABLE VI

ENROLLMENT BY COURSES IN SKILL IMPROVEMENT PROGRAMS AT ALBUQUERQUE TECHNICAL-VOCATIONAL INSTITUTE FOR THE 1966 SPRING TRIMESTER

PROGRAM	COURSE	ENROLLMENT Trimester I	ENROLLMENT Trimester II
Skill Improvement			
	Aircraft Electricity	19	0*
	Aircraft Carburetion	0	17
	Auto Electricity	22	16
	Bookkeeping	37	72
	Business Accounting	0	16
	Business English	29	22
	Cashier	0	61
	Cash Register Operation	17	0
	Commercial Art	21	16
	Construction Hydraulics	0	22
	Drafting	35	80
	Electricity and Electronics	45	47
	Florist Assistant	0	21
	Industrial Mathematics	28	0
	Machine Tool	17	16
	Medical Assistant	0	47
	Office Machines	60	81
	Print Reading	29	23
	Shorthand	92	158
	Speciality Secretary	0	26
	Speech	0	16
	Small Business Accounting	25	0
	Trade Mathematics	0	33
	Typing	207	266
	Welding	35	36
TOTAL		741	1092

* A zero indicates the course is not currently offered.

TABLE VII

SUMMARY OF ENROLLMENT IN THE VARIOUS PROGRAMS AT THE ALBUQUERQUE TECHNICAL-VOCATIONAL INSTITUTE FOR THE 1966 SPRING TRIMESTER

PROGRAM	ENROLLMENT
Government Projects	
MDTA	142
RAR	59
EOA	
Title V	320
Title 11-B	258
Full-Time	169
Apprenticeship	466
Skill Improvement	
Trimester I	741
Trimester II	1092
TOTAL	3247

New Mexico Junior College. Located in southeastern New Mexico at Hobbs, the New Mexico Junior College was officially formed July 1, 1965. The fiscal year 1965-1966 is being devoted to planning, organizing and building to enable the college to accept student enrollments in September, 1966.

The New Mexico Junior College is operated under the 1963 Junior College Act. An operational levy of three mills was approved by qualified voters in June 1965. In addition to the operational levy, qualified electors voted to release $3,000,000.00 in negotiable coupon general obligation bonds for building and equipment purposes. This amount is just under one and one-half per cent (1 1/2%) of the total net assessed valuation of the New Mexico Junior College District.

The New Mexico Junior College District encompasses Hobbs, Lovington, Eunice, and Tatum school districts, an area of approximately 3,815 square miles. The total net assessed valuation of the Junior College district is $200,386,514.00.

Since New Mexico Junior College was not open to students at the time of this writing, student enrollments shown in Table VII are projected enrollments. These figures were determined by surveys of students in high schools in the area and by estimating the number of students from outside the district and from adult and high school drop-out groups who would likely enroll.

Data in Table VII reveal that of the projected total enrollment of 179 students in 1966, 99 or 55 per cent, will be in secretarial (36),

automotive mechanics (34) and data processing (29) courses. The projected enrollment for 1970 is 262 per cent (469) of the 1966 projected enrollment.

Summary. The Albuquerque Technical-Vocational Institute is by far serving the larger number of personnel than is the Northern New Mexico State School at El Rito. The New Mexico Junior College located at Hobbs will do much to satisfy the need for vocational and technical education in the southeastern segment of the state. This still leaves many other areas of the State of New Mexico in need of good, accessible vocational-technical education.

TABLE VIII

PROJECTED VOCATIONAL-TECHNICAL ENROLLMENT BY AREAS FOR NEW MEXICO JUNIOR COLLEGE, HOBBS, NEW MEXICO

COURSES	YEARS				
	1966	1967	1968	1969	1970
Drafting Technology	18	28	35	41	52
Data Processing	29	40	51	60	75
Electronics	16	23	29	34	42
Machine Shop	4	5	6	7	9
Auto Mechanics	34	48	62	72	89
Welding	14	20	26	30	37
Air Conditioning	7	10	13	15	19
Secretarial	36	50	65	76	95
Licensed Practical Nurse	11	15	19	23	28
Distributive Education	0	0	0	0	0
Vocational Agriculture	4	5	6	7	9
Vocational Home Economics	2	3	3	4	5
Others	4	5	6	7	9
Totals	179	252	321	376	469

CHAPTER IV

SUMMARY AND CONCLUSIONS

The phenomenal growth of modern technology has placed tremendous demands upon the educational systems of the nation. Science and technology have bred specialization and the development of new skills into the modern world of work. For these and other reasons, a critical evaulation must be made concerning vocational education. Today, almost without exception, the person without a job is the person without a skill.

Area vocational schools are but one way to provide vocational and technical education to persons needing specialized education. Other institutions conducting vocational training include community or junior colleges, universities, and secondary schools. It is not the intent of the writer to advocate the use of any specific institution as the only successful means of providing vocational and technical education, but rather the wise use of one or a combination of institutions for the most effective presentation of vocational education within the State of New Mexico.

Since the passage of the Vocational Education Act of 1963, there has been a tremendous increase in the number of area vocational schools and vocational programs across the nation. The increase in vocational-technical programs is expected to continue even at a faster rate than has been manifested in the past growth and expansion of vocational programs.

It is felt that even though vocational programs are being extended and initiated in virgin areas, much remains to be done. The areas of

weakest vocational programs are in the small rural schools. As was stated previously, almost one-third of the total high school population is still enrolled in rural schools that are too small to offer satisfactory education for all students. The capital outlay for facilities as well as the salaries of special instructors represent such a large figure in terms of student enrollment as to make vocational programs almost prohibitive in small schools. The writer offers the following suggestions as possible solutions to the problems of financing vocational programs in small schools.

(1) Construction of area vocational schools to be jointly financed to serve students and adults on an area wide basis.

(2) If for various reasons such as proximity, the vocational program must be financed and operated by a single school district, operate part time night classes for more efficient use of the facilities available.

It is felt that vocational programs are sometimes omitted from the curriculum of the secondary schools partially because of the cost of such programs and partially because of the attitude manifested toward vocational education. Historically, the college preparatory curriculum has been the most prevalent type of curriculum found in the public secondary school. Today, even though there is a greater demand for college graduates in all fields of knowledge, there is also paralleling this demand for college graduates, a greater demand than ever before for skilled craftsmen and technicians. How long can the educational systems of our

nation continue to train only twenty per cent of its school population in practical arts education, when eventually after floundering around the college campus for a few years eighty per cent will go to work in semi-skilled or skilled occupations or remain unemployed? It is felt that the population explosion and the economy of the nation will soon force the educational system away from the present trend in education.

The data presented in this report have implications not only for vocational leaders but for school personnel, from the administrator to the classroom teacher. School administrators must become aware that the curricula offered in many schools do not afford every opportunity to all students to develop themselves to their fullest extent. It is not realistic to expect schools to develop every student to his fullest capacity, but action can and must be taken to try to extend education to those who may need it most.

This report has implications for the guidance counselors in the public schools. Students should always have the right to choose their vocation according to their aptitude, interest and ability, but definite steps should be taken to make each student aware of his ability and aptitude. Sometimes this procedure entails acquainting the child's parents of his aptitude and possible limitations of his ability.

Generally, all public school teachers need a more comprehensive understanding of the need for, and the purposes of vocational education.

The challenge is especially great for vocational educators. Successful vocational programs in the future must be conducted in an attractive, efficient and highly scientific manner. As vocational education moves into the spotlight of education, vocational programs must be ready to withstand close scrutiny by educational leaders and the public.

The challenge, more dynamic, more urgent and more exacting, to give every person the opportunity to develop himself to the highest educational and vocational level possible within his various limitations, is present for all in education.

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A Research Report of a Graduate Study

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June, 1965

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RESEARCH SERIES IN AGRICULTURAL EDUCATION

A Research Report

of a

Graduate Study

GUIDELINES FOR THE DEVELOPMENT OF TRAINING PROGRAMS FOR AGRICULTURAL TECHNICIANS

Joseph R. Clary and Ralph J. Woodin

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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NATIONAL CONCERN FOR

TECHNICAL EDUCATION IN AGRICULTURE

Introduction

One of the most significant changes in the occupational structure of the United States today is the rapid growth of occupations which lie between the fields of the skilled crafts and engineering. These occupations contain many new jobs of a technical character, varying widely in the scope and level of the tasks performed and in the nature of the activities carried out. The workers in these jobs have come to be known as technicians.

The rapidly changing occupational structure of the nation resulting from expanding automation and technology suggests the need for a thorough and continuing analysis of technical jobs and the training required for them.

The rapidly changing occupational structure in the United States has resulted in a critical shortage of technicians, including agricultural technicians.

The United States Department of Labor recently provided an overview of projections of changes in the population and labor force of the United States between 1960 and 1970. The overview revealed that --

> Workers under 25 will account for nearly half of the labor force growth during the 1960's, even though they will stay in school longer.
>
> .....
>
> The kinds of jobs industry will need workers for are also changing but the biggest increases will occur in the occupations requiring the most education and training.
>
> .....
>
> The fastest growth will occur among professional and technical occupations, especially engineers, scientists and technicians.

While the total labor force will increase approximately 20 per cent between 1960 and 1970, the technical and professional personnel will increase approximately 42 per cent.

Vocational educators in a number of states have indicated that programs for the training of agricultural technicians will be developed in their states within the next five years.

Vocational-technical education is in the process of emerging as a major facet of the educational enterprise. Its purposes, distinguishing characteristics, kinds of institutions needed, administrative structure and curricular offerings (with the possible exception of engineering-related programs) are in a developmental state.

The constantly increasing need for agricultural technicians demands the development of new educational programs for the training of these technicians. Twenty-eight State Directors of Vocational Education recently indicated to this investigator that definite plans were being made in their states for the development of training programs for agricultural technicians within the next five years.

PLANS FOR THE STUDY

The major purpose of this study was to develop guidelines for use in planning and conducting training programs for agricultural technicians.

The following specific objectives were identified to guide the direction of this study:

1. To determine the status and characteristics of present training programs for agricultural technicians.

2. To determine, for the following categories, the degree of emphasis administrators of present training programs for agricultural technicians believe should be given to certain procedures in developing

successful training programs for these technicians.

a. Objectives of the program

b. Types of programs offered

c. Curriculum content

d. Recruitment

e. Student services

(1) Selection
(2) Counseling
(3) Placement and follow-up
(4) Residence facilities

f. Library

g. Instructional staff

h. Facilities and equipment

i. Acceptance by industry, business and educational leaders

j. Evaluation

k. Accreditation and/or licensing

l. Location

3. To synthesize, refine, and evaluate a tentative set of guidelines for use in planning and conducting training programs for agricultural technicians.

PROCEDURE FOR THE STUDY

A check list of procedures was developed and mailed to institutions in the United States training agricultural technicians for the purpose of determining the degree of emphasis which should be given to the procedures in successfully developing training programs for these technicians.

A tentative set of guidelines for planning and conducting training programs for agricultural technicians was synthesized and submitted to a jury of experts for refinement and evaluation.

Visits were made by the investigator to several institutions training agricultural technicians to secure additional information for the

further refinement of the tentative guidelines.

The investigator used the literature on the development of training programs for technicians, the evaluation of the tentative guidelines by the jury along with their additions and other comments, the study of the status and characteristics of present training programs for agricultural technicians, the reactions of the institutions' representatives as to emphasis which should be given to procedures in the successful development of training programs for agricultural technicians, and the information and ideas gained while visiting a number of these institutions as a basis for refining the tentative set of guidelines for the development of training programs for agricultural technicians.

SURVEY OF CURRENT TECHNICAL PROGRAMS IN AGRICULTURE

The institutions used in this study were identified through state directors of vocational education, the U. S. Office of Education and published educational directories. Forty-four institutions were identified for contact. Twenty-five institutions reported training programs for agricultural technicians and responses from these institutions used in the study. Four other institutions indicated programs but were parts of four year colleges of agriculture and thus eliminated from the study. One institution was listed as a technical high school. Thirteen of the original institutions reported they did not have training programs for agricultural technicians. One institution did not respond. Responses were received from ninety-eight per cent of the original forty-four institutions.

Types of institutions

The types of institutions in which there were programs for the

training of agricultural technicians could be classified into four general categories: technical institutes, junior colleges, comprehensive community colleges and area vocational-technical schools.

The number of institutions in the study and the percentage of the total according to type of institution are shown in Table 1.

As Table 1 shows, there were more technical institutes with training programs for agricultural technicians than any other type of institution. Junior colleges were second.

TABLE 1.--Institutions identified in this study with training programs for agricultural technicians according to type of institution

Type of Institution	Number	Per Cent of Total
Technical Institute	12	48
Junior College	8	32
Comprehensive Community College	3	12
Area Vocational-Technical School	2	8
Total	25	100

Types of programs currently in operation

Representatives of institutions participating in the study were asked to identify the types of training programs for agricultural technicians currently in operation in their institutions. They were requested to specify the names of the programs. Table 2 summarizes information received concerning training programs currently in operation according to the type of institution in which the program was located.

TABLE 2.--Training programs for agricultural technicians currently in operation according to type of institution

Type of Program	Type of Institution				
	Technical Institute	Junior College	Comprehensive Community College	Area Vocational-Technical School	Total
Agricultural Business and Management	11	5	1	0	17
Animal Science Technology	10	3	1	0	14
Horticultural Technology	6	3	1	0	10
Agricultural Engineering Technology	4	2	1	1	8
Agricultural Technology	4	2	0	0	6
Plant Science Technology	2	0	1	0	3
Forestry Technology	0	0	0	1	1
Total	37	15	5	2	59

Total number of students currently enrolled in programs

The number of students currently enrolled in different types of training programs for agricultural technicians is shown in Table 3.

The information presented in this table includes advanced students as well as those who entered programs in the fall of 1963.

Several of the programs indicated significant increases in enrollments from the first year the programs were in operation until now. Those institutions still in their initial year of training

agricultural technicians reported the same number currently enrolled as in the beginning class or a smaller number due to withdrawals during the year.

TABLE 3.--Number of students currently enrolled in training programs for agricultural technicians according to type of program

Type of Program	Total Number Currently Enrolled				Total
	Less Than 20	21-40	41-60	61 or More	
Agricultural Business and Management	11	3	0	0	14
Animal Science Technology	4	1	1	1	7
Horticultural Technology	3	0	1	0	4
Agricultural Technology	2	0	1	1	4
Agricultural Engineering Technology	0	2	1	0	3
Plant Science Technology	0	1	0	0	1
Forestry Technology	0	0	1	0	1

Awards given for successful completion of the program

All institutions participating in the study indicated that some award was given to students successfully completing the training program. The respondents were asked to indicate the type of award given.

Table 4 shows that the associate degree was the type of award given by a large majority of the institutions.

TABLE 4.--Type of award given for successful completion of training programs for agricultural technicians according to type of institution

Type of Institution	Type of Award		
	Associate Degree	Diploma	Certificate
Technical Institute	9	2	1
Junior College	6	1	1
Comprehensive Community College	3	0	0
Area Vocational-Technical School	0	0	2
Total	18	3	4

Other Training Programs for Agricultural Technicians

Not all agricultural technicians are trained in the institutions which constitute the population used in this study. This study was limited to public institutions which trained agricultural technicians and there may be private institutions with such training programs. Also, large agricultural businesses and industries may operate training programs in connection with the business or industry and train personnel to operate at the technician level.

A number of colleges in the United States operate agricultural institutes or other types of training programs as part of their colleges of agriculture and these train personnel at the technician level. These institutions were not asked to participate in this study because the investigator and others with whom he conferred believed

the problems and procedures of these institutions in developing and conducting training programs for agricultural technicians would be sufficiently different to warrant their exclusion from the study.

Further analysis of data showed that most of the institutions were relatively small but a small portion had student bodies numbering into the thousands. Generally these institutions had quite small part-time student enrollments and extension student enrollments were practically nonexistent.

Almost all the institutions were accredited by either a state or a regional agency but practically none were licensed.

Most of the institutions provided several types of student services for prospective students, enrolled students and graduates.

Twenty-eight State Directors of Vocational Education indicated to the investigator early in the study that definite plans were being made in their states for the development of new or additional training programs for agricultural technicians within the next five years. The institutions in this study indicated that 21 additional training programs were already in the planning stages.

Summary of the guidelines

All the guidelines developed in this study, along with the modal response(s), mean ratings of response(s) and standard deviations, are summarized in Table 5.

TABLE 5.--Summary of guidelines developed in this study for planning and conducting training programs for agricultural technicians in post-high school educational institutions

Guidelines	Modal Response(s)	Mean Rating of Responses[a]	Standard Deviation
1. Agricultural technician training program objectives should reflect the unique characteristics of technical education of less than the baccalaureate degree, but above the high school level.	4	3.85	.3619
2. The types of agricultural technician training programs to be offered should be determined with primary but not exclusive attention to occupational (job opportunity), educational and interest surveys of people and industries to be served.	4	3.57	.6253
3. Curriculum content for agricultural technician training programs should be closely related to present and future occupational needs.	4	4.00	.0000
4. A planned recruitment program should be developed to acquaint prospective students with the opportunities for becoming trained as agricultural technicians and for employment upon successful completion of this program.	4	3.46	.6325
5. Selection of students for agricultural technician training programs should be based on interests, aptitudes, previous education, intellectual capacity and background experience - the criteria varying with the occupations for which training is given.	4	3.86	.5167
6. Institutions providing agricultural technician training programs should develop an adequate counseling and guidance program, coordinating it with counseling programs of local schools and the Employment Security Commission.	3,4	3.50	.5000

TABLE 5.--Continued

Guidelines	Modal Response(s)	Mean Rating of Responses[a]	Standard Deviation
7. Placement and follow-up services in agricultural technician training programs should result in graduates being placed in the jobs for which they were prepared and also provide information for proper analysis of program effectiveness.	4	3.69	.4637
8. Residence facilities should be made available for students when sufficient need is demonstrated based on the opportunity of students to obtain programs of their choice which are not available to them otherwise and when the addition of these facilities serves as a means to enable the institution to more fully meet its objectives.	3	2.71	.7962
9. Students enrolled in agricultural technician training programs should have ready access to a well-organized, appropriately coordinated library which provides a ready reference to up-to-date information and which has an appropriate range of authentic and professional publications in the area of work for which technicians are being trained.	4	3.79	.4074
10. The instructional staff in agricultural technician training programs should have technical occupational competence in the area for which training is offered and should understand and be proficient in teaching skills and competence essential to successful performance as an agricultural technician.	4	3.82	.3619
11. Adequate and appropriate facilities and equipment are essential and should be made available in the training of highly competent agricultural technicians.	4	3.92	1.0025

TABLE 5.--Continued

Guidelines	Modal Response(s)	Mean Rating of Responses[a]	Standard Deviation
12. Planned and continuous efforts should be made to increase the acceptance and prestige of technician occupations (including agricultural technicians) and technician training programs.	4	3.31	.7204
13. Continuous and planned programs of evaluation should be characteristic of agricultural technician training programs.	4	3.77	.4243
14. Agricultural technician training programs should become accredited and/or licensed as early as possible by a recognized accrediting or licensing agency in order to assure the public that some kinds of recognized standards are being met and to protect graduates from pseudo-technician graduates.	4	3.31	.7204
15. Agricultural technician training programs should be located in institutions in areas of population and agricultural industry and business concentration so as to be readily accessible to those whom they are designed to serve.	3,4	3.46	.4960

[a]Scale:

Very Much	Much	Some	Little	None
4	3	2	1	0

An extensive survey of the literature concerning educational programs for the training of technicians provided the basis for drafting a very tentative list of guidelines and supporting statements. These were submitted to a small advisory committee for refinement.

A national jury of leading educators was selected by the

investigator to further refine the guidelines and to evaluate both the guidelines and the supporting statements. The tentative list of guidelines only was submitted to the jury with a request for help in refining them. They were asked to indicate need for clarity or further amplification of the submitted guidelines and to suggest additional guidelines needed.

The investigator used the suggestions from the jury in redrafting the guidelines. The supporting statements were then added to the guidelines. Both the guidelines and supporting statements were scaled and submitted to the jury for evaluation.

Summary of data concerning guidelines and supporting statements

The following guidelines and supporting statements were evaluated by the jury to warrant a mean rating of 3.00 or higher (indicating of much or very much importance) on an importance scale. The supporting statements corresponded to procedures statements which were rated by representatives of institutions with training programs for agricultural technicians. The supporting statements, unless otherwise noted, also correspond to procedures which were given mean ratings of 3.00 or higher (indicating much or very much emphasis should be given to them in developing successful training programs for agricultural technicians) on an emphasis scale. The guidelines were rated only by the jury. The supporting statements, in effect, were rated by both the jury and representatives of the institutions.

Objectives

GUIDELINE: Agricultural technician training program objectives should reflect the unique characterisitcs of technical education of less than the baccalaureate degree, but above the high school level.

a. The objectives should be such that resulting curricula are primarily occupation-centered and planned toward occupational competence for the graduate.

b. Clearly defined and realistic objectives for the training programs should be developed under the guidance of a professional educator assigned to give leadership in this area.

c. Lay personnel in agricultural businesses and industries should be involved in the development of objectives for agricultural technician training programs.

d. A major objective of the training program should be to prepare the student for immediate productive employment in the technician occupations for which training is provided.

e. The objectives should allow for preparation of students for clusters of related technician occupations.

f. The objectives should be in harmony with the legal bases on which the institution was founded.

Types of programs offered

GUIDELINE: The types of agricultural technician training programs to be offered should be determined with primary but not exclusive attention to occupational (job opportunity), educational and interest surveys of people and industries to be served.

a. An advisory committee including representatives of the agricultural businesses and industries should carefully plan any surveys made.

(1) The main purpose to be served by each survey should be determined before instruments for it are developed.

(2) The precise information desired should be determined and instruments developed to assure its being obtained.

(3) Sufficient funds and/or time should be budgeted for making the surveys.

(4) A well-qualified person to direct the survey should be carefully selected.

(5) The sources of information should be carefully selected.

(6) Consultant help in field research should be obtained in developing the survey plan and guide.[1]

b. Extensive and dependable information and data are needed, including:

(1) The identification of jobs or occupational clusters dependent upon agricultural technician training programs.

(2) The types and number of employment opportunities currently available and those realistically expected over a given period of time.

(3) The amount of support employers will give to the program.

(4) Other available sources of education and training for the particular area under consideration.[2]

(5) The number of potential students who are now interested and would enroll in the program.

c. The survey findings must be carefully analyzed to determine what agricultural technician training curriculums should be established.

---

[1]Received less than a mean rating of 3.00 by the institutions.

[2]Received less than a mean rating of 3.00 by the institutions.

(1) Specialized consultant help should be secured in analyzing and interpreting the survey data.[3]

(2) Advisory committees should be involved in analyzing and interpreting the survey data.

Curriculum content

GUIDELINE: Curriculum content for agricultural technician training programs should be closely related to present and future occupational needs.

a. Curriculum content should be primarily occupation-centered.

b. A balance between technical-supporting content and class-laboratory experiences is essential for learning concepts and principles and their application.

c. Preliminary drafts of curriculum content should be developed through a study of the present and future job requirements in the occupational fields selected and the allocation of the required knowledge, skills and understandings to courses of instruction.[4]

d. The depth and scope of mathematics and science must be tailored to occupational needs of those enrolled.

e. The difficulty level should be such that it can be mastered by a reasonably high proportion of the students within the time limits of the curriculum.

f. The curriculum should be flexible enough to be easily revised as needed in advance of the changing competencies of the technician.

---

[3]Received less than a mean rating of 3.00 by the institutions.

[4]Received less than a mean rating of 3.00 by the institutions.

g. Curriculum content should be planned with advice, counsel and support of the agricultural industry for which the training program is being developed. Other agricultural education leaders should also be involved.

h. The curricula for the agricultural technician training programs should be coordinated with the total institution program.

Recruitment

GUIDELINE: A planned recruitment program should be developed to acquaint prospective students with the opportunities for becoming trained as agricultural technicians and for employment upon successful completion of this program.

a. The recruitment program should include activities with the following groups:

(1) High school counselors, teachers and administrators.

(2) High school students.

(3) Agricultural industries, businesses and associations.

(4) Parents of high school students.

(5) Other agricultural organizations and agencies.[5]

b. Specific responsibility for giving leadership to recruitment activities should be assigned.

c. Personal contacts with individuals and/or groups of prospective students should be made and maintained.

d. Emphasis in recruitment activities should be based upon fitting the talents and interests of the prospective student to the technician job.

---

[5]Received less than a mean rating of 3.00 by the institutions.

e. Recruiting efforts should clearly show how the training program is essential to securing a job as a technician.

Selection

GUIDELINE: Selection of students for agricultural technician training programs should be based on interests, aptitudes, previous education, intellectual capacity and background experience - the criteria varying with the occupations for which training is given.

a. Prospective students should be interviewed and appraised with respect to personal traits, physical handicaps and the like in relation to the job of technician.

b. Policies and procedures for student selection should be carefully developed to assure admission of only qualified students.

c. Only those applicants who have a reasonable chance of success in the training program should be admitted.

d. Self-selection by the prospective student should be a significant part of the selection process.[6]

e. An adequate testing program is important in selection.

Counseling

GUIDELINE: Institutions providing agricultural technician training programs should develop an adequate counseling and guidance program, coordinating it with counseling programs of local schools and the Employment Security Commission.

---

[6]Received less than a mean rating of 3.00 by the institutions.

a. Counseling services should be made available for the following levels of counseling:

(1) Counseling prior to enrollment

(2) Advisor counseling regarding courses, requirements, study techniques, student organizations and the like.

b. A trained guidance counselor should be provided to give leadership to and coordinate guidance activities.

c. The counseling and guidance service should provide the following:

(1) A placement service.

(2) A vocational information service.

(3) A follow-up and research service.[7]

(4) A counseling service.[8]

Placement and follow-up

GUIDELINE: Placement and follow-up services in agricultural technician training programs should result in graduates being placed in the jobs for which they were prepared and also provide information for proper analysis of program effectiveness.

a. An organized and well-planned placement service should be made available to graduates of agricultural technician training programs.

b. Placement personnel should have extensive contacts with agricultural businesses and industries.

c. Records of employment are essential and should be used for analyzing program effectiveness.

---

[7]Received less than a mean rating of 3.00 by the institutions.

[8]Received less than a mean rating of 3.00 by the institutions.

d. Good relationships with prospective employers of graduates should be developed long before actual placements are made.

e. Institutions preparing agricultural technicians should locate desirable placement opportunities for graduates.

f. Up-to-date placement records should be kept for use in public relations, recruitment and counseling.

Residence facilities

GUIDELINE: Residence facilities should be made available for students enrolled in agricultural technician training programs when sufficient need is demonstrated based on the opportunity of students to obtain programs of their choice which are not available to them otherwise and when the addition of these facilities serves as a means to enable the institution to more fully meet its objectives.[9]

a. The following factors should be considered when determining whether residence facilities should be provided:

(1) Geographic location of the institution.

(2) The possibility of placing agricultural technician training in an educational institution within commuting distance.[10]

(3) The institution's objectives.

(4) The number of students needing housing.

b. The library should be well-equipped with:

(1) Reference books.

(2) Technical publications developed by manufacturers of agricultural equipment.

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[9]The guideline received a mean rating of less than 3.00 by the jury.

[10]Received less than a mean rating of 3.00 by the institutions.

(3) Technical periodicals in agriculture.

(4) Pertinent agricultural research bulletins (both publicly and privately sponsored research).

(5) Pertinent government publications in agriculture.

(6) References on economics.

Instructional staff

GUIDELINE: The instructional staff in agricultural technician training programs should have technical occupational competence in the area for which training is offered and should understand and be proficient in teaching skills and competence essential to successful performance as an agricultural technician.

a. Potential instructors should have adequate backgrounds of technical training, technical experience and appropriate teacher training.

b. An adequate number and variety of instructors should be provided.

c. Adequate funds should be provided to meet the competition of industry for the talents of qualified personnel on the instructional staff.

d. In-service training should be provided for the instructional staff.

e. The agricultural technician teacher:

(1) Should be able to establish rapport with students.

(2) Should know how to teach technical subjects.

(3) Should be proficient in applicable manual skills and the use of tools.

(4) Needs a thorough knowledge of the principles and laws of science and mathematics.

(5) Should be a perpetual student as well as mentor.

Facilities and equipment

GUIDELINE: Adequate and appropriate facilities and equipment are essential and should be made available in the training of highly competent agricultural technicians.

a. In the planning of all facilities, the objectives of the program should be kept in mind.

b. An adequate number of various types of well-equipped classrooms should be provided.

c. Facilities and equipment should be available for the student to learn to use the precision instruments, the hand and machine tools, materials, processes and operations involved in the technician occupations for which training is given.

d. Equipment lists should be derived from the content of the courses of study which make up the curriculum.

e. Laboratories should be well-equipped for extensive use for testing, research, experiments and so that instruction can be based on the application of a particular science to industrial processes.

Acceptance

GUIDELINE: Planned and continuous efforts should be made to increase the acceptance and prestige of technician occupations (including agricultural technicians) and technician training programs.

a. Close and continuous contact with industry is desirable.

b. Counselors, other educators and parents should be educated to the fact that technician education is not a "second best" education.

c. The institution should develop and maintain good community relations.

d. "Satisfied customers" should be used to increase acceptance of the program.

e. Planned efforts to increase prestige of technician occupations and technician training programs should be made.

f. An associate degree or other appropriate form of recognition should be awarded graduates to increase the status of the program.

Evaluation

GUIDELINE: Continuous and planned programs of evaluation should be characteristic of agricultural technician training programs.

a. Program evaluation should involve students, graduates of the program, employers of graduates, potential employers and others.

b. Adequately planning for continuous and comprehensive evaluation is an integral part of program planning.

c. Evaluation procedures should provide for objective evaluation of both the processes and the products of agricultural technician training programs.

d. Evaluation should be concerned with the future as well as the past and present.

Accreditation and licensing

GUIDELINE: Agricultural technician training programs should become accredited and/or licensed as early as possible by a

recognized accrediting or licensing agency in order to assure the public that some kinds of recognized standards are being met and to protect graduates from pseudo-technician graduates.

a. Copies of the criteria for accreditation and/or licensing should be secured as early as possible and efforts made to meet them.[11]

Location

GUIDELINE: Agricultural technician training programs should be located in institutions in areas of population and agricultural industry and business concentration so as to be readily accessible to those whom they are designed to serve.

a. The program should be located where similar type training is not already offered by other institutions in the area.

b. Location of the program should be made only after a survey of need, interest and resources is made and evaluated.

c. The institution in which the program is located should lend itself to serving a commuting population of a number of full-time students.[12]

d. The program should be located in an area where students might get first hand observation of and/or work experience in the cluster of occupations for which the training is being given.

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[11]Received less than a mean rating of 3.00 by the institutions.

[12]Received less than a mean rating of 3.00 by the institutions.

Conclusions

The following conclusions were drawn by the investigator, based on his interpretation of the data presented in this study.

1. Many four year colleges have set up programs for the training of agricultural technicians in connection with their colleges of agriculture. Most of the agricultural technicians currently being trained are in these types of institutions.

2. Training programs for agricultural technicians are rapidly developing in other types of institutions, however, and will be developed at an increasing rate during the next five years.

3. Training programs for agricultural technicians are being developed primarily in two types of institutions other than those mentioned, in technical institutes and junior colleges. To a lesser extent some types of programs are being developed in comprehensive community colleges and area vocational-technical schools.

4. Most of the training programs for agricultural technicians currently in operation have extremely small enrollments but these enrollments should increase as these programs become better established and more well known.

5. Local boards of trustees or local boards of education are policy making bodies for most institutions in which there are training programs for agricultural technicians.

6. Most training programs for agricultural technicians are two years in duration and lead to the Associate in Applied Science Degree. Some training programs are being set up so that courses taken in these programs might be transferred to other institutions and applied toward degrees.

7. Training programs for agricultural technicians are primarily located in institutions receiving state appropriations to help meet current operating expenses, expenses for equipment purchases and expenses for buildings and other capital outlay.

8. Objectives of programs for training agricultural technicians should lead to curriculums that are primarily occupation-centered, planned toward occupational competence of the graduate and prepare the student for immediate productive employment.

9. The type(s) of program(s) to be offered in a particular institution or location should be determined only after a very careful survey of occupational, educational and interest needs of the people in the area to be served by the sponsoring institution.

10. Recruitment of students is one of the critical factors in the development of training programs for agricultural technicians. A great deal of emphasis should be given to this area and recruitment programs planned. Recruitment for these programs will become easier as the programs become more well established and the status of technical occupations and technical education programs at this level raised.

11. Another critical factor in the successful development of effective training programs for agricultural technicians is the selection of a highly competent instructional staff who can provide training in the highly technical skills as well as broad supporting knowledge and skills. Staff size for some of the programs currently in operation severely limit this being done. Programs developed in connection with and on the campuses of four year colleges of agriculture appear to be ideally situated in terms of having a larger instructional staff from which to draw.

12. Facilities and equipment for training programs for agricultural technicians should give emphasis to the development of cognitive rather than manipulative skills and be designed for extensive use for testing, research and experiments.

13. Location of programs for the training of agricultural technicians should receive major consideration in the development of programs as this affects program objectives, availability of potential students, instructional staff, and other critical factors in the successful development of training programs.

14. The procedures used in the instrument with institutions are procedures that should prove to be of value to administrators planning for training programs for agricultural technicians. The degree of emphasis which should be given to each procedure will vary with the type of institution in which the program is located.

15. The guidelines developed in this study are usable and have been rated as important considerations in the successful development of training programs for agricultural technicians. The supporting statements for each guideline provide suggestions for implementing the guidelines.

APPENDIX A

Questionnaire for Institutions

Please complete
and return by
February 19, 1964

PART I

THE INSTITUTION AND SETTING

The purpose of this section is to determine the types and nature of institutions with one or more curriculums designed specifically to train agricultural technicians. Please complete all items as accurately as possible.

1. Name of the institution _____

2. Mailing address of the institution _____

_____

3. Type of institution (Please check the item below which most accurately describes your institution):

_____ Technical Institute _____ Area Vocational-Technical School

_____ Junior College _____ Comprehensive Community College

_____ Other (Please identify) _____

4. Enrollment of the institution: Full-time students: Men _____ Women _____

Part-time students: Men _____ Women _____

How do you distinguish between full-time and part-time students: ____

_____

Extension students: Men _____ Women _____

5. Administering agency (e.g., Local Board of Education _____; State Board of Education _____; Board of Trustees _____; Other (Please identify) _____

6A. Types of agricultural technician training programs in operation in your institution and information concerning each program:

	Name of Agricultural Technician Training Program	Year program started	Number Students: Enrolled in first class	Who have completed this program	Placed in jobs for which trained	Who began program this fall	Currently enrolled (include advanced students)
Ex. 0.	Agricultural Computations Technology	1959	14	28	20	18	31
1.							
2.							
3.							
4.							

How were prospective students identified? _____

_____

6B. Types of agricultural technician training programs currently in the planning stage:

	Name of Agricultural Technician Training Program	Year in Which Program is Expected to be Initiated
1.		
2.		
3.		
4.		

7A. Source of funds for current operation expenses for the agricultural technician training program(s): (Teachers' salaries, supplies, equipment repairs, etc. Do not include major equipment purchases or other capital outlay.) (Indicate approximate percentage of these funds being received from the following sources.)

a. Local taxes	____%	d. Private industry	____%
b. State appropriations	____%	e. Student tuition and/or fees	____%
c. NDEA funds	____%	f. Other (Please specify):	
		_____	____%
		Total	100 %

B. Source of funds for equipment purchases:

a. Local taxes	____%	d. Private industry	____%
b. State appropriations	____%	e. Student tuition and/or fees	____%
c. NDEA funds	____%	f. Other (Please specify):	
		_____	____%
		Total	100 %

C. Source of funds for buildings and other capital outlay (excluding equipment):

a. Local taxes	____%	d. Private industry	____%
b. State appropriations	____%	e. Student tuition and/or fees	____%
c. NDEA funds	____%	f. Other (Please specify):	____%
		_____	____%
		Total	100 %

8. List institutions in your area which accept credit given by your institution for agricultural technician training program courses and allow this credit to be applied toward a degree.

_____ _____

_____ _____

9. Is an award given upon the successful completion of the agricultural technician training program? Yes _____ No _____. If yes, please indicate type: Associate Degree _____ Diploma _____ Certificate _____ Other (Please specify) _____
Are they eligible for license? Yes _____ No _____.

10. What titles (such as Associate in Arts or Agricultural Implements Technician), if any, are given or assigned to the persons successfully completing the agricultural technician training program? _____

_____ _____

11. a. Is your institution licensed? Yes _____ No _____. If yes, please indicate the licensing agency:

_____

b. Is your institution accredited? Yes _____ No _____. If yes, please indicate the accrediting agency:

_____

c. Are your agricultural technician training programs accredited? Yes _____ No _____. If yes, indicate accrediting agency:

_____

12. Student services: (Please check appropriate column for your institution)

Student Services (Prospective Students)	Available	Not Available but Should Be	Not Needed
a. Brochures and other recruitment materials	_____	_____	_____
b. A planned recruitment program	_____	_____	_____
c. Guidance and counseling services	_____	_____	_____
(Enrolled Students)			
a. Financial assistance programs	_____	_____	_____
b. Faculty advisers for students	_____	_____	_____
c. Dormitory accommodations	_____	_____	_____

	Available	Not Available but Should Be	Not Needed
d. Campus eating facilities	_____	_____	_____
e. Guidance and counseling services	_____	_____	_____
(Graduates)			
a. Placement services	_____	_____	_____
b. In-service programs	_____	_____	_____
c. Guidance and counseling	_____	_____	_____

13. Instructional staff -- specialty instructors for agricultural technician training programs (do not include related courses instructors):

a. Number instructors: Full-time _____ Part-time _____

b. Number full-time instructors with Bachelors' _____ Masters' _____ Doctors' _____ Degrees. Number non-degree full-time instructors _____. Number full-time instructors with job experience in the technician area in which teaching _____.

c. Number part-time instructors with Bachelors' _____ Masters' _____ Doctors' _____ Degrees. Number non-degree part-time instructors _____. Number part-time instructors with job experience in the technician area in which teaching _____.

d. Other people in the administrative structure who devote a per cent or all of their time to agricultural technician training:

Title of Person	Per Cent of Time
_____	_____
_____	_____
_____	_____

PART II

PROCEDURES IN DEVELOPING AGRICULTURAL TECHNICIAN TRAINING PROGRAMS

INSTRUCTIONS: There are two general purposes for Part II of this instrument. One is to identify any procedures not listed but which you feel important to the successful development of agricultural technician

training programs. Please add these in the spaces provided. The second purpose is to determine the amount of emphasis which you believe should be given to each procedure in developing successful agricultural technician training programs.

A scale is provided to record your reaction to each procedure in terms of the amount of emphasis which you believe should be given to the procedure in developing successful agricultural tecnnician training programs.

Following each procedure is a set of numerical values (4-3-2-1-0) labeled (E). These numbers correspond to the alternatives in the scale below. Please circle the value on the scale which most nearly indicates your reaction to each procedure in terms of the question below:

QUESTION: In attempting to develop successful agricultural technician training programs, what degree of emphasis should be given to this procedure?

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

Section I. Objectives of the Program

	PROCEDURE	SCALE
1.	Development of clearly defined and realistic objectives for the training programs under the guidance of a professional educator assigned to give leadership to this area.	(E) 4 3 2 1 0
2.	Development of objectives with which lay personnel in the agricultural businesses and industries are in general accord.	(E) 4 3 2 1 0
3.	Development of objectives which assure that training programs would prepare students for immediate productive employment in the technician occupations for which training is provided.	(E) 4 3 2 1 0
4.	Development of broad objectives which allow training for a cluster of related occupations.	(E) 4 3 2 1 0
5.	Development of objectives to assure that resulting curricula are occupation-centered and planned toward occupational competence of the graduate.	(E) 4 3 2 1 0
6.	Development of objectives in harmony with the legal bases on which the institution is founded.	(E) 4 3 2 1 0
7.	_____	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

Section II. Types of Programs Offered

PROCEDURE	SCALE
1. Careful planning, including the use of an advisory committee with representatives from agricultural businesses and industries, preceded any occupational, educational and interest surveys that are made.	(E) 4 3 2 1 0
a. Deciding on the main purpose to be served by each survey before the instruments for it are developed.	(E) 4 3 2 1 0
b. Deciding on the precise information desired and the development of instruments to assure its being obtained.	(E) 4 3 2 1 0
c. Careful selection of sources of information.	(E) 4 3 2 1 0
d. Careful selection of well-qualified person to direct the survey.	(E) 4 3 2 1 0
e. Obtaining consultant help in field research in developing the survey plan and guide.	(E) 4 3 2 1 0
f. Budgeting sufficient funds and/or time for making the surveys.	(E) 4 3 2 1 0
2. Conducting valid surveys which provide extensive and dependable information and data needed.	
a. Determining the types and number of employment opportunities currently available and those realistically expected over a given period of time.	(E) 4 3 2 1 0
b. Identifying other available sources of information and training for the particular areas under consideration.	(E) 4 3 2 1 0
c. Determining the number of potential students who are presently interested in and who would enroll in the program.	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
d. Determining the number of potential students who could possibly be made interested in enrolling in the program.	(E) 4 3 2 1 0
e. Identifying jobs or occupational clusters dependent upon agricultural technician training programs.	(E) 4 3 2 1 0
f. Determining the amount of support employers would give to the program.	(E) 4 3 2 1 0
g. Gathering other types of information needed to make decisions on the types of programs to be offered.	(E) 4 3 2 1 0
3. Careful analysis of survey findings to determine what agricultural technician training programs should be established.	
a. Securing specialized consultant help in analyzing and interpreting the survey data.	(E) 4 3 2 1 0
b. Involving advisory committees in analyzing and interpreting the data.	(E) 4 3 2 1 0
4. _____	(E) 4 3 2 1 0

Section III. Curriculum Content

1. Analysis of agricultural technician jobs to assure that curriculum content is primarily occupation-centered.	(E) 4 3 2 1 0
2. Provision of a skilled technical education analyst to supervise the analysis of the technician jobs and the allocation of the required knowledge, skills and understanding to preliminary drafts of courses of instruction.	(E) 4 3 2 1 0
3. Securing advice, counsel and support of agricultural and educational leaders and of the agricultural industry for which the training program is being developed in order to plan curriculum content.	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

	PROCEDURE	SCALE
4.	Achieving a balance between technical-supporting content and class-laboratory experiences.	(E) 4 3 2 1 0
5.	Tailoring the depth and scope of mathematics and science to the occupational needs of those enrolled.	(E) 4 3 2 1 0
6.	Determining the difficulty level to be achieved.	(E) 4 3 2 1 0
7.	Coordination of the curricula with the total institution program.	(E) 4 3 2 1 0
8.	Making the curriculum flexible enough to be easily revised as needed in advance of the changing competencies of the technician.	(E) 4 3 2 1 0
9.	Making work experience as a technician helper a part of the curriculum.	(E) 4 3 2 1 0
10.	_____	(E) 4 3 2 1 0

Section IV. Student Services

(a). Recruitment (of Prospective Students)

1.	The development of a well planned recruitment program including activities with the following groups:	
	a. High school students	(E) 4 3 2 1 0
	b. High school counselors, teachers and administrators	(E) 4 3 2 1 0
	c. Parents of high school students	(E) 4 3 2 1 0
	d. Agricultural industries, businesses and associations	(E) 4 3 2 1 0
	e. Other agricultural organizations and agencies	(E) 4 3 2 1 0
	f. The general public	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

	PROCEDURE	SCALE
2.	Assignment of specific responsibility for giving leadership in recruitment activities.	(E) 4 3 2 1 0
3.	Preparation of materials for use by mass media such as newspaper, radio and television.	(E) 4 3 2 1 0
4.	The making of individual personal contact and/or contact and follow-up of all identified interested prospects for enrollment.	(E) 4 3 2 1 0
5.	Giving emphasis to the fitting of talents and interest of prospective students to technician jobs.	(E) 4 3 2 1 0
6.	Clearly showing that the training program is essential to the securing of a job as a technician.	(E) 4 3 2 1 0
7.	_____	(E) 4 3 2 1 0
	(b). Selection (of Students)	
1.	Careful development of student selection policies and procedures to assure admission of only qualified student.	(E) 4 3 2 1 0
2.	Interviewing and appraising prospective students with respect to personal traits, physical handicaps and the like in relation to the job of the technician.	(E) 4 3 2 1 0
3.	Development of an adequate testing program.	(E) 4 3 2 1 0
4.	Selection of only those applicants who have a reasonable chance of success in the training program.	(E) 4 3 2 1 0
5.	Use of self-selection by the student as a significant part of the selection program.	(E) 4 3 2 1 0
6.	_____	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
(c). Counseling	
1. Provision of counseling services:	
a. Prior to enrollment.	(E) 4 3 2 1 0
b. Concerning facilities, schedules and the like.	(E) 4 3 2 1 0
c. By advisors regarding courses, requirements, study techniques, student organizations, and the like.	(E) 4 3 2 1 0
d. Involving personal problems.	(E) 4 3 2 1 0
e. By fully trained workers such as psychologists or vocational counselors.	(E) 4 3 2 1 0
2. Provision of a trained guidance counselor to give leadership to and coordinate guidance activities.	(E) 4 3 2 1 0
3. Provision of the following counseling and guidance services:	
a. Vocational information service.	(E) 4 3 2 1 0
b. Personal data collecting service.	(E) 4 3 2 1 0
c. Counseling service.	(E) 4 3 2 1 0
d. Follow-up and research service.	(E) 4 3 2 1 0
e. Placement service.	(E) 4 3 2 1 0
4. Provision of an adequate testing program for counseling purposes.	(E) 4 3 2 1 0
5. _____	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
(d). Placement and Follow-up (of Graduates)	
1. Development of a well-planned placement service and procedures.	(E) 4 3 2 1 0
2. Assuring that placement service personnel have extensive contacts with agricultural businesses and industries.	(E) 4 3 2 1 0
3. Location of desirable placement opportunities upon completion of the program.	(E) 4 3 2 1 0
4. Development of good relationships with prospective employers of graduates long before actual placements are made.	(E) 4 3 2 1 0
5. Development of employment records for use in analyzing program effectiveness.	(E) 4 3 2 1 0
6. Use of up-to-date placement records in public relations, recruitment and counseling.	(E) 4 3 2 1 0
7. _____	(E) 4 3 2 1 0
(e). Residence Facilities	
1. Consideration of the following factors when determining whether to provide residence facilities:	
a. Possibility of placing agricultural technician training in an educational institution within commuting distance.	(E) 4 3 2 1 0
b. The institution's objectives.	(E) 4 3 2 1 0
c. Extent to which housing is a suitable medium for the achievement of educational objectives.	(E) 4 3 2 1 0
d. Number of students needing housing.	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
e. Available rooming facilities near the campus.	(E) 4 3 2 1 0
f. Financial resources of students.	(E) 4 3 2 1 0
g. Financing plans available.	(E) 4 3 2 1 0
h. Stability of enrollment.	(E) 4 3 2 1 0
i. Geographic location of the institution.	(E) 4 3 2 1 0
j. Availability of adequate transportation.	(E) 4 3 2 1 0
k. _____	(E) 4 3 2 1 0

Section V. Library

1. Making available sufficient funds to supply the library adequately with:	
a. Reference books.	(E) 4 3 2 1 0
b. Technical periodicals in agriculture.	(E) 4 3 2 1 0
c. Technical publications developed by manufacturers of agricultural equipment.	(E) 4 3 2 1 0
d. Pertinent government publications in agriculture.	(E) 4 3 2 1 0
e. Pertinent agricultural research bulletins (both publicly and privately sponsored research).	(E) 4 3 2 1 0
f. References on automation.	(E) 4 3 2 1 0
g. References on economics.	(E) 4 3 2 1 0
h. References on manpower.	(E) 4 3 2 1 0
2. Making the institution library readily accessible for use by students in the agricultural technician training program.	(E) 4 3 2 1 0
3. _____	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
Section VI. Instructional Staff	
1. Securing instructors with adequate backgrounds of technical training, technical experience and appropriate teacher training.	(E) 4 3 2 1 0
2. Securing instructors:	
a. With a thorough knowledge of the principles and laws of science and mathematics.	(E) 4 3 2 1 0
b. Proficient in the applicable manual skills and the use of tools.	(E) 4 3 2 1 0
c. Proficient in the linguistic skills and social sciences.	(E) 4 3 2 1 0
d. Who are perpetual students as well as mentors.	(E) 4 3 2 1 0
e. Who know how to teach technical subjects.	(E) 4 3 2 1 0
f. Who are able to establish rapport with students.	(E) 4 3 2 1 0
3. Providing adequate funds to meet the competition of industry for the talents of qualified personnel on the instructional staff.	(E) 4 3 2 1 0
4. Provision of the number and variety of instructors needed.	(E) 4 3 2 1 0
5. Provision of in-service training to the instructional staff.	(E) 4 3 2 1 0
6. _____	(E) 4 3 2 1 0
Section VII. Facilities and Equipment	
1. Planning the facilities and equipment in keeping with the objectives of the program.	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
2. Provision of facilities and equipment necessary for the students to learn to use the precision instruments, the hand and machine tools, materials, processes and operations involved in the technician occupations for which training is given.	(E) 4 3 2 1 0
3. Provision of well-equipped laboratories for testing, research, experimentation and the application of a particular science to industrial processes.	(E) 4 3 2 1 0
4. Adequately equipping the shops and laboratories from lists derived from the content of the courses of study making up the curriculum.	(E) 4 3 2 1 0
5. Provision of an adequate number and types of well-equipped classrooms.	(E) 4 3 2 1 0
6. _____	(E) 4 3 2 1 0

Section VIII. Acceptance

1. Planning efforts to increase prestige of technician occupations and technician training programs.	(E) 4 3 2 1 0
2. Educating counselors, other educators and parents to the fact that technician education is not "second best" education.	(E) 4 3 2 1 0
3. Developing and maintaining good community relations.	(E) 4 3 2 1 0
4. Developing and maintaining close and continuous contact with industry.	(E) 4 3 2 1 0
5. Using "satisfied customers" to increase acceptance of the program.	(E) 4 3 2 1 0
6. Awarding an associate degree or other appropriate recognition to graduates.	(E) 4 3 2 1 0
7. _____	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
Section IX. Evaluation	
1. Adequately planning for continuous and comprehensive evaluation.	(E) 4 3 2 1 0
2. Developing evaluation procedures which provide for objective evaluation of both the processes and the products of the agricultural technician training programs.	(E) 4 3 2 1 0
3. Involving students, graduates of the program, employers of graduates, potential employers and others in program evaluation.	(E) 4 3 2 1 0
4. Making the evaluation concern the future as well as the past and present.	(E) 4 3 2 1 0
5. _____	(E) 4 3 2 1 0
Section X. Accreditation and/or Licensing	
1. Locating an appropriate accrediting and/or licensing agency for the agricultural technician training programs as soon as the need for such programs are identified.	(E) 4 3 2 1 0
2. Investigating the requirements for accreditation and/or for licensing and attempting to meet these requirements.	(E) 4 3 2 1 0
3. Budgeting funds for accreditation expenses and/or for licensing fees.	(E) 4 3 2 1 0
4. Widely publicizing the accreditation and/or licensing of the local program.	(E) 4 3 2 1 0
5. _____	(E) 4 3 2 1 0
Section XI. Location	
1. Locating the program in an institution situated in an area of population concentration.	(E) 4 3 2 1 0

EMPHASIS SCALE

Very Much	Much	Some	Little	None
4	3	2	1	0

PROCEDURE	SCALE
2. Locating the program in an institution situated so as to serve a commuting population of a number of full-time students.	(E) 4 3 2 1 0
3. Locating the program in an institution where similar type training is not already offered by other institutions in the area.	(E) 4 3 2 1 0
4. Locating the program where students might get first hand observation of and/or work experiences in the cluster of occupations for which the training is being given.	(E) 4 3 2 1 0
5. Locating the program based on results of a survey of need, interest and resources.	(E) 4 3 2 1 0
6. _____	(E) 4 3 2 1 0

APPENDIX B

INSTITUTIONS PARTICIPATING IN THE STUDY

Abraham Baldwin Agricultural College, Tifton, Georgia

Catawba Valley Technical Institute, Newton, North Carolina

Cobleskill Agricultural and Technical Institute, Cobleskill, New York

East Central Junior College, Decatur, Mississippi

Essex Agricultural and Technical Institute, Hathorne, Massachusetts

Hinds Junior College, Raymond, Mississippi

Lake City Junior College and Ranger School, Lake City, Florida

Modesto Junior College, Modesto, California

Mt. San Antonio Junior College, Walnut, California

Murray State Agricultural College, Tishomingo, Oklahoma

Northeastern Junior College, Sterling, Colorado

Northern Montana College, Havre, Montana

Skagit Valley College, Mount Vernon, Washington

Springfield and Clark County Technical Education Program, Springfield, Ohio

State University Agricultural and Technical Institute at Alfred, Alfred, New York

State University Agricultural and Technical Institute at Farmingdale, Farmingdale, L. I., New York

State University Agricultural and Technical Institute, Morrisville, New York

State University of New York Agricultural and Technical Institute, Canton, New York

State University of New York Agricultural and Technical Institute, Delhi, New York

Sussex Vocational-Technical Center, Georgetown, Delaware

Vermont Technical College, Randolph Center, Vermont

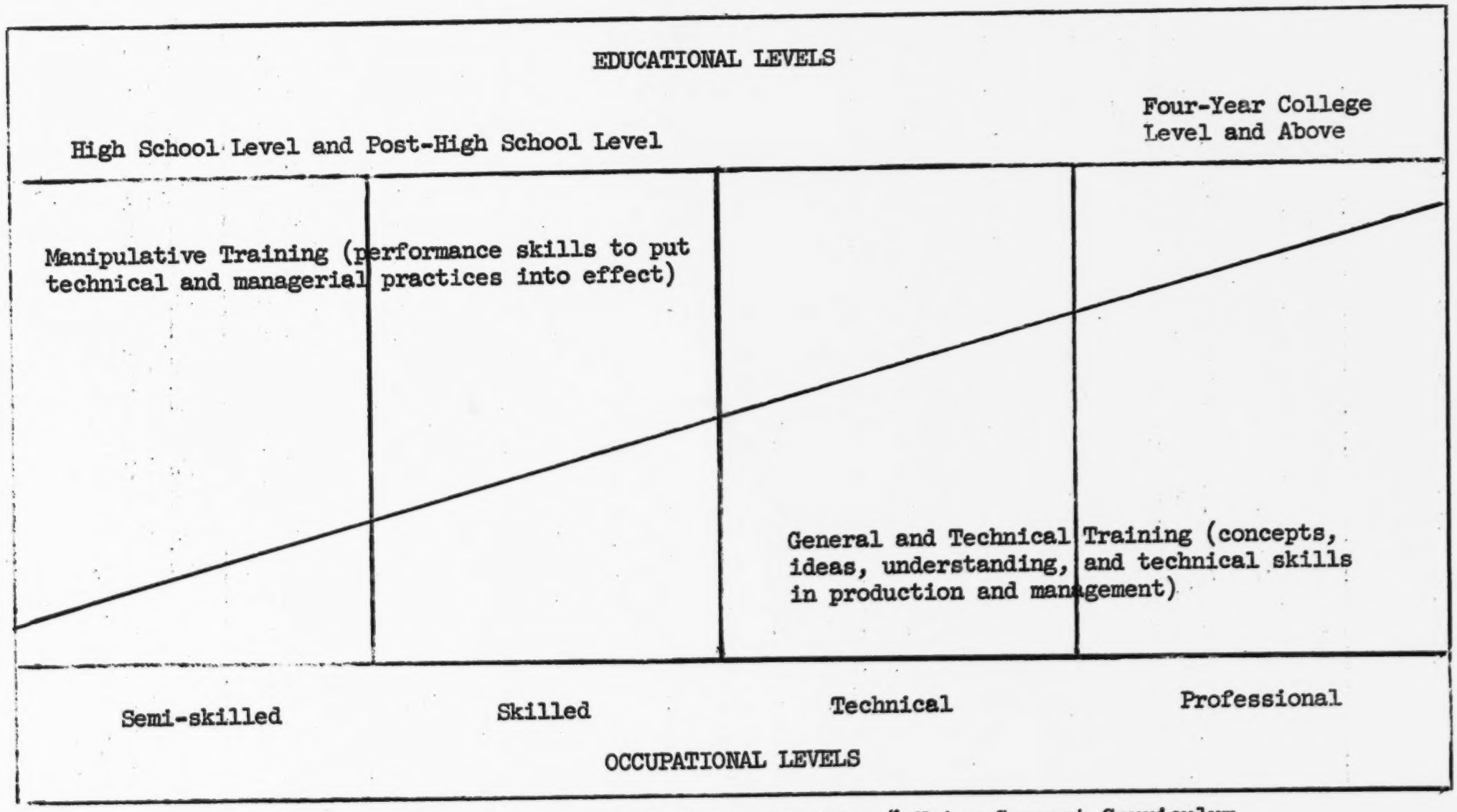
Wausau Technical Institute, Wausau, Wisconsin

Wayne County Technical Institute, Goldsboro, North Carolina

Wilson County Technical Institute, Wilson, North Carolina

Yakima Valley College, Yakima Valley, California

Proportions of Two Types of Training in Educational Programs for Different Occupational Levels



Source: Gerald B. James, "Vocational and Technical Education," Using Current Curriculum Developments (Washington: Association for Supervision and Curriculum Development, National Education Association, 1963), p. 89.

Suggested Criteria for Identifying Technician Occupations

If the majority of the following items are checked in the affirmative, the occupation may be classified as of technician character.

Does the occupation require intensive training in technical subjects involving the direct application of specialized functional aspects of science, mathematics, and advanced technical skills and information based upon: Yes____ No____

____a. Analysis and diagnosis of situations and problems requiring technical understanding.

____b. The ability to use standard technical handbooks and similar materials effectively.

____c. Frequent decisions with respect to technical problems.

____d. Concern with a variety of technical situations often involving many factors and variables.

____e. The use of a variety of instruments.

____f. Interpretation of plans and drawings.

____g. Visualization and creative design.

____h. An understanding of equipment.

____i. An understanding of materials and processes.

____j. Cost analysis in addition to technical understanding and technical skill.

____k. The ability to render technical assistance to engineers, scientists, or other professional personnel engaged in scientific research or production.

____l. The ability to supervise or communicate with others effectively in oral and written form, including the use of graphics, in matters pertaining to technical activities.

Source: Lynn A. Emerson, Technician Training Beyond the High School (Raleigh: Vocational Materials Laboratory, Division of Vocational Education, North Carolina Department of Public Instruction, 1962), p. 16.

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RESEARCH SERIES IN AGRICULTURAL EDUCATION

A Research Report

of a

Graduate Study

INTEGRATING BIOLOGICAL PRINCIPLES WITH INSTRUCTION IN VOCATIONAL AGRICULTURE

By

John T. Starling and Ralph E. Bender

Issued by

The Department of Agricultural Education

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The Ohio State University

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FOREWORD

Agriculture, like the rest of the economy, is undergoing rapid and accelerating changes due to technological and scientific developments and improved methods of organization and management.

It is evident that increased impetus will be given to science in the years ahead and instruction in vocational agriculture should become more science-oriented to keep pace with the scientific and technological developments in agricultural production.

Since many agricultural problems lend themselves to an application of biological principles, this study should provide direction for improving instruction in vocational agriculture and provide a means for a better understanding of biological principles basic to agriculture through an inductive method of teaching.

A forerunner to this study was conducted at the University of California, Davis, with Sidney S. Sutherland, Professor of Agricultural Education, University of California, and W. Earl Sams, Consultant, Bureau of Secondary Education, State Department of Education, serving as co-ordinators of the project.

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INTEGRATING BIOLOGICAL PRINCIPLES WITH

INSTRUCTION IN VOCATIONAL AGRICULTURE

CONCLUSIONS

Based on an interpretation of the data presented in this study, the following conclusions were drawn:

1. When biological principles are integrated into the teaching of vocational agriculture, at the high school level, the students show greater achievement in agriculture and have a greater understanding of biological principles. The students are also more interested in agriculture and in science.
2. The teaching of biological principles integrated with instruction in vocational agriculture is desirable in Ohio high school vocational agriculture classes.
3. The difference in student achievement between first and second year pilot schools was not consistent on all tests.
4. Freshman and sophomore students showed greater achievement than junior and senior students when the biological principles approach was used in teaching vocational agriculture.
5. The number of principles taught was the most significant factor influencing achievement in biology.

6. Teachers believed that, when the biological principles approach was used in teaching high school students of vocational agriculture, their students were able to transfer their understanding of principles in the solving of other agricultural problems.
7. Classroom teaching which involved integrating biological principles with instruction in vocational agriculture required more teacher time but caused teachers to do a more thorough job of planning for their classes.
8. Teachers believed that in-service education programs should place more emphasis on the development of related teaching aids and demonstrations in order to improve the teaching of biological principles.

Need for the study

Teachers of vocational agriculture have become concerned about the explosion of knowledge and the rapid technological developments, and they realize the need to search for ways to adjust their programs to keep pace with the changing times. This need is also emphasized by the following statement:

> Little change has been made in vocational agriculture education since its inception. The content of the courses in vocational agriculture as well as its place in the curriculum need re-examination. Educational leaders need to determine the proper emphasis to be given in courses in order to broadly educate young people who, to the limit of their respective abilities, can adjust to changing times.[1]

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[1]Mervin G. Smith, Carlton F. Christian, Adjustments in Agriculture-A National Basebook (Iowa State University Press, Ames, Iowa, 1963), p. 366.

If we lean heavily toward applied training, the student may be better prepared for his first job. On the other hand, applied training, may become out of date by the time the student has been on the job for a short while. In the long run, a basic understanding of principles may serve him better than simply knowledge of how to do things.

The "principle approach" lends itself to instruction which is directed toward the development of understanding and the ability to make appropriate application to a wide range of agricultural problems. It has long been accepted that principles should be taught with application and that the most effective teaching results when principles and application are presented in the closest association with each other.

John M. Mason said,

> The aim of education should be to convert the mind into a living fountain and not a reservoir. That which is filled by merely pumping in will be emptied by pumping out.[2]

Recent studies have shown that there will be a decreasing number of opportunities for vocational agriculture graduates to enter farming in the future--thus, making it necessary for them to find employment in jobs related to agriculture.

With the rapid changes in technology, it is anticipated that the educational competencies for these jobs will change many times in the next few years. This is substantiated by the following quotation:

> Since jobs will change materially during the working lives of many in the future, a reassessment of our vocational education should be made by the

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[2] Ibid., p. 359.

> states and the federal government. With the changing careers we contemplate, rigid vocational training seems to be of doubtful value.[3]

As better means of transportation are developed and we move toward more unified international educational programs, it is reasonable to assume that more people will find employment in foreign countries. The skills and abilities needed for these jobs would most likely be much different than those needed for the jobs in the community in which the individual was trained.

Technological developments are needed and taking place in other countries as is indicated by the following quotation taken from Phi Delta Kappan Magazine:

> Agriculture has been traditionally regarded as the occupation of the shoeless, a concept with roots in the early colonization period. A few landlords were masters of land and life over a great portion of the population. The "peon-patron" relation which evolved still prevails in most countries. It is a cultural heredity likely to survive for many years.
>
> Inevitably, this condition affects concepts of agricultural education. For years, it was believed that no training is needed by those who till the soil and take care of animals. Such tasks had been performed throughout the ages by the less educated or non-educated. Fortunately, this concept is changing, even though slowly. The main impetus for this change comes from technological advances.[4]

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[3]Goals for Americans, The Report of the President's Commission on National Goals (Prentice Hall, Inc., 1960), p. 202.

[4]Fernando Del Rio, "Agricultural Education in Latin America and Its Promise for the Future," Phi Delta Kappan Magazine, Volume XLV, Number 4, January 1964, p. 202.

The need to keep pace with technological developments is not confined only to agricultural education but to all phases of education. In addition to the many technological developments, socio-economic changes have caused educators to focus attention on broadening all educational programs. Studies have shown that one out of every five persons move each year and consequently a person educated in New York may find employment in California, or vice versa. The constant increase in automation eliminates some jobs while creating others and the competencies needed for these jobs are continually changing.

In a national seminar held at The Ohio State University, Benjamin C. Willis, Superintendent of Schools in Chicago, said:

> We must not only broaden our educational spectrum and expand it, but also build more flexibility into it and make our judgments of its effectiveness more individualized and varied. Broad principles must form the foundation for any educational program. It is futile to prepare individuals for specific kinds of work which may or may not exist tomorrow without providing them with the general skills that will permit them to modify specific capabilities as the need arises.[5]

With the complexity of our American society, we are challenged to search for new and better methods of teaching. Much research is being conducted in the field of education as is emphasized by the following statement:

> One need but glance at a recent volume of the "Encyclopedia of Educational Research" to become impressed with the great body of knowledge about education and the educative process that is accumulating year by year.[6]

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[5]Benjamin C. Willis, A Design for the Future, Report of a National Seminar on Agricultural Education, The Ohio State University, 1963, p. 75.

[6]Roald F. Campbell, John E. Corbally, John A. Ramseyer, Introduction to Educational Administration (Allyn and Bacon, Inc., Boston, 1962), p. 50.

The writer is of the opinion that teachers of vocational agriculture have an excellent opportunity to teach scientific principles and help students see the practical application of these principles, thus making science courses more meaningful to students. With the increased emphasis placed on science some educators have expressed the opinion that the emphasis has been placed on science as a course without giving students an opportunity to see its relationship to other fields of knowledge. This thought is expressed in the following statement:

> We have so exalted the power of science that we sometimes forget its relation to other fields of knowledge.[7]

Since we have this opportunity in vocational agriculture we need to conduct research to determine the feasibility of this approach and to determine the best methods to use.

Purpose of the study

The purpose of this study was to determine the feasibility of integrating biological principles with instruction in vocational agriculture at the high school level in Ohio.

Specific objectives

The major purpose of the study was--

1. To determine the significant difference between the pilot and control schools relative to changes in achievement in agriculture, biology, and interest in agriculture and science.

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[7]Edgar Dale, Audio-Visual Methods in Teaching (The Dryden Press, New York, 1954), p. 142.

2. To determine the significant difference between pilot schools that are first year participants and those that are second year participants relative to changes in achievement in agriculture, biology, and interest in agriculture and science.

3. To determine the correlation between the dependent variables change in achievement in agriculture and biology and the following independent variables:

a. Year in the project.

b. Number of principles taught.

c. Age of the student.

d. Status in biology.

e. California Mental Maturity score.

f. Agricultural interest score.

g. Science interest score.

4. To determine which independent variables are most important in influencing the dependent variables.

5. To determine the desirability of integrating the biological principles with instruction in vocational agriculture in Ohio.

6. To determine the changes needed to make the biological principles approach more effective.

PROCEDURES EMPLOYED IN THE STUDY

In order to accomplish the objective evaluation in this study, the design involved pilot and control schools. Both groups were given a pre-test and a post-test. This study was patterned after a similar study conducted in California. However, this study went beyond the California study in that an Agricultural Achievement test and an Interest Inventory test were given in addition to the California Mental Maturity test and a Biological Principles test used in the California study. This study also made use of a more comprehensive statistical analysis.

The subjective evaluation was accomplished through the use of a questionnaire to secure opinions from the teachers of vocational agriculture in the pilot schools.

The major steps in the procedure employed in this study included (1) selecting the pilot and control schools, (2) developing and selecting evaluative tests, (3) administering evaluative tests, (4) developing and administering the questionnaire, and (5) summary and analysis of data.

Selecting the pilot and control schools

In selecting the pilot schools, assistant state supervisors of vocational agriculture were asked to recommend schools that, in their opinion, would give the biological principles approach a fair trial. The supervisors considered such factors as: geographic location, size of school, administrator attitude and teacher

competency. From the list of eighteen schools recommended by the supervisors, fifteen agreed to serve as pilot centers in which the teachers would integrate the biological principles into their course of study for high school students of vocational agriculture.

In order to have a benchmark to use in evaluating the biological principles approach, control schools were selected to serve as a means of comparison. The vocational agriculture staff decided that the control schools should be selected from the cooperating schools or schools used for the purpose of training teachers of vocational agriculture. Eight schools were selected for the control group in which a traditional program would be conducted. They were asked to participate only in the testing phase of the program with no attempt to integrate the principles into their course of study.

Developing and selecting evaluative tests

In developing the agricultural achievement test, a list of one hundred and fifty multiple choice questions, based on the major areas of emphasis in the Ohio vocational agriculture program, was developed. This list of questions was rated by the vocational agriculture staff and one hundred questions were selected to make up the agricultural achievement test used in this study.

The biological principles test previously used in the California study was used as the instrument to evaluate understanding of biological principles. This test consisted of seventy-five multiple choice questions.

In the selection of the I.Q. and Interest Inventory tests to be used, the Division of Guidance and Testing, Ohio State Department of

Education was consulted. As a result of their recommendation, the California Short-Form Test of Mental Maturity and Educational Interest Inventory by James E. Oliver were the tests selected.

The pre-tests which included the agricultural achievement, biological achievement, California Mental Maturity, and Interest Inventory were administered the first week in October, 1963.

The post-tests were administered the first week in May, 1964. The California Mental Maturity was not included in the post-tests because the I.Q. scores were obtained from the pre-test.

Developing and administering the questionnaire

The questionnaire used to secure the subjective evaluation was developed by the writer of this study. A list of questions to secure teachers' opinions relative to their experience with the biological principles approach and implications for future programs was developed and submitted to the writer's graduate committee. Their suggestions were incorporated into the development of the questionnaire into its final form. The questionnaire was administered to the teachers in the pilot schools at a meeting with these teachers the second week of May, 1964.

STATISTICAL ANALYSIS OF TEST RESULTS

Selection and use of statistical models

In order to select appropriate statistical models for this study, the writer consulted Professor D. Ransom Whitney, Director of the Statistical Laboratory, Department of Mathematics, The Ohio State University.

Since one of the major objectives of this study was to determine the significance of the difference in change in achievement between the pilot and control schools, the "t" test of significance was selected, as being the most appropriate. Support for this test is given in the following statement:

> The most widely used acceptable test is to compute for each group pre-test - post-test gain scores and to compute a "t" between experimental and control groups on these gain scores.[8]

The "t" test was employed to determine the significance of the difference in changes in scores between the pilot and control schools on the following tests:

1. Agricultural Achievement
2. Biology Achievement
3. Agricultural Interest
4. Science Interest

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[8]Donald T. Campbell, Julian C. Stanley, Handbook of Research on Teaching, American Educational Research Association (Chicago, Rand McNally and Company, 1963), p. 217.

The following is a model for this statistic:

$$\frac{\bar{X} - \bar{Y}}{\sqrt{\frac{s_X^2}{n} + \frac{s_Y^2}{m}}}$$

Using Agricultural Achievement as an example, $\bar{X}$ is the mean of the differences, post-test minus pre-test for the control schools, and $\bar{Y}$ is similarly the mean of the same differences for the pilot schools. s_X^2 and s_Y^2 are estimates of the variance of these differences for control and pilot groups. When using the student "t", the researcher tests the hypothesis that an increase on the Agricultural Achievement test for the control group is statistically equal to that of the pilot group. A larger value of "t" rejects this hypothesis at either the 5% or 1% level of significance, and if the hypothesis is rejected, the alternative to be accepted is that the group with the largest mean difference made the most improvement from pre-test to post-test.

The "t" test was also employed to determine the significance of the difference in achievement between ninth and tenth grade students in pilot schools participating in the project the first year and ninth and tenth grade students in pilot schools that were second-year participants.

Another objective of this study was to determine the relationship between the dependent variables, achievement in agriculture and biology and the following list of independent variables:

Mental maturity score

Number of principles taught

Grade level of the student

Age of the student

Agriculture interest score

Science interest score

The statistic employed for this analysis was the correlation coefficient "r". "The correlation coefficient (r), commonly referred to as the product-moment correlation, provides a quantitive measure of relationship between two variables X and Y."[9]

"This statistical model not only provides a measure of strength but also the direction of association, expressed either as positive or negative."[10]

In calculating the correlation between the independent variables and the dependent variables, change in achievement in agriculture and biology, each independent variable was considered separately with the other independent variable held constant.

After determining the correlation between the dependent and independent variables through an analysis of the results of this study, it was still believed that some of the independent variables were more important than others in determining the dependent variables, change in achievement in agriculture, and change in achievement in biology.

The following independent variables were considered:

1. Year in the project.

2. Number of principles taught.

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[9]Henry E. Garrett, Elementary Statistics (New York: David McKay Company, Inc., 1962), p. 92.

[10]Sanford M. Dornbusch and Calvin F. Schmid, A Primer of Social Statistics (New York: McGraw-Hill Company, Inc., 1955), p. 195.

3. Age of the student.

4. Year in high school.

5. Status in biology

   (a) had biology in a previous year

   (b) taking biology concurrently

   (c) has not had biology

6. California Mental Maturity Score (pre-test).

7. Agricultural Interest Score (pre-test).

8. Science Interest Score (pre-test).

In order to determine the most important variables, the analysis of covariance "F" test was applied to the data. The following is a model of this statistic:

$$Y = b_0 + b_1 X_1 + b_2 x_2 + b_3 X_3 + b_4 X_4 + \begin{array}{l} a1 \text{ Biology Previously} \\ a2 \text{ Biology Concurrently} \\ a3 \text{ No Biology} \end{array}$$

$$+ b_6 X_6 + b_7 X_7 + b_8 X_8$$

In one problem Y is change in achievement in agriculture, and in the other, change in achievement in biology and $X_1 - X_8$ corresponds to independent variables 1 to 8. The a_1, a_2, a_3 are effects due to status in biology and the b's are regression coefficients which are estimated.

The measure of central tendency selected was the mean because "The arithmetic mean is the most widely used measure of central value."[11]

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[11] Ibid., p. 62.

MAJOR FINDINGS

Table 1 shows that the students in the pilot schools showed greater achievement between the pre- and post-test than the students in the control schools. The greatest difference was in biology achievement where the students in the pilot schools showed a net gain of 5.23 whereas the students in the control schools showed a net gain of only 1.44.

Table 1 shows a decrease in agriculture interest for students in both the pilot and control schools; however, the students in the pilot schools showed less decrease than those in the control schools.

It is quite significant to note that the students in both the pilot and control groups had almost the same mental maturity score with a mean score of 98.68 for students in the pilot schools and 98.87 for students in the control schools. The two groups were so near the same that one could say there was no difference so far as mental ability was concerned.

Table 1.--Mean scores on pre- and post-agriculture, biology, agriculture interest, science interest and California Mental Maturity tests for pilot and control schools

Test	Pilot			Control		
	Pre	Post	Net Gain or Loss	Pre	Post	Net Gain or Loss
Agriculture Achievement	43.47	47.36	3.89	47.60	49.76	2.16
Biology Achievement	25.76	30.97	5.23	28.59	30.03	1.44
Agriculture Interest	13.02	12.92	-.10	13.33	12.69	-.64
Science Interest	10.88	11.08	.20	11.12	10.87	-.25
California Mental Maturity	98.68			98.87		

Significance of difference in change in student achievement between the pilot and control schools

Even though the foregoing table shows a greater increase in change in achievement for the pilot schools over the control schools, it might appear that this increase was not significant. When the "t" test was applied to the data the increase for the pilot over the control schools on all tests was significant at either the .01 or .05 level of confidence.

Table 2 shows the mean difference in agriculture achievement between the pre- and post-test for the pilot schools to be 3.891 while the mean difference for the control schools was 2.162. This was significant at the .05 level of confidence as is shown by the "t" value of 2.455.

The mean difference in achievement in biology between the pre- and post-test for the pilot schools was 5.211, while this difference was only 1.443 for the control schools. This was quite significant as can be seen by referring to Table 2. This table shows a "t" value of 6.630 which is significant at the .01 level. The writer was of the opinion that this analysis was highly important because it showed that the students who were taught the biological principles showed greater achievement in biology than those who were not taught the principles.

As it is shown in Table 2, there was a decrease in interest in agriculture between the pre- and post-test in both the pilot and control schools; however, the decrease was less for the pilot schools than for the control schools. There was a significant difference between the pilot and control schools. This difference was significant at the .05 level in favor of the pilot schools based on a "t" value of 2.416.

Table 2 also shows there was an increase of .200 in science interest between the pre- and post-test in the pilot schools while the control schools showed a decrease of .245. This difference in science interest was significant at the .01 level of confidence.

The implication can be made that students of vocational agriculture who have biological principles integrated into their course of study show greater achievement in agriculture and biology and are more interested in agriculture and science.

Table 2.--Mean difference between pre- and post-test achievement in agriculture, biology, agriculture interest, and science interest for pilot and control schools

Test	Pilot n = 422 Mean Difference	Control n = 235 Mean Difference	t Value
Agriculture Achievement	3.891	2.162	2.455[b]
Biology Achievement	5.211	1.443	6.630[a]
Agriculture Interest	-.102	-.643	2.416[b]
Science Interest	.200	-.245	3.403[a]

a = Significant at .01 level
b = Significant at .05 level

Significance of difference in change in student achievement in agriculture, biology, and agriculture and science interest between ninth grade students in first-year pilot schools and second-year pilot schools

Seven of the fifteen pilot schools used in this study were participating in this project the second year. Some might conclude that a year of previous experience might cause them to do better than the first-year schools. Others might conclude that the first-year schools would do better because of the "Hawthorne Effect."

Table 3 shows that there was a significant difference at the .05 level of confidence in difference in change in achievement in agriculture between ninth grade students in pilot schools participating in the project the first year, and ninth grade students in pilot schools participating in the project the second year. The mean difference for the students in the second-year pilot schools was 6.208 while the mean difference for the students in the first-year pilot schools was only 3.066.

There was also a significant difference at the .05 level of confidence in difference in science interest between ninth grade students in first-year pilot schools and ninth grade students in second-year pilot schools. The mean difference between the pre- and post-test for the first-year students was .039 while the mean difference for the second-year students was .794.

There was no significant difference between the first and second-year schools in difference in change in achievement in biology and agriculture interest.

Table 3.--Mean difference between pre- and post-test achievement in agriculture, biology, agriculture interest, and science interest for ninth grade students in first-year pilot schools and second-year pilot schools

Test	1st year n = 61 Mean Difference	2nd year n = 101 Mean Difference	t Value
Agriculture Achievement	3.066	6.208	2.059[b]
Biology Achievement	5.132	5.089	.033
Agriculture Interest	-.016	.455	.936
Science Interest	.039	.794	2.590[b]

b = .05 level of significance

Significance of difference in change in achievement in agriculture, biology, and agriculture and science interest between tenth grade students in first-year pilot schools and second-year pilot schools

There were seventy tenth grade students in the first-year pilot schools and one hundred and seven tenth grade students in the second-year pilot schools. Even though seven of the fifteen pilot schools were participating in this project, the second year, all students were first-year participants so the only difference would be in the experience of the teacher. The mean difference for both groups and the "t" values is presented in Table 4.

Table 4 shows a significant difference at the .05 level in mean difference in change in achievement in biology between tenth grade students in first-year pilot schools and tenth grade pilot schools.

This difference was in favor of the first-year schools. The mean differences in agriculture interest was -1.128 for the tenth grade students in the first-year pilot schools and -.141 for tenth grade students in the second-year pilot schools. This was a significant difference at the .05 confidence level in favor of the second-year pilot schools.

The most significant was the difference in interest in biology between the first- and second-year pilot schools. The tenth grade students in the first-year pilot schools showed a decrease of -.364 interest in science while the students in the second-year pilot schools showed an increase of .238. The calculated "t" value for this difference was 2.988, making a significant difference at the .01 level of confidence.

A comparison of Tables 3 and 4 shows that the only test on which there was consistency between first- and second-year students was science interest. Due to this inconsistency, the writer was of the opinion that it would be difficult to say that there was a significant advantage to the year of experience.

Table 4.--Mean difference between pre- and post-test achievement in agriculture, biology, agriculture interest, and science interest for tenth grade students in first-year pilot schools and second-year pilot schools

Test	1st year n = 70 Mean Difference	2nd year n = 107 Mean Difference	t Value
Agriculture Achievement	4.486	3.365	-.837
Biology Achievement	8.714	5.860	-2.219[b]
Agriculture Interest	-1.128	-.141	2.414[b]
Science Interest	-.364	.238	2.988[a]

a = Significant at .01 level
b = Significant at .05 level

<u>Correlation between independent variables and change in achievement in agriculture and biology</u>

In discussing the design for this study, the question as to what would be the relationship between certain independent variables and change in achievement in agriculture and biology was often presented. The independent variables frequently suggested were:

Mental Maturity Score

Number of Principles Taught

Student Age

Grade Level of Students

Biology Status

Agriculture Interest

Science Interest

After the data were analyzed by the correlation coefficient (r), it was still difficult to determine which correlations were

significant. In order to determine the significance of the various correlations, reference was made to Snedecer, Statistical Models, and the following formula was applied:[12]

$$t = r\sqrt{\frac{n - 2}{1 - r^2}}$$

Using this formula, it was determined that an "r" value equal to or greater than .0955 was significant at the .05 confidence level and an "r" value equal to or greater than .1253 was significant at the .01 confidence level.

Table 5 shows the correlation between student age and change in achievement in agriculture to be significant at the .05 level of confidence. The older students showed slightly greater achievement in agriculture between the pre- and post-tests than younger students.

The opposite was the case between student age and change in achievement in biology in that the older students showed less change in achievement in biology between the pre- and post-test than the younger students. This negative correlation was significant at the .01 level of confidence.

There was also negative correlation which was significant at the .01 confidence level between grade level and change in achievement in biology. The students in the upper high school grades showed less change in achievement in biology between pre- and post-test than students in the lower high school grades.

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[12]George W. Snedecer, Statistical Methods (Ames, Iowa: Iowa College Press, 1948), p. 149.

There was no significant correlation between the other independent variables and change in achievement in agriculture or biology.

Based on the results of this study, it appears that younger students achieve more than older students. Perhaps it could be implied that younger students try harder or that the biological principles approach is more adapted for younger students.

Table 5.--Correlation between independent variables and change in achievement in agriculture and biology

Independent Variable	Change in Achievement in Agriculture r value	Change in Achievement in Biology r value
Mental Maturity Score	-.0277	.0565
Number of Principles Taught (Pilot schools only)	.0497	.0347
Grade Level of Students	-.0269	-.1538[a]
Age of Student	.1100[b]	-.2289[a]
Agriculture Interest Score (Pre-test)	.0497	.0613
Science Interest Score (Pre-test)	.0109	.0791

a = Significant at .01 level
b = Significant at .05 level

Significance of the independent variables in predicting the dependent variables change in achievement in agriculture and biology

Since there was little correlation between the independent and dependent variables it seemed advisable to further analyze the data to determine which independent variables were the best predictors of the dependent variables change in achievement in agriculture and biology. The "F" test was the statistic employed for this purpose.

After the "F" test was used to analyze the data, it was apparent that there was no significance between any of the independent variables and change in achievement in agriculture so these results are not presented in the following table. The results relative to achievement in biology are presented in Table 6.

Table 6 shows that the two variables most significant in predicting change in achievement in biology were the number of principles taught and biology status. These factors were significant at the .01 confidence level. It should also be noted that students who were taking biology concurrently achieved the best while the students having had biology previously achieved the least and the students who had not had biology were in between. The age of students was significant at the .01 level; however, this was of negative value as can be seen by the "F" value of -15.547 in Table 6.

Based on the analysis presented in this table, if a study similar to this was conducted the two most reliable factors in predicting achievement in biology would be the number of principles taught and status in biology.

Table 6.--Significance of independent variables in determining the dependent variable, change in achievement in biology

Variable	Achievement in Biology: Regression Coefficient	Achievement in Biology: F Value
Year in project	.032	.0019
Number of principles taught	.265	7.78[a]
Student age	.864	-15.547[a]
Year in high school	.616	2.47
Biology status	-2.363[b] 2.040[c] .323[d]	9.831[a]
California Mental Maturity	.013	.542
Agriculture Interest	.029	.0756
Science Interest	.247	2.396

a = Significant at .01 level
b = Student had biology a previous year
c = Student taking biology concurrently
d = Student has not had biology

The writer is of the opinion that the best predictor is the number of principles taught. This is particularly true since it would be difficult to have all students taking biology concurrently with the biological principles approach in vocational agriculture. The writer would recommend that, if a similar study was conducted, a greater effort should be made to teach more of the principles.

TEACHER'S EVALUATION OF THE BIOLOGICAL PRINCIPLES APPROACH

The teacher's evaluation of the biological principles approach was secured through the use of a three-page evaluation instrument. A meeting of all the teachers in the pilot schools was held the second week in May, 1964, at which time the teachers reacted to all items on the evaluation instrument. In the cases of multiple teacher departments, the two teachers conferred with each other in answering questions and only one evaluation per school was obtained. The experience of the teachers in the fifteen pilot schools placed them in an excellent position to express their opinion on the questions on the evaluation instrument. This subjective analysis provides a valuable addition to the objective analysis included in the previous chapter of this study.

Summary of principles taught

At the outset of this study, the writer was hopeful that an average of ten of the twenty-two biological principles per school would be taught. Actually, the average number of principles taught per school was 7.1.

Table 7.--Number of schools teaching each principle and number of schools teaching each principle inductively

Principle	Number of Schools Teaching This Principle	Number of Schools Teaching This Principle Inductively
Reproduction	15	15
Photosynthesis	14	12
Plant nutrition	14	14
Animal nutrition	13	13
Germination of seeds	12	11
Transpiration	9	8
Genetics	8	8
Growth	8	7
Diffusion	7	6
Matter and energy	7	4
Respiration	7	7
Living matter	6	5
Regulators of plant growth	6	5
Movement of substances in living organisms	5	4
Ecology	4	4
Non-living matter	4	3
Pathology	4	2
Classification	3	2
Organic cycles	3	2
Nervous system	3	3
Endoctrine system	2	2
Irritability	1	0

Table 7 is a summary of the number of schools teaching each of the twenty-two principles and the number of schools teaching each of the principles inductively, or incorporating them into the solving of an agricultural problem. "Reproduction" was taught by all fifteen of the pilot schools while "Irritability" was taught by only one school. A comparison of Columns 2 and 3 in Table 7 shows there was close correlation between the schools teaching a principle and the schools teaching a principle inductively.

The principles of reproduction, photosynthesis, plant nutrition, animal nutrition, germination of seeds, transpiration, genetics, and growth were taught by more than 50 per cent of the schools. Table 7 also shows that the principles of diffusion, matter and energy, respiration, living matter, regulators of plant growth, and movement of substances in living organisms were taught by more than 30 per cent of the schools. The remaining eight principles were taught by less than 30 per cent of the schools.

Reasons for not teaching other principles

In answer to this question, all fifteen teachers gave "a lack of time to prepare" as their reason for not teaching some of the principles. Nine of the fifteen teachers said, "the principles didn't fit into my course of study" or "they didn't apply to the subject areas I was teaching." One teacher stated, "My students were too slow to comprehend some of the principles," and one teacher stated, "I could teach all of the principles if they were spread out over a four-year period."

The writer would doubt the validity of the reason, "My students were too slow to comprehend some of the principles," because in the statistical analysis of this study it was shown that there was no correlation between student I.Q. and change in achievement in agriculture and biology.

Extent to which students were able to transfer their understanding of the principles to the study of other agricultural problems

A four-point rating scale was used to secure teachers' opinions as to the extent of transfer of understanding. The teachers checked "very well," "some," "very little," or "none."

Twelve of the fifteen teachers checked "some" as to the extent to which students were able to transfer their understanding of the principles in the study of other agricultural problems while the other three checked "very well."

The teachers gave some specific examples of transfer of understanding of the principles which were as follows:

1. "When students understood the principles of reproduction relative to one species of farm animals, they were able to transfer this understanding to other species."
2. "Students were able to see the reason for careful selection of livestock when they understood the principle of genetics."
3. "Students were able to associate the principle of photosynthesis with the rate of planting corn."
4. "In studying plant nutrition, students could see that the principle of nutrition was dependent on other principles such as: photosynthesis, transpiration and diffusion."
5. "When we were discussing chemical weed control, the students associated regulators of plant growth as interferring with the growth process."
6. "In studying animal nutrition, students had a better understanding of the interdependence of plants and animals since we had previously studied photosynthesis and plant nutrition."
7. "Students could associate the principle of ecology with environment control in swine."

8. "The placement of fertilizer on corn made sense to students when they understood the principles of diffusion and plant nutrition."

In meetings with the teachers, emphasis was given to having the students state a principle after a problem was taught which included the application of a principle. Emphasis was also given to providing an opportunity for students to apply principles previously learned in solving other agricultural problems.

Ways in which the biological principles approach added to the effectiveness of teaching

The teachers were in general agreement that the biological principles approach added greatly to the effectiveness of their teaching. Six of the teachers reported, "It caused me to study and do a more thorough job of preparing for my classes." Five teachers reported, "This approach makes the vocational agriculture program more applicable to non-farm students" or "It provides students with a better background for non-farm agricultural jobs." Four teachers reported, "It has stimulated more thinking and interest among students" and two teachers stated, "This approach has increased my interest in teaching." Two teachers stated, "This approach helps to gain respect for vocational agriculture" and one teacher reported, "It coordinates agriculture with science courses and makes the total school program more meaningful to students."

All teachers expressed the opinion that the biological principles approach should be extended to more schools in order to upgrade the teaching in vocational agriculture.

It is the opinion of the writer that all good teachers spend more time in preparing to teach a class than in actually teaching the class. If the biological principles approach caused teachers to do a more thorough job of planning, it was worthwhile.

Teachers' opinions as to the major advantages and disadvantages of the biological principles approach

Advantages -

1. Principles don't become obsolete like production practices.
2. The principles approach emphasizes why rather than so much how.
3. This approach makes agriculture more scientific which appeals to better students.
4. This scientific approach is more effective in preparing students for college.
5. Better understanding is developed when principles are emphasized in the teaching.
6. The vocational agriculture program was more challenging and the students were more interested.
7. This approach removes the idea that agriculture isn't scientific.
8. It causes the teacher to do a better job of preparation.

Disadvantages -

1. The slower students tend to get lost with this scientific approach.

2. A lot more time is required for preparation.

3. Many of the references required are not written on high school level.

4. In order to develop understanding of a principle, more time was required which made it necessary to eliminate some units from the course of study.

It is the opinion of the writer that S. S. Sutherland gives an excellent summary of the advantages and disadvantages of the inductive method of teaching biological principles in the following statements taken from Agricultural Education Magazine:

> Teaching inductively has much to recommend it. True, it takes more time to cover a given subject; more teacher preparation is involved to set up the necessary problems, demonstrations, field trips, etc., but there are compensations which offset these disadvantages.
>
> 1. Discovery is an inherently interesting process and the inductive approach is the discovery approach.
>
> 2. Teachers using it may tend to cover fewer subjects and to teach them more thoroughly.
>
> 3. Centering teaching around broad principles which have wide application should result in students emerging with greater understanding of the practices which are based upon these generalizations.
>
> 4. Since the inductive process students are taught to think; given practice in thinking, especially if deduction is added to induction, and if students are required to apply what they have discovered.
>
> 5. Science teachers are being taught to use this improved teaching procedure. We can hardly afford to drop behind the parage.[13]

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[13] S. S. Sutherland, More Inductive Teaching Needed, Agricultural Education Magazine, Vol. 37, No. 3, September, 1964, p. 71.

APPENDIXES

Appendix A - Agricultural Achievement Test

Appendix B - Biological Science Agriculture Test

APPENDIX A

Department of Agricultural Education
The Ohio State University
and
Vocational Agriculture Service
State Department of Education

AGRICULTURAL ACHIEVEMENT TEST

Name_____ Year in Vo-Ag____

Name of School_____ Year in H. S.____

INSTRUCTIONS

Each test item includes a statement followed by several alternative answers labeled A, B, C, D. Select the answer which best completes the statement. Place the identifying letter in the blank in front of the item number.

Example: In the following question, alternative B is the best answer. Therefore, B is written in the blank in front of the number.

__B__ 1. Small and irregular shaped fields are:

A. More efficient because work in each field can be finished in a shorter period of time
B. Inefficient because maneuvering of machinery is difficult and time is lost in turning
C. More efficient because a more adequate system of roads and lanes can be used to connect the different fields
D. Inefficient because it makes it harder to set up a crop rotation program

* * * * * * * * * *

____ 1. All of the following are major divisions of the FFA chapter program of work except:

A. Earning and saving
B. State and national activities
C. Safety
D. Public relations

____ 2. All of the following are degrees in the FFA except:

A. American Farmer
B. Chapter Farmer
C. Greenhand
D. Star Farmer

____ 3. Each state association may elect a certain per cent of its membership to the State Farmer Degree each year. The maximum per cent is:

A. 10%
B. 25%
C. 2%
D. 15%

____ 4. The third line of the FFA motto is:

A. Living to serve
B. Learning to do
C. None of these
D. Doing to learn

____ 5. The Ohio FFA Foundation, Inc., is:

A. An independent organization of businessmen
B. A means whereby interested organizations and individuals may financially assist the FFA
C. A new group to be established next year
D. Solely concerned with providing awards to FFA members

____ 6. All are good FFA chapter officer election procedures except:

A. Vote by written ballot
B. Use a nominating committee of seniors
C. Limit officers to seniors
D. Establish a minimum scholarship requirement for potential officers

____ 7. All of the following are aims and purposes of the FFA except:

A. To create and nurture a love of country life
B. To encourage and practice thrift
C. To encourage improvement in scholarship
D. To develop skills and abilities needed in farming

____ 8. During the year, the minimum number of times an FFA chapter executive committee should meet is:

A. 3 times
B. Prior to each chapter meeting
C. 3 times during the year and once during the summer
D. At the call of the adviser

____ 9. All of the following are commonly used sources of long term farm credit except:

A. Federal Land Bank
B. Commercial banks
C. Insurance companies
D. Production Credit Associations

____ 10. A group of hog producers who kept careful records averaged 5.29 pounds of feed per pound of pork produced, 7.5 pigs farrowed per litter, and 6.1 pigs weaned per litter. In terms of efficiency of production on good corn belt farms, these producers would be considered:

A. Highly efficient
B. Efficient in terms of pigs produced
C. Efficient in terms of feed conversion
D. Below average in efficiency

____ 11. A method for a farmer to lower risks would be to:

A. Concentrate on one type of livestock enterprise
B. Concentrate on one type of crop enterprise
C. Have one type of livestock enterprise and grow feed for that enterprise
D. Have supplemental livestock and crops which best fit into the major system

____ 12. When a farmer is short on capital, it is important that he:

A. Have a fast rate of turnover for his capital
B. Have his capital invested in low risk enterprises with a slow rate of turnover
C. Speculate on new crops or breeds of livestock in order to make large profits
D. Invest his money in long-time investments which are very secure

____ 13. A farmer on a small acreage can best increase his volume of business through enterprises:

A. Where labor inputs are very low in utilizing forage produced
B. Which have high labor peaks at certain seasons of the year
C. That take a medium amount of labor throughout the year
D. Which are intensive in the use of labor throughout the year

____ 14. The most suitable measuring stick for an efficient dairy enterprise would be:

A. Greatest production per animal in pounds of milk
B. Greatest production per animal in pounds of butterfat
C. Maximum profit from the enterprise
D. To have the highest quality livestock possible

____ 15. If a conservation plan is adequate the farm will:

A. Probably have higher profits the first year
B. Make more profits over the longer period of time
C. Make less profits but conserve fertility for future use
D. Show very little difference in the profits made

____ 16. Machinery should be substituted for labor when:

A. The value of labor saved is more than the increase in machine costs
B. There is a plentiful supply of labor
C. The machinery is first placed on the market
D. Farm prices are beginning to go downward

____ 17. The time for a farmer to expand production is when:

A. Industrial wages and employment rise and before his farming costs catch up
B. Industrial wages and employment have risen and farming costs have caught up and leveled off
C. General employment seems to be going into a slump
D. His costs are going up faster than prices received for his products

____ 18. When returns from capital are greater than the cost of borrowing money:

A. Profits can be increased still further by using credit
B. Profits can be maximized by using available capital and not more credit
C. It is more efficient to have enough money on hand to cover production costs
D. It is good policy to have reserve to protect credit

____ 19. Which of the following is not an advantage of specialization

A. More labor-saving equipment is practical
B. Production knowledge can be concentrated
C. Marketing and purchasing may be carried on more effectively
D. Labor can usually be distributed more evenly over the year

____ 20. Which of the following would be considered a liability for a farmer?

A. Cash on hand
B. Crops on hand to be sold
C. Bank note for operating expenses
D. Cash reserve in the bank

_____ 21. The most reliable measure of efficient economic management of a field crop is:

A. Total yield per acre
B. Plant population per acre
C. Net returns per acre
D. Value of crop sold per acre

_____ 22. The young farmer with limited cash:

A. Should invest his funds in a small farm
B. Should invest his funds in a small equity in a large farm and borrow the remainder
C. Should rent a full-sized farm and invest his funds in machinery and livestock
D. Put cash in savings account and work for wages until able to buy a farm

_____ 23. The price of any agricultural product is usually:

A. Not related to the distance from market
B. Lowest in the surplus area farthest from the market
C. Highest in the surplus area farthest from the market
D. Uniform throughout the market area

_____ 24. The individual farmer should:

A. Go in and out of an important enterprise to avoid the influence of a cycle
B. Keep rather constant acreages or number of animals
C. Increase and decrease numbers of animals when his neighbors do
D. Switch from one major enterprise to another to try to hit the best market for each

_____ 25. The firing order of a tractor is 1-3-4-2. Intake valve #1 opens after:

A. Intake valve 2
B. Intake valve 3
C. Intake valve 4
D. Can't tell from information

_____ 26. If the same numbers on the blade and tongue of the framing square are used when setting the T bevel it will give an angle of:

A. 30 degrees
B. 45 degrees
C. 60 degrees
D. 90 degrees

_____ 27. A number 4 stamped on the tang of an auger bit means it is:

A. 4 inches in length
B. 4/3 inches in diameter
C. 1/4 inches in diameter
D. 1/16 inches in diameter

_____ 28. Which of the following is not a product of the partial and complete combustion of acetylene and oxygen?

A. CO_2
B. CO
C. H_2O_2
D. H_2

_____ 29. Bronze welding is described as a process of:

A. Fusion
B. Cohesion
C. Adhesion
D. None of the above

_____ 30. Which of the following is not a layout tool?

A. Combination square
B. Level
C. Divider
D. Chamfer

_____ 31. You use a tachometer to check the cylinder speed on a combine and discover that it is too slow. To correct this trouble you would need:

A. A larger driven pulley
B. A larger driving pulley
C. A smaller driving pulley
D. None of these

_____ 32. A field is 400 feet wide and 1306.8 feet long. How many acres are in it? (1 acre = 43,560 sq. ft.)

A. 10 acres
B. 12 acres
C. 15 acres
D. 20 acres

_____ 33. Which of the following accounts for the greatest percentage of loss when combining a clean crop?

A. Shoe
B. Rack
C. Cylinder
D. Cutter bar

____ 34. The height of your eyes is 5.6 feet. Using a hand level you sight on a point 50 feet up the slope as being on the same level as your eyes. The slope of the land in front of you is:

A. 5.6 per cent
B. 11.2 per cent
C. 12.4 per cent
D. 56.0 per cent

____ 35. The main advantage of a diesel tractor compared to a gasoline tractor is:

A. More power in diesel
B. Lower initial investment
C. Lower fuel costs
D. No particular advantage

____ 36. One spark plug in an engine is not firing. Which of the following would you do to find the faulty spark plug?

A. Adjust the gap on each plug and start again
B. Clean each spark plug and replace
C. Use a wrench to short out each plug in order and listen for a change in engine operation
D. Pull out in order the spark plug lead wires at the distributor and listen for a change in engine operation

____ 37. A 5-inch V-pulley is turning at 1,750 revolutions per minute and driving a 9-inch pulley. At what rpm will the 9-inch pulley turn?

A. 176
B. 877
C. 974
D. 3,500

____ 38. The primary purpose of cultivation is to:

A. Make a mulch to conserve moisture
B. Break up clods
C. Control weeds
D. Mix fertilizer with the soil

____ 39. You have purchased a 13 x 7 drill. The width covered by the drill is:

A. 84 inches
B. 91 inches
C. 98 inches
D. 7 feet

____ 40. When planting corn you have changed from a narrow seed to a very wide seed. What adjustment must be made to correct for the width of the seed?

A. Select a seed plate with the correct length cell
B. Increase the planting rate
C. Turn the filler ring groove up
D. Decrease the speed of forward travel

____ 41. If one bushel of wheat were spread over one acre, there would be 18 to 20 kernels per square foot. A combine operating in wheat is found to leave 40 kernels per square foot. What is the loss in bushels per acre?

A. 1 bu.
B. 2 bu.
C. 4 bu.
D. 8 bu.

____ 42. You find a large amount of shelled corn on the ground behind a corn picker. Which of the following adjustments would help correct this condition?

A. Increase rate of forward travel
B. Move snapping rolls closer together
C. Decrease the tension on the husking rolls
D. Add lugs to the snapping rolls

____ 43. Where should the footing of a house be placed?

A. On top of the ground
B. Just below the top soil
C. Where the footing is placed makes very little difference
D. On firm soil below frost level

____ 44. A mixture of concrete is too sloppy or wet for placing in a form. Which item listed below should be performed to make a stiffer mix and yet not change the strength?

A. Add more cement and gravel
B. Add more cement
C. Lt it set a while before placing it in the form
D. Add more cement, gravel and sand as in original proportion

____ 45. A bin on the second floor of a barn is 8 feet square and 6 feet high. One cubic foot of the bin holds (.8) or four-fifths of a bushel. The bid is filled with wheat which weighs 60 pounds per bushel. How much weight is there on each square foot of the bin floor?

A. 288 lbs.
B. 384 lbs.
C. 480 lbs.
D. 2880 lbs.

____ 46. The voltage of a circuit supplying a particular electric heating load is doubled, but the wattage of the load is kept constant. Power (watts) loss due to resistance in the circuit conductors will be:

A. Reduced to one-half its former value
B. Increased to double its former value
C. Increased to four times its former value
D. Reduced to one-fourth its former value

____ 47. An electric hot water heater rated 5290 watts at 230 volts is mistakenly connected to 115 volt service. The resistance of the heater is now approximately:

A. 5 ohms
B. 10 ohms
C. 20 ohms
D. 25 ohms

____ 48. 2000 watt hours is equivalent to:

A. 200 kilowatts consumed for a period of 6 minutes
B. 1 kilowatt consumed for a period of 30 minutes
C. 2 kilowatt hours consumed over a period of 30 minutes
D. 20 kilowatts consumed over a period of 10 minutes

____ 49. All of the following are items of fixed cost in owning a farm tractor except:

A. Interest on investment
B. Insurance
C. Taxes
D. Labor

____ 50. If a tractor is operated 800 hours per year instead of 400 hours per year, all of the following statements could be expected to be true except:

A. The total cost of operation per hour would increase
B. The total cost of operation would increase
C. The fixed costs per hour would be reduced
D. The depreciation cost per hour would be lower

____ 51. The machines which a farmer can best afford to own are those:

A. Which are used most throughout the year and are efficient labor savers
B. Used only at peak season work loads and are available with custom operators
C. Which are high investments and used only during a short period of time
D. Which are older and cheaper to purchase although newer models may be more efficient

____ 52. The cost of owning machinery, for a farmer who is limited in the amount of capital which he has for production purposes, can be determined by:

A. The rate he could earn on an outside loan or investment
B. The rate of return his money would yield when used for other investments on the farm
C. The rate of interest he would get if he put the money in a savings account
D. The rate of return he would get if the amount were invested in low risk investments such as government bonds

____ 53. The number of bd. ft. in 16 pieces of 2" x 6" x 14' oak is:

A. 224 bd. ft.
B. 448 bd. ft.
C. 112 bd. ft.
D. 672 bd. ft.

____ 54. Scaly and ulcerated skin, diarrhea and lameness are common visible symptoms in swine of:

A. Hog Mange
B. Rickets
C. Vitamin B_2 deficiency (Riboflavin)
D. Hog Flu

____ 55. Hog cholera is:

A. A highly contagious disease
B. A non-contagious disease
C. A rare disease among swine
D. Usually non-fatal to swine

____ 56. When a cow ovulates, the ova is:

A. Being fertilized
B. Being released
C. Undergoing reduction division
D. Being imbedded

____ 57. When would be the best time to breed a cow?

A. When you first notice her in estrus
B. When she is no longer mounting
C. 12 hours after you first notice her in estrus
D. For all freshening

_____58. Fertilization takes place when:

A. A bull serves a cow
B. A cow comes in estrus
C. The egg and sperm unite
D. The calf is born

_____59. All of the following are advantages of artificial breeding of dairy cattle except:

A. The danger of cross bulls is eliminated
B. The cash cost per service is lower
C. The total cost per service is lower
D. The danger of transmitting disease is lessened

_____60. Incomplete deminance in color means that when a red cow is crossed with a white bull, the off-spring will all be:

A. Red
B. White
C. Roan
D. Born dead

_____61. The practice of mating closely related animals is called:

A. Outcrossing
B. Inbreeding
C. Nicking
D. Artificial breeding

_____62. The dressing percentage for choice steers is ordinarily:

A. 52%
B. 60%
C. 68%
D. 80%

_____63. All of the following are protein supplements for beef cattle except:

A. Cottonseed cake
B. Linseed oil meal
C. Soybean oil meal
D. Molasses

_____64. All of the following terms describe corn as a feed for beef cattle except:

A. Palatable
B. High in Vitamin A
C. Low in total digestible nutrients
D. Low in fiber

____ 65. The dressing percentage of beef cattle is most affected by:

A. Differences in sex
B. Differences between pregnant and open heifers
C. Differences in finish
D. Differences between breeds

____ 66. Pelleting feeds for fattening beef cattle has all the advantages listed below except:

A. Less feed wasted
B. Less feed required per pound of gain
C. Faster gains
D. Lower cost per pound of gain

____ 67. The gestation period for swine is:

A. 124 days
B. 3 months and 3 days
C. 104 days
D. 3 months, 3 weeks, and 3 days

____ 68. The best source of calcium for feeding brood sows is from:

A. Corn
B. Iodized salt
C. Soybean oil meal
D. Ground limestone

____ 69. The most critical time in feeding bred gilts or sows during gestation is:

A. The last month
B. The first month
C. Two weeks after the pigs are born
D. During the flushing period

____ 70. Pigs farrowed by gilts which have received aureomycin are usually:

A. Larger at birth
B. Stronger at birth
C. Stronger and more uniform at weaning time
D. All of the above

____ 71. Milk should be cooled quickly to a temperature of:

A. 26° F.
B. 32° F.
C. 45° F.
D. 60° F.

____ 72. Name the disease of dairy cows that most commonly affects the quality of milk:

A. Mastitis
B. Pink eye
C. Cholera
D. Ketosis

____ 73. To control feed flavor in milk, silage should be fed:

A. Immediately before milking
B. During milking
C. After milking
D. 3 hours before milking

____ 74. The bacterial plate count of milk for fluid consumption as it is delivered from the farm shall not exceed:

A. 10,000
B. 50,000
C. 200,000
D. 500,000 bacteria per milliliter

____ 75. Antibiotics most likely to contaminate milk are those administered to the cow:

A. By drenches through the mouth
B. Through salves on the surface of the teats
C. Through injections in the skin
D. Through materials injected into the teats

____ 76. The major function of pasteurization of milk is to:

A. Kill bacteria
B. Increase palatability
C. Remove foreign matter
D. Reduce the size of the fat globules

____ 77. Dairymen are encouraged to pasteurize milk for home consumption because:

A. The heat dissolves foreign material making the milk richer
B. The heat destroys harmful microorganisms which may be present, making the milk safe for consumption
C. Raw milk doesn't taste as good as pasteurized milk
D. It improves the nutritional value of the milk

____ 78. For a farmer just getting started in farming, to raise purebred stock for show purposes:

A. Is a business with very little risk involved
B. Is easy to get into and takes very little capital
C. Requires large capital funds and involves large risks
D. Will give him quick returns for the capital which he has invested

____ 79. The units of heredity which are responsible for expressing a single characteristic are called:

A. Chromosomes
B. Genotypes
C. Phenotypes
D. Genes

____ 80. Sand soil particles are smaller than:

A. Silt
B. Clay
C. Gravel
D. All answers correct

____ 81. Corn should be planted:

A. As deep as possible to get roots down to water (about 3-4 inches)
B. As shallow as possible to get seed in warm soil (about 1/2-1 inch)
C. Deep enough for moisture, yet shallow enough to be in the upper strata of warm soil (1½-3 inches)
D. As shallow as possible to avoid insect damage (1/2-1 inch)

____ 82. The earliest date that corn may be safely planted is determined primarily by:

A. Soil moisture
B. Soil temperature
C. The length of day
D. Farm work load

____ 83. The soil temperature is best for planting when it reaches:

A. 54 degrees
B. 60 degrees
C. 75 degrees
D. 81 degrees

____ 84. Planting more than three inches deep:

A. May kill the sprout because it is too difficult to reach the surface
B. May place the seed in too much moisture for germination
C. Place the seed too far from the fertilizer
D. Results in greatly increased supply of phosphorous for plant

____ 85. Planting too shallow is harmful because:

A. The seedling may lack moisture for germination
B. The plant will suffer from drought in July
C. Moles may damage the grain
D. Late cold spells may stop germination

____ 86. With heavier plant population should go:

A. A high fertility level
B. A smaller type corn plant
C. An early maturing hybrid
D. A mid-season hybrid strain

____ 87. A good ear size to strive for is:

A. .25 to .50# ear
B. .50 to .75# ear
C. .75 to 1.00# ear
D. 1.00 to 1.50# ear

____ 88. All of the following are important in deciding the most profitable rate of fertilizing corn except:

A. The price of corn
B. The expected yields from different amounts of fertilizer
C. The color of the soil
D. The cost of the fertilizer

____ 89. A land use capability map includes all of the following information on each land area except:

A. Slope
B. Degree of past erosion
C. Dominant soil series
D. Per cent of run-off

____ 90. Fertilizer should be used as long as:

A. It increases the crop yields
B. The added returns are more than the expenses over a reasonable length of time
C. The quality of the crop is increased
D. The original fertility of the soil is maintained

____ 91. Nitrogen fixing bacteria are found in the soybean plant in the:

A. Leaf petioles
B. Stalks
C. Blossoms
D. Root nodules

____ 92. The most important ingredient in an inoculant used on soybeans is:

A. Bacteria
B. Fertilizer
C. Mineral
D. None of these

____ 93. Which of the following groups of inoculant can be used to inoculate soybeans?

A. Clover group
B. Bean group
C. Pea and vetch group
D. None of these

____ 94. One bushel of soybeans will produce about how many pounds of soybean oil meal?

A. 30
B. 36
C. 42
D. 48

____ 95. Chemical defoliation of soybeans is most important when:

A. An early frost has occurred
B. September and October are warm and wet
C. Short season varieties are used
D. Corn is to follow soybeans in the rotation

____ 96. What is the highest moisture content at which you should try to store soybeans at home without a drier?

A. 9%
B. 11%
C. 13%
D. 15%

____ 97. What is the minimum per cent germination necessary for seed to be certified?

A. 70%
B. 90%
C. 99%
D. 80%

____ 98. Companion crops (such as oats and wheat) are often used by farmers to obtain a return while the slower developing seeding (alfalfa-brome) is becoming established. This procedure has resulted in poor stands of meadow. The basic reason for this is from competition between the companion crop and seeding for:

A. Lime
B. Inoculation
C. Light
D. Weeds

____ 99. Which is the most economical fertilizer in terms of cost per pound of plant food?

A. 2-12-12 @ 50.00 per ton
B. 5-10-10 @ 55.00 per ton
C. 8-16-16 @ 60.00 per ton
D. 12-12-12 @ 72.00 per ton

____ 100. The best control for loose smut of wheat is:

A. Crop rotations
B. Seed treatment of Ceresan M
C. Resistant varieties
D. Control of barberry (alternate host)

APPENDIX B

Department of Agricultural Education
The Ohio State University
and
Vocational Agriculture Service
State Department of Education

BIOLOGICAL SCIENCE--AGRICULTURE TEST

by
S. S. Sutherland
University of California, Davis, 1961

DIRECTIONS

This is a test of your knowledge of biology as applied to agriculture. For most questions there are five possible answers. You are to decide which is the best one. You should answer all questions even when you are not perfectly sure that your answer is correct. You may guess, but you should avoid wild guessing. Do not spend too much time on any one question.

Study the sample questions below, and notice how the answers are to be marked on the separate answer sheet.

Sample 1. Which of the following is the name of a breed of cattle:

A. Poland China
B. Percheron
C. Southdown
D. Hereford
E. Leghorn

For Sample 1 the correct answer, of course, is D (Hereford). In the five answer spaces after Sample 1 on your answer sheet, an "X" has been made through the letter D.

Sample 2. The name given to the scientific study of living things is--

A. Chemistry
B. Physics
C. Biology
D. Geology
E. Anthropology

The correct answer for Sample 2 is "Biology" which is answer C; so you would answer Sample 2 by making an "X" through C on your answer sheet. Do this now.

Read each question carefully and decide which one of the answers is best. Notice what letter your choice is. Then on the separate answer sheet, make an X through the letter. In marking your answers, always be sure that the question number in the test booklet is the same as the question number on the answer sheet. Erase completely

any answer you wish to change, and be careful not to make stray marks of any kind on your answer sheet or on your test booklet. When you finish a page go on to the next page. If you finish the entire test before the time is up go back and check your answers. Work as rapidly and as accurately as you can.

When you are told to do so, open your booklet to page 2 and begin. The working time for this test is 60 minutes.

1. The difference between living and non-living things is best described by one of the following statements--

   A. Only living things grow or change in size
   B. Non-living things do not grow or move about
   C. Living things can reproduce their own kind
   D. Non-living things can become living things if they produce growth
   E. There is no such thing as non-living matter

2. The science that deals with classification and naming of organisms is called--

   A. Botany
   B. Psychology
   C. Taxonomy
   D. Physiology
   E. Zoology

3. Latin names are assigned to plants and animals--

   A. To make it difficult for people not trained in scientific work to understand
   B. To help keep latin a "live" language
   C. Because all early work was done in Latin and it is too late to change now
   D. To make one name universal for the same organism
   E. Because there are more descriptive words to use in Latin

4. The scientific name of barley is <u>Hordeum</u> <u>vulgare</u>. These two Latin words tell--

   A. The family and the order
   B. The order and the class
   C. The genus and the species
   D. The phylum and the kingdom
   E. The phylum and the class

5. Which one of the following does <u>not</u> belong in the following order?

   A. Deer
   B. Bison
   C. Horse
   D. Bear
   E. Zebra

- -

6. The interrelationship between living organisms and their environment is called--

   A. Botany
   B. Zoology
   C. Taxonomy
   D. Ecology
   E. Physiology

7. One of the following would <u>not</u> change the environment of plants--

   A. Wind
   B. Heat
   C. Water
   D. Gravity
   E. Light

8. Plants compete for all but one of the following--

   A. Heat
   B. Light
   C. Oxygen
   D. Carbon dioxide
   E. Nutrients

9. In a changing environment, living organisms can survive only through adaptation and/or migration. One of the following is <u>not</u> related to the above principle--

   A. Migration
   B. Estivation
   C. Hibernation
   D. Winter sleep
   E. Solar rotation

10. The coyote, which is classified as a carnivore, has done considerable damage to the sheep and cattle industry throughout the U.S. He has an appetite for young lamb and calves, although he also eats a variety of other animals. His ultimate source of energy and food can be traced to--

    A. Plants
    B. Insects
    C. Lizards
    D. Rodents
    E. Jackrabbits

11. The U. S. Department of Agriculture has many restrictions on the importation of plants and animals into the United States from foreign lands, especially if the organism does <u>not</u> already exist in the United States. The reason for this is--

    A. The organism may not be suited to our climate
    B. The country of origin does not have the same political views as the U.S.

C. The organism may adapt so well it may become a pest
D. Competition may be so keen for the organism that it will not survive
E. The S.P.C.A. has gone on record opposing the import of foreign organisms

12. Living things can survive in a changing environment only through adaptation or migration. In which type of farming does the farmer do the most toward changing the environment of the crop or livestock he produces?

A. Range beef cattle
B. Growing dry land barley
C. Producing apricots on irrigated land
D. Producing grade A milk
E. Growing ornamentals in a greenhouse

13. Which of the following "Rules of Thumb" are not based directly upon the principle that plants and animals survive only by adapting to their environment or by migrating?

A. Warm season crops tend to have deeper roots than cool season crops
B. All biennial plants require long days and low temperature for optimum flowering
C. Annual plants endure unfavorable environmental conditions through seed dormancy
D. Where tomatoes produce maximum yields, potatoes produce minimum yields
E. Wind machines and orchard heaters should be used in many areas to reduce the danger of frost damage

14. The success of a farmer is directly dependent upon his ability to adjust the plants and animals he grows to their environment or to adjust the environment to his livestock and crops. Which of the following does not illustrate adapting plants or animals to their environment?

A. Dehorning cattle
B. Pruning fruit trees
C. Irrigating barley
D. Scarifying legume seed
E. Castrating pigs

15. All living organisms affect each other in some manner. Which of the following best illustrates a detrimental relationship in which one or both of the organisms suffer?

A. Cattle and other ruminants have microbes in their digestive systems which affect digestion
B. Nematodes in a soil on which sugar beets are grown
C. A number of cattle fattening in a feed lot
D. Grapefruit trees grown in a date garden
E. Nitrogen-fixing bacteria in soil where alfalfa is grown

16. Sometimes two organisms live in a close relationship which is beneficial to both of them. Such a situation is called--

A. Symbiosis
B. Adaptation
C. Parasitism
D. Autecology
E. Synecology

- -

17. The movement of materials from an area of high concentration to one of low concentration is called--

A. Circulation
B. Diffusion
C. Mixing
D. Percolation
E. Evaporation

18. All living organisms depend upon the fact that, in general, materials tend to move from an area of high concentration to an area of low concentration. Which one of the following is <u>not</u> an application of this principle?

A. Some plants will not grow in an alkali soil
B. Fresh water is sprinkled over vegetables in the grocery store to keep them crisp
C. Alkaline soils may be improved by leaching
D. Too heavy applications of fertilizer may kill a plant
E. Celery is blanched by excluding light from the lower stalks of the plant

19. The over-application of fertilizer will produce symptoms in the plants called fertilizer burns. This condition is brought about by the change in--

A. Nutrient requirement
B. Moisture requirement
C. Respiration requirement
D. Photosynthesis requirement
E. Osmotic relationship

- -

20. The manufacture of simple sugar by green plants is accomplished by a process called--

A. Chlorophyll
B. Transpiration
C. Respiration
D. Photosynthesis
E. Food production

21. Green plants are capable of manufacturing their own food when light and essential elements are present because they contain--

A. Nucleolus
B. Cytoplasm
C. Protoplasm
D. Vacuoles
E. Chlorophyll

- -

22. Which one of the following is <u>not</u> directly accomplished by the presence of organic matter in the soil?

A. Decreases water run-off
B. Increases water holding capacity
C. Improves aeration of soil
D. Increases available plant food
E. Produces a better soil structure

23. All plant and animal life is dependent upon cycles in which certain essential food elements are kept in constant circulation between plants, animals, soil, air and water. Which one is <u>not</u> an example of this cycle?

A. Gypsum added to the soil to improve its structure
B. The Pilgrims burying a fish beside each hill of corn planted
C. The making and using of a compost heap
D. The use of manure as a fertilizer
E. Plowing under clover or alfalfa

24. When barley is planted on ground which grew barley the year before, there will be streaks across the field where the plants are lighter in color and rather yellowish. These lighter colored strips are where straw was left by the harvester when the preceding year's crop was harvested. The reason for this is--

A. Lack of moisture, since the straw kept the rain off these strips of soil
B. The straw kept the temperature of the soil too low during the summer
C. Insufficient nitrogen in the soil to support both the barley and the soil bacteria which break down and decompose the straw
D. Too much nitrogen in the soil so that the soil bacteria do not need to break down the straw to obtain nourishment
E. The straw smothered out the new barley plants and prevented them from growing as rapidly as where the ground was bare

- -

25. The growth of an animal is influenced by all but one of the following--

A. Age of the organism
B. Health
C. Heredity
D. Color of the organism
E. Temperature

26. Grasses will recover after grazing or cutting because their growing points (meristematic tissue) are located in the--

A. Margins of the leaves
B. Tips of the leaves
C. Bases of the leaves
D. Roots
E. Tendrils

27. A farmer, fencing his pasture, has used a 15 foot tree as a post and nailed his woven wire fencing to this tree. The top of his fence is 4 feet high and the bottom is 6 inches above the ground. The following year he discovers his sheep are getting out and immediately remembers his live post. The farmer returns and finds to his amazement that the tree is now 20 feet tall and the bottom of his fence is now--

A. About 1/2 foot above the ground
B. About 1 foot above the ground
C. About 5 1/2 feet above the ground
D. About 3 1/2 feet above the ground
E. About 4 feet above the ground

- -

28. All living things require specialized chemical substances to regulate the life processes necessary for growth and development. All but one of the following practices are applications of this principle--

A. Pruning roots when transplanting
B. Defoliating cotton by spraying with synthetic auxins
C. Pruning fruit trees
D. Harvesting barley
E. Thinning fruit by use of synthetic auxin to cause abscission

29. Synthetic growth regulators are used for all but one of the following--

A. Killing dandelions
B. Shortening dormancy of fruit trees
C. Rooting cuttings
D. Prevening fruit drop
E. Formation of fruit buds

30. "Heading back" trees by pruning the ends of branches promotes growth of new shoots because--

A. More sunlight is admitted to the other branches
B. Materials in the tips of the branches which prevent or slow down growth are removed
C. There is more plant food available to the parts of the tree which remain
D. Less moisture is lost from the leaves

- -

31. Diseases or malfunctions that may occur on plants or animals are serious because they--

A. Generally affect some physiological process
B. Make the organism sick
C. Can ruin the appearance of the plant or animal
D. May affect humans if not controlled
E. Are infectious

32. Non-infectious diseases in animals may be caused by all but one of these--

A. Smog
B. Improper feeding
C. Viruses
D. Heredity
E. Poisons

33. Infectious diseases in plants are controlled by all but one of these--

A. Breeding disease resistant plants
B. Using sprays and dusts
C. Seed treatment
D. Injection of vaccines
E. Changing cultural practices

34. All living organisms have parasites which are capable of affecting their life processes to a degree which depends upon the susceptibility of the host, the environment, and the nature of the parasite. Which of the following is <u>not</u> an application of this principle?

A. Pigs in certain areas are born hairless and have goiters
B. Cattle grubs cause an estimated loss of 100 million dollars annually
C. Reduction of aphid damage to alfalfa has been obtained by introducing a fungus which attacks the aphids
D. Lice and mites on chickens may reduce egg production
E. The "lady bug" or Australian lady beetle feeds upon and is used in the control of cottony cushion scale

35. In order to survive, living things possess the ability to perpetuate their own kind from a part of themselves. All but one of the following terms are related to this statement--

A. Asexual reproduction
B. Sexual reproduction
C. Alternation of generations
D. Crop rotation
E. Fission

36. Fruit trees are usually propagated asexually by cuttings or by grafting and budding because--

A. They do not produce viable seeds
B. The seed produced by fruit trees is usually not true to variety
C. It is easier and quicker
D. It is cheaper
E. It is too difficult to harvest and store the seeds

37. Our domestic animals reproduce sexually because--

A. They are one of the lower forms of life
B. They are one of the higher forms of life
C. They have been domesticated
D. Sexual reproduction is a less complicated process
E. All forms of animal life reproduce only in this way

38. Which of the following normally reproduce both sexually and asexually?

A. Corn
B. Johnson grass (Bermuda grass)
C. Swine
D. Barley
E. Sunflowers

- -

39. All living organisms respond in some fashion to stimuli. One of the following would not necessarily stimulate an organism--

A. Soil type
B. Light
C. Heat
D. Cold
E. Darkness

40. Beehives are placed in alfalfa fields which are grown to produce seed because the alfalfa flower reacts to a bee entering the flower by releasing pollen, thereby making a larger yield of seed possible. This is an example of--

A. Photosynthesis
B. Diffusion
C. Irritability
D. Pathology
E. Transpiration

- -

41. Which one of the following conditions is essential to the germination of seeds?

A. The seeds have gone through a period of dormancy
B. The seeds have been treated for fungus diseases
C. The soil in which the seed is planted is free from weeds
D. The soil in which the seed is planted is fertile
E. The seed is planted in the "dark of the moon"

42. Which one of the following environmental factors does <u>not</u> affect the germination of seeds?

A. Moisture
B. Temperature
C. Type of soil
D. Oxygen
E. Light

- -

43. A plant will attain optimum growth, provided other environmental factors are favorable, when all essential nutrients for growth are available--

A. In adequate amounts
B. In much more than adequate amounts
C. In much less than adequate amounts
D. In slightly less than adequate amounts
E. But some in adequate amounts and others in inadequate amounts

44. In fertilizing plants, which of the following is <u>unimportant</u>?

A. The time of day when the fertilizer is applied
B. The location of the fertilizer with respect to the plant
C. The nutrients contained in the fertilizer
D. The pH of the soil
E. The method of applying the fertilizer

45. The letters "C HOPKNS Cafe Mg Cu Zn Mo Cl"--

A. Are a code used by the fertilizer dealers
B. Are the symbols for all of the nutrients essential for plant growth
C. Are the symbols for the micronutrients needed by plants
D. Is the trade name for a commercial fertilizer

46. Plants require certain available essential nutrients to attain maximum growth, if all other factors are favorable. Which group of minerals or elements are <u>all</u> essential nutrients?

A. Nitrogen, hydrogen, oxygen, sulfur, humus
B. Phisphorus, potassium, sulfur, calcium, uranium
C. Magnesium, carbon, iron, zinc, lead
D. Nitrogen, carbon, iron, zinc, oxygen
E. Nitrogen, carbon, potassium, lead, magnesium

- -

47. All plants transpire. Whenever the uptake of water by the roots is lower than the rate of transpiration, wilting will be initiated and the severity of damage, if any, will be dependent upon the kind of plant, the stage of growth, and the duration of time that the condition exists. Transpiration means--

A. The loss of water vapor by the aerial portion of the plant to the atmosphere
B. A distension or pressure created by the protoplasm against the cell wall caused by the accumulation of fluids
C. The time at which the available soil moisture is less than what is required by the plant
D. Difference in atmospheric pressure
E. The amount of water a soil will hold against gravity when allowed to drain freely

48. In the same environment, which plant will transpire most rapidly?

A. Cactus
B. Sunflower
C. Bamboo
D. Pine tree
E. Apricot tree

49. Which of the following does <u>not</u> influence the rate of transpiration in plants?

A. Temperature
B. Humidity
C. Wind velocity
D. Availability of nutrients
E. Size and shape of leaves (number of stomata)

50. When transplanting crop plants it is important to remember that there will be some wilting by transpiration losses. This deficit can best be controlled at planting time by--

A. Reducing the root area
B. Good soil moisture
C. Reducing the leaf area
D. Irrigating after planting
E. Irrigating before planting

- -

51. All organisms depend in varying degrees on a system by which nutrients, oxygen, and regulatory secretions are distributed in the organisms, and the waste products of metabolism are removed. This indicates that plants and animals--

A. Are related
B. Have similar organs
C. Transport food in a fluid
D. Have hearts to pump these secretions
E. Have "blood"

52. Which of the following is not a part of the circulatory system in higher animals, such as farm animals?

A. Intestines
B. Heart
C. Veins
D. Capillaries
E. Arteries

53. In the circulatory system of plants the xylem and phloem correspond to which parts of the circulatory system in animals?

A. Heart and blood
B. Capillaries and blood
C. Veins and arteries
D. Blood and arteries
E. Lungs and heart

- -

54. The benefit which livestock derive from their food depends upon the composition of the food, its nutritive value and the ability of the animal to utilize the food. Which of the following is not based upon this principle?

A. The nutritional content of a feed increases with an increase in the % of dry matter
B. The higher the % of lignin in a feed, the lower its digestibility
C. The higher the % of protein in a feed, the lower its nutritional value
D. It takes more pounds of roughage than of concentrates to produce the same amount of nutrients
E. As a feed crop matures the % of moisture and protein decreases

55. Which of the following best defines a balanced ration?

A. It is always palatable
B. It needs no further adjustment
C. It is available and economically practical
D. It supplies all the essential nutrients in the right amounts and proportions for a twenty-four hour period
E. It supplies all the essential nutrients in the right amounts and proportions for a month

56. The type of nutrient which is highest in energy value is--

A. Protein
B. Carbohydrates
C. Minerals
D. Fats
E. Lignin

57. Which of the following is <u>not</u> a good "rule of thumb" for the feeding of arm animals?

A. As an animal matures, the required protein decreases; the required carbohydrate increases
B. The feed requirement for the maintenance of an animal depends upon the size of the animal, its activity, and its environment
C. Approximately three-fourths of the feed eaten by an average dairy cow is used for milk production

- -

58. Animals perceive changes in their environment by way of their nervous systems. Which of the following is <u>not</u> an application of this principle?

A. Strangers present in a barn at milking time may cause dairy cattle to hold up milk
B. A period of extremely hot weather may cut down egg production of a poultry flock
C. A nervous herdsman may make cattle nervous
D. Cattle coming in contact with an electric fence and receiving a shock will avoid it in the future
E. The appearance of a healthy animal is quite different from that of a diseased animal

59. The endocrine glands regulate or control four of the following life processes of animals. Which one is <u>not</u> directly regulated by these glands?

A. Rate of metabolism
B. Amount of blood sugar
C. Blood pressure
D. Activity of ovaries or testes
E. Digestion

60. The livestock breeder is most concerned with the function of which one of the following endocrine glands in his animals?

A. Gonads
B. Thyroid
C. Parathyroid
D. Pancreas
E. Adrenal

- -

61. All organisms derive the energy required for the activities from the oxidation of simple foods within their protoplasm. The rate of energy release is dependent upon those internal and external factors which create the need for energy. This being a true principle, all organisms--

A. Respire
B. Breathe
C. Transpire
D. Inhale
E. Exhale

62. The rate at which energy is released as plants and animals respire is dependent upon factors which create the need for energy. Which of the following is <u>not</u> an agricultural application of this principle?

A. The respiration rate of a vegetable determines the length of time which it can be stored
B. Livestock being fattened should be kept quiet
C. Compacted soil hinders growth of plants
D. Livestock should be protected from extreme cold
E. Salt is used in preserving ham

63. Chemically, the process if respiration is--

A. The same as photosynthesis
B. The reverse of photosynthesis
C. The same as transpiration
D. The reverse of transpiration

- -

64. The branch of biology dealing with the study of heredity is called--

A. Geriatrics
B. Genetics
C. Physiology
D. Ecology
E. Taxonomy

65. On the basis of the genes which they possess, which of the following cattle would be most closely related?

A. Sire and daughter
B. Identical twin calves
C. Dam and daughter
D. Dam and sire
E. A bull calf and a heifer calf not twins

66. A farmer has a valuable and highly productive cow which lost the sight of one eye as a result of an accident.

A. It is all right to continue raising calves from her
B. The unsoundness is likely to be transmitted to her offspring
C. The calves will probably have a tendency to have weak eyes
D. There will be a tendency toward moonblindness in the offspring
E. It is impossible to tell ahead of time what would be the effect on the offspring

In the crossing of breeds of cattle the traits for some characteristics are dominant and some are recessive. In the following crosses of Aberdeen Angus and white Shorthorns the black color of the Angus is dominant over white and the polled characteristic of this breed is dominant over horns of the Shorthorns.

Let B stand for Black color
b stand for White color
P stand for polled
p stand for horned

Listed below are 5 possible crosses that involve the listed traits. For each question 67 to 75 determine which cross in the Key applies. Then mark on your answer sheet for each question the letter that is the same letter as that cross.

A. BBPP x BBPP
B. BbPp x BbPp
C. bbpp x bbpp
D. bbPP x bbPP
E. BBpp x BBpp

67. Which cross would give you only pure white horned calves?

68. Which cross would give only pure black polled claves?

69. Which cross would give only pure white polled calves?

70. Which cross would give a ratio of three black polled calves and one white horned calf

71. Which cross would be used if you were interested in breeding for the dominant traits?

72. Which cross would be used if you were interested in only the recessive traits?

73. Which cross would be used if you wanted dominant color and recessive horned characteristics?

74. Which cross would give only recessive color and dominant polled characteristics?

75. Which cross would produce the genotype bbPP?

# # # # # # #

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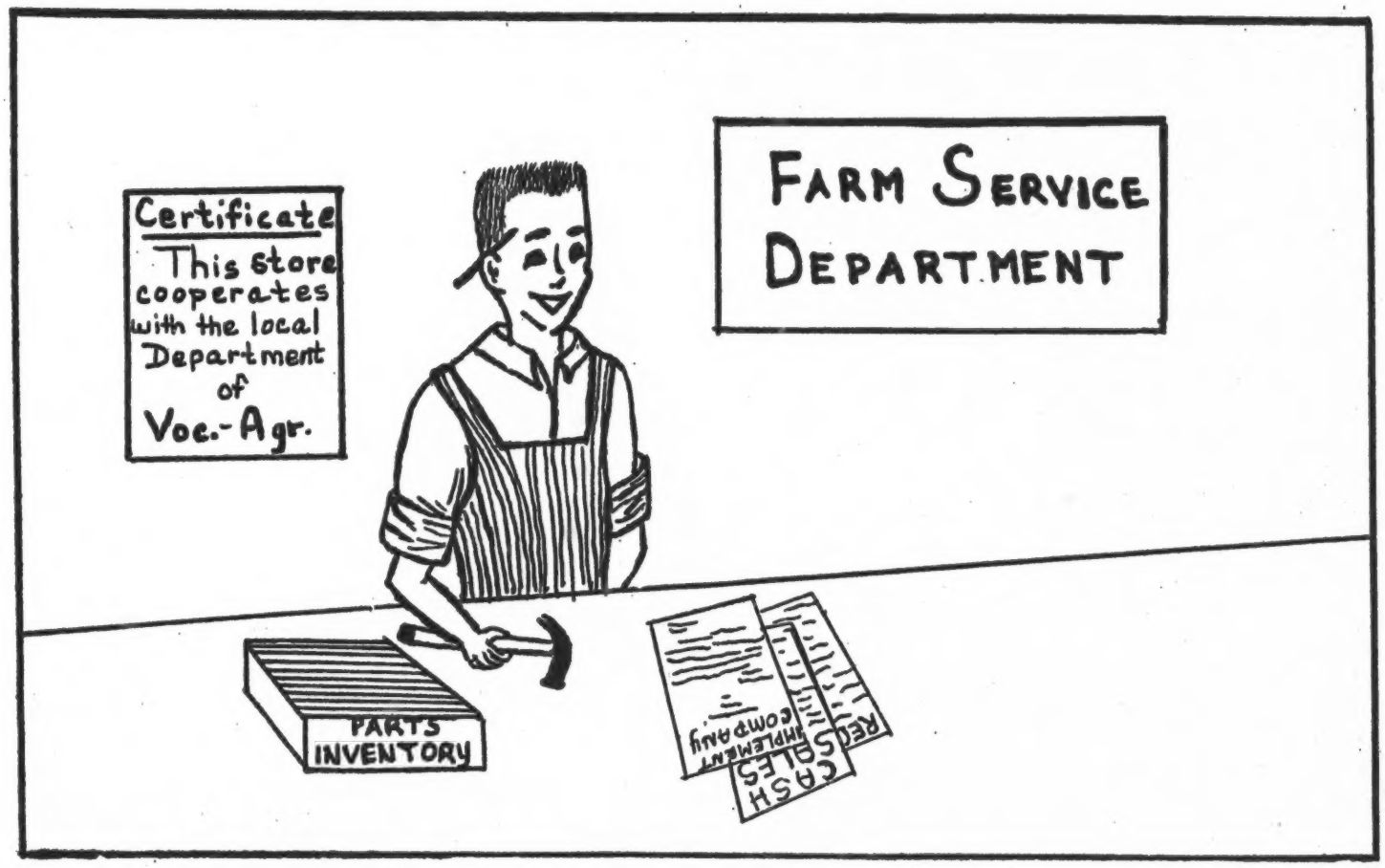
Preparing Students for Non-Farm Agricultural Occupations

Report of Workshop

1964

The Ohio State University



Department of Agricultural Education
The Ohio State University
and
Vocational Agriculture Service
Ohio Department of Education
Columbus, Ohio

VT 00357

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PREPARING STUDENTS

FOR

NON-FARM AGRICULTURAL OCCUPATIONS

Report of the Workshop

Program Planning
Agricultural Education 799B

Held at

The Ohio State University
Columbus, Ohio

June 22 through July 10, 1964

Edited by

Willard H. Wolf

Department of Agricultural Education
The Ohio State University

and

Vocational Agriculture Service
Ohio Department of Education

Columbus, Ohio

1964

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EDITOR'S COMMENTS

This report is the result of a three-week workshop held at The Ohio State University June 22 to July 10, 1964, to explore the training needs of those who will be employed in non-farm agricultural occupations and develop programs for educating students for these occupations. Twelve teachers participated in the workshop which was directed by Dr. Willard H. Wolf, and Mr. D. R. Purkey with the cooperation of other staff members.

The workshop was organized to facilitate the development of programs for educating students in non-farm agricultural occupations which could be conducted in the participants' schools. The teacher-participants were organized in seven committees and the reports of these committees were so structured so that the development of these programs was completely covered. Admittedly, time and available resources limited the completeness of the reports but they are designed to give teachers definite assistance in organizing programs for their respective communities.

Each of the teachers participating in the workshop is conducting a pilot program and the plans for each of these programs is available in a report entitled, "Pilot Programs for Preparing High School Students for Non-farm Agricultural Occupations." These plans vary considerably, but follow the guidelines suggested in this report. This variation is highly desirable, as it will provide an opportunity to assess the advantages and disadvantages of different procedures.

It is planned that during the year and at the end of the year, the workshop participants will meet to discuss experiences and exchange ideas so that eventually there may be developed an accepted and workable procedure for conducting the non-farm agricultural education program.

It is hoped that those reading this workshop report will respond with written suggestions for its improvement, particularly in the light of their experiences. The time available for developing a successful program of vocational agriculture as it pertains to non-farm agricultural education is at hand. It is also limited, as the period for evaluation is in 1969. The entire program of vocational agriculture could be in jeopardy if the evaluation should not be favorable. The alternative of failure, of course, is success and this is possible with the cooperative efforts of all those engaged in the challenging work of vocational agriculture.

Willard H. Wolf, Professor
Department of Agricultural Education
The Ohio State University

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George Rhonemus, Teacher of Vocational Agriculture, Manchester High School, Manchester, Ohio

John Stimpert, Teacher of Vocational Agriculture, Johnstown-Monroe High School, Johnstown, Ohio

DETERMINING THE NEEDS FOR PREPARING STUDENTS FOR NON-FARM AGRICULTURAL OCCUPATIONS

Committee No. 1

John Stimpert
George Rhonemus

Consultant

H. D. Brum

This Is the Purpose

When planning an educational program to prepare students for non-farm agricultural occupations, there are several items of needs that should be considered. One of these needs pertains to students so that they are properly prepared. Another need is that associated with the kinds of occupations for which training should be provided. A third need involves the teaching personnel and the school. So that these needs may be identified and understood, it seems that attention should be given to:

1. Determining where graduates have been employed
2. Determining availability of cooperators
3. Determining jobs available
4. Determining availability and needs of students
5. Determining teacher competencies and incompentencies
6. Determining the anticipated results of the non-farm agricultural occupational training program

This Is the Situation

In many vocational agricultural departments there is a need for training students for employment in non-farm agricultural occupations. Since this need will vary over the state, it seems reasonable that each instructor should conduct surveys in his community and school to determine the extent of the need. He must also survey his own skills and abilities

to determine how best to provide the training. These surveys should prove valuable in organizing a workable plan.

Facts associated with the following items should help the teacher in assessing the need in teaching for non-farm agricultural occupations.

1. Educational level of Ohio's population[1]

   58.2% - Less than 4 years of high school
   27.3% - High school graduates
   7.6% - 1 to 3 years of college
   6.9% - 4 or more years of college

2. Employment by occupational areas in Ohio [2]

   42.2% - Craftsmen and technicians
   14.7% - Distribution
   14.4% - Clerical office
   7.6% - Professional (requires college degree)
   5.3% - Agriculture (non-farm)
   12.1% - Others

   These data must be used advisably. The data for both farming and non-farm agriculture are taken from the 1960 census. The other data are classified by job titles; for example, a meat cutter may fit into the craftsman-technician group or the distribution group. Where he was placed was left to the discretion of the one making the classification.

3. High school enrollment in Ohio by programs[3]

   81.0% - College preparatory (general)
   11.8% - Clerical office (vocational)
   3.1% - Vocational trades and industrial
   2.1% - Vocational agriculture
   1.3% - Vocational distributive
   .7% - Cooperative office

   The 2.1 percent of the high school enrollment credited to vocational agriculture were those students actually in the class. If you compare these data with those in Item 2 above you may observe there seems to be a potential for expanding the vocational agriculture program in Ohio.

---

[1]United States Bureau of the Census. United States Census of Agriculture: 1960. Washington, D.C.: United States Government Printing Office.

[2] State Department of Education, 1963-1964.

[3]Ibid.

4. Ohio's educational programs[4]

100 - Enter the first grade
91 - Enter the ninth grade
71 - Graduate from high school
27 - Enter college
16 - Return the second year to college
15 - Return the third year to college
14 - Graduate from college

5. The employment situation in Ohio is constantly changing. The Ohio Bureau of Unemployment Compensation has compiled the following data to show change in employment for the period of 1960 to 1970.[5] The percentages below indicate the personnel increase needed for the areas listed.

55% - Professional occupations
25% - Management
31% - Clerical
29% - Sales worker
23% - Craftsman
18% - Operatives
26% - Service Workers
00 - Laborers
-13% - Farmers, farm workers
28% - Non-farm agricultural occupations

The percent of change in employment for the non-farm agricultural group has increased as much as any group except the professional, while at the same time the farmers - farm workers group has decreased. This again seems to indicate a need for a change in the program so that vocational agriculture will better serve its clientele. The importance of the farmer in our economy has not changed. Agriculture is still the leading industry.

6. The State Department of Education conducted an interest survey of Ohio high school students during the school year of 1963-1964. The results of this survey are as follows:

48.78% - High school vocational training
26.13% - High school vocational training and college plans
74.91% - Desire high school vocational training
21.33% - College plans or post-high school training
47.46% - Have college or post-high school training plans
3.76% - Undecided

---

[4]State Department of Education, 1963-1964.

[5]Ibid.

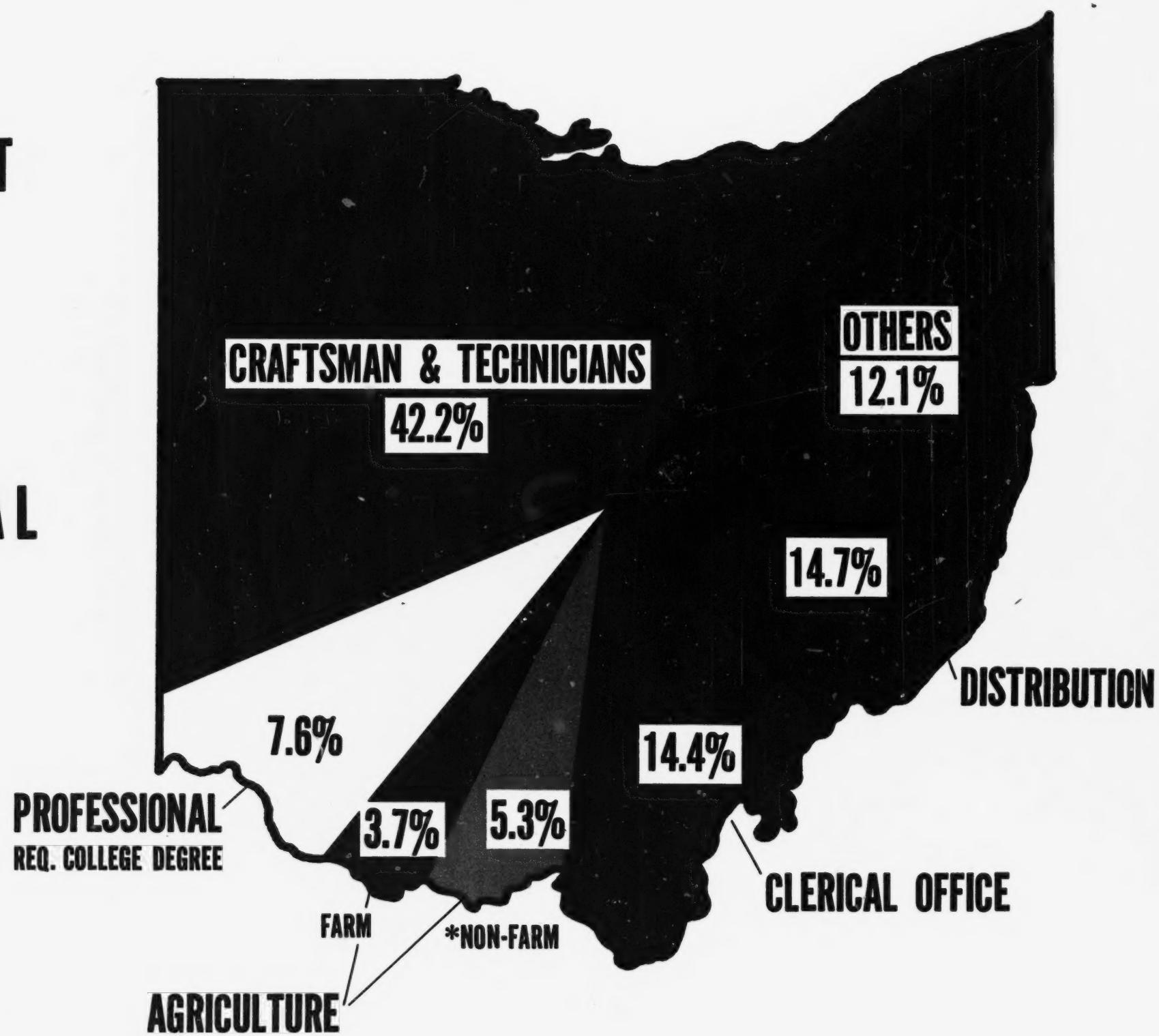
7. Number of jobs available in Ohio

From a survey entitled "Employment Opportunities and Needed Competencies for Workers in Ohio" conducted by H. D. Brum, Assistant State Supervisor of Vocational Agriculture, Ohio, there is a need each year for 14,660 new employees including replacements who must have the knowledge and skills in agriculture at the high school level in order to hold their non-farm agricultural jobs. These jobs are in such areas as agriculture services, manufacturing, and sales.

8. Mr. Brum's survey also revealed that there is a need for skills and knowledge in various areas of employment. As shown by the following data, certain areas have a greater need for skills and knowledge in agriculture than others. Perhaps our curriculum should be proportioned in accordance to this need.

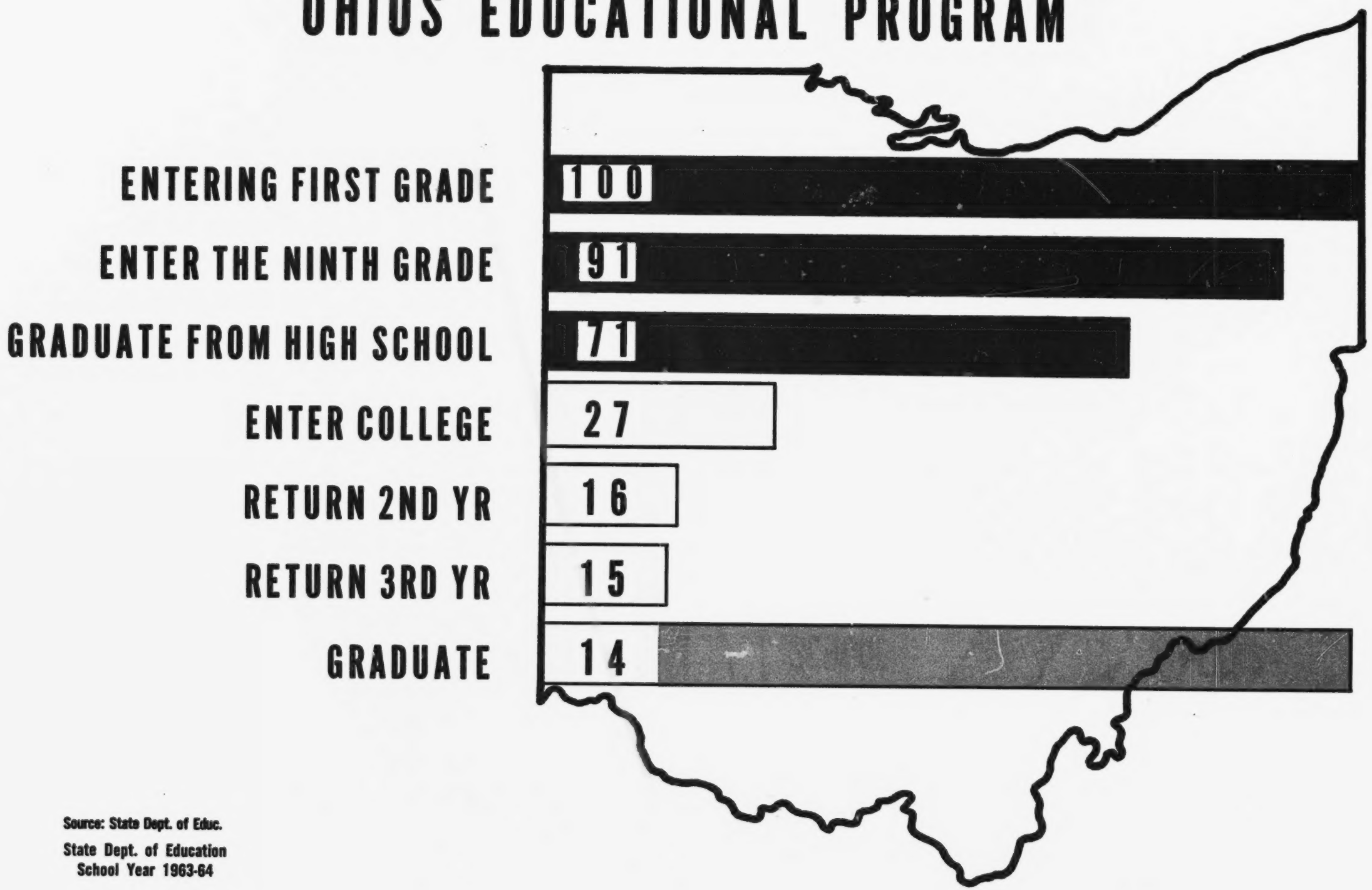
Food processing	29.9%
Horticulture	19.9%
Insect, sprays, etc.	4.4%
Animal science	3.1%
Crop science	2.7%
Soil science	2.6%
Forestry	1.4%
Agricultural economics	1.3%
Agricultural engineering	1.0%

EMPLOYMENT BY OCCUPATIONAL AREAS



Source: U.S. Census - 1960
*STATE DEPT. ED. STUDY

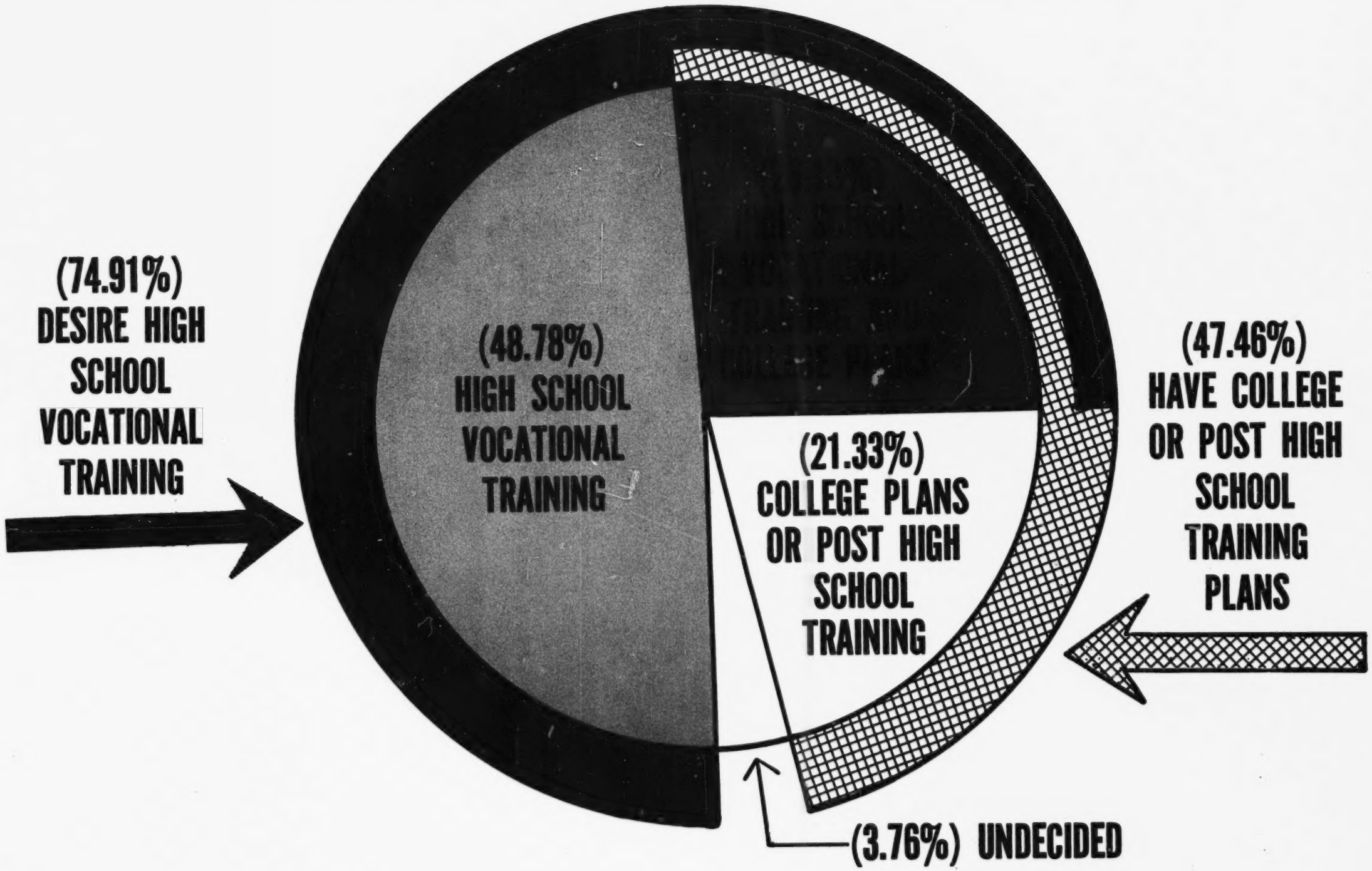
OHIO'S EDUCATIONAL PROGRAM



Source: State Dept. of Educ.

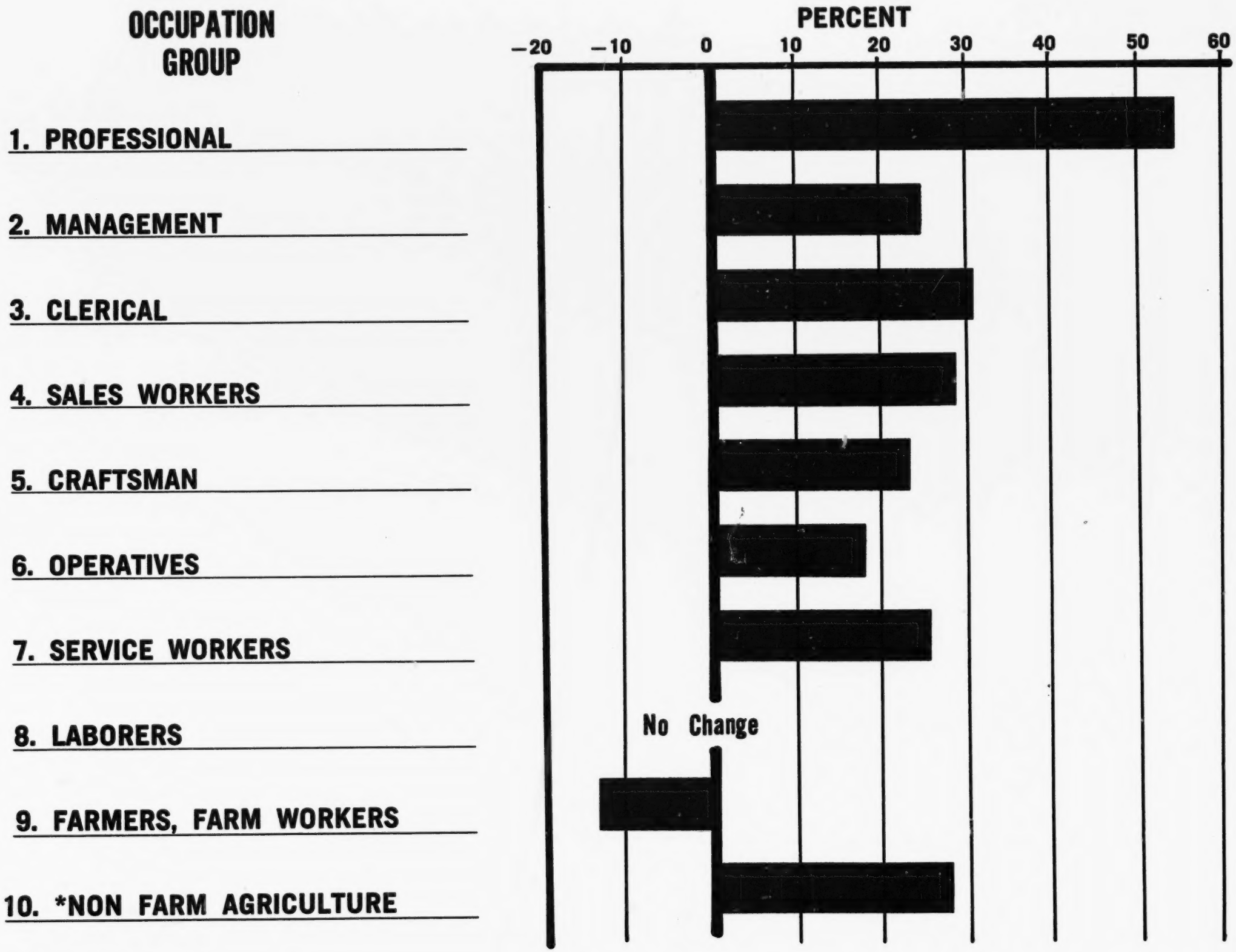
State Dept. of Education
School Year 1963-64

VOCATIONAL INTEREST RESPONSES
OHIO HIGH SCHOOL STUDENTS



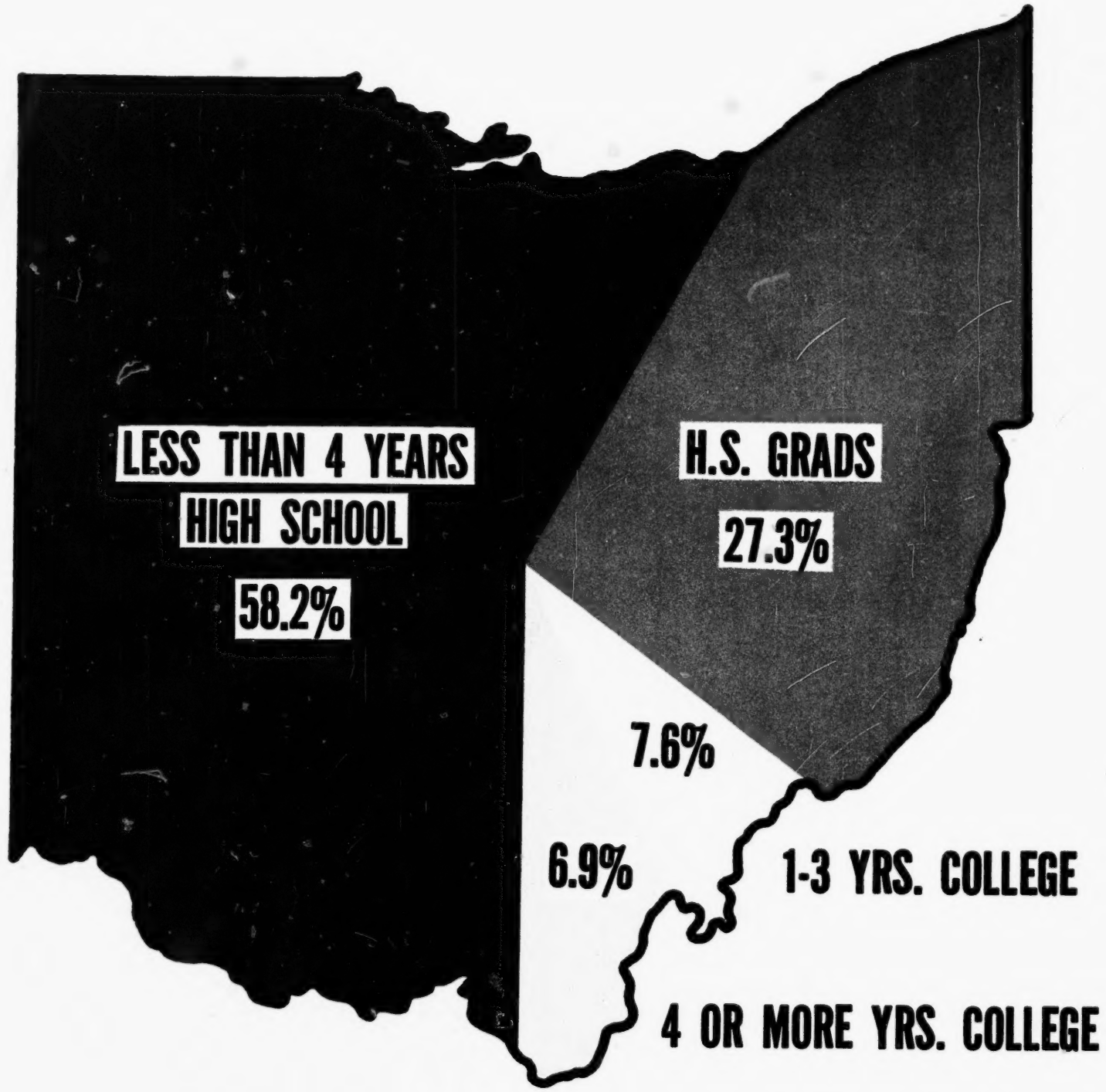
State Dept. of Education
School Year 1963-64

PERCENT CHANGE IN EMPLOYMENT IN OHIO — 1960 - 1970



SOURCE: OHIO BUREAU OF UNEM. COMP.
*STATE DEPT. ED. STUDY

EDUCATIONAL LEVEL OF OHIO'S POPULATION



Source: U.S. Census - 1960

This We Can Do

1. Determine graduate employment

The purpose of this survey is to determine the areas of employment that graduates from a school have been securing. This survey should be designed to reveal the number of students employed in: Non-farm agricultural related; Non-agricultural related; Full-time farming; Part-time farming; College; and Armed Services. The related agricultural and non-agricultural occupations may be broken down into the following areas: Unskilled; Semi-skilled; Skilled; Sales; and Management. The agri-related occupations should be summarized according to major areas such as such as farm machinery, farm elevators and meat cutting.

The information asked for on this survey can be obtained through students and relatives of graduates if the graduate is not a resident of the community. A sample survey form is presented in this report.

2. Determine the cooperating employers

The number of agri-related businesses willing to cooperate on a training program must be determined. They should be cassified according to their function, such as production, processing, distribution servicing and sales. The procedure on how to select the cooperator will be described later in the report of Committee No. 4. A sample interview form is attached. This form could be used in making a preliminary survey of the agri-related businesses in your community.

3. Determine the number of jobs available

The number of jobs available in production, processing, distribution, services, and sales agri-related businesses must be determined and identified in your local community. This information could be obtained from the cooperator interview form that is attached. The Ohio State Employment Service can be of help in determining the number of jobs available on the county, area, and state basis. Also, additional information may be obtained from Brum's Survey.[6] It should be especially noted that the employment in some areas is on the increase while in other areas it is decreasing.

4. Evaluate survey

An accurate means of summarizing and recording the results of this community survey should be devised. This summarization form should include the breakdown on graduate employment, the number of possible cooperators in each area, and the number of jobs available in each area.

---

[6] H.D.Brum "Employment Opportunities and Needed Competencies for Workers in Ohio"(Unpublished).

5. Determine enrollment potential

   a. The results of the graduate and cooperator survey should be used in counseling with students in the eighth, ninth, tenth, eleventh, and twelfth grades. This counseling should be prior to conducting student survey.

   b. Conduct the survey to determine the number of students in the eigth, ninth, tenth, eleventh, and twelfth grades to be involved in this program on a five-year basis.

   c. An educational interest inventory test should be given to the students in these grades. This test was devised by James E. Oliver, Ph.D., and is published by the Educational Interest Testing Associates, P.O. Box 4121, Northeastern Station, Dearborn, Michigan.

   d. A sample student interest survey form that could be given to the sixth, seventh, eighth, and high school students is included in this report.

6. Determine teacher competence

   a. Based on the surveys of the graduates, cooperators, students, and available jobs, a list of skills and abilities needed to train students in this program should be devised. These skills and abilities should be listed by areas, such as: Animal Science; Insects, Diseases, Pests, and Controls; Crop Production; Food Processing; Soil Science; Forestry; Horticulture; Agricultural Engineering; and Agricultural Economics.

   b. This list should then be divided into two categories on the basis of the teachers competency to teach. These categories may be headed; "Teacher Competent" and "Teacher Incompetent". In regard to the teacher incompetent list, the teacher should locate resource people or special instructors to assist him in these areas. Cooperators in training stations may also assist the teacher in teaching the areas either as a part of the "on-the-job" training or as part of the related instruction. Members of the advisory committee may also be of help in securing special instructors for specialized areas.

7. Summarize findings

   a. All surveys should be properly summarized and analyzed, and the results recorded as to the number of students, number of cooperators, number of jobs available, areas of instruction to be included, and the extent of outside instruction based on employment and training needs.

   b. The results should be given to the administrator, supervisor, advisory committee, community, and school.

8. Make the decision

   a. A tentative plan should be devised by the instructor with the help of the administrator.

   b. This plan should be submitted to the advisory committee at a formal meeting.

   c. A definite decision should be reached after consulting with the advisory committee.

9. Project the new program

   a. The needs of the student and community should be publicized and revealed to the community.

   b. The objectives and purposes of the new program should be publicized.

   c. The anticipated results of the new training program should be reasonable and then used as goals for the coming year.

GRADUATE EMPLOYMENT SURVEY
YEARS 19__ TO 19__

Name of graduate _____

Address _____

Year of graduation _____ Present age _____

Please check the correct answer:	Yes	No
1. Are you farming full time?	___	___
2. Are you farming part time?	___	___
3. Are you working in an agri-related business?	___	___

If yes, please list the type of business: _____

4. Are you working in a non-agri-related business?
   Please list the type of business _____

5. If you answered questions 3 or 4 with "yes", please check one of the following: My job classification is

Unskilled	___
Semi-skilled	___
Skilled	___
Sales staff	___
Technical consultant	___
Supervisor	___
Manager	___

If you are employed in an occupation other than farming, please answer the following questions:

	Yes	No
6. Has your training in vocational agriculture been of help to you?	___	___
7. Did you attend college?	___	___

If yes, please list the name of college and your majoring subject _____

_____

	Yes	No
8. Did you attend a technical school?	___	___
If yes, which one? _____		
_____		
9. Did you attend a trade school?	___	___
If yes, which one? _____		
_____		
10. Are you a member of the Armed Services?	___	___

NON-FARM AGRICULTURAL OCCUPATIONAL TRAINING PROGRAM

_____
High School

COOPERATOR INTERVIEW FORM

Name of Business _____

Address _____ Phone Number _____

Type of Business _____

Manager's or Owner's Name _____

Type of jobs involved in conducting the business

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Training areas in which the student could be involved while employed

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Number of students that could be placed in a cooperative training program

Title of Job	Number of Agriculture Students You are Willing to Help Train 196___	196___	196___	196___
1.				
2.				
3.				
4.				
5.				

Job opportunities for high school graduates trained in agriculture

Title of Job	Number of Job Openings: Last Year	This Year	Next Two Years
1.			
2.			
3.			
4.			
5.			

STUDENT INTEREST SURVEY

Name _____ Age____ Year in School _____

Name of Father _____ Father's Occupation _____

Address _____ Phone Number _____

Do you live in town? Yes___ No___

Do you live on a farm? Yes___ No___
Number of Acres_____ Owned_____ Rented_____

What do you want to do for an occupation after graduating from high school?

_____

Why do you think you will like this occupation?_____

_____

What high school courses will you enroll in during your high school career or have enrolled in that will help prepare you for your preferred occupation?

Science _____
English _____
Spanish _____
Typing _____
Bookkeeping _____
Journalism _____
Mathematics _____
History _____
Music _____
Vocational agriculture _____
Industrial arts _____
Latin _____
Chemistry _____

Are you planning to go to a trade school? Yes___ No___
If yes, what will be your majoring courses in college?_____

_____

Are you planning to go to a trade school? Yes___ No___
If yes, what type of trade school will you attend?_____

Do you think you might be interested in any of the following occupations after graduation? Check the one or ones that might interest you.

_____ Farm advisor to bank and other lending agencies
_____ Hatcheryman
_____ Florist
_____ Field man for buying and selling farm organizations
_____ Selling feed, seed, fertilizer, farm machinery, spray materials, etc., to farmers
_____ Buying agricultural products from farmers
_____ Servicing machinery and equipment sold to farmers

Do you think you might be interested in any of the following occupations after graduation? Check the one or ones that might interest you.

_____ Auctioneer
_____ Artificial breeding technician
_____ Crop dusting or spraying (aerial and otherwise)
_____ Conservation service employee
_____ Custom machine operator
_____ Dairy Herd Improvement Association manager, field man, or tester
_____ Farm management and farm record service
_____ Forestry technician
_____ Landscape consultant
_____ Tree surgeon
_____ Land appraiser
_____ Seed, feed, milk, and meat inspector

Do you think you might be interested in any of the following occupations after graduation? Check the one or ones that might interest you.

_____ Agronomist (crops and soils)
_____ Agricultural journalist for radio, television, newspaper, or magazines
_____ Animal husbandman
_____ Agricultural conservationist
_____ Agriculture teacher in high school or college
_____ Agricultural economist
_____ County agricultural extension agent
_____ Forester
_____ Farm management specialist
_____ Food technician
_____ Horticulturist
_____ Rural sociologist
_____ Landscape architect
_____ Agricultural engineer
_____ Agricultural missionary
_____ Poultry specialist
_____ Veterinarian

Would you enroll in a high school four-year course of study covering livestock production, crop production, farm shop, farm mechanics (welding, electricity, farm machinery), farm management, rural sociology, parliamentary procedure, and public speaking, if it was offered? Yes _____ No _____

If yes, would you complete an agricultural production project at home such as: A beef steer; sow and litter; a breeding ewe; corn; wheat; and/or soybeans as part of your high school graduation requirement if additional high school credit was granted for this project? Yes_____ No _____

Would you enroll in a high school course of study covering animal and crop science, welding, electricity, gasoline engines, greenhouse production, nursery production, forestry, credit, carpentry, conservation, landscaping, meat cutting, parliamentary procedure, and public speaking in two years and for the third and fourth years work for one-half school day for additional training on a job of your choice? Yes _____ No _____

If you answered yes, for the first two years would you also be willing to participate in a cooperative project involving the production of livestock or grain if you were to receive part of the income from the sale of the item produced? Yes _____ No _____

In the space below, please feel free to write any suggestions that you might have concerning this survey.

_____
Student's signature

_____
Parent's signature

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PRE-TRAINING AND RELATED CLASSROOM INSTRUCTION FOR A COURSE IN NON-FARM AGRICULTURAL OCCUPATIONS IN VOCATIONAL AGRICULTURE

Committee No. 2

Ponney Cisco
Harry Plank

Consultant

Earl Kantner

This Is the Purpose

Experience in non-farm agricultural occupations will be secured by job work experience at training stations with local businesses. Along with the experience on the job, there needs to be instruction in the classroom related to the job experience. The work of Committee No. 2 is to outline some related classroom instruction suggestions according to the following objectives:

1. Planning a curriculum where the related classroom instruction is integrated into a regular vocational agriculture program

2. Planning a curriculum where the related classroom instruction will be in a separate specialized course related to the job work experiences of the class members

3. Determining the prerequisite requirements for these courses

4. Suggesting some pre-training instruction in vocational agriculture courses I, II and III in preparation for the special training in non-farm agricultural occupations

This is the Situation

1. Teaching for preparation of students for non-farm occupations in agriculture has been done only on a limited scale in a few departments in the state in pilot programs.

2. Other areas of vocational education in the state of Ohio have done more in training high school students for specific jobs than has vocational agriculture except for our training for farming.

3. Public Law 88-210 has opened the way to develop some programs in this field of non-farm agricultural occupations.

4. If a department goes into this expanded program, some changes will be necessary in the vocational agriculture curriculum to make time available for both student and teacher.

5. There are curriculum aids available through the State Department of Agricultural Education. These aids include some semester plans for the junior and senior years which help to make the vocational agricultural program more flexible.

6. There are certain abilities, appreciations and understandings that can best be acquired in the classroom before or during the time of on-job training.

This We Can Do

There are likely to be many different organizational patterns used by schools to prepare students for non-farm agricultural occupations through vocational agriculture. However, generally the students enrolled will be seniors with one or more years of course work in vocational agriculture. The related instruction for students pursuing an education in non-farm agricultural occupations will either be given in a separate class for these trainees or in a class with other seniors in vocational agriculture who have farming as their objective. In the latter situation the instruction related to non-farm agricultural occupations will be intergrated with the instruction related to the farming occupations.

Two curricula are presented in this report. They were developed for specific situations and presented as examples. Since a curriculum should be tailored to fit a situation so these curricula should be altered if used to develop a program of instruction.

The first curriculum to be presented is for a department that has one teacher of vocational agriculture and where the teacher is planning to have but one class of seniors. Instruction in this class will relate to agriculture, but to both farming and to non-farming occupations. The emphasis will be on business training and the students will be required to have either farm projects or non-farm job experience. Students must have completed at least one year of vocational agriculture prior to their senior year. Instruction and work in farm mechanics is not included, but can be added if desired by a substitution of curricular content. This may also be necessary to accommodate timely and pertinent problems relating to farming programs, on-job training and FFA activities.

INTEGRATED COURSE

VOCATIONAL AGRICULTURE IV

<u>September</u>

- Orientation to the course
  - Discuss the "Importance of Agriculture"
    "Non-farm Agricultural Occupations"
  - New film by New Holland on agricultural occupations
- Start a farm account series
  - Field trip to case farm
  - Boy's Village Farm figures to be used
  - Monthly figures to be caught up so they can be summarized after January 1
  - Why farm records and/or agricultural business
- Elevator sales slips and monthly statements
  - Office supply salesman or local elevator for sales slips and statements
  - Use bulletin, "Merchandising Products Used in the Farm Business" developed by Howard Nowels
- Start a simple bookkeeping system
  - Use a carbon statement form and a ledger card
  - Make entries from sales slips from above
  - Make a breakdown on sales into departments: Feed; Seed; Fertilizer; Chemicals; Etc.

<u>October</u>

- FFA corn yield figures
  - Yield check
  - Shrinkage, drying, discounts
- Financial statements
  - PCA and local bank
  - Develop a complete financial plan for the farm operator
    1. Budgets
    2. Guiding principles of using credit
    3. Factors to consider on financial plan
- Notes
  - PCA and bank notes
- Interest rates
  - Figure true rate of interest using formula in Federal Land Bank book, "Financing Farming Activities"
  - Show film, "Credit Where Credit Is Due"
- Monthly bookkeeping and farm accounts

November

- Total farm investment
  - Value of land and buildings
  - Compare farms listed for sale in local paper
  - Appraising farms
  - Value in power and equipment
    - Depreciation
    - Rental vs. ownership
    - Appraise used machinery
- Study Court House records
  - Filing of deeds, mortgages, notes
  - PCA man can help
- Insurance
  - Kinds of insurance
  - Amounts of insurance
  - Workman's Compensation
- Parliamentary procedure
- Monthly bookkeeping and farm accounts

December

- State feed laws
  - Requirements on feed tags for minimums and maximums
- State tests -- fertilizer and lime
  - State test reports
- Feed formulation
  - Detailed on vitamins and minerals (This could be training that would apply to a feed salesman.)
- Finish farm account entries
- Monthly bookkeeping

January

- Farm inventory
  - Field trip to case farm to actually take inventory
- Summarize farm accounts
  - Enter totals in book
- Study "Farm Business Analysis"
  - Compare the dairy analysis to the case farm
- Taxes
  - Income tax
  - Personal property tax
  - Social Security
- Summarize project books
  - Where boys have farming programs
- Monthly bookkeeping

February

- Marketing
  - Trends and cycles
  - Types of marketing (coop and independent)
- Marketing milk
  - Film, "The New Story of Milk"
  - Field trip to Akron Milk Producers
- Marketing eggs
  - Field trip to Wooster Egg Producers, Inc.
  - Representative from Wooster Egg Producers, Inc. in class
- Government programs in marketing
- Coop quiz
- Monthly bookkeeping

March

- Marketing meat: Packing
  - Local packing house
  - Retail
    - Supermarket
- How prices are determined
  - Compare local prices in paper
  - Text, "The Farm Management Handbook"
- Meat judging
  - Film, "Two Steaks"
- Grain marketing
- Grain futures
  - Illinois Bulletin 696, "Uses of Grain Futures Markets in the Farm Business"
- Monthly bookkeeping

April

- Farm planning: Field layout
  - Soil conservation plan
  - Soil test map of farm
  - Cropping system
    - Maximum economic capability
      1. Soil tests
      2. Planned production of crops
      3. Fertilizer and lime requirements
      4. Figure highest dollar return per acre
  - Livestock system
    - Livestock balanced to crop production
      1. Returns from livestock compared to crops
      2. Types of livestock
  - Labor requirements
    - Labor requirement plan
      1. Hired labor
      2. Family labor
- Relate this planning to non-farm agricultural occupations
- Use farm business and analysis materials (Soil Conservation and PCA can help.)
- Monthly bookkeeping

May

Agriculture careers
Films, "Blue Chip Farming"
"Agriculture USA"
Adjusting buildings and equipment to needs
Determining buildings and storage needs
Home beautification -- related to agricultural occupations
Summarize and total monthly bookkeeping

Individual conference periods will be spent with the boys who are placed on jobs. These conferences will be on labor relations, leadership development, personal development, etc.

The second curriculum was specifically planned for a department with one teacher conducting a separate class for senior students enrolled in non-farm agricultural training. However, as it may be observed, this curriculum could be used in a multiple teacher department where separate classes or so called segregated classes are scheduled for students pursuing the broadened program of vocational agriculture.

Those who designed the segregated course suggested that the content of Vocational Agriculture I, II and III be similar to that of former years except, that in teaching, application should be made to situations involving agricultural non-farm vocations as well as to farming. It must also be recognized that with a segregated class there needs to be a selection of students and further, that the personnel in the class will determine the instruction to be given. Since criteria have not been established by experience, the advice offered by those in Distributive Education, Business Education, and Diversified Cooperative Training should be heeded. They suggest that at the start we in vocational agriculture should select students who are:

1. At least 16 years of age
2. Interested in the course for the training and not merely for a job while in high school
3. Sufficiently capable, mentally and physically to satisfactorly complete their training
4. Employable
5. Prepared in technical agriculture through farm experience and successful completion of one year of vocational agriculture, or if the farm background is deficient successful completion of two years of vocational agriculture. Of course, the completing of three years of vocational agriculture prior to on-the-job training should be encouraged.

The curriculum presented does not suggest a time allocation, but it was recommended that about 60 per cent of the class time be devoted to the teaching of principles associated with businesses, 25 percent of the time to on-the-job problems, and the remaining 15 percent of the time to FFA and such other activities conducive to the effective conduct of a class in vocational agriculture.

The class is presumed to be at least for one period and the time requirements set up by the Ohio Division of Vocational Education. Also, this period should be scheduled immediately preceeding the time set aside for on-job experience.

The example presented lists the major areas of instruction and some of the important inclusions for each area. These areas are not presented in the order in which they should be taught nor is there any suggestion given regarding the amount of time to devote to each area.

VOCATIONAL AGRICULTURE IV

Orientation	Applying for your job Business ethics Human relations -- appearance, grooming, etc. Working permits, Social Security, etc. General store regulations and rules Possibilities in the business world
Agri-business Salesmanship	Introduction to selling Meeting the customer (the approach) Learning the sales demonstration Handling objections Closing the sale Attitudes important to success How to make change
Agri-business Management	Managing a business Making business transactions Sales slips, receipts, etc. Evaluating the business
Labor Relations	Work habits What the employer expects Qualities for promotion Working together Labor laws Labor unions
Leadership Development	Leadership traits Conducting meetings Speaking in public Professional development
Personal Development	Meeting people Job interviews Personality Grooming
Agricultural Economics and Rural Sociology	Importance of agriculture Agricultural complex Farm production unit Food production
Careers in Agriculture	Types of careers Incomes Job stability Requirements
Preparation for the World of Agri-business	Job interviews Establishing a home and family Community obligations Summary Examinations

Some Suggestions for Pre-training Instruction
in Preparation for the Special Training in Non-farm
Agricultural Occupation

1. First 3 years of Vocational Agriculture
   Vocational Agriculture I - Basic Principles in Agriculture
   Vocational Agriculture II - Production in Agriculture
   Vocational Agriculture III- Management and Mechanics in Agriculture

   Students in these courses will have production projects or other occupational experience.

2. Criteria for determining which year to teach certain subject matter during the four years.[7]

   a. Should provide a greater emphasis on the agricultural sciences during the first two years and be coordinated with student's agricultural occupational experience program needs. Survey agricultural opportunities in farming as well as non-farm jobs.

   b. Should provide a more advanced and complex study of crops and livestock production, agricultural engineering technology, and agri-business management within the last two years (may be in semester units).

   c. Should provide for study of certain phases of agri-business management throughout the four years. For example:
      (1) During the Vocational Agriculture I course, considerable time should be spent on agriculture as a business, the future of farming and allied agricultural interests, and the inter-relationship of farming and agricultural occupations.

      (2) During the Vocational Agriculture III course, a case-farm set of farm accounts should be started January 1 that will be completed during the course to be used and analyzed in the agricultural business course, Vocational Agriculture IV.

   d. Should be based upon the assumption that much of the training in agri-business management should be associated with the total farm operation rather than enterprise management. Farm business management may be a desirable program to offer young and adult farmer classes.

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[7]Crabbe, Leslie F., Gilbert S. Guiler, D. R. Purkey, John T. Starling, "Guide for Developing the Instructional Program for Vocational Agriculture," Columbus; Ohio Department of Education and Department of Agricultural Education, The Ohio State University.

e. Should devote approximately forty percent of the students' class time to the study of agricultural mechanics during a four-year course.

f. Should provide an opportunity for students to choose areas of specialization in agriculture with on-the-job training for agricultural occupational experience.

3. Use resource people from industry and services for class instruction.

   a. It is recognized that the teacher of agriculture cannot be a specialist in all the fields of non-farm agricultural occupations.

   b. This group of professional people is ready and willing to help in training for non-farm agricultural occupations if they are asked.

4. Use many field trips for orientation and exploring the field of non-farm agricultural occupations.

5. Consider the proposed curriculum for vocational agriculture in Ohio based on semesters. This is illustrated on the following page and is designed to give more program flexibility for the teacher and for the student.

   Example:

   Student A - May elect Vocational Agriculture I and II and then during the junior and senior years include any four of the eight specialized areas, each of which is one semester in length.

   Student B - May elect agriculture in the sophomore year, horticulture the first semester of the junior year, agricultural business the second semester, and be placed in an occupation during the senior year.

   Student C - May elect the three most interesting areas during the junior and senior year and, in a large department, the fourth semester course could be developed as the need warranted.

The "senior only" section is where the course in non-farm agricultural occupations is provided.

PROPOSED CURRICULUM PATTERN FOR VOCATIONAL AGRICULTURE IN OHIO

9th Agriculture Industry	10th Agriculture Production	11th	12th	Seniors Only
		Specialized Instruction by Major Areas on Semester Basis(Example Only-Not for Publication)		
Orientation to Agriculture Industry Animal Science Plant Science Agriculture Mechanics Leadership Guidance Occupational Opportunities in Agriculture	Basic Principles and Problems Found in: 1.Agricultural Business Management and Records 2.Animal Science 3.Crop and Soil Science 4.Agricultural Mechanics 5.Leadership Training	Agricultural Mechanics OR Horticultural Science OR Animal Science OR Crop Science	Agriculture Business Analysis OR Soil Science OR Farm Power and Machinery OR Non-farm Agri-business-Classroom and Occupational Experience	On-job Training Non-farm Agric. Special Selection ? ?

Occupational Experience Program required for all students while enrolled in vocational agriculture.

Bibliography

"Analysis of Commercial Feeds, Livestock Remedies, Fertilizers, and Agricultural Liming Materials," State of Ohio Department of Agriculture.

"Course of Study in Agriculture, 1963" University Park: Department of Agricultural Education, Pennsylvania State University.

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"Curriculum Planning for Vocational Agriculture," Teacher's Guide Series No. 4, Columbus: Department of Agricultural Education, The Ohio State University, 1961.

"Doane Agricultural Farm Management Guide" and Student Workbook, St. Louis, Missouri: Doane Agricultural Service.

"Financing Farming Activities," Louisville, Kentucky: Farm Credit Banks of Louisville.

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Rowse, Edward J. and Carroll A. Nolan, Fundamentals of Advertising, Cincinnati: South-Western Publishing Company, 1950.

Whittney. Farm Equipment and Retailing Handbook, Kansas City, Missouri: Implement and Tractor.

Wingate, John W. and Carroll A. Nolan, Fundamentals of Selling, Cincinnati: South-Western Publishing Company, 1959.

Wingate, John W. and J. Dana Weiner, Retail Merchandising, Cincinnati: South-Western Publishing Company, 1963.

DEVELOPING INDIVIDUAL TRAINING PROGRAMS

Committee No. 3

Gordon Eaton
James Omweg

Consultant

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This Is the Purpose

The training programs should include the content of all the instruction provided whether it be in the classroom, on the job, in individual conference, individual study, or in group committee work. The program should consider the step-by-step outline for each of the needs of the occupation for which training is to be provided.

To those who are developing training programs, this report may be of assistance by:

1. Suggesting procedures to use in identifying the non-farm job opportunities in the community;

2. Suggesting procedures for developing individual training programs for each enrollee;

3. Suggesting aids in identifying specific non-farm job requirements;

4. Suggesting records to be kept for the program.

This Is the Situation

The program of vocational agriculture is presently being evaluated because of the changes taking place in agriculture. The technological advances being put into practice have accelerated agriculture's changes. There has been a decrease in the number of farmers and an increase in the number of employees in occupations related to agriculture and, specifically, to non-farm agriculture occupations. This increase in demand of employees for non-farm agricultural occupations needing some knowledge of agriculture has prompted the need for a new phase of educational training to be added to the present vocational agriculture program in Ohio.

Since Mr. Brum's[8] study reveals that 5.3 percent of Ohio's total employed population are working in non-farm agricultural related occupations, programs of vocational agriculture should be aimed at not only the farming occupations areas, but, also, the non-farm agricultural occupations. With the advent of education for non-farm occupations and the newness of the inclusion in the federally supported program, there is little information available to aid teachers to fulfill this assignment. For instance, there needs to be developed job descriptions, training guides, for each occupation, criteria for experience, teaching aids for cooperator, lists of skills and/or competencies for each occupation, teaching machines, work books, individual study guides and references. Probably, we are least prepared and will be hampered most by deficiencies in this aspect of the broadened program.

This We Can Do

1. Identify On-the-job Training Opportunities

   a. The teacher should list first the on-job training areas available from his own knowledge and experience of a cooperating center.

   b. The advisory committee can also offer valuable assistance in identifying on-the-job training areas.

   c. When cooperators are contacted, consideration should be given to job areas available and for which experience can be provided. Refer to "Cooperator Interview," Section 1.

2. Develop an Individual Training Plan

   After a student is employed in an approved cooperating center, an individual training plan should be developed. The plan may include such general information as: The student's name; age; year in school; occupation pursued; cooperating center; person directly responsible for supervision at the cooperating center; length of training period; beginning wages; and hours of employment.

   The training plan should also include the list of job areas or specific activities in which the student is to participate in the cooperating center. Some jobs have been analyzed by vocational agriculture, other vocational services, and agricultural services, business, and industries. In the areas that analyses are not available, the teacher will need to refer to the procedure used to identify on-the-job training opportunities and prepare an analysis. A suggested format is included, showing a completed training plan for a Garden Supply and Nursery Center.

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[8] H.D.Brum "Employment Opportunities and Needed Competencies for Workers in Ohio" (Unpublished).

After the training plan is developed the student and cooperator, along with the teacher, need to determine:

a. Who is to provide the instruction for each activity listed in the job training plan;

b. Where the instruction will occur, classroom or on the job;

c. When the activity should be completed.

Included in this report is a suggested form to use when developing individual training programs. The form is in two parts. The first is a cover to provide an available reference of important information. This may be attached to as many sheets of the second part as are needed to outline the training plan.

The second part has five divisions: The Instructional Units and Needed Skills. Here the major units or larger segments of the training program may be recorded. Then these units may be divided with as much detail as desired by the teacher and student. This breakdown may, and probably should, include the skills, both managerial and manipulative needed by the student for adequate preparation for employment after completing the training program.

The Reference column should have recorded the books, bulletins and other resources available to the student for individual study. Study materials must be usable and on student reading levels. The listings should cover each unit. If admonition is in order, "do not slight this part of the plan".

The next two major columns are headed "Instruction" and "Experience". Instruction refers to the most likely way or ways that the related, the academic and the informational aspects of a unit are acquired by the student. For some parts of the unit the student may receive class and/or on-job instruction. For some he may receive sufficient assistance from the cooperator on the job, while in some situations the student may need to rely entirely upon individual study and with or without special help from the teacher or cooperator.

The first two columns under Experience is for checking where the experience is to be received and the second two columns are to record the kind of experience received, whether performed or observed.

At frequent intervals the training program should be reviewed by the student, the teacher, and the cooperator to determine the progress made by the student and to set goals for future study and participation. A final checking of the training plan, probably with red pencil, will afford a means of program evaluation.

Individual Training Plan

Name _____

Address _____ Telephone Number _____

Year in school _____

Parents' name _____

Training occupation _____

Cooperating station _____

Address _____ Telephone Number _____

Cooperating Instructor _____ Telephone Number _____

Student's School Schedule by Periods

1. 5.

2. 6.

3. 7.

4. 8.

Student's On-job Working Schedule

GARDEN SUPPLY AND NURSERY PLANS

Instructional Units	Unit Breakdown and/or Skills Needed	References	Instruction			Experience			
			Individual	Class	On job	School	On job	Observed	Performed
I. Inventory Capital Stock and Equipment									
A. Tree Materials	Identifying Banding Setting Staking, Protecting Moving Selecting Pruning Etc.	General Horticulture Talbert Practical Horticulture, Shoemaker, Teskey							
B. Ornamental Shrubs	Identifying Selecting Setting Pruning Etc.	Horticulture Science, Janick							
C. Slat House	Constructing Materials Maintenance Using Etc.								

Copies of training programs are available in the Department of Agricultural Education, The Ohio State University.

3. Develop Individual Study Guides for Projects

As each unit is studied by the student, the training plan may need to be expanded to meet individual projects and situations. The report of this individual project may well be an additional assignment -- similar to improvement projects and supplementary practices in farming programs. For instance, a student interested in becoming employed at a garden center may wish to work in one of the many specialized jobs in the field. Such a job may well be landscaping.

LANDSCAPING

INDIVIDUAL STUDY GUIDE

On-Job Experience: Garden Center

I. Development of Landscaping Plan

A. Types of arrangement
B. Principles
C. Lawn suggestions
D. Drives and walks
E. Choosing trees
F. Where to plant trees
G. Shrubs to plant
H. Flowers to grow
I. Roses
J. Vines and their use
K. Cost of plant material
L. Pruning practices
M. Ornamental evergreens
N. Things to do and not to do
O. Planting suggestions
   1. Care of nursery stock
   2. To prepare for planting
   3. Setting
   4. Preventing injury
   5. Subsequent care
P. Some trees for special purposes
Q. Shrubs for special purposes
R. Small evergreens for special needs
S. Detailed drawing to scale of plan
T. Detailed outline of cost for plan

(Things to consider in developing an individual project)

References

Harrison, W. R. Modern Garden Supply Retailing. Washington, D.C.: Monumental Press, Inc.

Etc.

4. Provide Job Description

Teachers should secure detailed job descriptions of the separate occupations for which they are to provide training. There are many sources of these descriptions such as the ones prepared by the Ohio State Employment Service, or "Job Openings for Persons Trained in Agriculture," distributed by the Dean's Office, College of Agriculture and Home Economics, The Ohio State University.

Many of the larger companies, such as those involved in farm machinery, are members of state and national organizations. These organizations develop job descriptions for many of the positions needing personnel.

In some situations, it may be necessary for the teacher and the cooperating instructor to prepare descriptions for specific jobs.

Included is a job description of a Garden Store Owner. This is detailed and probably unlike most descriptions available.

GARDEN SUPPLY STORE OWNER[9]

Description of Work

Garden supply stores -- dealing strictly in garden plants, fertilizers, insecticides, and similar merchandise -- are relative newcomers to the field of retailing. It is only since the 1940's that stores of this type have become widespread throughout the country. Garden Supply Store Owners face competition from almost thirty different types of retail establishments which handle both large and small lines of garden merchandise as sidelines. These include hardware and feed stores, retail nurseries, department and grocery stores, and implement dealers. Subtracting the stores which handle garden supplies as one of many different lines leaves the following four retail outlets which are designated as true garden supply stores. The duties of the Garden Supply Store Owner vary with each type.

The city garden store is the most "storelike" of the four, having fixtures, counters, and display areas similar to any other retail store. It deals in garden supplies and accessories, such as fertilizers, sprays, garden tools, small types of power equipment, pots, planters, and ceramics. Many city garden supply stores handle no plant material at all-- with the exception of seeds, prepackaged bulbs, and potted house plants. A store of this type sells most of its products in small amounts (such as two-pound bags of potting soil) for it caters to apartment house residents and city small-home owners. The operator of such a store seldom operates a nursery or greenhouse. He buys his limited stock of growing plants from local nurseries or has them shipped in.

A second type of store is the nursery-garden shop. Here the operator deals in both supplies and plants. Many of the more successful stores are in suburban areas where homeowners have large lawns and gardens. This store owner stocks large power equipment. He usually relies on wholesale growers or nurseries to supply his large and varied stock of plants, shrubs, and trees.

Emphasis is on the sale of growing plants and flowers in the suburban nursery, the third variety of garden store. Since the owner raises and sells his own plants, the greenhouse or lathhouse is the main "store." Often he has little space for displaying any garden equipment or supplies other than his "live" stock and a few essentials such as potting or planting soil.

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[9] Occupational Guidance. Unit 5, Volume VII. Minneapolis: Finney Company, 1964.

The fourth and final outlet is the vacant lot nursery, a small-scale business which operates on a seasonal basis (spring, summer, and fall). The owner usually concentrates on selling seedlings or annual plants. He may grow them himself in flats or purchase them from wholesale growers. He also may handle perennials and a limited collection of shrubs and small trees. Since he must dispose of all his stock before winter, he must be careful not to overbuy or overplant. He usually operates on a close margin; therefore, anything he fails to sell cuts deeply into his profits. Frequently the owner of such an operation expands his activities within a few years. Thus, the vacant lot nursery often develops into the suburban nursery.

The owner-operator of any of these four businesses must have gardening know-how as well as a green thumb, for his customers will expect free gardening advice along with their purchases. If he deals largely in gardening supplies, he must keep up with new items on the market. Because today's consumers are more knowledgeable in their buying habits, they expect their garden store dealer to keep his stock up to date; if he does not, they take their business to dealers who do. Within the past fifteen years enormous strides have been made in the manufacture of pesticides, fertilizers, and prepackaged sterilized and fertilized garden soil mixtures. Hence, the dealer also must keep abreast of recent scientific discoveries which affect his field. Finally, commercial nurseries and experimental farms are constantly developing new and improved disease-resistant plants, tree, grasses, and shrubs. Competition is keen among nurseries to offer these new plants to their customers. New strains usually are in short supply and, therefore, are expensive; consequently, the dealer or nurseryman who is able to secure them is assured of good profits.

In addition to knowing his merchandise thoroughly, the Garden Supply Store Owner faces the same problems as any other retailer -- with an added problem. His stock is highly perishable. He must be a good salesman and develop an effective plan to display his goods so that they will appeal to his customers. He writes his own newspaper ads and other advertising copy. If he raises his own nursery stock, he must be prepared to spend long hours planting, thinning, trimming, potting and repotting, watering, and feeding his growing stock. He also must see that plants are labeled and priced correctly. It is vital that he keep a close check on his inventory, taking note of plants or supplies that move quickly and must be reordered and of those which do not sell and consequently may be dropped entirely from his stock. Many garden stores service and supply parts for the power equipment they sell.

As a beginning businessman the store owner frequently needs outside financing to get his business on its feet. He must familiarize himself with various types of loans, bank financing, "floor planning," government assistance to small businesses and similar methods of operating on borrowed capital. He must watch retail trends closely so that he does not overextend himself when a recession threatens. Before deciding where to locate, he studies his trade area carefully. Suburban sites usually offer the greatest opportunity for profits since gardening requires space and the suburban homeowner usually has a larger lot than his city neighbor. Parking facilities play an important part in his choice of location, too. Because his merchandise is often too heavy and bulky or too fragile and delicate to carry long distances, customers prefer to shop where adjacent parking is available. The Garden Supply Store Owner must consider these and other factors if he hopes to operate a profitable business. His business duties overlap with those of a promoter, gardener, landscape authority, mechanical genius, and exterminator.

Earnings

Earnings of this businessman vary according to many factors -- the type, size, and location of his operation. He may raise his own plants or buy them from wholesalers. His business may be year-round or strictly seasonal. There is normally a larger percentage of profit per sale on plants than on manufactured or prepackaged merchandise. The majority of manufactured items return a gross profit of from 33 1/3 to 40 percent to the seller. Plants, on the other hand, may show as much as 200 percent profit. However, it should be pointed out that the longer the plant grows in a flat, the less salable it becomes. With plants that are grown in pots or tubs, the reverse is true, since prices go up as the plants grow larger.

Income of a vacant lot nursery owner may range anywhere from $4,000 to $6,000 for a five-to-seven-month season. Large city garden shops may gross well over $50,000 annually. Suburban nurseries and nursery and garden shops likewise provide a wide range of income for their owners. Weather conditions can play an important role in turnover. Wind, hail, excessive moisture, and droughts can wipe out plantings and result in increased plant sales, while insect invasions and diseases boost sales of dusts and sprays.

History of Occupation

The garden supply store gained popularity during the wartime period of the 1940's. People who had little previous knowledge of growing vegetables planted "victory gardens." After the war they continued to garden, no longer out of necessity, but out of keen interest and satisfaction in their work. Scientific and technological advances within the past three decades also contributed to the growth of gardening, as did increased home ownership. New strains of hardy, disease-resistant plants and effective, odorless, easy-to-use insecticides and fertilizers added up to easier and more successful do-it-yourself gardening. Colorful and well-edited home and garden magazines, plus intensive advertising and promotion programs conducted by garden suppliers have contributed much to the interest that has developed among homeowners. Naturally, the growth of garden supply stores has closely paralleled this rising interest in gardening and landscaping.

Working Conditions

The owner of a garden supply outlet must reconcile himself to an up-and-down working pace. His peak season continues through early spring into late autumn. During the fall and winter, sales dwindle. Some garden outlets close for the winter; others operate on limited schedules. In southern or southwestern regions where there is a year-round growing season, the Garden Supply Store Owner operates on a more normal schedule. The dealer may concentrate on indoor sales work or outdoor gardening, depending on the type of his operation. Many businesses are husband-wife partnerships. An operator may have no help outside his own family, or, in large suburban outlets, may employ thirty or more stock boys, cashiers, salesclerks, office workers, maintenance men, and gardeners.

Hours of Work

The busy spring season requires the Garden Supply Store Owner to put in long hours of work. Most stores remain open until 9:00 or 10:00 P.M. Many are open on Sundays and holidays, too. If he has his own greenhouse, the owner may spend several hours working with his plants before opening his store. He frequently does his "paper work" after business hours.

Ability Required

Good business sense, experience in gardening and landscaping, and a genuine interest in growing plants are important to a successful operation. Physical ability and stamina are assets, too, since the Garden Supply Store Owner is on his feet almost constantly. If he operates his own nursery he spends much time bending, stooping, and kneeling. Mathematical and mechanical skills and the ability to meet the public and to plan ahead are also important to his business success.

Temperament Required

This type of operation requires a manager who can organize his time so that his business runs smoothly, even during busiest days. He must be tactful and helpful with customers and especially tolerant of those absolutely lacking in gardening knowledge. Often, bad weather and other factors over which he has no control reduce his earnings. He learns to accept these disappointments without becoming discouraged.

Education and Training Required

Although a college education ordinarily is not required in this occupation, it is extremely helpful. Botany, horticulture, and landscape architecture are among suggested college courses. Study of business and economics will prove useful, too. Persons planning a career in this field should first gain practical experience as either nursery or garden store employees.

Finances Required Before Earning

Today the cost of college tuition averages from about $400 to $800 a year, plus board and room, books, and incidentals.

Business loans to launch a garden supply operation may be secured through various lending agencies, with rates varying in different parts of the country. Initial investment in a city garden store for stock and fixtures is at least $5,000. For safe operation, there should be a cash reserve of another $5,000 to be used as working capital. These are minimum figures. Purchase price or rental rate of the store will depend on its size and location.

Suburban nursery and garden shops require a smaller investment. The amount varies according to rent, overhead, and amount of stock. By careful planning, a shop can be started with initial capital of $3,000 to $5,000. Modern credit programs work to the advantage of small businesses.

Banks throughout the nation provide "flooring" plans; these apply only to so-called durable goods (including powered garden equipment and machinery). Such a plan enables the business owner to buy goods with established bank credit, rather than tying up his own capital.

Financial Aids

For a complete article on scholarships and financial aids see:

Occupational Guidance
"Financial Aids for College Students
Unit 3, Volume I, Supplement
Finney Company
3350 Gorham Avenue
Minneapolis, Minnesota, 55426

Attractive Features

The satisfaction of operating one's own business more than compensates for the headaches it may cause. Rarely does a person enter the field who does not understand and enjoy gardening. In fact, many stores are opened as a profitable outgrowth of a gardening hobby. A reputable dealer is respected as an authority, enjoying reasonable profits and a fair return on his investment.

Disadvantages

A fluctuating market and unfavorable weather conditions can upset the best-laid plans. Since garden stores deal in perishable goods, they depend on rapid turnover to realize a profit. If sales are slow, the owner can lose heavily in a relatively short period. Since a business of this type is seasonal, it is impractical to maintain a full staff year-round. Therefore, new employees must be trained each year.

Outlook for the Future

Rising home ownership and the move to the suburbs are two big reasons for a continuing and favorable outlook in this work. The reduction of the workweek, resulting in more leisure time, enables people to spend additional time gardening. New and better equipment and garden supplies, plus improved plant varieties, continue to make gardening easier and more satisfying. The Garden Supply Store Owner who keeps abreast of new developments will find a ready market for his goods.

Licensing, Unions, Organizations

In most towns and cities there are zoning ordinances specifying the kinds of businesses (if any) which may be established in given areas. Practically all cities require a business license, with average fees ranging from $10 to $20. Sometimes, an annual fee, plus a small percentage of the yearly gross earnings, is required. Nursery fees also are charged by most states. Some states demand a flat yearly fee; others require a standard fee, plus an added sum based on the amount of nursery acreage. State fees commonly range from $1 to $20. If a dealer confines himself to local sales, the reciprocating license arrangements between states are unimportant to him. However, if he plans to ship plants across state boundaries, it is necessary to make clearance arrangements. In most states, reciprocal privileges have been established and the nursery licenses of one state are honored by the agriculture department of another state.

State inspectors pay periodic visits to nurseries and garden stores to insure that plants offered for sale are free of communicable diseases and destructive insect pests. A store may not be certified (licensed) unless it passes these inspections. In Louisiana, the prospective owner must pass a state examination and be a graduate of a state-approved horticultural college before he can open a nursery. There are many professional organizations in this field, including national, state, and local nurserymen's associations and the National Association of Garden Supply Dealers.

Suggested Courses in High School

Classes in agriculture, biology, botany, and business will prove helpful. Since plants are frequently sold under their Latin names, the study of this language will be worthwhile, too. A student planning to attend college should make certain his high school program fulfills the admission requirements of the college of his choice.

Suggested High School Activities

Junior garden clubs, Future Farmers of America, and 4-H Clubs all help aspiring young gardeners gain practical knowledge through special gardening, landscaping, and soil-study projects which these organizations encourage.

Methods to Enter Work

A would-be garden store operator should work in an established store or nursery before considering starting his own business. When he does so, he should proceed cautiously, making certain he has the necessary financing and working capital. He will need legal counseling as well as sound business advice.

Testing Your Interests

How can you know if you are suited to this occupation? Ask yourself these questions. If you answer "yes" to most of them and the job sounds interesting to you, it would be a good idea for you to look into this vocation further as a possible career.

1. Do you enjoy gardening?

2. Have you a better-than-average knowledge of garden supplies?

3. Are you a good salesman?

4. Does running a business appeal to you?

Related Information

Purchasable Material:

"Modern Garden Supply Retailing," by W. R. Harrison
Monumental Press, Inc.
1745 K Street, N. W.
Washington, D. C., 20006

"Selecting a Store Location" (25¢)
U. S. Government Printing Office
Washington, D. C., 20425

"Popular Gardening" (yearly subscription, $3.50)
Holt, Rinehart, and Winston, Inc.
383 Madison Avenue
New York, New York, 10017

"Horticulture Science," by Jules Janick ($8.50)
W. H. Freeman and Company
660 Market Street
San Francisco, California

"General Horticulture," by Thomas J. Talbert
Lea and Febiger
Philadelphia, Pennsylvania

"Practical Horticulture," by James S. Shoemaker and Benjamin J. E. Teskey
John Wiley and Sons, Inc.
New York, New York

Visual Aids:

"How Green Is Your Garden?" (16 mm, color, sound, 30 min.)
This film shows lawns and gardens and gives useful how-to-do-it information on lawn and garden care. (Available to schools if audience numbers fifty or more and to adult groups.) Free loan. Pay transportation charges.

Films of the Nations Distributors, Inc.
62 West 45th Street
New York, New York, 10036

"Lawn and Garden Insect Control" 16 mm, color, sound, 14 min.)
The destruction of garden pests is shown in this film. Free loan. Pay transportation costs.

Modern Talking Picture Service
3 East 54th Street
New York, New York, 10022

Records

The Supervised Work Experience Record Book for Vocational Agriculture, published by the French-Bray Printing Company, should be used. This book provides for keeping a record of student's career choices, work agreements, goals, daily record of activities, and wages with a year's summary, improvement projects, and personal account.

5. Develop training plans for all non-farm agricultural occupations

   a. Individual training plans should be developed for each of the possible training areas in non-farm agricultural occupations in the state of Ohio. These could be used by teachers to develop with students individual training guides. This would also help standardize the training for agricultural occupations throughout Ohio.

   b. The development of these training plans could be encouraged as special problems.

   c. A standardized format should be developed so that there is consistency in the prepared training programs. This will aid in teacher education. It should also enable more teachers to participate and to benefit from cooperative effort.

PROVIDING COOPERATIVE ON-JOB EXPERIENCE

Committee No. 4

James R. Beckley
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This Is the Purpose

On-job training is essential for the trainee to become proficient in the competencies which are considered necessary to become successfully employed in his chosen non-farm agricultural occupation. Educators and agricultural business managers are in agreement that certain phases of the non-farm agricultural training program can be more successfully accomplished through on-job training experience provided by a cooperating employer, with supplemental related instruction being provided in the classroom by the vocational agriculture instructor during the period of on-job training. In order to provide a complete and rewarding experience it is essential that good school-employer relations be maintained, adequate on-job supervision by vocational agriculture instructor be provided, appropriate and periodic evaluation of trainee's progress by employer be accomplished, and the qualified trainees and cooperating employers be selected.

On-job experiences assist students in acquiring the necessary skills and abilities for gainful employment. To facilitate the experiences, the following objectives are suggested:

1. Utilizing advisory committees to provide adequate on-job experiences

2. Reviewing with the cooperating employer the list of skills and abilities to be included in the trainee's program

3. Selecting cooperating employers who will provide the necessary training environment and instruction needed by trainees

4. Developing criteria for use in evaluating the training qualification of the cooperating employer

5. Developing a training agreement which specifies the conditions under which the on-job training program will operate

6. Providing for systematic supervision and coordination by the vocational agriculture teacher during on-job training of trainee

7. Developing a progress report for continuous evaluation by the cooperating employer and student

8. Developing guidelines for selection of trainees for on-job experiences

9. Securing desirable relationships among students, parents, teacher, and cooperating employer

10. Determining the scope of specific non-farm agricultural occupations

This Is the Situation

One of the most important decisions the individual will ever make is the choice of an occupation. In our present society we are likely to spend half of our waking hours working for a living; therefore, how well the individual likes his occupation will determine to a great extent the happiness and satisfaction he gets out of life.

Fewer and fewer workers are needed on farms as more and more chores become mechanized, yet some 23 million jobs in the United States are closely tied to agriculture in a new kind of service called agri-business.

Today, farmers function as just one part of a wholly new farm-industry team called agri-business. For every farmer on the land, from two to three persons working in related lines of business are needed to keep him going.

Agriculture is Ohio's leading industry -- as well as the nation's largest industry. Thus, while the number of persons needed for on-farm production has decreased rather rapidly, related off-farm agricultural occupations have multiplied astoundingly, and are making new careers for some of the people forced off the land.

Many former farm workers crowding into cities have helped to swell the rolls of the jobless because many of them lack the skills required by industry.

"In almost any business today, on or off the farm, the job goes to the person who has prepared for it. More and more, agricultural related jobs require specific study, training, and experience -- success in farm-related careers will in the future belong more than ever to the man or woman who has especially prepared to serve what has become an exceedingly complex and competitive business."[10]

"In addition to Ohio's 140,000 farmers, there are some 165,262 non-farm agricultural related occupations in Ohio which require some knowledge of agriculture."[11] The areas of competencies needed by the non-farm agricultural workers in Ohio are:

1. Animal science
2. Insects, diseases, and pest control
3. Crop production
4. Food processing
5. Soil science
6. Forestry
7. Horticulture
8. Agricultural engineering
9. Agricultural economics

According to the Ohio State Department of Education Survey, in 1963-1964,[12] 9.0 percent of Ohio's occupational forces are employed in agriculture, 3.7 percent on farms and 5.3 percent non-farm, while only 2.1 percent of Ohio's high school students are enrolled in vocational agriculture, 1.3 percent are enrolled in distributive education, and 3.1 percent in vocational trades and industrial education.

This study indicates that a 28 percent increase of non-farm agricultural related occupations can be expected in the ten-year period, 1960 to 1970. During this same period an expected decrease of 13 percent on-farm workers is projected.

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[10] Robert Worrall, Assistant to the Dean, College of Agriculture and Home Economics, The Ohio State University, Presentation at Workshop, June 22, 1964.

[11] Herbert D. Brum, Assistant State Supervisor of Vocational Agriculture, Ohio, Presentation at Workshop, June 23, 1964.

[12] State Department of Education, Ohio, School Year 1963-1964.

In the past our vocational agriculture programs have concentrated their efforts toward preparing students for occupations in production agriculture with the major emphasis on returning to the farm and little or no training for these related agricultural occupations. In December of 1963 the Perkins Bill (Public Law 88-210) was passed which will permit the legal training for non-farm agricultural occupations as soon as legislation appropriates funds for reimbursement for local programs of vocational agriculture.

Until funds are appropriated for carrying out this type of vocational agriculture program, individual teachers may establish pilot programs with the approval of the local board of education and state supervisory personnel to conduct non-farm agricultural occupation training programs.

It is recommended that vocational agriculture teachers attend non-credit area workshops for conducting non-farm agricultural occupation experience programs prior to embarking upon this phase of the total vocational agriculture program.

This We Can Do

1. Utilize Advisory Committees

An advisory committee, properly selected and conditioned, can be a definite asset to the vocational agriculture teacher in the following ways:

a. Assist in determining on-job training stations

b. Assist in determining training outlines or job descriptions

c. Assist in securing resource personnel to help instruct in related on-job training

d. Assist in public relations work

e. Assist in broadening teacher's contacts

f. Assist in evaluation of non-farm experience program

2. Provide On-job Training Programs

The vocational agriculture teacher, together with the assistance of the advisory committee, should develop training schedules to guide both the cooperating employer for on-job training and the vocational agriculture teacher for related classroom instruction. The teacher, together with the cooperating employer, should develop an understanding of the total training program and indicate responsibilities of each party for the student trainee's on-job and related classroom training program.

Suggested training programs and training program guides need to be developed by the Agricultural Education Department which will provide the basis for a comprehensive program from which the trainee can obtain the necessary skills, abilities, attitudes, and knowledge to secure and maintain successful employment in the area for which he is training.

3. Evaluate Candidates for Non-farm Agricultural Cooperators

The evaluating device on next page may prove helpful.

NON-FARM AGRICULTURAL COOPERATOR

Name _____

Criteria	Favorability
1. Interested in helping boys	5 4 3 2 1
2. Successful in agri-business	5 4 3 2 1
3. Able to get along with boys	5 4 3 2 1
4. Willing to cooperate	5 4 3 2 1
5. Efficient as an agri-businessman	5 4 3 2 1
6. Of good character	5 4 3 2 1
7. Emotionally stable	5 4 3 2 1
8. The head of a respectable home	5 4 3 2 1
9. Aware of the function of vocational agriculture	5 4 3 2 1
10. Aware of the function of the non-farm agricultural on-job experience program	5 4 3 2 1
11. A member of agricultural, civic, or community organizations	5 4 3 2 1
12. Motivated by high ideals	5 4 3 2 1
13. Eager and hard working	5 4 3 2 1
14. A good influence (spiritually)	5 4 3 2 1
15. Tactful	5 4 3 2 1
16. Open-minded	5 4 3 2 1
OVER-ALL RATING	5 4 3 2 1

5 - Exceptionally favorable
4 - Favorable
3 - Somewhat favorable
2 - Somewhat unfavorable
1 - Exceptionally unfavorable

4. Select Cooperating Employers

It should be understood from the very beginning that all potential non-farm agricultural businesses will not be suitable cooperating training stations. The cooperating employer needs to be carefully chosen as the success or failure of the program depends to a large extent upon him. The following suggested procedures are recommended in choosing the cooperating employer.

a. Vocational agriculture teacher list potential training stations in community.

b. Teacher review list of potential cooperators with advisory committee. Committee suggest possible cooperating employers to teacher.

c. Suggested cooperating employers are rated by teacher, using "Non-farm Agricultural Cooperator" criteria sheet.

d. Teacher personally interview suggested cooperators with an average rating of "4" or above to determine willingness to cooperate.

e. Teacher select cooperating employers with rating of "4" or "5" who are willing to cooperate in on-job training program.

COOPERATIVE VOCATIONAL NON-FARM AGRICULTURAL TRAINING

PROGRAM AGREEMENT

Cooperative vocational non-farm agricultural training is designed to provide an opportunity for a student to develop vocational skills, technical knowledge, and sufficient social and leadership ability to become a well-adjusted beginning worker in the community. While accomplishing these objectives, there are definite requirements that must be met and there are definite responsibilities the student must realize and agree to carry out to the fullest extent.

As a condition for acceptance into _____
(name of non-farm agricultural

_____, the student agrees:
business)

1. To conform to the regulations set forth by the vocational agriculture teacher and employer, to be punctual, to be regular in attendance at school and on the job, to notify the employer and coordinator in advance in case of absence from school or from the job

2. To accept the vocational agriculture teacher as the authority to determine the total credit and school grade for the vocational agriculture course (to earn his credits, the student must pass both the classroom work and the work in the work station)

3. To perform related study assignments with earnestness and sincerity

4. To carry out the training on the job and in school in such a manner that it will reflect credit upon himself and on the school

5. To perform all duties in a creditable manner

6. To accept the school regulation that any student absent from school during the morning classes, class period, or part of a class period of the morning classes, may not report for work that day

7. Not to be employed in another part-time job which involves work beyond the cooperative training program

OTHER CONDITIONS:

1. The employment and training of the student shall be in accordance with federal, state, and local laws and regulations.

2. The vocational agriculture teacher shall endeavor to adjust all complaints with the cooperation of all parties concerned and shall have the authority to transfer or withdraw a student at any time. The vocational agriculture teacher, if transfer or withdrawal is necessary, will notify all parties concerned.

3. In the event that a student is dismissed from the program, the student may not continue working for his employer. If the cooperator does not agree to this condition, the agricultural business shall cease to be a training station for the cooperating students the following year. Student dismissed may not be rehired until such time as he would ordinarily graduate from high school.

4. Parents (or guardians) will assume responsibility over any conduct or safety of the student from the time he leaves school until he reports to his job; likewise, from the time he leaves his job until his arrival home.

5. Students are not permitted in school during school hours unless they are scheduled for lunch, classes, or study hall. Students will be required to carry their daily schedule at all times.

Parent (or guardian)	Student
Cooperator	Vocational Agriculture Teacher

STUDENT-TRAINEE PROGRESS REPORT_____HIGH SCHOOL
(to be completed by employer)

_____in_____ _____
Name Non-farm Agriculture Business Date

Please check the appropriate blanks. (Use other side for additional comments.)

I. APPEARANCE Suggestions for Improvement

___ Appearance is an asset to business
___ Usually neat in appearance
___ Appearance needs improvement
___ Appearance is detriment to store

II. PUNCTUALITY

___ Always on time
___ Usually on time
___ Occasionally late
___ Frequently late

III. ATTENDANCE

___ Usually regular in attendance
___ Seldom absent
___ Occasionally absent
___ Frequently absent

IV. DEPENDABILITY

___ Reliable in following instructions
___ Usually follows instructions
___ Sometimes careless in following instructions
___ Cannot be relied upon to follow instructions

V. INTEREST IN WORK

___ Usually enthusiastic about work
___ Shows interest in work most of time
___ Interested in certain phases
___ Lacks interest in work

VI. JUDGMENT

___ Wise in actions and in making decisions
___ Usually shows sound judgment
___ Sometimes shows lack of judgment
___ Poor judgment reflection in company

VII. PRODUCTION

Suggestions for Improvement

___ Exceeds average production
___ Shows initiative in getting work done
___ Should produce more; is average
___ Low production makes liability

VIII. CUSTOMER RELATIONS

___ Is remembered by customers
___ Customer reaction is pleasant
___ Customer relations need improvement
___ Customer reaction is indifferent

IX. INITIATIVE

___ Recognizes work to be done and does it without direction
___ Sometimes goes ahead in work not assigned
___ Seldom seeks work beyond regular routine duties
___ Shows lack of vision of work

On what type of work would you like the employee to show more initiative?

X. COOPERATION

___ Works unusually well with others
___ Cooperates well; shows willingness
___ Helps when asked
___ Pulls against others

___ Solicits and receives constructive cooperation of others
___ Tends to lead others in right direction
___ Occasionally uncooperative
___ Makes no effort to work through others

XI. RATING OF STUDENT

___ Excellent
___ Above average
___ Average
___ Below average
___ Very poor

Rated by _____

Department _____

Position _____

STUDENT EVALUATION OF ON-THE-JOB TRAINING

Name _____ Place of Employment _____

Part I: Please answer yes or no.

1. Did the knowledge you received from this experience justify the time you spent on the job? _____
2. Do you believe the experience you gained will help you in later life? _____
3. Do you believe that this training will be of help to you in getting a job after graduation? _____
4. Did the experience you gained help you in deciding what occupation you will choose after graduation? _____
5. Would you recommend that this program be continued? _____
6. Is the period of one year too long or too short? Too long _____ Too short _____
7. Did the program hurt your school work in any way? _____
8. Did your employer ever make any unreasonable demands? _____
9. Did your employer take time to adequately explain "why and how" to you? _____
10. Did any of the other employees ever resent your being there? _____ If yes, please explain why you feel that there was resentment _____

Part II: Please check the block under the word that describes your answer to the following statements.

	Always	Sometimes	Never
1. Did you arrive at work on time?			
2. Did you do the work assigned to you?			
3. Did you cooperate with the person in charge and other employees?			
4. Did you follow instructions?			
5. Did you exhibit a desire to learn?			
6. Were you pleasant and cheerful while on the job?			
7. Were you courteous to customers?			
8. Did you complete your work to the best of your ability?			
9. Were you reluctant to go ahead on assigned work?			
10. Did you ever dislike your work?			

Part III: Please list all of the different jobs that you worked on during the period. Do not list any one more than once.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Part IV: Please write your suggestions for improving this program.

GUIDELINES FOR USE IN THE SELECTION OF TRAINEES
FOR ON-THE-JOB NON-FARM AGRICULTURAL OCCUPATION TRAINING

Criteria	Favorability
1. Enthusiastic (interested) about agriculture	5 4 3 2 1
2. Willing to work	5 4 3 2 1
3. Responsible	5 4 3 2 1
4. Of good moral character	5 4 3 2 1
5. Cooperative	5 4 3 2 1
6. Virtuous, honest	5 4 3 2 1
7. Well groomed	5 4 3 2 1
8. Well mannered	5 4 3 2 1
9. In good health	5 4 3 2 1
10. Physically able to work in areas of training	5 4 3 2 1
11. Able scholastically	5 4 3 2 1
12. Able to make decisions	5 4 3 2 1
13. Willing to adjust extra-curricular activities	5 4 3 2 1
14. Located relatively close to cooperating trainer	5 4 3 2 1
15. Able to provide transportation to cooperating trainer	5 4 3 2 1
16. Respectful of the property of others	5 4 3 2 1
17. Completing related classroom instruction in vocational agriculture	5 4 3 2 1
18. Interested in farming as a career	5 4 3 2 1
19. Interested in agriculture other than farming as a career	5 4 3 2 1
20. At least sixteen years of age	Yes No
OVER- ALL RATING	5 4 3 2 1

5 - Exceptionally favorable; 4 - Somewhat favorable; 3 - Favorable;
2 - Somewhat unfavorable; 1 - Exceptionally unfavorable

6. Maintain Good School, Teacher, Parent, and Cooperator Relationships

The teacher will serve as the school representative to visit and confer with cooperators and is responsible for maintaining good school, parent, and cooperator relationships. The teacher will work with the school principal and faculty members in scheduling and organizing classes and work schedules. The cooperator should direct his communications to the teacher. A list of suggested responsibilities for each of the areas follows:

a. Teacher's Responsibilities

1. Provides learning experiences in the related class
2. Works with the cooperator on a training program for each student
3. Visits the trainees periodically on the job
4. Discusses over-all policies with the cooperator
5. Discusses the trainee's work with the cooperator
6. Acquaints students with occupational opportunities and requirements in the agricultural field
7. Helps develop training standards
8. Works with school principal and faculty members in organizing trainee's schedule
9. Maintains businesslike relationships with employers
10. Confers with potential and present students in the program of off-farm occupational training

b. Cooperator's Responsibilities

1. Recognizes the long-range value to all concerned
2. Interviews the trainees that are pre-selected by the school
3. Assigns the trainee to a regular job
4. Explains policies, rules, and regulations
5. Makes arrangements for working hours within state and federal laws
6. Submits an evaluation report on the trainee each school grading period

7. Calls the teacher for aid in adjusting problems

8. Agrees to keep the trainee for a full school year

9. Seeks a conference with the teacher before discharging a trainee

10. Follows a definite training schedule and program of study at work

c. School's Responsibilities

1. Recognizes the importance of serving the needs of the trainees

2. Directs the studies of the trainees to include courses which will prepare the trainees for work in business

3. Channels incoming and outgoing communications to the teacher concerned with the training program

7. Determine the Scope of Non-farm Occupational Training

Farming is seasonal. Therefore, much of the work in the agriculture businesses that supply and serve farmers is also seasonal. (Examples: Weed killer -- used during growing season; Farm machinery sales and service establishments must meet the seasonal demand for equipment -- tillage, planting, harvesting). The students will need year-round experience to insure complete training for positions in non-farm agricultural occupations.

Consideration should be given to experience in the summer months to provide the number of hours of training needed to develop the trainee's skills and abilities.

The workshop committee suggests that the students training in non-farm agriculture occupations receive at least 360 hours of on-the-job experiences. This is to justify one hour of credit for his training since laboratory classes in other school subjects meet two periods for one credit (2 hours' class x 180 school days = 360 hours in class per school year).

The 360 hours is suggested as an absolute minimum. Some occupational areas (for example, farm machinery sales and service) will require training in terms of 1000 hours to develop proficiency. Students interested in this field should also receive complete seasonal training. Generally, it would be wise if teachers of vocational agriculture would plan for 540 hours on-the-job experience for all students.

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"How to Get and Hold the Right Job," Washington, D. C.: United States Government Printing Office.

"Farm Machinery Service and Repair -- A Course of Study," Columbia: Department of Industrial Education, College of Education, University of Missouri.

"Occupations for Persons Trained in Agriculture," Columbus: College of Agriculture and Home Economics, The Ohio State University.

"Public Relations for Retail Employees," Austin: Division of Extension, The University of Texas.

FACILITATING THE PROGRAM

Committee No. 5
Harlan Bockbrader
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Consultant
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This Is the Purpose

Any educational program cannot attain its maximum potential unless adequate facilities, equipment, personnel, and scheduling procedures are provided. Since this new approach may require additions and changes in these areas, this committee has attempted to provide guidelines which may be used in facilitating pilot programs in non-farm agricultural occupational training.

The committee, in preparing its report, considered the following objectives:

1. Meeting the legal requirements
2. Developing a schedule which provides the best total educational program for the students enrolled
3. Determining the facilities needed for the best possible teaching-learning situations
4. Determining the responsibility of each party concerned with the program, such as student, parent, teacher, and cooperating employer
5. Developing a need for an adult education program
6. Selecting non-farm agricultural occupational record books
7. Selecting competent advisory committee members

This Is the Situation

Prior to 1964 we had limited experience with non-farm agricultural training, consequently our facilities were not developed with this new program in mind. We need to continue with the former objectives and over-all facilities used previously because we will continue to train students in production agriculture. However, we will need to add to the present facilities to provide for non-farm agricultural occupations.

This We Can Do

1. Secure Qualified Teachers

The teacher of a non-farm agricultural occupation training program shall be a certified teacher of vocational agriculture and a graduate of the college of agriculture.

As we look to the future of this program, it may be recommended that the teacher have additional training in sales, merchandising, and advertising. Later, in multiple teacher departments we may want specialists with strong backgrounds of business experience. We should use the services of other teachers such as distributive education, business education, and diversified cooperative training.

2. Select Appropriate Schedule

The following schedules are based on seven and one-half to ten 45-minute periods per week or five one-hour periods per week. The 45-minute periods could be seven periods per week one year and eight periods per week the following year or seven periods per week the first semester and eight periods the second semester - or vice versa.

a. Full Unit (1)

Agri. I	Minimum 30 Students Production Agriculture
Agri. II	Production Agriculture
Agri. III & IV	Integrated Production Agriculture & Farm Occupational Training

b.	Full Unit (1)	Minimum 30 Students
	Agri. I	Production Agriculture
	Agri, II & III	Production Agriculture
	Agri. IV	Integrated Production Agriculture & Non-farm Occupational Training
c.	Full Unit (1)	Minimum 25 Students
	3/4 Unit	20 Students - Production Agriculture
	1/4 Unit	5 to 7 Students - Non-farm Occupational Training
	Agri. I	Production Agriculture
	Agri. II	Production Agriculture
	Agri. III & IV	Production Agriculture
	Agri. IV	Non-farm Occupational Training
or	Agri. I & II	Production Agriculture
	Agri. III & IV	Production Agriculture
	Agri. IV	Non-farm Occupational Training
d.	Full Unit (1)	Minimum 25 Students
	1/2 Unit	15 Students - Production Agriculture
	1/2 Unit	10 Students - Non-farm Occupational Training
	Agri. I & II	Production Agriculture
	Agri. III & IV	Production Agriculture
	Agri. IV or III & IV	Non-farm Occupational Training
e.	Three-fourths Unit	Minimum 20 Students
	Agri. I & II	Production Agriculture
	Agri. III & IV	Integrated Production Agriculture & Non-farm Occupational Training
f.	Three-Fourths Unit	Minimum 20 Students 15 Students-Production Agriculture 5 Students-Non-farm Occupational Training
	Agri. I & II	Production Agriculture
	Agri. III & IV	Production Agriculture
	Agri. IV or III & IV	Non-farm Occupational Training

g. Multiple Teacher Department
One more full unit or full unit with fractional units with a teacher or teachers of Production Agriculture and one or more full or fractional units of Non-farm Occupational Training in Agriculture. (In every department of vocational agriculture there must be either full or fractional units in Production Agriculture.)
Multiple teacher departments can use any combination of the above schedules that are approved by the school administrator and district supervisors.

3. Secure Approval of Units

This table summarizes the information presented under scheduling and gives minimum student numbers for unit approval of a non-farm occupational program. These units require a related class plus one-half day of released time for student on-the-job experience.

Number of Units	Number of Students
1/4	5
1/2	10
3/4	15
Full	20 - 25

4. Grant Credits

Credits for the non-farm agricultural occupational program shall be determined by the school administrator. It is recommended that a student in a related non-farm agriculture class plus one-half day on released time will receive at least two credits.

5. Equip the School

In order to develop an effective non-farm agricultural occupation program, it is important that proper equipment be be made available to the students. The facilities recommended in the Ohio Vocational Agriculture Facilities bulletin should be provided along with additional sales, merchandising and advertising references.

A suggested reference list might include:

a. Farm Equipment Retailers Handbook
Farm Equipment Retailing, Inc.
Kansas City, Missouri

b. Retail Merchandising, 6th Edition - Winegath & Wenier
South Western Publishing Company
Cincinnati, Ohio

c. Selected Lessons for Teaching Agricultural Science
D. W. Andrews and E. M. Juergenson
The Interstate Printers & Publishers
19-27 North Jackson Street
Danville, Illinois

d. Farm Advertising and Salesmanship
Dept. of Agricultural and Extension Education
College of Agriculture
University of Wisconsin
Madison, Wisconsin

e. Merchandising Products Used in the Farm Business
Vocational Agriculture Service
Ohio Dept. of Education and Department of Agr. Education
The Ohio State University
Columbus, Ohio

f. Cooperative Part-time Manuals
Distributive Education Department
Division of Extension
The University of Texas
Austin, Texas, 78712

g. Fundamentals of Selling, 7th Edition - Wingate & Nolan
South-Western Publishing Company
Cincinnati, Ohio

h. Fundamentals of Advertising, 6th Edition - Rowse & Nolan
South-Western Publishing Company
Cincinnati, Ohio

i. Sources of materials on selling, merchandising, and advertising may be obtained from the following companies:

(1) American Petroleum Institute
1217 Avenue of the Americas
New York, New York

(2) Federal Reserve Bank
Minneapolis, Minnesota 55440

(3) National Cash Register Company
Dayton, Ohio

(4) Cities Service Oil Company
Business Research of Education
Div. Marketing Training Department
Lowell Street
New York 5, New York

(5) National Retail Merchants Association
100 W. 31st St.
New York 1, New York

(6) Agriculture for Related Occupations
Bureau of Agricultural Education
State Education Department
The University of the State of New York
Albany 1, New York

(7) Agri-Business Technology
H. B. Drake, Coordinator
North High School, 701 East Home Rd.
Springfield, Ohio

6. Provide On-the-Job Training Experience

a. Schedule Experience

(1) Under the pilot programs the following may be considered for on-the-job training:

(a) After school, Saturdays, and during the summer

(b) The last two periods of the school day, providing the student has these periods free, plus summer experience

(c) During one-half day released time

(2) If a student desires to gain his experience during the summer it is recommended that he begin this experience following the junior year.

b. Supervise Student During Work Experience

(1) A program agreement should be the cooperative effort of the school, the teacher, the employer, the student, and the parent. This agreement should contain items such as the time the student leaves the school, the amount of time the student spends on the job, the rate of pay, and who is responsible for the student from the time he leaves the school until he arrives home. Refer to report of Committee No. 4 for a program agreement.

(2) The reason for on-the-job supervision is to discuss the program of the student and to determine problems which have arisen with the employer. These problems then become the basis for the classroom discussion.

(3) The number of visits should be determined by the student's needs and the type of occupational experience.

c. Outline Responsibilities (Reference to "Mr. Employer." Department of Vocational Education. State Department of Education, 220 South Parsons Avenue, Columbus, Ohio).

(1) Teacher

(a) Provides learning experiences in the classroom

(b) Works with employer and store supervisor on a training program for each student

(c) Visits the student-trainee periodically on the job

(d) Discusses over-all policies with the store manager

(e) Discusses the student's work with the store supervisor

(f) Acquaints students with occupational opportunities and requirements in the field

(g) Helps develop training standards

(h) Maintains harmonious relationships with various community organizations

(i) Interprets accurately and clearly the objectives of the agricultural education program

(j) Works with school principal and faculty members in organizing related classes

(k) Confers with persons interested in agricultural education

(l) Maintains businesslike relationships with employers and refrains from discussing the activities of one business with other individuals or groups

(2) Student

(a) Is a loyal employee in the store in which he is working

(b) Is honest, dependable, and willing to accept responsibility

(c) Keeps a good attendance record in the store and good record book in school

(d) Notifies coordinator and employer of anticipated absence

(e) Is clean, neat, and dressed to meet the requirements of the job

(f) Is courteous and considerate of others

(g) Accepts criticism as an aid to learning

(h) Has a harmonious working relationship with store personnel and employees

(i) Is interested, alert, and accurate

(j) Develops good work habits

(k) Belongs to the Future Farmers of America, an organization composed of students enrolled in vocational agriculture. The club sponsors activities which help develop leadership and responsibility and provides for social and educational values. The student participates in FFA on the local level and attends district, state, and national conventions when possible.

(3) School

(a) Provides additional education for student other than on-the-job experiences

(b) Makes arrangements concerning hours and wages with the student and coordinator

(c) Keeps the student a full school year if he is satisfactory

(d) Has a personal interview periodically with the student

(e) Notifies the coordinator before discharging a student; urges promising young people to consider enrolling in vocational programs

(f) Introduces student-trainee to all persons in the department

(g) Assigns student to a job in the department and provides job rotation within the department

(h) Works with coordinator on the preparation of a training program

(i) Discusses department policies with coordinator and student-trainee

(j) Calls the coordinator for aid in adjusting minor problems

(k) Fills out a rating sheet periodically for each trainee

(5) Parent

(a) Is responsible for student's trasportation to and from the job

(b) Is responsible for student's activities on the job

d. Provide for Student's Welfare

As the coordinator of non-farm agricultural occupational experience, a vocational agriculture teacher is responsible for the student's safety. To protect the teacher and cooperator these precautions should be followed:

(1) Be sure the student has on file with the employer a schooling certificate, often referred to as a work permit. These must be signed by the employer and the employee's parents.[13]

(a) A new certificate is necessary each time the minor changes employment.[13]

(b) Certificates must be returned to school office two days after employee quits; otherwise, the employer is liable.[13]

(2) Be familiar with child labor laws.[13]

(a) Minors under sixteen years (work hours)
(b) Minors under eighteen years (work hours)
(c) Meal periods

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[13]Department of Industrial Relations, Division of Women and Minors and Minimum Wage. Ralph S. Forster, Chief, Columbus, Ohio.

(d) Prohibited occupations
(e) Wage agreements
(f) Withholding wages due a minor

(3) Be sure the parents completely approve of the means of transportation to and from work.

(4) Be sure the student is never allowed to drive a motor vehicle on the highway without the proper license.

(5) Provide in-class instruction in the proper procedure in operating equipment.

(6) Be sure the employer gives additional operating and safety instruction before the student operates the machinery.

e. Arrange Transportation for the Job Experience

(1) A teacher should try to provide training station for student as close to the school as possible.

(2) The student should remain in his own school district unless previous arrangements are made with vocational education programs in other districts.

(3) The parents should be responsible for transportation to and from the training station.

(4) The teacher, the cooperator, the parents and the student should have a signed agreement in the school office.

7. Provide Adult Education

a. It is possible to develop another program of adult education or the graduate may join the present young or adult farmer program.

b. Each teacher has the option as to whether a course should be given to all employers in order to coordinate their work.

8. Secure Record Book for Students

The recommended record book is the Supervised Work Experience Records in Vocational Agriculture, published by French-Bray Printing Company.

9. Use Advisory Committees

(a) Function of Advisory Committee

Warren G. Weiler, Ohio State Supervisor of Vocational Agriculture, indicates that an advisory committee is highly desirable and considered essential for optimum operation of the local vocational agriculture program by many Ohio vocational agriculture teachers.

The advisory committee should consist of 9 to 12 key or influential community citizens who have a definite interest and understanding of vocational agriculture and/or are engaged in a non-farm agricultural business.

(b) Procedure

(1) Obtain the cooperation and approval of the school administrator and board of education for selecting and using an advisory committee.

(2) Identify different areas and select influential individuals who are willing to serve in an advisory capacity for the program.

(3) Develop a clear understanding on the part of all advisory committee members that their function is definitely advisory and not policy making.

(c) Purposes

Mr. Warren Weiler,[14] State Supervisor of Vocational Agriculture, listed the following purposes of advisory committees:

(1) Help determine the non-farm agricultural occupations program in the community

(2) Help secure personnel

(3) Evaluate the program

(4) Broaden teacher's contacts

(5) Secure cooperators

(6) Help sell new ideas

(7) Help publicize the program

[14]Warren Weiler, Address at Workshop, June 30, 1964.

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PLACEMENT OF GRADUATES

IN NON-FARM AGRICULTURAL OCCUPATIONS

Committee No. 6

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This Is the Purpose

In vocational agriculture very little attention has been given to the placement of students in fields other than farming. In fact, too few teachers have considered placement their responsibility. This was and probably continues to be in the minds of many teachers the responsibility of the parents. Since teachers do not have a clear understanding of their role in placement, emphasis must be given to the means for securing student employment as well as to the education of students for a vocation. Employment is particularly important when the success of the broadened program is evaluated on the basis of the number of students actually placed in the jobs for which they were prepared. Thus it behooves teachers to increase their efforts in placement by:

1. Showing the need for personnel in non-farm agricultural occupations
2. Determining the agencies and people who can help place graduates of the non-farm agricultural program
3. Suggesting procedures for securing job openings and opportunities
4. Promoting public acceptance of the program and graduates
5. Developing a record system to aid employment
6. Showing the need for follow-up supervision after graduation
7. Providing criteria to measure the success of placement
8. Providing adult education and retraining, if necessary, for graduates

This Is the Situation

Teachers of vocational agriculture have had limited experience in placing students in either non-farm or on-the-farm vocations. However, personnel in some of the other vocational services have for years been engaged in training programs utilizing occupational placement. These services are distributive education, diversified cooperative training, cooperative office education. Assistance from these services should be sought and adaptations of their knowledge should be made in conducting the educational program of vocational agriculture for agricultural non-farm occupations. There is much to be done to prepare for the broadened program of vocational agriculture and neither time nor finances permits needless pioneering.

D. R. Purkey, District Supervisor of Vocational Agriculture, stated, "The success of the program will be determined by the number of graduates successfully placed in agricultural jobs. Every available resource must be used so that the program is well planned and a reasonable degree of success attained within the five year period allotted for the evaluation."

Warren G. Weiler, State Supervisor, reported that "this addition to vocational agriculture requires a broader view of agricultural education, and a greater responsibility in job placement." He further stated that "personnel in vocational agriculture will, of necessity, be required to work in cooperation with educational agencies and employment agencies."

The significance of job placement is emphasized by Bernard Nye, State Supervisor of Distributive Education in Ohio, when he stated that "People change jobs at least three times before they settle for one; and then after they have determined this job, they continue to move. This right remains a part of the American way of life. So, even though a student is educated for a vocation and he is placed, he will likely make changes throughout his productive work life. It seems education for new assignments and advanced positions, should culminate in satisfactory placement." Thus the task of education and placement continues and as our American society becomes more complex vocational training, retraining, and placement will take on added importance.

Herbert D. Brum, District Supervisor of Vocational Agriculture in Ohio, reported that "There are about 165,000 in non-farm agricultural jobs concerned with knowledge in agriculture and about five percent are needed as new employees each year."[15] If these numbers are an indication of the placement opportunities, over 8,000 graduates per year will be needed to fill the openings. This would mean an enrollment of at least 32,000 students in vocational agriculture just to fill the non-farm agricultural jobs in Ohio in the next four years.

In the 1960 agricultural census, 625,000 are listed as employed in agri-businesses in Ohio. These are found in over 49,000 establishments and include all levels of education. However, not all of the employees need a technical knowledge of agriculture.

Some schools employ guidance directors to help evaluate and place students. Record forms are available from these teachers to evaluate and record information to aid in placement and evaluation.

Robert E. Taylor, Professor of Agricultural Education at Ohio State University, said that for every farming opportunity there are three to four opportunities in the business of agriculture. Also, for every professional or degree person, there are three to four who need post-high school education.

Robert Worrall, Assistant to the Dean of the College of Agriculture and Home Economics at Ohio State University, stated, "While on-the-farm jobs have decreased rapidly, related jobs off the farm have multiplied astoundingly, and are making new careers for some of the people who have been forced off the land. This does not mean, however, that every farmhand or every boy or girl who is not needed on the farm can move readily into a related industrial or business job.

"In almost any line today, on or off the farm, the job goes to the person who is prepared for it. More and more, agriculture-related jobs require specific study, training, and experience.

"Despite promising opportunities in agriculture, in this field, as in industry, unemployment and underemployment exist right alongside unfilled jobs. There seems to be a insufficient number of properly qualified applicants. It has been estimated that as many as 15,000 new jobs in agriculture-related work become available annually, with no more than 7,000 applicants able to qualify." With these data in mind the future for those interested in non-farm agricultural occupations seems unusually favorable.

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[15] Employment by Occupational Areas, United States Census, 1960, State Department of Education Study.

This We Can Do

1. Plan for placement

The local Ohio State Employment Agency should be contacted by the teacher and the students early in the year of graduation. A student with his file prepared in June can have it activated the day of graduation. Employers looking for trained employees should be able to either check with the O.S.E.A. or with the teacher.

Personal contact by the teacher is as important as any other method in securing jobs for graduates. The teacher should leave a card at the employer's office to help the employer remember where he can secure qualified employees. These cards should be printed and distributed at all places of business visited, not just the cooperating centers.[16]

Teachers should know the businesses and employing personnel so as to help them secure the type and quality of employees they want.[17] Each spring, it is felt, a survey should be made by personal contact of the needs of employers. A list of all non-farm agricultural businesses can be made from the telephone book. Name, address and information about the organization could be made on a 4 by 5 card and filed. Here is a sample card:

Organization _____

Manager _____ Phone _____

Job Classification	Number to be Replaced This Year

Total Number Employees ____ Number College Educated _____

Names of Graduates Placed Here	Date	Date Replaced

[16] Fred Linard, Distributive Education Coordinator, Southwestern City Schools, Grove City, Ohio.

[17] Bernard Nye, State Supervisor of Distributive Education, Ohio.

When making this survey and while visiting employers, the graduates that fit into specific occupations should be suggested to employers. This expedites placement of qualified students.

A pocket-sized accumulative record could be given to each person to present to employers when interviewed. Any company making plastic death notices could be employed to make these. These small photostatic copies, much like the plastic-covered discharges given after World War II, could tell much to an employer. The graduate's grades and activities, honors, and offices held would tell in a few minutes what it would take an employer considerable time to find out at the school.

2. Promote the program

The guidance director in the school can help with much of the testing work. He will have available the Kuder Interest Vocational Test, the Differential Aptitude Test, and if the budget allows, the General Aptitude Test Battery which is the best one of all.[18] The Differential Aptitude Test will test eight aptitudes: Verbal; numbers; reasoning; mechanical; special relations; clerical; English; and spelling.

Public Relations: The teachers, administrators, parents, and community need to be kept informed of the program. Use the display cases in the school. Papers, radio and TV should be employed to show what is being done and how successful the program really is. There will be enough to pull the program down. Make use of every opening in public relations to improve the program's image.

Banquets should include employers and work station managers. They must be informed or else they can not help.

A pamphlet like the one called, "Mr. Employer," used by distributive education could be used to improve the acceptance of this program by personnel.

Every inquiry by employers needs attention. Follow up every phone call and place only qualified people.

There will be some behavior problems that should be given attention. There may be some placed in the program that can not receive a recommendation. The program will be known by the few bottom students that fail. It behooves teachers to see that these misfits are guided into other programs in which they have a chance to succeed.

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[18] Carlton Antoine, Guidance Director, Gahanna High School, Gahanna, Ohio.

3. Provide records to help place graduates

Much exists at present to help employers make decisions when selecting employees. The plastic school record written about earlier could suggest that the following may be secured at the school:

1. Accumulative records folder
2. Permanent record of a student
3. Personality traits evaluation
4. Student activity form
5. Extracurricular form and offices held
6. All test data in the student's folder
7. Student's attendance record

Buros Fifth Mental Measurement Yearbook has many tests that could be used. The guidance director usually has copies.

If teachers admit that they can't do it all, they leave open the road to experts who can and teachers can become teachers instead of information bureaus.

Teachers should maintain a card file of graduates. This may be a 4 by 5 card with the student's name, age, jobs he has held. Keep this employment record for at least five years.

To determine how much help teachers have been to the graduates in securing and holding their jobs, visitation is required. During these visits the teacher could determine the graduate's strengths and weaknesses, implications for improving the program should be noted, and clues should be listed for adult courses. Continued interest in students and follow-up are essential to success in the program.

Do not forget the "Work Permit" nor the "Wage Agreement." This form could be used:

MINOR AGREEMENT

Date _____

We, _____, have employed a minor who is under twenty-one years of age and agree that said minor shall be paid at the rate of $_____ per hour or $_____ per week for _____hours per week. We also have on file working certificate for said minor if under eighteen.

_____ _____

Minor Owner or Official

4. Determine the criteria for measuring placement

If the measure of success is placement in jobs, we should set some guidelines here to measure programs. Rex Cunningham, Arcadia Vocational Agriculture Teacher, has fifty percent of his students going into non-farm agricultural occupations as a goal for his program.[19] This would seem higher than the about thirty percent placed in farming.[20]

According to D. R. Purkey, it was found that a person skilled in one field could be put on a job in an unrelated field requiring skills and would adapt himself to that job much faster than an unskilled person trying to fill the job. With this in mind teachers do not need to be as concerned if a student quits a particular skilled job upon graduation, because prior training will help him adapt to a new job. In a skilled job the person learns to think and reason and even experiment or use his imagination and when confronted with something new he will not bog down or just give up as some people do. His prior training will give him the initiative to go through with a project.[21]

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[19]Rex Cunningham, Teacher of Vocational Agriculture, Arcadia High School, Arcadia, Ohio.

[20]Ralph E. Bender, "Occupations of Ohio Vocational Agriculture Graduates." The Ohio State University, Columbus, 1962.

[21]D. R. Purkey, Assistant Supervisor of Vocational Agriculture, Ohio

5. Provide education for out-of-school non-farm agriculturally employed persons

According to Bernard Nye, teachers must know the business terminology before they can fluently speak to business people.

After graduation many students will take a job similar to the one in which they are trained.[22] However, a year later they quit and go into jobs where the big money is paid. Within two to three years these students often quit again and get a job in a business related to the one which they originally had. Because of this constant job changing, we must offer non-farm adult education to meet the demands of these persons. These adult courses will have to be taught by experts in the various fields. In choosing these experts one should consult his advisory committee and have them suggest who is best qualified to teach these courses. The advisory committee also helps choose the courses to be taught. Most of these courses are for twelve to fifteen persons per class for a ten-week period of two-hour sessions for $15 enrollment fee. According to Mr. Nye, in distributive education, this charge is necessary to bring out the enrollees and to keep them attending the meetings.

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[22] Bernard Nye, Supervisor of Distributive Education, Ohio

EVALUATION OF THE PROGRAM WITH EMPHASIS ON NON-FARM AGRICULTURAL OCCUPATIONS

Committee No. 7

Urban T. Oen

Consultant

Ralph J. Woodin

This Is the Purpose

Evaluation of the program of vocational agriculture is a logical first step for improving the program. By evaluating, we help identify strengths and weaknesses. Sound evaluation in vocational agriculture as in any educational program, is based upon a clear understanding of the objectives of the program and their relationship to the school and the community. We need evaluation not only in agricultural occupations but in its relation to the total program of agricultural education.

To fulfill this purpose the report gives some direction to:

1. Evaluating a program
2. Securing student evaluation
3. Securing employer evaluation
4. Evaluating non-farm occupational training

This Is the Situation

We are trying to "set the stage" for an honest evaluation of our vocational agriculture program with special emphasis on non-farm agricultural occupations. The program should not be evaluated entirely upon placement after graduation. There are many criteria to evaluate the program and placement is just one of these.

Departmental objectives of the local program must be coordinated with those objectives of state and national programs as well as with local school objectives to be of a worthwhile nature.

When beginning the process of evaluation, it is, of course, necessary to know what is desired. Thus, in evaluating a local program of vocational agriculture one must decide what the objectives of that program are. These objectives must be developed by the local teacher for his specific situation.

The objectives of American education, vocational education, education in agriculture, and the expansion of the latter programs under Public Law 88-210 must all be known. All of these objectives must then be coordinated to properly evaluate the program.

According to the Educational Policies Commission - the common thread of education is the development of the ability to think.[23] This idea does not conflict with the Committee on Research and Publications of the American Vocational Association which states that vocational education provides knowledge and training which contributes to a satisfying and useful life.[24] The student must think in applying this knowledge and skill to different jobs. Vocational education gives purpose and meaning to education by relating school work to a specific occupational group. Vocational education means more than training for specific job skills - it develops abilities, understanding, attitudes, working habits, and appreciation which contribute to a satisfying and productive life.

Under the old laws, the aim of vocational education in agriculture was to train present and prospective farmers for proficiency in farming.[25] However, under Public Law 88-210, the present program is expanded to training and placement in agricultural related businesses.

Before instruments of evaluation are reviewed, it may be wise to recognize that there are some significant questions needing answers.

1. What number of students have acquired salable skills?

2. What number of students are placed successfully in related jobs?

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[23] The Central Purpose of American Education. Washington, D. C.: Educational Policies Commission of the National Education Association, 1961.

[24] Administration of Vocational Education at State and Local Levels. Washington, D. C.: Committee on Research and Publications, American Vocational Association, Inc.

[25] Educational Objectives in Vocational Agriculture, Vocational Division Monograph No. 21, 1955. Washington, D. C.: U. S. Department of Health, Education, and Welfare, Office of Education.

3. Is occupational guidance provided for students during the four-year vocational agriculture program?

4. Is there an instructional program with coordinated on-the-job training?

5. Is there favorable administration, student, parent, and agri-business reaction to the program?

6. Is training provided at all levels of employment - professional, technical, agricultural service, managerial, supervisory, sales, clerical, skilled, semi-skilled, vocational, and occupational?

7. Is there a reasonable number of students being served to justify the cost of the program?

8. Is a program being provided that will fit into the educational system of a school?

9. Is there an effective follow-up of the graduates with adult education?

10. Is the program being evaluated frequently?

11. What has been done to keep the public informed of the progress of the program?

This We Can Do

Evaluation in education may consist of program evaluation, student evaluation, and employer evaluation.

Program evaluation should be made in terms of predefined objectives. An evaluation form using such objectives is "Appraising the Vocational Agriculture Program."[26] This instrument has been effectively used in Ohio. The over-all plan calls for complete departmental evaluation each five years. Naturally, evaluating should be continuous, and particularly when additions are made to the total program. This applies for the inclusion of instruction in non-farm agricultural training.

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[26] "Appraising Your Vocational Agriculture Program," Columbus: Department of Agricultural Education, The Ohio State University, 1963.

Probably a first phase in evaluating the non-farm agricultural training program is to secure appraisals from students completing the program. It is suggested that the graduates be given the evaluation instrument as soon after completing their senior year in high school as they are employed. The instrument may be used periodically as the need arises but it is hoped that these later appraisals are secured every three years. The following instrument is presented as a suggested guide and no doubt can be improved.

The information needed to complete this evaluation can best be secured by personal interviews with the graduate. When this is impossible, mailing the instrument to the graduate may be the means of securing the data. By all means, students while in high school should be alerted to their part in evaluations, particularly after graduation.

GRADUATE APPRAISAL

of

TRAINING AND EMPLOYMENT

Name _____

Place Where Employed _____

1. What is your exact position? How long have you held this position? State your job duties and responsibilities.

2. Are you satisfied in your present position? ____ If your answer is no, what position would you like to have, either in your present place of employment or in another business establishment?

3. What is the next position to which you could be promoted in your present place of employment? What are the traits that your employer is looking for to promote you to the next position?

4. What requirements will you have to meet to be advanced to the next position?

5. Of what value was your high school experience in vocational agriculture as it relates to your present work? How did it help you?

6. What are some things that you are now encountering in your work for which you were not adequately trained in high school?

7. What should be added to or removed from the present vocational agriculture program?

The second phase in evaluating the non-farm agriculture training program is to secure appraisals of the program from the employer. This instrument should be used after the graduate has been employed for several months and then periodically for the next three years.

The information needed to complete this evaluation can best be secured by personal interview with an explanation of the importance of having it completed. When personal interview is impossible, the instrument should be mailed to the employer with an explanation of the importance of his completing the evaluation.

The following instrument is suggested as a guide and no doubt can be improved.

EMPLOYER APPRAISAL

of

GRADUATES AND TRAINING

_____ in _____ _____
Name Business (Store) Date

Please check the appropriate blanks. Use other side for additional comments.

APPEARANCE

____ Appearance is an asset to business
____ Usually neat in appearance
____ Appearance needs improvement
____ Appearance is detriment to store

SUGGESTIONS FOR IMPROVEMENT

PUNCTUALITY

____ Always on time
____ Usually on time
____ Occasionally late
____ Frequently late

ATTENDANCE

____ Usually regular in attendance
____ Seldom absent
____ Occasionally absent
____ Frequently absent

DEPENDABILITY

____ Reliable in following instructions
____ Usually follows instructions
____ Sometimes careless in following instructions
____ Cannot be relied upon to follow instructions

INTEREST IN WORK

____ Usually enthusiastic about work
____ Shows interest in work most of time
____ Interested in certain phases
____ Lacks interest in work

JUDGMENT

____ Wise in actions and in making decisions
____ Usually shows sound judgment
____ Sometimes shows lack of judgment
____ Poor judgment reflection in company

PRODUCTION

Please indicate on what you base employee production.

____ Exceeds average production
____ Shows initiative in getting work done
____ Should produce more; is average
____ Low production makes liability
____ Sales volume
____ Stock work
____ Other _____

CUSTOMER RELATIONS

____ Is remembered by customers
____ Customer reaction is pleasant
____ Customer relations need improvement
____ Customer reaction is indifferent

INITIATIVE

____ Recognizes work to be done and does it without direction
____ Sometimes goes ahead in work not assigned
____ Seldom seeks work beyond regular routine duties
____ Shows lack of vision of work

Would you like the employee to show more initiative?_____
How?_____

COOPERATION

____ Works unusually well with others
____ Cooperates well, shows willingness
____ Helps when asked
____ Pulls against others
____ Solicits and receives constructive cooperation of others
____ Tends to lead others in right direction
____ Occasionally uncooperative
____ Makes no effort to work through others

What should your employee know in these agricultural areas to perform best in his present job?

Rate each subject matter to indicate:

VI Very Important: Worker regularly uses content of subject matter area

I Important: Worker often uses content of subject matter area

SI Of Some Importance: Worker sometimes uses content of subject matter area

U Unimportant: Worker does not use content of subject matter area

___VI___I___SI___U 1. Basic agricultural mechanics - use of common hand and power tools

___VI___I___SI___U 2. Welding and soldering - electric arc and oxy-acetylene gas welding, heating, brazing, cutting and soldering

___VI___I___SI___U 3. Safety - agricultural accidents associated with engineering and mechanics

___VI___I___SI___U 4. Agricultural engineering including farm power, machinery, drainage, irrigation, and buildings

___VI___I___SI___U 5. Animal science including feeds and feeding, breeding, and management

___VI___I___SI___U 6. Insects, diseases, pests, and controls

___VI___I___SI___U 7. Crop production including plant breeding, management and weed control

___VI___I___SI___U 8. Food processing including dairy products, meats, cereals, fruits and vegetables

___VI___I___SI___U 9. Soil science including bacteriology, classification and erosion control of soil, and fertilization

___VI___I___SI___U	10.	Forestry including propagation, management and timber marketing
___VI___I___SI___U	11.	Horticulture including fruits, vegetables, landscaping, nursery production, maintaining parks and recreational areas
___VI___I___SI___U	12.	Agricultural Economics including farm management, credit, marketing, and agricultural policy
___VI___I___SI___U	13.	Occupational experience - placement in industry for job training experience
___VI___I___SI___U	14.	Others - (please list)

15. Suggestions for improving the vocational agriculture program

The following instrument is to be used in evaluating the non-farm occupational training program. It is meant to be used as a yearly evaluation at the close of each school year. This can be used as a basis for comparing programs with different schools and should help in program planning. This instrument is presented as a guide for evaluating this phase of the program. Teachers should add measurable items for their situation.

EVALUATING NON-FARM OCCUPATIONAL TRAINING

Guiding Statement

Supervised non-farm agriculture occupational training for students in vocational agriculture should provide purposeful individualized and group experience in non-farm agricultural occupations. The nature and extent of the experience should progress with the ability of the students to the extent that he has acquired salable skills and is employable upon graduation. Effective training necessitates continuous, cooperative effort on the part of students with parents, school administrators, employees, and teachers.

Some Facts and Figures

HIGH SCHOOL PUPILS:

1. Each class has an up-to-date course of study _____

2. Percent of class time used for supervised study _____

3. Percent of teaching directly related to student's supervised non-farm agricultural occupation training programs . . . . . _____

4. Percent of teaching directly related to student's job problems . . . . . _____

5. Percent of teaching directly related to FFA activities and leadership training . . . . . _____

6. Number of students enrolled in vocational agriculture in non-farm agricultural occupational training . .

   Juniors _____
   Seniors _____
   Total _____

   This total is what percentage of the total vocational agriculture enrollment? _____%

7. Number of different occupations in which students are being trained . . . . . _____

List the training centers	Number placed in each
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____
f. _____	_____

8. Average number of hours of work on the job by the students . . . . . _____

9. Average number of hours the students worked on school released time . . . . . _____

10. Gross income per year per student from non-farm related occupational programs . . . . . Range _____
Average _____

11. Number of resource persons used:

Last year	This year
_____	_____

12. The program of agricultural education is based on an analysis of a survey of educational needs of the students. A summary of the analysis is on file. Describe: _____
_____
_____

13. An advisory committee meeting has assisted in evaluating and planning the departmental program. Describe _____
_____
_____

GRADUATES*

	Years after graduation									
	Less than 1 year		1 year		2 years		3 years		4 years	
	No.	%	No.	%	No.	%	No.	%	No.	%
In non-farm agricultural occupations										
In farm occupations										
In agriculture college or agriculture technical school										
In occupation not related to agriculture										

* Exclude number in the Armed Services

SELECTED TRENDS

High School Program	Two Years	Last Year	This Year
Hours of professional time spent per week in planning for teaching	____	____	____
Number of student reference bulletins added to department library	____	____	____
Number of courses or workshops attended by the teacher for the purpose of improving instruction	____	____	____
Number of graduates completing 4 years of vocational agriculture	____	____	____
Percent of those enrolled in vocational agriculture as freshman who graduated	____	____	____
Average number of visits per high school student per year	____	____	____
Average number of improvement projects per student	____	____	____
Average net worth of students in non-farm agricultural occupations	____	____	____
Average net worth of students in production agriculture (same year basis)	____	____	____
Number of teacher visits made to prospective cooperators per year	____	____	____

	Two Years	Last Year	This Year
Socio-economic changes in the local community were systematically studied and program changes made accordingly	____	____	____
Number of advisory committee meetings held	____	____	____
Graduates:			
Average number of vists per employee per year	____	____	____

RESULTS OR OUTCOMES

Use local interviews, employee and employer questionnaires, observation and discussions as a basis for your appraisal of results.

Evaluation Scale: 5 = Excellent; 4 = Good; 3 = Average; 2 = Fair; 1 = Poor.

5 4 3 2 1	1. The non-farm agricultural occupation placement programs of the students provided a satisfactory basis for teaching the agriculturally related subjects and abilities important to the area.
5 4 3 2 1	2. The non-farm placement programs are resulting in sound student-business relationships with parents, school officials, and prospective employers.
5 4 3 2 1	3. Meaningful non-farm training programs are provided for those students who enroll and are placed on the job.
5 4 3 2 1	4. Upon graduation and completion of the program, the students possess salable skills.
5 4 3 2 1	5. The educational objectives of vocational agriculture and of non-farm agricultural occupational training have been met in the program.

5 4 3 2 1	6.	There is cooperation between the vocational agriculture teacher and others in vocational education in promoting the welfare of the school.
5 4 3 2 1	7.	School and community representatives are helping in evaluating and developing the vocational agriculture program.
5 4 3 2 1	8.	The vocational agriculture program is adjusting satisfactorily to changing conditions.
5 4 3 2 1	9.	The students are making desirable changes in occupational non-farm training programs as a result of classroom teaching.
5 4 3 2 1	10.	Substantial earnings and savings are made by students through their supervised experience programs.
5 4 3 2 1	11.	The classroom arrangement, condition, and appearance provides a desirable learning environment.
5 4 3 2 1	12.	The reference library materials for students' use are adequate and up-to-date.

Evaluation of the Area

5 4 3 2 1	To what extent does the supervised agriculture occupational training programs for students in vocational agriculture provide purposeful training and experiences in the non-farm agriculture related businesses and which lead toward employment in a non-farm agricultural occupation?

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APPENDIX

WORKSHOP PROGRAM

Monday, June 22

9:00 - 10:15	Who Are the Participants? What Has Been Their Experience with Non-farm Agricultural Occupation Training? --- Moderator - Wolf
10:15 - 10:30	Coffee Break
10:30 - 11:30	Importance of Non-farm Agricultural Occupations (Emphasis for Ohio) ---------- Worrall
11:30 - 1:00	Lunch
1:00 - 2:30	Some of the Problems in Conducting Training Programs in Non-farm Agricultural Occupations As Related to the State of Ohio (Guidelines to be observed to qualify for Federal and for State aid) ---------- Weiler
2:30 - 2:45	Coffee Break
2:45 - 3:30	What Are Some of the Major Problem Areas Affecting the Program on the Local Level? (Making committee assignments) ---------- Purkey
3:30 - 5:00	Buzz Sessions by Individuals in Groups According to Major Problem Areas to Identify Local Problems

Tuesday, June 23

8:30 - 9:00	What Is Happening to the Graduates of Vocational Agriculture from the Johnstown-Monroe School? ---------- Stimpert
9:00 - 10:00	Summary of Studies Relating to Occupational Status of Vocational Agriculture Graduates with Associated Implications ---------- Cross
10:00 - 10:15	Coffee Break

Tuesday, June 23 (Continued)

10:15 - 11:30	Reports by Group Leaders Pertaining to the Problems Identified ----------Moderator - Purkey	
11:30 - 1:00	Lunch	
1:00 - 2:30	The Occupational Opportunities for Employees in Non-farm Agricultural Work ------	Brum
2:30 - 4:00	Determining Agricultural Non-farm Occupations for Which Training Should Be Provided in a School (Survey the need) - Halterman	
4:00 - 5:00	Committee Meetings -- Major Groups	

Assessing the Task
Reviewing Workshop Reports

Wednesday, June 24

8:30 - 10:00	The Workshop Report ----------	Wolf
10:00 - 10:15	Coffee Break	
10:15 - 11:30	Needs of Non-farm Agricultural Occupations As Secured from the Ohio Study ----------	Brum
	Needs As Reported in Other Studies ----------	Taylor
11:30 - 1:00	Lunch	
1:00 - 2:30	Committee Presentation of Plans for the Workshop Report ----------	Purkey

Outlining the Task
Assessing Responsibilities
Planning and Arranging Consultant Assistance
Setting Goals and Deadlines

2:30 - 2:45	Coffee Break	
2:45 - 5:00	Committee Meetings with Advisors to Prepare the First Draft of the Workshop Report	

Thursday, June 25

8:30 - 10:00	Reports of Committees ---------- Moderators -	Wolf Purkey
	Unifying the Task Omitting Duplications Assuring Coverage	
10:00 - 10:15	Coffee Break	
10:15 - 11:30	Conducting the Related Class Sesssions in Distributive Education ----------	Ruth
	Procedure in Teaching Using Training Programs Emphasis upon How the Teaching Is Accomplished Rather Than on Details of What and When	
11:30 - 12:30	Lunch	
12:30 - 2:15	Conducting the Related Class Instruction in Diversified Cooperative Training -------	Struewing
2:15 - 2:30	Coffee Break	
2:30 - 4:00	Preparing Individual Training Programs ------	Ridenour
	Reviewing Individual Training Guides Selecting Occupations for Which Guides Are to be Prepared During the Workshop Period Setting a Pattern to Follow in Preparing Guides Locating Aids for Preparing Guides	
4:00 - 5:00	Committees Developing Training Programs for Selected Occupations ------	Purkey

Friday, June 26

8:30 - 9:30 Reports of Progress on Workshop Report ----- Purkey

Reviewing Outlines

9:30 - 9:45 Coffee Break

9:45 - 11:30 How the Vocational Services Utilize On-the-job Training (Extent of programs, common concerns, similarity and dissimilarity of procedures, essentials for success) ---------- Moderator-Weiler

Diversified Occupations ---------- Davis

Distributive Education ---------- Nye

Agricultural Education ---------- Dougan

Business Education ---------- Linard

11:30 - 12:30 Lunch

12:30 - 1:30 Plans for the Visit to the Newark Public Schools ---------- Nye Purkey

Schedule for the Day
Transportation
Finding the School
Participating
Reporting

1:30 - 2:15 Laws to Consider ---------- Forster

Workman's Compensation
Wage Laws
Child Labor Laws
Safety Laws
Transportation
Liabilities

2:15 - 2:30 Securing Reference Materials and Information Needed to Facilitate the Purpose of the Workshop ---------- Wolf

2:30 Adjourn

Monday, June 29

8:30 - 4:30 Observing the Newark Distributive Education Program ---------- Nye
and Distributive Education Teachers at Newark

The School
Administration of the Vocational Program
Enrollment
Student Qualifications and Responsibilities
Procedure of Recruitment and Selection
Occupations for Which Training Is Provided
Related Instruction (Class Schedules, Content)
On-the-job Training
Cooperator's Responsibilities
Teacher's Responsibilities
Student's Responsibilities
Parent's Participation
Facilities
Resources
Advisory Committees
Student Evaluation (Basis)
Placement after Graduation from High School
Adult Education
Teacher's Qualifications

Tuesday, June 30

8:30 - 9:00 Evaluating the Visit to the Newark Public School ---------- Moderators - Purkey
Wolf

What Questions Were Unanswered
What Did You Like
What Did You Dislike

9:00 - 10:00 Developing Facilities for a Program of Non-farm Agricultural Occupations -------- Starling
Cross

Classrooms
References
Teaching Aids
Scheduling

10:00 - 10:15 Coffee Break

Tuesday, June 30 (Continued)

10:15 - 11:30	Using Advisory Committees ----------	Weiler
	Selecting Cooperating Centers Planning Training Programs Determining Cooperator's Responsibilities	
11:30 - 1:00	Lunch	
1:00 - 1:30	Identifying Pilot Program Projects ---------	Weiler
1:30 - 2:00	Agreeing on Ground Rules for Pilot Programs--	Taylor
2:00 - 2:15	Coffee Break	
2:15 - 3:15	Committee Meetings -- Planning Individual Pilot Programs (Teachers with similar projects working together; supervisors as consultants)	
3:15 - 4:00	Reports by Participants of Pilot Program Plans ----------Moderator---	Taylor
4:00 - 5:00	Committee Meetings to Refine Pilot Projects	

Wednesday, July 1

8:30 - 9:25	First Review of Workshop Reports---Moderators--	Wolf Purkey
	Committee I	
9:25 - 10:20	Committee II	
10:20 - 10:35	Coffee Break	
10:35 - 11:30	Committee III	
11:30 - 1:00	Lunch	
1:00 - 1:55	Committee IV	
1:55 - 2:50	Committee V	
2:50 - 3:05	Coffee Break	

Wednesday, July 1 (Continued)

3:05 - 4:00	Committee VI	
4:00 - 5:00	Committee Meetings (What else is needed to develop the necessary understandings and to be prepared for the task of teaching vocational agriculture to students interested in non-farm agricultural occupations and, also, to prepare a worthwhile workshop report?)	

Thursday, July 2

8:30 - 10:00	What Should Students Know Prior to Their On-the-job Training (Panel) ----------Moderator---	Brum Fetters Barnhart Mann Nowels Metcalf Colville Judy Vogt
10:00 - 10:15	Coffee Break	
10:15 - 11:30	Preparing Students in Agriculture I and II for Non-farm Agricultural Vocations (The vocational agriculture curriculum for Agriculture I and II and probably III if only Agriculture IV is for off-farm job training) ----------	Guiler Kantner
11:30 - 1:00	Lunch	
1:00 - 2:15	The Curricula (What, When, What Amount) for One and for Two Years of Specialized Non-farm Agricultural Vocational Training ----------	Kantner
2:15 - 2:45	Making Adaptations for Individual Situations	Starling
2:45 - 3:00	Coffee Break	
3:00 - 4:00	Providing Available References and Classroom Teaching Aids ----------	Ridenour Starling
4:00 - 5:00	Committee Meetings on Workshop Report	

Friday, July 3

8:00 - 9:30 Conducting the On-the-job Training Program (Panel) ----------Moderator - Dougan
Lillick
Gassman
Slough
Cunningham

Determining the Time for Experiences (During the day, after the school day, weekends, summer)
Selecting the Cooperators
Developing Effective Relationships among Cooperators, Students, Parents, School Administrators, Faculty, and Coordinating Teachers

9:30 - 9:45 Coffee Break

9:45 - 11:30 Planning the Experience Program
Planning the Cooperator Teaching Program
Utilizing Advisory Committees

11:30 - 12:30 Lunch

12:30 - 2:30 Supervising and Coordinating the Classroom Instruction with Experience
Individual Instruction
Changing Training Stations to Secure Maximum Experience
Evaluating Students
Informing the Public

2:30 Adjourn

Monday, July 6

8:30 - 10:00	Teaching Students to Keep and to Use the Student Record Book ----------	Wolf
10:00 - 10:15	Coffee Break	
10:15 - 11:30	Records Needed for Non-farm Agricultural Occupations Training ----------	Crabbe
	State and Federal (Administrative) School (Administrative) Teacher (Departmental) Cooperator (Administrative) Student (Training Aid)	
11:30 - 1:00	Lunch	
1:00 - 2:30	Experiences of Ohio Teachers with On-the-job Training for Non-farm Agricultural Occupations (Panel) ----------Moderator -	Weiler Winland Crabbe Fruth
2:30 - 2:45	Coffee Break	
2:45 - 5:00	Committee Meetings -- Preparing Second Draft of Workshop Report	

Tuesday, July 7

8:00 - 11:30	Committee Meetings	
11:30 - 1:00	Lunch	
1:00 - 2:30	Placing Graduates, Follow-up of Graduates, Conducting Programs of Adult Education ---	Ruble
2:30 - 2:45	Coffee Break	
2:45 - 5:00	Evaluating the Program of Vocational Agriculture (Non-farm) ----------	Ruble Woodin

Wednesday, July 8

8:00 - 9:00	Report of Committee I
9:00 - 10:00	Report of Committee II
10:00 - 10:15	Coffee Break
10:15 - 11:30	Report of Committee III
11:30 - 1:00	Lunch
1:00 - 2:00	Report of Committee IV
2:00 - 3:00	Report of Committee V
3:00 - 4:00	Report of Committee VI
4:00 - 5:00	Committee Meetings to Perfect the Reports

Thursday, July 9

8:00 - 9:30	How Men Engaged in Agri-business Look at Vocational Training for Employment in Their Fields of Interest ---- Moderator	- Weiler Allgyer Martin Whitney Greenleaf Woods Gehrig
9:30 - 9:45	Coffee Break	
9:45 - 11:30	Submitting Copies of Detailed Pilot Project Plans by Each Participant, Previously Reviewed and Accepted by an Authorized Assistant Supervisor ----------	Taylor
11:30 - 1:00	Lunch	
1:00 - 5:00	Committee Meetings	

Friday, July 10

8:00 - 11:30	Presentation of Final Reports ----------	Wolf
11:30 - 12:30	Lunch	
12:30 - 2:30	Evaluating the Workshop ----------	Weiler
2:30	Adjourn	

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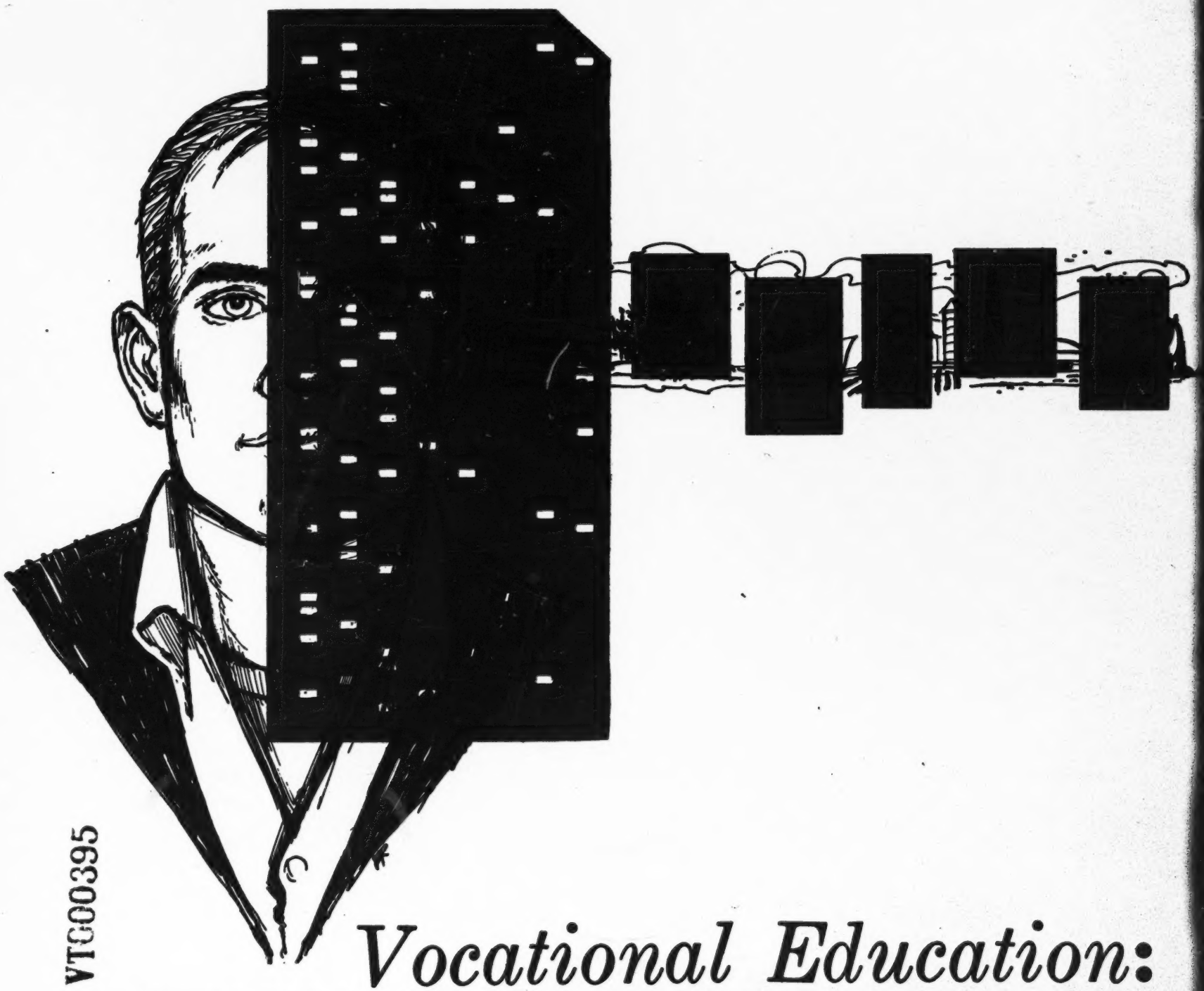
65 CALIFORNIA STATE CONFERENCE ON VOCATIONAL EDUCATION: Report

HELD AT LOS ANGELES • JANUARY 11 & 12, 1965



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Vocational Education: ESSENTIAL TO ECONOMIC PROGRESS

CALIFORNIA STATE DEPARTMENT OF EDUCATION

MAX RAFFERTY
Superintendent of
Public Instruction

SACRAMENTO, CALIFORNIA
1965

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Report of the

California State Conference

on

VOCATIONAL EDUCATION

January 11-12, 1965

Los Angeles, California

"If we are learning anything from our experience, we are learning that it is time for us to go to work, and the first work of these times and the first work of our society is education."

—LYNDON B. JOHNSON

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Note: Status as of conference date.

65: CALIFORNIA STATE VOCATIONAL EDUCATION Report

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"The basic purpose of our vocational education effort is sound and sufficiently broad to provide a basis for meeting future needs. However, the technological changes which have occurred in all occupations call for a review and reevaluation."

—JOHN F. KENNEDY
February 20, 1961

Preface

Californians have long valued all aspects of education and have allocated a major portion of the state's resources to a public school system designed to benefit all citizens in all areas of educational preparation. To meet the needs of California's millions in these decades of breathtaking technological change, it has become increasingly important to education—particularly vocational education—to adjust to modern needs. No longer is there time for a slow diffusion of occupational changes into the educational curriculum. Change must be rapid; otherwise our complex social and economic systems can be seriously damaged.

It was to chart a new course for vocational education that the California State Conference on Vocational Education was convened. A cross-section of Californians met the issues head on in an intensive two days of discussion, reflection, and deliberation.

This report is intended to provide a summary of the discussions, the actions, and the points of view expressed at the conference. In a sense, this report may serve as a window to the future development of vocational education in California.

THOMAS W. BRADEN
President
State Board of Education

MAX RAFFERTY
Superintendent of Public Instruction
and Director of Education

CONFERENCE ON

By Lachlan MacDonald

A PIONEER CONFERENCE for policy-level study of vocational education in the state of California has given definition to the new dimensions of a large-scale program in occupational training.

Some 800 delegates of community, industry, labor, business, church, and school groups met together and heard from key national, state, and local authorities. Their aim: to develop greater understanding of the problems affecting the current and future educational needs of the nation's work force.

The two-day conference at the Statler-Hilton Hotel in Los Angeles, January 11-12, 1965, created a pattern of information, discussion, and cooperation designed to improve and expand vocational education in California high schools, adult education programs, and junior colleges. At the same time the conference demonstrated ways in which other states may develop plans to utilize the benefits of extensive and complex federal legislation, such as the far-reaching Vocational Education Act of 1963.

Immediate press, radio, and television response and the comments of the delegates themselves indicate the growth of greater understanding, acceptance, and willingness to support vocational education programs.

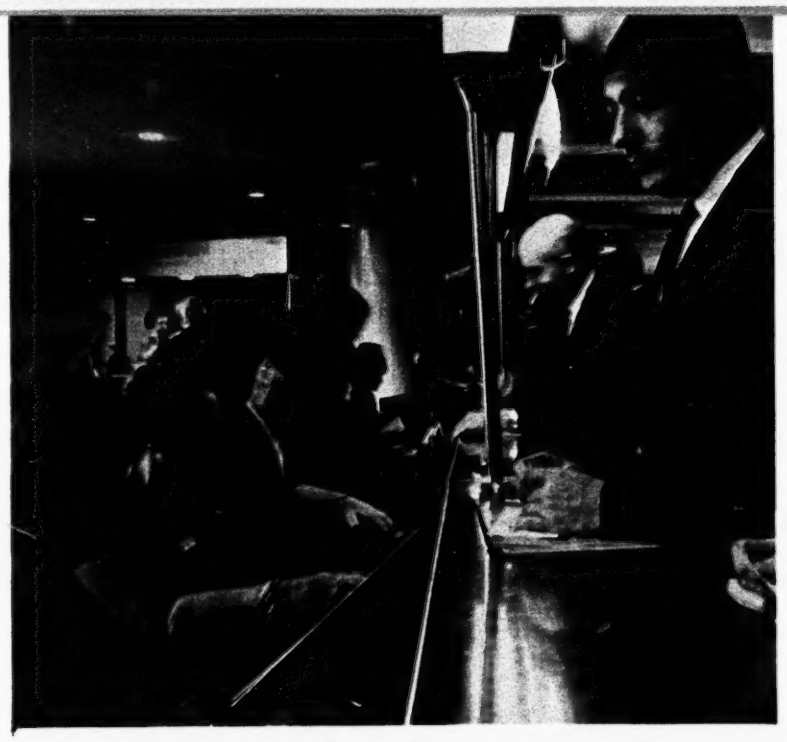
The conference, which was called by Max Rafferty, California's Superintendent of Public Instruction, and the State Board of Education, laid a basis for reestablishment of the dignity of work and the value of labor.

Those in attendance heard six general session addresses on major topics which were supplemented by detailed presentations in 11 afternoon discussion sessions. In addition, six young people presented "Now Hear Youth," a panel on current vocational experiences. Written versions of the general session speeches and summaries of the discussions and of the youth panel appear in this report.

> ***Tomorrow science will have moved forward yet one more step, and there will be no appeal from the judgment which will then be pronounced on the uneducated.***
>
> —ALFRED NORTH WHITEHEAD

The chief legislative topic among conferees was the Vocational Education Act of 1963, which some authorities predicted will have a national influence comparable to that of the Morrill Act of 1862 and the Hatch Act of 1887, the milestone laws which established America's land-grant colleges and the agricultural experiment stations operated in connection with them.

TOMORROW



The Vocational Education Act of 1963 has its roots in the National Vocational Education acts first adopted by the Congress in 1917 and subsequently amended. Every year since 1917, Congress has reviewed the local-state-federal programs, which have been expanded and extended by several successive enactments.

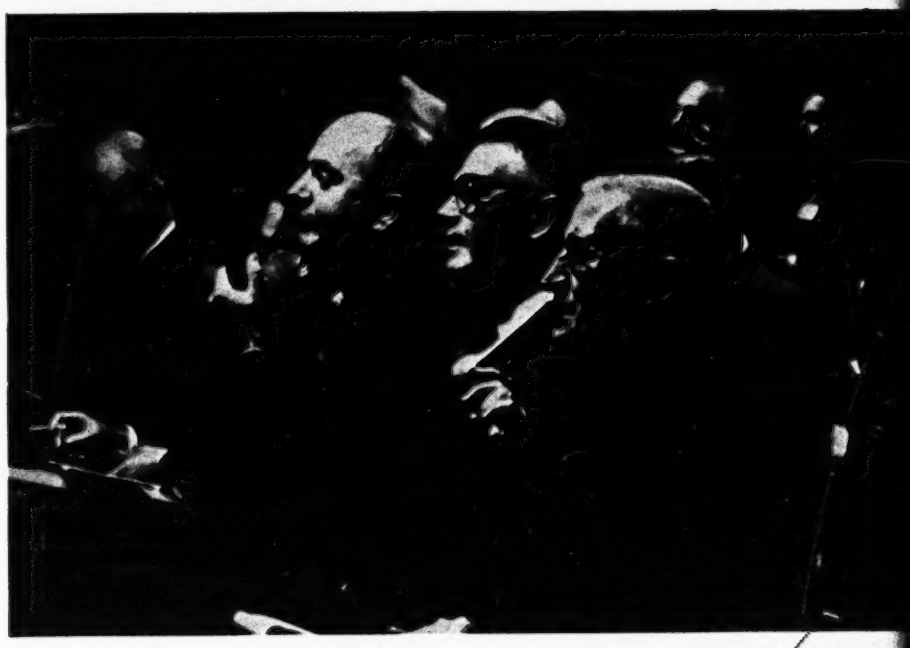
THE MAJOR VOCATIONAL EDUCATION statutes, which many attending the conference have helped to develop or implement at various levels of society, are:

- The Smith-Hughes Act of 1917, which provides $7 million annually toward preparation of vocational education teachers, promotion of vocational education programs, and state development of vocational education in agriculture, the trades, homemaking, and industry
- The George-Barden Act of 1946, which provides $29 million annually for further vocational education
- The Practical Nurse Amendment of 1956, which provides $5 million annually to increase the number of adequately trained professional and practical nurses and health personnel
- The Fishery Training Amendment of 1956, which provides $180,000 annually for fishery personnel training
- The National Defense Education Act of 1958, which provides $15 million annually for technician training
- The Manpower Development and Training Act of 1962, which provides for the retraining of persons displaced by automation and other changes in the economy. In 1964–65 this program provided $110 million for such training and allowances
- The Area Redevelopment Act of 1961, which provided $4.5 million annually for training in economically distressed areas until 1965

In addition, special World War II vocational education programs trained 7.5 million people in a five-year period, at a cost of $297 million.

In fiscal 1964 the combined federal statutes, exclusive of the Vocational Education Act of 1963, were providing $170.6 million annually to benefit 4 million students (half of them adults) in high schools and colleges. Every state and territory offers federally aided vocational educational programs; in all but the most recent programs, states must match federal funds, dollar for dollar.

On February 20, 1961, President John F. Kennedy, in his message to Congress on American education,



California takes a look at the future of vocational education

told of his plans to convene an advisory body to review and evaluate the current national vocational education acts and to make recommendations for improving and redirecting the program.

Every individual has a place to fill in the world, and is important in some respect whether he chooses to be so or not.
—NATHANIEL HAWTHORNE

On October 5, 1961, the White House announced that the Secretary of Health, Education, and Welfare had appointed the panel of consultants on vocational education. The panel concluded its review and submitted its report in November, 1962. Copies of the report, *Education for a Changing World of Work*, along with appendixes and a summary report, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 90402.

In *Education for a Changing World of Work*, the President's panel charted the course of the new programs which vocational education must develop to serve a nation in technological and economic change.

The panel pointed out that of the 87 million people working full-time by 1970, 26 million of them will be young workers starting jobs for the first time. To make sure that these young people have the aptitudes, skills, and education to match the needs of the economy is a giant task.

OF EVERY TEN PUPILS now in elementary schools, three will not graduate from high school, three will graduate and go to work, and four will continue their education. Of the four, only two will finish four years of college. In other words, even though college enrollments will double during this decade, eight out of ten pupils now enrolled in the elementary schools will not graduate from college. How, asked the President's panel, will these eight out of ten fare in the changing world of work?

The panel recommended a local-state-federal partnership to teach the skills the nation needs. It reported that:

- Vocational education is not available in enough schools.
- Vocational education is not available to all who need it.
- Vocational education is not preparing for enough jobs.
- The need for technical training after high school is critical.

In a specific agenda for action, the panel proposed federal appropriations for:

1. Youth in high school who are preparing to enter the labor market or to become homemakers

The conference explored minori

2. High school youth with academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education program

3. Youth and adults who have completed or left high school and are full-time students preparing to enter the labor market

4. Youth and adults unemployed or at work who need training or retraining to achieve employment stability

5. Services and facilities required to assure quality in all vocational and technical education programs

Congressional leadership was quick to recognize the priority and practicality of the panel's call for appropriations. With the passage of the Vocational Education Act of 1963, a program of federal assistance which will reach $225 million annually was provided to continue to improve vocational education.

The implications of the Vocational Education Act of 1963 were explained at the conference by Walter Arnold, Assistant U.S. Commissioner of Education for Vocational Education Services:

> The bill removes the so-called restrictions or limitations that previously existed under the older Vocational Education acts and now opens wide to the states and their school systems many opportunities for expanding services. For example, the New Vocational Education Act requires that the programs be geared much more closely to the labor market needs. It identifies employment opportunities. It opens wide the whole range of occupations for assistance in organizing training other than in the professions. It suggests, and in fact almost requires, that training opportunities be offered for all levels of ability in jobs other than professions. It contemplates that all kinds of institutions in the country will be used; that is, the comprehensive high schools, the vocational-technical high schools, so-called area schools, junior and community colleges, and in fact the four-year colleges and the universities.

DR. ARNOLD POINTED OUT that the law requires constant evaluation of its own program, with the first evaluation group, which will be appointed next year, to report to Congress by January 1, 1968. Another important feature is the provision of 10 percent of the annual appropriation for research into vocational-technical education problems throughout the country.

"In general," Dr. Arnold summarized, "all these measures contemplate a much more massive attack on the economic and social problems of the country."

Most appropriately, the keynote speaker of the California State Conference on Vocational Education was the sponsor of the Vocational Education Act of 1963, the Honorable Carl Perkins, Congressman from the Seventh District, Commonwealth of Kentucky.

Pointing out that national problems become state problems because of population mobility, Congressman Perkins suggested ways in which the Vocational Education Act will help Americans to meet the changes created by automation, defense needs, dropout trends, minority group struggles, and other problems. He focused attention on a lack in education in basic skills at the elementary and secondary levels, education which would make individual adjustment possible, enabling persons to reach their potential and profit from established programs.

There is as much dignity in tilling a field as in writing a poem.

—BOOKER T. WASHINGTON

The Congressman praised California for setting a pattern of leadership by utilizing the Vocational Education Act of 1963 for local programs.

The Kentuckian's message to Californians followed the opening remarks of Max Rafferty, Superintendent of Public Instruction, who announced plans for a nationwide conference of the states which he hoped

group problems

For some the conference was an initiation into a larger world of vocational education than they had previously experienced.

would chart the course of education for the next decade, particularly in the area of vocational education.

"More of our young people are involved in this area than any other, and, therefore, it is going to assume a proportionately large place on the national scale," California's Superintendent of Public Instruction noted.

Each man has his vocation. The talent is the call.

—RALPH WALDO EMERSON

Dr. Rafferty posed some general questions for the delegates, urging them not to be satisfied with theoretical answers to questions like the following: What should we be teaching boys and girls in the high school area of vocational education? Is what we are doing now adequate? How can vocational education help solve the dropout problem? How can it solve the youth unemployment problems? What do business, industry, and labor want the schools to turn out in the way of raw material for the factories and the businesses of the 1970s and 1980s?

The delegates heard Seymour Wolfbein, Director of the Office of Manpower, Automation, and Training of the U.S. Department of Labor, predict that "the entire employment picture in the United States is going to change radically in the next ten years." He recommended a vocational education process which would "help peoples at all stages of educational development . . . to withstand the inevitable changes that are going to occur."

Edmund G. Brown, Governor of California, told the delegates how new methods may be used to solve community problems in California—problems related to transportation, institutions, sanitation, and other operations of government and industry. Scientists and engineers of the space age have "the ability to think in terms of new dimensions, to break down barriers, and to use technological skills to solve the problems of the everyday world. We have asked these talented men, who so far have had their minds on the stars, to use their skills on earth," the Governor said.

He also told the delegates that California has asked aerospace engineers to design systems that will "improve our data" on educational requirements. And the work of these engineers will have implications for vocational education, he said.

After listening to the speakers and taking extensive notes in their discussion sessions, the delegates were given an opportunity to summarize the conference events.

For some the conference was an initiation into a larger world of vocational education than they had previously experienced.

Others, familiar with the terms and ideas, occasionally drifted into restatements; yet, they were able to reflect independently on what they had seen and heard. As the conference report was being prepared, comments from those attending were beginning to be heard:

"Vocational education is being recognized in a form that is going to be more palatable to nonvocational educators."

"This is an important step in getting the state master plan for vocational education underway."

"I think the conference identified the interested and active persons in vocational education. As an industrial man, I was interested in the increased ability to communicate with people in vocational education."

"Vocational education is an area where management and labor can get together and better understand each other's feelings and problems."

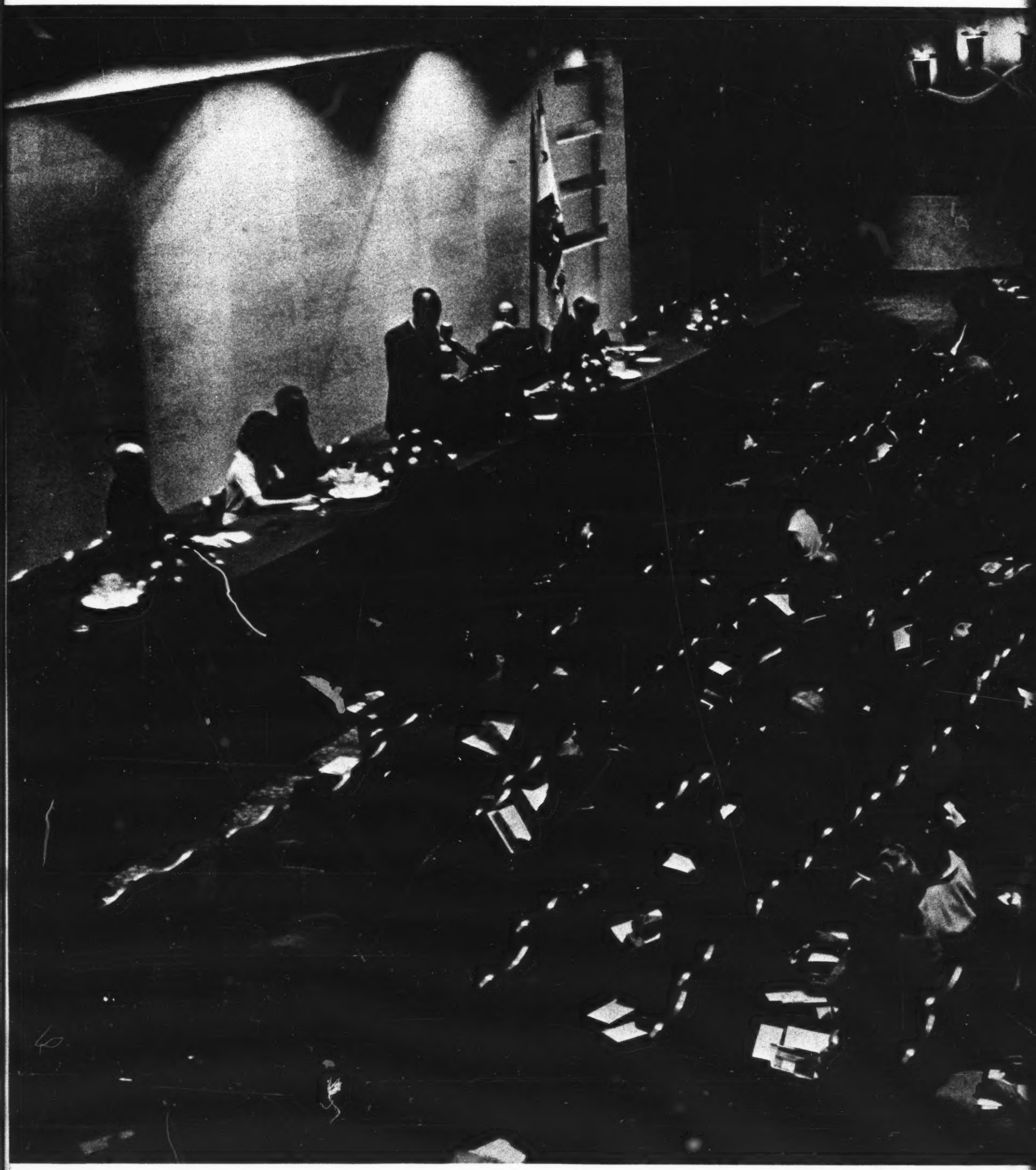
In statements like these the delegates indicated the impact the conference had upon their own concepts of vocational education.

If the answers to our social problems are hard to formulate, the experience at the conference was nevertheless significant. The fabric of California vocational education is no longer what it was, nor does its image in the public eye reflect past stereotypes.

The principle of change is being accepted; the specifics of new action are yet to come.

There is no trade or employment but the young man following it may become a hero.

—WALT WHITMAN



The Opening Session

DELEGATES TO THE CALIFORNIA State Conference on Vocational Education were a varied group. At the opening session of the conference, business executives rubbed shoulders with turret-lathe operators, and scientists settled themselves in seats next to teenaged members of the Future Farmers of America.

The mixture was not accidental. Invitations to participate in the conference purposely had been extended to a cross-section of the people of the state. As a means of ensuring new viewpoints and ideas, the conference planners had been especially careful to invite persons not fully familiar with the history of vocational education.

While delegates were finding their seats for the opening session, press representatives were interviewing key conference speakers. The interviews were focused on teenage employment problems. Seymour Wolfbein of the U.S. Department of Labor reminded newsmen that the percent of teenagers looking for work was well over twice that of the adult population—and that the percent of unemployed teenagers in racial minority groups was twice what it was for the average teenage figure.

Superintendent of Public Instruction Max Rafferty, commenting to the press on outmoded high school vocational education courses, said that too many teenagers were "building birdcages and overhauling jalopies"; he called for more meaningful programs.

Soft-spoken Carl D. Perkins, the Kentucky Congressman who shepherded the Vocational Education Act of 1963 through the House of Representatives, praised California vocational education leadership but recommended more national concern with elementary and secondary education as a base for training in complex vocational skills.

After the interviews were completed, the guest speakers took their places on the podium of the conference hall, a high school ROTC color guard carried the flag down the aisle, and Dr. Rafferty rapped his gavel to open the first general session of the conference.

California's Superintendent of Public Instruction Max Rafferty addressed the opening session.

The Honorable Carl D. Perkins

Man's Relationship

I AM DELIGHTED to have this opportunity to be in the magnificent state of California and am pleased to extend my greetings to your fine Governor, the Honorable Edmund G. Brown, and to the chairman and officers of your state conference. I wish to compliment Dr. Rafferty and the State Board of Education for pioneering in a conference of this nature. I well realize that you will not obtain all the answers that you are seeking, but you will make much progress. I am particularly pleased to have the opportunity to be in the home state of my friends and colleagues who work with me on the House Education and Labor Committee. I have heard many fine and remarkable things about California opportunities from Jimmy Roosevelt, George Brown, Gus Hawkins, and Alphonzo Bell, all four of whom as members of Congress served on the committee and contributed in writing the Vocational Education Act of 1963.

Before I get into this discussion, I want to pay tribute to Paul Sheats, Dean of the University Extension, University of California. He served on the vocational education panel, appointed by President Kennedy, which laid the foundation for the enactment of the Vocational Education Act of 1963. The legislation that was finally enacted embodied many of the panel's recommendations.

IN SPITE OF MAN'S remarkable facility to adjust to the whims of nature and the physical forces which constantly threaten his security, he finds it most difficult to adjust to the adversities of his own making. We are all aware of the rapidly changing economic conditions that have occurred, accelerated by the new technologies which scientific investigation and research have produced. Technology has enabled less than 10 percent of our population to provide enough food to feed the entire population, with gigantic surpluses that pose tremendous problems. Technological change and the ensuing automation of many economic activities have created job dislocations not only off the farm but in all types of industry in this country. The shift of employment from farm to city has placed great demands on our educational systems and institutions to assure our rural youth of an educational background which will be suitable to the world of work they will find upon graduation.

The 88th Congress has been often referred to as the "Education Congress," and well it might be, for it passed a number of monumental acts directed toward helping our educational system adjust man to his changing work environment.

The 88th Congress, in thinking of our higher educational needs, did not confine itself to bricks and mortar. In the amendments to the National Defense Education Act, the Student Loan Program was greatly expanded and its payment provisions liberalized. In addition, the so-called Antipoverty Bill, which was fashioned in the House Education and Labor Committee, created a work-study program for our colleges and universities.

The 88th Congress did not confine itself to the needs of higher education. The largest federal vocational assistance program in history was enacted in the form of the Vocational Education Act of 1963. For the first time, federal funds became available to assist state vocational education programs in the construction of buildings.

IN NOVEMBER, 1964, the U.S. Office of Education announced the allocation of 169 million dollars from federal funds to the states for operation of vocational education programs. California received the largest allotment—$11,283,295, a dramatic increase over the previous rate of federal contribution for vocational education, which was about $3,067,741. These funds may be used not only for construction, but also for the payment of teachers' salaries and the purchase of new equipment and materials. Written into the law were firm provisions to initiate a work-study program which will enable many deserving students to obtain the necessary financial assistance to attend vocational schools.

I commend your state for its leadership in vocational and technical education. Responsible California administrators made a substantial contribution to the hearings which it was my privilege to conduct in fashioning the Vocational Education Act of 1963. C. W.

to His Working Environment

Patrick, President of San Diego Junior College, appeared before our subcommittee as chairman of the Committee on Vocational-Technical Education of the California Junior College Association, and he gave the committee keen insight into problems of this particular phase of education in California.

I have also observed that California has an outstanding program. Within three months after Congress made funds available, California was fully operational under the provisions of the Vocational Education Act of 1963.

Because California was first in the nation to obtain approval for its state plan, at least 200 California school districts are now operating new or extended programs under the provisions of the act.

CALIFORNIA'S PROGRAM of vocational education, long the most extensive in the United States, has been accomplished through dependence upon the comprehensive school principle, making vocational instruction a part of the total stream of public education, not something secured in special vocational or trade schools, which segregate boys and girls on the basis of their occupational choices.

You are going to be able to come up with new breakthroughs in vocational education at every level: high school, adult school, and junior college. The new funds have become "seed money" to many districts; they serve as incentives to experiment. I feel that you will come out of this conference with suggestions and recommendations that will benefit not only the state of California but the whole American educational system. This conference certainly will benefit labor and management and be of greatest benefit to dropouts.

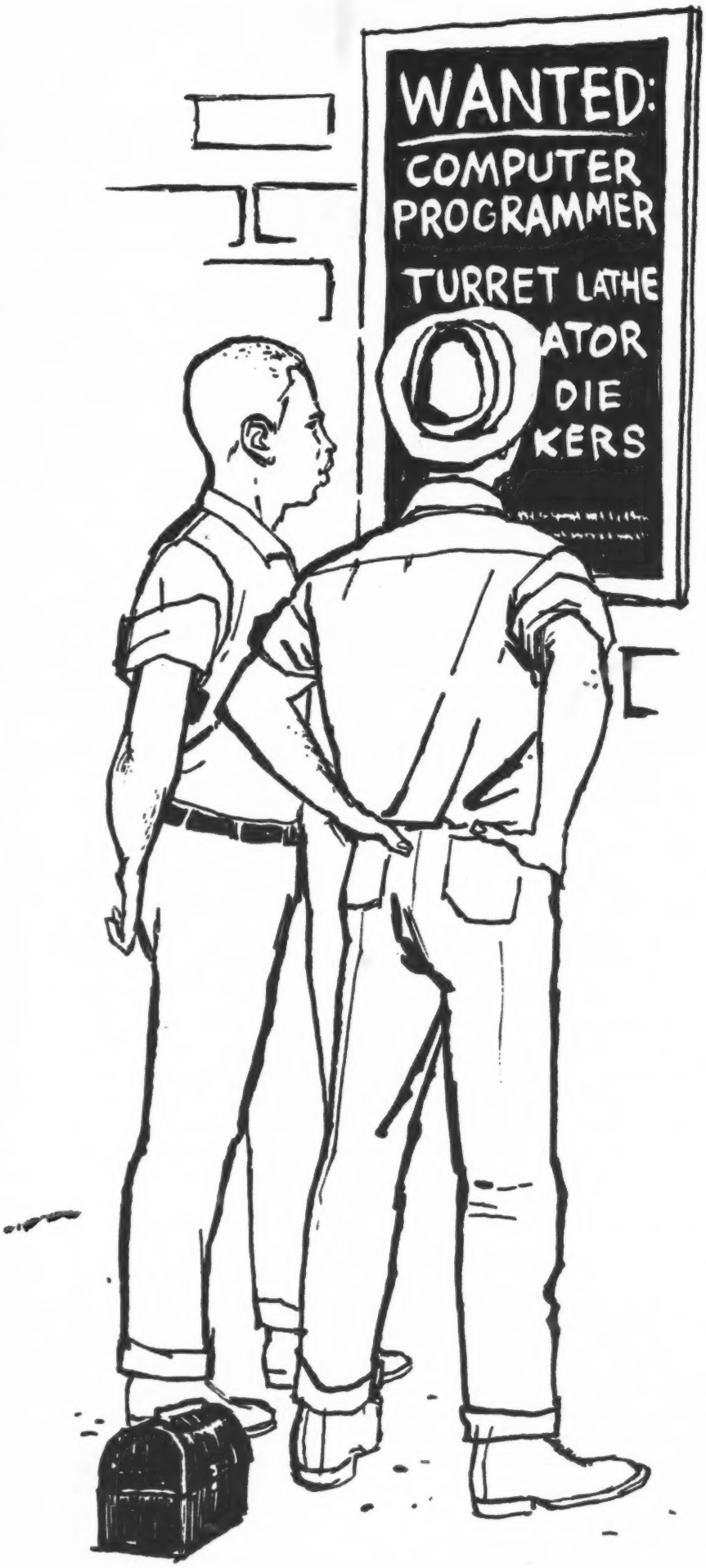
Congress has been aware of the challenge of this dropout problem. It has acted through a number of programs to help individuals suffering from lack of education and work. Under the Manpower Development and Training Act, unemployed and underemployed adults can receive subsistence payments while attending vocational education training courses designed to fit them for remunerative occupations. This program is designed to extend to the hard-core unemployed group in that it also permits instruction of those who lack the fundamentals in reading, writing, and mathematics, which are so necessary to secure the maximum benefit from vocational training courses.

As chairman of the General Subcommittee on Education, I have for many years conducted hearings on the adult basic education legislation, the Youth Opportunities Act, elementary-secondary education, and other legislation pending in the Congress; and I have often realized that we needed more progress in the area of vocational education legislation. There was something lacking—the old Vocational Education Act needed to be modernized and expanded because it did not cope with the problem of job orientation.

CARL D. PERKINS, a member of the House of Representatives from eastern Kentucky, long has been active in legislation relating to education. He is the ranking Democratic member of the House Education and Labor Committee in the 89th Congress, and is chairman of that committee's Subcommittee on Education. He has introduced several significant education bills, among them the Impacted Areas bill of 1956 and the Adult Basic Education Act of 1961.

The work of Congressman Perkins and his committee, following the report of President Kennedy's Panel of Consultants on Vocational Education, produced the Vocational Education Act of 1963.

Congressman Perkins currently is active in developing legislation for federal aid to primary and secondary schools.



"Flexible skills and dividuals adjust to

CONSIDER THAT TODAY the gross national product of this country is in excess of $600 billion, that average earnings in manufacturing are in excess of $100 per week, that per capita income is in excess of $2,500 a year, and that civilian employment of this country has gone beyond the 70 million mark.

On the other hand, take into consideration that one-fifth of all American families live on less than $3,000 per year income and 12 percent live on an income of less than $2,000. Of this poorer group, 54 percent live in the cities and 16 percent on the farms; and about 30 percent are rural nonfarm residents, such as those in the great Appalachian area. We have an unemployment rate in this country of approximately 5 percent, but the present rate among our teenagers is 14 percent, and the rate for our Negro teenagers is approximately 30 percent. Some 750,000 to 800,000 teenagers are unemployed today.

It speaks for itself that we must commence to take greater notice of the problem of unemployment than ever before. Your great state of California is the leader in trying to make the greatest contribution. I do not know of any other state that has made the effort that California has made to cope with the dropout problem and train high school youngsters who will otherwise enter the labor force with training inadequate for this space age. The greatest problem that we have in the Appalachian area that I come from is the lack of training opportunities. You have better facilities in this area. We lack the vocational education schools. We lack elementary-secondary teachers. We hope, during the present session of Congress, under the leadership of President Johnson, to pass an elementary-secondary education bill that will go a long way toward solving this basic problem.

We have already begun efforts to provide opportunities for those millions of adult citizens in our country who lack a sixth-grade education or its equivalent. The Adult Basic Education Act, which I had sponsored in two sessions of the Congress, was made a part of the so-called Antipoverty Bill and will provide federal funds to help the states establish regular programs of instruction for adults in basic educational skills.

THIS ENTIRE UPGRADING of educational opportunities will have a far-reaching effect on the unemployment toll. Slowly but surely these programs will provide individuals with the necessary education and training so that their flexible skills and knowledge will let them adjust to new job opportunities when economic changes such as automation affect their occupations.

The 88th Congress recognized that the educational processes do not stop at the school, and that adequate

knowledge will let in- new job opportunities."

library facilities throughout the nation are necessary to assure all citizens ready access to current information so necessary to keep pace with rapid changes occurring in our country as the result of new ideas and new concepts, not only in the field of science and mathematics, but also in all fields of learning.

The 88th Congress recognized that there is a close relationship between the problem of the dropout and the preschool education of children who have no financial means of obtaining books and preschool instruction. For this reason, in the community action provisions of the Antipoverty Bill, authorization was given for federal financial assistance to special programs of preschool education for youngsters so as to enable them to keep pace with academic requirements in the elementary schools. A successful student rarely becomes a dropout, according to much of the evidence presented to the committee on which it is my privilege to serve.

In the enactment of Public Law 88-164, the 88th Congress expanded assistance in the field of education and programs for handicapped children through grants to public and nonprofit institutions of higher learning to assist in training personnel to train teachers in the field of education of mentally retarded and other handicapped children. As is well known, the 87th Congress also enacted improvement in the laws for programs of education of such handicapped children.

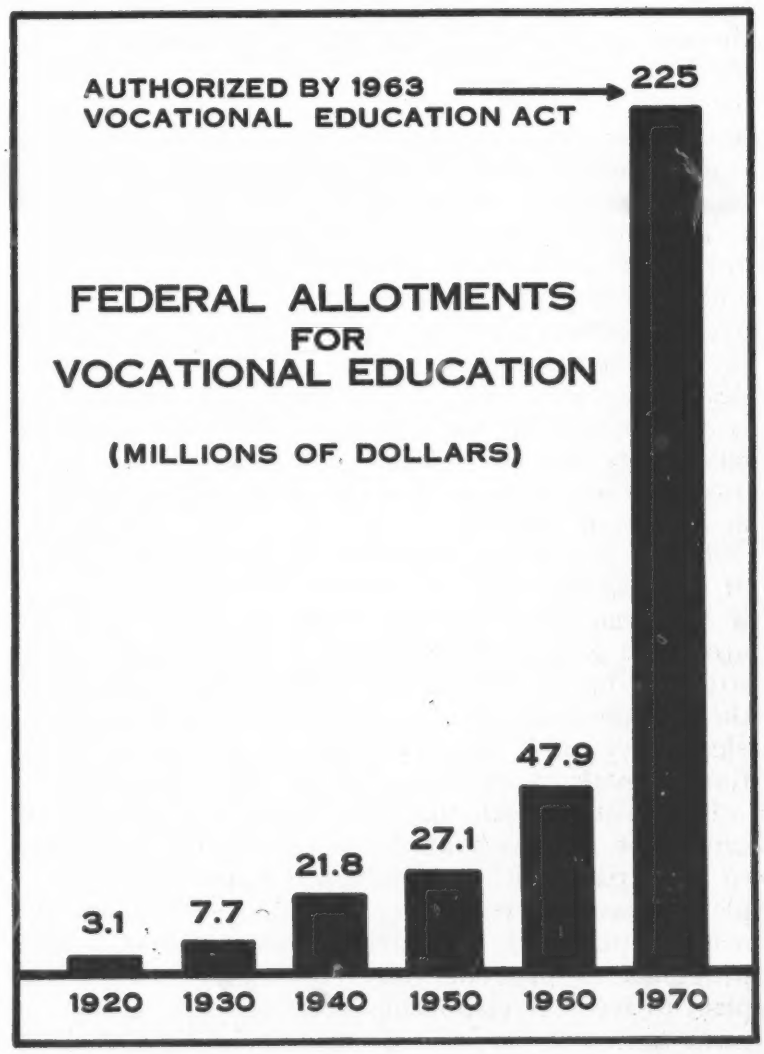
A new Nurses Training Act was made law, and legislation was enacted to increase the opportunities for the training of physicians, dentists, and professional health personnel so as to assure our communities of a more adequate supply of people trained in health.

As I have said, these legislative accomplishments indicate that there is some evidence to support those who would call the 88th Congress the "Education Congress." However, I do not think that we should let these accomplishments blind us to the fact that we are a far cry from the point where we can provide every child and every adult in the nation with the education which our times demand.

EVEN THOUGH WE HAVE increased federal funds in the vocational education program from approximately $47 million to $159 million, we have not yet filled the need in our vocational schools: to assure every citizen of an opportunity for the training which our economy requires and which the individual needs to realize his own full potential.

However, as significant as these educational legislative achievements have been in meeting the pressing manpower problems of the 1960s, we have virtually ignored the foundation of our educational structure—the elementary and secondary systems. In the final analysis it is the soundness of man's basic educational skills—the three R's, if you please—which will determine his ability to adjust to the economic and technological forces which are constantly affecting his employment. In our modern age, as rapidly as technological changes are made, not only is it necessary for a man to continue his education as he works to keep abreast of the changes that are occurring in his job, but also it may be necessary for him to undergo retraining for an entirely new occupation more than once during his lifetime.

It becomes almost too obvious that an individual's ability to continue his education during a working career or to embark upon a new course of training depends upon how well our elementary and secondary school systems have done the job initially. One of the greatest problems confronting the operation of the Manpower Development and Training Act and other



"The foundation of vocational education is jeopardized."

retraining programs has been reaching the hard core of our unemployed, because it consists of older workers who find their level of achievement in the basic education skills inadequate for the reading and mathematical requirements of present-day vocational training courses.

THE PROBLEMS CONFRONTING elementary and secondary education in California are particularly acute. Your state is confronted with the continuing rush of people to seek homes in California. Every day more than 1,600 people come to your state to live. In terms of classroom facilities alone, this may conservatively amount to 26 new classrooms each day. Adding complexity to the problem is the fact that students are entering classrooms in California equipped in varying degrees of competency to carry on academic work. The inadequacies of our elementary and secondary school systems in other states are reflected by the newcomers to the classroom here in your own state. The mobility of the American people today, where one out of every four families can be expected to make a move every year, illustrates the national proportions of the education problem and the great need for providing full educational opportunities in all areas of the nation.

There are many elementary and secondary schools throughout our nation which simply do not have the local financial resources to build the classrooms, to hire and to train the teachers, to provide adequate lunch programs, to purchase the best instructional equipment and aids, and to furnish suitable transportation and access to school facilities.

The foundation upon which we build successful vocational education programs, upon which colleges and universities may construct programs to satisfy the ever increasing demand for college-trained people, in fact the foundation upon which our concept of democracy and the full exercise of citizenship rests, is jeopardized by the fact that the opportunity for elementary and secondary education of the highest quality is not available in all areas of our country and in all school districts.

Just as it is easier to see the weaknesses in that part of the building or house which is above the ground, it has been easier for the Congress and educational groups in general to seek improvement of the superstructure of the educational system before examining the weaknesses in the foundation of the system—the elementary and secondary grade level where the fundamentals of an education are obtained.

It is plain to see that our national defense needs cannot be met without the scientists and technicians to keep pace with technological opportunities. It is plain to see that emphasis should be given to science, mathematics, and the strengthening of our college programs to produce this trained manpower. It is plain to see the relationship between high unemployment rates and the lack of vocational educational opportunities.

What is most difficult to see is the fact that an individual, armed with a solid basic education, has gained the ability to readily acquire new knowledge and new skills as the processes of automation and technology require him to adjust to new job changes and new job opportunities.

What is difficult to see is that the inability of many deserving students to obtain college admission may be based upon the lack of funds locally to provide that individual with the appropriate elementary and secondary education.

What is difficult to see may be the tremendous burden imposed upon our colleges and universities to spend additional funds and time in furnishing students with basic elementary and secondary education instruction which could have and should have been supplied at the elementary and secondary level.

LET ME CONCLUDE with the observation that great progress has been made on fashioning a good superstructure for our educational system. We must now give prompt attention to the urgent needs of its foundation—our elementary and secondary school system.

When I first came to the Congress back in 1949, the Senate overwhelmingly passed a bill which provided $300 million for facilities and teachers' salaries at the elementary and secondary level. But in the House we always lacked one vote of getting that needed piece of legislation out of the House Committee on Education and Labor.

I believe that because of pioneering conferences that are showing the way, the people of this great country are going to realize that we cannot afford to delay for another generation the passage of this greatly needed legislation.

The new legislation at the elementary and secondary levels will add one category to legislation which has been of tremendous help in impacted areas of defense installations. Another category will be diametrically opposite, taking into consideration families with low incomes and channeling money through your state offices—acting more or less as certifying agents—into these particular school districts. The legislation will really have as its purpose equalizing educational opportunities in the various states. We hope to reach all the people in the great metropolitan areas and in the rural sections of the country which have a low per capita income.

It is estimated that by 1970 we will have about 87 million people at work in this country and that approximately 58 million of the people now employed will need their skills upgraded. It is a great challenge, not only to the vocational educational leadership but also to all educators. I personally feel that we are on our way toward solving the dropout problem which contributes to youth unemployment. With the great technical schools and vocational schools that you have in this great state, there is no doubt in my mind that you will continue to pioneer in vocational education and set a pace for the nation to follow.

Needs of Our Labor Force in the Next Decade

IN 1965 WE ARE GOING to have a million more 18-year-olds than the year before. In this country, and especially in California, a million may not sound very big; but a million more 18-year-olds are a lot of people.

* * *

Age 18 happens to be the age when the American male makes his entry into the full-time labor force. This year more 18- and 19-year-olds will come into the labor force than did in the entire period from 1950 to date!

* * *

Because of the increase in the number of teen-agers, 1965 will see the largest number of dropouts in the history of the United States.

We have made studies of dropouts, and for the overwhelming majority of these kids you have a pretty good idea of what the score is back in the elementary grades in terms of attitudes and achievements. It seems to me that if we can do something at the elementary level about the development of attitudes, we can really go a long way toward solving this problem.

* * *

There is going to be a 40 percent increase this year in the number of people showing up at institutions of higher learning, knocking on the door and saying, "I want to get in." (If you have a youngster who wants to get into college, I have one piece of advice: "Buy a college!")

* * *

In reference to Dr. Rafferty's comments on opportunities in blue-collar work, I think that the best piece of vocational guidance that my daughter ever

Seymour Wolfbein
Deputy Manpower Administrator and Director, Office of Manpower, Automation, and Training, U.S. Department of Labor

DR. WOLFBEIN has been with the U.S. Department of Labor since 1942. His major areas of work have been and are with employment and unemployment developments, and occupational information for career guidance, as well as automation, training, and retraining. He is a Fellow of the American Statistical Association and the American Association for the Advancement of Science.

Excerpts have been taken from his informal remarks at the California State Conference on Vocational Education.

"This year will see the

got was back in the third grade. Her teacher made the class go around the block on which each child lived, making believe that they were census takers and finding out the occupation of each father.

I remember my daughter coming back; her eyeballs were twirling. She had been brought up in the typical white-collar milieu, but she had just discovered that the man with the biggest house and the greenest lawn —and for all I know, the biggest mortgage—was not the teacher, not the superintendent of schools, but the *plumber!*

* * *

Automation, cybernation, increasing output per manhour, reducing manhour requirements per unit of product—it all adds up to the same thing: You need less manpower to get out a given unit of production.

Here is an example, because every one of these things is happening right now: Last year we put out more cars than in 1955, the previous record year, but we did it with 18 percent fewer workers.

* * *

We will not have full employment in the United States unless we improve the quality and increase the quantity of vocational education programs.

* * *

In 1964 we had more people employed, they worked longer hours, the average factory wage was up to $103 a week. You name it; we made a record. But unemployment among young people went *up!*

In 1963 the unemployment rate among teen-agers was 250 percent of the national rate. By 1964 it was up to 285 percent of the national rate.

* * *

America today stands at the peak of her economic prosperity. If we can't take off from that vantage point, we're going to be in trouble.

* * *

Congress has given you a cornucopia of vocational education legislation, and there is more coming.

* * *

Many of you here helped get the Manpower Development and Training Act off the ground. We have been in business with it a little over two years. One out of every two trainees is a long-term unemployed worker. More than 28 percent of the trainees are Negro, a percent even greater than the proportion of Negroes among the unemployed. Two out of every three trainees got trained in the growth occupations—

largest number of dropouts"

the white-collar and skill occupations. The figures that we just got for 1964 showed an increase in the placement rate from about 70 percent to about 75 percent . . . *it can be done!*

* * *

The geography of employment opportunities in California is going to experience a substantial and significant change in the immediate years ahead and certainly in the next decade. The change will stem from the impact of advancing technology, the shifting composition of military demands, and—within a year or two—a major change in the composition of your immigration. You are not immune to what the rest of the nation has been experiencing in terms of geographic shifts. You have already seen it in the changing composition of military demands.

* * *

There will be an upending of occupational standings —practically a manpower revolution in the State of California. Substantial emphasis is going to be given in the nation, and especially in California, not only to the obvious professional white-color jobs, but also to that band of occupations we call "skilled persons" and the service occupations.

Service occupations are the second biggest growing band of job opportunities in this country. They include some of the relatively low-skilled, low-paying occupations—the personal-service occupations. Those of you in the vocational training will want to move into that one as quickly as possible.

* * *

The key word that ties all of this together is "change." I challenge anyone in this audience to name one occupation which is immune to the impact of advancing technology, or which will be immune in the next few years.

* * *

We now have more people employed in the service-producing industries than in the goods-producing industries. You're going to see that doubled in spades in California in the next few years.

* * *

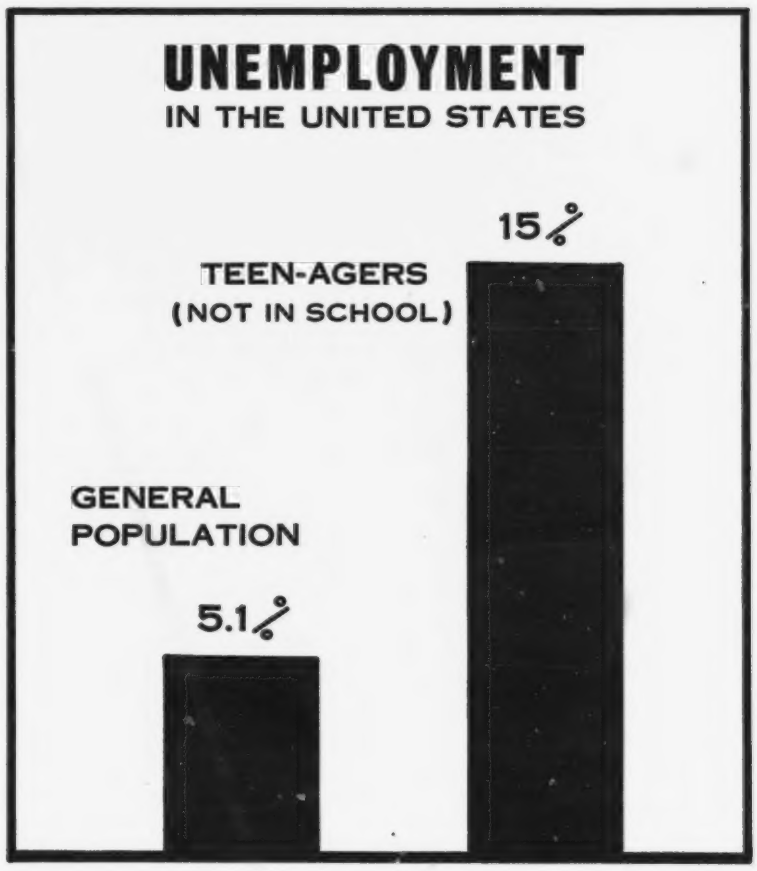
You pick up a newspaper and look at the want ads. The *words* weren't even around a half-dozen years ago.

* * *

It's no longer a neat, stable world where you can take young people and give them some lovely form of vocational education that will fit them snugly into a nice job slot. For better or for worse, it's not that way.

* * *

Vocational education is the process which helps people at all stages of their educational development to withstand the inevitable changes that are going to occur in the relationship between what they learned and what they are going to be called upon to do in the world of work.



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The Honorable Mary Conway Kohler

"Our economic growth in California is not yet solid enough . . . to preclude the roots and offshoots of poverty which we see around us."

VOCATIONAL EDUCATION

YOU MAY RECALL that when Willie Sutton was asked, "Why do you rob banks?" he replied, "That's where the money is."

I don't know much about your money out here, but I do know a great deal about your power and potential. I know that you are the fastest-growing state in the country. I know that your labor force has increased most rapidly during the past ten years—35 percent compared to 14 percent in the nation as a whole. I know that one out of every three engineers in the United States works in California. I know that of all the research money ever spent in this country, 90 percent has been spent by living scientists, many of whom reside in California.

One might say that you never had it so good. In fact, the United States has never had it so good. Gone are the days of hard labor and drudgery so common when we were young. Were we meeting just 100 years ago, we would be discussing a new law restricting the working hours of children under fourteen years of age to ten hours a day. Look how far we have come in that area in a century.

The sudden great affluence experienced by our generation will probably never be repeated. Today we earn more, we spend more. We have over trillions in assets, and our wealth increases. Yet our economic growth is neither fast enough nor solid enough to preclude the roots and offshoots of poverty which choke at least one-fifth of our population.

Let me give you some examples. An estimated 16 million children are so handicapped by the influences of poverty that they have difficulty with minimal achievement in school. Sixteen-year-olds are three times more likely to leave school if their families have annual incomes under $5,000 than they are if the family income is $7,500 or more a year. Half of our young men fail to qualify for Selective Service; nearly one-fourth of them fail the Armed Forces mental test.

I believe that we are maintaining too high a rate of unemployment when it still hovers around 5 percent.

MRS. MARY CONWAY KOHLER is a native of San Francisco. For 15 years she was referee of the Superior Court of that city in its Juvenile Division. Earlier she was chief probation officer of the court.

Presently Mrs. Kohler is a consultant on youth problems to the U. S. Department of Labor, to the Mayor's Povery Council of New York and to numerous foundations and governmental agencies.

As consultant to the Ford Foundation, Mrs. Kohler spent five months in Europe in 1959 studying methods used by European courts to combat juvenile delinquency. As consultant to the Taconic Foundation, she has studied the problems of vocational education and unemployed youth. Her findings have been reported both in technical and in popular publications.

A WAY OF LIFE

In New York, 10 percent of our relief roll, our welfare department case loads, are people who cannot earn enough to support their families.

Private enterprise can no longer support the work force it did in the past. During the period from 1943 to 1953, it absorbed 84 percent of the people entering the civilian labor force. In addition, it created new jobs to accommodate workers disemployed by agriculture or industry. But from 1953 to 1964, private enterprise absorbed only 52 percent of those entering the civilian labor force.

THIS DRASTIC DROP was due to stepped-up mechanization and automation and to rapid population growth. The population bulge created by the increased birth rate during the war years is now in collision with automation, which has decreased the unskilled or entry jobs which the young have normally had.

There is little reassurance in a 5 percent unemployment rate—one in 20 out of a job—when certain sectors of our population have one in three-and-a-half out of jobs, which is the case of young Negro males. In the middle of the depression years, only one in four was out of work, and yet you know how all hell broke loose in those days, until the situation was remedied.

The hardest hit adults, of course, are the uneducated. Sixty percent of the unemployed today never finished high school, and 40 percent never finished grade school. The young and unskilled, however, are the hardest hit of all. This is due, in part, to the fact that men are often doing boys' jobs.

Recently, I was talking with the president of a large steel company. I was trying to persuade him to restructure jobs, in order to let the entry workers—in this instance, school dropouts—get a start in the work world. He said, "I can't do this. I haven't added one new employee in the last ten years. I feel lucky to hang onto my men and give them boys' jobs."

The big reason behind the youth employment problem is that we neglect the average child. We do well with the extremes—the gifted and the mentally retarded. Our bright, talented young people usually pass gracefully through the growing-up process, moving from school to school to college. And remarkable work is done with the mind of the child that is not fully developed. Thanks to their parents and to the great push that our late President gave to the mental health program, our mentally retarded children receive good attention.

The average child, however, tends to be passed over. We have perhaps doubled the holding power in our high schools and tripled the going college rate. But we forget to count those who drop out of college, or those who leave before they finish high school.

In some areas of the country, improvement has been made. I was pleased to notice, for example, that the Los Angeles Schriber study shows that the rate of high school retention is 77 percent. In New York, it is only 63 percent, while in Michigan it is 91 percent.

I am not reassured by these figures, however, because I know of schools—in New York and probably in Los Angeles—where only 14 percent of the youngsters who start high school ever finish. And I can take

"The delinquent child is also the child who has failed at school."

you to another school, a block away from one of these, where 98 percent complete their school work.

It is important to note that a significant rate of difference shows up in the retention rate between students in the academic course and those in the vocational course. In the United States as a whole, about 65 percent of the academic course students finish, while only 51 percent of those in vocational studies complete their schooling.

The saddest fact of all, in my judgment, is that 27 percent of the seniors in all the vocational schools drop out, while only 3 percent of the seniors in academic classes quit.

THESE DROPOUTS are education's failure, and they constitute a source of great social ill in this country. National studies show that 95 percent of our delinquent seventeen-year-olds are dropouts. Notice that I did not say that 95 percent of the dropouts are delinquents; that is quite different. The point is that the delinquent child is also the child who has failed in school.

This fact is serious, because school is really the only growing-up process we have ever established which is orderly from childhood to adulthood. School provides the way to work, and, if it is interrupted, or if our way of life keeps it from being orderly, we are handicapping large numbers of children, particularly those who are of normal intelligence.

I maintain that we are, in fact, handicapping these children by our lack of foresight. We are permitting vast numbers of young people of normal mentality to drop out of school. These unfortunate youngsters are the casualties of our society. These are the youngsters whom we are failing. They, like you and me, were born into a society that judges man by the work he does. Thus, these youngsters develop their own self-image on the basis of the work they do or do not do.

To do nothing is to be nothing, and to be nothing for very long is to become nothing forever.

I brought with me a recording of a youth who typifies a great number of our educational failures. This young fellow came every day to a clubroom, paid his ten cents, stretched himself out, and stared up at the ceiling. One worker asked, "Jay, how come you pay your dime and just lie around here? Why don't you play checkers or talk to the other guys or something?" Jay answered, "Look, man, this is the only place in the world they let me be, where they don't bug me. I hang on the corner or in the park, and the cops boot me. I go home, and they throw me out. They don't let me in the school no more. I hang in the hallway, and the janitor yells. I sit on the stoop, and the neighbors bitch. I get a little peace here, so just leave me be."

This is the futility of life for the youngsters we are casting out. And we are casting them out of vocational education programs, when we fail to reach them.

I recall one tragic example of a young man in a prison I visited. This fellow looked about fourteen, though he was actually twenty-two. He had been in and out of correctional schools and prisons all his life. He struck my attention, because, as he ran a hand printing press in the industrial shop, his eyes sparkled. He seemed to have a love of life, unlike those around him, and he was obviously enjoying every minute of the work he was doing. I talked with him and discovered that, though he was due to leave prison, he was resisting it. He simply did not want to go.

"Why?" I inquired.

"How can you ask?" he replied. "Because I have a job here."

"There are jobs outside," I said, knowing full well that the printing unions would never let him in, and that no employer would take him with his record.

"Look, ma'am," he answered, "what union is going to let me in? And besides, there's no job like this; except for me this press wouldn't work."

WE SHOULD NOT FORGET that every one of us must have the kind of job that "except for me, it wouldn't work." This is vital to the dignity and productivity of us all.

Yet how seldom this happens to the unskilled young person today. We are casting him out as a derelict, a derelict on the shores of affluence. This is the tragic situation of the youngsters who get out of school without the occupation or skill necessary to make them employable.

Our unfortunate tendency in America is to put the blame on someone—in this case, on the personal characteristics of those who fail, because they are unskilled and unemployed. This is at once unjust and unrealistic. The plight of these unhappy young people reflects a far deeper problem.

In my judgment, the only solution to this problem is an absolute revolution in education, particularly in vocational education. This collision between the population bulge and automation, this lack of consciousness of the needs of every human being and this inability to meet his needs, reminds me very much of the paradoxical age which Dickens describes in the opening lines of *A Tale of Two Cities*:

> It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair.

Although Dickens was talking about the French Revolution, he could as easily have been setting the stage for a thesis on the kind of revolution you and I must bring about—particularly you educators, you industrialists, and very much you men of labor. We must all be revolutionists, for we all share the responsibility for improving the lot of our young people. Only by improving our overall economic performance and by developing a new way of life are we

going to break down the basic road blocks to a good way of life for all.

What can we do in this revolution? We must develop a new concept of education. We must have more schooling, longer schooling, and a very different kind of schooling.

School dropouts have taught us much. In fact, they may well be the salvation of American education, for they point up a sober and vital fact: Our schools are failing to prepare our culturally deprived or culturally different children for useful roles in our society.

Hopefully, these dropouts will force us to find a way to educate them. I would say to teachers that the first step is to accept the fact that we *can* educate these youngsters. We must get rid of the defeatist attitude typified by the principal of a poor school I visited in New York. When I asked him, "What would you do with this sorry scheme of things?" he replied, "I would make these children just like me. I came up the hard way—my parents were immigrants—I made it."

The fact is that these children are not us; they are themselves, and we must take them as such. We must concentrate on them as individuals and search out their innumerable virtues. For the creativity of some of these nonlearners in vocational schools is unbelievable. You see this quickly, if you watch them on the playground or in other circumstances that are not school imposed.

Incidentally, it is more than happenstance that where money goes into education, failures go down. For example, considering the per capita income of a state and the amount spent for public education, Utah does quite well. It has the fewest draft rejectees and the fewest illiterates of any state in the country.

CALIFORNIA FARES WELL, too. Your state is fourth in the nation in educational effort, that is, in what you spend in relation to your capacity to spend. This effort certainly contributes significantly to your low school dropout rate.

Essentially, we have two major tasks: one, to prevent our educational casualties; two, to salvage our educational failures. To do this, education has to become the central endeavor of every community in the country. To do this, the educational attack must be a different one, and that means that we must use every innovation which can be brought to bear.

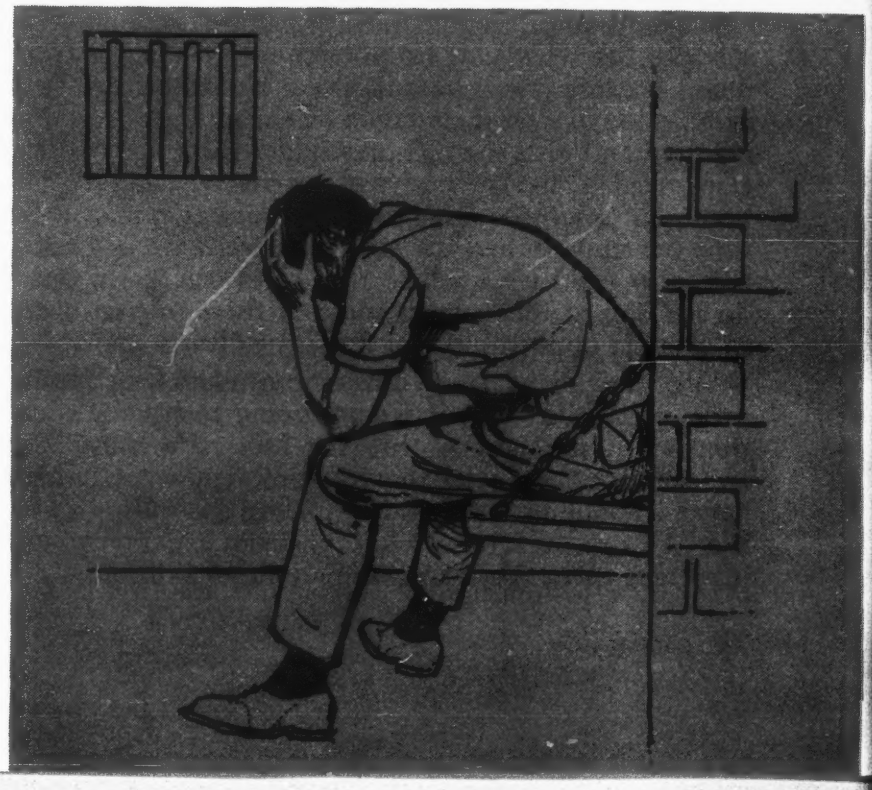
I would plead chiefly for innovation. Seek out every possible creative teacher, find a way to get that teacher recognized, find a way to let him be free to create. Validate these innovations, so that you have the courage to institutionalize them and spread them far and wide.

Accept the fact that almost every child can be educated to do some job. In New York, which suffers many handicaps unknown to you Californians, we took a group of the lowest functioning school dropouts and began a program of training them for work. But before we could begin any vocational education, we had to teach these youngsters to read, because reading retardation is the universal characteristic of the school failure. We used all sorts of teaching methods, some that I had never heard of before. We found no instance where we couldn't make a breakthrough. With one child, it would be the method of color reading. With another child, another method would work. But we always made a breakthrough. This is the kind of a tryout we must have.

We must also begin to tie curriculum to the world of work, and we must do this very early in a child's life. I have been particularly interested in your own California invention of the Richmond Plan, in which you took four subjects—math, science, English, and lab—and directed the work of each day and each week around the same subject. Essentially, this was a pre-engineering technology curriculum. I was impressed by the fact that those youngsters who were failures in the straight academic course were getting this technology course.

As I questioned these young people, even without a scientific validation of the process, I realized something important. Not only was the study program built around strong interest, it was also built around the same subject matter. The students would say, "I can be an A student now, because I get it. If I don't get it in the first class, I get it in the second or the third; I never lose anything any more. I used to lose it, and it was lost forever."

This is just one small technique; there are many more, which you know better than I. What I plead for is that we begin to tie some of these teaching techniques to the world of work. We must create in these youngsters, as early as possible, an experience and an appreciation of work and of their part in the world. Some examples I saw in Russia this summer illustrate my point. In their shop courses, fourth graders made all the toys for the kindergartens and nurseries, and they kept them in repair as well. Obviously, the school



"We have to tie curriculum to the

directors knew they could get better toys manufactured by their industries, but they were intent on having these fourth graders feel a sense of involvement and responsibility in relation to the kindergartens and nurseries. The children responded accordingly, as one might expect.

At the University of Moscow, I saw a group of eighth graders visiting the physics lab. They were turning over the oscilloscopes to find the marks they had left there when they made the instruments in their eighth grade shop courses. These were the oscilloscopes used by the physicists developing the Sputniks, and it is obvious that these youngsters had been made to feel a sense of real involvement and importance in the world of work.

Russia's singleness of purpose gets under your skin after the first day, but the strong group sense, oriented toward the Russian schoolchild, contrasts sadly with our own system. Their children are their privileged class. Why have we had such blinders on for so long? Why do we push our children aside, saying, "We'll get to you later, we'll get to you later," until it is finally too late to salvage them?

This process of developing respect for the world of work must begin very early in a child's life. This is difficult, however, because the average way of urban community life provides little or no way for children to learn work values at home. Therefore, we must begin teaching work values in the very first grade of school. We must get real work into the school experience at the earliest opportunity.

I would plead with labor to take a new look at schools: See what you are preventing youngsters from doing because it can be done by a working man. Possibly, these fine workers could be the guides for young children and give them chores under their supervision. I am tired of having nothing considered a child's job because it might be done by some union member. The time has come when we must all give. I do not ask a father to yield up a job so that child can learn, but I do ask him to reconstruct some of these jobs in order to provide opportunity for a child to learn.

We must have very different guidance operating early in a child's life, if we are going to have a vocation and trade way of life for him. We must stop concentrating only on the academic endeavor, which never lets one use his hands, as being the only way of life. We must teach our children from experience, not just train them from an occupational handbook.

We must encourage the type of counseling that I had the pleasure of participating in, in Everett, Massachusetts. There, representatives of management and labor in different areas met with 40 groups of ten youngsters each on a year-round basis. This was a preparation-for-employment program, and I saw, firsthand, how very useful it was to child and adult alike. This kind of counseling is a must—counseling where there is a true coalition among management and labor and education to better the lot of young people going into vocational training.

CHURCHES ARE ANOTHER SOURCE of very good organized work guidance. I was interested to see that, in England, the Church of England has made this sort of counseling one of its major volunteer efforts.

We are going to have to reconstruct many of our jobs. In doing so, we are going to confront some very sacred cows of management and labor. We must pull employed men who have the capacity for better and more highly skilled work into higher level jobs, in order to open the way for the less skilled. We must do the same with our professions. How can we beg constantly for more teachers, when we let teachers in the classroom do so many things that assistants and subprofessionals can do? And, at the same time, we have unemployed people who could be trained in subprofessional work. It makes no sense. It is incredible that we go on the same way year after year without challenging our methods.

I think that the new Economic Opportunity bill provides a tremendous chance to train the subprofessional, as well as to train the poor and handicapped to help themselves. But to use this opportunity, we must give up some of our very sacred ideas about the requirements of being a professional. I am confident, however, that once we do it, we will like it. I lived through those days in the first world war when nurses' aides were first talked about, and I can remember how shocking it was that anyone but a trained nurse could ever touch a bedpan. That day is long gone, and the registered nurse is glad of it, I can assure you.

Perhaps most important, we must begin a process of continuing education in a very different way from what we do now, particularly in vocational education. We must not force a child to decide positively in the ninth grade that he will become a carpenter or a plumber. This is the practice in many of our schools. On the other hand, we cannot let the child forestall

world of work."

learning an occupation forever, because if he leaves school, it is forever in the life of that child.

I am strongly in favor of what I call the California way, or, particularly, the Los Angeles way, of deferring the real vocational and technical education to the junior college, if possible. Yet, I have great disdain for a large group of intelligent people who let youngsters stop school without having any place to go, simply because they are untrained.

I think we have a chance under the vocational education legislation of 1963 to develop area schools, or what I call skill centers. These are places where students can go for short- or long-term, cafeteria-type training, as needed.

In addition, we should consider the so-called sandwich program of education so popular in England and in Europe. Under this system, the student has apprenticeship training in school for a while, then goes out to work, back to school and out to work again. He is always moving up the ladder.

WE MIGHT THINK, too, about developing an expanded social security system to permit time off or shorter hours for training purposes.

We certainly must devise some system in the nation as a whole for a constant appraisal and reappraisal of talent and the means of fitting this talent into an upgrading process of training.

We must use the chances we have to work with the job corps of the Neighborhood Youth Corps, provided for under the Economic Opportunities Act. The job training camps set up under this program, incidentally, are largely being contracted out to private industry. This, I think, represents a great challenge. Let industry get in there and see what the problems of educating the hard core of our youth really are. This is their responsibility and, perhaps, if they take over these camps, these training centers, we will get some innovations and a new kind of sympathetic understanding of the youth employment problem.

We have known for many years that work-study and cooperative education pay off. Yet this system still has not grown as it should have in the United States. It overlooks the slower learner; it passes over the average child. Too often, its benefits are reaped by the student who presents no job placement problem. All this must change.

I especially wanted to come here, because I knew that industry, labor, and education were participants in this conference. This three-way coalition is precisely what we need for the educational revolution I have been talking about. And I don't mean it as it exists in these advisory committees. I don't mean committees that meet once a year. I do mean a deep involvement of these outsiders—labor and industry—in the problems of education. In short, why not loan the best of industry to the schools as teachers? Why not loan experienced teachers to industry?

Instead of trying to indoctrinate our young people with fixed methods, our aim should be to help them develop decent attitudes toward the work and skills which will make them adaptable to many different jobs and many different ways of life. To indoctrinate youth is to ensure early obsolescence. To help these youth develop skills, good attitudes and habits of mind, to provide them with knowledge and understanding, is to ensure their continuing capacity for change and growth. We must begin this process early, and we must never let it stop. There can be no graduation in this new way of life.

You, a coalition of management, labor, and education, can and must work together to achieve this aim. For if you succeed, then we will have a system that provides for its own continuous renewal. We will have the leadership necessary to sustain a great civilization suffering serious challenge.

I like to think of you Californians, because I love your state and because always, always, you try first in the nation. I think of you fondly in terms of a California story told to me by your own Kenyon Scudder.

It is the story of two youngsters going home from a correctional school. One had a family unable to read or write. He had sent them a message saying that if they didn't want him back, they should just forget him, and he'd stay on the train. But if they did want him, they could put a ribbon on the apple tree by the railroad track, and he'd see it and get off at the station. As the train neared the apple tree, however, he just didn't have the courage to look. So he turned to his companion and said, "Is there a ribbon on that tree?" His friend answered, "It's covered with ribbons."

I like to think of you covering with ribbons of opportunity the tree of life for the least of your children and all of your children.

65 CALIFORNIA STATE VOCATIONAL EDUCATION Report

Vocational Education in a

IT IS INDEED a great honor—and also a great opportunity—to appear here today at this statewide conference on vocational education as a representative of the United State Office of Education. Commissioner Francis Keppel sends warm greetings. He very much regrets that he cannot stand here himself. I believe most of you know that the President's message on vocational education is due in Congress today. The Commissioner has been working very closely with the White House Staff and the President and others in the preparation of this message.

THE IDEA OF THIS CONFERENCE is dynamic. It was most impressive to me to read the statement of its general purpose as "the establishment of directions and dimensions for a far-reaching program of occupational preparation adequate to meet the current and future needs of California's total work force." The conference announcement also assumed a universal interest in vocational education in the State of California—an interest that has been demonstrated in preceeding conference sessions. I think this amounts to a public recognition in the State of California that vocational education is in fact everybody's business—of industry, business, labor education and all of the citizenry of this state and other states. As we see it from a national level, we feel we need the same spirit and attitude in all 54 governmental jurisdictions with which the Office of Education deals.

But the fact that vocational education might be everybody's business doesn't mean that it is nobody's business. Somebody has to do the work. I am going to suggest who might be doing what and a little bit of how.

Sometimes, it seems, we get so involved in legislation, in rules and regulations, in programs and in administrative decisions that we tend to lose sight of the real goal: to help provide better tomorrows for all the people of this country.

At the federal level—and no doubt at the state and local levels as well—it does worlds of good once in a while to stop and take a few deep breaths, and to take a good look at the young people who will be deeply affected all their lives by the decisions being made now—by the kind of thinking being done here these two days in Los Angeles.

A few months ago, President Johnson said:

> If we are learning anything from our experience, we are learning that it is time for us to go to work, and the first work of our society is education. We must rest our faith and our hopes for America on education—not for some, but education for all.

A few months before that, Mr. Johnson had spoken of "dramatic evidence of our commitment to education as the key to our social and economic and technological and moral progress . . . a reaffirmation of our conviction that education is the cornerstone of our freedom."

That last statement was made in the occasion of the President's signing into law the Vocational Education Act of 1963.

Today—a little more than a year later—the U.S. Office of Education, in cooperation with vocational educators and state officials all over the country, is in

Walter M. Arnold

Assistant U.S. Commissioner of Education, Vocational Education Services, U.S. Office of Education, Washington, D.C.

DR. ARNOLD administers the Vocational Education Act of 1963, as well as the vocational training portions of the Area Redevelopment Act of 1961 and the Manpower Development and Training Act of 1962. He has directed vocational education at the local and state levels, and has worked in industry. Among other accomplishments, he is a journeyman machinist.

Dynamic Economy

the midst of creating reality from these strong precepts and from the Congressional mandate which inspired them. As the great new programs under the act go into orderly operation in the several states, we have been rededicating ourselves to vocational education's overriding purpose: to make occupational training opportunities available to everyone who needs and wants them.

I THOUGHT I MIGHT DIGRESS here for a moment, to say just a few words about what is happening elsewhere in the country in this regard. I have had the unusual opportunity of visiting nearly all of the states in the last three years—some of them quite a number of times. Revolutionary things are happening. It is the greatest revelation that I have experienced in many years in vocational education. Every state on the East Coast, starting with Maine and including the mountain states in the Appalachian region and going all the way to Florida, is involved in a massive construction program and program development in vocational and technical education.

Not all of the states are that active. In my home state of Pennsylvania, I would guess that the unemployment rate has never been less than 6 or 7 percent in this century. Pennsylvania was once the leading agricultural state of this country and the leading manufacturing state, but it is no longer. Today, there is scarcely one program of vocational or technical education in the public schools of Pennsylvania that operates at the post-secondary level.

You could relate that to a growing economy with the attraction of industry.

Now I will give you another side of the picture. In 1957 North Carolina started a skill-development program through what they called Industrial Education Centers. Last year they opened the last of the 20 centers they had planned, and they now have some satellites. Their goal was, by 1965, to produce every year 23,000 graduates who were skilled in occupations of all kinds. The state industrial development group sold outside North Carolina industry, and inside industries, on the idea that "we will produce the skill for you to do whatever it is you need to do."

I think it is significant that in the calendar year 1963 North Carolina ranked *fifth* in this country in absolute dollar increase of capital investment in new and expanded industry and business. In the most recent five-year period, the total dollar amount devoted to industrial expansion North Carolina rose from $168 million to $294 million. That is not an accident. That is not a coincidence. You have only to talk to the new industries that have come in there to establish the fact that they moved to North Carolina because skilled workers were available there.

I visited another eastern state recently and met with the Governor, his Economic Development Commission, the State Department of Education, and the vocational education leadership of the state. That Economic Development Commission is a very sophisticated group. They have been in California, meeting with business and industrial people up and down the state—not to proselyte your industry, but to talk to California industry about its expansion plans and what this particular eastern state has to offer in the way of people and skills. You can see just how keen the competition is in today's dynamic economy.

More and more states are learning that education and skill and development of technical knowledge is linked with industrial progress and the general business progress of a state.

The *Atlantic Monthly* is running a series of articles on the best high schools in the United States. There is an article in the January, 1965, issue on Allentown High School in Pennsylvania. It is entitled "Education for Industry," and it reveals what the secondary school can do for, and do with, industry in a live-wire community, and something of how you get it done. We have some friends in the country who say, "You can't do this at the secondary level." Our answer is to show them where and how it is being done. Another high school featured in the Atlantic series is

"The states and the federal government

Dunbar High School, the outstanding Chicago vocational school. East High School, in Denver, Colorado, is another; Newton High School, of Newton, Massachusetts, is still another.

MRS. KOHLER COMMENTED in her speech to this conference about the poor record of the vocational schools of this country. There are outstanding high school vocational programs in this country. What Mrs. Kohler did not clarify was that the high schools she talked about were largely large-city vocational high schools that have been "dumping grounds" for years and years. Principals of those "dumping ground" schools never have had the right to select the students for an occupational training program. They take whoever is sent there. If you have administered vocational education programs, you know very well that you cannot conduct a quality program if you have to take all persons who appear at the door. The programs aren't designed that way. It won't work.

One large city now is embarking on a very interesting program supported by a $55 million bond issue—to expand vocational education in 16 comprehensive high schools and to update and improve two vocational technical high schools, one for boys and one for girls. They are now in the early stages of developing what they call "regional vocational technical centers" in the city. These centers will provide the shops and laboratories for several of the high schools in each section of the city. The students receive their related instruction in their "home" high school and get their practical training in the so-called regional school.

Here is a large city, greatly alarmed, like many, about the number of dropouts—people with no skill and very little chance of getting employment. This big city is bent, not on arguing about "either-or," but on using everything it has available to accomplish its goals.

Among our own profession across the country, we do too much arguing about "either or else." If everybody did everything he could, utilizing every resource in this country, we wouldn't even touch the problem today. So it seems rather futile to stand around and argue whether you should do it this way or that way. It may very well be that a city like Los Angeles, for example, needs to promote vocational education all ways concurrently.

Within the past few months, the U.S. Office of Education has made some major changes in the Vocational and Technical Education Division. These changes are designed to make more and better services available to the states in connection with the new act. The accent now is on the future—not the past.

THERE IS A NEED to commit ourselves totally to a new concept of vocational education—to new directions. It must be possible for anyone to become qualified for gainful employment—no matter what handicaps he carries with him from his growth environment into the world of work. The other side of this coin is that the entire economy will be helped by reaping the benefits of advancing technology.

The Congress has opened a number of new doors to us as a means of helping to accomplish these goals. The regulations which have been approved and issued spell out the implementation of the new legislation. They have made it possible for the states to develop new state plans and to take advantage of the opportunities that are now available.

Thirty of these state plans have now (January 12, 1965) been approved by the Commissioner. Forty have been submitted, and the rest are expected to be approved almost any time. I think it is to the credit of Wesley P. Smith, the Vocational Education Section in the Department of Education, and the State Superintendent of Public Instruction, that California was the first state to have its plan approved. To show you how Mr. Smith operated, the President signed the appropriation bill on Friday, September 18, and the California State Plan was approved on Monday, September 21. So California isn't losing any time.

The total allotment for California under this new act for fiscal 1965 is about $7,750,000. In the 1964 fiscal year, California's federal allotment from all vocational education acts was about $3,250,000. And, incidentally, California overmatched that by 7 to 1 from state and local funds. This is interesting in light of the fact that the national overmatching figure is about 4.31 to 1. It shows the commitment of California to vocational education.

Here is a figure that might startle you a little: In this current fiscal year, more than three times that amount of federal money is available to California—$11,305,000 of federal money! You can see what could lie ahead in the way of a dynamic movement if California continues to overmatch this sum at the rate of 7 to 1.

This will give you some idea of the government's greater participation in assisting the states to get this job done. California will have an additional $440,000 to use for experimental work on a work-study program. The money is provided under the new law to

share the responsibility."

help keep needy students in school until they complete their vocational education programs. This will be a very interesting development.

BACK TO THE ECONOMY. If you want to read something fascinating, see the November 1964, issue of *Fortune* magazine, which features an article called, "Knowledge: The Biggest Industry of Them All." What would you estimate is invested in what *Fortune* calls "the knowledge business" in this country? It comes to nearly $200 billion for this last calendar year!

In 1958 the investment in the knowledge industry in the United States was greater than the combined gross national product of England, France, and West Germany. This gives some idea of the philosophy in this country about the investment in education. It bears out, I think, what Dr. Schultz of Chicago University has said—that investment in human capital has a far greater return than investment in material capital. We are just beginning to get a full appreciation of this.

A quotation from the *Fortune* article might be of interest:

> An obvious reason nations and individuals crave knowledge is that it can directly elevate their productivity and prosperity. Another reason is less obvious. A static society can exchange with relatively little effort its small store of knowledge, but a rapidly changing society needs to organize a vast daily flood of communication, most of which is not specifically calculated to advance any productive process. This stream of communication is an essential part of the modern environment; without it civilization would cease to breathe.

I think this emphasizes how the knowledge industry—which includes vocational and technical education, of course—is a great factor.

It is obvious that education in this country, both formal and informal, is totally involved in the dynamic economy which is burgeoning from one end of this land to the other. Vocational education's contribution to the development of skill and technical knowledge is a great asset to a dynamic economy. In this day and age, the total effort of the nation bears a direct ratio to its investment in human resources. Hence, vocational education is often referred to, correctly, as one of America's greatest resources.

There is certainly general agreement among educators and others concerned with the nation's young people that modern life holds few berths for the uneducated and the poorly prepared. Yet, vocational education has simply been inaccessible to too many people. A sampling study of vocational education offerings in six states, found that only 7 percent of secondary school students, or persons of secondary school age, had an opportunity for vocational education leading to gainful employment.

The states and the federal government share the responsibility to continue the fight to eliminate under-education and poor preparation from the economic scene by helping young people to become educated and adequately prepared to the best of their abilities in those fields where job opportunities will be available to them.

VOCATIONAL AND TECHNICAL education programs cannot provide solutions to all the problems of our society. That is obvious. But they can provide some vital armament—skill and technical know-how—in the battle against unemployment, juvenile delinquency, school dropouts, and many other social and economic problems.

The new Vocational Education Act is really new. It does not represent merely a regrouping of educational forces within the vocational and technical fields. The Act recognizes that a complex technology cannot be expected to stand still. The world of 2015 will be as different from this one as 1965 is from the time when our great-grandfathers were young. This is no time to be looking backward with yearning to the days of the little red schoolhouse—or even to the days of the big red brick schoolhouse. It is time to look ahead—to make a determination about what vocational education should be like, and must be like, in a dynamic economy.

A total, balanced program of vocational education should be available to every community in the United States. This is a necessary goal for the nation if such training is to be readily accessible to all. One of the most revealing things that came from the study of the President's Panel of Consultants on Vocational Education was that nowhere in this country—in any state or in any community—could you find a total, balanced program of vocational education. This is a program—actually, a variety of programs—in a community or a state that meets the needs of all the people whom we have been identifying at this conference: the school

"The new Vocational

dropouts, the young person of less-than-average ability, the displaced older person, the person who is concerned about changing his occupation or more nearly capitalizing on all of his talents and aptitudes. You name them and a total, balanced vocational education program should cope with them.

We accepted the directives of previous Congressional acts—the Smith-Hughes and George-Barden acts—as our responsibility and said, "We'll do this. Whatever else needs to be done, we hope somebody else gets it done."

Well, the fact of the matter is, nobody got it done. I believe that the greatest gap in the public education system today is the lack of appropriate programs for persons of less-than-average ability.

In a meeting in Oklahoma, attended by the Governor of that state, I used the "less than average" expression. When he got up to speak, he turned to me and said, "If you don't mind, I'd like to point out, as a politician, that there are no less-than-average people in Oklahoma." He expressed the idea more accurately than I did. He said, "What we say in Oklahoma is that every citizen in this state has some talent, some ability, some aptitude, some interest. In this economy there is a place for him, and it is our job to help bring the two together."

I submit that to you as part of a total, balanced program in vocational education.

UNLESS THE EDUCATORS of this country—educational administrators, school superintendents, principals of schools—begin to address themselves to something more than our single line of approach to secondary school education, we are going to continue to have serious social and economic problems in this country. In the big cities you can see how serious these problems are, and there is no evidence right now that we are solving them. Whatever is being done now is being done at a slower pace than the pace at which the problems are accumulating.

James Bryant Conant heartily commends the states of California and New York for their unquestioned leadership in the fields of higher education and elementary and secondary education respectively. In his recent book, *Shaping Educational Policy*, Dr. Conant emphasizes the differences in educational progress between California and New York.

On page 81 he says:

> The two most populous states in the Union warrant a close examination by anyone interested in educational policy. They present both similarities and contrast. . . . In terms of the organization of public education, the contrast . . . is . . . sufficient to make a foreign student of our educational chaos wonder which state is to be taken as typical. The answer, of course, is neither . . . each state may be considered as furnishing something *approaching* an ideal solution to *part* of a total problem. California has led the way in providing a rational approach to educational policy making beyond the high school. And for generations, New York has provided a model of how to organize and employ the power of the state to promote excellence in the locally controlled public schools.

On page 96, Dr. Conant states:

> . . . California stands out as the one state in the Union that has developed and put into operation a master plan. Whether one approves of the plan (as I do) or not is quite beside the point. What is encouraging about it, and makes that state worthy of study, is the fact that a long-range educational policy has been established.

Dr. Conant is right, of course. California can achieve the same eminence in the field of vocational and technical education which it now enjoys in higher education. The answer is to have a kind of master plan—to develop a long-range policy. And, I believe, that is one of the chief purposes of this two-day conference. Dr. Conant also places great emphasis on the need for strengthening the state departments of education. As you know, Dr. Conant has spent a good bit of time overseas and has learned a good deal about the European educational system which is engrossing to some of our people. Dr. Conant believes—and I think most of us would subscribe to that belief—that in America, in light of our history and our philosophy, our educational hope and progress rests with the individual states. He advocates very strongly the strengthening of our state departments of education in many different ways. He gets so bold as to point out those states that are at the other end of the scale, and he doesn't hesitate to mention names. So if you are interested in what doesn't look good, you can read his book.

IT SHOULD BE APPARENT that a master plan for vocational education must be based on the requirement of a total, balanced program. The natural question is: "What is a total, balanced program of vocational education?"

Generally speaking, a total, balanced program is one that is tailored to all of the requirements of communities and defined areas, yet does not lose sight of the patterns emerging in the state and national labor market. Such a program not only must make room for all the individuals it expects to serve, it must also reflect the advent and departure of businesses and industries and the flow of workers to and from a state, a region, or a metropolitan labor market.

Education Act is really new."

It would be a rare vocational educator or administrator in the state of California who would not say that there is much to be done in California in vocational and technical education, and that the communities of the state, and the state as a whole, can borrow from the best developments in other states on the road to achieving a total, balanced program.

If program planning is to be realistic, it must be based upon known facts—facts concerning employment opportunities, types and numbers of persons needing vocational and technical education, present facilities through which persons receive training, what employers desire in the way of preemployment preparation of the workers they hire, and the opportunities they seek for their workers who may need updated and upgraded training.

All of these facts must be assembled and organized, and conclusions must be drawn from them concerning the best types of programs to meet the needs of a given state. If this is done thoroughly, it takes the form of a master plan for vocational and technical education. It will suggest needed changes in present programs, the numbers and types of new programs required, the types of institutions in which they should appropriately be located, and the geographical location of such institutions. It will indicate the sequence of development of programs with respect to program emphasis and program location. When a new program is proposed, it will be appraised against the criteria of the master plan as to whether it is needed, how large it should be, where it should preferably be located, and in what type of institution it should be offered. A good master plan will save costly errors and make for effectiveness in the development and operation of programs. It will be kept up to date through revision when significant changes occur in the labor market, in industrial development, and in other aspects of the economy that have bearing on vocational education.

THE SPACE AGE also demands that the workers of today and tomorrow be literate as well as willing and skilled. A lot more time and effort must be expended in making sure that people entering the new world of work have the basic tools.

If any state in the Union can do all of this California can. O. Henry said that "Californians are a race of people; they are not merely inhabitants of a State." He wrote that in 1909, but it's probably still true. California is blessed with talented leadership in education and vocational technical education. I would like to commend Wesley P. Smith, State Director of Vocational Education and his staff, especially, on their very progressive action and their remarkable progress in a time of very difficult administration.

In behalf of myself and the Office of Education, I would like to say you have our very best wishes and a sincere offer on our part to give any assistance we can provide in the implementation of new and expanded programs in vocational and technical education in your dynamic economy.

Now Hear Youth

BURNS

MEMBERS OF THE CONFERENCE paused in their deliberations on the future of vocational education to hear firsthand from six young men and women who had benefited from successful vocational education programs of previous years. All were proud of the vocational education that had guided them to success. The following excerpts were taken from their remarks to the conference delegates.

JAMES E. BURNS, *Monrovia*

Mr. Burns was active in the vocational agriculture program of his high school. Later he received an Associate in Arts degree in ornamental horticulture. Presently, he is a salesman for a major nursery, and he is enrolled part time in ornamental horticulture at the Pomona campus of California State Polytechnic College. He is married and the father of four children.

"I grew up in the San Fernando Valley on a very small farm. I grew various types of vegetables and chrysanthemums, which I sold from house to house and on corners where there was traffic. When I entered senior high school, I majored in the field of agriculture. In my senior year I was local and regional Future Farmer president. These experiences, along with chapter functions, helped me very much in my leadership training. I learned to work with and to influence people, a most valuable asset in my occupation. After graduation I studied in junior college for two years in the field of ornamental horticulture; then I left school to provide for my new family. Now I am an outside salesman for a top wholesale nursery and have won five sales contests in the past six years.

"In the future I plan to finish at California State Polytechnic College and look forward to sales management or a business of my own.

"I will close with this thought—let's do more for vocational training than we are doing at present."

MRS. SHARON COBB, *San Francisco*

Mrs. Cobb, who majored in history and stenography in high school, graduated in 1963. Presently, she is employed by the San Francisco Housing Authority, where she has worked as housing clerk, secretary, and stenographic adviser.

"My appreciation of stenographic training I received in school is sincere and great, for it made it possible for me to earn enough while in school to complete my high school education without money worries, and it provided me with the skills necessary for getting and holding a good job after I graduated.

"In my senior year of high school I made an appointment to see our vocational counselor regarding part-time employment. Shortly after my visit, I received a notice from him that the San Francisco Housing Authority was starting a part-time work program for students who lived in public housing. Since I lived in public housing with my mother and family, my grades were above average, and I was able to type well, I was able to qualify.

"In my new job my working hours were from 1 p.m. to 5 p.m., and I went to school in the morning. My typing, shorthand, business English, business math, office training, and switchboard training were all invaluable to me on my new job. In school I had been taught to type as if I were being paid for it, so that the transition to typing on the job was easy.

"I now realize why my teacher placed so much stress on accuracy. When I am typing leases, they must be absolutely correct. I can truthfully say that through the business education courses I took as a student in high school, it was easier to get and hold a job when I entered the business world. I feel confident of the future."

BONNIE HELLQUIST, *Anaheim*

Miss Hellquist enrolled in a junior college vocational nursing course after graduation from high school in 1963, and she is presently employed as a licensed vocational nurse.

"I am employed in a 60-bed hospital with one nursing station governing three wards—medical, surgical, and pediatrics. I am a treatment nurse for all three wards. My vocational training has given me a solid background in all these fields. In junior college the program was arranged so that we had a half-day of classroom orientation to nursing procedures and treatments; then the very next half-day we had actual experience at an accredited hospital, so we learned while it was fresh in our minds.

"Some of the duties that I execute at the hospital are assisting doctors with physical examinations, diagnostic tests, and major dressing changes. Also I administer medications, including narcotics, and perform general nursing care.

COBB

HELLQUIST

NEWMAN

TALBOT

TOLY

"I feel that anything done for humanity is eternal and will last from one generation to the next. I am deeply grateful to you leaders of the past and present in vocational education, whose foresight and concern made training in vocational nursing available to me."

MRS. KAY NEWMAN, *Long Beach*

Mrs. Newman took homemaking courses in high school and earned her Associate in Arts degree before she married.

"My career as a homemaker began only a year and a half ago, but my training for the job of homemaking dates back to my junior and senior years in high school. Some of the learning experiences in those homemaking education courses should be required of all students, including the boys. One significant part of this preparation included learning to understand and care for children.

"Using the budgeting knowledge I had gained in my homemaking class, my fiancé and I had the opportunity to plan for our marriage. Because we learned to plan ahead, we soon will be moving into our new home, with no debts behind to worry us.

"Knowledge gained in housing, home furnishings, and household equipment has been particularly valuable to me. For Christmas I received a new sewing machine from my husband, and I sometimes have the feeling that he has had a few handy-hint courses himself! Learning the proper way to prepare food was a favorite part of my homemaking training, a part that I use three times a day.

"My schooling isn't over yet. I would like to add more units to my Associate in Arts degree. And what courses do you think I'll be taking? Homemaking education, of course."

SERGE B. TALBOT, *San Jose*

Mr. Talbot majored in merchandising in high school. He fulfilled the work experience requirement for his major by working part time in the same shoe store where he is now manager. In addition to his full-time job, Mr. Talbot attends evening college classes.

"My present place in the business community had its roots in the distributive education program. Through the practical approach of correlating school and work, I was able to find that hard-to-get first job. Vocational education for me meant immediate identification. At the age of sixteen I was already launched as a specialist. I was a retailer and liked it. When I graduated from school in 1963, I already had found my niche. Active participation in the high school Distributive Education Club was a proving ground for assuming early responsibility.

"Distributive education can be divided into three major categories—classroom instruction, on-the-job training, and extracurricular activities. Each was a key part in my success.

"I should give special credit to my distributive education instructors and the dual role they played as classroom teachers and job coordinators."

NORMAN TOLY, *Livermore*

Mr. Toly is a designer-draftsman working on nonnuclear research and development phases of the nuclear weapons program. He became a journeyman machinist after graduation from high school, and he attained his present position through vocational training in junior college.

"I had always had a desire to draw, to build and to see things built, but the high school that I attended had no drafting courses. After graduation I went to work at various jobs until an opportunity of working as a machinist was available.

"As a journeyman machinist, I was working with drawings and fabrication, but I felt that as a draftsman I could achieve a more satisfying job and higher pay. Junior college offered a mechanical drafting course, which appealed to me. Later I elected to enroll in the full-time, two-year day course in industrial drafting. I transferred to the graveyard shift at work and started the course in 1956. When I graduated, I left the machinist's trade and was employed as a draftsman at a higher rate of pay.

"My present employer is alert and progressive in realizing the necessity of education. He provides classes during work to keep us informed on the latest drafting methods. One such method deals with automatic program tooling, in which a punched tape controls a machine tool which produces a part.

"I wish to thank Oakland City College and all who made it possible—from the instructors, to the industry advisory committees, to the taxpayers—for the opportunity they gave me to pursue a course that has proved successful for me."

The Need for

I AGREE WITH John B. Lawson, of Philco's Aeronutronic Division, that "the provocative question today is not whether we need continuing education. It is, what are we going to do with those who refuse it?" Adult dropouts should now be as much a matter of national concern as public school dropouts because the mature adults are stewards of future history or nonhistory. This statement has never been made of any previous generation. A readiness to continue learning is the key to manpower development.

Every major document on national policy in the past ten years has underscored the fact that continuing education is vital to economic and social progress. From the report of the Commission on National Goals to the latest statement on national policy from the Committee for Economic Development, the emphatic consensus is that continuing education can no longer be considered frosting on the cake. Far from being a peripheral segment of the total educational enterprise, it is now essential to national growth and survival.

But what does the record show?

The latest national study of participation in adult education was done a couple of years ago by the National Opinion Research Center at the University of Chicago. It showed that approximately 25 million or one in five adult Americans were active participants in organized educational activities. I suggest that we should view with mild panic a participation rate approximately equal to the paid attendance at major league baseball games during a single season.

Sir Eric Ashby, in the *Saturday Review* for November 21, 1964, says that "administrators must conceal their bright ideas." The administrator, he says, must feed the bright idea into an organization at quite a low level—and watch it percolate slowly upward. With luck, it will come to his desk months later for approval, and he must greet it "with the pleased surprise which parents exhibit when their children show them what Santa Claus has brought them for Christmas."

The proposal which I am about to make violates this stratagem in at least two respects: (1) it involves a policy decision which others, not I, can make; (2) by choosing this time and place for its advocacy, I am gambling on osmosis rather than on percolation. Hopefully, this idea may be diffused through this knowledgeable and influential assembly. My proposal will not put another 100 million adult Americans into the classroom, but, by using the carrot rather than the stick, it would induce additional millions to serve their own and the national interest by picking up their option on lifelong learning.

I PROPOSE THAT we move as rapidly as possible to build into the 40-hour work week eight hours of paid time for voluntary participation in organized programs of continuing education. The paid time off for continuing education could be either in job-related or liberally oriented programs. The latter would include a wide range of learning opportunities in the arts and humanities, in the social sciences, and in acquiring the skills necessary for community leadership and participation. In case any fast-draw critics label this "a radical new idea," I should like to point out that the conservative government of nineteenth century England did something very similar in providing for the broad liberal education—at Cambridge and Oxford—of working class youth, who otherwise would never have been able to lead *or* participate. And that nation has realized vast dividends on its initial investment.

I realize that various unions have already negotiated "sabbaticals" or other time-off plans into their contracts. More efforts to spread the work will certainly follow. But time off is not enough, and management might well contribute support for continuing education in the interest of increasing employability and productivity.

My proposal faces up to the fact that without a national program of continuing education supported with resources at least comparable to those now being earmarked for elementary, secondary, and higher education, we cannot move toward the Great Society. And certainly little progress can be made to improve decision-making on major questions of public policy without national priority for continuing education.

To flesh out the program and to inventory the existing and additional resources which would be required, I recommend the creation of a National Commission

Paul H. Sheats

Continuing Education

on Continuing Education. This commission should be appointed by the President of the United States, and its assignments should include the determination of federal legislation and support needed to achieve the program's objectives.

The urgency of this recommendation derives from two closely related results of the knowledge explosion: (1) what Professor Neil Chamberlain of Yale University calls the steady downgrading of the occupational competence of all who are employed; and (2) the changing requirements of the work force as a result of automation cybernetics.

Professor Chamberlain points out that we are still operating as though a person can acquire, in the first 20 years or so of his life, all the formal education he will need the remaining 40 years of his career.

But the clock starts running down the moment a young man or woman steps from the commencement platform, be it college or high school. The real dispossessed of the world—and this daily becomes more true in the modern, industrially mature nations—are the uneducated and the untrained. But, as Dr. Chamberlain points out, "There is only a tenuous difference between the uneducated and the undereducated, the untrained and the undertrained." Once we admit that in most occupations knowledge runs ahead of the pace at which a worker can keep up with it, we are forced to seek continuing education throughout our lives, as the only hedge against individual obsolescence.

The engineer who graduated today has a "half-life" of about only ten years. By this we mean that half of what he learned at the point of graduation will be obsolete in a decade. Moreover, half of what that same engineer will need to know ten years from now is not yet discovered. I have seen similar computations applied to the legal profession, which is given a half-life of 15 years; and in the physical sciences, it may be closer than that.

A second major consequence of the knowledge explosion results from the impact of automation and cybernetics on the work force.

Before this impact is felt to its fullest extent, we need desperately to wipe out the major strongholds of American poverty. In this new war on poverty, the target group is some 38 million Americans, about one-fifth of the nation. The poorest 20 percent received 4.7 percent of the total national income. And the official unemployment figures do not accurately reflect the magnitude of the problem:

- 5.5 percent are unemployed.
- 4 percent have sought full-time employment but have found only part-time jobs.
- An estimated 5.5 percent have withdrawn from the labor market.
- Military and space expenditures have provided employment directly or indirectly for some 12 to 15 million.

An expansion, therefore, of training and retraining programs for dropouts and unemployed will be effective only if the economy can produce enough new

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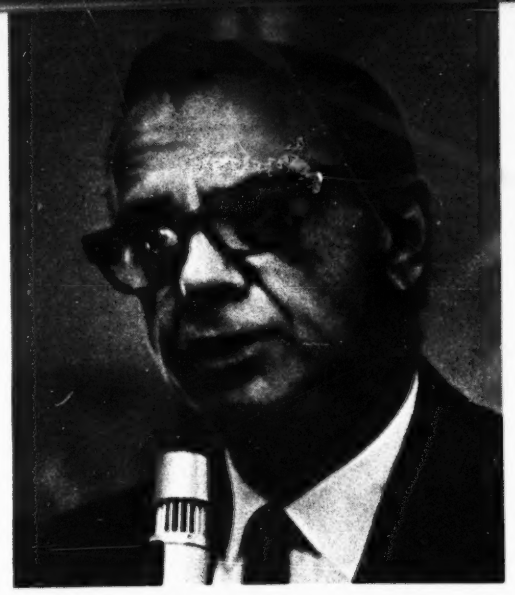
For a period during World War II, Dr. Sheats was head of the Adult Education Section of the U.S. Office of War Information. He has been with the University of California since 1946, and Dean of Extension since 1958.



"Hopefully, by the time the cybernetic revolution has had its full impact upon our economy, continuing education—job-related or not—will be as much

jobs to ensure placement both of the trained and the retrained.

The most serious paradox of all lies in the fact that a substantial portion of the population is subsisting below the poverty line at a time when the production potential exists to supply all needed goods and services.

Ralph Bellman, a computer scientist of the Rand Corporation, was quoted in the *Chicago Daily News*, as follows:

> Industrial automation has reached the point of no return: the pace will increase astronomically in the next decade.
>
> Two percent of the population—by implication the 2 percent of the upper administrative and executive levels—will in the discernible future be able to produce all the goods and services needed to feed, clothe, and run our society with the aid of machines.

Even if this prediction is off by 20 percent, the changes which will be required in our attitudes and behavior will be revolutionary. One of the dangers to our democracy—if we do not deliberately broaden participation in lifelong learning—will be a growing elitism. There will be the plebians who "finished" their years of schooling while, on the other hand, continuing education will serve as the key club for the Great Society.

IT WILL TAKE SOMETHING much more radical than the proposal I have made here this morning to tool up for a society in which our present work force is reduced by 75 to 98 percent. But, in a nation moving inexorably toward manpower requirements of higher and higher competency, with full employment more and more difficult to maintain, the case for devoting 20 percent of the work week to continuing education rests on solid ground. As the educational secretary of the American Chemical Society said in a letter to a member of my staff on December 10, 1964, "Technical obsolescence is an ever more serious problem, and lifelong continuing education is the only known solution."

By implementing my recommendations, there can be, at one stroke, updating and upgrading of the work force, as well as at least a temporary increase in the number of available jobs in both the industrial and public sectors of the economy. It is self-evident that there will still be a large pool of unemployed, particularly in the seventeen-to-twenty-one group and among those now existing below the poverty level.

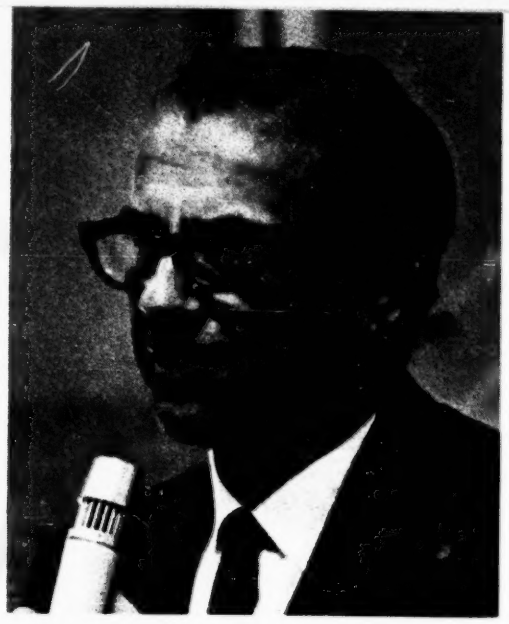
Obviously, the unemployed will have to be served through the Vocational Education Act of 1963 and the Economic Opportunity Act of 1964. This group is so large that these acts must be extended and expanded to deal with this problem, but even federal aid will not be enough unless there is a sizable expansion of jobs in the public sector. My own view is that the most helpful method of creating jobs is to establish, at subprofessional levels, cadres of aides in the teaching profession, in social welfare, and in health and law enforcement agencies where the gap between need and available services is most evident.

Most of my argument thus far has been directed toward economic justification of the proposal which I have made. But my recommendation also included participation on paid work time in educational programs which are not job related. This really gets into the problem of the changing nature of work.

Donald L. Garrity, head of the San Francisco State College's Department of Sociology, said recently:

> Time has tended to be calculated in terms of working and time free from work. Time will continue to be calculated in terms of work. But the work period will be one of the least important of the day, week, or career. There's a difference between recreation—traditionally a process of relaxation with more work in mind—and leisure, which isn't necessarily oriented toward work and which can create its own values of personal worth and satisfaction.

What are these values of personal worth and satisfaction to be derived from this new leisure? Have not many of us in this room been so centrally concerned with the achievement of full employment and retraining of the work force that we have failed to recognize that our problem goes far beyond the development of technical vocational and even professional competency? The need to broaden the scope of our schooling—to take this master plan approach—is difficult to discuss without indulging in generalities such as "self-fulfillment" and "integrity." Certainly this need grows



an accepted part of normal adult behavior as breathing."

more important as the body of knowledge in every field deepens and becomes more complex.

I think the importance of including the humanities in continuing education is best demonstrated by the tale of the old Danish farmer who took his teen-age son into town to enroll him in the Danish Folk School, which stressed the liberalizing studies.

"Will he learn here how to make better butter?" the farmer asked, clearly dubious about the value of the Folk School experience.

"No," was the reply, "but, when he returns home, he will never again be satisfied to make anything less than the *best* butter."

John Gardner, of the Carnegie Corporation, in his recent book, *Self-Renewal,* puts the challenge even more explicitly when he says:

> Exploration of the full range of his own potentialities is not something that the self-renewing man leaves to the chances of life. It is something he pursues systematically, or at least avidly, to the end of his days. And by potentialities I mean not just skills, but the full range of his capacities for sensing, wondering, learning, understanding, loving, and aspiring.

With the prospect of increased leisure for larger and larger segments of the population, our tendency to fragment the categories of academic disciplines must be reversed. We must begin to put the pieces back together meaningfully. As a small step in this direction, I am proposing that we counterbalance the overwhelming emphasis in most of our institutions upon vocational and job-related programs of continuing education by permitting, in fact *encouraging,* the use of paid work time for participation in programs in the areas of public affairs and the liberal arts.

Any doubts as to the need for expanded public affairs programs were dispelled last month when *Time* (December 25, 1964, p. 15) reported the results of a recent University of Michigan Survey Research Center study, showing that 28 percent of the sample questioned did not know if there is a communist government in China now, and 39 percent did not know of the existence of the Nationalist Chinese government.

Hopefully, by the time the cybernetic revolution has had its full impact upon our economy, continuing education—whether job related or not—will be as much an accepted part of normal adult behavior as breathing.

First, however, we must understand (and modify) the extent to which we are still enslaved by our Puritan inheritance, which equates work with godliness and nonwork with sin. In fact, the enslavement came long before the Puritans arrived. We can go back to the code of Hammurabi, written 4,000 years ago, when craftsmen and peasants were denied the benefits of literacy, and when crafts could be transmitted only by direct instruction under an apprenticeship system. C. Hartley Grattan, in his book *In Quest of Knowledge,* says:

> The failure to apply the new literacy to the crafts . . . led to the slowing down of the rate of technological change . . . and accounts in part for the unprogressive nature of these societies.

In 1855, Frederick A. P. Barnard, President of the University of Alabama, wrote with blindest certainty that a crafts society and its characteristic apprenticeship system was so permanent a feature of American life that vocationalism would never intrude itself upon institutions of formal learning.

The passage of the Morrill Act of 1862 began a reversal of this trend, but if you had participated in the meetings of the President's Panel of Consultants in Vocational Education, as I did, you would know that the deep cleavages which began far back in our cultural history have not completely disappeared today. The vocational educator often feels alienated from his academic colleagues; the academician often demonstrates snobbishness toward educational programs which prepare man for work.

This bit of history is interesting only insofar as we can learn something from it. Certainly, the intervening 4,000 years, which have brought us into a new age of science, should not lead us to create a new elite of those who know versus those who do not know, to a growing schism between the wise and the ignorant, or to a fragmentation of the total educational task into learning for the job and learning for self-realization. Blinders may help to win a horse race, but I doubt considerably whether tunnel vision is an asset to educational statesmanship.

"Problem-solving in its highest form is an

I remember vividly a conference which University of California Extension conducted at the Alumni Center at Lake Tahoe in 1961 on "The Creative Person." It was attended by about 75 presidents of corporations, foundations, and major institutions throughout the nation. Their interest in this invitational meeting derived from the fact that members of the staff of the Institute of Personality Assessment and Research, on the Berkeley campus of the University, were scheduled to summarize and report upon some five years of research on creativity. At the particular session I have in mind, the late Professor John E. Arnold of Stanford University reported on a study of 209 top-level scientists and engineers from some 20 research and developments groups on the West Coast. The significant point in this study, for our purposes, was that of this sample 84 percent were continuing to study in their major fields, and of this group, 85 percent, or nine out of every ten of these highly motivated adults were also studying outside their main field.

In the discussion period following Professor Arnold's talk, one of the delegates asked if these data meant that company policy should include time off and tuition reimbursement for employee participation in educational programs which were not job related. Professor Arnold said he meant exactly that, to which his questioner responded, "This is socialism."

Whether it is socialism or not—and I happen to think that it is not—since 1961 the increase in the number of continuing education programs subsidized by tuition reimbursement by companies is phenomenal. This is also true in the field of trade union education, as we can testify from our own experience.

The results of the certificate program begun by the University of California Extension on the Los Angeles campus, in cooperation with the Los Angeles County Federation of Labor, are uniformly impressive. An average enrollment of 225 in a single semester is drawn from just three southern California counties. These people come from 74 different unions, and in 90 percent of the cases, the union is paying the full fee for 160 hours of class work consisting of such courses as Urban Problems, Understanding the Economy, Government and Politics in America, and Public Opinion in a Mass Society.

THE NEED TO AVOID equating adult education with retraining is nowhere better demonstrated than in these labor studies. A very few of these enrollees leave labor for management. At least one-quarter of them move up to assume roles of greater responsibility both officially within the union and in community organizational work. Many return to attend courses after they have completed the certificate program. When an extension staff member attended a recent meeting, where 60 or 70 union members came together, he was deeply gratified to observe that the ones who knew how to speak most effectively were men who had taken extension's course in Communication and the Power of Words.

Encouragement of self-development and advancement of personal creativity are good and adequate reasons for broadening the spectrum of educational opportunity which my proposal would provide. But there is a further reason, which stems from social urgency rather than from personal need. Problem-solving in its highest form is an educational process. The application of rational methods of inquiry and discussion and awareness of the consequences of alternative solutions require the mastery of skills which can best be learned off the job and in educational programs which lean heavily on the liberal arts and the social sciences.

The speed with which we move forward in the war on poverty, in the equalization of opportunity, in the reduction of racial tension, and in the improvement of urban life bears a direct relationship to the energy and ingenuity with which our educational institutions provide the information base on which decision-making and problem-solving can be improved. Even the most competent technically trained work force cannot produce a good life or ensure the survival of the human race.

The present generation of adults—not college graduates of some future time—must choose wisely now and deal rationally with the fateful decisions which confront us. Technology cannot supply this requirement. Only expanded programs of continuing education in the liberal and fine arts, contributing to self-realization, increased civic competence, and public responsibility will ensure our continuance as a free people.

I have been an administrator for too many years not to realize that there will be objections to the proposal which I have made. Moreover, there will need to be some careful planning on how best to utilize our existing facilities and when and how expansion should take place. The proposed National Commission on Continuing Education, like the vocational education panel, can draw upon expertise already available as it develops detailed plans and specifications.

Before I conclude, let me identify and answer, in part at least, a few of the objections which will certainly be made. There is, of course, the question of cost—cost to industry in terms of released time, cost to the community in terms of expanding the facilities of

educational process."

continuing education which will be needed, and cost to the individual who participates—depending on whether or not the educational services are supplied on a tuition-free basis. Such problems may be difficult, but they are certainly resolvable. A nation which is solving the problems of conquering outer space certainly can solve the relatively minor logistical problems of establishing a national program of continuing education on work time. We have already made tremendous progress in the direction I am recommending.

COMPANY-FINANCED SCHOOLING is probably the fastest-growing form of adult education in the United States today. It may be a matter of tuition reimbursement; it may take the form of establishing in-plant programs or alternating a work-study cycle. Several months ago, it was reported that General Electric alone spends $45 million a year to support a curriculum of thousands of courses at dozens of plants across the country, with a student body of 35,000. Although industrial expenditures on continuing education are predominantly in favor of job-related programs, *Time* magazine estimated in its December 18, 1964, issue that $25 million annually is being channeled by business into cultural courses and programs.

California already has the base on which to build expanded facilities and programs. For over a century, it has had publicly supported continuing education in its public schools, which, along with the junior colleges, state colleges, and university and agricultural extensions, today collectively serve millions of the state's adults with programs ranging from basic adult education to cryogenic technology.

The kinds of issues with which we are dealing in our effort to narrow this gap between the generation of new knowledge and its dissemination and application are really amazing. They have nothing to do with the traditional view of adult education as remedial. The public attitude which seems to still consider adult education as a peripheral part of our education is missing entirely what the knowledge explosion is doing to program planning in all of our institutions.

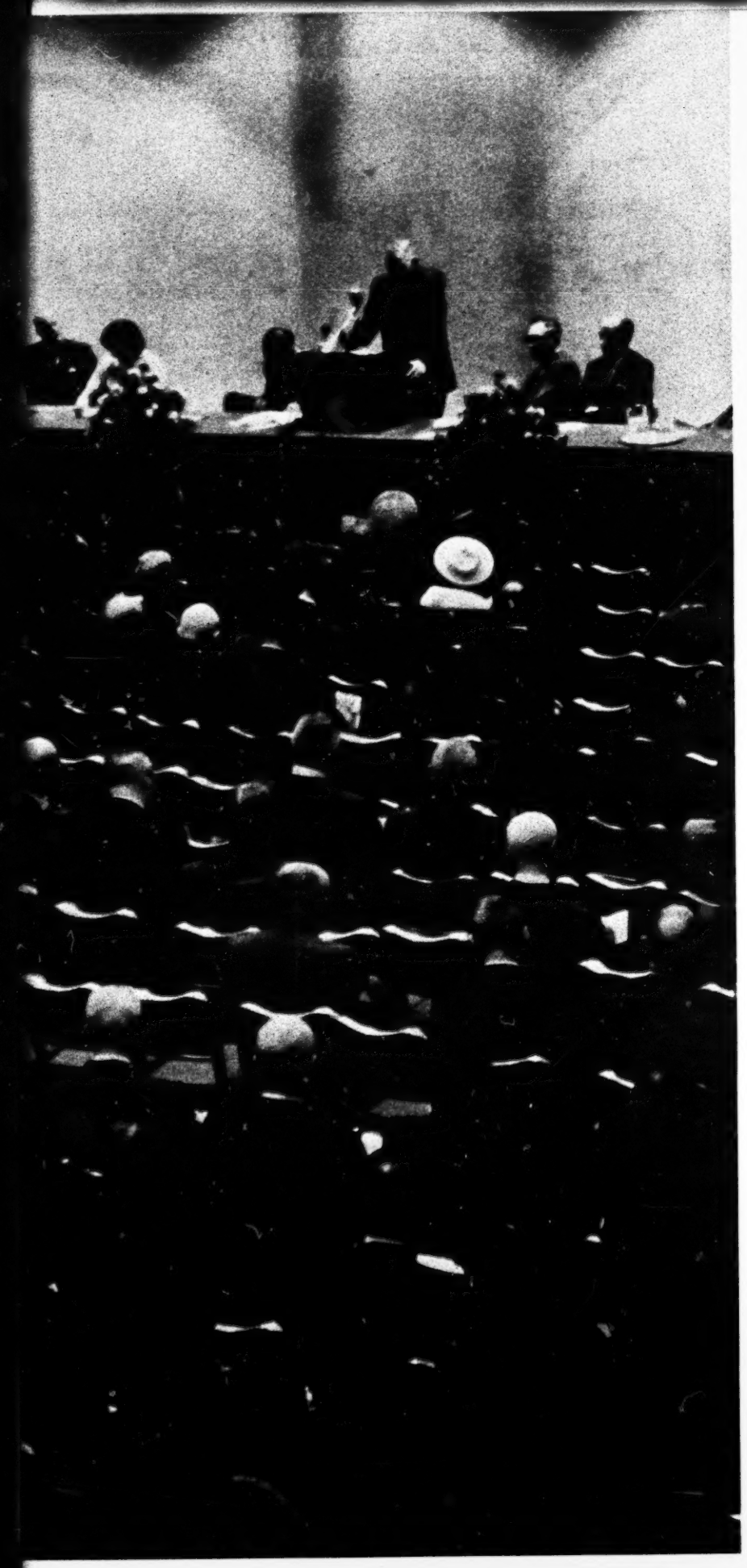
There is stepped-up federal support for state-developed programs in vocational education and manpower development, regional and urban development, and agriculture. The Economic Opportunity Act and legislation now being drafted to provide federal support for technical services in the Department of Commerce and general extension services in the Department of Health, Education, and Welfare will, if passed, further ensure the fiscal base required to make my proposal practicable.

The role of the states in coordination becomes increasingly crucial with the proliferation of federally supported educational programs administered by various departments and agencies of our government. But these reflect, in part, President Johnson's conviction that "The answer for all of our national problems, the answer for all the problems of the world, comes down, when you really analyze it, to one single word—*education*."

In the case, for example, of urban extension, in which President Johnson has expressed special interest, the successful application of educational resources to the solution of urban problems will depend upon the mobilization of a state's capabilities to develop a statewide plan and to utilize its existing facilities in an attack on specific problems. Agricultural extension has already demonstrated how this can be done in the case of rural problems. While the development of an urban extension service is more complex, it is certainly not beyond the range of our capabilities, given the fiscal support which will be required.

And, in my consideration of cost, two basic facts must be kept in mind:

1. We are currently investing in research and development something in the neighborhood of $15 to $16 billions per year. In comparison, the amount of the gross national product which has gone into the dissemination and application of the new knowledge which results from these expenditures is infinitesimal. The scales must now become more nearly balanced. The proposed legislation to support general extension, in the last Congress, carried an appropriation of $9 million. Appropriations for agricultural extension are currently at $60 million. These sums are completely out of proportion to the investment in the production of knowledge.
2. These expenditures, required to develop further the potentialities and capacities of our human resources, are self-liquidating. As has been pointed out many times, such expenditures are, in fact, an investment in the best resource the nation possesses—namely, its people; and, as their



"Lifelong learning should be accepted as a normal part of our daily lives."

creativity and productivity are enhanced, as their lives are enriched, more rapid cultural and economic development will be assured.

A MORE TROUBLESOME OBSTACLE is that learning is hard work, that motivation diminishes after the fourth decade of life, and that, as David Ausubel says, "Segments of the population which will have the most free time are least prepared to handle more free time and least likely to turn to educational pursuits." Simply, "self-fulfillment" or "personal growth through adult education" are concepts which have no meaning at all to large segments of the population.

I was amazed recently, reading a Harris survey (December 14, 1964, *Los Angeles Times*), that 18 percent of respondents reported their biggest disappointment in life was their lack of a good education; whereas, when asked to identify the one thing they looked forward to most in life, only 3 percent wished to go back to school! Perhaps the obvious discrepancy in these figures is due to the fact that many of today's adults did not have a happy experience learning.

The failure to communicate to large segments of the public the new characteristics of continuing education must certainly be charged against the professional adult educators. The image of continuing education as primarily remedial work for noncitizens or the educationally disadvantaged does not square with the facts. Today, the bulk of our program offerings in University of California Extension are postgraduate and professional, interdisciplinary, and tailor-made to synthesize new knowledge and explain its applicability to personal and social needs. Take, for example, the titles of last year's major symposia on the San Francisco medical campus of the University of California: "Man Under Stress," "The Family's Search for Survival," "The Uncertain Quest: The Teenagers' World," and "Food for Civilization." These programs reached, over television and Voice of America, hundreds of thousands of viewers and listeners who could not be physically present for the sessions. Or take, the scientific programs in space physics, where the editors of the book especially prepared for this course could hardly get the copy to press on time because of the rate at which new knowledge in this field was being generated.

On the other hand, we have almost incontrovertible evidence that the more education a person has, the more he wants and demands. Since the trend is toward higher and higher educational attainment (college enrollments have increased 102 percent in the last ten years; 53 percent of high school graduates now go on to college), there would seem to be good reason for believing that we can, with new methods, overcome whatever resistance to learning remains.

Our own projections at University of California Extension predict a 16 percent growth in enrollments by 1975, with the national extension registration expected to triple by 1980. In a recent survey conducted by our director of extension on the Riverside campus of the University, 77 percent of our current enrollees have either an undergraduate or a graduate degree. Only 17 percent of their fathers could be so catalogued.

These figures give us some measure of the changes in educational attainment which are occurring and provide a solid basis on which to project success for the proposal I have made, even with participation in continuing education on paid time remaining voluntary. Those who would prefer to work rather than go to school have that option.

ONE OF MY FIRST administrative jobs, back in 1936, involved the expenditure of emergency relief funds for a national program in public affairs education for adults. We had 19 demonstration centers throughout the nation, one of them at Santa Ana in Orange County. Nineteen out of every 20 persons employed in the project had to be from the relief rolls. Even by present standards, the program accomplished its objectives. What interests me is why a constructive and important task of continuing education could be undertaken only in the depths of the depression and has not been repeated since. It seems to me that it is about time that lifelong learning should be accepted as a normal part of our daily lives, even though, as Margaret Mead says:

> We are now at the point where we must educate people in what nobody knew yesterday, and prepare people in our schools for what no one knows yet, but what some people must know tomorrow. We must rid ourselves of the idea that anybody can ever finish his education.

I received recently a description of a new approach to alumni education now in operation at Oakland University, an affiliate of Michigan State University, in Rochester, Michigan. Oakland's concept represents a radical departure from traditional higher education. Take, for example, the statement that "the task of achieving a liberal education be recognized for what it surely is—a lifelong process which cannot be condensed into any particular curriculum or time period." An institution committed to this objective must be prepared to extend its concern for its students throughout their lifetime.

Oakland University is giving more than lip service to this objective since its continuing education program is based, in large part, upon a relationship between a professional counselor and the graduate developed during the period of the student's residence and full-time study. This counselor, working with the employer of an alumnus or with the alumnus directly, plans educational programs that are of specific aid to him. In effect, this approach turns the years out of school into an extension of the learning experiences at college.

SOMEWHAT UNGRACIOUSLY perhaps, I have argued this morning with the subject assigned to me in this conference. The problem, I have said, is no longer one of demonstrating a need for continuing education. The central question now is: How do we get more and more adults to participate? I have gone further than that and suggested that we take eight hours paid time out of the 40-hour work week and give to all hourly and salary roll employees the option of using this time to participate in organized programs of continuing education. Moreover, these programs need not be vocational or job related, but, on the other hand, they bear no resemblance to gold-bricking. They will represent serious attempts on the part of qualified agencies in our society to provide important subject matter taught by competent instructors for the purpose of increasing the student's capabilities and developing his potentialities, because we believe such growth will contribute to the betterment of society and the human condition.

I have recommended further that a National Commission on Continuing Education be established to implement this proposal on a nationwide basis. I have said the progress toward the Great Society can be accelerated if we build into our processes of problem-solving and decision-making the resources of continuing education, and, finally, that we cannot afford to let inherited prejudices about work, vocational education, or academic purity induce the kind of institutional senility which only blocks our way to social advance.

I am extremely fond of a couplet by A. E. Housman:

> *I, a stranger and afraid*
> *In a world I never made.*

This, it seems to me, puts poignantly and succinctly the predicament of modern man. Engulfed by the knowledge explosion, frightened by the threat of nuclear destruction, intimidated by a science and technology which he only dimly understands, and alienated from his past, he seeks personal identity and self-fulfillment in a world that is progressively more impersonal and remote. The answer to strangeness is understanding. The antidote to fear is knowledge. And the prescription for alienation is informed involvement in community life. It is because I believe that the expansion of continuing education will help to provide these kinds of answers to the predicament of modern man that I would write it into the work structure and the daily fiber of American society.

The Honorable Edmund G. Brown
Governor of the State of California

Vocational Education is *Everyone's* Job

THE SUBJECT of your discussions is one of the most vital in the economy of the nation's leading state. I am proud of the quality of education in the state of California, but I'm never satisfied, and I hope that you aren't either. In public life or in private life, as soon as you start resting on your laurels or you think that what you are doing is good and correct and can't be bettered, then you're in trouble.

In the work that you're doing, I guess you feel as I do sometimes up there in Sacramento; that progress is slow, that you're not moving ahead as fast as you should. I feel frustrated sometimes about things that I feel very strongly about, things that I believe I know more about than anybody else by reason of the position that I hold. And I do get discouraged at times, and I imagine that you do, too. But let me tell you, yesterday we had a meeting of the council in the Governor's office in Sacramento, and we had all the department heads there. They had a picture of this big dam that we're building at Feather River. It was appropriate at this time, with floods in the northern part of the state. Then they showed the picture of the big dam at Oroville, which this year held back waters sufficiently to protect the cities of Yuba City and Marysville from devastation. Then I knew that even though we can't always see the things that we're doing, we are making progress. But there we can see the physical works. The things that you're doing are less definite; you can't see them. But I do hope that you will leave here better informed and with greater zeal to keep on working.

This morning I had a press conference. I advised that press conference and all the people of the state that today I approved a grant of $1,900,000 for a program to provide jobs for 5,000 young men and women in Los Angeles. The Youth Opportunities Board and Economic Opportunities Federation will jointly supervise this project. Its goal is to help school dropouts finish their education by giving them part-time work at various schools in the city and county. The jobs will be available to young men and women between the ages of sixteen and twenty-one in low-income areas. They will work as aides or assistants to custodians, cafeteria workers, garage employees, gardeners, playground attendants, librarians, office workers, and teachers. They will work 12 hours a week, and their wages will be $1.27 per hour. It isn't very much, but it will be just enough money to keep in school some of those who may be on the verge of dropping out, and we'll be educating them and doing some of the things that I think should be done.

Now you professional vocational educators are not here merely to talk to one another. You have come

to this conference to exchange ideas and develop new approaches by working with labor, management, business and industry, government, and youth. This task is not easy. We ask you, for example, to find out why there are so many people out of work in the state of California, the fastest-growing state in this entire nation, not only in people, but also in industry and prosperity. And further, why are so many young people, who are just out of school, untrained for available jobs? And why, in the midst of unemployment, do jobs requiring special skills go begging because there are no trained workers to fill them?

MY JOB AS GOVERNOR—and yours as specialists—is to provide the answers and the leadership needed to strengthen the economy by building a bridge between jobs and education.

Let me emphasize that the problems are caused by vast upheavals in the economy that in one way or another affect every nation in the world. On Sunday night in San Francisco, I greeted the new prime minister of Japan. We had an opportunity to discuss the problem Japan has in education, and from his conversation I could see that his problems and ours in the nation and here in California are somewhat the same.

Yesterday, the industrial revolution threw men out of work. Today, the technological revolution is causing even more far-reaching chaos. We live at a time when electronic equipment in a bank can add deposits, subtract checks, and strike new balances at a rate of 33,000 accounts an hour. In a factory, milling machines now take minutes to do jobs that formerly took days.

The Department of Labor has estimated that technological change is canceling out about 200,000 factory jobs each year throughout the nation. Now, what becomes of these workers who lose their jobs to a machine? They either agree to be retrained, or they go on the welfare rolls. Or they are retrained only to find that the job they now can do is only available 2,000 miles away from home. That's part of the background of our problem. But let me emphasize that the picture is not altogether bleak.

In our history, we have previously met the challenge of training a man to do a specific job. During World War II, we thought nothing of graduating a pilot and a gunner and a navigator from school on the same day that the plane rolled off the assembly line.

Today, however, I think we lack some of the essential information. As I talk about these things, you can see the *X* qualities of what should be done. You can see them and I can see them as I speak. We don't know when the plane will roll off the assembly line, or whether it will need a gunner or a navigator—or even a pilot. So we must close that information gap. We must look ahead to find out what kind of jobs there will be ten years from now. And we must do this by making use of the very automation that has upset the traditional patterns of employment so that it will be a powerful tool for prosperity in the future.

I am glad to be able to tell you today that my administration has already taken the lead in this direction. During the last few years, defense department contract cutbacks have caused severe lay-offs in the aerospace industry. Since 37 percent of our manufacturing industry is concentrated in ordnance, aircraft, electrical, and instrument production, we obviously faced a problem. And California faced the toughest problem in the entire United States because we had more of such industry.

SHORTLY AFTER SKYBOLT FOLDED two years ago, I asked the leaders of aerospace and defense industries to find out how to soften the impact of these cutbacks. We met in the Executive Mansion in Sacramento, we met here in southern California, and we met in various other places.

The first studies of this group showed that 50 percent of all engineers and scientists trained in space and research and development live and work in California. We have also found that such skilled workers share a talent that we can and should put to work on community problems. The talent is the ability to think in terms of new dimensions, to break down barriers, and to use technological skills to solve the problems of the everyday world. In other words, if engineers can get John Glenn into orbit and back, why couldn't they design a better way to get a father to work and back?

We think they can do exactly that. And, therefore, we have asked these talented men, who so far have had their minds on the stars, to use their skills on earth.

"The improvement of education is my number one goal."

—INAUGURAL ADDRESS, 1959

"Too many vocational educators have

(Don't for a moment think that I'm minimizing what they're doing in that direction either; I like to keep my mind on the stars and I want everyone else to do it, too.) But we have called for bids from California's aerospace industry to work out programs in four areas.

First, transportation. We have asked the systems engineers of these great aerospace industries to provide a complete transportation network within the state, efficiently coupled into land, sea, and air transportation out of the state. We have asked them to identify the major patterns of movement of people and merchandise, materials and food, within the state. We have asked them to describe the transportation system which the state will need 10, 20, 30, and even 50 years from now to provide efficient movement. We can tell by past growth how many cars we will have in the future and the direction which we should go. Finally, we have asked them to tell us how much such a transportation system will cost. Who should pay for it? Who should run it?

Bids for a transportation system were put out with specifications like those for the construction of a building. We have received 20 bids from the greatest systems engineers in the state of California, and these are now being worked over in Sacramento to determine to whom this contract will be awarded.

Second, we have done another amazing thing—and let me emphasize that all of these things we are doing are experimental. They can fall flat. I don't know whether they will or not. I don't want you to think that because we have our eyes on the stars that we think systems engineers can answer every question in the state or in the world. But, second, we have asked systems engineers to design new ways to cope with California's criminals and mentally ill.

Third, we have asked them to develop systems for managing the vast amounts of wastes discharged into the air, the soil, and the water of California as a result of consumption by men and machines of materials which are necessary to support life or to produce goods.

Fourth—and foremost for the purpose of this gathering—we have asked the systems engineers how best to gather accurate information upon which government and industry can base decisions for years and even decades ahead.

For a society which spills out words and pieces of paper the way ours does, we are often woefully lacking in hard facts on which to base crucial decisions. We have asked the aerospace engineers to design systems that will improve our data on diseases and educational requirements.

You can see the implications of these requests for vocational education. There is no reason why these systems engineers can't work out a system to find out what types of jobs are going to be available in the future—and when. And I'm going to ask them to do exactly that! Then we would know what kind of training—and in what amounts—to give which students in which areas of the state.

I foresee a system which will tell us, years in advance, that in 1975, for instance, aerospace industries on the San Francisco peninsula will have openings for 512 electrical engineers and 16 theoretical physicists and 1,200 technicians. I can see reports issued in 1966 that will show that, in 1976, San Diego's aerospace industries will need only 125 technicians, but 1,000 truck drivers, 100 plumbers, and 21 electricians. With this information on hand, some coordinating agency could then inform each of the colleges and high schools in the San Francisco and the San Diego areas what the needs will be in every conceivable job field. And the high schools and colleges could train students accordingly.

Now I must confess that this is a bit of looking at the stars, but nevertheless, I think that we should keep looking in that direction. And if these people could do some of the things they've done, I think that you'll agree with me that we can make progress in this direction, too.

I can foresee another system whereby a fry cook sitting in the State Employment Office in Sacramento looking for a job could hear about an opening in Los Angeles that had become available only minutes before.

I can imagine still another computerized system which would match the skills of the unemployed with the qualifications of a job opening and grind out a man's card—which would be his ticket to a job. I don't know whether I like this or not, but nevertheless, it's here.

This, of course, is only a beginning. But it is an exciting start, a pioneering effort which I believe is in keeping with the tradition of California and, I hope, the customs of my administration. The idea of transferring talented systems engineers from the field of space hardware to the broader field of human needs

locked their programs to the past."

is in itself a breakthrough of significant proportions. The talent has been there for some time. It just took us a while to see its tremendous potential.

I must point out, though, that what I am suggesting here today will only work if you vocational educators start looking at your problems the way a systems engineer would—that is, with new thinking, with a fresh approach.

For too long, too many vocational educators have locked their programs to the past. Unable or unwilling to find out the needs of employers, these educators have been training students for jobs that don't exist. Or worse yet, they have been training them for no jobs at all.

Walk into the average high school today. You're likely to find students still taking mechanical drawing or woodworking or auto mechanics or homemaking. Fortunately, some good comes out of most of these courses. The students gain dexterity by using their hands. But they do not get job training. And the students find, to their regret, that when they are graduated from high school, they just can't find jobs.

The boy who learns auto mechanics can use his knowledge to fix his jalopy, but he can't afford a jalopy.

The boy who took a course in woodworking may well have trouble getting into a union with his limited knowledge, so he can't be a carpenter. If he is lucky enough to find a job in another field, he might be able to enjoy woodworking as a hobby.

But vocational education—by its very title—was not meant to train people to be good at their hobbies. It was meant to train people for a vocation, not an avocation.

When high school courses have no real goals, they have become dumping grounds for everyone's problems and prejudices. Teachers who have a student who is a disciplinary problem shunt him into a vocational education course, only to find that he is still a disciplinary problem—though a less literate one, since he has been barred from academic work.

And further, in many large cities, vocational education courses have been the in-school ghettos of the Negro, the Latin American, and other minority groups whose own cultural poverty so far has doomed them to a life of failure. These classes have been the dumping grounds even for many bright and able Negro youngsters who, because of the color of their skin, have sometimes been forced by prejudice into nonacademic study. We must stop this stereotyping of our students for the simple reason that we cannot afford to waste any of our talent today. Every boy and girl in this state must have a chance to develop his abilities to the limit.

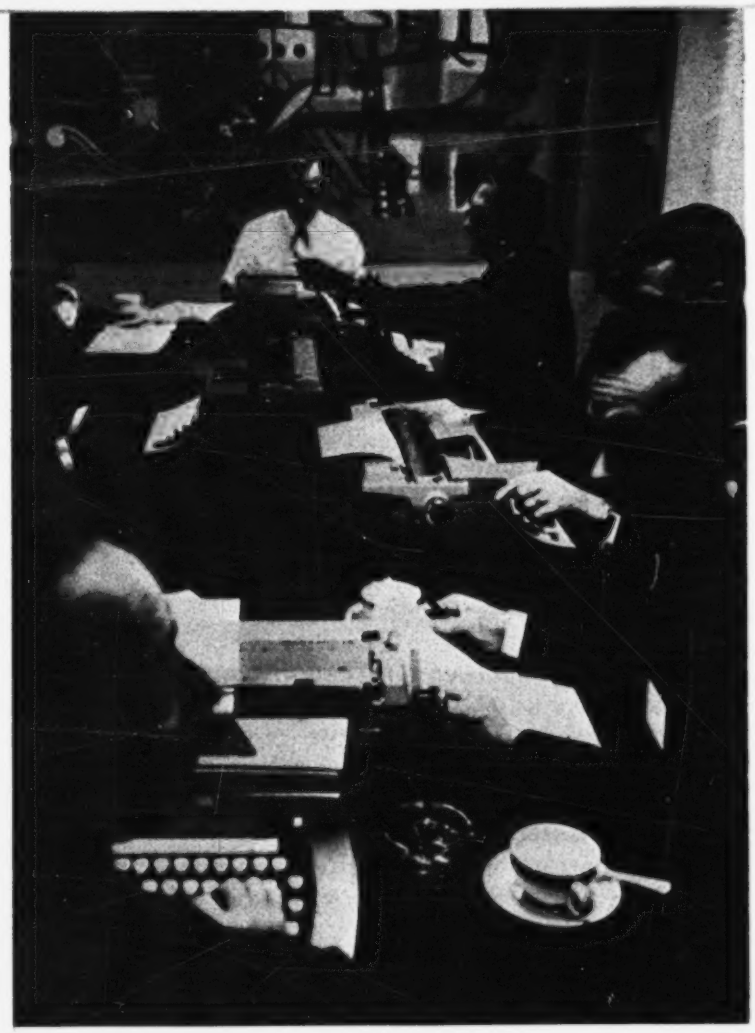
No matter what talent a person has or doesn't have—and no matter what job a person will end up doing in his lifetime—there are certain basic skills that he or she will be expected to possess. Probably the first, and most important, is the ability to read and write. So you might say that vocational education begins in kindergarten. Educators agree that the first few years of a child's life are the most important to his development. It follows naturally that the first few years of his education are also the most important. The very young child should learn another facet of vocational education—and in the very first grade. And that is: When there is a job to do, he should do it. It should be impressed upon him that the job to do right now is to go to school and learn. To do even that job well, the child must master the fundamentals, because they are the tools that he will need to work with.

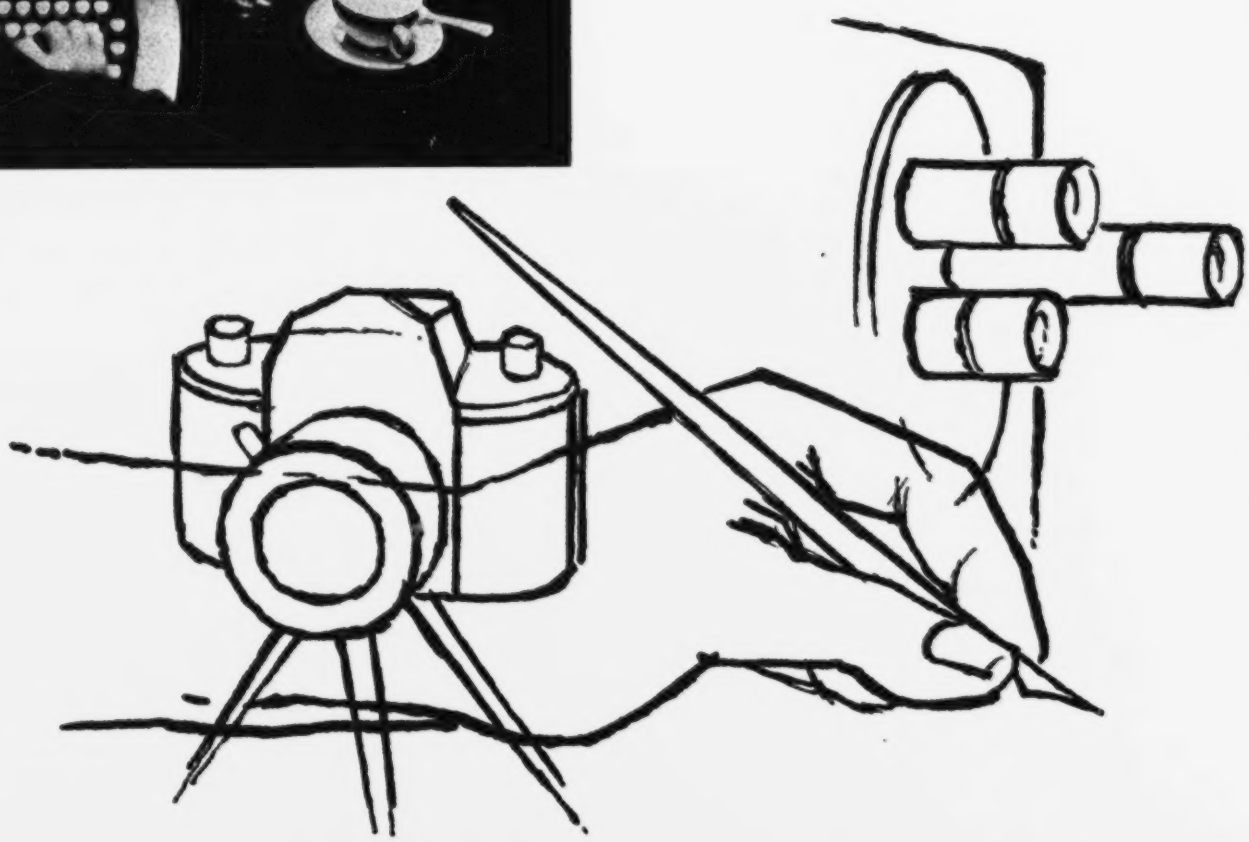
I don't believe that I have painted a very pretty picture for you here today, but I do believe that it is an accurate one. I don't mean to say that nothing good has been done, because some excellent things have been done and you're doing them everyday. What I am trying to say is that we must stop walking down the same paths to failure in vocational education and pave some new roads to success.

We can be encouraged by the successful inroads that have already been made by our large, unified school districts in our big cities and the junior colleges in urban areas. But we do need more emphasis on vocational training in the cities, and in rural areas as well.

Through your work at this conference—and I know that it is going to be transcribed and studied and it will be reported to educators all over the United States—I assure you that you can make real progress. You can help us to educate the public to the fact that not all students were meant to be doctors and lawyers, nor should they be. Our society needs the skills of secretaries and clerks and craftsmen and technicians. We are going to keep on needing them, in one form or another, in the future.

You are here to help us match people with jobs—now and in the future. I wish you well.





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Editorial Note

The material in this report was prepared under contract with the Vocational Education Section, State Department of Education, by members of the faculty and staff of California State Polytechnic College. The college provided editorial and recording staff members who volunteered their time and services to prepare this report.

Although deeply interested in vocational education, members of this staff did not participate in the conference beyond reporting it. Points of view, or opinions stated, are not necessarily the official position or policy of the State Department of Education or of California State Polytechnic College; rather, they are attempts to report objectively and concisely the events of the conference.

The purposeful variety of the reports of the various discussion sections that follow permits forms chosen by each team of section recorders to present the ideas put forward and discussed and to reflect the relationships among the discussion topics themselves.

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DISCUSSION SECTION ONE

What Makes Youth Employable?

To help participants identify the characteristics, understandings, attitudes, and abilities that contribute to occupational competence and employability of youth, members of the panel made individual presentations about various aspects of youth employment; then they participated in an open discussion.

* * *

Youth in Technical Industry

If five different industrial managers were asked what makes youth employable, the questioner would probably get five different answers. Mr. Laird pointed out that life in the industrial field is rapidly becoming very difficult and complex for the noncollege graduate. He quoted former Under Secretary of Labor James T. O'Connell, who has reported that the number of people in white-collar jobs now exceeds the number of workers in blue-collar jobs, a trend which is continuing and will be accelerated in the next decade. These facts give rise to serious questions. Are the so-called blue-collar worker's days numbered? Will automation do away with the need for unskilled and semi-skilled people? What kind of education is necessary for noncollege-bound young people?

The need in the future is not for more scientists and engineers but for more well-trained technicians to give support to the scientists and engineers. According to several authorities, there should be five or six trained technicians to back up each electronics engineer. At present, the ratio is approximately one to one.

Chairman: James Corson, Executive Secretary, California Association of School Administrators, Burlingame

Panelists: Robert H. Hill, State Supervisor of Youth Services, Department of Employment, Sacramento; Mrs. Mary Frances Allen, Employment Supervisor, Southern Counties Gas Company, Los Angeles; F. N. Laird, Industry Education Programs, Personnel Division, Autonetics, Anaheim; Mrs. Marie Muzzy, Personnel Director, Walker Scott Company, San Diego; Mrs. Jessie Chittenden, Assistant Dean of Placement, Pasadena City College

Recorders: David E. Cole, J. M. McRobbie

The present need is to teach youth marketable skills. To emphasize this point, one of the panelists quoted J. T. Wahlquist, President of San Jose State College, who said that democracy can be made to work successfully only if every citizen is educated to the limit of his capacity; that we cannot ignore individual differences in our students and simply exclude the slow learners; and that we cannot apply the same standards to everyone.

Among those qualities which most employers look for in those they employ are honesty, integrity, sincerity, enthusiasm for life and work, conscientiousness, openmindedness, flexibility, receptivity, and a healthy sense of responsibility to the employer and the

job. Additional desirable traits are related to the employee's attitude toward people, toward the American system of free enterprise, toward government, and toward daily efforts on the job.

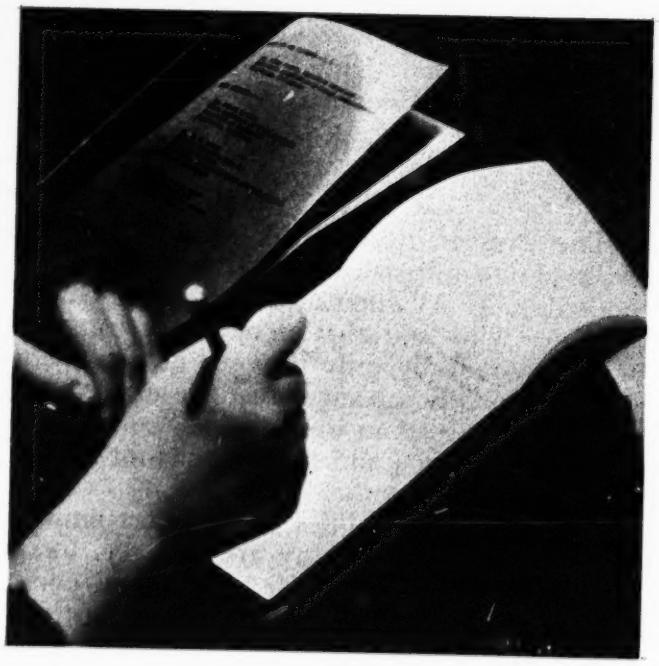
The Autonetics Division of North American Aviation has a program called P.R.I.D.E. This acronym stands for Personal Responsibility in Daily Effort. The purpose of the program is to get employees to develop positive attitudes toward their jobs and the society in which they live.

Most young people can be employed in blue-collar jobs if they know arithmetic and feel competent in using it, have a good grasp of the English language and are able to communicate through the spoken and written word, read ordinary written material with good comprehension and reasonable speed, and can use the simple tools of the proposed trade. Industry will be more pleased and youth will be more employable if, in addition, the young people understand (1) our economic system; (2) our governmental system; and (3) the basic principles of human relations.

Youth in Retail Merchandising

Mrs. Muzzy of the Walker Scott Company approached the topic, "What Makes Youth Employable," from the standpoint of the young person seeking a first job. She spoke as an employment executive of a five-store mercantile chain which employs from 900 to 1,000 full-time employees and 350 to 400 seasonal employees. Since the late 1930s, the firm has had a policy of employing youths of high school and college age. The company's stores are located in the vicinity of high schools and colleges, and the schools' employment counselors make a practice of referring potential employees to the firm. More qualified young applicants are turned away than can be hired. However, at the request of the schools' employment counselors, the company grants interviews to all applicants in order to give them valuable experience in applying for a job. Mrs. Muzzy urged more firms to make this a practice.

According to Mrs. Muzzy, the following characteristics make youth employable: appearance, pleasant personality and proper attitude, interest, integrity, loyalty, aggressiveness, and the desire to learn. Young people should have an awareness of good grooming and a pride in maintaining a good appearance, and the schools should do everything they can to help their students gain this awareness and develop this pride. A radiant personality is evidenced by a ready smile even though the person is under extreme tension during the course of an employment interview. A good personality can be developed from training received both in the home and the school.



It was observed that today's youth evidence a higher degree of aggressiveness than that shown by previous generations. Even though they are more aggressive, however, the effects of automation are making it continuously more difficult for them to obtain gainful employment. It was observed that modern youth possess a keen desire to learn, to compete, and to excel, which is apparently the result of school training.

Mrs. Muzzy emphasized that previous training, regardless of its nature or apparent minor importance, is a strong consideration in hiring youth. Such training may be in the area of school-oriented activities, Junior Achievement projects, vacation activities such as camp counseling, and weekend occupations.

Each of the company's jobs is categorized by a job description, Mrs. Muzzy reported. Of 77 job descriptions, 68 stipulate that high school graduation is mandatory for the jobs described; only seven indicate that a high school education is "only" preferred. Two classifications do not require a high school education but are part of a program in which the employee works and pursues his high school education at the same time.

As part of its training program for school-age employees, Walker Scott Company has organized the High Deb or Varsity Council. The function of the council, which is composed of 30 student employees, is to meet periodically to study and discuss fashion trends and to present fashion shows at various high schools and junior colleges. The group also makes an annual trip to Los Angeles Merchandise Mart. This program has gained acknowledgment from area educators in distributive education.

In summary, Mrs. Muzzy said that, by and large, youth desire employment and that young people make desirable employees for the retail merchandising industry, the largest single employer group in the United States. She stated that more schoolwork should be oriented toward the noncollege-bound high school student.

Youth in Service Industries

Mrs. Allen, representing service industries at the conference, referred to the *Dictionary of Occupational Titles*, published by the U.S. Department of Labor, in which the term "service industries" refers to performance of domestic services, personal services (such as those performed by barbers and beauticians), protective services, and building services. These are distinguished from the services offered by a public utility, which is, technically speaking, not a service industry. However, it was noted that a public utility does, in fact, offer services to customers; therefore, some of the factors which make youth employable for a public

utility would be expected to apply to service industries.

For example, Mrs. Allen pointed out, the employment pattern of the public utility which she represents is in three areas: college recruitment, specialized middle- and top-level management, and beginning-level employment. Because of the competition from other potential employers, the college recruiting program represents a large investment in time and money, but it accounts for only a small percent of overall employment. The hiring of specialized middle- and top-level management probably accounts for less than 1 percent of all persons employed by the company, because of a strong policy of hiring from within. The only person who would be considered for employment in one of these classifications would be one who possessed skill, training, and knowledge that someone already employed by the firm did not possess.

The major emphasis of the company's employment office is on hiring beginning-level employees. Because of the strong emphasis on the policy of promotion from within, the company maintains a continuous program of on-the-job training. Specialized classes have been designed to help train the employee in the skills of his particular field. Thus, the major objective of the employment office is to hire persons with the ability to profit from additional training and to get along with their coworkers.

Mrs. Allen gave four case histories describing persons who had started with the company at a beginning level, and through company and outside education, had progressed to managerial and supervisory positions.

In discussing qualities that make youth employable in her own company, Mrs. Allen noted that most of the company's beginning employees possess above-average intelligence and the ability to use it. The employees must possess the qualities necessary to enable them to create a favorable impression for the company with the public; they must have a good knowledge of basic English and mathematics. Some 90 to 95 percent of the men employed by the company must have an aptitude for mechanics and electricity. In most jobs filled by women, typing and shorthand are required.

Service industries have a common need for employees with the ability to work with, and get along with, others. Although some requirements of the small employer may be different from those of the large employer, both types of employers look for the same basic traits in those they employ.

Youth in a State Training Program

Describing the Oak Glen Forestry Youth Camp near Beaumont, California, Mr. Hill explained that it prepares untrained and unemployable youth to become employable and useful members of society.

Youths selected for the training camp are unemployable mainly because of lack of education as a result of having dropped out of school. Also, since they have no work experience, they have not acquired productive skills, knowledge, or ability. Typically, they evidence a poor adjustment to group activities, require a high level of supervision, and have a low regard for society and its laws.

However, after successfully completing the program at Oak Glen Camp, 85 percent find satisfactory employment. Jobs held by these youth, generally speaking, are on a beginning level—jobs that would not be acceptable to most high school graduates but are at least "a step up the ladder."

Those who do not take advantage of the opportunities offered at the camp usually hold back because of lack of motivation or the fact that their environment has not encouraged them to take advantage of opportunities for improvement.

Summary and Discussion

Considerable concern was expressed by participants regarding difficulty shown by teen-agers and other young people in getting along with others. Although this ability is much valued by industry, it is not always taught. Young people who come from broken homes particularly seem to lack this training, it was observed. Greater attention in evaluating psychological approaches to youth was urged.

Several portions of the discussion stressed ways in which job requirements are related to the intelligence and abilities of the individual. Various definitions of

intelligence were mentioned, along with a statement that 68 percent of the population is of "average" intelligence. Yet, even mentally retarded people, under the burden of a label, may be rated highly if evaluated in terms of those functions which they can perform with competence.

It was noted that employment standards vary in industry. For example, pipeline contractors, who indirectly employ personnel for large utilities, may not be so rigid in their employment standards as the utilities are.

Mr. Laird reported that some companies overhire. That is, they set higher standards to fill a job than are necessary for the proper function of that job. Overhiring sometimes leads outstanding high school students employed for summer work to lose enthusiasm when they observe graduate engineers, for example, working in routine jobs. Industry is often "degree-happy," it was suggested, and should reexamine hiring practices.

It was urged that industry recognize responsibility for creating jobs. Two observations were made: 20 percent of the employers create 80 percent of the jobs; and these employers express interest primarily in employing people with above-average intelligence. What can be done to provide the below-average group with employable skills? What kinds of opportunities are available to them?

The desire of large employers for employees of above-average intelligence is based in part upon the policies of promotion from within. Mrs. Chittenden commented that it is difficult to get junior college students to accept beginning-level positions, despite evidence that those who start at the bottom use the experience to advance.

Examples of policies which tend to discourage beginning workers were cited: a report that an electronic worker hoping to work for the post office in his field must begin as a letter carrier, and a confirmation that gas company personnel trained for data processing must begin at a lower-level job.

Educational trends often influence the young people's attitudes. In addition, parents may refuse to approve nonprofessional courses for their children in junior college. Thus, it is sometimes difficult to put into practice the theory that students should not attempt education beyond the limit of their abilities. Counselors attempting to guide advisees into vocational courses often fail to receive cooperation from students and their parents.

Although placement practice suggests that any kind of student work experience is better than none, most students will not consider such jobs as cutting lawns, babysitting, or delivering papers. Parental attitudes influence these negative responses of the students, and so does the climate of opinion developed by industry, which has helped educational institutions sell the value of higher education.

A by-product of the emphasis on higher education is the fact that young people feel that they have a right to start in high employment positions. It was suggested that industry must now feel an obligation to sell the accelerated program in vocational education. Vocational curriculums to challenge students and also give them a sense of success should be developed. One method advocated was the problem-solving situation in which students must think their way through an experience rather than follow a set of established procedures.

Vocational education is entering a new era of respectability; it is no longer regarded as a "dumping ground." Because of the high level of technical training necessary in many of today's blue-collar jobs, vocational education now has greater status and is gaining broader support. Nevertheless, vocational training is not a cure-all for students with below-average intelligence. In some areas this notion tends to hold back the overall development of a vocational education program.

The effect of new legislation for vocational education will not be to discontinue the existing comprehensive high school, but to centralize facilities for vocational education.

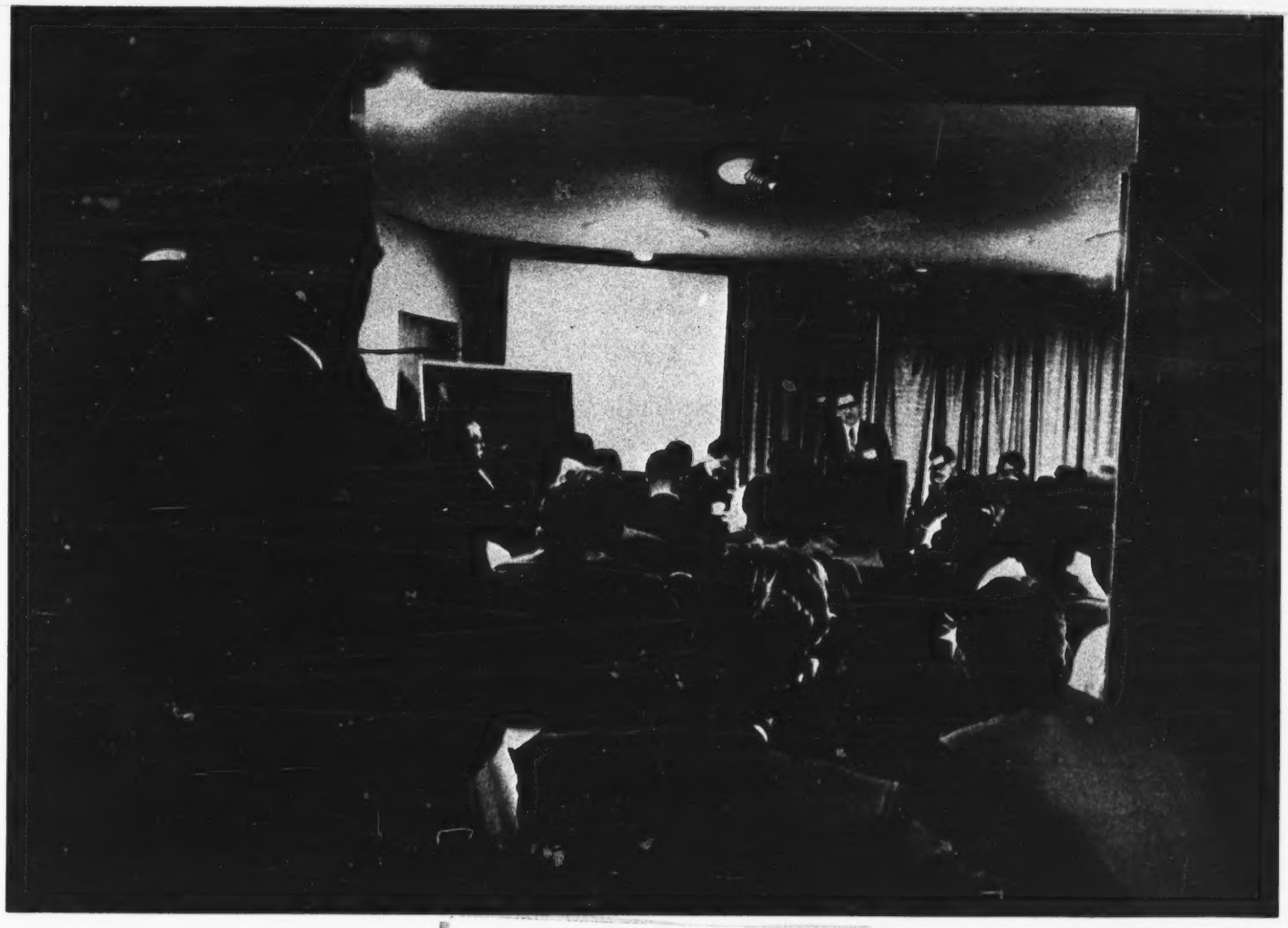
A program proposed at Stockton would establish a vocational high school to serve the county; this school would meet the special needs of students and provide training that the comprehensive school cannot afford, such as specialization in cosmetology, printing, electronics, and data processing. High levels of training would motivate high school students to attend the vocational school.

A similar program suggested at Torrance would support the comprehensive high school with an area vocational center. Los Angeles Trade Tech was cited as a school which had received increasing acceptance.

In discussing the conflict faced by students who hope to satisfy college entrance requirements, yet also wish to learn a marketable skill, participants said that these students should be discouraged from attempting to pursue both a commercial program and a college preparatory program in high school. A college preparatory program with supplemental job training (during summer school, if necessary) was recommended. However, although such training would be of great value to the student who enters college, there is not enough time in summer school to achieve marketable skills in most areas. Typing and shorthand courses offered in summer schools, for example, were considered essentially supplemental vocational preparation.

After identifying the types of training institutions operating in the state, the panel recognized that one of the primary needs is for vocational education for potential dropouts. An account was given of a San Francisco proposal to open a vocational high school in addition to the existing night vocational program for both high school students and adults. Training in vocational high schools or comprehensive high schools is needed to meet future demands for workers in service occupations. The manpower training programs of the federal government already are providing some such training, but more federal subsidies may be necessary to help schools do an adequate job.

Generally, a spirit of willingness to cooperate was shown by state, local, service, and industry representatives, with an acknowledgment that new vocational education legislation will have a direct bearing upon both educational programs and future hiring practices.



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DISCUSSION SECTION TWO

How Future Manpower and Training Needs Can Be Identified

DURING THE PAST SEVERAL YEARS, high levels of unemployment, struggles for equal rights, the Anti-poverty Program—all have highlighted the importance of forecasting manpower and skill requirements for training purposes. Collecting and disseminating information on these forecasts and on job vacancies have come to demand the highest priority among vocational educators; yet, we seem to be making slow progress. Not enough resources are being allocated to research; we don't even know what kind of information we need. We must also deal with essentials of economic policy: the high level of unemployment in California today and the particular kinds of skill demands we will experience in this growth state. Factors like these tremendously complicate the task of projecting technologies and the skills they will require.

National and State Employment Trends

Mr. Gershenson used graphs to compare similarities and differences in employment patterns in California and in the United States. He suggested that vocational education people keep in mind both the similarities and the differences in employment patterns in California and the United States and in California and the rest of the West. He emphasized that changes change —directions change—and we have to anticipate them if we can. This makes projection a difficult task. Mr.

CHAIRMAN: Don Vial[illegible]irman, Center for Labor Research and Educati[illegible] University of California, Berkeley

PANELISTS: Louis E.[illegible] Professor of Industrial Engineering, Universit[illegible] California; Berkeley; Maurice I. Gershenson, Chief, Division of Labor, Research and Statistics, State Department of Industrial Relations, San Francisco; Sam Gomsrude, Wage and Salary Administra[illegible] North American Aviation, El Segundo; Clive Know[illegible] Research Director, California State Council of Carpenters, San Francisco; Don Mayall, Senior Research Analyst, State Department of Employment, San Francisco; Bruce Poyer, Research Director, Western Conference of Teamsters, San Francisco; Mrs. Margaret Thal-Larsen, Executive Secretary, Commission on Manpower, Automation, and Technology, San Francisco

RECORDERS: Quay D. Ives, Robert V. McKnight

Gershenson pointed out these similarities and differences in the trends in employment patterns:

- *Unemployment.* In 1950, California's unemployment was considerably higher than that for the United States. In 1954, however, it was less than the national average. Then the unemployment

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curves paralleled each other for some time. At present, California's percent of unemployed is 6.1, compared to the national figure of a little over 5 percent.

- *Nonagricultural Wage and Salary Workers.* In 1950-55, the California pattern was much different from that of the United States, for we were increasing the proportion of our employment in goods-producing industries. Despite the graphic growth of aerospace industries in California in the last few years, however, the proportion of nonagricultural workers has fallen off quite rapidly.
- *The Service-rendering Industries.* This group has the opposite trend. California has always had a much higher proportion of employment in service industries than the nation as a whole has had. This increase in services and decrease in goods-producing is the normal trend of a mature society.

Reemphasizing changes within change, Mr. Gershenson pointed out that California employment patterns differed markedly from the national trends in 1940, approached them closely in 1959, and now, with the growth of aerospace industries, are diverging again. In individual industries, he pointed out the following long-term trends since 1950:

- *Construction.* In contrast to the stable national pattern of construction and despite our big population increase, California has had what looked like a downward trend and now a reversal.
- *Transportation, Com[illegible]ication, and Utilities.* Other industries have [illegible]bed the drop in railroad employment, and [illegible]rst time in many years, this industry gro[illegible]de new highs.

- *Finance, Insurance, and Real Estate.* Although their proportions are not very large, these reach new highs in California every year.
- *Trades.* There has been a sharp drop since 1958, although we seem to be heading up a little now.
- *Service Industries.* Up until 1956 we had a slight downward trend. But in 1956 the trend started upward, and we see no let-up.
- *Government.* California has a larger proportion of employment in government than the nation as a whole does. Nearly one out of five persons employed in California is in government.
- *Manufacturing.* In 1960, Dr. Gershenson said, he predicted that manufacturing would continue to be the number one industry in employment in California, but next year manufacturing will drop to second place and trades will be first. So, although patterns seem to indicate similarities with the nation as a whole, there are major differences in California.

In conclusion, Mr. Gershenson pointed out that services, finance, and government are employing increasing numbers of people, while trades, construction, and agriculture are employing fewer. There is a "flattening out" of the relationship between white and blue collar workers and, in California, a higher proportion than in the United States of professional-technical workers, clerical workers, and craftsmen.

Elements of Technological Change

Predicting manpower needs is a complicated two-part problem. The first part, which Dr. Davis did not discuss, deals with the numbers of workers that will be needed in various jobs. The second part is, what kinds of jobs will there be and what kinds of skills will people need for them?

Three types of technological change have been going on for a long time, Dr. Davis said:

- Mechanization—the substitution of mechanical devices for human power
- Rationalization—the specialization of tasks through breaking them down and reordering them so that more professional talent is required in the planning phase but less skill is required of the individual carrying out the work
- Automation—the mechanization of control and information processing

How to predict the direction of these types of technological change is the subject of Dr. Davis' research project at the University of California. Phases of his work include:

- Identification of common elements of technology in order to determine what educational preparation can best prepare people for particular jobs
- Examination of the variety of responses required in the performance of jobs to try to predict what tasks will become mechanized and automated next
- Analysis of what is economically feasible as well as technologically possible

One of the characteristics of highly automated, mechanized processes is an immoderately large capital investment per employee. At the present time the steel industry in the United States has invested about $100,000 for every employee; the petroleum industry, about $125,000. Such an investment motivates employers to see that their plants are operated at their highest capacity for the longest possible time, to bring about job changes that will require a minimum amount of downtime. Consequently, they want workers with a range of skills they can use to maintain as well as operate the costly equipment. Therefore, Dr. Davis predicts that we will move away from the high degree of specialization that has been needed in highly manual competitive work toward the multiple skills that are most useful in automated, mechanized work.

Speaking of short-term needs, Dr. Davis said that what we need in this state and probably across the nation is a network to feed employment information into the employment system and our Department of Employment, information that will also be useful and available for guidance and counseling and for short-term training programs.

At the moment California's information-gathering machinery is only partially developed. The Department of Employment participates in only about 10 percent of the job placements made in the state. Nevertheless, the Department is a public agency that can, with some extensions, collect information about the kinds of jobs being called for and the kinds of workers placed and displaced, so that we can look at the immediate changes taking place in our local economy.

In the long run, Dr. Davis said, we need to develop ways of looking at changes with perspective, removing them from their framework of specific industries. When we can look at changes across industry, there will be more similarities than differences in the responses we expect from persons working in advanced technology.

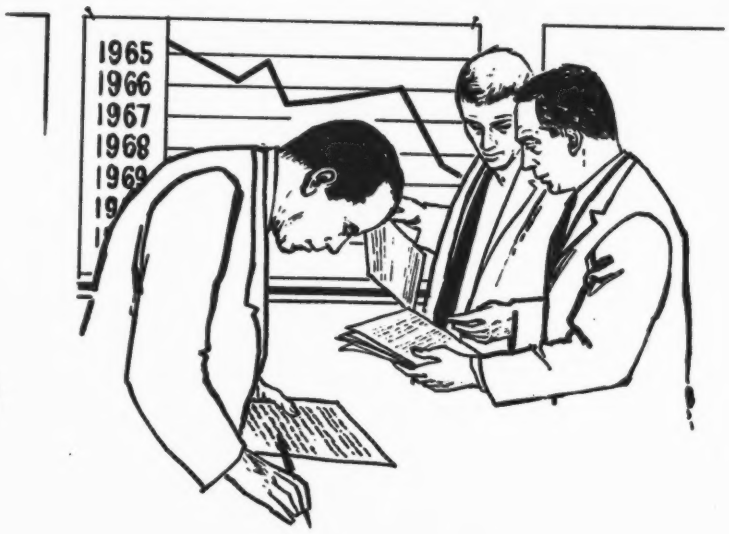
Changes in Aerospace Requirements

Perhaps the best way to identify changes in job requirements as they relate to the aerospace industry, Mr. Gomsrude said, is to note that in his own company, 85 percent of the employees were blue collar workers in 1941. In 1965, less than 30 percent can be defined as blue collar workers.

There have been a number of reasons for this dramatic shift:

- A sharp transition from the mass production of hundreds of thousands of aircraft to individual production of a few products having to do with space exploration and supersonic transportation
- A consequent demand for utmost reliability, which is achieved through the use of new materials, new processes, and new techniques
- A substantial change from manual work operations to mental work operations requiring workers to be certified and recertified

Concurring with Dr. Davis that multiskilled workers would be needed in the future, Mr. Gomsrude pointed out that a man working on a space capsule needs to be extremely proficient in electronics and also needs a working knowledge of hydraulics, mechanics, pneumatics, and environmental conditions in the capsule. On the other hand, he said, the aerospace industry also requires certain work operations that are so highly specialized that some workers can perform only a single operation. Mr. Gomsrude predicted that both the multiskilled and specialized worker will be needed in the future.



The answer to aerospace needs, he said, is the technician. The technician has a thorough working knowledge of one of the recognized fields of science or engineering, and he can understand and interpret the work of the professional engineer. In addition he is a skilled workman in a craft or in some operation associated with manufacturing or development. One division of Mr. Gomsrude's company needs 400 technicians now, but the company will have to hire people who have the aptitude and basic skills and train them. Technicians are not available.

Employment in the Construction Industry

Construction in California is a $5-billion-a-year industry, which places it ahead of agriculture and even with the aerospace industry, Mr. Knowles said.

California leads the nation in construction. It builds 20 percent of all the new housing units; yet, it employs only 10 percent of the nation's construction workers. This discrepancy is explained by the technological revolution in construction in California brought about by the use of the following:

- Machinery and power tools of all kinds
- Off-site prefabrication of components
- New materials requiring fewer men to handle them
- Specialization in which one crew lays a foundation, another builds the framing, another does the siding
- Computer technology in scheduling men and materials to minimize downtime

There are no figures to indicate to what extent the cited factors have displaced craft labor, but it is certain that they have reduced the pride of the craftsman in his work, Mr. Knowles said.

From 1956 to 1964, there has been a national annual increase of about 100,000 employees in building construction, plus 75,000 white collar workers in the industry. Roughly, California needs 13,000 newly trained construction workers a year. In 1963, of 28,000 enrolled apprentices, 4,500 completed their apprenticeships, leaving a need for 8,500 additional workers. Undoubtedly, this gap is being filled by workers who are not going through the apprenticeship program in this state but achieving journeyman status in another way.

A worker entering the building trades can expect that his rate of unemployment will be about twice that of the average worker, for unemployment stands at 12 percent in the building trades. Under the best of conditions, a carpenter can expect to work only 1,400 hours a year, and his annual earnings will only slightly exceed those of the average factory worker.

The Teamsters' Viewpoint

In the last several years the Teamsters' Union has had the reputation of being one of the few unions in the country that has actually gained in membership, at least in absolute terms, Mr. Poyer said. Like the other unions, however, the Teamsters' Union is losing ground in terms of proportion of work force represented.

The outlook is dim for future job opportunities in the driving trades. Jobs still can be had in the San Francisco Bay area, and applicants do not need a great deal of skill. Employers look for responsibility rather than skill. In northern California a driver will have a chance to get a job if he's between 25 and 30, and has two or three years of good experience, and has children to support. This is not promising to youngsters coming out of school, Mr. Poyer remarked.

In the cannery and food-processing jurisdiction of the Teamsters' Union in northern California, the federal government conducted an automation demonstration project from 1950 to 1962. Its purpose was to project employment trends in this industry. The economists found that production soared in those years despite sharp reduction in the number of hours worked during the summer months and no increase during the winter months.

The federal and state economists who worked on the project felt that it should go beyond a summary and prediction of employment trends. The economists wanted to talk to the people who were being displaced, find out what other kinds of work they could

do, if there were training opportunities for them, if they could be referred to other programs, and so forth. The group hoped to get factual information which would benefit not only the industry but also the economy at large.

This second phase of the project was never conducted because industry representatives on the joint committee refused to authorize it, Mr. Poyer said. Since all of these proposals cost money, employers are understandably reluctant to divulge the sort of information needed. Yet, the problem, of course, has to do not only with those industries with which the union is bargaining, but also with the whole economy of the state and the people who need jobs and training opportunities.

Employers are not yet reconciled to recognizing these problems as social problems that have to be grappled with at the state and federal levels. Nor are the unions, with their separate jurisdictions and their emphasis on collective bargaining, the best agents on whom to center a program of job opportunities, information, and training. The unions are, however, beginning to create job opportunities by the use of several plans:

- Sharing work
- Reducing number of hours of work per week
- Increasing paid time off-holidays, vacations, straight extra days, sabbatical leaves
- Granting early retirement under pension funds

One job opportunities area that should not be discounted, Mr. Poyer said, is recreation. As people work fewer hours, they have more leisure time. Teaching the use of leisure time, planning programs for recreation, and staffing recreational facilities may well be one of the big areas to come in vocational education.

Occupational Information

Gathering occupational information is one of the services of the State Department of Employment. Occupational information indicates how labor markets work, what occupations are in demand, what their requirements are, what kinds of applicants are available, and what happens to displaced workers.

The two major uses of labor market information are in vocational counseling and in developing programs for the training and retraining of workers.

The Department of Employment develops and uses three basic kinds of labor market information:

- *Current Labor Market Information on Jobs Available, Applicants, and Locations.* This type of information is limited because the Department participates in only 10 percent of job-finding transactions. The Department is currently participating with the Federal Bureau of Employment Security in a national study to extend knowledge of job openings in certain labor markets.

  Current labor market information is used internally by the Department of Employment. It is published only in brief forms like lists of shortage occupations or statements on current local labor conditions usually developed by the Department's individual mobile offices.

- *Occupational Guides.* In the past eight years, the Department of Employment has developed nearly 400 "Occupational Guides," each one describing a single occupation's employment requirements, training requirements, job opportunities, working conditions, and pay scales.

  The main purpose of the occupational guides is to provide counseling information to schools and the Department of Employment. They also serve to indicate changing job content, for they are developed by Department analysts working with employers.

  The chief defect of the occupational guides is that they do not provide perspective on the entire labor market or even an entire industry. Another shortcoming is that every occupation cannot have its own guide. The *Dictionary of Occupational Titles* includes 4,000 titles describing 20,000 different jobs!

- *Manpower Projections.* To estimate future and current job vacancies in an entire industry or labor market, the Department of Employment uses two techniques.

  First is the "skill survey," which solicits information from a sample of employers as to their current and future needs. This kind of survey is limited by the willingness of employers to cooperate, their ability to forecast accurately their needs, and the organization of the method, which tends to elicit only broad descriptions of existing conditions.

  The second projection technique is based on analyzing current trends in the labor market, in population, and in industry, and then projecting the trends into the future. An advantage of this technique is that the many sources of data can be used,

and they tend to act as checks and balances on each other. This technique is limited by the competence of the economic analysts.

The use of forecasts of any kind is subject to overriding restrictions. Projective techniques are not intended to provide a picture of the future. They are rather a tool for planning, and the trends they indicate are the logical products of a set of assumptions. If the trends prove wrong, the original assumptions must be discarded. The value of projective techniques is that they offer a logical approach to all the information available, a reasonable and consistent way of adding new information, and a working basis for planning.

Discussion

None of the panelists, Mrs. Thal-Larsen pointed out, really answered the question of "How Future Manpower and Training Needs Can Be Identified." She reviewed Sol Swerdloff's analysis of three ways to determine future labor needs:

1. Ask the employer. This method removes responsibility from the forecaster, but most employers cannot predict their long-range needs, and certainly they cannot speak for employers in new industries that haven't been invented yet.
2. Extrapolate straight-line trends. This method is simple, but as Mr. Gershenson warned, directions change.
3. Accumulate all available information on occupational changes. But occupational changes are based upon changes in industry, which are based on changes in public policy, which is determined by an unknown future.

Mrs. Thal-Larsen added the hope that other disciplines—perhaps a combination of industrial engineering and psychology—can suggest additional methods of projection.

In addition to the problem of gathering information for forecasting purposes, there is the problem of distributing information to users. In what forms do people need occupational information? Is it necessary to indicate trends in certain occupations locally as well as nationally? To what extent do counselors need qualitative information?

Mr. Gershenson predicted that immigration would maintain its pattern of many young people coming to California looking for jobs rather than old people coming here to retire.

Dr. Davis said that the primary indicator in the decision to substitute mechanical substitutes for human endeavor is the "cost differential." Given a particular industry's total costs for costs of labor, capital, and equipment, his research group may be able to predict whether a particular type of technology or device would be adopted by that industry (unless the industry is more interested in maintaining a particular market position than in costs).

Mr. Gomsrude described the technician as the man between the blue collar worker and the white collar worker—perhaps a gray collar worker. Mrs. Thal-Larsen thought this shade might soften public prejudices.

Mrs. Thal-Larsen asked Mr. Gomsrude how much lead time aerospace advisers to schools could allow for technician courses. Mr. Gomsrude replied lead time is partially determined by the urgency of a given situation. The aerospace industry is working closely with the Department of Employment to update their *Dictionary of Occupational Titles* and interpret industry requirements. Constant consultation is required.

Mr. Knowles said that one of the problems of predicting manpower needs in the construction industry is that practically no reliable information is available. The only reason that he was able to cite figures for the 1960–1964 period, he said, was that the pension funds came into existence then and manhour figures were available.

Mrs. Thal-Larsen reminded Mr. Poyer that he had said that some employers felt that responsibility was more important than a high school diploma. She asked if responsibility could be taught and tested, thereby opening up jobs to responsible people lacking a high school diploma. Mr. Poyer said it was hard to prescribe training for jobs that do not require a high degree of skill. He thought that in some cases the requirement of a diploma might be merely a method of weeding out job applicants.

In answer to Mrs. Thal-Larsen's question, "Finally, assuming that what we need are overall industrial and occupational projections probably for two, five, and ten years for the state as a whole in some areas, plus a continuing flow of qualitative information, plus a continuing revision of the information we do have, what do we need to get started right now and what do we need first?" Mr. Mayall answered, "Money."

In response to a question from the floor, Mr. Mayall said that he had no solution to the problem of whether to teach specific skills to meet the needs of small employers or give broad basic training to suit large employers. He said that the tie-in between on-the-job training and vocational training is not clear. One participant said it is possible to provide first the basic skills and then the required specialization.

Harold Hill, Assistant Superintendent, Secondary Education, Mount Diablo Unified School District, asked how schools can get the information to justify their training programs on the basis of need. Mrs. Thal-Larsen answered that the Department of Employment sometimes can justify the need but often has this problem in framing its own MDT training proposals. The question points up the need, she said, for a coordinated, comprehensive system of labor market information that can give these answers for the school district, the metropolitan areas, the state as a whole. Again, "What do we need to get started?"

When one participant suggested that the answer lay in data processing, Chairman Vial pointed out that machines could not make the policy decisions involved in a manpower program. Dr. Davis added that computers can turn out information no better than the information that is fed to them. "We have the computer and data processing mechanisms to disperse information," he said, "and they could do it right now if we knew what information to put into the computers. And if, indeed, we had a way of getting the information."

DISCUSSION SECTION THREE

The Role of Business and Industry in Vocational Education

TODAY'S BUSINESSMAN MAKES decisions while looking to the future, not to the past. Dr. Gray pointed out that both schools and government should share the same point of view. Students should not be trained for what was needed last year, or even this year; they should be trained for what will be needed in the future.

Change is inevitable. There are changes in products, tools and techniques, raw materials, and, above all, changes in job content. The rate of change is likely to increase in the future. Mr. Knapp said that in five years, 25 percent of the work force will be producing products not in existence today. A basic problem, then, is how to fit and train workers for this whirlwind of change.

Dr. Arnold pointed out the need to match people with jobs. In this matching process, democratic methods should be used rather than an arbitrary, preplanned assignment of job quotas. This is the more difficult, but in the long run the more profitable, method.

Educational Rejects

Mr. Boynton discussed the high number of "rejects" produced by our educational system. He cited a publication of the U.S. Office of Education, *Education for the Changing World of Work*, which points out that

CHAIRMAN: Herbert W. Rubottom, Chief, Educational Services, General Dynamics-Convair, San Diego

MODERATOR: Lee Ralston, Director of Practical Arts, Office of the Los Angeles County Superintendent of Schools

PANELISTS: Walter Arnold, Assistant U.S. Commissioner of Education, Vocational Education Services, U.S. Office of Education, Washington, D.C.; Ralph E. Boynton, Vice-President, Training and Development, Bank of America, San Francisco; John Carroll, Director of Education, California Labor Federation, AFL-CIO, San Francisco; Volney H. Craig, Jr., Manager, Limoneira Co., Santa Paula; John Dobrei, Supervisor of Education and Training, Aerojet-General Corp., Azusa; Robert D. Gray, Professor of Economics and Industrial Relations, California Institute of Technology, Pasadena; Henry Gunderson, President, Professional Administrators and Coordinators Association of California, San Jose; Charles F. Hanna, Chief, Division of Apprenticeship Standards, State Department of Industrial Relations, San Francisco; David Hurford, Vice-President, Sears, Roebuck Foundation, Pacific Region, Los Angeles; F. A. Knapp, President, Associated Printing Industries, Berkeley

RECORDERS: William E. Fox, Harry K. Wolf

of ten students in elementary school, three will not finish high school. Of the seven who do, three will go to work, some as wives and mothers, while four will go on to higher education. Only two of these four will complete four years of college. Mr. Boynton expressed concern that although many have the potential, few graduate from college.

Another publication, *One Third of a Nation*, also furnishes information about this problem of educational rejects. For instance, one-third of America's young men turning eighteen today will be found unfit for military duty. One-half of this one-third will be unable to qualify because of medical reasons. The other half will be disqualified because of failing to pass the mental tests. Of the mental rejectees, 40 percent will not have gone beyond elementary school and 80 percent will not have finished school. If business and industry had such a high percent of rejects of their products, they could not afford to remain in business.

It was suggested, however, that industry should stop looking on education as an assembly line operation with a high rate of failure; it is time for businessmen and educators to stop merely talking together and to start acting together. An attempt should be made to get industry and education to "cross over into each other's worlds" so that each will have a better understanding of what the other is trying to do.

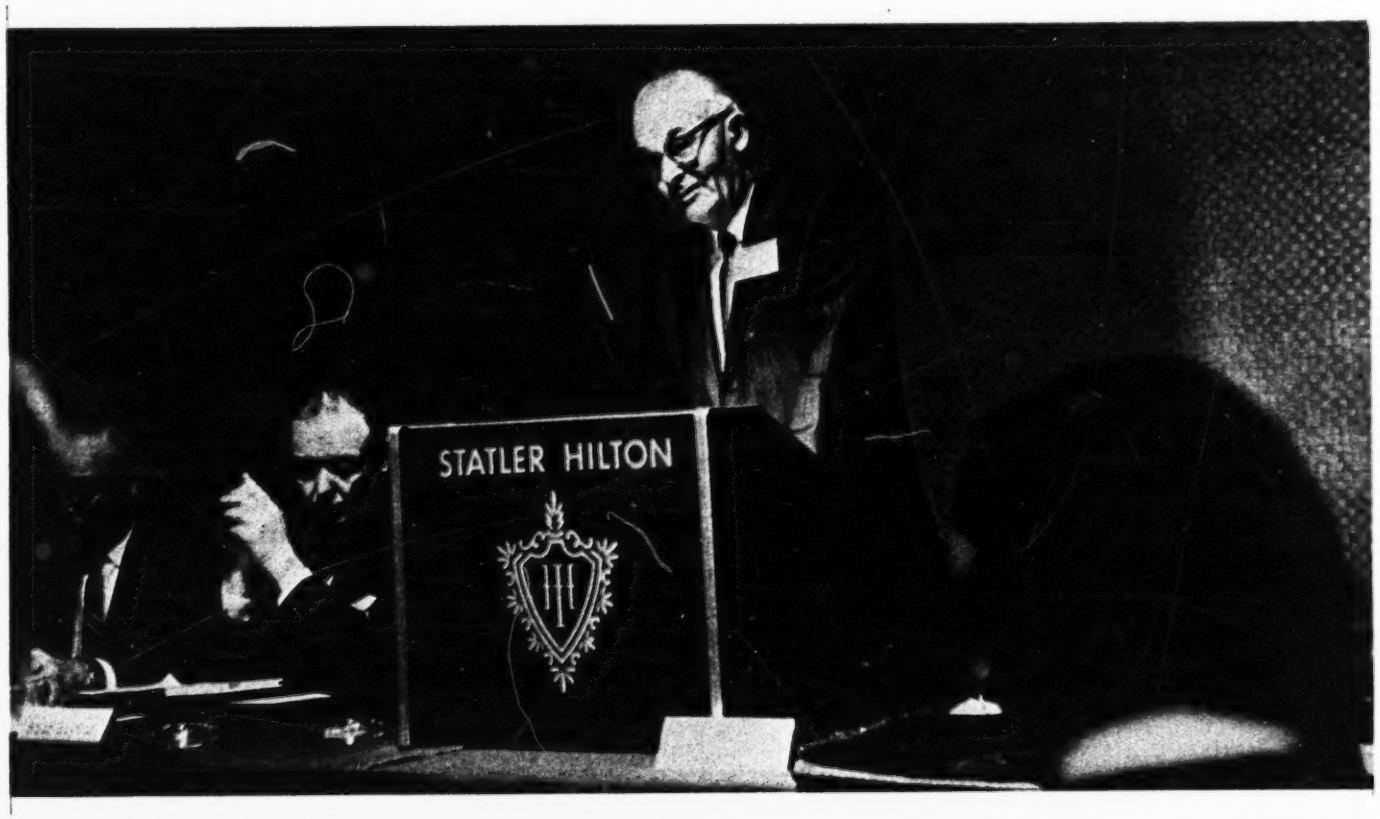
Two of the panelists said that school standards should not be downgraded to reduce failures; rather, they should be upgraded to meet the requirements of industry.

Dr. Arnold, in his summary, indicated that the greatest need in vocational education today was programs which would meet a variety of needs and appeal to large numbers of individuals.

Kinds of Training

A decision must be made as to what should be taught, or what training should be given, and who should give it. This training function should be divided between industry and schools. Schools should provide the training which they are uniquely equipped to provide, while industry should decide what it can safely provide after the student is out of school. In addition, there are areas where each can cooperate in training the individual.

Industry speaks of vocational education in many ways. This variety of attitudes has resulted in shortages of trained manpower in some occupations, while there are labor surpluses and unemployment in others,



primarily among the unskilled. Training is the catalyst to resolve this dilemma. The content of training courses must be matched to job requirements; course content must also be kept fluid because of job changes.

Dr. Arnold urged that vocational education take place at all levels of the educational system, because individuals at different levels have different needs. There are many examples of training provided by industry and labor. Mr. Knapp spoke of the schools for tradesmen now being built and in operation, which are generally financed out of industry educational funds. He also pointed out that a major problem today is bridging the gap between schools and entry into employment, except in the professions. One way of bridging this gap is through apprenticeship programs—providing on-the-job training as well as training in the classroom. One can earn while he learns. The annual cost per apprentice is far less than the yearly cost of a college education; yet, the apprenticeship program is decreasing, nationwide. In California, however, there has been substantial growth in this program. There is still some employer resistance from those who feel that a first-year apprentice does not return enough to the employer.

Dr. Arnold also pointed out the inadequate reporting of supply and demand in employment opportunities. Many statistics about the supply of jobs are given as total figures, rather than as more hopeful subtotals. Records should also be kept of student placement resulting from specific training and the effectiveness of trained students in specific jobs.

Questioned as to whether there should be a county or district vocational training center, or whether facilities should be expanded at the school district level, Mr. Ralston responded that since we are committed to a comprehensive high school, technical training should be given there. One of the panelists said that many high school students are not ready for vocational education until perhaps their senior year. Therefore, in his opinion, vocational education would be better placed at the post-high school level.

Funding for Training Programs

Funds for training programs are provided in various ways. The federal government provides many of these funds, and often the states provide matching funds. In addition, labor contracts often provide for educational funds. Mr. Knapp briefly discussed a proposed tax credit to participating companies that sponsor apprenticeship programs. During the discussion session, a union representative pointed out that his union opposed such a program of tax credits for employers. The union position is that management and labor should work out training programs through collective bargaining. More than money is needed, however, to stimulate the interest of young people in skilled trades.

Coordination and Communication

Stressing the need for trying to find a means of coordinating the efforts of education, management, and labor, Mr. Knapp declared that vocational education is "the hottest thing in the United States today, with everybody getting into the act." However, more directions and coordination are needed.

Mr. Boynton talked of poor communication between government, industry, and labor unions as to what is needed and what is produced by schools. He felt that industries would take more interest in the school system if they, for example, had to subcontract for education as they subcontract with many of their suppliers. In a sense they do, since taxes levied on industries help pay for education.

The excessive number of school courses now required by law has greatly reduced the elective courses

available to the high school student; this has created a problem which could be solved by more effective communication with the community and state.

Promotion of Vocational Education

Several suggestions were made by speakers for promoting vocational education and for solving some of the problems identified during the conference. Included were vocational fairs and skill contests to help in stimulating young people's interest, and work experience and cooperative training programs for employed workers. These programs have met with varying degrees of success.

Business can provide training specifications, job and technical information, and changing job competency requirements for the schools. Equipment and materials can be provided for teachers. A clearing house at the state level, in each state, is needed for the orderly planning of these programs. However, in spite of such programs, industry, government, and the schools have grown farther and farther apart.

Mr. Boynton cited counseling as the key solution to some of the problems in vocational education today. There are too few counselors, and it takes too long to train them. There is so much rapid change in industry today that it is difficult, if not impossible, to keep the counselor informed of all the changes that are taking place. In addition, much pertinent information is not published and thus is not available to the counselor.

Declaring himself disillusioned with career days and mass attempts at counseling, Mr. Boynton suggested that counseling should be done on an individual or small group basis and continued throughout the school year. Industry's attempts to talk to students through teachers, administrators, and counselors have not been successful enough. Industry should now talk to students directly.

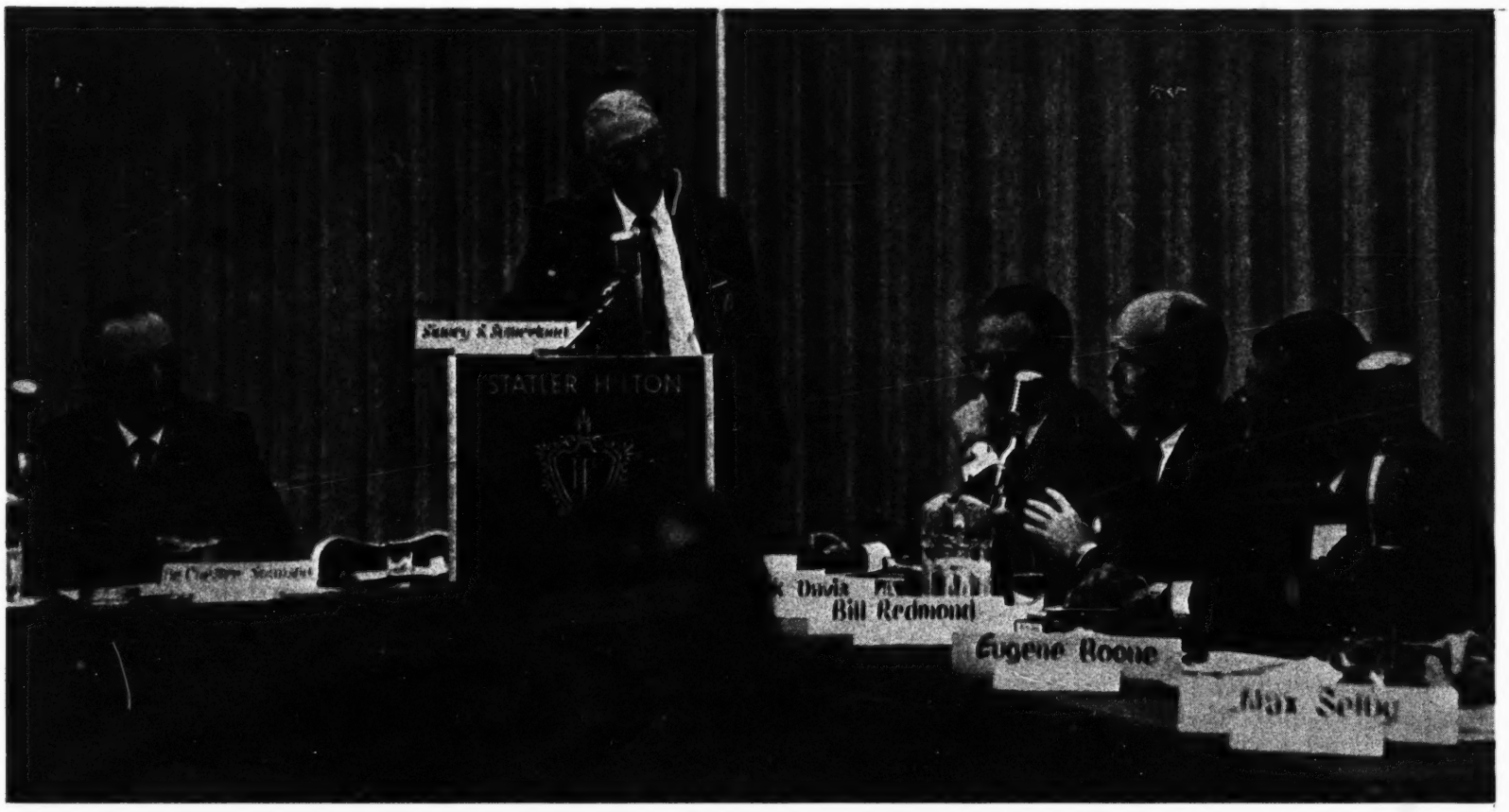
The counselor's role should be changed to that of vocational counselor-coordinator. The counselor-coordinator would not talk to students about jobs, but he would arrange for small groups of students to meet with representatives of business, government, and the professions. Individual sessions with interested students would follow the small group meetings. Perhaps in such meetings the student "failure" might develop some acceptance of his teachers' previous advice.

Ways were discussed in which labor unions could be interested in high school work experience or exploratory programs. Suggested were bridges of communication between the schools and local union officers. They should talk and share together in the formulation, planning, and action stages of solving problems related to cooperative effort.

A labor union representative in the audience stated that his union did not want the high school student to get summer job experience, since there is now an excess of workers for available jobs. Instead, he suggested schools should teach students basic principles and techniques, rather than providing work experience.

Job Opportunities in Agriculture

Discussing trends in agricultural employment, Mr. Craig pointed out that opportunities are expanding as rapidly in agriculture as in any other industry. In the past, agriculture has been able to draw on a reservoir of trained individuals. Few trained people have been entering the field recently, however. Many trained individuals are now of an advanced age and will be leaving agriculture, thus opening up more jobs.



DISCUSSION SECTION FOUR

The Responsibility of Public Education for Occupational Proficiency

CONFEREES SPOKE OF THE CAUSES and consequences of vocational education's low repute. One consequence was illuminated by Dr. Richardson, when he pointed to the effect that occupational training's poor reputation has on parental attitudes and the consequent pressures exerted by parents against vocational programs and against occupationally oriented guidance in the schools. Such pressures, he said, yield a growing population of student failures—children who do not happen to be responsive to, or motivated in, a purely academical educational program.

But participants dealt a sharp blow to the popular and oversimplified belief that vocational education is, by itself, an answer to the dropout problem. In fact, one panelist said that the status—and success—of vocational education can be secured only by excluding the "dropout type" from vocational education.

Among the situations contributing to vocational education's poor public image, speakers identified these:

- Outdated curriculums in vocational education
- The inability to predict future skill requirements of industry and agriculture
- The paucity and, too often, the low quality of teachers in vocational education—a problem viewed as an effect as much as a cause of vocational education's poor image

CHAIRMAN: Sidney S. Sutherland, Professor of Agricultural Extension, University of California, Davis

PANELISTS: Eugene Boone, John Inglis Frozen Food Company, Modesto; Jack Davis, General Personnel Manager, Pacific Telephone and Telegraph, Los Angeles; Wilbur L. Fillippini, Vice-President, District No. 5, California Federation of Labor, AFL-CIO, Santa Barbara; Milo Johnson, President, San Jacinto Junior College, Beaumont; John M. Rand, Superintendent, Temple City Unified School District; Bill Redmond, State Department of Employment, Sacramento; Ralph Richardson, Associate Professor of Speech, University of California, Los Angeles; Max Selby, Training Representative, Hughes Aircraft Company, Newport Beach; Chester Swanson, Professor of Education, University of California, Berkeley

RECORDERS: Lloyd Kramer, Robert L. Maurer

Developing Curriculums and Meeting Needs

Representatives of education expressed their reluctance to have schools provide training in the specific skills that industry often requires, because of the likelihood that many specific skills soon will become

obsolete. Mr. Davis agreed with the educators that schools might better provide the basic and general skills that are needed in virtually all occupations. However, smaller companies without their own training programs would continue to require specific skills as a condition of employment.

The special vocational high school was proposed as a means of offering training in those vocational skills not now offered in most of the schools in California. Most conferees agreed, however, that the comprehensive high school should be preserved, and that there was a considerable risk that the special high school would merely serve as a reception center for problem children. Most of the group also agreed that the junior colleges should play a central role in vocational education. Many hastened to add, however, that the high school has an opportunity to make a most important contribution by providing intensive vocational guidance and by offering a wide range of elective vocational courses.

Speakers suggested that, in developing curriculums, the junior colleges must have or find the means to react quickly to market requirements. While this involves constant investment in new equipment, Dr. Sutherland pointed out that the service trades represent the fastest-growing area in industry, and only a minimum of equipment is required to offer training to students planning to seek employment in these fields.

Securing Qualified Teachers

The shortage and disparate quality of vocational teachers were related directly to the publicly held negative associations surrounding industrial and agricultural labor. It was emphasized that this problem, which tends to create poor teaching situations, has served to reinforce the negative image the public has had of vocational education. It was pointed out that many vocational education teachers are retired craftsmen, out of touch with newer technology and current market requirements. This weakness tends to hamper the success of vocational education programs in the schools.

Dr. Richardson noted another factor bearing on the status of vocational teaching: There is no adequate way to apply or relate conventional academic criteria —those by which most teachers are ranked—to vocational teachers with experience in industry. Dr. Richardson asked whether industry could provide qualification standards in occupational areas, which the schools could use to provide ranking and status to vocational teachers. Such standards, when accepted by other teachers and the community, would redound to the benefit, dignity, and status of vocational educational teachers and, thereby, to vocational education itself.

Solving Problems in Vocational Education

The panelists viewed education's position with respect to occupational preparation in terms of a complex array of related problems, all of which seemed to be tied in—either in terms of cause or of effect—with public attitudes toward vocational education. The solutions to these problems, as viewed by the panelists, are presented in the paragraphs that follow.

Several speakers characterized the students whom the schools have failed as "the third group," the other two groups being the academically oriented and the occupationally talented. Mr. Redmond spoke of reducing the size of the third group by a special program of preparing young children from culturally deprived homes to enter school on an equal footing with other children. Dr. Richardson described federally supported experimental programs of this type now in progress in Los Angeles and elsewhere. He indicated possibilities of success, but he suggested that such a program, on a broad scale, would be very expensive.

On the subject of growing obsolescence of previously acquired skills, Thomas Johnson of Whittier High School spoke from the audience of the important role which must be assigned to adult education in occupational retraining.

Most speakers advocated refurbishing the image of vocational education, but all agreed that this is not a mere public relations problem. To shed the public disapproval which has clung to occupational preparation, vocational education must *be*, as well as *appear*, successful. To succeed, it must have teachers specifically trained as vocational education instructors. This was particularly emphasized by Mr. Fillippini. In addition, Mr. Selby indicated that good vocational teachers will have to move back and forth between industry and school in order to keep in touch with modern technology, skill requirements, and market realities.

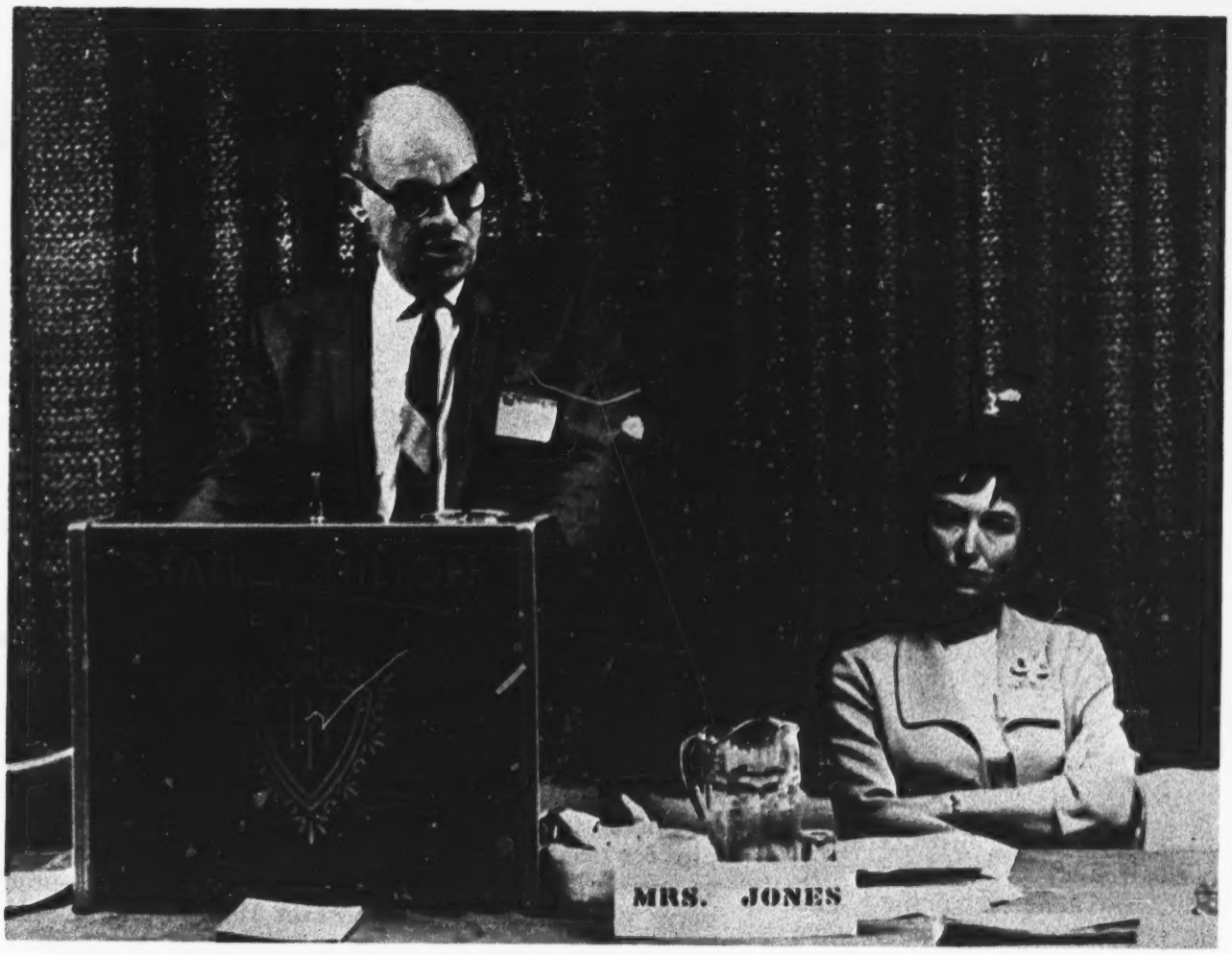
Mr. Boone cited research indicating that any successes achieved in dealing with "the third group" can all be traced to the presence of highly motivated teachers whose missionary zeal stimulates students to the degree that they become motivated to learn and succeed.

Further, to be a success, vocational education must be able to depend upon active guidance programs and identification of the occupationally talented at an early age. This is a job for the junior high and the high school. Dr. Sutherland emphasized that guidance is a key element in vocational education.

Also, the schools must stop perpetuating the invidious distinction between professional and vocational education. Toward this end, Mr. Redmond urged that the schools be prepared to do more than placate their own communities. He further suggested that the Department of Employment be permitted to offer occupational guidance to young people.

Mr. Rand commented that there are students who cannot perceive the significance of education without first having worked. Through a work-study program, such students can learn both the dignity of labor and the importance of study.

To the problems involving public education and occupational preparation, the panelists and conferees suggested several solutions. Most were aimed at making vocational education a successful and success-producing activity.



DISCUSSION SECTION FIVE

The Community's Responsibility for Vocational Education

THE PUBLIC SCHOOLS OF THIS NATION are committed to meeting the educational needs of every citizen—elementary school through college. And change in our society makes it imperative that both college-preparatory and vocational education be available to all these citizens—young and old alike. Schools must also realize that change is a permanent part of our economy. Students must be helped to understand that jobs and job requirements change and that all persons must be prepared to accept and adjust to change.

Part of the success in extending vocational education to more youth and adults will depend upon teachers and the community developing a more positive attitude and a greater appreciation for craftsmanship and occupational competence. There must be renewed awareness of the dignity of labor. And respect for a job well done must also be stressed as a part of vocational education. In addition, our complex and rapidly changing economy increasingly requires many different skills and abilities, all of which place a greater responsibility on the public schools to offer comprehensive programs to serve all youth and adults.

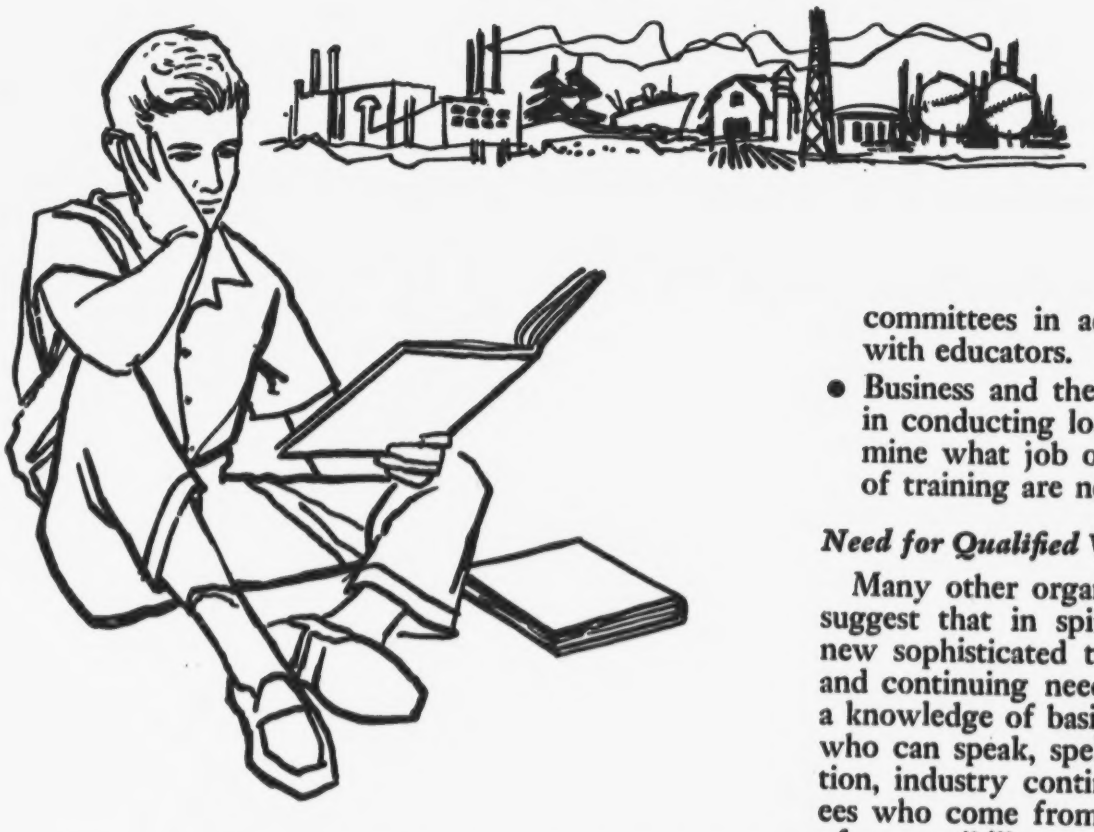
CHAIRMAN: F. A. Grunenfelder, Orange County Superintendent of Schools, Santa Ana

PANELISTS: Roger Jessup, President, Jessup Farms, Palm Springs; Mrs. Barbara T. Jones, District Manager, Western Girl, Inc., Long Beach; Hyman Weintraub, Executive Secretary, Teachers Guild, Los Angeles; Norman E. Watson, Superintendent, Orange Coast Junior College District, Costa Mesa

RECORDERS: Daniel C. Chase, Oliver A. Batcheller

The Role of the Schools

An increasing number of public schools are striving to improve and adjust their offerings to prepare people more effectively for gainful employment. Many schools are developing systematic programs of post-high school education, including special programs for dropouts. One example of such advanced thinking is a summer school for dropouts conducted in Orange County.



Schools can more effectively serve a broader spectrum of occupational needs if there is dedicated spirit, systematic planning, and adequate financing. The bulk of the school-age population must now have more preparation for entering business and industry in addition to the many other facets of our economy. We are at the point where skills and abilities required in the world of work suggest that vocational programs can no longer serve as a dumping ground for academically poor students. The image and actualities of vocational education must be altered to reflect a more positive, hopeful, and rewarding phase of our educational system.

The Role of Industry

In the business world and throughout our communities, there is an increasing awareness that the schools cannot do the vocational training job alone. Industry and lay persons must provide more than financial backing. They also must assist occupational education by identifying occupational opportunities and by helping develop new vocational education offerings—courses that will prepare people for new types of jobs and at the same time assist all students in recognizing and avoiding those jobs that are rapidly being phased out.

Fortunately, many business leaders and companies are among those providing this kind of assistance. The Administrative Management Society has recommended that its members follow three broad objectives in working with schools:

- Members should cooperate with schools in curriculum planning and development with particular reference to the office occupations.
- They should seek representation on boards of education and be willing to serve on business advisory committees in addition to working more closely with educators.
- Business and the general community should assist in conducting local and national surveys to determine what job opportunities exist and what kinds of training are needed to fill such jobs.

Need for Qualified Workers

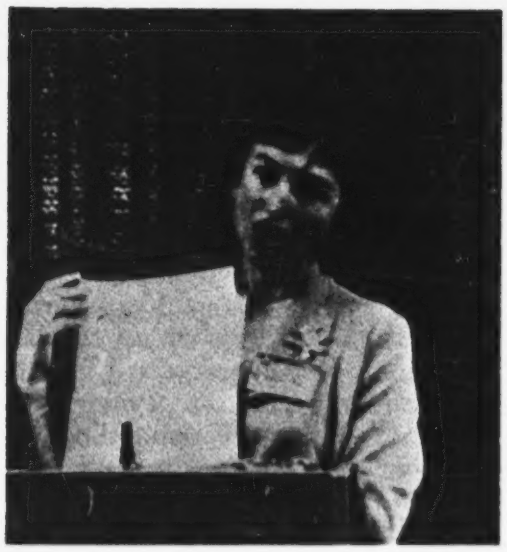
Many other organizations in business and industry suggest that in spite of automation and the many new sophisticated technologies, there is still a great and continuing need for qualified workers who have a knowledge of basic arithmetic and mathematics and who can speak, spell, and write effectively. In addition, industry continues to appreciate those employees who come from the public schools with a sense of responsibility and good work habits.

There is continued recognition that although employees need to be prepared for such broad concepts as citizenship and cultural understanding, in some ways it is even more important that young people have some specific marketable skills. Regardless of the amount of training or education a person has had, it is generally recognized that problems related to personal traits account for more failures on the job than does a lack of manipulative or technical skill. Thus, vocational education has a responsibility for strengthening and encouraging the development of desirable personal habits and attributes. It is generally agreed that a worker who can get along with other people makes a good employee, and human relations must be a key ingredient in vocational preparation.

The Role of Vocational Education

Perhaps one of the most effective ways for minimizing the costs of supporting welfare recipients and the unemployed would be the expenditure of tax monies for vocational education rather than for charity-type programs. Such thinking suggests that the public schools should provide some broad background to assist students in adjusting to different jobs and to different life situations. It is also apparent that our schools must increasingly provide for an ongoing education. Education is a constant process in all of its phases, including occupational education.

A revival in our society of the concept of the dignity of labor would seem appropriate as change presses upon us the need for more systematic vocational education. One of the main values of a course of training is in giving dignity to labor. The making of a lamp or a piece of furniture is perhaps less important than learning to do one's best and feeling the responsibility of doing nothing less than one's best. Such attitudes can be fostered by teachers.



One of the most critical aspects of vocational education is that many teachers and counselors are unable or unwilling to keep up with changes in industry. Keeping up to date is a full-time job. The opportunities that are available and the training that is needed to meet these opportunities require time and attention. But such efforts must be made if we are to bridge the gap between school and gainful employment.

Vocational education has always been an important part of the American education system, but it has reached new heights of importance in recent years, primarily because of the attention that has been focused on the rise in unemployment and the threat of automation. We are facing a national emergency in vocational education.

American ideals are closely allied with material production. We are a commercial nation. There would seem to be three pervading elements underlying the current need for emphasizing vocational education.

- There is a need for diversity among vocational education programs. Vocational education programs now require a scope greater than anything we have ever developed before. Vocational education, now a necessity for all, is charged with doing a more comprehensive job.
- There is need for education for change. Education must be flexible and resilient and should provide a basis upon which individuals may build successful careers and lives. Jobs and job requirements keep changing, and adjusting to these changes is part of modern-day life.
- There is need for continuous, lifelong education. Education is a growing process, with students continuing to be students throughout life. As automation accelerates, so does the need for education.

How do the schools, lay persons in the community, business, industry, and labor bring about expansion and improvement of vocational education and occupational preparation for all youth and adults? One very practical approach would be to follow these guidelines:

1. Determine job needs and educational preparation for meeting them.
2. Determine whether such needs and their requirements are appropriate to a particular level of education; e.g., high school, junior college, adult school.
3. Develop the curriculum or training program.
4. Plan and provide facilities, equipment, and supplies.
5. Recruit and train instructors.
6. Recruit students.
7. Offer the course of training.

8. Evaluate the educational program and the performance of former students when they are on the job. Follow up and make changes as needed.

Recognition of, and appreciation for, vocational education's role in society lead toward improved programs of occupational education. A dedicated spirit and cooperation among schools, the general community, labor, industry, and business are essential if vocational education is to serve youth and adults in the decades ahead as effectively as it has in the past.

Summary

Not enough communities have adequate, effective vocational programs. With good programs it would be easier to awaken school officials, accrediting agencies, parents, and students to the importance of vocational occupations in our society, as well as the opportunities in vocational work and the personal satisfactions derived from it.

Ideal programs must be adequately equipped with modern machinery and curriculums programmed to occupations that will exist when the students graduate. The courses must be taught by enthusiastic, dedicated teachers who have had work experience in their specialty areas, who keep up to date, and who can convey the dignity of labor and awaken an appreciation for craftsmanship. Vocational teachers who meet these high standards of accomplishment should have the same pay and status as their academic peers.

One of the greatest weaknesses of the total school program lies in the counseling of students by well-meaning individuals who have never been in business or have never held a job other than teaching. These individuals often are unaware of the excellent opportunities available in the business world.

DISCUSSION SECTION SIX

Work Experience Education and Vocational Education

EACH PANEL MEMBER TOLD the audience of his activities in a successful work experience program. The audience learned of the fruitful efforts of a vocational agricultural instructor in a small agrarian community, of the diversified program possible in a large industrial complex, of the success enjoyed by a business concern which developed a cooperative program with a community college, and of the rewarding results of an apprenticeship program developed by a trade union in cooperation with local community colleges.

The programs described were as varied as the interpretation of work experience. They included programs designed to meet the needs of the school dropout as well as students planning to go to college; programs in agriculture, distributive occupations, office occupations, and the trades; programs for those with much experience as well as those with none; programs to meet the needs of the mature as well as the immature youth; programs which provided no income to the participant and those which offered pay equivalent to that of full-time employees; programs underwritten by the participants and those aided by governmental funding.

Despite this diversity, the programs had a common theme: They were all designed to complement the total training of the youths who participated; and in the opinion of those associated with the program, they were meeting these goals most successfully.

Why Are These Programs Considered Successful?

The term "successful," as it was used throughout the discussion, seemed to center upon a satisfaction quotient. To be successful, a program needs to meet the needs of the participating students. Ordinarily, the needs of students as expressed by educators are not needs that students themselves recognize as being of immediate importance. It was emphasized that these work experience programs, however, were not successful until the students realized satisfaction of their needs as they saw them.

CHAIRMAN: Henry Tyler, Executive Secretary, California Junior College Association, Modesto

MODERATOR: Norman Eisen, President, California Work Experience Educators, Whittier

PANELISTS: Edna Fife, Personnel Director, Sears, Roebuck Company, Pomona; Stanley Graydon, Secretary, Sheet Metal Joint Apprenticeship Committee of Orange County, Santa Ana; David MacPherson, Director of Vocational Agriculture, Victorville High School; Milton F. Reiterman, Supervisor of Occupational Preparation, San Francisco Unified School District

RECORDERS: Robert J. Healey, William Kirkpatrick

It was pointed out that many students drop out of school because of their inability to identify their long-term needs. Potential dropouts often do recognize the need for a job, however, and accept what must be learned to succeed on the job. In other words, working for grades may yield little satisfaction, whereas working on a job to meet the demonstrated need of an employer may give students a deep satisfaction.

Employers indicated a degree of satisfaction from their participation in these programs. Miss Fife indicated, for example, that she had accepted as employees submarginal students who, when they proved that they could be successful, gave her a personal satisfaction from having taken part in their learning program. Mr. Graydon indicated that his organization's apprenticeship program offered a better opportunity for the selection of qualified future journeymen than any other program.

The employer seems to profit, said one panelist, from the experience of examining a student's potential on a level at which the employer does not expect profitable production immediately and then watching the student grow to a level at which he becomes a productive employee.

School coordinators commented on personal satisfactions which they said could not be realized in other types of programs. Frequently, they are in a position to observe dramatic changes in students participating in a work experience program—changes in attitude toward school, in personal self-regard, in aspiration, and in maturation. They have seen their programs grow in stature with students because work experience opportunities are desired by many students but are restricted to those participating in the school program. Educators can feel a community response to this type of effort also.

Why Aren't There More Programs?

The primary reason that there are not more work experience programs is probably apathy. The teacher who conducts such a program is likely to work much harder than those who rely upon presenting material in more traditional ways. The first step in developing a successful program is to ascertain that the teacher-coordinator is both skillful and dedicated—that he is willing to work as hard as is necessary to ensure a successful program.

Such a program cannot succeed unless it has the cooperation of all participating parties. It is not always easy to encourage uniformity of purpose among agencies with differing goals, such as the school, business, and trade unions. Not only is organization of a cooperative effort a deterrent to many programs, but also their very nature requires more time and travel, which makes them more expensive than most educational programs.

Cost certainly has been a deterrent in the past, and those who might profit from offering work experience programs are not always aware of potential sources of supporting funds. It was suggested to those attending the session that information on the types of work experience programs for which funds are available and the ways to procure these funds could be obtained by contacting the State Department of Education.

What Are Some of the Problems?

It was obvious from the discussion that even the most successful programs are not operated without problems. Considerable discussion centered on the legal implications of the hiring of minors and the effects of this hiring on workmen's compensation, unemployment insurance, and union affiliations. It was suggested that evidence would indicate that accident rates do not increase with the employment of minors in these controlled programs, and that in many cases the school district assumes the financial obligation for workmen's compensation for students who are a part of a noncompensated program. It was further indicated that the term of employment is usually of such a duration that the student-employee does not qualify for unemployment insurance nor does the school coordinator countenance any application for unemployment insurance. It is unusual for a work experience program to cause difficulties with union activities. Programs are usually not available in those areas where the unemployment rate is high; and in most cases where union affiliation is necessary for employment, students have willingly complied with, or been excused from, this responsibility.

How Can More Successful Programs Be Developed?

Those representing the employers said that the schools should take the initiative in developing successful programs. Most employers are ready and willing to cooperate if an enthusiastic coordinator comes to them with a well-defined program. Too often, in the opinion of one employer representative, a program of this nature is initiated by administrative action and then assigned to a faculty member who has neither training nor inclination for it. Too many programs are marginal because of inadequate coordination. The schools must develop people who are trained in work experience education and who have the knowledge and zest to ensure results.

It was claimed that too often the coordinator lacked knowledge and appreciation of the work that the student would be called upon to do on the job. In fact, one personnel director indicated that many programs were so ineffective that she did not feel it significant to include on an application blank the notation that the applicant had participated in a work experience program. She said that job success depended largely upon one's ability to "get along" rather than upon specific skills learned in school, and that many work experience programs were not helping students develop this ability. The coordinator must set the tempo for the attitudes to be developed on the job, and employers felt that it was his responsibility to be an active troubleshooter in keeping friction between the student and the employer at a minimum.

It is often the student with the least capacity and motivation, the one who creates the most negative reaction when seeking employment, who most needs the benefits of the program. It is the responsibility of the school coordinator to develop a rapport with his local business community to create a willingness to accept students who can profit from a work experience program. He should zealously promote the success of his students.

It sometimes happens that a community is not large enough to support a work experience program. The recommendation to use the services of the office of the county superintendent of schools was offered. With the recent surge of federal activity in providing funds, work experience programs are now fiscally feasible for all sizes of school districts. A sufficient body of evidence indicates that the business community is ready to cooperate, and there is a large segment of the school population for whom this type of program meets a need. All should learn what the school district can do to implement a work experience program. Local programs will gain by contacting the State Department of Education, particularly the Vocational Education Section, which stands ready to offer information and assistance.

DISCUSSION SECTION SEVEN

Vocational Education and the Socioeconomically Handicapped

MEMBERS OF THIS SECTION discussed work opportunities and the kinds of specialized education and training suitable and essential for those persons who have socioeconomic, educational, or other handicaps. The basic assumptions of the panelists were that all persons should have an opportunity for education and training to prepare for work commensurate with their abilities.

CHAIRMAN: Joseph C. Bellenger, Director of Vocational Education, San Jose Unified School District and San Jose Junior College District

PANELISTS: Allen Cook, Superintendent, Deuel Vocational Institute, Department of Corrections, Tracy; Leo R. Lopez, Consultant, Compensatory Education, State Department of Education, Sacramento; Robert R. Wheeler, Director of Special Urban Educational Services, Oakland Unified School District

RECORDERS: Fernando Penalosa, Jewel M. Riddle

Inadequacies of Traditional Education

Education of a purely academic nature does not prepare some individuals, particularly the socioeconomically handicapped, for useful, economically productive places in society. Many such young people, insufficiently motivated by the traditional academic approach, become dropouts and swell the ranks of the unemployed or are placed in correctional institutions. Allen Cook, Superintendent of the Deuel Vocational Institute, pointed out that many students are bored with their academic subjects, do poorly, and are dismissed from school. When these boys and girls get into trouble and are committed to correctional institutions, their home community absolves itself of further responsibility despite the fact that 98 percent of the inmates eventually return to the same community. These young people regard themselves as failures, and others regard them likewise. They are of average intelligence, but manifest a dislike for academic education. At institutions like Deuel, they are given the opportunity to learn a useful trade.

Had they received this type of vocational education in the first place, these youngsters might never have had difficulty with the law. Rather than being burdens on the taxpayers, they could have become useful taxpaying citizens. Because of the policies of some school districts, the federal government and state governments have set up expensive organizations to do the job that the schools should have done.

On the question of whether vocational education for students who are not culturally deprived should be the same as for those who are, it was indicated that wrongs already done to the deprived should be righted. In addition, the disadvantaged groups should be convinced that schooling is valuable; and vocational and nonvocational education should work hand in hand, not separately. The student must be able to apply knowledge immediately, not when he gets to college, if he ever does.

Dignity of Work

Mr. Cook emphasized that young people should be taught the dignity of work. This nation became great through work, not idleness. Scientists and engineers may devise beautiful blueprints for spacecraft, but nothing flies without the work of the man on the bench.

Mr. Lopez stressed the importance of children having, as a model, a father who goes to work each morning. In a large number of the socioeconomically handicapped homes, the father is either absent or unemployed. It is important to take culturally deprived elementary school children on study trips to see adults of their own ethnic background working in various trades and white-collar jobs.

Mr. Wheeler said that it is wrong to consider vocational education as a kind of second-rate education-training which is below academic education in value and prestige. Many skilled trades—that of machinist, for example—require as high a degree of specialized reading and mathematical skills as do some white-collar occupations. Therefore, vocational education should be recognized as the equal, if not the superior, of academic education, and the dignity and importance of manual skills should be underscored. The learning of the requisite skills and attitudes should begin even before age five.

Valuable Human Resources

Mr. Bellenger theorized that history has largely been the story of socioeconomically depressed people in various societies who started revolutions, initiated invasions, or brought about other changes. Society is now seriously taking upon itself the problems of helping these long-neglected people, because it realizes that these people are not contributing their full potential to society. Vocational education offers society the means for helping these people become productive.

Mr. Wheeler said that education ought to serve national purposes and contribute to the national growth and progress. Our citizens must develop skills which are salable on the labor market. Yet, one-third of our youth live in circumstances of poverty and present serious educational problems. About half will not finish high school. About one million young people between the ages of sixteen and twenty-four are neither in school nor working. Some are high school graduates, and some have even had some college training, but all are unemployable because of the purely academic training they have received.

Mr. Lopez affirmed that education cannot do the whole job by itself. Other sectors of national life, such as industry, should be expected to cooperate.

Mr. Cook quoted Secretary of Labor W. Willard Wirtz: "Every undereducated, undertrained youth from a poverty background entering our work force today will cost us approximately $30,000 in various kinds of welfare payments in the course of his lifetime. Either we help the youth or we support the adult."

Mr. Cook pointed out that through welfare and relief we pay people to be idle. He suggested that the nation could help itself by helping youth through paying the way for these young people to get vocational education training. "If we pay people to be idle, why can't we pay them to go to school?"

Identification of the Culturally Deprived

Mr. Lopez stressed the fact that the identification of the culturally disadvantaged child is not yet an exact procedure. The fact that he is, for example, an underachiever does not differentiate him from other underachievers if achievement is the only measure. Underachievement may occur for a variety of unrelated reasons, such as emotional disturbance, undetected physical disabilities, lack of native capacity, and cultural deprivation.

The culturally disadvantaged child usually displays at least one of the following traits:

- He tends to lack the social experiences which our present school curriculums assume to be common to all students. His experiences in the society are marked by sharp differences from the "normal" or "regular" pattern assumed by the middle-class oriented school.
- Deprivation in sensory and perceptual experience has retarded his development.
- Deprivation in symbolic experience has both impaired his language functioning and inhibited his conceptual development; e.g., children whose native language and subculture differ from American English and American culture.
- He has motivational orientations which are inappropriate to normal school achievement or success.
- He has acquired values and expectations which tend to generate conflict between himself and the school.

The environmental factors which seem to have the highest correlation with cultural deprivation, as shown by studies throughout the nation, are low economic status, alienated social status, and geographic isolation. This is not to assert absolute causation, for not all poor children, or all Negro children, or even all migrant children are automatically culturally disadvantaged.

The culturally disadvantaged, therefore, can be identified as children who are below average in school achievement and who are economically deprived, or are socially alienated or rejected, or are geographically isolated, or any combination thereof. Possible causes of these environmental factors follow:

- Economically deprived because the breadwinner is a nonproducer because of disability, age, or technological displacement; the breadwinner provides

only a marginal economic existence; or the breadwinner is absent.

- Socially unintegrated because they belong to an unintegrated racial group; or a subcultural group which does not speak English and/or is culturally different.
- Geographically removed because they live in areas removed from adequate educational opportunities; or they live mostly or totally migratory or transient existence.

Importance of Understanding the Deprived Child

Teachers in particular should make every effort to understand the economically and culturally disadvantaged child and his background. Otherwise, no type of education will benefit the child appreciably, for he has not had the "normal" experiences assumed by the school. His motivational orientations and his symbolic experiences have been different. Teachers fail with these young people because they no not understand students from such backgrounds, not because they do not know how to teach their subject.

Mr. Lopez explained how compensatory education programs attempt to compensate for students' lack of appropriate experience. One-shot approaches, such as remedial reading classes, will not solve the problem. Approaches on many fronts are needed. Students must be shown the relationship of learning to life and to practical situations, particularly work situations.

Teachers must be sensitized to the needs and perceptions of the children. They must be alert to detect strengths as well as weaknesses and quick to capitalize on such strengths, especially as they are related to skills required for various kinds of occupations. Children must in turn be alerted to all kinds of vocational opportunities and understand and develop their own strengths in this regard. More effective vocational counseling is necessary at all levels of the school system, so that teachers can know their students better and students can know themselves better.

It was emphasized that in order for compensatory education to be most effective, it should be offered to children when they are very young—around three or four years of age. Even with preschoolers, favorable attitudes toward learning and work can be inculcated.

The panelists agreed that for maximum effectiveness, the planning of vocational education and other programs for the socioeconomically handicapped youth should involve both parents and peer groups.

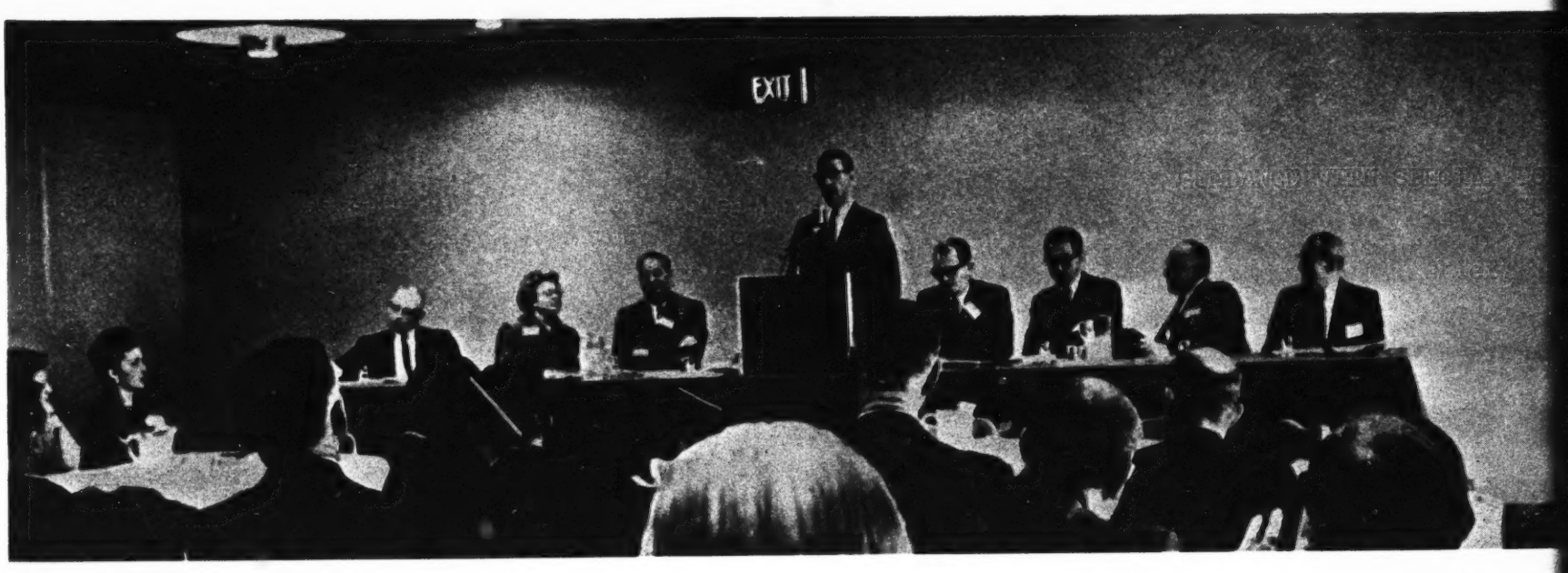
Pilot projects in compensatory education have cost an estimated $150 a pupil, but an estimated annual expenditure of at least $500 per year per pupil over and above normal costs is recommended to achieve minimal results.

The discussion group was cautioned not to refer to special programs at the elementary level as "vocational education." Vocational orientation of elementary school children of disadvantaged background is simply part of the much broader problem of exposing young children to the whole world of work, not just those kinds of work that involve the manipulation of tools. Children should be exposed to the service occupations and professions as well.

Future Considerations

It was pointed out that programs were needed to take care of children without ability as well as those with ability. The discussants in the section had tacitly assumed that all young people had some sort of ability.

The panel discussion did not include any treatment of vocational training or retraining of socioeconomically handicapped or culturally deprived adults. This fact was pointed out in the discussion period, but the problem obviously constituted a broad area that merited separate discussion.



DISCUSSION SECTION EIGHT

Progress and Promise for Educating Adults for Employment

THE ROLE OF VOCATIONAL EDUCATION for adults in our society was emphasized by the panelists in this section. The changing needs of an increasingly automated society make it imperative for us to reach more unemployed and underemployed adults. What kind of education should adults undertake? Education only for specific vocational skills which may soon be outmoded? Or education for a more broadly based spectrum of adaptations? The various methods of strengthening vocational education programs for adults are reported here in the order of presentation.

Mr. Van Scoyk pointed out in his introductory remarks that in 1850 more than one-half of the population of the United States was of school age (twenty years or under); by 1930 less than 40 percent of the population was of school age; and by 1975 it is expected that less than 25 percent of the total population will be of school age. In other words, by 1975, 150 million people of the expected 200 million population will be adults. Two-thirds of these 150 million will have completed high school. This seems to indicate that in order to achieve the Great Society which President Johnson wishes for us in this decade or even in this century, we must develop and maintain a very efficient education program for adults.

Liberal Arts in Vocational Education

Dr. Freedman discussed some of the socioeconomic problems arising in American communities as a result of automation and rapid changes in technology.

A frequent contemporary theme is that automation is about to produce drastic changes in our lives and reduce a large part of the work force. We hear proposals to shorten the work week, to provide guaranteed annual income, and to bring about new attitudes toward work and leisure. Should a drastic reduction of the work force suddenly develop because of automation, we will have an ethical as well as an economic problem. A man has to have a job to feel productive and useful. The concept that a man does not have to work for his living would be new to most Americans, and it would necessitate a change in our values.

In Dr. Freedman's opinion, the statements about the pace and extent of dislocation of the labor force tend to be exaggerated; nonetheless, automation presents a serious problem. Without new approaches to training and education, which continue throughout life, the steady growth of unemployment will be inevitable.

CHAIRMAN: Randolph Van Scoyk, Principal, Fairfax Adult School, Los Angeles

SPEAKERS: Leonard Freedman, Head, Department of Social Science, University Extension, University of California, Los Angeles; Mrs. Marilyn Sullivan, Older Worker Specialist, State Department of Employment, Los Angeles

PANELISTS: Laurence Belanger, Consultant, Pupil Personnel Services, State Department of Education, Sacramento; Leland W. Clark, Director of Adult Education, San Jose Unified School District; E. D. Goldman, Assistant Superintendent, Adult and Vocational Education, San Francisco City Unified School District; Jack Kadushin, Training Supervisor, Lockheed-California Company, Burbank; Harvey B. Rhodes, Dean, Division of Adult Education, Modesto Junior College

RECORDERS: Michael Slama, Samuel I. Bellman

As a new approach to education, Dr. Freedman suggested that we include significant components of the liberal arts at all levels. He gave three reasons for including "general education" as one element in all future education:

- From the vocational point of view, general education develops flexible attitudes in people and also improves their communication skills.
- General education helps people as citizens to understand how the world is being changed by automation and other forces.
- General education adds to the development of the individual, and it teaches him how to use his increased leisure time creatively.

To many people, leisure is a vacuum, although it can provide numerous opportunities for the appreciation and enjoyment of art, music, books, and the world of the future.

In conclusion, Dr. Freedman stated that there are too many unmet needs, both here and abroad, for us to accept growing unemployment as a permanent feature of modern life. There is a great need for the products of our American economy in our country and throughout the world. There is a great need for more recreational facilities and highways, and there is much to be done to improve our educational system. It would be shameful to immobilize our people in the face of all of these challenges. Even 5 percent unemployed is too much!

Occupational Training Centers for Adults

Mr. Clark discussed the operation of some of the occupational training programs for adults and how they are contributing to the training and retraining of California's work force.

According to Mr. Clark, adult education enrollments in vocational training courses constitute 31 percent of all enrollments in California's programs for adults. The programs are flexible enough for schools to be able to organize training courses ranging in duration from one week to 36 weeks. As examples of programs, he mentioned training for salesmen, medical assistants, offset press operators, service station attendants, journeyman electricians, and data processing machine operators. A partial listing of training opportunities can be found in the *Directory of Occupation-Centered Curriculums in California Junior Colleges and Schools for Adults*, a publication of the California State Department of Education.

The education program for adults in California is well equipped, in Mr. Clark's opinion, to offer courses in basic literacy and the courses a person would need to qualify for a high school diploma. After adults develop essential learning skills in these courses, they can master vocational knowledge and qualify for gainful employment.

Advisory and sponsoring groups, including labor unions and management, help to make education programs for adults practical and successful. They help adult education administrators establish goals and objectives for particular programs. These groups also help in developing course content and methods of teaching, and they recommend technically qualified candidates for instructors. The vocational training staff should act as counselors in guiding the right person into the right program. This is important, for failure in the classroom is of smaller consequence than failure on the job. Education programs for adults will need

continuous adaptation to meet successfully the many challenges of our changing times.

Technology in the Employment Market

Mrs. Sullivan discussed some of the occupations that will continue to provide employment opportunities and some of the occupations that will be created as a result of technological change.

Constant changes in the job structure require a reexamination of our approach in preparing people for work. It takes 20 years or more for a child to grow into a mature and competent member of the labor force. However, the person's vocational preparation does not end when he becomes 20 years of age. The Director of the U.S. Employment Service, Louis Levine, has said that people will be changing *careers*—not just jobs—three or four times in a lifetime. Therefore, an effective education program for adults is, and will continue to be, needed most urgently.

Probably the most significant change in occupational structure has been the shift toward white-collar jobs. In 1910 white-collar workers constituted 22 percent of the labor force; by 1961 they made up 42 percent. The number of farm owners and manual laborers has declined dramatically.

A new classification, "bleached blue-collar" jobs, is growing rapidly. An example of this is the relatively new job of "console operator." This person is replacing many machine operators and processing laborers.

Today in manufacturing, mining, and construction, it is machines that count, not muscles. In offices, computer technology has curtailed the need for people doing routine tasks; among those displaced by machines are file, sorting, and recording clerks, and certain office-machine operators.

The fastest-growing occupational groups in the last decade are the professional, technical, and semitechnical workers—those who are the most highly trained in the white-collar group. Much of this increase has been taking place in the scientific and engineering professions, reflecting rapid advances in electronics, jet aircraft, guided missiles, chemicals, communications, and atomic energy.

The atomic energy industry provides an illustration of the emergence of new scientific and technical

occupations. According to a study prepared by the Atomic Energy Commission in 1963 for the Bureau of Labor Statistics, the continuing progress in the development of atomic energy has generated a new industrial sector that in 1963 employed about 135,700 workers in more than 500 establishments.

Among the white-collar occupations, the sales group is expected to increase rapidly. Vocational training can play a major role in training people who are needed to sell, to a rapidly growing population, abundant new products and services produced by our expanded economy. Currently, there is a shortage in the following occupational categories: aeronautical engineer, canvasser and solicitor, chemical engineer, civil engineer, dietician, electronic and resistance spot welder, engine lathe operator, hydrotel operator, licensed vocational nurse, live-in housekeeper, live-in maid, machinist, mathematician, medical technician, module assembler, nurse, physician, policeman, programmer, social and welfare worker, systems analyst, teacher, and upholsterer.

There is also a need for more skilled craftsmen, such as carpenters, electricians, machinists, mechanics, molders, plumbers, repairmen, tool and die workers, vending machine routemen, and other skilled workers.

There are other jobs that have not been absorbed by automation and that have not been discussed here. The *Dictionary of Occupational Titles,* published by the U.S. Employment Service, provides the latest information on all jobs and trends in employment. A concerted effort on the part of all concerned and a willingness to apply energy, imagination, and research to the problems of modern technology will overcome the threat of unemployment of a large segment of the adult population.

School and Community Involvement for Programs for Adults

Treating the symposium topic, "Progress and Promise for Educating Adults for Employment," Mr. Goldman dealt with this question: "How are the school and community involved in the establishment, operation, and evaluation of the occupational programs for adults?"

First, he pointed out that we must consider why the community must be involved with the schools. Four reasons for such involvement were presented:

- Occupational training is necessarily a practical program.
- The schools cannot work in a vacuum.
- For practical ends to be achieved, there must be active community involvement and support.
- Financial aid is needed from the community as well as from the school district.

In order to carry out occupational programs for adults, Mr. Goldman continued, the schools must become actively involved with such organizations and agencies as these: (1) the federal government (for example, the Department of Health, Education, and Welfare and the Department of Labor); (2) state government (for example, the State Department of Education and the State Department of Employment); (3) labor; (4) management; (5) city government, including local antipoverty commissions; (6) foundations (such as Ford, Mott, Rosenberg); (7) universities; and (8) newspapers, radio, and television.

The next question that arises, according to Mr. Goldman, is: "How do schools get involved with these community agencies?" This involvement requires a sufficient school staff and a good working relationship with the relevant agencies and organizations. Not only is it necessary for schools to work together with these other groups, but adequate physical facilities must also be obtained. Often other facilities besides those provided by the schools must be utilized, such as rehabilitation workshops, senior centers, industrial sites, and public facilities. Advisory committees are also essential.

In terms of function, the school is responsible for curriculum and for obtaining teachers, and the State Department of Education is responsible for giving advice and counsel through its regional supervisors.

Although evaluation of the occupational programs for adults presented through the schools is always somewhat difficult, one of the most practical measurements of a program's success is its number of job placements and the length of time individuals remain on the job.

Rural Areas and Occupational Programs for Adults

Mr. Rhodes discussed this question: "How are the school and community involved in the establishment, operation, and evaluation of occupational training programs for adults in rural areas?" Pointing up the great need for occupational education for adults, Mr. Rhodes quoted President Johnson's statement that 20 percent—four times the national average—of America's eighteen to twenty-four-year olds with only an eighth grade education are unemployed, while employers are hunting for trained men and women. Jobs held by high school graduates increased by 40 percent in the last ten years. Jobs for those with less schooling decreased by nearly 10 percent.

The problems confronting the undereducated and unemployed citizens of rural areas (which are primarily dependent upon agriculture and related businesses) are as deep, as frustrating, and as permanent as are the economic and social stresses found in the

urban communities. Automated and mechanical equipment is rapidly replacing much of the manual labor which has been necessary to agriculture throughout its history. Small farmers each year are finding it more difficult to operate profitably without extensive mechanical equipment.

In the rural areas, welfare and unemployment costs have skyrocketed, and a greater percent of the labor force is unemployed for longer periods each year. Increased community services, such as fire and police protection, and the high incidence of fire in inferior housing also add to the general community cost—so do the social problems of family disintegration, delinquency, and crime.

Each year a greater percent of the labor force is unemployed. The average unemployed person is thirty years old, and because of his lack of education and skills probably will remain unemployed the rest of his "productive" life. The average yearly unemployment payment, not including welfare benefits, is over $1,000 per family head. This means that society will spend over $30,000 on each such unemployed person in the next 30 years; then Social Security takes over. Multiply this by the number of hard-core unemployed, and the total is staggering. When such figures are properly presented to community leaders, they immediately develop an interest in solving employment problems.

Because they have a reasonably compact administration, rural areas, if given competent leadership, can often muster their resources more readily and more effectively than can sprawling urban complexes. The key question then appears to be: "Who can or who should provide the leadership to accelerate the necessary community effort?" Leadership, in Mr. Rhodes's opinion, should be the responsibility of the adult education administration of the particular area.

The first act should be to develop a community advisory committee, or what the Economic Opportunity Act calls a "community action committee." This group should include all segments of the community power structure. Data required from community agencies and from the 1960 census pertaining to the total community and its problems should be presented to the committee.

Rural communities find that with cooperative action on the part of the total community, they have the manpower, the knowledge, and the desire to solve their social and economic problems realistically and effectively. However, they need financial assistance from state and federal agencies, because their own resources are insufficient to meet the demands placed upon them.

Six Programs for Adults

Mr. Kadushin, speaking on the topic, "Adult Occupational Training Programs," said that the changing needs for vocational training require change in depth as well as change in kind. The level of training of the entire work force needs to be raised for two reasons: (1) to meet the increasing technical complexity of employment; and (2) in order to make room for the people being developed as our work force (for example, in the "war on poverty" program), those at lower-level jobs, such as the slow learners, will need to be upgraded. For example, there are gas station attendants who have technical abilities but who have not been encouraged or given sufficient instruction. Such people must be upgraded to make room for those who can do only a gas-pump-attendant type of job. In a person-oriented vocational program, what can we do to make such persons employable?

Mr. Kadushin described a pattern of six programs (four of them occupation-oriented, and two, person-oriented) of occupational training for adults. The two person-oriented programs were the "equal opportunity" type and the "war on poverty" type. The former is established by community organizations and government agencies at schools for adults and community colleges, and it is funded by government agencies, with instruction administered through the schools. The antipoverty type of program is established by government agencies, using contractual arrangements with schools and industry, and it is operated by industrial organizations and/or schools under contract to government agencies operating training centers.

The first two programs in the occupation-oriented group are of the "vestibule" or preemployment training type. Both programs are established by high schools and community colleges and are administered

through the schools. The third program in this group is the "changing job requirements—retraining" type, which is established by industrial organizations and/or government-sponsored (MDTA) school programs. The fourth is the "changing job requirements—related or supplementary training" type, which is established by industrial organizations and adult evening or extension schools. Both the third and fourth types of occupation-oriented programs are operated by industry training specialists and/or school administrators.

Frequently Overlooked Nature of the Adult

Dr. Belanger, speaking on the topic, "Guidance Services for Adults," described ways in which adults differ from children in order to point up the fact that any program of instruction designed to prepare adults for employment must be accompanied by appropriate guidance services for adults if the program is to accomplish its purposes.

Stressing the importance of *process* and *product* in education, he pointed out that criticism of public education is based on dissatisfaction with the educational product. Can education assess the actual job skills of individuals so that both they and potential employers can clearly see the dimensions of the products of learning which the individual offers? Can there be a clear definition of the educational product which our educational process is designed to produce? The educational product can be assessed only in terms of the individual's job skills, he said. Education has to be individualized, or personalized, if its product is to be clearly discernible.

In guidance services for adults who are being educated for employment, the essential task is to help the individual determine the kind of educational product he should be. Guidance can be provided only in full partnership with the counselee. He must make his own decisions and face any consequences of such decision making. He must make his own commitments to the particular educational process which he clearly believes will help him become the product he desires to be. It is his expectation of himself as a product that allows him to become open to the process. Guidance services for adults in training for employment should help these adults to formulate individual educational plans, help them to test these plans, and help them to accomplish their goals.

Dr. Belanger suggested that the time is rapidly approaching when the state of California will create the "comprehensive school district"—one which, with other community agencies and colleges, will be equally concerned with nursery school, elementary school, high school, and adult education, utilizing every available setting for education and remaining open around the clock all year long. Each area would have a community guidance center to assist people of all ages in their pursuit of job skills or the good life—a place where people could freely discuss their hopes and their dreams, a place which could refer them to an educational process able to help them become the product of America which they aspire to be.

This section developed the view that there is a great and urgent need for extending vocational education programs for adults. The changing needs of an increasingly automated society make it imperative for us to reach as many as possible of the unemployed and the underemployed adults who need to reformulate their occupational programs. Much is already being done through the efforts of individual agencies in urban and rural areas, as well as through the efforts of these agencies working together.

Among the many continuing problems, however, is the problem of educating or reeducating the adult lacking skills and ambition, the person who does not feel himself capable of undertaking a serious vocational education program. But through the continuing efforts of federal, state, and local agencies, even this problem may some day be overcome.

What kind of education should adults have? They should be provided both occupational training for immediate employment and a liberal arts education to help them adapt to the changes resulting from new technology. Dr. Freedman believes that liberal arts will have to play a greater role in the vocational education process, since the liberal arts have the potentiality of making man more flexible and better able to cope with ever changing job requirements, as well as with the need for better use of the leisure time which is increasingly available to more workers at all levels.

Several panel members said that in the past few years there have been too many legislative acts and too many new programs in the area of vocational education. One panel speaker expressed the wish for time to become better organized, to implement the existing laws, and to do all of these things right! The selection of the right people and the right kinds of programs, he said, constitute the most important current aspect of adult vocational education.

DISCUSSION SECTION NINE

Counseling and Guidance for Occupational Training

In setting the stage for the panel, Dr. Smallenburg identified the following as discussion topics:

- How Youth Determines Vocational Choices
- What Assistance Youth Needs in Making Plans for Gainful Employment
- Identification of the Contributions of School, Industry, Business, and Parents in Vocational Guidance for Youth
- Exploration of New Ways of Working Cooperatively

As additional stimulation for discussion, he posed three fundamental questions: (1) What are some of the causes of occupational maladjustment? (2) What are some desirable characteristics of a career guidance program? (3) What are some of the organizational patterns for presenting career information?

In answer to the first question, Dr. Smallenburg pointed out that 41 percent of adult workers surveyed in a study indicated dissatisfaction with their careers. The problems they cited were (1) discrimination against minority groups in education and employment; (2) lack of job experience among younger workers; (3) age (more of the older than the younger workers were dissatisfied); (4) prevalence of women in the labor force; (5) lack of opportunities for handicapped workers; and (6) aspirations of workers (80 percent aspired to higher-level jobs, but only 20 percent achieved them, indicating a need for realistic goals).

Chairman: Harry Smallenburg, Director, Division of Research and Guidance, Office of the Los Angeles County Superintendent of Schools

Panelists: Muriel I. Sheldon, Supervisor, Secondary Guidance and Counseling, Los Angeles Unified School District; Mrs. Ruth Miller, Educational Director, Amalgamated Clothing Workers of America, Southern California Joint Board, Los Angeles; Karl R. Kunze, Manager, Training and Management, Personnel Department, Lockheed Aircraft Corporation, Burbank; Henry A. Talbert, Western Regional Director, National Urban League, Los Angeles

Recorders: Milton R. White, Jerry Dimitman

Dr. Smallenburg gave the following desirable characteristics of a career guidance program and pointers for counselors:

- *Involvement of total staff and community resources in planning and presenting a program early in the high school years.* Solicit aid from classroom teachers and from the community. Consult with parents. Allow students to assume responsibility for their own plans.
- *Knowledge of the labor force.* Understand systems for classifying occupations. Provide reliable information on labor market needs and trends. Understand the experience and role of women in the labor force and the relationship of employment to marriage, home life, parenthood, and other factors.
- *Development of tentative educational and career plans based on job information and the student's self-understanding.* Teach job-getting and job-holding techniques. Develop in students attitudes consistent with job satisfaction and wholesome employer-employee relationships.
- *Preparation of an educational plan.* Develop long-range post-high school training plans for achieving tentative career goals. Include opportunities provided by colleges, military services, trade schools, and industrial training programs.
- *Administration and organization.* Provide time and personnel for an independent and systematic program of individual and group learning experiences. Provide inservice training for those who are to conduct the program. Provide an adequate library of occupational materials and visual aids. Offer placement services for students.

Four major points were assigned to each panelist for discussion within the context of his own organization:

1. What does youth need to make vocational choices?

2. What assistance does your organization give in counseling youth?

3. What plans does your organization have for the future development of counseling?

4. How can we all work together more effectively in helping youth to reach their full potential?

School District

Miss Sheldon, of the Los Angeles Unified School District, outlined four basic steps toward a wise occupational choice: (1) self-analysis; (2) information about the labor market trends and required training; (3) application of this knowledge in tentative vocational choices; and (4) placement and follow-up. She termed this a developmental process.

Pointing to progress in the Los Angeles program, Miss Sheldon discussed the group guidance in the eighth, ninth, and tenth grades. She indicated that job placement and student follow-up are separated. She also noted that after the tenth grade, all vocational guidance is conducted on an individual basis.

More individual counseling is needed, she indicated, and pointed to the austere budget as the limiting factor in providing more professional counseling time. Streamlined administrative procedures and counselors with broader skills are needed to reduce red tape and paperwork. Group vocational counseling, with peers participating, is a desirable improvement to help youth develop realistic goals. Work with parents in groups was also mentioned as a possible improvement. Although there is need to work more comprehensively with groups in business, government, and the colleges, Miss Sheldon noted that Los Angeles counselors already have difficulty in covering the multitude of meetings, conferences, luncheons, and dinners offered by various groups endeavoring to offer specific vocational data.

Miss Sheldon stressed the need for more skilled counselors and the fact that more counselors are becoming available. She agreed that there is a need for people to feel that "labor is good."

Industry

Mr. Kunze pointed to the changing nature of vocational choice from the day when youth made the

selection once and remained with it to today's pattern of making several decisions before making a final selection. He indicated that vocational choice has become part of a lifelong process of changing vocational needs, changing levels of aspiration, and changing careers.

He pointed out that lack of knowledge about careers is a major problem for young people faced with vocational decisions. During school the young person acquires academic knowledge and "experiential" knowledge, e.g., shop classes, applied courses, typing classes. Mr. Kunze pointed out serious problems in that there is less opportunity today for youth to acquire experiential knowledge, and parents and teachers are having more difficulty in keeping up to date in all fields because of the rapidly changing technology of society.

Although the counselor of today has better knowledge and information, inadequate national distribution of labor information is hampering his effectiveness.

Commenting upon a national committee assignment he has undertaken for the government, Mr. Kunze cited supply and demand figures for counselors. At present, there are 50,000 counselors in the nation; another 35,000 will be needed in the next two years, and training requirements have increased. Future needs are for utilization of present work forces, more training of existing work forces, studies of an "occupational mix" for the future, and related studies of reduction of certain types of jobs.

Reviewing his company's present contribution in the area of counseling, Mr. Kunze pointed to the employment interview and related application, testing, and knowledge of the job market as phases of assistance to youth. Industrial placement counselors are trained personnel representatives or interviewers, he stated. Industrial counselors tend to work more closely with those who have been employed for some time than with those hired recently.

With respect to cooperative efforts, Mr. Kunze said that current strengthening of academic education is beneficial and reflects requirements of today's jobs, but academic courses must not be taught at the expense of vocational training—balance is needed.

Urban League

Reviewing Urban League attention to counseling, Mr. Talbert pointed out that his organization has been contributing to this area for 54 years.

Mr. Talbert cited the following statistics from the U.S. Census:

- Of the white population, 70 percent complete high school, but only 40 percent of the nonwhite population complete high school.
- Of the total population, 11 percent are Negro; 3.5 percent of all professional workers are Negro.
- Negroes with a college degree earn less, on the average, than whites with only a high school education.

The League feels that the need for cooperation with racial minorities is most evident. Mr. Talbert cautioned against mistaking the current social revolution as simply the handiwork of a few disgruntled, radical, irresponsible persons. "Beneath and around all of this is a sizable segment of the nonwhite community that is concerned with what happens in the future."

Mr. Talbert also referred to a statement by the president of the U.S. Chamber of Commerce that 70 percent of the youngsters who graduate from high school each year plan to go directly into the work force. Many of them would like to take some form of advanced vocational or technical training, but they find themselves blocked by adult disapproval. Some are dissuaded by ill-informed guidance counselors who are out of touch with the working world. Some of the college-bound youth would also prefer vocational training, but all too often their parents insist upon a college degree at any price. "We can't do much about parents," Mr. Talbert said, "but we certainly can improve the quality of our school counselors by exposing them more effectively to the opportunities that exist for young men and women who are willing and able to develop marketable skills."

The Urban League position is that youth need counselors better able to recognize problems and to offer more realistic counseling—counselors who are qualified, who are more committed, who provide more minority race role models, and who represent a better balance between various kinds of occupational training. Specific League programs, current and projected, are:

- "Tomorrow's Scientist Technicians," in which young people are exposed to a variety of work situations
- Offers of counselor training by Urban League executives at the beginning of the school year
- A "skills bank," matching persons to openings throughout the nation
- Cooperation with the Economic Opportunities Act programs providing more help for the nonwhite population
- Mobile counseling units, which take counselors to youth
- Family motivation programs

As his concluding statement, Mr. Talbert announced a newly planned Urban League conference to be held

in Tucson, Arizona. Persons who have lived in poverty will be brought to the conference to discuss the problems of the poor with educators and sociologists.

Labor

Organized labor has a distinct interest in the talents, interests, and aptitudes of students making vocational choices, Mrs. Miller said. She pointed out that labor is reaching students through parents who are members of the AFL-CIO groups.

Mrs. Miller indicated that counseling is a tripartite problem: (1) the student's talents, interests, and aptitudes need to be identified, along with his general and specific motivation; (2) a great improvement is needed in the flow of up-to-date information on job opportunities; and (3) counselors need to help youth combine their talents, interests, and aptitudes within the scope of the "realistic" world of work.

Mrs. Miller suggested that counseling should begin as early as possible—not later than the seventh grade—and that industrial arts overview courses should be given in junior high school. These courses should encompass five major areas of four weeks each for girls as well as boys.

The majority of counselors are still academically oriented, she stated, and a profound change is needed in attitudes toward vocational education. She did not mean simply that vocational education should have more status, but that teachers and vocational counselors should realize that they are preparing young people for a real world of available employment and that vocational education is highly significant.

Current efforts being made by labor include sponsoring conferences on community problems, including public education; cooperating with community groups such as the Youth Opportunities Board; and participating in apprenticeship programs.

Concluding, Mrs. Miller emphasized the need for early counseling, more and better counselors, better industry-government-labor cooperation, and an overall greater respect for work.

Discussion

Speaking of California's master plan for higher education, Mrs. Miller stated that much the same type of plan should be developed for vocational education on a statewide basis, with a communication system for transmitting vocational information for students.

The problem of bringing together the total community to support increased programs of counseling was highlighted by discussion of increased requirements for counselors and increased specialization. A committee in Washington, headed by C. Gilbert Wrenn, authority on student personnel matters, was quoted to the effect that the situation will get worse before it gets better. Progress in group counseling was pointed to as one improved area.

The opinion was expressed that the public, labor, management, and educational administrators need to be brought together in their thinking toward financing improved counseling programs. Noted also were recent comments in the California Legislature regarding need for more attention to teaching and less emphasis on administration and counseling and peripheral educational services.

Margaret Crawford of Los Angeles Trade Tech reported that some 6,000 people a year are tested in that school, which employs only three counselors and one assistant dean of counseling. The staff is augmented by instructor-counselors, well qualified to counsel in their field, who confer with the students after test score evaluations. The testing program includes aptitude tests for all of the 55 trades taught.

The need for counseling programs directed toward other than college-bound students was cited, along with the need for more positive feelings among counselors about vocations. Because of their academic backgrounds, counselors are sometimes uncomfortable when they get involved with counseling in vocations. Reeducation of parents regarding vocations—since almost all parents want their children to go to college—was stressed, with parental pressure cited as the primary factor affecting a youth's decisions about careers until he leaves high school.

In the Los Angeles Unified School District, the use of parents on panels counseling disadvantaged youth has been highly beneficial. The Parent-Teacher Association was recommended as a truly helpful group, not to be overlooked in involving parents in counseling.

Changes in rigid academic requirements were urged to relieve pressure upon vocational programs, while the need for additional time in vocational classes and for scheduling two or three periods for shop courses was also noted, thus indicating the scheduling conflicts that arise between academic and vocational programs.

Vocational education's lack of prestige was pinpointed by a statement that "we need to dignify all work and dignify all phases of the curriculum—not just with lip service, but we need to really mean it."

Panel Summary

Dr. Smallenburg summarized by reviewing seven areas of agreement:

1. There is concern for improving counseling and guidance on the part of schools.

2. There is action—the various groups are taking steps to assist youth.

3. There is vision—the groups represented are looking ahead to the future.

4. There is a desire to cooperate.

5. There is agreement on the importance of the counselor.

6. There is a shift in emphasis noted toward vocations.

7. Problems still exist—financial, administrative and intraprofessional.

DISCUSSION SECTION TEN

The Responsibility of the Department of Education for Vocational Education

THE THEME FOR THIS SESSION developed from three questions:

- What kind of organization of the State Department of Education would be best?
- What kind of leadership should the Department offer?
- What is the role of the Department in maintaining educational standards?

The discussion was guided by these questions, and this report is structured accordingly. (In this report, "Department" is the term used to identify the Vocational Education Section of the California State Department of Education.)

CHAIRMAN: C. W. Patrick, Assistant Superintendent, Higher and Adult Education, San Diego Unified School District

PANELISTS: Armin Henderson, Secretary-Treasurer, District Council of Carpenters, San Diego; Robert E. Kelly, Associate Superintendent, Division of Secondary Education, Los Angeles Unified School District; William J. McCann, Executive Secretary, Southern California Industry Education Council; Robert Swensen, President, Cabrillo College, and President, California Junior College Association

RECORDERS: Ralph Ritchie, Rod Garrity

Organization

The dominant topic was communication. New communication practices must be instituted. The Department should serve as an information center, actively communicating with all agencies involved in vocational education. Information from these sources should be readily available to interested persons or schools. Of primary importance is liaison with interested groups outside vocational education. Simple, flexible methods of reporting to the Department should be devised.

The Department should have available a number of specialists for consultation. These specialists should be specifically acquainted with the problems of a given level (junior high, high school, junior college, or adult) of vocational education and also identified with

a specific field. They should devise evaluation procedures which could be used by schools to determine the effectiveness of their vocational programs. The evaluation process should be administered by the schools, but specialists should be available for consultation upon request.

Research in the Department should be directed toward investigations on a statewide or areawide basis. Efforts should emphasize industrial and occupational trends, identification of geographic and technical areas, identification of entry occupations, and problems which school districts cannot handle unaided.

Leadership

Liaison with industry and unions should be a primary activity of the Department. The vital importance of communications was given the most emphasis by both panel members and the audience.

The Department should serve as mediator and give direction in vocational education problems which involve schools, labor, industry, and other groups. Articulation and coordination, especially between high school and junior college vocational programs, should originate with the Department.

The Department should take active leadership in the improvement of vocational teacher training. Revision of teacher training practices is necessary. Sources for teachers should be identified, and new techniques for selecting, upgrading, and updating vocational teachers should be instituted. Teaching internship programs should be expanded and improved.

It was suggested that the existence of a master plan for vocational education would assist management and labor to coordinate their programs with the Department of Education. Another suggestion made was that the Department should not enter into political activity.

Standards

Performance, employment, and training standards should be in agreement. The establishment of standards for terminology and performance should be the responsibility of the Department.

The problem of the many agencies operating in vocational education came up in this discussion of standards and qualifications. Without coordination, any given set of performance standards may not meet the requirements of industry. As an illustration, the typing performance specifications of the State Department of Employment were claimed to be inadequate for industry. It was felt that the Department should be the source and coordinator of final standards.

Concern was also expressed over the existence of dual standards for academic and vocational instruction. No decisions or recommendations evolved from this discussion.

Other Recommendations

The use of project teams may be the solution to the problem of rapid change. Area "skill centers" should be formed. Each junior college should be a top-quality vocational school. Coordinated efforts would avoid costly, useless duplications among the junior colleges.

DISCUSSION SECTION ELEVEN

Financing Vocational Education

THE FINANCIAL ASPECTS of vocational education are both complex and crucial—complex because of the variety of federal, state, and local fundings; crucial because adequate financing is basic to the quality and availability of vocational education programs. This section was concerned with the manner in which vocational education may be accorded the financial support essential to its improvement and future development.

Providing good vocational education is not only a state and local problem; it is also a national problem. Financing vocational education is not the responsibility of any single segment of government—local, state, or federal—but of all levels of government, plus business and industry. The cost of the present vocational education program should be examined in view of its socioeconomic aspects, present support, real and/or hidden costs, and possible sources of adequate financial support. The panelists reviewing these areas were well-known southern California educators who have been associated with vocational education for many years.

CHAIRMAN: J. Lyman Goldsmith, Coordinator, Programs for Vocational Education, Los Angeles Unified School District

PANELISTS: Claude W. Fawcett, Associate Professor of Education, Educational Placement Office, University of California, Los Angeles; George E. McMullen, Administrative Coordinator, Budget Division, Los Angeles Unified School District; Norman R. Stanger, Director, Vocational Education, Office of the Orange County Superintendent of Schools, Santa Ana; Joseph H. Stephenson, Director of Vocational Education, San Diego Junior Colleges

RECORDERS: Richard T. Nelson, Milton French, William Armstrong

Sociological Aspects of the Costs

"In the field of vocational education, we are in grave danger of being inundated by technological changes."

A review of the amount of energy expended for goods and services by man, animals, and machines from 1800 to 1900 shows that the energy expended by man was reduced 38 percent, the energy expended by animals was reduced 35 percent, and the energy expended by machines was increased 533 percent. The average work week in 1800 was 70 hours, and the projected work week for 1970 is 37.5 hours. The value of average daily production has changed from 27 cents in 1800 to a projected $5.02 in 1970 (both figures based on 1947 dollars). These figures should clearly indicate that man's productive skills have been able to keep up with the growth of mechanization. How much would the forecast, or the present, value of average daily production be if man could have immediately implemented discoveries and inventions of processes and machines?

Usually seven to 12 years elapse before discoveries are accepted and implemented. This time lag should give prospective displaced workers adequate time to

acquire new skills. However, workers have a natural reluctance to prepare for new jobs until they are out of work. Also, in select areas—usually government or secret industrial areas—the implementation of a new discovery must wait until qualified personnel are trained. It behooves vocational education to establish communication lines in these special areas.

If vocational education can shorten the time lag in implementing discoveries, the economic cost to the gross national product caused by technological advances can be greatly reduced. If the work force had been no better prepared in 1960 than it was in 1950, our national production in 1960 would have been 10 percent less than it actually was.

Advancing technology is changing the composition of the work force in the United States. The large proportion of unskilled laborers is being supplanted by a large proportion of skilled, clerical, and professional workers.

According to a study conducted in San Diego, 80 percent of the unskilled labor group had less than a high school education. The dependents of this group represented 62 percent of the high school dropouts. This study also showed that the average intelligence level of the dropouts was very close to that of the high school graduates. Therefore, Dr. Fawcett believes that dropouts will decrease in number as the skills of their parents are upgraded and parents concomitantly overcome their resistance to change. The person entering the labor market today must expect to have to learn another skill within his lifetime.

The Real Costs of Vocational Education

"If we are going to increase the gross national product . . . we are inching up on a total commitment to education."

Before the community is asked to support program expansion or a new program, time and money must be spent developing the plan for presentation. The California Plan for Vocational Education recognizes that the public wants to know the intent and principles of the various programs. Presentations of proposals are very important in order to get public commitment.

Hidden costs should be included in the school district plan—costs for expansion, program development, and future programs. Other hidden costs for equipment maintenance, spare parts, depreciation, and personnel salaries should also be included. The total vocational education program should be shown, including both the present and the new proposal, so that their impact on future expenditures can be recognized.

Mr. McMullen observed that school financing is moving toward the program budgeting concept to evaluate the cost of education. If the federal government should use funding procedures similar to those used by the Department of Defense, this could work a handicap on school districts.

Another hidden cost to be considered relates to the timing of disbursement once a program is accepted. All of the program money should be allocated immediately to the local level to reduce the time it takes to implement the program.

Financial support for vocational education comes from the school district, with dollar-matching funds coming from the federal government to the state government for distribution and planning. In the past, the Smith-Hughes Act has been the major source of funds for vocational education, and it is still in effect with the Vocational Education Act of 1963. Other laws in the past have not been as liberal as the act of 1963, but they have recognized the need for retraining.

The Vocational Education Act of 1963 is designed to maintain, extend, and improve existing programs and to develop new programs of vocational education. This program requires evaluation to improve quality and to give the taxpayer more for his money.

The latest act which has made available large untapped funds for retraining is the Antipoverty Bill, officially known as the Economic Opportunities Act of 1964. This act has a very broad base, but there has not been enough time to evaluate its effect on vocational education. The wording of the act may be construed to mean that the federal government and private industry could operate a program which parallels the present vocational education program in the community. Such a program is now being attempted in Orange County.

Mr. Stanger stated, "The total education cost is supported 57 percent by local funds, 40 percent by state funds, 2 percent by federal funds, and 1 percent by miscellaneous funds." The local contribution has been increasing, and the state portion has been decreasing. The miscellaneous group includes business, industry, and trust funds.

Vocational educators prefer federal support but not federal control or competition.

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Possible Solutions for Adequate Financing

Mr. Stephenson presented a list of principles or basic rules which, if followed, could solve some of the problems of adequate financial support for vocational education. He emphasized the area of excess costs: "Any method of financing vocational education should provide for legitimate excess costs." The precedent of excess-cost basis already has been established in educational programs for the physically handicapped, mentally retarded, and gifted, and in compensatory education as well.

Excess costs develop in the need for special equipment and supplies, in machine depreciation and obsolescence, and in machine replacement. Some of these costs must be borne if workers are to be trained in specialized mechanical skills.

Mr. Stephenson believes there are adequate funds available for the present vocational education programs if the funds are distributed properly. Proper distribution requires cooperation among all the people associated with vocational education.

Summary

Losses in the gross national product could be greatly reduced by adequate vocational education programs. It is vocational education's responsibility to reduce, and possibly close, the gap between the time technological discoveries are made and the time of their implementation. Communication lines must be set up among industry, potential workers, and vocational educators so that retraining may begin earlier and reduce the time lag.

New money has been appropriated for vocational education to supplement the present vocational programs, but more importantly to expand the present program and to develop new and better occupational preparation. Planning, evaluating, and budgeting of all programs are needed, and the costs of these phases must be recognized as necessary costs. Program proposals should be complete and have some uniformity so that better decisions can be made and also so the proposals will have a greater chance of acceptance. Vocational education must be recognized as an excess-cost program, and it should be presented and compared with other excess-cost programs.

The new money available could imply new controls, so it behooves the local vocational education system to maintain and improve its coverage and quality. There is no reason for the federal government to run a duplicate system in the same community.

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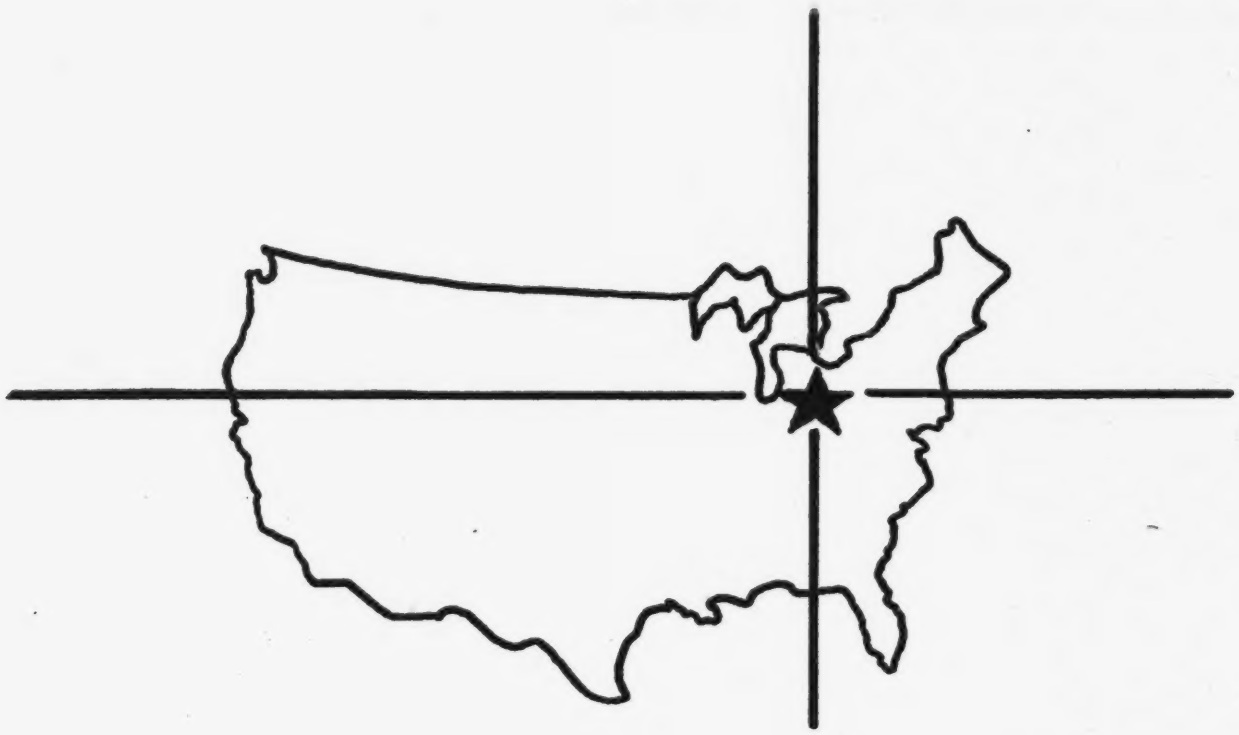
VOCATIONAL EDUCATION LEADERSHIP STUDY NO. 2

Guidance in Vocational Education

Guidelines for Research and Practice

A National Interdisciplinary Seminar



THE CENTER FOR RESEARCH AND LEADERSHIP DEVELOPMENT
IN VOCATIONAL AND TECHNICAL EDUCATION

The Ohio State University
980 Kinnear Road
Columbus, Ohio

00396

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Guidance in Vocational Education

Guidelines for Research and Practice

A Report of a National Interdisciplinary Seminar

January 12-14, 1966

held at

The Ohio State University, Columbus, Ohio

Edited by

Robert E. Campbell, Seminar Chairman

The Center for Vocational and Technical Education

The Seminar was sponsored by The Center for Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio 43212.

Preface

Recent trends in the world of work and in education have placed increased emphasis on the need for effective programs of vocational guidance. In response to this need The Center for Research and Leadership Development in Vocational and Technical Education invited nationally recognized leaders from several disciplines throughout the country to meet together to develop guidelines for initiating and improving such programs.

The over two hundred participants in this interdisciplinary seminar represented forty states and Turkey and included personnel from vocational education, psychology, sociology, labor economics, guidance, rehabilitation, higher education, and research.

The National Vocational Guidance Association held their annual meeting in Columbus concurrent with the seminar.

It is difficult for a report of this type to reflect the true spirit of the meeting. However, observers could not help but be aware of the enthusiasm and willingness of participants to join hands in future cooperative efforts to further improve guidance in vocational and technical education. Undoubtedly, the "ripple" effect of this seminar will be felt throughout the profession for many years. In addition to the immediate benefits accruing to participants and the institutions and organizations they represented, the seminar contributed to identifying and clarifying problems for future investigation and study.

Dr. Robert E. Campbell, Occupational Psychologist at The Center, is to be commended for his excellent work in planning and conducting this seminar. The following persons who contributed to the development of the program merit recognition: Dr. Frank M. Fletcher, Professor of Psychology, The Ohio State University: Dr. Herman J. Peters, Professor of Education, The Ohio State University; Dr. Francis P. Robinson, Professor of Psychology, The Ohio State University; Dr. Carroll L. Shartle, Assistant Dean, College of Commerce and Administration, and Professor of Psychology, The Ohio State University; Dr. Byrl R. Shoemaker, Director of Vocational Education, State of Ohio; Mr. Ronald E. Vidmar, International Business Machines Corporation; Dr. Charles E. Weaver, State Supervisor, Guidance Services, State of Ohio; and Mr. Melvin L. Gary, Research Associate, The Center for Vocational and Technical Education.

The Center is also indebted to the consultant staff for their presentations and assistance to the participants. Special appreciation is also extended to The Center secretarial staff, especially to Miss Phyllis Armentrout and Mrs. Ursula Makey who provided invaluable assistance for the seminar program and the preparation of this report.

The Center for Research and Leadership Development in Vocational and Technical Education

The Center for Vocational and Technical Education has been established as an independent unit on The Ohio State University campus with a grant from the Division of Adult and Vocational Research, U.S. Office of Education. It serves a catalytic role in establishing a consortium to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach, and interinstitutional in its program.

The purposes of The Center are:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To simulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research on vocational and technical education in the many concerned colleges and departments in institutions of higher education;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, and others) through an advanced study and in-service education program;

6. To establish a storage and retrieval system in vocational and technical education;

7. To provide educational opportunities for individuals contemplating foreign assignments and leaders from other countries responsible for the administration and supervision of vocational education.

The Center staff includes specialists in vocational education and supporting disciplines. To give flexibility in carrying out the specific functions and activities of The Center, consultants and visiting staff members are utilized on a short-term basis to complement and supplement the permanent staff.

A National Advisory Committee representing vocational education, supporting disciplines, and the world of work aids The Center staff in identifying priority areas, utilizing outside resources effectively, and communicating with key groups.

It should be pointed out that The Center's catalytic role in establishing consortia to focus on relevant problems could be especially meaningful as the profession addresses itself to some of the critical problems identified in this seminar. In short, we hope that the profession will think of The Center as a resource for establishing channels of communication and coordination in a major confrontation of the significant problems in this area.

Robert E. Taylor
Director
The Center for Research and
Leadership Development in
Vocational and Technical Education

NEED FOR THE SEMINAR

The need for the seminar has evolved from a number of recent major trends in our nation, but especially (1) the post World War II "baby boom", (2) automation, (3) advanced technology, (4) manpower needs, (5) the changing composition of the labor force, (6) a revamping of our educational system, and (7) overcrowded colleges. On some of these trends we have been caught short, i.e. although the trend was predictable, we allowed the problem to snowball, and with flushed faces are trying to dig out.

We read with trepidation the manpower estimates that we can expect approximately 26,000,000 new workers in the 1960's, an increase of 50 percent over the 1950's. One wonders how the economy is going to accommodate this flood, but there is some consolation in the fact that the industrial demand is almost equally as great (provided the potential worker has prepared for the"right occupation").

Assisting a potential or current member of the labor force to elect the "right occupation" is a complex task involving the cooperation of a number of disciplines (labor economists, educators, sociologists, psychologists, counselors, technicians, etc.). It is difficult to estimate who has the greatest responsibility, but traditionally the primary responsibility has fallen on the educational system (school administrators, guidance counselors, teachers, and the student per se). Grant Venn in his American Council of Education Report, as well as others, has stressed the importance of providing guidance services in vocational and technical education as a means of bridging the gap between education and work.

The trends have created problems for both the educator and the worker and are manifested in our culture. Symptoms are evident in various forms, e.g. shortages of skilled technicians, alienation, fears of unemployment, forced migration, early retirements, adult retraining, employee turnover, intense competitiveness for college sheepskins, and poverty programs. The modern worker has to be prepared for not just a singular occupational choice, but the probability of continuous career decisions and job adjustment and re-adjustment.

The modern guidance counselor and vocational educator have an equally difficult task in assisting the potential worker in a changing world of work. For long-range planning, guidelines need to be formulated in anticipation of the consequences of the trends. This necessitates a merging of the relevant disciplines to consider a reconceptualization of guidance services in view of our future needs. The siminar is intended as a national task force, bringing together leaders of the key disciplines to formulate guidelines for guidance in vocational and technical education. The seminar will focus on critical issues and problems not only for high school populations, but also post high school, and more specialized populations.

PURPOSE

The major purpose of the seminar is to provide an opportunity for leaders in vocational education, guidance, and related disciplines to pool their resources and thinking in formulating plans for initiating and improving programs of research and practice. The general over-all goals of the seminar are as follows:

1. To stimulate interdisciplinary research and interest;
2. To evaluate the status of the field and to identify specific problem areas;
3. To assist educators and administrators in establishing policy and program guidelines;
4. To coordinate and exchange information among the relevant disciplines;
5. To project long-range needs and goals;
6. To reduce the time lag between research, theory, and practice.

Robert E. Campbell
Seminar Chairman

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AN INTERDISCIPLINARY APPROACH TO VOCATIONAL EDUCATION AND GUIDANCE

Walter M. Arnold
Assistant Commissioner for Vocational and Technical Education
U. S. Office of Education

It is a vitally significant factor to vocational education and to the people it serves that the expertise of all disciplines is brought to bear on this facet of education. Only by a concerted effort can high quality vocational education be readily available to all who need it. Thus the vocational guidance aspects of vocational programs must not be dealt with in a vacuum apart from the curriculum content or the needs of the individuals and the Nation's labor market realities.

This is precisely why I am so pleased to have the opportunity to address such an interdisciplinary group. However, I must confess having experienced some frustrations in preparing this address. Speaking to an audience of guidance counselors, social scientists, and educators in such a manner as to contribute substantive knowledge or ideas to each discipline is not easy. Therefore, what I have done is to develop a "sugar-coated" pill approach, one that is directed to the whole audience, hoping that your keen perceptive ability will help each of you relate those ideas and concepts that are pertinent and important to your discipline and the subject of the hour.

First, may I touch briefly on how the vocational educator sees the interdisciplinary approach in vocational education. The passage of the Vocational Education Act of 1963 marks a great turning point in the philosophy and direction in the history of vocational education. Vocational education had a very limited meaning and interest for most of the social scientists. The extent of the few exceptions is limited to relationships with industrial and business development commissions or to some tie with industrial economists, making detailed studies of business and industrial situations. This has not proved to be the best working relationship.

The social scientists, in the history of the program, have never particularly concerned themselves, as I've known it, with issues and problems of vocational education. Neither have they concerned themselves much with the impact that vocational and technical education was expected to have upon the labor force of this country or upon the careers of students. When you review the chronology of guidance, you will find that social scientists appeared from time to time when they made an effort to delve into the problems and the influences of vocational education through the medium of vocational guidance. After passage of the Vocational Education Act of 1963, U. S. Commissioner Keppel insisted that we build into the Division of Vocational and Technical Education the disciplines of economics, psychology, and anthropology. He was especially insistent about an interdisciplinary approach in the research program under Section 4(c) of P.L. 88-210. If you examine the three branches in that division, you find one branch dealing with employment opportunities, headed by a labor economist; there is a second branch dealing with human resources, directed by a psychologist. Other psychologists on that staff deal with the behavorial aspects of the students and trainees in vocational and technical education. The third branch deals with educational resources, directed by a versatile educator, who would also qualify as a social scientist by experience and interest. This observation reveals the first influence in the Office of Education toward an interdisciplinary approach to vocational education and research.

Mr. Keppel insisted, and rightly so, that we deal with program evaluation by bringing economists, particularly a labor economist, and a sociologist into the division to assist us in structuring an evaluation program. The new law under which we are operating requires an evaluation by a 12-person, ad hoc group, at intervals of no less than every five years. The first one is getting underway now. The Council will be appointed by Secretary Gardner. They are obliged, under the law, to report to the Congress, to the Secretary and to the President by January 1, 1968. I feel quite certain that the Secretary and the Commissioner will be very insistent that there be an interdisciplinary approach to that evaluation--a nationwide appraisal of what has happened or what is going on in vocational education, particularly related to the purposes in the new Act.

We see many other evidences now in vocational education of the active participation and the influence of the social scientist. For example, last summer, our office sponsored three inter-locking seminars as an in-service training program for the entire staff of our division. There were full-time sociologists, psychologists, and economists, working with the staff each day. The general objective was to help our staff to become familiar with the various influences these other disciplines have upon vocational and technical education. The Brookings Institution is presently conducting a study sponsored by the Carnegie Corporation on Economic Issues in Vocational Education. It becomes a striking revelation to attempt to make an analysis of the economic issues in vocational education because they are manifold. Another very significant participation, with an injection of still other disciplines, is the Massachusetts Institute of Technology Curriculum Workshop conducted last summer. People were invited from all over the world to participate in planning the development of the identification of a different kind of curriculum in the elementary and secondary schools; a curriculum that would have the effect of giving the young person in our public schools a better orientation to the world of work without sacrificing the attainment of skills in the three R's. A certain kind of influence will have to be brought to bear upon the public educators of this country in order for them to take a searching look at the elementary and secondary education curriculums; and to bring about a transition that will guarantee young people to grow up with a more thorough knowledge of all the factors and influences that make a community a desirable place in which to live and work. Inherent in these understandings are social and economic implications of all America at work. Occupational education must be much more than the process of acquiring technical "know how." Thus, we must recognize that technical "know how" must be supplemented with instruction that leads to civic and social responsibility for citizenship in all occupations in our 20th century labor force.

We were pleasantly surprised to find that the Educational Testing Services at Princeton had assigned a man full time to work with educators and vocational educators in measuring the proficiency of vocational teachers. It seems quite clear now that we can no longer conduct vocational and technical education programs apart from the economic, social, political, psychological conditions of the society that exists today and that we can foresee in the future. Neither can vocational education and guidance be separated, as I think they have been in many instances in our history. To get some idea of what is expected in the way of economic and social conditions, I would suggest that you read the Research Institute of America staff recommendations brought together in June 1964 entitled "Your Business in the Next Fifteen Years," which is a striking analysis of what we can look forward to in the next 15 years. These recommendations consider the population boom, and the growth of the American economic system in terms of gross national product. Let me point out just a few things that I think are extremely forceful: "In briefest summary, we see the makings of an enormous economic boom ahead. Fifty million more Americans waiting to be served, fed and satisfied by enterprise. The gross national product hitting the incredible total of $1.2 trillion measured in constant 1960 dollars. This is four times the amount of everything this nation produced, transported, and shot off on five continents at the peak of our war effort in 1942." The report goes on to say: "We also see major problems in providing the jobs, and therefore the incomes necessary to bring this boom to reality."

No matter what educational problem you approach today, you run headlong into social, economic, political, psychological conditions and influences that may well determine the success or failure of an educational program. To ignore the "facts of life" about these conditions and influences is almost suicidal. We see some present evidences of a kind of ignoring of economic and social facts of life in the great cities--problems in what has been described as social dynamite, a very important area for the educator to examine thoroughly. Our staff, along with people in the Department of Labor, are taking very searching looks at the "Watts" situation in other cities. There is a most interesting experiment going on in Chicago in an interagency work project, reaching down into neighborhoods, person by person, door to door, trying to identify needs and behavorial characteristics of people, many of whom have never seen anybody interested in their families for three generations. The educator obviously is going to have to be concerned with this kind of situation.

The great importance of interdisciplinary action in vocational education and guidance is brought home most forcefully in a statement of John Maynard Keynes' in his book "The General Theory of Employment Interest and Money." He wrote this back in 1935: "The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe (and I include vocational educators in this) themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist." That probably alarms

vocational educators and the guidance people, too. It should probably greatly alarm the social scientists, too, because, if there is some substance to this, and I am inclined to believe there is, then the influence of the social scientists can be critical or pivotal on an educational program. An illustration of this may be found in the Harbison and Myers book, "Education, Manpower, and Economic Growth," which lists many references that argue against vocational education in secondary schools. Personally, I think the arguments are not very well justified in terms of social and economic conditions, but these two reputable economists think differently. Of course, they make their case and rightly so, but the educator, the vocational educator, and the guidance person are going to have to examine such theories very carefully before they become the slaves of something that could become defunct in a serious social situation in this country. This is an illustration to show how you can be influenced rightly or wrongly by the theories of good thinking social scientists.

In consideration of the objectives of the conference, we need to examine the status of guidance in vocational education, and to identify the problem areas. The matter of the status of vocational education, and of guidance in vocational education was examined by the panel of consultants that was brought about by President Kennedy's education message in 1961. The panel, as you know, produced the report, "Education in a Changing World of Work." The recommendations that came out of that report led to the enactment of the Vocational Education Act of 1963 and set the stage for many changes that are taking place in vocational education.

Very briefly, the principal thing about the new Act which has meaning for the seminar, has to do with the six purposes that are spelled out in that Act. They represent one approach to what we are calling a total balanced program of vocational education. The first of the six deals with programs for youth in high school. The number one purpose in the Vocational Education Act of 1963 sets up an important but somewhat controversial issue. Some economists contend that vocational education, as we have known it in the United States, has no place in the secondary schools.

The second of the six concerns vocational education for persons who have completed or left the high school, and who are available for full-time study in preparation for entering the labor market. This requires a type of post-high school or an area program that can accommodate the younger or older dropout from school as well as high school graduates. In my own view, one weakness of the education system in this country is the fact that a person could make the wrong choice, an inadvertent mistake, and suffer from it all of his life. I am sure many of you know of companions, friends or associates, who made the wrong decision somewhere--they dropped out of school prematurely, or they made the wrong choice of a career--and then suffered severe penalties for the rest of their lives. A total balanced program of education should permit a citizen, young or old, to correct his mistakes--at any time during his life--thus having recourse to a variety of educational services for personal readjustment when required.

The third of the six purposes is vocational education for those who have alredy entered the labor market and need training or retraining to update or upgrade their job skills.

The fourth of the six purposes has to do with the vocational education for persons who have academic, social, or other handicaps that prevent them from succeeding in regular vocational education programs. We were disappointed to find in our first survey of the distribution of expenditures under the new Act, that less than three percent of the money had been devoted in the states for programs for persons with special needs. Admittedly, to identify the needs of these people and assist them to find a program that suits their needs is a most difficult task. It is also extremely difficult to motivate these people to permit educational growth. Many are adults who have already entered the labor market and who need training or retraining to achieve stability or advancement in employment. The Manpower Development and Training Act of 1962 and other federal legislation, also offers opportunities for this type of training.

The fifth of these purposes has to do with the construction of facilities--a "first" such use for vocational education federal funds. About 40 percent of last year's funds went into the construction of new facilities. These funds are bringing about dramatic developments in the building of a great variety of area vocational education facilities, such as: departments of comprehensive high schools; secondary vocational area schools; specialized vocational-technical high schools; technical institutes; post-secondary types of area schools; the junior and community colleges; and the four-year colleges and universities. The bottleneck of the lack of physical plant became acute when we began to implement the Manpower Development and Training Act

of 1962. You would be amazed at the number of programs that must use faciltiies of all kinds--garages, abandoned school buildings, or whatever can be obtained. It is a fact that the program cannot move forward until there are some respectable facilities available for people to use and profit from bona fide, high quality training programs.

The last of these purposes which, incidentally, bears directly on guidance, has to do with what we call the ancillary services. This was designed by the Congress to assure quality in all vocational education programs--elements such as teacher training, supervision, program evaluation, special demonstration experimental programs at the State level, development of instructional materials, State administration and leadership, periodic evaluation of State and local vocational education programs, and studies dealing with information regarding current and projected manpower needs and job opportunities. There is a specific reference to vocational guidance services. In the "official" definition of vocational education in the new Act, vocational guidance is mentioned specifically as an important area to be financed with the grant funds that come to the States.

Another of the conference purposes has to do with stimulating interdisciplinary research interests. We have made noticeable progress in research in the last two years since the passage of the Act. Meaningful, substantial, and reliable research on real problems can now be carried out. This seminar should lead us to some problems in the field of guidance, and hopefully, attract the interest of the social scientist to help solve these problems is contained in one of the recommendations that has come out of the subcommittee of the President's Committee on Specialized Personnel. This distinguised subcommittee is made up of such men as Dr. Felix Robb of Peabody College and Ralph Boynton of the Bank of America. One of their many recommendations, with respect to vocational guidance, was how to bring what they call the "user," that is the potential employer, and the product of the public schools--the graduate or the dropout--closer together instead of relying on the counselor in this country to do this tremendous job that needs to be done. They are talking about a new kind of person, a coordinator who would work with the counselor in bringing the user closer together with the product of the public schools. They also recommend the establishment of a sophisticated center of occupational information in every State that would bring to the entire public school system a constant flow of labor market information, job requirements, and training opportunities. Obviously, these recommendations would require substantial financing and some real aggressive action in this country.

The matter of projecting long range needs and goals is one of the basic charges in the new Vocational Education Act of 1963. The programs that are to be designed and operated must be geared to potential job opportunities.

There is a growing interest in the benefit-cost analysis method of budgeting and planning. Very briefly, it tries to measure the benefit you want to accomplish in a program by putting a cost figure on it and by making a decision as to whether the benefit you identified is worth the cost, or whether you want to modify the benefit and change the cost. You attempt to measure objectives in terms of quantity and quality, and then put a price tag on them and proceed to try to reach these objectives. This is an approach to the matter of projecting long range needs and goals, and it is significantly identified as one of the conference objectives. If you want to address yourselves to something very pertinent in terms of guidance, you could try to take the benefit-cost approach. What is the long time goal of guidance in vocational education, and which objectives are realistic this year, next year, or five years from now; finally, compare them with conditions expected fifteen years from now by the American Institute of Research.

Another one of the objectives has to do with establishing policy and program guidelines. There is a tremendous educational training program being carried on by private industry and business. It runs into billions of dollars and far outreaches the financial magnitude of our programs. You could also go to the military, or the private schools of this country, and find a vast investment in these training programs. To the extent that we can, and keeping within the provisions of the Federal Act, we are establishing policies and program guidelines, which are based primarily on the statement of purpose in the Vocational Education Act.

Let me read this purpose to you: The purpose of this act, meaning Public Law 88-210, is to "authorize Federal grants to States to assist them to maintain, extend, and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities of the State--those in high school, those who have completed or discontinued their formal

education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps--will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training." That purpose was developed by a great number of people, including some very distinguished congressmen. If that part of the phrase that has to do with authorizing Federal grants, etc. and the States, was deleted and you just stated the remaining section as the basic purpose of vocational education, guidance and education in this country, you would have said it most eloquently.

Another objective of the conference has to do with coordinating and exchanging information, which could be wrapped up in the word communication--you could also add to that the dimension of coordination and cooperation. Interagency coordination and cooperation is very important to assure meaningful programs.

We are coming to a period now where we need to identify and train an entirely new brand of leadership. Those of you who are concerning yourselves with training new leadership should take a look at this need. The new leaders would be persons who are thoroughly familiar with all of the programs that are directed toward the Purpose that I just read, and would have a high degree of skill in applying the resources of those programs at the right place, the right time, and without confusing the recipient of the services. Recently, I was in Minnesota visiting one of three experimental programs we are conducting with the cooperation of 13 Federal agencies. Dr. John McCauley of the Department of Labor and I are co-chairmen of these three experimental projects. We call them "concerted services training projects." The whole idea of this experiment is to try to demonstrate that without any new money or authority, we can coordinate the resources of 13 agencies to meet the needs of the people of the three counties--one in New Mexico, one in Arkansas, and one in Minnesota. The three local county administrators of these programs have entirely different backgrounds of experience and professional training. It will be interesting to measure the results of close coordination of these many programs and agencies. These projects are examples of what we are going to have to look forward to in the development of a whole new kind of leadership, particularly in vocational education and guidance.

Next, I mention the need to reduce the time lag between research, theory, and practice. The Division of Adult and Vocational Research in the Office of Education has a technical advisory committee made up of persons from industry, labor, education, and research. This committee is vitally concerned about disseminating and applying research results at the operation level. You know very well it doesn't do a bit of good to conduct research which is never used. Obviously, this objective has the utmost importance in this seminar.

The examination of change and what we call systems approach to vocational education would be helpful at this point. A little publication here at The University, the SEC Newsletter on the conference on Strategy for Educational Change, contains the following observations about change: paraphrasing Dr. Kurt Lewin description of "Theoretical Formulations for Change." The first phase is "unfreeze." The second is "move," and the third is "refreeze." He bases these theoretical formulations on the assumption that people change to improve their present position or to avoid a worse condition. He says the unfreezing involves a kind of dissatisfaction with the present. No one should have any trouble coming to that point. Movement to a new condition is achieved by inducement or reward. Refreezing involves the establishment of an equilibrium after a new level of behavior has been reached.

Perhaps, still more applicable to us is Dr. Philo T. Farnsworth's application model of education to bring about change. "First, recognize and articulate the need." I presume this seminar is going to address itself to that. Secondly, "propose a solution." This seminar will not have carried out its work if it can't propose some solutions to our problems. "Third, create an interest in the suggested solution." "The fourth is to demonstrate the usefulness of the program." We either have it, and it is demonstrated successfully, or we ought to set it up, and demonstrate it. "Fifth, invite group and public interest in the program." I'm quite sure we have not been successful in generating public interest in vocational guidance. At the same time, it certainly is becoming evident that many people are identifying the guidance problem as the "key" problem of education and vocational education in this country. If you know the history of vocational education, you will identify these steps that have been enumerated. One of the most important steps is the "sixth one, which is obtaining official approval and financing." "The seventh step is taking action to remove legal restrictions." We have some legal restrictions appearing already in the Vocational Education Act, and one of them of great importance is the absence of a provision for stipends in the research program. There will be efforts made to seek an amendment which removes this inhibiting legal restriction to the implementation of research programs and leadership development.

Closely correllated with change are the results of using the systems approach. What we see developing in vocational education across the country is what you might call an over-simplified systems approach to vocational education. This system starts something like this. You begin with all applicable Federal and State legislation. This includes all the Federal and State laws, local provisions for programs, appropriations--all legal authority to move ahead. The second step is the matter of the development of regulations, policies, procedures, guidelines at all levels--Federal, State, and local, and, hopefully, very well coordinated. The third step, in vocational education particularly, but in many other programs too, is the State plan. It is simply a basic contract which sets forth the conditions under which a State will conduct a program.

The next item in the system is dynamic and dramatic, which we call the projected activities program. Each State is required to submit to us an explanation of what they propose to do in the next year with the funds they have--Federal, State, and local. They are to give an explanation and justification of this proposed program. A State does not get any money--this is part of the system--until its projected activities program is thoroughly reviewed and approved. This is a cooperative venture between the State and the Nation in trying to bring about the maximum use of the dollar. The next step in this system is reporting, primarily involving the submission of annual statistical, financial, and descriptive reports. The reports which have come in for the first year of the new Act, the fiscal year 1965, are being reviewed very carefully.

The projections for 1967, incidentally, will be due May 15. Each State, through these vehicles will say what it proposes to do in the fiscal year 1967. Here you have the beginning of the feedback into the system. In addition, the evaluation which I have already mentioned should be a very valuable feedback into this system. A similar effort will be made to measure what is not being done, or rather who is not being served, why, where are they, who are they, etc. That will be a very significant aspect of the feedback. Of course, the research program is really a kind of wrap up in the system because the research program should be operating continuously to feed back its results into the whole system. If the system is working properly, it should result in a constantly improved and expanded program. That is an over-simplification of what we call a systems approach in vocational education, and I commend it to the guidance people for similar use.

Finally, we need to be concerned with these challenges. I ask myself and you, "Can we in our American society, in fact, provide education for all the children of all the people?" We have expounded this philosophy ever since I have known anything about education. We have professed to be committed to an educational program that will educate all the children of all the people. I say the challenge is, "Can we in fact provide education for all the children of all the people, or is that just some kind of a trite statement of purpose and some kind of far off dream?"

Furthermore, "Can we attain in a practical way, and in a democratic manner, the goal of developing all persons to their maximum potential ability?" We profess to do this; we profess to be committed to it. Again, the serious question and challenge is--can we, in fact, attain such a goal?

The next challenge is one we have read and heard of for many years--I know the guidance people will be familiar with it--"Can we, in fact, match people with jobs in a democratic way in this country?" Can we match people with jobs in the framework of freedom of choice?

Next, "Can we provide appropriate education and training for all persons who need it and can profit by it?" This is a commitment of vocational education. We profess to offer training opportunities for all persons who need it and can profit by it. Can we do that in fact?

Then looking to the manpower needs of the country, "Can we provide education and training for all kinds of jobs, from the least skilled to the most technical and professionally demanding?"

The last challenging question--"Can we, in fact, provide appropriate education and training in all kinds of institutions in this country, both public and private, and stop the either-or argument that constantly goes on?" These are the charges, the challenges, the responsibilities that the public of this country is expecting us to carry out in education and vocational education programs today.

OVERVIEW OF RESEARCH AND DEVELOPMENT ACTIVITIES
DIVISION OF ADULT AND VOCATIONAL RESEARCH
U.S. OFFICE OF EDUCATION

Duane M. Nielsen, Director
Educational Resources Development Branch

I welcome this opportunity to meet with you here this week. May I extend to you the greetings of our Washington staff and assure you of our appreciation for your interest in vocational and technical education and your willingness to participate in this timely and important conference.

We are midway in what will surely be the most dynamic decade in the history of vocational and technical education in this country. It will either be dynamic in our ability to successfully identify and confront the challenges and problems which we face, or more dramatically in our failure to do so. This conference is focused on a segment of these challenges, problems and opportunities. That is why you are here and why you will participate actively. It is why you will go home and translate the ideas discussed, concepts developed and procedures identified into effective vocational guidance programs. We wish you success in this conference and in your individual efforts in the interest of vocational and technical education. You are the keys to action. We urge you to accept this responsibility in your participation here this week and in your subsequent activities.

I have divided this overview of our research and development activities into four categories. First, I have been asked to discuss the July 1 reorganization of the Office of Education and our current organizational structure. Second, I will give you a progress report on the fiscal 1965 activities of our division operated under Section 4 (c) of P.L. 88-210, the Vocational Education Act of 1963. Third, I would like to suggest some priority areas for research and development concentration. Fourth, I will review the guidance and counseling projects currently supported by our program.

Reorganization

When the Department of Education was created by Congress in 1867, the new government unit was authorized to have a Commissioner of Education and three clerks. Total budget: $9,400 a year. Ninety-three years later -- in 1960 -- the Office of Education had 1,100 employees and was running 20 separate education programs with annual expenditures of $500,000,000. Today, the Office of Education is handling more than 40 education programs with more than $3,300,000,000 authorized. It has 1,600 employees.

The statistics demonstrate the obvious. Education has finally come into its own. It is not growing -- it is exploding. Congress has given the U.S. Office of Education major responsibilities for carrying out programs to improve American education.

Early in 1965, the President of the United States -- at the request of HEW Secretary Celebrezze -- appointed a special Task Force "to advise and assist the Office of Education meet its new program responsibilities." The Task Force, headed by Dwight Ink of the Atomic Commission, included members of both the Bureau of the Budget and the Civil Service Commission.

For three months, the Ink group probed, questioned, investigated, and evaluated. On June 14, 1965, the Task Force completed its work. Four days later, Secretary Celebrezze submitted the Task Force's recommendations to the President and the Cabinet. The Task Force concluded that the Office of Education had become "fragmented and unduly layered" by a patchwork of organizational units created for each new education law -- sometimes for each new title of a law. A reorganization was necessary. But the neat little boxes were only part of the story.

The Ink group singled out a most important element in revamping the Office of Education -- new blood. First priority, said the Task Force, is to recruit new personnel. It urged that competent personnel from disciplines other than professional education be carefully considered for service in the Office of Education. It called for an Ad Hoc committee under the Deputy Commissioner to identify vacancies, review applications, and set up recruiting teams. It asked for hard-hitting recruiting efforts at both professional and clerical levels.

DIVISION OF VOCATIONAL AND TECHNICAL EDUCATION

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Prog. Eval. Specialist-Vacant

ADMINISTRATIVE SERVICES
Executive Asst.-R.Grim
Budget Acctg. Officer-E.Jennings
Management Advisor - Vacant
Budget Acctg. Analyst-T. Yazek
Reports Analyst - D. Gray

PUBLICATIONS - J. McCarthy

INFORMATION AND REPORTS
Public Inform Officer-J.Billings
Writer-Editor-A.Berzen, M.Underwood

ORGANIZATIONAL RELATIONS-W.Tenney

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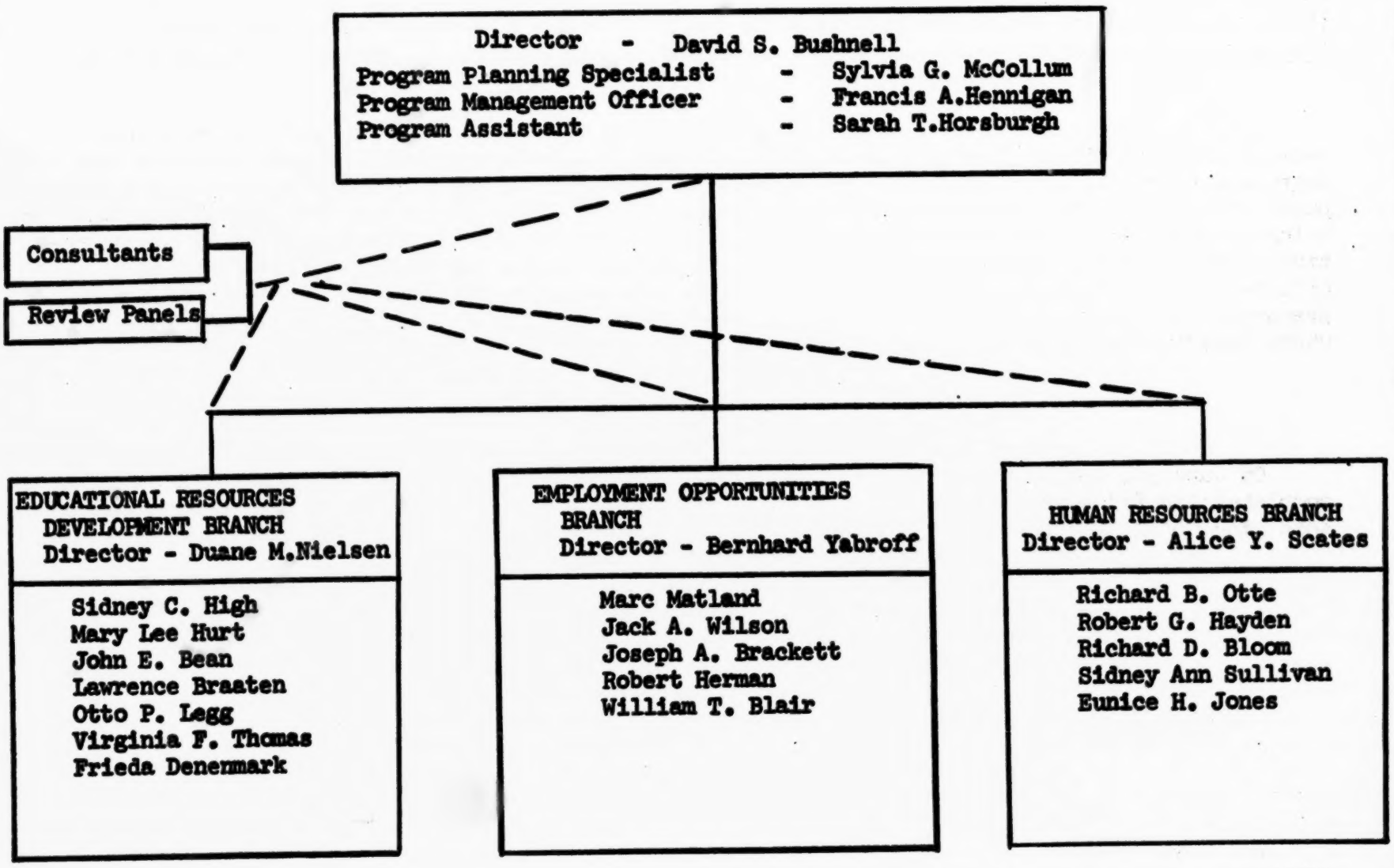
INSTITUTIONAL TRAINING Asst.Dir.-Vac.	NATIONAL PROGRAMS Asst.Dir.-D.Crum	CURRICULUM AND INSTRUCTIONAL MATERIALS Asst.Dir.E.Bowler	ANCILLARY SERVICES Asst. Dir. M.Strong	STATE PLANS AND ACTIVITIES Asst.Dir.-H.Duis	OCCUPATIONS Asst.Dir. J. Beaumont	PROGRAM PLANNING AND DEVELOPMENT Asst.Dir.-Vac.	FACILITIES PLANNING AND DEVELOPMENT Asst.Dir.M. Russo
Inst.Tr.Prog. Proj.Analysis Proj.Review & Evaluation Pre-Voc.Trng. Facil. & Equip. Utilization Proj. Manag.& Coordination	Exp. & Dem.Tr. Nat'l Tr. Prog. OJT Related In. ARA Training State Supervis. Utilization Retraining & Em. of Women Sec.'s Report on MDTA To Congress	Curriculum Needs Survey Curriculum Dev. & Design Instructional Mtls. Devel.	Teacher Educ. Inservice Preservice Voc. Guidance Occup.Inform. Work Study Prog. Basic Educ.	State Plans & Agreements State Projected Prog.Activit. Grant Programs State Activity Coordination Policy Interpr.	Office Occup. Dist.&Marketing Occupations Technical Occup. Health Occup. Home Economics* Trade&Ind.Occ. Agriculture Occ.# *FHA #FFA	Prog.Finc.Proj. Pers.Trg. & Dev. Mgmt. Analysis Research Lias. Secondary Prog. Post-Sec. Prog. Adult Programs Special Prog. Professional Personnel Exchange	Facilities Design Residential Schools Appalachian Construction

REGIONAL OFFICES

I II III IV V VI VII VIII IX

TRANSPARENCY 1. DVTE Organizational Structure
Effective July 1, 1965

DIVISION OF ADULT AND VOCATIONAL RESEARCH



TRANSPARENCY 2. DAVR Organizational Structure Effective July 1, 1965

As the Ink proposals were carried into effect, the Office of Education prepared for orderly chaos. Eight hundred new personnel had to be hired -- including many top-level super-graders. Personnel from defunct bureaus had to be reassigned. Additional office space had to be found in buildings outside 400 Maryland Avenue. The Bureau of Higher Education, for example, went from 187 to 336 positions. Entire bureaus were moved physically to new locations. Other bureaus merely evaporated.

The major reorganization and adjustment involving the vocational and technical education research and development program, and the administration of Section 4(c) of P.L. 88-210, is that we were formerly the Occupational Research and Planning Program (ORP) in the Division of Vocational and Technical Education (DVTE). We are now the Division of Adult and Vocational Research (DAVR) in the new Bureau of Research (BR) as shown in the DVTE structure after reorganization in Transparency 1; additional DAVR organizational and staffing detail is given in Transparency 2.

Specific procedures have been implemented to assure close coordination and communication between DAVR and DVTE. This is essential if research and development and program operation are to render effective service. Joint staff meetings, committees, project and program review are parts of this effort. There are definite advantages to DAVR and the other OE research programs being centralized in the new Bureau of Research. Uniform procedures and a coordinated concentration on research and development priorities in education should result in increased program efficiency. One combined policies and procedures document for the Bureau of Research has been prepared. All proposals should be sent to the Bureau of Research, U.S. Office of Education, where they will be assigned to the appropriate Division for processing.

FY 1965 PROGRESS REPORT

On June 30, 1965, the Occupational Research and Planning Program (DAVR since July 1) completed its first year of activity. Although the program had been in operation slightly less than nine months the response was impressive. In summary:

- 475 proposals were received, almost double our January 1965 estimate. Assuming that each proposal represents five man days of effort by those in the research community on vocational problems, the program generated 2,400 man days of effort at no expense to the Government.
- 146 proposals or 31 percent of the total received were approved by the Commissioner and all will become firm contracts within the next few weeks.
- The total appropriation of $11.85 million for fiscal year 1965 was expended.

The distributions of projects approved during fiscal 1965 are shown in the next four transparencies. A brief examination of these distributions provides an overview of the scope and diversity of program activity. Transparency 3 indicates the distribution of approved projects by areas of major impact.

TRANSPARENCY 3. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY AREAS OF MAJOR IMPACT, FY 1965 (N:147)

Job Analysis	6	4%
Testing and Evaluation	6	4%
Curriculum	13	9%
School Organization, Administration, and Special Programs	7	5%
Methods, Material, Media	7	5%
Teacher Education and Training	22	16%

Individual and Social Characteristics	14	10%
Career Choice	5	3%
Guidance and Counseling	8	5%
Special Groups (Drop-outs, Adults, Disadvantaged, and Slow Learners)	19	13%
Research and Development Planning and Administration	40	26%

Classification of the project into areas of major impact yielded a 16 percent distribution of approved projects for teacher education and training, 13 percent for immediate vocational needs of dropouts, adults, disadvantaged and slow learners; 26 percent for the training and support of research personnel, and the rest scattered among the other eight classifications. The planning and administration area includes two vocational research centers, 24 State Vocational Research Coordinating Units, and several small projects aimed at improving research management. A high multiplier effect from these projects is expected and reflects a sound first-year investment in program growth potential. The number indicated for guidance and counseling does not include several projects which have some relevancy to this area. These and others approved during fiscal 1966 will be discussed later in this presentation. There is a reasonably good distribution of projects covering topics stressed during FY '65, e.g. identification of emerging job opportunities, optimum location of vocational schools, evaluation of teacher certification requirements, in-service training for vocational teachers, and the improvement and expansion of State vocational education planning organizational and administrative capabilities. We are also supporting or participating in a number of projects concerned with exploiting new information handling techniques through computer-assisted instruction, and electronic data processing of information on the statistics of the vocational system and on research activities completed or in process. Application of systems analysis and operation research techniques to major vocational problems is also being attempted.

The distributions by branch, submitting institution and type of project are given in Transparency 4.

TRANSPARENCY 4. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY BRANCH SUBMITTING INSTITUTION AND TYPS, FY 1965.

BRANCH N:147			SUBMITTING INSTITUTION (N:147)				TYPE (N:147)				
EO	HRD	ERD	College or University	State Education Department	Local Education Agency	Private Organization	Res.	E-D-P	Tag.	C	RCU
13	36	98	105	25	7	10	46	42	33	2	24
9%	24%	67%	72%	16%	5%	7%	32%	29%	22%	1%	16%

BRANCH

EO - Employment Opportunities
HRD - Human Resources Development
ERD - Educational Resources Development

TYPE

Res. Research
E-D-P Experimental, Development, and Pilot
Tag. Training
C Center
RCU Research Coordinating Unit

The distribution by Branch shows 67 percent of the projects falling under Educational Resources and Development, 24 percent under Human Resources Development, and 9 percent under Employment Opportunities. The high percentage in Educational Resources is consistent with the relatively heavy emphasis noted above on training programs and on demonstration projects.

The problem of attracting competent behavioral scientists to work on vocational aspects of human resources development, and competent economists to undertake occupational research projects has delayed the response in these two areas. The situation is improving, but for the next few years we will be in competition with other research and development programs for behavioral and social science research talent.

A substantial number of approved projects - 72 percent - went to colleges and universities. These statistics can be misleading, however, because many university projects were undertaken on behalf of State and local school systems.

A better balance was achieved in the distribution of types of projects. Thirty-two percent was for research, 29 percent for experimental, developmental and pilot programs, 22 percent for training, and 17 percent for research centers and State Coordinating Units. The relatively large proportion of experimental and training projects should yield early and visible results and thereby make immediate contributions to an improved vocational system.

The geographical distribution shown in Transparency 5 reflects a concentration of projects in California, Illinois, Michigan, New York, and Pennsylvania, with 57 percent of the total number in these five States. Only 13 States show no approved projects during fiscal 1965.

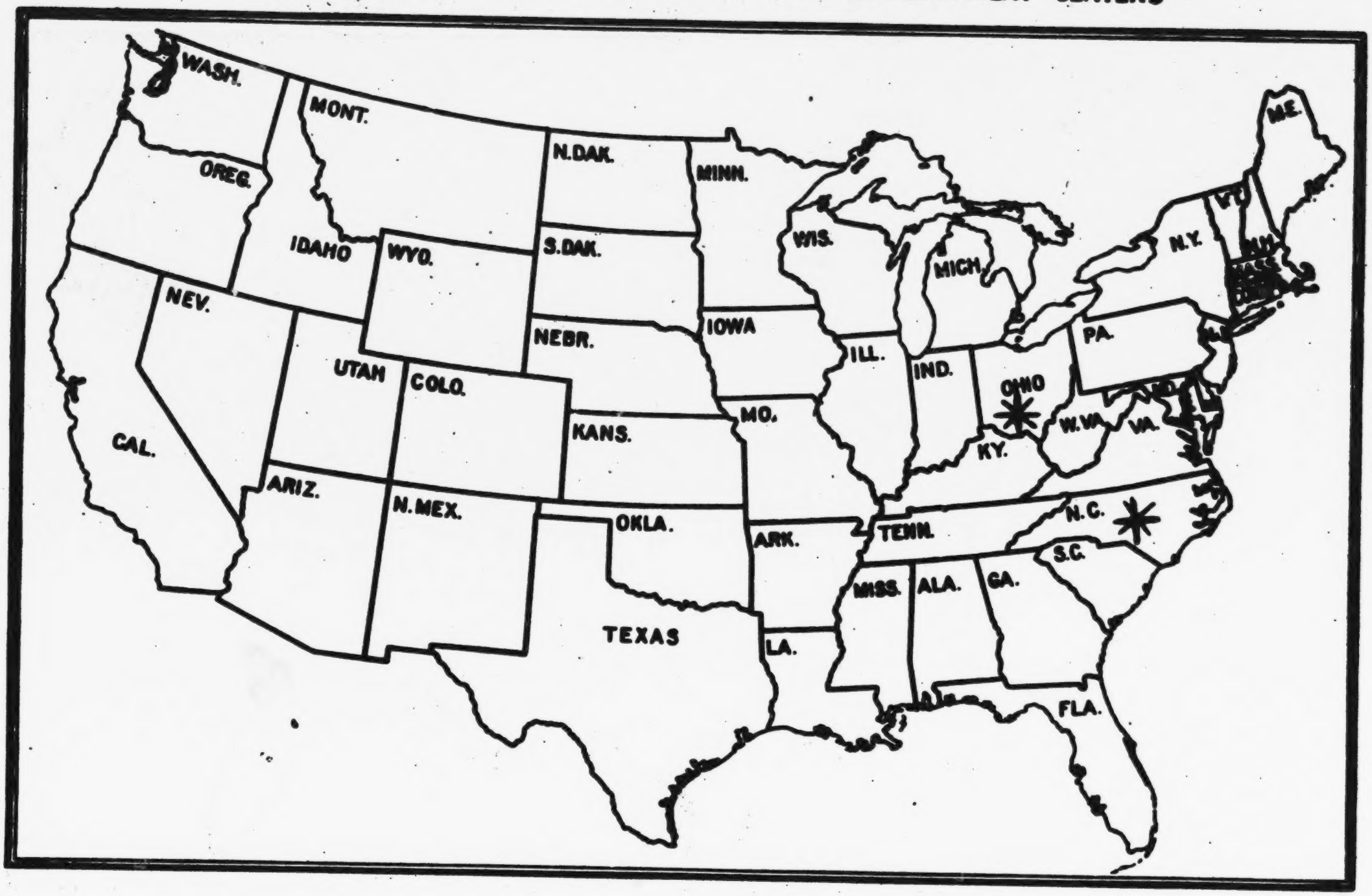
TRANSPARENCY 5. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY STATES, FY 1965. (N:147)

Alabama	0	Nebraska	2
Alaska	0	Nevada	0
Arizona	1	New Hampshire	0
Arkansas	2	New Jersey	3
		New Mexico	1
California	16	New York	12
Colorado	5	North Carolina	2
Connecticut	2	North Dakota	1
Delaware	1	Ohio	5
District of Columbia	4	Oklahoma	7
		Oregon	4
Florida	7		
		Pennsylvania	9
Georgia	2		
		Rhode Island	1
Hawaii	0		
		South Carolina	1
Idaho	2	South Dakota	0
Illinois	11		
Indiana	0	Tennessee	0
Iowa	4	Texas	3
Kansas	1	Utah	1
Kentucky	3		
		Vermont	0
Louisiana	1	Virginia	0
Maine	0	Washington	2
Maryland	3	West Virginia	0
Massachusetts	5	Wisconsin	7
Michigan	9	Wyoming	0
Minnesota	3		
Mississippi	1		
Missouri	2		
Montana	1		

Location of the two research and development centers, the five research and development units and the 24 State research coordinating units is shown in Transparencies 6, 7, and 8. These concentrations of resources for specialized purposes have proven to be quite productive. Those States without research and development units will be invited to submit proposals this spring for the establishment of RCU's.

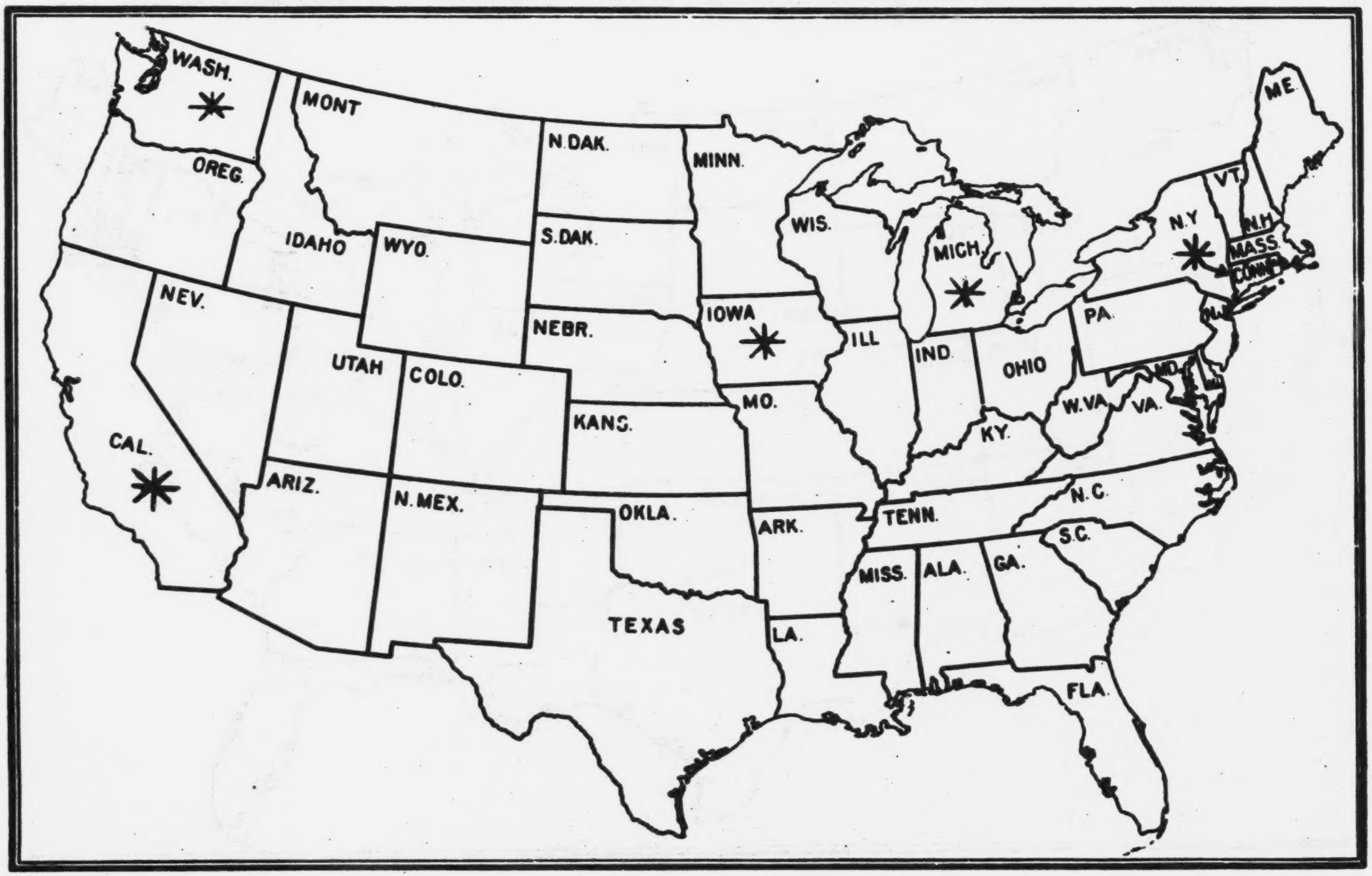
Transparency 6

LOCATION OF THE TWO RESEARCH AND DEVELOPMENT CENTERS



Transparency 7

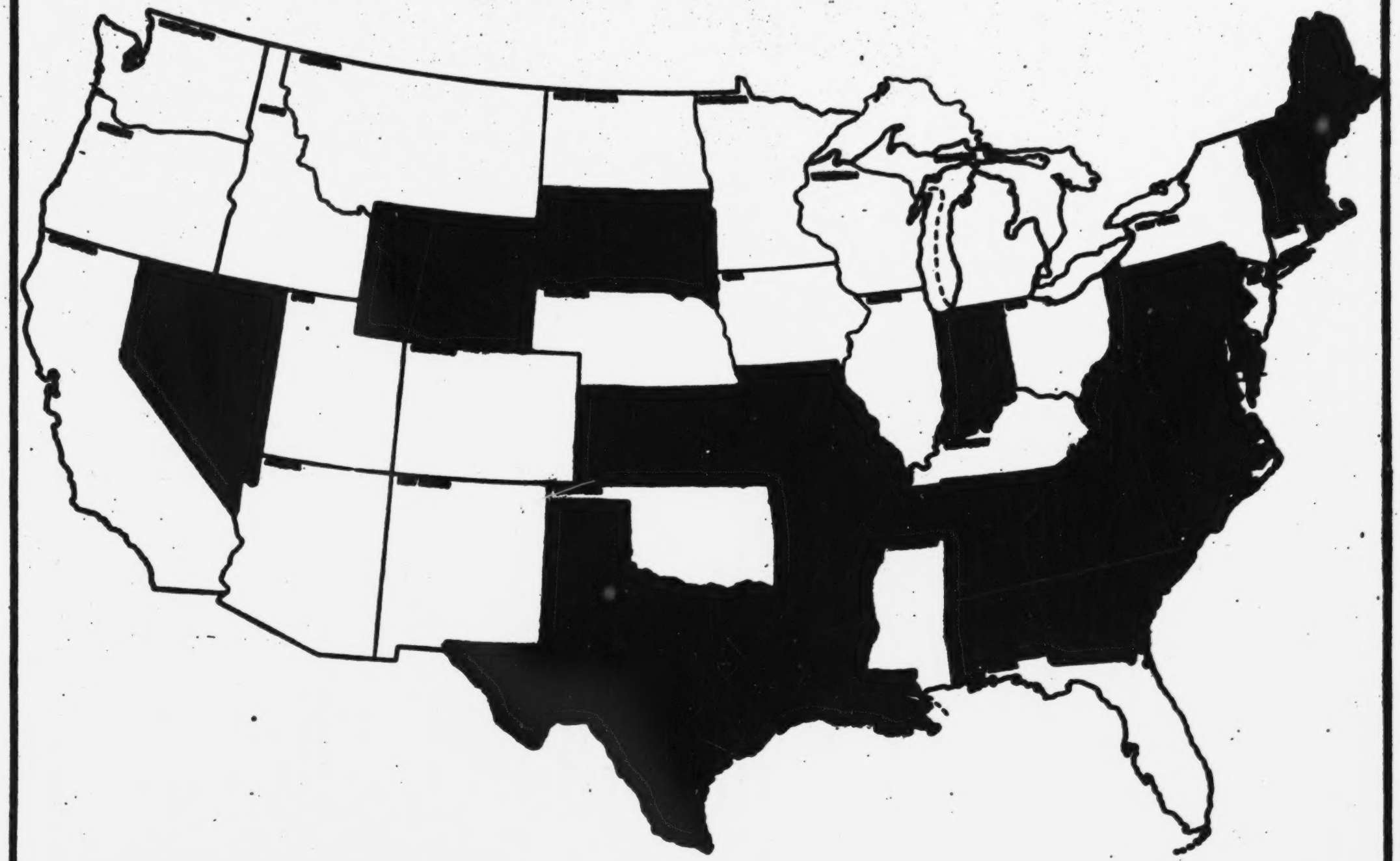
LOCATION OF THE FIVE RESEARCH AND DEVELOPMENT UNITS



Transparency 8

LOCATION OF THE 24 STATE RESEARCH COORDINATING UNITS

(The States in white have RCU's)



Overall, the statistics indicate program activity at a much higher level than we expected. Where imbalances existed, adjustments have been sought through active solicitation and sponsorship of needed studies. We expect to do more of this as our professional staff expands.

The Conditions and Procedures and the Federal Regulations governing the submission and handling of proposals and the administration of contracts were first issued in November 1964. Over 15,000 copies have been distributed throughout the educational and research communities. In March, supplementary Conditions and Procedures were issued for submitting proposals on vocational research centers, and in April for proposals on State research coordinating units.

A Preliminary Statement of Guidelines for the Occupational Research and Planning Program was issued simultaneously with the Conditions and Procedures. This statement of program objectives and research priorities reinforced the more legalistic program documents and enabled us to announce our presence and state our program interests to the public. More then 15,000 copies have been distributed.

Every available opportunity has been followed up to initiate meetings with other Federal agencies, professional societies, foundations, and business organizations having an actual or potential role in vocational research. At the annual conventions of the American Vocational Association, the American Educational Research Association, and the American Psychological Association, the new program was presented to large and receptive audiences. Presentations were also made at nine regional conferences, conducted in January and February by the Division of Vocational and Technical Education for State Directors of Vocational Education and their staffs.

Modest efforts were made in the dissemination of research results. Lines of communication have been established with State Directors of Vocational Education and State Department of Education Research staffs through the distribution of periodical listings and abstracts of proposals received and funded. Arrangements have also been made to furnish information regularly to research journals and newsletters.

Directors of Centers and State Research Coordinating Units will become an integral part of this dissemination and communication function.

The reorganization of the Office of Education should help us to improve this vital function. The Division of Research Dissemination and Training in the Bureau of Research will, among other things, make available an Electronic Data Processing System for the storage, retrieval, and dissemination of research information.

Closely related to stimulation and dissemination efforts is the provision of consultative services to prospective sponsors of proposals. These services range from expressing an opinion on the relative merits of a budding concept to lengthy and involved meetings and exchanges of correspondence on the actual development and drafting of a formal proposal. These services provide a rich area for both teaching and receiving instruction on research and development design and methods; they probably provide the most severe tests of the professional skills and attitudes of the program research staff. We have not been able, of course, to accommodate all requests. In recognition of this problem, we have indirectly expanded our consultative capabilities by funding the two vocational research centers and 24 State research coordinating units. In addition, the series of intensive seminars was conducted at four major universities for vocational researchers on research objectives and proposals preparation procedures and methods. We intend to continue to expand support for this type of activity. Six additional research seminars will be conducted this spring.

The earlier mentioned preponderance of university sponsors of projects in fiscal year 1965 emphasizes the need to improve the research capabilities of State and local educational agencies. Most of the efforts discussed above point in this direction. The lack of response on the part of State and local school districts is often not so much a shortage of available research talent as a need for training professionally qualified persons in the mechanics of preparing proposals. The creation of the new Bureau of Research gives the Office of Education an excellent opportunity to revamp and simplify its research application and funding procedures.

Considerable effort has been made to develop and maintain close relationships with other Government agencies. An immediate concern is with working out effective operating relationships between the Division of Vocational and Technical Education and the Division of Adult and Vocational Research, and with the four other Divisions in the new Bureau of Research: Division of Research Training and Dissemination: Division of Elementary and Secondary Research; Division of Higher Education Research; and Division of Laboratories and Research Development.

We have,of course, considerable experience in working with the Division of Vocational and Technical Education, and the legislative mandate in the 1963 Act enables us to concentrate on providing research and development support to its programs. The disadvantages of organizational separation between the research and operating programs should be offset by the ability of the Division of Adult and Vocational Research to focus all applicable program resources of the Bureau of Research on the needs of the vocational system. For example, the Division of Research Training and Dissemination and the Division of Laboratories and Research Development offer new and promising support potential.

We are also engaged in efforts to define the vocational implications of the research provisions of the 1965 Elementary and Secondary Education Act, and have been active in developing methods of funding comprehensive projects from the resources of several other statutory programs.

In improving our coordination with other Federal agencies, we have concentrated principally with the Office of Manpower, Automation and Training of the Labor Department, and the Office of Economic Opportunity. With OMAT we have developed a good division of labor on complementary research and development areas of emphasis. We are working out joint support arrangements for vocationally oriented projects involving the Office of Economic Opportunities and the Office of Education. During the current fiscal year we plan to strengthen program contacts with the Departments of Agriculture and Commerce, and with agencies such as Defense and NASA which also make major investments in manpower research and training.

PRIORITY AREAS FOR RESEARCH AND DEVELOPMENT CONCENTRATION

Seven areas of special emphasis have been selected by DAVR for priority attention during 1966-1967. These areas are indicated on Transparency 9. I will discuss these priority areas in terms of their application to vocational and technical education in general, however, the implications for guidance and counseling are obvious, particularly in priority seven.

TRANSPARENCY 9 PRIORITY AREAS FOR 1966 AND 1967

1. Program Evaluation
2. Curriculum Experimentation and Development
3. Personal and Social Significance of Work
4. Personnel Recruitment and Development
5. Program Organization and Administration
6. Adult Education
7. Occupational and Other Manpower Information and Career Choice Processes

1. <u>Program Evaluation</u>

The Vocational Education Act of 1963 requires that a report evaluating Federally supported programs in vocational education be presented to the President and the Congress not later than January 1, 1968. Research projects designed to contribute to this evaluation have a high priority since they must necessarily be completed well in advance of the January 1, 1968, date. Research will be directed to the following specific problem areas:

(1) Determining the effectiveness of new vocational education programs supported by Federal funds under the 1963 Act with reference to career patterns, employment records, and incomes of graduates and non-graduates; the amounts and kinds of vocational and on-the-job training considered necessary by employers; high school dropout rates; and other measurable factors relating to the success or lack of success of participants in such programs. Particular attention will be focused on the intergovernmental fiscal relations aspect of vocational education; e.g., the extent to which matching funds for new programs represent new resources devoted to vocational education.

(2) Comparative studies of alternative methods of preparing individuals for work and economic evaluation of training programs in particular occupational fields. Studies which seek to determine the relative effectiveness and relative costs of the many ways young people are prepared for work and the ways in which experienced workers acquire additional training will be actively pursued.

(3) The impact of vocational education on job changes (among areas, occupations, and industries) and other aspects of economic resources mobility will be carefully considered.

2. Curriculum Experimentation and Development

The basic objective of this area of concentration has been to stimulate a critical examination of present educational practices in vocational and adult education, particularly those that relate to the teaching of disadvantaged youth and to encourage and support research and development projects in curriculum and teaching of new and emerging occupational skills. Among the highest priority items in vocational education is the need to identify the knowledge and skills required to qualify for a cluster of rapidly developing occupational opportunities. The establishment of new configurations of vocational programs which will concentrate on groupings of related occupations, such as the health services or agriculture services occupations, will be explored. The best developing instructional resources, media, and ficilities will be applied in the development of these new skills. Recent innovations in simulation training and computer based instruction, particularly those pioneered by NASA and the Armed Forces, will be explored for their relevance to vocational education. Experiences gained at the Job Corps Centers and MDTA programs will be evaluated and emulated where applicable.

The Division will be interested in curriculum proposals which examine, experiment with, and offer well articulated programs at various grade levels below that of professional, including the specification of teaching methods, and materials in the following occupational fields:

(1) Health services occupations
(2) Engineering-technician occupations
(3) Recreational occupations
(4) Ornamental horticulture and agriculture services occupations
(5) Building maintenance
(6) Public service occupations
(7) Social welfare occupations
(8) Office occupations

In addition, studies which evaluate these and other curriculum offerings and curriculum materials are desired. The principal purpose will be to identify the relative effectiveness of different methods of teaching and the best combination of practices and materials in preparing people for newly emerging job opportunities.

Research and experimentation will also be focused on new administrative structures and organizational patterns for establishing and carrying out new occupational training and adult education programs. This should include consideration of new and improved methods of teacher utilization and the application of educational technology to the needs of adult and vocational education.

3. Personal and Social Significance of Work

The concept of work as a major factor in adult life is central in our society. From his work the individual derives not only his income but also many of his personal satisfactions and his status in the social groups with which he has contact. In order to prepare him for his role as an employed adult and to help him continue to grow both as an individual and as a member of society, it is necessary for us to increase our understanding of how a person forms his concepts of work. We need to know more about the kinds of things which motivate him in various work-related situations and the ways in which he derives his satisfaction from them. Knowledge about a person's aspirations and their relationship to his abilities are vital in providing counseling and guidance. The place of different kinds of work in the individual's value structure and also in the value structure of various social groups is of major importance in his choice of an occupation. The interaction of his work and his self-concept throughout the various life-stages of adolescence through maturity must be considered in preparing the person for work entry as well as continuing education and training.

Understanding the worker as an individual and as a member of society is crucial in planning his education and evaluating his performance. Research in terms of the non-college bound will be encouraged in all of the areas mentioned above, and development projects which utilize such knowledge for purposes of counseling or designing better educational programs will be considered.

4. Personnel Recruitment and Development

Accelerated technological change, space research and development, a rapid expansion of the service industries, and an expanded vocational education program at the secondary and post-secondary levels has increased the demand for vocational teachers. New area vocational schools are being built. Many high schools and community colleges are adding vocational courses. To keep pace, it is imperative that high priority be accorded to the recruitment and development of competent vocational and adult education personnel; thus the goal of this fourth area is to assist in the development of an adequate supply of the types of personnel needed to staff new programs of vocational and adult education and to develop procedures to permit the upgrading of present personnel.

Studies are needed which relate to the determination of the numbers, qualifications, and sources of people needed to meet the staffing requirements of current and projected adult and vocational programs.

Research is needed to determine what vocational teachers should be taught and how teacher preparation programs should be organized at our Nation's colleges and universities.

The development of experimental programs for training new and current personnel are required. This should include the training not only of vocational teachers and counselors but school administrators and related vocational-technical-adult educational personnel. Funds are available to conduct summer and other institutes for teachers for new emerging occupations or to upgrade the competencies of teachers presently engaged in adult and vocational programs.

5. Program Organization and Administration

A number of investigations should be directed to the improvement of existing organizational structures of vocational education at State and local levels. The identification of factors which influence change, such as attitudes of State boards for vocational education; use of advisory groups; involvement of appropriate groups in the formulation of State plans, of matching funds, and other patterns of organization which facilitate rapid adaptation of program activities is urgently needed.

Successful local, State, and regional programs and their related organizational structures used to be identified and communicated elsewhere. Organizational and administrative patterns of vocational education programs already in existence need evaluation. Those that are successful need recognition and communication to other practitioners. Recent trends in general education, such as ungraded schools, team teaching, flexible scheduling, and individualized instruction need to be adapted to the purposes of vocational education.

6. Adult and Continuing Education

The increased emphasis on adult and continuing education is reflected in a substantial number of Federal programs, such as the Manpower Development and Training Act and the Economic Opportunity Act. This rapidly growing field requires definition and improved institutional patterns. Many previous attempts at planning have failed because of the lack of knowledge about the number and kinds of adults presently engaged in educational activities and of the number and kinds of courses and programs available to them. It is not possible to build a sound plan without a more accurate picture of the size and scope of the current enterprise.

Emphasis will be given first to determining the extent of participation in adult and continuing education activities. This undertaking will probably be in the nature of a census which will provide more reliable data on the numbers of adults participating in specific kinds of educational activities.

A second undertaking of equal importance is the assessment of the kinds of courses and programs for adults currently available in this country. Substantial programs in adult education are carried on by diverse agencies and organizations as departments of the Federal government, colleges and universities, junior and community colleges, propriatary schools, industrial firms, labor unions, public school systems, libraries and museums, and voluntary organizations of various kinds. It is necessary to understand the nature and scope of these offerings before attempting the design of future large-scale programs for adults.

Research is also needed on the problem of what motivates adults to continue learning and how they learn. It seems clear that both the motives of adults in seeking to learn and the process itself is different from what happens with children and adolescents, but definitive knowledge is lacking.

Emphasis will be placed on the development and evaluation of:

(1) The methods of recruiting and training teachers and leaders for adult and continuing activities;
(2) Ways in which adult education organizations and agencies can be coordinated in bringing their resources to bear on areas in which there is critical need for social action;
(3) Definition of the needs of older persons for broadening their education or learning new work skills;
(4) Educational programs for semiliterate adults to enable them to live more successfully in an urban environment; and
(5) Patterns of organizing and administering new institutions or agencies designed specifically for the education of adults.

7. Occupational Information and Career Choice

One of the severest handicaps to vocational and technical education has been the dearth of relevant occupational data and methods for effective communication of such information. Lack of knowledge about the ways in which career decisions are shaped has all too often led to the selection and preparation of youngsters for inappropriate careers, particularly those who can least afford to make wrong commitments.

Occupational information needs will be met through a variety of studies. For example, new and growing occupational fields will be surveyed to identify skill competencies and training requirements, and to determine future employment needs. Occupational classification systems will be analyzed for possible improvement. The costs of vocational education which are borne by students - such as tuition, transportation, and earnings given up to attend school - will be weighed against the returns to the individual in personal income, job satisfaction, and other benefits.

Projects which relate to improved methods of packaging and disseminating occupational opportunity information will also be sought in order to meet the needs of specific audiences, such as the high school dropout, the slow learner, disadvantaged youngsters, parents, hard core unemployed, etc.

Studies of the process of recruiting and selecting counselors and the entire process of vocational guidance and career choice are extremely important. We need to expand counseling practices which provide occupational information to the non-college bound student. We need to assess counselor competencies and to develop methods for their upgrading.

Projects which do not fall in one of these seven priority areas may be funded if conditions warrant support of such programs.

In addition to these general priority areas, priorities have been established for training seminars, institutes and workshops for the summer of 1966. These priorities are listed on Transparency 10. We plan to fund several such activities for vocational guidance and counseling personnel under priority 8 on this list. Proposals for conducting 1966 summer institutes and seminars should be submitted by February 15. Priorities for 1967 summer training activities will be established and communicated during the summer of 1966. We will welcome your suggestions of activities to be included in the 1967 priority listing.

TRANSPARENCY 10. PRIORITIES FOR TRAINING, SEMINARS, INSTITUTES, AND WORKSHOPS, SUMMER 1966

1. State and Local Leadership Development
2. Administration and Operation of Programs for the Disadvantaged
3. Teacher Educators - Instructional Media
4. Home Economics Teachers - Programs for Wage-earning Occupations
5. Administrators and Counselors - Post-secondary Programs
6. Teaching Psychiatric Nursing
7. Fluid-power Teachers
8. Vocational Guidance and Counseling Personnel
9. Teachers of Numerical Control
10. Office Education Teachers and Teacher Educators
11. State and Local Technical Education Administrators
12. Teachers of Instrumentation
13. Teachers of Agriculture Technologies
14. Dental Assistant Instructors
15. Home Economics Teachers - Preparation for Employment in Group Care and Guidance of Children

GUIDANCE AND COUNSELING PROJECTS

The Division of Adult and Vocational Research has approved 22 projects which relate directly or have some relevancy to vocational guidance and counseling. Eleven additional proposals have been received and are currently being processed. I will quickly review brief summaries of the 22 approved projects. The first 15 are more directly relevant to guidance and counseling, than the remaining seven. You may secure additional information on a specific project by contacting the principal investigator.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education
Division of Adult and Vocational Research

Vocational Education Act of 1963
(P.L. 88-210 Sec. 4(c))

PROJECT SUMMARY - ERD-109-65
Contract No.OE-6-85-042

TITLE: Use of a Mobile Vocational Guidance Unit--A Pilot Project

PRINCIPAL INVESTIGATOR: Dr. Robert H. Zeller, Director
Department of Guidance Services

INSTITUTION: State Department of Public Instruction, Springfield, Ill.

FEDERAL FUNDS REQUESTED: $45,500

DURATION: Beginning, July 1, 1965 Ending, June 30, 1968

Objectives: To demonstrate what can be accomplished by providing vocational guidance services to non-college bound students in economically underdeveloped and sparsely settled areas by:

1. Providing information about jobs and training opportunities;
2. Conducting counseling interviews to assist individuals in understanding the assets they have to offer on the job market, and in recognizing attitudes and skills required for job placement, and by
3. Using two mobile units to transport itinerant counselors and a traveling library of guidance materials into the sparsely settled areas where the specified groups of students are located.

Procedures: Six economically underdeveloped communities will be selected. Actual guidance services will be provided within these communities throughout the first two years of the demonstration project. The third year will be devoted to an evaluation of the two-year demonstration period and to assisting schools and communities that will continue providing vocational guidance services. The State of Illinois will provide the necessary capital outlay for the mobile units.

PROJECT SUMMARY - ERD-120-65
Contract No. OE-6-85-001

TITLE: New Directions in Vocational Guidance: An Institute for Counselor Education

PRINCIPAL INVESTIGATOR: Dr. Phyllis C. Wilson, Coordinator, Guidance and School Counseling

INSTITUTION: Queens College, The City University of New York

FEDERAL FUNDS REQUESTED: $6,595

DURATION: Beginning, July 1, 1965 Ending, November 30, 1965

Objectives: To provide to counselor educators new knowledges of employment trends and major issues in the world of work so that they may, in conference, arrive at an initial statement of criteria to be met in revising vocational guidance to meet current needs.

Procedure: Informative sessions with key personnel from government, industry, labor, and counselor education will be followed by group discussions and finally by documentation of the thinking of the institute as a whole in a final report.

PROJECT SUMMARY - ERD-163-65
Contract No. OE-5-85-059

TITLE: Vocational Problem-Solving Experiences for Stimulating Career Exploration and Interest

PRINCIPAL INVESTIGATOR: John D.Krumboltz, Associate Professor of Education and Psychology

INSTITUTION: Stanford University, Stanford, California

FEDERAL FUNDS REQUESTED: $61,810

DURATION: *Beginning June 1, 1965 Ending, November 30, 1966

Objectives: To find ways of motivating young people to take advantage of job training opportunities, to continue their education, to see the world of work as a set of intriguing problems, and to explore their own career potentialities. A series of life-like problem-solving experiences related to particular occupations will be constructed and tested. It is hypothesized that tenth grade students who are given an opportunity to solve simulated vocational problems will explore possible career opportunities and engage in interest-indicative activities to a greater extent than will equivalent subjects given either information about these same occupations or more general occupational information. The relative effectiveness of interest-generating materials will be tested for each of three occupations, in both a suburban and less economically privileged high school, for both boys and girls.

Procedure: In each of two high schools 450 tenth grade students will be randomly assigned to the cells of the experimental design (25 students of each sex in each treatment group for each occupation) so that the total N will be 900. Materials respresenting the nine combinations (3 occupations by 3 treatments) will be arranged in a random sequence and distributed to students. Criteria of effectiveness will include the drop-out rate, self-ratings of occupational interest, extent of voluntary information seeking about careers, amount of knowledge about each occupation, interest inventory scores, and willingness to undergo training for an occupation. Analyses of variance and covariance as well as non-parametric methods will be employed to test the hypotheses.

* Confirmation of letter contract dated June 1, 1965

PROJECT SUMMARY - ERD-211-65
Contract No. OE-5-85-094

TITLE: A Short Course for Secondary School Counselors on Vocational and Technical Training and Employment Opportunities

PRINCIPAL INVESTIGATOR: Dr. Huey E. Charlton, Associate Professor of Guidance and Counseling

INSTITUTION: Atlanta University, Atlanta, Georgia

FEDERAL FUNDS REQUESTED: $15,447

DURATION: *Beginning, June 1, 1965 Ending, August 31, 1965

Objectives: Improvement of the professional competencies of secondary school counselors, with emphasis on:

(1) Acquisition of knowledge about needs for personnel in scientific and technical pursuits below the professional level.

(2) Acquisition of knowledge about training opportunities for non-college bound youth, with special attention to area schools, MDTA, etc.

(3) Acquisition of knowledge about employment practices and policies of large and small businesses and industries.

(4) Development of skill in the use of standardized tests.

Procedures: (1) Thirty selected secondary school counselors will be provided with six weeks of classroom instruction by two full-time professors and a variety of on-campus and off-campus consultants.

(2) Six one-day field trips will be made to large and small industries and businesses and to vocational and technical schools.

(3) During the six-week training program, each enrollee will prepare an outline for at least one inservice training program for the teachers in his school district. These local inservice training programs will be scheduled for the 1965-66 school year.

* A short term authorization of $10,000 was made on June 1, 1965, to initiate project work during the period of contract negotiation.

PROJECT SUMMARY - ERD-220-65
Contract No. OE-5-85-093

TITLE: Training Program for Vocational Counselors

PRINCIPAL INVESTIGATORS: Dr. Gordon G. McMahon, Associate Professor, Trade and Technical Education, and Dr. Donald Frick, Associate Professor, Education and Guidance

INSTITUTION: Colorado State University, Fort Collins, Colorado

FEDERAL FUNDS REQUESTED: $17,990

DURATION: Beginning, June 1, 1965. Ending, November 30, 1965

Objectives: 1. To develop counselor skills in implementing practical vocational counseling techniques in local communities.

2. To bring basic factual information to counselors regarding new areas of training offered by recent Federal legislation on all aspects of vocational education.

3. To develop in counselors a better knowledge and understanding of the world of work and vocational philosophy so that they may provide more effective vocational counseling for individuals at various levels of educational attainment.

Procedures: 1. Thirty selected school counselors will be provided with four weeks of classroom instruction by three full-time professors and a variety of on-campus and off-campus consultants.

2. Each enrollee will have supervised practical experience in testing, interviewing, and counseling individuals who are being served by the Occupational Adjustment Services Center of Denver's Emily Griffith Opportunity School.

3. Each enrollee will participate in business and industry visitations to observe job types, selection procedures, training requirements, etc.

4. Each enrollee will establish a plan of action based upon the total learning experiences of the training program. The plan of action will be formulated in terms of a cooperative effort for the enrollee's local community to meet the vocational education needs of the youth of the community.

* Confirmation of letter contract dated June 1, 1965

PROJECT SUMMARY - ERD-403-66
Contract No. OE-6-85-039

TITLE: Maximization of the Professional Potential of Home Economics Teachers Through Group Counseling

PRINCIPAL INVESTIGATOR: Dr. Elizabeth M. Ray, Associate Professor
Home Economics Education

INSTITUTION: Pennsylvania State University, University Park, Pennsylvania

FEDERAL FUNDS REQUESTED: $9,335

DURATION: Beginning, September 1, 1965 Ending, August 31, 1967

Objectives:
1. To investigate the influence of group counseling in reducing anxiety and identify stress amoung prospective home economics teachers.
2. To determine, through content analysis of transcriptions of recorded counseling sessions, the nature and sources of actual and anticipated conflict in relation to commitment to a professional role.
3. To study the effects of group counseling sessions as measured by scores on measures of professional commitment, self concept, concern for students, and seccess in student teaching.
4. To study the longitudinal effects of group counseling in individualized mediation of the personal-professional role and in variations in professional history.

Procedures: Each of three groups of approximately twenty undergraduate Home Economics Education majors entering the two term sequence of pre-professional courses will be divided into two sub-groups, and assigned randomly to experimental or control conditions. Students assigned to experimental conditions will be assigned to a group counseling situation in charge of a counselor from the psychology department, which will include two periods per week for 12 weeks, of the two-term sequence. The control group will not have the counseling experience. Differences between the two groups will be determined by measures of professional commitment, self actualization, discrepancy between perceived and ideal self, of student estimate of teacher concern, grades in selected courses, and scores on student teaching. The transcriptions of the recorded counseling session will be analyzed for personal-professional role conflict.

PROJECT SUMMARY - ERD-422-65

TITLE: Counselor Institute and Follow-Up Workshop Project

PRINCIPAL INVESTIGATOR: Dr. Howard E. Mitchell, Director, Human Resources Program

INSTITUTION: The University of Pennsylvania, Philadelphia, Pennsylvania

FEDERAL FUNDS REQUESTED: $34,862 *

DURATION: Beginning, July 1, 1965. Ending, June 30, 1966

Objectives: This institute is to increase the competence of a selected group of junior and senior high school guidance counselors to work with culturally disadvantaged youth. Specifically, it will increase counselor understanding of: the attitudes of this group; changing employment opportunities; and industrial requirements and plans for the future.

Procedures: Fifty counselors from the New Jersey, Delaware and Delaware Valley area of Pennsylvania will attend a summer institute from July 19 - August 6, 1965 for seven hours per day. A series of lectures, visits to industrial plants and small group discussions will comprise the course content.. In addition, each counselor will develop an individual or a small group project to be continued in his local school during the following year. A follow-up and evaluation to determine participant changes will be conducted by the research personnel during the year which follows conclusion of the institute.

* A short term authorization of $12,000 was made on June 1, 1965, to initiate project work during the period of contract negotiations.

PROJECT SUMMARY - ERD-475-66
Contract No. OE-6-85-035

TITLE: Work Conference to Develop Guidelines for Supplementation of Counselor Educational Curricula in the Vocational Aspects of Guidelines and Counseling

PRINCIPAL INVESTIGATOR: Dr. Carl McDaniels, Associate Professor of Education

INSTITUTION: School of Education and College of General Studies George Washington University, Washington, D.C.

FEDERAL FUNDS REQUESTED: $19,168

DURATION: Beginning, October 1, 1965 Ending, January 31, 1966

Objectives: To convene a 3 day work-conference in the autumn of 1965 to develop a set of guidelines to supplement existing counselor education curricula with respect to vocational aspects of guidance and counseling. Five papers related to the topic would be developed in advance of the conference for discussion and review purposes. There would be 25 participants invited to the conference. They would be assigned to work-study groups on various aspects of the guidelines. Upon completion of conference the guidelines would be reviewed by the participants and published for dissemination to directors of counselor education programs throughout the United States. The guidelines would therefore be available for trial use and evaluation in the summer and fall of 1966.

Procedures: In early September a 3-5 man advisory group would be chosen to make recommendation on the final selection of writers for working papers and participants to be invited. The work-conference would be held in mid-November at Airlie House, Warrenton, Virginia.

PROJECT SUMMARY - HRD-033-65

TITLE: Planned and Unplanned Aspects of Occupational Choices by Youth

PRINCIPAL INVESTIGATOR: Dr. Robert A. Ellis, Associate Professor of Sociology

INSTITUTION: Institute for Community Studies, University of Oregon, Eugene,Oregon

FEDERAL FUNDS REQUESTED: $379,842

DURATION: Beginning, March 19, 1965. Ending, August 31, 1966 *

Objectives: The general objective is to learn about the nature of the occupational decision process and of the social and personal factors that faciliate, impede or prevent youth in our society from developing occupational goals that can be effectively and realistically achieved. There are five specific objectives:

1. To develop a conceptual model of occupational choice.

2. To identify the typical steps followed by youth in developing occupational goals.

3. To determine group and environmental factors that systematically influence the occupational choice process.

4. To expand the techniques available for studying occupational choice patterns.

5. To collect and disseminate significant findings on occupational choice patterns.

Procedures: A nationwide study will be made of the planned and unplanned aspects of occupational decisions made by youth in our society. The study will involve the following specific tasks:

1. Systematically collecting and evaluating available knowledge on the occupational decision process and related factors.

2. Perfecting existing techniques and developing new techniques for studying occupational choice patterns, and translating them into terms usable at different educational and social levels.

* A short term authorization of $20,000 was made to initiate project work during the period of contract negotiation.

PROJECT SUMMARY - No. HRD-095
Contract - No OE-5-85-035

TITLE: The Relationship Between Guidance Programs and Changes in Student Behavior

PRINCIPAL INVESTIGATOR: Dr. Armas W. Tamminen, Professor and Head, Dept. of Psychology

INSTITUTION: Minnesota State Dept. of Education, St. Paul, Minnesota

FEDERAL FUNDS REQUESTED: $53,540

DURATION: *Beginning June 1, 1965. Ending May 31, 1966

Objectives: This studies a large-scale investigation of relationship between various aspects of guidance programs, on the one hand, and personal and social variables that have been frequently identified as possible guidance "outcomes", on the other. The major objectives of the study are to initiate a search for evidence that guidance programs justify the efforts and money expended on them.

Procedures: Using information available in the Minnesota State Department of Education and in the Office of the Statewide Testing Program, and gathering further information from a random sample of Minnesota schools and pupils, this study will: (1) measure various dimensions of school guidance programs and of personal-social characteristics of pupils exposed to these programs; (2) search for any relationships that may exist between these two sets of variables under varying school or situational conditions.

* Confirmation of a letter contract dated June 1, 1965

PROJECT SUMMARY - HRD-098-65
Contract No. OE-5-85-036

TITLE: Identification of Characteristics of Practical Nursing Students For Use in Guidance and Selection

INVESTIGATOR: Barbara L. Tate, Assistant Director, Research & Studies Service

INSTITUTION: National League for Nursing, New York, New York

FEDERAL FUNDS REQUESTED: $19,800

DURATION: Beginning, May 1, 1965. Ending, April 30, 1967

Objectives: This research is designed to discover whether a nursing student's (1) biographical characteristics, (2) reasons for choosing nursing, and (3) occupational goals when entering the program have any effect on her completion of the full program.

Procedures: Data are being collected through three questionnaires. The first is to be completed by all entering students at practical nursing schools randomly selected from a stratified sample. The second questionnaire will be given to all students who have finished their programs in these schools, and the third will be filled out by those same respondents a year after graduation. The information will be coded, tabulated, and analyzed in order to provide information for the further development of practical nursing as an occupation.

* A short term authorization of $5,500 was made on May 1, 1965 to initiate project work during the period of contract negotiation.

PROJECT SUMMARY - HRD-263-65
Contract No. OE-5-85-091

TITLE: A Development Program for Vocational Counselors Directed Toward Serving Disadvantaged Youth More Effectively

PRINCIPAL INVESTIGATOR: Dr. Thomas J. Sweeny, Director of The Guidance Center

INSTITUTION: University of South Carolina, Columbia, South Carolina

FEDERAL FUNDS REQUESTED: $16,711

DURATION:* Beginning, June 1, 1965 Ending, February 28, 1966

Objectives: To assist professional counselors in South Carolina to a better understanding of the problems of disadvantaged youth and to consider the most effective ways of dealing with the problems of these young people.

Procedures: An institute will be held during the summer at the University of South Carolina for 30 practicing counselors who work with disadvantaged youth. The participants will work together in developing and evaluating recommendation for serving this group more effectively.

* A short term authorization of $4,500 was made on June 1, 1965, to initiate project work during the period of contract negotiations.

PROPOSAL SUMMARY
Contract No. HRD-405-65

TITLE: Use of Computer Technology in Vocational Counseling

INVESTIGATOR: John F. Cogswell, Research Leader

INSTITUTION: System Development Corporation, Santa Monica, California

DURATION: November 1965 - April 1967

TOTAL FEDERAL FUNDS REQUESTED: $140,280

Objectives: The researchers will conduct a general survey of guidance practices in vocational training schools in order to discover how automated data-processing systems are currently being used. This information will provide the basis for innovations in computer-assisted counseling and will ultimately be utilized to construct a viable automated system of vocational guidance.

Procedures: The counseling procedures at 16 institutions connected with vocational education and guidance at both the high school and post-secondary levels -- including two State employment agencies - will be examined in detail. One of these sites will be selected for additional intensive study. An experimental, computer-assisted counseling system will then be developed to meet its particular needs. Included in the information-processing service will be a student data-base and retrieval system, programs for the appraisal of counseling techniques, and automated "interviewing" procedures for the collection of routine information. The effectiveness of the system will be evaluated after it has been put into operation.

PROJECT SUMMARY - HR-5-0065
Contract No. OE-2-10-39

TITLE: Floundering and Trial After High School

PRINCIPAL INVESTIGATOR: Dr. Donald E. Super

INSTITUTION: Teachers College, Columbia University

FEDERAL FUNDS REQUESTED: $98,418

DURATION: September 15, 1961-September 14, 1964

Objectives: This project is to investigate the psychological characteristics, social environment, and academic experience of a group of young adults and compare these factors with the amount of floundering and trial each experienced prior to the time he became established in a regular adult occupation.

Procedures: Interviews, questionnaires, and tests will be used to collect data on vocational maturity, personal adjustment, social adjustment, socioeconomic status, achievement and experience on a group of young adults who are the subjects of previous experimental research. The data will be processed using a high-speed-electronic computer to tease out the relationships which exist among the factors being considered. The relationships which are discovered should provide a better understanding of the influence of the developmental factors on career achievement.

PROJECT SUMMARY - No EO-402-66
OE-6-85-052

TITLE: A Multi-Media Approach to Communicating Occupational Information to Non-College Youth

PRINCIPAL INVESTIGATOR: Dr. Ann M. Martin, Research Director, Center for Library and Educational Media Studies

INSTITUTION: University of Pittsburgh, Pittsburgh, Pennsylvania

FEDERAL FUNDS REQUESTED: $127,765

DURATION: Beginning, October 1, 1965 Ending, November 30, 1967

Objectives:
1. To prepare a variety of guidance materials (including a 12-to 16-week television series) utilizing available occupational data.
2. To develop a training program for counselors

Procedures: Current needs for guidance information will be established by holding a conference of experts in the field. The materials which are produced will be used in 8 Pittsburgh school districts at the 8th and 12th grade levels. Changes in student behavior will be analyzed and comparisons will be made with students in a matching group of school districts used for control.

PROJECT SUMMARY - ERD 279-65
Contract No. OE-6-85-002

TITLE: PREP--Program for Recovering and Extending Potential for High School Underachievers Seeking Entrance at a Regional Community College

PRINCIPAL INVESTIGATOR: Mr. John J. Shea, Ed.D., Candidate and Teaching Fellow, School of Education

INSTITUTION: Greenfield Community College, Greenfield, Massachusetts

FEDERAL FUNDS REQUESTED: $4,659

DURATION: *Beginning, July 1, 1965. Ending, June 30, 1966

Objectives: 1. To determine if a Planned Summer Remedial Program (PREP) can prepare identified high school graduate-under-achievers for success in a two-year terminal program.

2. To determine whether personal-vocational counseling will have a differentiating effect on this student goal achievement.

3. To determine through followup procedures the degree to which both the remedial program and the underachievers have been successful.

Procedures: The 40 participants selected from public schools in three Massachusetts counties will be screened to determine that they have been unsuccessful college applicants. These persons will be voluntarily enrolled in the PREP program at Greenfield Community College for a seven-week remedial program and will be guaranteed admission to this college as full-time students for the fall semester. Pre-test and post-test objective data will be collected on each participant. Twenty of these students will be selected in random manner for internal personal vocational counseling. Test scores of the 40 PREP participants will be compared at the end of the first semester with the pre-test and post-test scores of a randomly selected group of successful two-year terminal students.

* Confirmation of letter contract dated July 1, 1965

PROJECT SUMMARY - No. HRD-155
Contract - No. OE-5-85-054

TITLE: Study of Youth in High School, at Work and Unemployed

PRINCIPAL INVESTIGATORS: Mr. R.L. Kahn, Program Director, Survey Research Center and Mr. J.G. Bachman, Study Director

INSTITUTION: University of Michigan, Ann Arbor, Michigan

FEDERAL FUNDS REQUESTED: $89,077

DURATION * Beginning, June 1, 1965 Ending, May 31, 1971

Objectives: Three issues, two pragmatic and one theoretical, are basic to the research here proposed and summarize the objectives: (1) What are the differential effects of three major patterns of education and socialization in late adolescence -- high school, employment, and unemployment? (2) Against what basis of comparison can new developments in education and training (the Job Corps, for example) be appraised? (3) What are the potent factors in terms of which the effects of these several educational environments can be explained?

Procedures: The research objectives will be met by means of a three-year study of boys in the transitional period from late in the fifteenth year to early in the eighteenth year. In order to explore the relationships among factors, and among changes in them, three panels of subjects will be used: (a) 900 boys who remain in secondary school until they graduate, (b) 600 boys who leave school shortly after their sixteenth birthday and soon find jobs, (c) 300 boys who leave school shortly after their sixteenth birthday and do not readily find jobs.

* Confirmation of letter contract dated June 1, 1965

PROJECT SUMMARY - HRD-159-65
Contract No. OE-5-85-058

TITLE: Factors Related to Educational and Occupational Aspirations of Early Adolescent Males from Culturally Deprived Families

PRINCIPAL INVESTIGATORS: Dr. Ruth J. Dales, Professor, and Dr. James Walters, Professor and Head, Department of Home and Family Life

INSTITUTION: Florida State University, Tallahassee, Florida

FEDERAL FUNDS REQUESTED: $ 24,760

DURATION: Beginning June 1, 1965 Ending May 31, 1969

Objective: To examine the relationship between academic and vocational aspirations of intellectually competent and academically successful youth from culturally deprived areas and their friendship patterns, self concepts, family relations, and behavior as rated by teachers.

Procedures: A three-year study of white and Negro boys in low economic areas in North-Florida will be conducted. Eighty, ninth, and tenth grade pupils will be considered in the first year of the study. During the second year these same youth will be followed as they progress into the ninth, tenth, and eleventh grades. In the third year they will be followed as to progress into the tenth, eleventh, and twelfth grades. The youth who reveal high potential but low aspiration will be studied with reference to peer-group and family-home situations. Background characteristics of youth who withdraw from school prematurely and youth who remain in school will also be examined.

* A short term authorization of $6,500 was made on June 1, 1965, to initiate project work during the period of contract negotiation.

PROJECT SUMMARY - No. HRD - 173
Contract - No. OE-5-85-067

TITLE: Work Orientation of Teenagers

PRINCIPAL INVESTIGATORS: Mr. Robert Smith, Study Director and Mr. Ronald Lippett, Program Director

INSTITUTION: University of Michigan, Ann Arbor, Michigan

FEDERAL FUNDS REQUESTED: $52,463

DURATION: * Beginning, June 1, 1965. Ending, September 30, 1966

Objectives:
1. To study the experiences and social contacts of school dropouts;
2. To determine how these relate to factors such as race, religion, social class, sex, the meanings of work and play, competence, success, and jobs, and
3. To evaluate findings for use in counseling and guidance.

Procedures: A dropout sample will be determined by consulting school records. Questionnaire data on the twelfth grade students will be compared with responses made while in the eighth and tenth grades to study developmental changes occuring during this period. A series of conferences will be held for school personnel to disseminate the findings and discuss their application to school problems.

* Confirmation of letter contract dated June 1, 1965

PROJECT SUMMARY - HR-348-65
Contract No. OE-6-85-074

TITLE: Migration and Vocational Choices of Students from an Economically Depressed Area

INVESTIGATOR: John Harp, Associate Professor of Rural Sociology

INSTITUTION: Cornell University, Ithaca, New York

DURATION: October 1, 1965 - September 30, 1966

FEDERAL FUNDS REQUESTED: $6,156

Objectives: This project will examine factors involved in the migration of post-high school youth from an economically depressed rural area. In particular, any environmental characteristics which appear to relate to the consistency of initial career plans and eventual job choice will be examined.

Procedures: Data collected three years ago from a sample of 800 high school graduates will provide the baseline for the study. The original subjects will be contacted and requested to supply information about the types and locations of their present occupations. These data will be compared with that available from the previous study in which the subjects were asked about their plans for the future.

PROJECT SUMMARY - HR-409-65
Contract No. OE-6-85-171

TITLE: Characteristics of Vocationally-Oriented School Dropouts and Graduates

INVESTIGATOR: George Mallinson, Dean, School of Graduate Studies

INSTITUTION: Western Michigan University, Kalamazoo, Michigan

DURATION: October 1, 1965 - June 30, 1967

FEDERAL FUNDS REQUESTED: $30,490

Objectives: This project will study the characteristics of high school dropouts and graduates who enter technical training programs and who drop out, who find employment immediately after completing high school, or who remain unemployed. The data will then be compared to information already available on students from the same schools who entered institutions of higher education.

Procedures: The subjects of a previous study of high school students will be re-contacted for this project. In addition to the data already on file, information will be obtained concerning their present employment status, any supplemental technical training they may have received, and their occupational aspirations. The collected data will be analyzed by computer. The results will be used to aid high school administrators and counselors in their vocational guidance programs.

PROJECT SUMMARY - HRD-413-65
Contract No. OE-6-86-065

TITLE: Improvement of Vocational Decision Making in the Community College

PRINCIPAL INVESTIGATOR: Antoinette Ryan

INSTITUTION: Blue Mountain Community College, Pendleton, Oregon

DURATION: October 1, 1965 - November 30, 1966

FEDERAL FUNDS REQUESTED: $ 56,537

Objectives: In order to encourage realistic vocational descision making by community college students, the initiators of this project will develop an integrated teaching and counseling program. The curriculum will include both instruction in basic skills and specific counseling experiences, so that a student's knowledge of himself can be increased as he learns factual material.

Procedures: Students at a community college who are judged to be either inadequate or unrealistic in making vocational decisions will be subjects of this research. They will be enrolled in a specially-designed curriculum including such factors as (1) individualized instruction, (2) team teaching, (3) a laboratory environment, and (4) small group counseling sessions. Course material will be aimed at fostering effective study habits and increasing basic skills in reading, writing, and mathematics. The experimental curriculum will be evaluated by comparing those students who have completed it with others who have not.

May I repeat again that it is a pleasure for me to participate in this seminar. Dr. Taylor, Dr. Campbell and the Center staff are to be commended for their excellent planning and leadership. I feel confident that our experience here will contribute greatly to our ability to more adequately serve vocational and technical education.

MANPOWER AND LABOR ECONOMICS: IMPLICATIONS FOR GUIDANCE IN VOCATIONAL-TECHNICAL EDUCATION

Howard Rosen
Assistant Director, Research
Manpower Administration, U.S. Department of Labor

Introduction

This seminar has been called to formulate new guidelines for vocational and technical education. In the past, those of us designated as "manpower economists" have alerted educators and guidance practitioners to basic changes occurring in the structure and pattern of activity of the population and labor force in the economy. I trust that my remarks will be of some assistance in enabling you to meet your difficult and practical problems which were identified by the Chairman of the meeting in his, "Need for the Seminar." Above all, I ask you to accept my comments as those coming from a friend of both vocational guidance and vocational education.

The more violent critics of vocational education have argued that it has failed to keep pace with changes in the economy and has thus become a moribund institution. I maintain that vocational education has, in the past, provided critically needed training for this Nation's labor force and that it now has the capability to adjust to the needs of our economy. I start with the premise that vocational education will continue to play a key role in training American workers. My optimism about the future of vocational education is based primarily upon certain sections of the Vocational Education Act of 1963 which contain "built-in" adjustments to change. I will refer to these sections shortly.

Too many of the critics of vocational education fail to recognize that this country has been able to achieve high war and peace-time levels of production because of our vocationally-trained labor force. When President Roosevelt, during World War II, called for the highest production of aircraft in world history, his critics scoffed and said that we had neither the manpower nor the material to meet these demands. Vocational education made a major contribution to the achievement of these war production goals by training some 7.5 million persons during World War II.

Let me expand on the phrase, "vocationally-trained labor force." Manpower economists do not have a single figure or concept which we can use as a "national skill level index" for comparing the skilled labor forces of the countries of the world. If there were such an index, I believe that this country would be ranked with the leaders. There is no question in my mind that one of the major reasons for this country's high ranking could be attributed to the skill and training contributed by our vocational education system.

Let me put this concept on a very personal level. Few of us engaged in "do-it-yourself" activities who casually do minor repairs about the home remember where we acquired the basic skills to do this type of work. We need to be reminded that many of us may have been among the 4 million persons enrolled in industrial arts education where we were exposed to basic industrial skills, knowledge, and concepts. We might have also been at some time, among the millions of persons (4.6 million in 1964) enrolled in federally reimbursed vocational education programs. When the enrollments of industrial arts education and vocational education are combined over a period of time it becomes easier to understand the contribution of vocational training in schools to the skill level index of the American labor force. This skill index means that we have a flexible labor force carrying with it an ever increasing cumulative level of skills and adaptability that can adjust to new economic social and technological change more readily than most other labor forces in the world.

Friends can also criticize. Let me use this prerogative now--particularly in connection with the efficiency of our vocational education system.

We are beginning, for the first time, to get some data from broad scale studies of vocational education. The first nationwide study of the post-graduation employment experience of male graduates of trade and industry vocational courses shows that the majority of vocational course-graduates do not, for their first job, enter the trade for which they trained in high school.[1] Of the young men whose first job is not in the trade studied, very few enter the trade in later years.

The American Institutes for Research study reports that for 1953, 1958, and 1962 only 13.4, 14.4, and 19.8 percent of the trade and industry graduates have held all of their full-time jobs in the trade studies. Apparently the majority of the T & I graduates do not work in either the trade studied or closely related trades.

This "gap" between the trade studied and future employment raises some serious questions about the effectiveness of both vocational education and guidance. Are we supporting a training system which is not preparing youngsters for the jobs they get? Coupled with the training question, we must also keep in mind the findings of the Project Talent study that between 50 and 60 percent of the 12th grade students in 1960 indicated that they had not discussed college or career plans with a school counselor during the previous year.[2]

Any impartial observation of the data on the enrollment in federally aided programs brings one to the conclusion that vocational education has not adjusted readily to the needs of our changing economy. We cannot ignore the facts that only last year 44.3 percent of the enrollees in federally aided vocational education programs were studying home economics and 18.8 percent were studying agriculture in the most highly industrialized Nation in the world (see Table 1). Between 1960 and 1964 employment in agriculture declined 16.8 percent from 5.7 million to 4.8 million. During this same period, enrollment in vocational agriculture rose 8.1 percent from 796,200 to 860,600.

Vocational educators have never squarely faced the issue of the mass exodus of manpower from farms in the United States. They have not acknowledged the net transfer of almost 25 million persons from farms since 1940. Today, the number of farm reared persons makes up approximately one-third of the total population in metropolitan centers. How many of these persons were equipped for urban employment when they were given vocational training in their local communities? Let me return to this question again when we look in more detail at the industrial and occupational changes which have occurred in our economy.

The time has come for vocational educators and those concerned with vocational guidance to take a close look at economic and social changes now taking place. Manpower economists can bring the facts to their attention. The changes in training and guidance will only take place when educators and guidance specialists translate these facts into revised programs and curricula.

I, for one, am acutely aware that many of the changes required for new directions can occur only under painful and wrenching conditions. Teachers and educators who have been raised and trained in a rural environment cannot easily adjust their thinking to the requirements of an urban world of fast-moving change. Many persons with special interests will argue for the status quo and resist change.

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[1] Max W. Eninger, The Process and Product of T & I High School Level Vocational Education in the United States (Pittsburgh: American Institutes for Research, Institute for Performance Technology, September 1965), ch. 5, p. 25.

[2] Progress Toward the Goals of Project Talent (Washington: U.S. Department of Health, Education, and Welfare, Office of Education, June 1965), Bulletin No. 4, OE-25043.

Table 1. Enrollment in Federally Aided Vocational Classes, by Type of Program, Selected Years

Fiscal Year	Total	Agri-culture	Distri-butive Occupations	Home Economics	Trades and Industry (1)	Practical Nursing	Technical Education
				Number (in thousands)			
1918	164.2	15.5	-	30.8	117.9	-	-
1948	2,836.1	640.8	292.9	1,139.8	762.6	-	-
1960	3,768.1	796.2	303.8	1,588.1	938.5	40.2	101.3
1961	3,855.6	805.3	306.1	1,610.3	963.6	47.3	123.0
1962	4,072.7	822.7	321.1	1,725.7	1,005.4	49.0	148.9
1963	4,217.2	827.8	309.6	1,839.4	1,001.8	54.0	184.6
1964 (2)	4,556.4	860.6	334.1	2,022.1	1,069.3	59.0	221.2
				Percent distribution			
1918	100.0	9.4	-	18.8	71.8	-	-
1948	100.0	22.6	10.3	40.2	26.9	-	-
1960	100.0	21.1	8.1	42.1	24.9	1.1	2.7
1961	100.0	20.9	7.9	41.8	25.0	1.2	3.2
1962	100.0	20.2	7.9	42.4	24.7	1.2	3.7
1963	100.0	19.6	7.3	43.6	23.8	1.3	4.4
1964 (2)	100.0	18.8	7.3	44.3	23.4	1.3	4.8

(1) Includes enrollment in fishery occupations.
(2) Provisional, subject to final review of state reports.
Source: U.S. Department of Health, Education, and Welfare, Office of Education.

I want to point out that those who will suffer the most from our inability to adjust to change will be the youngsters you educate and train. The real reason for this seminar is not vocational guidance nor vocational education. The real purpose is our concern for our future citizens. The stakes we are discussing are far higher than vocational guidance programs. For this reason, we must be guided by facts in developing the best possible vocational and guidance programs. The stakes are too important to let personal bias and involvement influence decisions and direction.

Let me now turn to the topics I wish to explore with you. These will include the current economic environment and indicate some of the changes which have occurred in recent years. Brief reference will be made to industrial employment changes, occupational shifts, trends in the employment of women, mobility of the labor force, and technological change. I will then turn to future manpower needs with specific reference to industry and occupational requirements.

After looking at the current scene and anticipated changes, I will discuss some problems of vocational guidance and challenges to manpower economics which these changes portend. The last section touches upon some research questions for vocational guidance and vocational education.

Economic Environment--1965

In looking at vocational education today, we must remember that we are viewing it from a vantage point of some 72.8 million Americans employed, with unemployment in November 1965 down to 3.0 million--one of the lowest levels in 8 years. Although we still have about 638,000 nonwhite workers unemployed and over four-fifths of a million jobless teenagers, it is apparent that our employment situation is in a far stronger position than it has been for many years.

However, before we are overwhelmed by the euphoria of a 4.2 percent unemployment rate, we must also take into account the fact that we are looking at a process of change--not a static situation. The very dynamism of our economy means that unless our institutions and our labor force keep up with change that their lag will create new future economic and social problems.

Let us note some of the more obvious industrial and occupational changes which relate directly or indirectly to vocational education and vocational guidance. We will then turn to some of the anticipated changes of the future.

Industry Employment Shifts

As indicated earlier, we should be aware that one of the most striking changes of the past 50 to 60 years has been the shift from farm to nonfarm work. The percentage of the civilian labor force engaged in agricultural activities declined from 38.8 percent in 1900 to 6.4 percent (1 out of 15) in 1964. In 1910, about 1 out of every 3 workers was employed in agriculture.

This massive shift away from agriculture to other economic activities has drastically affected the kinds of industries in which our labor force is employed so that today there are three times as many jobs in trade, finance, service, and government as there were nearly 50 years ago. Within the nonfarm sector of employment there has also been a significant move away from goods-producing industries such as manufacturing, mining, construction, and agriculture to service-producing industries such as trade, government, service, finance, insurance, real estate, transportation, and public utilities.

By 1964 we had some 37 million employed in service-producing industries as compared with the 25.8 million working in goods-producing industries (see Table 2). Between 1947 and 1964 the number of workers employed in service activities rose by 11,744,000 as compared with a decrease of 933,000 in goods-producing industries.

A recent research project, sponsored by the Manpower Administration of the U.S. Department of Labor under Title I of the Manpower Act, has underscored another significant development. This has been the growth of employment among not-for-profit organizations. Thus, the number of persons employed directly and indirectly for the not-for-profit sector (nonprofit institutions and government) of the economy comprised at least one-third of the entire employed population in 1963.[3] Included in the not-for-profit sector are all, or a high proportion, of programs which provide such basic goods and services as defense, education, health, religious activities, science and research, social welfare, cultural activities, the handling of mail, and police protection.

Occupational Changes

Because of these shifts occurring in industry employment, we have also had some sharp changes in the kinds of jobs our workers perform. Going back to 1910 again, we see that about 1 in 5 workers had a white-collar (professional, technical, proprietary, managerial, clerical, sales) job; more than 1 in 3 was a blue-collar worker (skilled, semiskilled, and unskilled); 1 in 3 was a farm worker and 1 in 10 had a service job.

One of the important changes of the post-World War II period has been the much greater growth in the number of workers in white-collar and service occupations as compared with manual workers. This growth has been especially large both in the number and proportion of professional and high-level managerial workers. Employment of white-collar workers rose by more than one hals (54 percent) between 1948 and 1964, rising from about 20.2 million to 31.1 million, so that 2 out of 5 workers were in white-collar jobs as compared with 1 out of 5 in 1910. Employment of service workers also rose substantially, growing from 6 million to 9.3 million, an increase of 55 percent. At the same time, employment of blue-collar workers increased much less rapidly, increasing about 8 percent from 23.6 million to 25.5 million. The number of farm workers actually declined, falling from 8.1 million in 1947 to 4.4 million in 1964, a drop of 45 percent.

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3 Eli Ginzberg, Dale L. Hiestand, and Beatrice G. Rubens, The Pluralistic Economy (New York: McGraw-Hill Book Company, 1965), p. 203.

Table 2. Wage and Salary Employment by Industry in the United States, 1964
(In thousands)

Goods-Producing Industries		Service-Producing Industries	
Agriculture (1)	4,761	Transportation and public utilities	3,976
Contract construction	3,106	Wholesale and retail trade	12,188
Mining	635	Finance, insurance, and real estate	2,944
Manufacturing	17,303	Service and miscellaneous	8,533
Total	25,805	Government	9,502
		Total	37,143

(1) Includes self-employed and unpaid family workers.
Source: U. S. Department of Labor, Bureau of Labor Statistics.

Employment of Women

One of the most striking developments in the post-World War II period has been the more rapid growth in the employment of women over that of men. Since the end of World War II, employment of women rose from 16.3 million to more than 24.2 million, an increase of almost 50 percent. This increase was four times more rapid than the rate of increase of jobs for men.

In 1965, 50 percent of all American women between the ages 45-54 were in the labor force. This is a dramatic contrast with the situation at the start of the century. At that time, only about 15 percent of women in this central age group were in the labor force.

Almost 3 out of every 4 employed women over the age of 35 are working in four major occupational categories. These occupations are ranked according to size from: clerical and kindred workers (26.5 percent); service workers, except private household (16.5 percent); operatives and kindred workers (15.9 percent); and professional, technical, and kindred workers (13.2 percent). (See Table 3.)

Table 3. Employed Women Aged 35 and Older by
Major Occupational Group, March 1963

Total: Number (in thousands)	14,724
Percent distribution	100.0
Major occupational group	
Professional, technical, and kindred workers	13.2
Farmers and farm managers	.7
Manager, officials, and proprietors, except farm	6.3
Clerical and kindred workers	26.5
Sales workers	8.3
Craftsmen, foremen, and kindred workers	1.3
Operatives and kindred workers	15.9
Private household workers	9.2
Service workers, except private household	16.5
Farm laborers and foremen	2.0
Laborers, except farm and mine	.3

Source: Special Labor Force Report, No. 40, U. S. Department of Labor, Bureau of Labor Statistics.

The major difference between the occupational distribution of the younger and more mature women, is that more than a third of the young women are in clerical jobs (1 in 4 of the women 35 and over have clerical jobs).

What is the significance of the high proportion of women 35 and over in the labor force and their occupational distribution to counselors and educators?

First, a large number of the women you educate will have three careers. The first career will take place after they leave school and enter the labor force. When they marry they will then leave the labor force to begin their second career as mothers and homemakers. The third career, typically, will take place after their children have reached school age and they return to the labor force. This pattern of work life must be understood by the educator and counselor in training young women and counseling them about their future careers.

The second significant fact about the employment of women is of direct interest to educators. How does the educational program you are now offering fit in with the fact that 1 out of every 4 working women age 35 and over today has a clerical or related job? Are today's training programs preparing women for the right kinds of employment opportunities?

It is now apparent that women represent a key element in our working force. They are evidently here to stay. By July 1964, the 4.5 million women working in manufacturing industries made up about one-quarter of total manufacturing employment. Approximately 50 percent of the employees in communications (telephone, radio and television broadcasting), and finance, insurance, and real estate were women.

Within the manufacturing industry segment, women workers accounted for more than 50 percent of the employment in electronic component plants. About 4 out of 5 workers in the apparel industry were women.

Both educators and counselors must now take into account the inescapable fact that women workers can no longer be sloughed off into training for homemaking with the mistaken notion that they will spend most of their lives out of the labor force and in the home. The kind and quality of training given to young women deserves the same priority as that given to young men. Furthermore, because so many married women must move with their husbands, their training must also be broad enough to enable them to adjust to widely different job opportunities.

Mobility of the Labor Force

Persons concerned with education and training have been slow in recognizing the fact that many of the young people they educate and train will leave their home communities[4]. As an indication of the mobility of our population we should keep in mind that half of the over 3,000 counties in the United States lost population due to outmigration between 1950 and 1960.

More recently, a study of the mobility of the population showed that between 1963 and 1964, about 11 percent of the 18 and 19 year olds have moved across a county line[5]. The migration rate for the 20 and 21 year olds was 15 percent and was up to 17 percent for those 22 to 24. The peak migration rate apparently occurs among persons in their early twenties--the age at which most young people leave their parental homes to find jobs, to get married and set up their own homes.

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[4] Although the American Institutes for Research study, The Process and Product of T & I High School Level Vocational Education in the United States, implies there was very little mobility among the trades and industry graduates (ch. 12, p. 3), the evidence presented contradicts the implication. If the graduates for whom no address could be found were included among the movers (and many of them probably should have been included), then almost 50 percent of the graduates did in fact, move.

X [5] Mobility of the Population of the United States March 1963 to March 1964 (Washington: U. S. Department of Commerce, Bureau of the Census, September 7, 1965), Current Population Reports, Series P-20, No. 141.

Many of the workers trained in vocational education institutions do not remain in their home towns after they receive their education. This becomes apparent when we see that between 1959 and 1964, about 600,000 male manual workers age 18-24 moved to noncontiguous states. (About half of these workers may have moved more than once.) Approximately a quarter of these movers were craftsmen.

The mobility problem is further complicated because of the extremes in environmental conditions in which a young person may be born, raised and trained and his ultimate destination as a worker. This is clearly delineated in the rural to urban population shift.

In May 1958, there were 25.8 million native born persons 18 years of age and over in the country who had been born on farms. About two-thirds of the farm-born population had migrated to nonfarm areas[6]. A recent survey of 16-21 year old youths showed that 40 percent of the boys and 60 percent of the girls who had been farm residents their last year in school had moved to nonfarm areas[7].

Farming is usually considered a family enterprise in which agricultural skills are passed from generation to generation. However, in 1962, only 20 percent of the employed male population 25 to 64 years old whose fathers were farmers and farm managers were also employed in agricultural occupations. Moreover, only 2 out of every 5 men, age 25 to 64 who had begun work as farmers were still engaged in farming in 1962.

The majority of these farmers' sons shifted out of farming into blue-collar, semiskilled occupations. Only a third of the farm-born were in white-collar jobs, compared with nearly a half of the nonfarm natives.

The reality of mobility and the significant differences in the kinds of jobs those raised on farms eventually get can no longer be overlooked by those charged with the responsibility of educating our youth. It appears that youngsters growing up in rural areas are being short-changed for life because of the training they get--or because of the lack of training.

Technological Change

No current analysis of education and vocational guidance can omit a discussion of technological change and its possible impact upon employment and job content. The new industry of research and development which exploded when expenditures for these activities rose from under $1 billion in 1941 to some $21.5 billion in 1965, guarantees changes and provides a built-in innovator in our economy.

Surprisingly, little hard data are available on the overall pace and effects of technological change. Our productivity measurements, which are limited in their ability to accurately measure technological change, do appear to indicate a modest historical acceleration in the rate of change.

Empirical evidence does indicate that technological change is a major factor in the displacement and unemployment of particular employees. The evidence is not so clear, however, that technological change has been primarily responsible for the high levels of unemployment which prevailed since 1953.

For this meeting, we can draw some useful conclusions about technological change without pursuing all of the arguments about the pace and impact of change upon the economy. The most important comment we can make about technological change is that it is necessary and desirable and our workers must be prepared to adjust to it throughout their working careers.

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6 Characteristics of U. S. Population by Farm and Nonfarm Origin (Washington: U. S. Department of Agriculture, Economic Research Service, December 1964), Economic Report No. 66.

7 Out-of-School Youth, February 1963--Part II (Washington: U. S. Department of Labor, Bureau of Labor Statistics, 1965), Special Labor Force Report, No. 47.

Congress has recognized that at least some of the costs for adjusting to technological change should be borne by society. The passage of the Manpower Development and Training Act in 1962 represented a move toward public policy which acknowledged that, as a Nation, we are willing to share the costs of adjusting to change by training and retraining workers displaced by technological change.

If we can assume that a 20 year old man will make more than six job changes (defined as a change of employer) during his 40 years of working life, it is fair to assume that some of these job changes will require new and different levels of skills[8]. The best tools available to provide the means of adjustment are education and training. We must teach more of the Nation's workers that change is permanent and the need to adjust to change will continue throughout their working careers. This philosophy and attitude should be instilled by both guidance counselors and educators in order to overcome the resistance to continuing education and training which prevails among some members of the labor force.

Before leaving the subject of technological changes, reference should be made to the fact that the millennium of the disappearance of the blue-collar worker is not yet here and will probably never come. Let us not be overcome by glib predictions of "workerless factories" of tomorrow.

We are so overcome with the dramatic shifts to white-collar jobs that we sometimes forget that millions of men and women are at work every day producing our clothing, furniture, automobiles, television sets, and performing service functions in restaurants and gasoline stations. Despite the hue and cry about cybernetics and automation, real life for millions of workers still consists of production and service jobs which have not disappeared and are not about to disappear in the near future. More of our educators ought to be thinking about the needs of these workers.

Just keep in mind that in October 1965, we had some 13.5 million semiskilled workers, some 3.7 million nonfarm laborers, and 9.5 million service workers producing goods and services. Not enough thinking and planning is being done about the educational and training needs of the people who fill these jobs before they enter the labor force and after they are already employed. The whole question of training for upward occupational mobility has never received the attention it deserves.

Future Manpower Needs

This peroration on past and current changes naturally leads to a look at the world of tomorrow. This future world is the world in which your students will live and work. Taking into account lead-time, educators must always be concerned with preparing young persons for tomorrow's world--not today's.

Although some brave industrial and occupational projections will be presented here, let it be clearly and honestly understood at the outset that it is in the area of forecasting that manpower economics faces its most difficult conceptual and technical problems.

Let me first briefly note the most recent manpower projections developed by the Bureau of Labor Statistics.

Industry Manpower Projections

The Department of Labor's Bureau of Labor Statistics has estimated that job growth in the economy will continue to be faster in the service-producing industries than in the goods-producing industries[9]. Between 1964 and 1975 manpower requirements in the goods producing sector (excluding agriculture) are expected to increase by about 15 percent to above 24 million. Agricultural employment is expected to fall by about 22 percent during this period, from nearly 4.8 million in 1964 to 3.7 million in 1975, despite an anticipated rise of about one fifth in agricultural output.

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8 Stuart H. Garfinkle, The Length of Working Life for Males, 1900-60 (Washington: U. S. Department of Labor, Manpower Administration, Office of Manpower, Automation and Training, July 1963), Manpower Report No. 8.

9 See assumptions used in making these projections from Manpower Requirements in 1975 (Washington: U. S. Department of Labor, Bureau of Labor Statistics, Division of Manpower and Occupational Outlook, October 1965), pp. 6-14.

Requirements in the service-producing industries--trade, government, services, transportation and public utilities, and finance, insurance, and real estate--are expected to continue the rapid increase of the post-World War II period, when the number of workers on the payrolls of these industries increased 46 percent, from 25.4 million in 1947 to 37.1 million in 1964. Over the 1964-75 period, manpower requirements in the service-producing industries are expected to increase by 36 percent, reaching 50.6 million in 1975.

Occupational Requirements

The Bureau of Labor Statistics estimates that the most rapid increase in manpower requirements between 1964 and 1975 will be for service workers (See Table 4). The demand for service workers is expected to increase the requirements for these workers by about two-fifths as compared with the expected growth of about one quarter in total employment.

An increase of about one-third is anticipated for white-collar jobs. Among white-collar occupations, the most rapid increase in requirements will be for professional and technical workers, which may grow twice as rapidly (45 percent) as the average for all workers. The requirements for blue-collar workers are expected to rise by one-sixth between 1964 and 1975. Among the blue-collar workers, the most rapid growth in requirements will be for craftsmen. Requirements for operatives will increase more slowly, by about a seventh, and little change is expected in the demand for laborers.

A nearly one-fourth decline in requirements is anticipated for farmers and farm workers.

Table 4. Total Employed in 1964 and Projected Requirements in 1975, by Major Occupational Group. (Numbers in thousands)

Occupational group	1964 (Actual)		1975 (Projected)		Percent change, 1964-65
	Number	Percent distribution	Number	Percent distribution	
Total, all groups	70,357	100.0	87,300	100.0	24
White-collar workers	31,125	44.2	41,300	47.3	33
Professional, technical, and kindred workers	8,550	12.2	12,400	14.2	45
Managers, officials & proprietors, except farm	7,452	10.6	9,300	10.7	25
Clerical and kindred workers	10,667	15.2	14,200	16.3	33
Sales workers	4,456	6.3	5,400	6.2	21
Blue-collar workers	25,534	36.3	29,700	34.0	16
Craftsmen, foremen, and kindred workers	8,986	12.8	11,200	12.8	25
Operatives and kindred workers	12,924	18.4	14,700	16.8	14
Laborers, except farm and mine	3,624	5.2	3,800	4.4	5
Service workers	9,256	13.2	13,000	14.9	40
Farmers and farm workers	4,444	6.3	3,400	3.9	-23

Note: Percents assume a 4 percent level of unemployment in 1975. Percents do not add to totals due to rounding.
Source: U. S. Department of Labor, Bureau of Labor Statistics, October 1965.

Some more detailed information about some of the occupations with which vocational educators are concerned may be helpful. For example, engineering and science technicians (excluding draftsmen and surveyors) increased from about 450,000 in 1960 to 260,000 in mid-1964. The rapid growth in demand for products of industries which employ large numbers of technicians was a major factor in causing this increase. The large increase in research and development activity and expenditures in defense and space exploration accounted for the rise in technician employment. According to the Bureau of Labor Statistics, employment requirements for engineering and science technicians are expected to increase by nearly two-thirds between 1964 and 1975, to about 1,025,000.

The employment of clerical and kindred workers rose almost steadily between 1947 and 1964--from 7.2 million to almost 10.7 million--an increase of 48 percent. Additional record-keeping and paperwork and the growth in size and complexity of modern business organizations and government have contributed to the rise in the employment of clerical workers. Employment requirements for clerical and kindred workers are expected to increase by about one-third during the 1964-75 period, rising from 10.7 million to 14.2 million.

The employment of craftsmen has risen erratically from less than 7.8 million in 1947 to nearly 9 million in 1964. Employment trends during the post-World War II period varied considerably among the individual skilled occupations.

Employment requirements for craftsmen, foremen, and kindred workers are expected to rise by about one-fourth between 1964 and 1975, increasing from 9 million to 11.2 million. Industrial growth and increasing business activity are the major factors expected to increase the need for skilled workers. Employment of mechanics and repairmen should continue to grow more rapidly than the skilled workforce as a whole. The requirements for airplane and automotive mechanics are expected to increase significantly during the 1964-75 period. On the other hand, employment requirements for machinists are expected to decline slightly (approximately 3 percent) during this period. The greater use of numerically controlled machine tools and other new metal working methods should reduce employment requirements for machinists, despite an expected growth in metal working activities.

In 1964, employment of semiskilled workers (operatives) had reached 12.9 million, the highest number on record. About 6 out of 10 operatives are employed in manufacturing. Large numbers are employed as assemblers, checkers, examiners, inspectors, drivers, and packers. The employment requirements for operatives are expected to rise by about 15 percent between 1964 and 1975, rising to 14.7 million in 1975. This increase will take place despite the technological impact which will affect many semiskilled jobs.

The rate of employment growth during the 1947-64 period for service workers was exceeded only by that for professional, technical, and kindred workers. The service worker occupational group represented about 13 percent of all employed persons in 1964, and included such diverse groups as private household workers, protective service workers, and waiters and waitresses. Included among the nearly 7 million service workers employed outside private homes were thousands of nurses' aides and other attendants in hospitals and similar institutions, waiters and waitresses, cooks and kitchen workers, barbers, beauty operators, maids, and porters.

Employment requirements in service occupations are expected to increase by about two-fifths between 1964 and 1975, to about 13 million. The greatest growth in requirements during the 1964-75 period is expected to be for policemen and other protective service workers; attendants in hospitals and in businesses rendering other professional and personal services; nurses' aides; beauty operators; cooks and waiters and others who prepare and serve meals outside private homes.

Problems of Vocational Guidance

Man's wisdom is a function of his ability to learn from available information and to adjust to new situations uncovered by this information. Vocational guidance, in a democratic society, is essentially the process of exposing the person who is being guided to occupational information so that he can do his own decision-making.

So much of our attention has been directed to the vocational guidance of youngsters that many of us fail to note that adults are also in need of vocational guidance. For example, those of you in the field of vocational education have long been aware of the declining need for workers in agricultural activities. You have also heard about the continuing shortage for teachers of mathematics and the sciences. Let me cite some data which, I believe, ought to raise some questions about the effectiveness of communication of information in our society.

The most recent data on high school teaching certification show that in 1964, 996 male college students completed their high school teaching certificate for agriculture. In 1965, the number completing their teaching requirements for agriculture will rise more than 15 percent to 1,150. Although it is true that the long-term trend for those preparing to teach in agriculture has been downward (1950--3,294; 1965--1,150) one can wonder about the effectiveness of transmitting information in the guidance process.

For example, 272 new teachers in agriculture were employed in 27 states in 1964-65 as compared with a new supply of 481 agriculture teachers. At the same time, the supply of mathematic teachers fell short of demand in 20 states. The demand for chemistry teachers exceeded the supply in 13 states and the need for teachers of physics was not met in 12 states.[10] One can ask what is wrong with the communication system in the most industrialized nation in the world when the plea for more teachers of science is not fully heeded?

This is not to suggest that those who were recently certificated in agriculture remained unemployed. Probably, most of them did get jobs. One can ask, however, if this is an efficient use of time and manpower. If the time spent for meeting the certification requirements for agriculture had been spent otherwise, it is fair to conclude that the student and society might have considered this a more efficient use of human resources.

It is apparent that a strong program of counseling and guidance is not only necessary for our youngsters, but on the basis of certification data it would appear that a similar program would be helpful for college counseling.

Let us now return to the young in need of vocational guidance.

The short review of some economic and social changes which were discussed in the previous section raises some vital questions for those concerned with vocational guidance as well as those who prepare youngsters for the world of work through our vocational education system.

The changes can be quickly summarized. We have had a massive shift in employment away from agriculture to other economic activities. Jobs in trade, government, service, finance, insurance, real estate, transportation, and public utilities have grown faster than in other activities. White-collar and service jobs have had the most rapid growth since the end of World War II and will apparently expand more rapidly than other kinds of jobs in the future.

Women have become a mainstay in our labor force. There is little likelihood that any basic change will occur in the pattern of their work careers.

We have a mobile labor force. Many of the young persons you train will <u>not</u> remain in your communities after they complete training.

Technological developments constantly create change and call for the ability to adapt to new jobs and new skills. Workers who make, on the average, six job changes during 40 years of working life must be able to meet job requirements if they are to continue to be productive.

X 10 <u>Teacher Supply and Demand in Public Schools, 1965</u> (Washington: National Education Association, Research Division, 1965) Research Report 1965-R10.

Challenges to Vocational Guidance

Each one of the changes referred to above poses challenges to those who provide vocational guidance and those who prepare youngsters for work. The youngsters you guide must be alerted to the kind of world they will face. The kinds of courses offered by vocational educators must be in tune with current reality and not the past. The information developed by the Department of Labor suggests that training must be offered for jobs in trade, in office work, and service functions. Less emphasis must be placed on training for agricultural employment and home economics.

The kind of vocational guidance and training given to young women must take into account the fact that at least 1 out of 2 women in this country will have three careers. Homemaking can no longer dominate the kind of training offered by vocational education, if 1 out of 3 women may end up doing office work.

Vocational educators and those who provide vocational guidance must also recognize that many of the young persons they educate and guide will leave their home communities. This raises the extremely difficult question of training for what kind of job. Beyond the needs of local employers, what kind of training should be offered if as many as 1 out of 2 youngsters will leave the area in which they were trained?

Does this call for a new approach to vocational education? Instead of training for specific skills and jobs should an attempt be made to provide broad skill training for job families rather than specific jobs?

If we are to stay with specific occupational training should not a good share of this training be related to national occupational trends so that youngsters will have the skills to make them employable in more occupations which show the greatest growth potential?

How can local educators and communities meet the need for a wide variety of occupations? Today, about 4.6 million persons are enrolled in federally aided vocational classes and only about a quarter of a million, or 5 percent, are in area technical education programs. Should there be a massive reversal of these figures, especially in rural districts, so that the greatest emphasis would be on area schools which can provide the wide background necessary for job flexibility and mobility.

How can we provide youngsters, through guidance or training, with the attitudes which will enable them to accept change as normal so that they will recognize that training and retraining may be a permanent part of their work life? Should we develop institutional devices so that retraining for workers will be automatically available after they have been in the labor force for a certain number of years?

Are guidance counselors qualified to provide the framework of flexibility and adjustment to change? Can we periodically retrain counselors to keep them abreast of our changing economy?

The posing of the challenges and questions to vocational guidance is fairly easy. The solutions and responses to change are not as easily available. Counselors concerned with vocational education must recognize that the young persons they are counseling in vocational education schools are going through an institution which is undergoing basic change. The adjustment to change in this institution will probably not take place as quickly as needed. This calls for imaginative and creative counseling which may, and should, in many cases, break precedent with accepted means of counseling.

Challenges to Manpower Economics

Many of the same problems which face the counselor now face those of us concerned with the very practical problem of implementing recent legislation concerned with vocational education.

I especially refer to the Vocational Education Act of 1963 which has officially introduced a new element in the relationship between vocational education and manpower requirements. The Act very properly calls for a responsiveness and sensitivity of vocational training to changing occupational requirements which, heretofore did not exist.

As many of you know, the Panel of Consultants on Vocational Education, which was convened at President Kennedy's request to review and evaluate past vocational education legislation, stressed that, "Education for occupational competency should be carefully correlated with the possibility of employment."[11] The panel recommended that local, State and Federal employment service reports and projections be made available to all schools so that this objective could be achieved.[12]

These recommendations of the panel were eventually incorporated into the Vocational Education Act of 1963 signed into law by President Johnson on December 18, 1963. In order for a State to receive its allotment of Federal funds, it must, under the new Act, submit to the Commissioner of Education a plan containing policies and procedures which insure that due consideration will be given to the results of periodic evaluations of State and local vocational education programs and services in light of "...information regarding current and projected manpower needs and job opportunities..." (sec. 5 (a) (2), Public Law 88-210).

The plan must also provide for a cooperative arrangement with the system of public employment offices in the State so that the employment offices will make available to the State board administering vocational education and local educational agencies occupational information regarding reasonable prospects of employment in the community and elsewhere. This information will be used to provide vocational guidance and counseling for students and to determine the occupations for which persons are to be trained.

In turn, the guidance and counseling personnel of the State board and local agencies are to make available to public employment offices, for use in occupational guidance and placement, information about the occupational qualifications of those who leave or complete vocational education courses and schools.

The challenge has now been put to the Department of Labor and the Department of Health, Education, and Welfare to implement the section of the Act relating training to manpower needs.

This calls for "shirt-sleeve" economics to enable the local Employment Service representative to provide the local vocational educator with some specific information on the number of machinists or automotive mechanics he should train for the next several years. This information must be translated back to important purchasing, building as well as curriculum decisions. The local educator will have to make his decisions to buy typewriters, machine tools, or electronic test equipment on the employment projections he received.

In response to the Department of Labor's responsibilities under the Vocational Act, the Manpower Administration has asked the Bureau of Labor Statistics and the Bureau of Employment Service to prepare a practical guidebook for occupational forecasting for use by the local Employment Service in carrying out its responsibilities under the Vocational Education Act. An interagency committee has also been established to work on the question of occupational forecasting and to set up administrative procedures so that HEW and Labor will carry out their charges under the Vocational Act both efficiently and effectively.

The Manpower Administration of the Department of Labor has recognized that occupational forecasting must be improved if counselors, educators, and administrators are to be provided with the tools necessary for assisting young persons who need vocational guidance. For this reason, the Research Office of the Manpower Administration has sponsored several research projects designed to improve occupational projections. The Bureau of Labor Statistics, Temple University, the University of Colorado, and Harvard University are all working on research projects which, hopefully, will increase our knowledge about forecasting as well as improve the techniques now being used to project manpower requirements.

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11 Education for A Changing World of Work, Report of the Panel of Consultants on Vocational Education (Washington: U. S. Department of Health, Education, & Welfare, Office of Education, 1963), OE 80021, p. 222.

12 Howard Rosen, Vocational Education and Manpower Needs (Washington: U. S. Department of Labor, Manpower Administration, Office of Manpower, Automation and Training, December, 1964), Preprint No. 5; also published Occupational Outlook Quarterly, December 1964, pp. 5-8.

The real problems of mobility and preparation for local community needs, the impact of technology and shifts in industrial and occupational employment must now all be translated into very specific information which will affect and change the vocational education system in the United States. I can assure you that those of us in the Department of Labor and HEW who are concerned with these problems do not have a bureaucratic approach. We recognize that both agencies are being put to the test by the Vocational Education Act. Only a genuing cooperative effort will enable us to meet our joint responsibilities.

Above all, we recognize that the stakes are high. The kind of job we do in making vocational education viable and responsive to change will affect the lives of millions of our youngsters. Their earnings, their employment, their job satisfaction, personal happiness, and their contributions to the Nation's advancement are all related to the effectiveness of our guidance and training.

As long as the Federal Government and its representatives in local areas are engaged in supplying information on future manpower requirements, it appears that we will have to develop a systematic approach which will take into account the supply (the number of workers being trained by occupation) so that the relationship between supply and demand will be fairly well balanced. If this is not done, excesses or shortages of workers in particular occupations could become commonplace.

The most important point to keep in mind here is how is this balance to be effected? In a democratic society this can only be done by the "carrot" approach through allocation of funds or scholarships. Any other approach would violate a basic democratic right which gives the individual the right to select his own life's work.

Research Areas

Your chairman has asked that I suggest some subjects that require further research. Many of the subjects covered in this paper have already indicated that we have a large number of unanswered questions in vocational education, vocational guidance, and manpower economics that can only be answered by further investigation and research.

I should like to be presumptuous and first suggest that since we face a large and firmly established institution that must adjust to change, that a major research effort first be directed to study how vocational education can be made to change.

When we turn to manpower economics, it is necessary to point to several weak points in our armor. The first weakness is the occupational statistics which need to be improved. Those of us who work with the available occupational data are acutely aware of their deficiencies. We also recognize that the data we work with are not current and should be brought up to date. This suggests two areas worthy of detailed examination. The first calls for a study of the accuracy of occupational data and how they can be improved and more adequately reflect economic, social, and technological change. The second point refers to the operational problem of how can more meaningful occupational data be made available more frequently than the inter-censal data.

The whole area of occupational forecasting is wide open for research. Although the Bureau of Labor Statistics has done a creditable job in working with limited resources, the Bureau is the first to acknowledge that improvements are needed in the methodology and techniques of forecasting.

We still do not have definitive answers to whether specific occupational training is more valid than training for families of skills. Educators and manpower economists should join forces in doing research on this difficult question. The answers may very well be that both types of training are necessary. The final answers await further research.

More information is needed about the long-term work careers of workers. The bare-bone patterns of work careers need additional research which will provide the flesh that makes up the total worker. Longitudinal studies in depth can help to supply information on the work pattern of workers as they move in and out of the labor force.

We have never squarely faced the real manpower needs of American industry. Many industrial personnel people have argued that industry must "un-teach" youngsters who come through vocational schools. More information is needed on this issue. Do we need a new orientation for vocational education? Can we offset the criticism of industry by expanding combination work and study programs?

We need to know more about the kind of vocational guidance young women need. The question of the communication process in vocational guidance has never been fully explored. We are all aware that not enough vocational guidance has been offered to both youth and adults. We are also realizing that even when information is available and transmitted that decisions are made which apparently are not based upon facts. The decision-making process in "selecting" careers needs further exploration.

We do not know who uses vocational guidance information. We do not know how it is used and we certainly do not know the effectiveness of vocational guidance material.

I am happy to say that the Research Office of the Manpower Administration is using some of its research funds for exploring several of the questions raised here. We expect that work being done by Dr. Herbert S. Parnes at The Ohio State University should eventually supply us with definitive information on the work career patterns of American workers. We are also working with the Women's Bureau of the Department of Labor in exploring the vocational guidance needs of mature women re-entering the labor force for their third career.

There is one important omission in the subjects covered in my earlier remarks. No mention has been made about the contribution of vocational education to the employment problems of Negro workers and other disadvantaged persons. Now that the walls of discrimination are coming down we must see to it that vocational education will prepare Negro workers for the new employment opportunities which will be made available to them.

The practice of using vocational schools in urban centers as dumping grounds for the less able must be discontinued. The results of the Experimental and Demonstration programs under the Manpower Act have shown that many disadvantaged workers can be salvaged and rehabilitated under the proper circumstances. The phrase "proper circumstances" goes to the heart of the problem. If vocational education is to take on a new look and be a major contributor in helping us save those whose lives have been crippled by discrimination, uninterested teachers, broken homes, and poverty, it will have to study the pioneering Experimental and Demonstration programs under the Manpower Act.

This may mean that you will have to develop new curricula, use new teaching techniques, and re-orient your teachers and guidance specialists so that they are more sympathetic to the plight of those they serve. I suggest that your entire educational approach may have to be re-examined and re-directed. The new programs and approaches to which I am referring can only be fully explored through a vigorous research program.

A detailed listing of the important problems requiring additional research will not bring about the changes which must occur in vocational education if it is to remain a viable force in training this country's labor force. These changes can only take place when those in positions of responsibility recognize the need for change and, after studying the best possible information available, begin to make the decisions which will enable vocational education to produce the kind of labor force needed for tomorrow's world.

A REACTION TO ROSEN'S PRESENTATION ON MANPOWER AND LABOR ECONOMICS: IMPLICATIONS FOR GUIDANCE IN VOCATIONAL-TECHNICAL EDUCATION

Herbert Parnes
The Ohio State University

Howard Rosen's paper does an admirable job of identifying the structural changes in the economy that have implications for manpower planning and vocational education. Recent trends in industrial and occupational structure, in the labor force participation of women, and in the rate and qualitative character of technological change are clearly of profound importance to those institutions concerned with the preparation of individuals for the world of work.

There is little in Dr. Rosen's paper with which I would disagree, unless perhaps it is the emphasis that he places on formal vocational education as the builder of the work skills of the nation. Without denying the importance of vocational education, it must nevertheless be recognized that methods of skill acquisition are diverse in all countries, and perhaps nowhere more so than in the United States. Apprenticeship programs, on-the-job training, military service training, and work experience are all complements to or substitutes for vocational education. In a survey of a national sample of the labor force made by the United States Department of Labor in 1963, about two-fifths of all skilled workers reported "formal" methods of having learned their jobs (including military service and apprenticeship, as well as school), while two-thirds reported formal or informal on-the-job training, and almost half reported just "picking up" their skill through work experience or from friends and relatives. (The various methods reported were not mutually exclusive).

While agreeing with Rosen's diagnosis of the implications of labor force changes for vocational education, I should like to raise the question whether the entire concept of vocational education needs to be re-thought. Traditionally, the concern of those in vocational education has been with formal instruction aimed at specific preparation for occupations below the professional level. From the standpoint of either educational or manpower policy, this does not seem to me to be the best way of viewing the role of one responsible for adequate vocational preparation, because it tends to exclude from his concern many questions and considerations that are of basic importance.

I would urge those interested in this field to think in terms of total vocational preparation: i.e., all those processes that prepare individuals for the world of work. In this context, it is immediately apparent that almost all types of education have vocational implications. Moreover, it is equally apparent that much of vocational preparation takes place outside the formal educational system. Thus, the following kinds of questions suggest themselves:

1. What combinations of formal and nonformal education (or training) constitute the best preparation for various types of work?

2. What combination of general education and specific vocational preparation is the best mix for assuring the kind of flexibility in workers required by rapid technological change?

3. What aspects of the formal educational system have vocational implications, e.g., in developing work skills; in inculcating receptive attitudes toward change; in developing in workers desirable qualities other than technical skills; and in providing information about the world of work that will contribute to meaningful occupational choice?

These are questions that are much broader than those generally entertained by practitioners in vocational education. They are nevertheless vitally important questions that someone must assume the responsibility for answering. Perhaps those in vocational education do not regard this as a congenial role, or lack some confidence in their ability to fill it. If so, I would urge that at the very least they must be willing to join forces with manpower economists, for the latter do not have the competence to go it alone.

A SOCIOLOGICAL APPROACH TO THE ANALYSIS OF PREPARATION FOR WORK LIFE *

Edward Gross
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Statistics are rarely exciting. A major exception was the report from the Bureau of Labor Statistics that unemployment had fallen to 4.3% in October, 1965 on a seasonally-adjusted basis. This is the lowest rate attained since the high point of the mid-1950's and is close to the goal of 4% which was set by President Kennedy's Council of Economic Advisors in 1961. The result is a triumph for the neo-Keynsian approach of Walter Heller, the former chairman of the Council, an approach which sought to create jobs for idle men by increasing purchasing power and investment incentives through fiscal and monetary activities of the government.

What is important about the low unemployment figure is that it appears close to the limit of what purely economic policies can accomplish. Labor Secretary W. Willard Wirtz stated recently: "It appears unlikely that unemployment among these groups in which it is most serious--especially younger workers and minority groups--will be substantially reduced by any foreseeable economic expansion."[1] Instead, Secretary Wirtz urged a "case by case, person by person" approach. He meant, for example, that while over-all unemployment is down, the rate for non-whites was still double the rate for whites, and for teenagers was three times as high. On the other hand, the rate for married men was only 2.1% and was at a ten-year low, a figure which appears to be practically irreducible in view of the need to allow for a certain amount of frictional unemployment (unemployment due to shifts in jobs from one part of the country to another and the like). If this analysis is correct, attention will shift from economic approaches to psychological and social approaches which involve providing a better fit between the man and the job by changing the man rather than, as in the economic approach, changing the market approach, changing the market in which he offers his services. As I shall point out later, the simple model suggested by "the man and the job" needs major revision. Nevertheless, it would seem that the role of counselors and the tasks that will be demanded of them will enormously increase in the next several years. It seems possible, in other words, for our economy to generate as many jobs as are called for to maintain the standard of living and the level of spending which our society considers healthy. The question is whether it is possible for individuals to be as easily made available for the jobs that are produced through economic remedies. That, of course, is one of the major contributions the counselor can make. I am, then, going to assume that the major problem with which we shall be faced in the next few years will not be that of an insufficient supply of jobs.

A second assumption I shall make is that people must remain at work in gainful occupations. That is, I am assuming that work will continue to be, as it has been in the past, the major source of income, status, and self-fullfillment. I call that an assumption because there are voices in the distance which are beginning to raise some doubts. For example, Wilensky concludes:

> "...the typical American man is lightly committed to his work. He may be reliable and disciplined on the job, he may talk it up or gripe about it, but he neither throws himself into it nor feels that it violates his better self."[2]

The economist Theobald[3] goes much further and foresees a period when a very high proportion of the population will be "at leisure." He looks ahead to a time when the shuttles will at last run themselves and a small number of highly skilled education professionals and managers will do most of the work of society. Should such a state of affairs ever come, then we shall have to look to activities other than the usual employment for sources of income, status and self-fulfillment. Theobald proposes that the persons who are "at leisure" be provided with a guaranteed income so that purchasing power is kept up. Such persons will have to search for methods of providing status and self respect in recreational activities, activities which serve the community, as well as other activities which we can hardly foresee at this time. In spite of

such long-range forecasts, it seems true for the near future that work will remain the necessary condition, as Wilensky himself notes, for "drawing the individual into the main stream of social life; whatever work ties are severed, there is a decline in community participation and a related sense of isolation."[4] (I need hardly add that even should such a millenium arrive, it would not mean the end of the vocational guidance counselor. On the contrary, there would seem to be more guidance than ever required, to effect the shift of persons from a life in which they are accustomed to securing their satisfactions in and through work to one in which they must do so in other ways. The term "vocation" may assume its generic meaning of a "calling." The counselor would not even have to change his name.)

Given the two assumptions I have just sketched--first, that jobs will be available for people to be counseled into, and second, that the job will remain the major self-fulfilling and status-giving activity of the future, the general subject I wish to address myself to is recent sociological research on occupations and industry that would seem to be relevant to the counseling process. I believe that I can sum up what I feel to be possibly helpful contributions in a brief preliminary statement which I will then elaborate. The statement is as follows: in sociological terms, preparation of an individual for the world of work means four different kinds of participation. He is being prepared for a life in an organization, for a set of role relationships, for a level and kind of consumption, and for an occupational history.

1. PREPARATION FOR LIFE IN AN ORGANIZATION.

If I were to try to state in one sentence what I believe to be the dominant characteristic of modern western urban industrial society, I would say it is the following: Western society seeks to attain all of its larger goals through large-scale organization. Whether the goal is producing goods, healing the sick, protecting society from criminals, protecting society from foreign enemies or educating the young, the characteristic approach is to form an organization with goals and a structure. Although many have lamented the cost to the individual of life in organizations, there does not appear to be on the immediate horizon any alternative which is likely to be even half as successful as organizations have proven to be. The test here is the one that Weber[5] proposed long ago: whenever large-scale formal organizations make their appearance in the modern world, they sweep all other forms of formal organizations before them.

The distribution of employees in the United States by size of firm is presented in the table below.

DISTRIBUTION OF CIVILIAN EMPLOYEES BY SIZE OF ORGANIZATION

SIZE OF FIRM (no. of employees)	NUMBER OF FIRMS (%)		TOTAL EMPLOYED (%)	
1-3	57.8	76.6%	7.4	14.8%
4-7	18.8		7.4	
8-19	13.8		12.6	
20-49	5.9		13.8	
50-99	1.9		10.2	
100-249	0.8	3.4%	12.9	58.9%
250-499	0.4		9.4	
500 or more	0.3		26.4	

Source: County Business Patterns: First Quarter, 1962.
Part 1: United States Summary, Tables 1A and 1C.
Bureau of the Census. Percentages calculated from raw data.
Note: Includes mainly those covered in whole or in part by the Social Security Program. Hence, partly or wholly excluded are: certain farm workers (about one-fourth), domestic workers, self-employed persons, Federal civilian employees, and employees of state and local government. Excluded also are railroad employees subject to the Railroad Retirement Act and employees on ocean borne vessels. In all, excluded persons make up about one-third of all employed.
However, see Footnote 6 where the attempt is made to include most of these excluded categories.

From this table a striking fact emerges. On the one hand, it is clear that the United States is a nation of small firms, for over three quarters of firms employ 7 or fewer workers; those employing 50 or more make up a scant 3.4%. On the other hand, the three quarters of all firms, when put together, account for only one seventh of all employees, whereas the tiny group of large firms together account for close to 60% of workers. In general, then we may assert that, although the average firm is small, the average employee works for a large firm. Nor does this present the whole picture, for the data in the table refer only to persons in private employment. The government, of course, is a large organization and the data reveal that in 1962 about one in seven of all the employed (some 9.2 million civilians) worked for the government in one capacity or another. Even the professions, which many persons think of as being practiced privately or in relatively small groups are not as exceptional as is often thought. The dominant situation for the professional is that of a salaried employee. The examples that come to mind are many. Accountants, airplane pilots, college presidents, dietitians, draftsmen, editors, engineers, scientists, social workers, and of course teachers as well as counselors are typically found working in formal organizations, and a high proportion in large organizations.

Certain implications follow from the predominance of the organizational context in the life of the average worker. First, a life in an organization means a position in an hierarchy of authority. An important consideration in the preparation of the individual, then, would include training for the handling of and adjustment to authority. Authority can be of different kinds--charismatic (based on personal devotion to a leader of remarkable qualities), traditional, based on rules (or what may be thought to be the rights that inhere in a particular position), or based upon expertise or the reputation of the person who wields authority. Different types of background and different types of values will mean that the individual that has difficulty with one kind of authority may be quite at home with a different kind. There are certainly no simple relationships between personality and authority although, of course, certain persons have difficulty with authority of any kind. Organizations may be analyzed in terms of the kind of authority structure which they provide but no organization is devoid of some type of assumptions about authority. Organizations are always coordinated structures and this means that some persons must make critical decisions on work-flow and on the manner in which the various parts of the organization will be articulated.

Second, the quest for security has come increasingly to mean associating oneself with a large organization which can offer tenure and protection against the vicissitudes of life, rather than attempting to equip oneself with skills which are equal to any emergency. In earlier days, persons who went to work for government were often criticized as being too security-minded. However, as organizations increase in size, this motive for a high proportion of workers cannot be dismissed. It is particularly important for workers at the lower end of the prestige hierarchy, many of whom feel that any type of enduring employment is superior to the chaotic work experience that most of them are forced to endure. The ability of the individual to do without organizational supports in his quest for security might be taken into account by the vocational counselor.

Third, it has been the finding of a large number of studies that persons do not experience their major friendships and intimate relationships at work.[7] Although they will make friends at work, usually these friendships are not carried over to after-work hours. Instead, the life of an organization is likely to consist of a set of impersonal relationships. In the classical case, organizations are set up in order to control the over-personalization of relationships, so that decisions will be made on the basis of the merits of the case rather than the feelings persons have towards one another or their own impulses. It is easy to exaggerate the matter but there seems little doubt that effective functioning in an organization means being able to handle impersonal relationships, that is, a certain degree of detachment from the work.

Fourth, organizations are set up to maximize the probability of success of goal-attainment. Consequently, flow charts and other methods for coordinating effort assume that most of the problems of attaining the goal of the organization have been solved. Inevitably then, work goes by a routine, and this is true however exciting one's job might be or however important the work of the organization is to the society. The employee, then, can expect that much of his day will be spent in routine, repetitive activities with excitement coming rarely. The ability to tolerate such routine may be of importance in particular cases.

Five, an obverse problem is presented by the fact that, in reality, no organization has solved all problems necessary to the attainment of its goals but instead, each organization has great needs for initiative and creativity on the part of their employees, although that initiative and creativity will have to be displayed with a context of a set of rules. Argyris[8] sees an inevitable conflict between the needs of the individual for creative expression and the

demands of the organization for conformity. I regard it as dubious[9] that there is such conflict, at least as serious as Argyris suggests. Still, some conflict is not only likely but desirable for both the organization and the individual. It is hardly surprising that the organization resists creativity since the only test, ultimately, of the value of a new idea is that it stands up well in the face of resistance. The creative individual, then, should not be repulsed by the structure of organizations, partly because there is no alternative for the organizations provide him with the equipment and the resources necessary to develop his ideas, but also because organizations need the contribution of the iconoclast, and can be made to respond to his original contributions. Such is particularly the case for scientists, research personnel and others.

Sixth, the data on job-shifting[10] argue strongly for the conclusion that the average worker holds many jobs in a lifetime. A high proportion of these will involve different employers and therefore, different organizations. The individual will therefore find it wise and realistic to maintain a certain distance from both the job and the organization. Loyalty to a particular organization may result in a great shock to the individual when he finds the organization cannot keep him on as an employee. Indeed, organizations are of two minds about loyalty. On the one hand, they desire persons who feel attached to the organization for this often means a greater willingness to tolerate delay in promotions and salary increases, and other types of irritations that the individual may have to put up with. On the other hand, persons may be too loyal, so that the organization will be unable to get rid of them when they are no longer suited to the organization's needs. It may then be not only to the individual's advantage but to the organization's advantage as well for persons to move from one organization to another after moderate periods in the organization. Such inter-organizational shifts suggest a revision of insurance and annuity arrangements so that a higher proportion are portable.

Seventh, and finally, attention needs to be given to the fact that mobility within an organization is not always upward. Perhaps because of our past experience with economic growth and because of our American optimism, we have tended to ignore the phenomenon of downward mobility. Inevitably, even in a growing economy, everyone will sooner or later experience some downward mobility although, for some, it may occur right at the end of their work careers. Most experience it much earlier. Much more research must be devoted to the social and psychological consequences of demotion. Organizations have many ways of handling demotion so as to soften its impact, such as kicking people upstairs, shifting them to other parts of the company to less demanding jobs, and other ingenious devices.[11] It seems to me that the reality of demotion must be faced as inevitable consequence of a desire of organizations to retain flexibility in their attempts to serve the society. So, it becomes important that the individual expect that his organizational career will have many directions, some up, some sideways, some down.

2. PREPARATION FOR A SET OF ROLE RELATIONSHIPS.

Preparation for the world of work involves preparation for a certain pattern of interaction with other persons on the job. What is suggested here is the desirability of learning to analyze a job in terms of role sets. What is needed is a new Dictionary of Occupational Titles in which job descriptions will be in terms of characteristic interactions rather than specific physical activities. For example, here is the description of "newspaper carrier" in the Dictionary of Occupational Titles (Second Edition):

> "Distributed newspapers to regular subscribers on a specified route. Collects accounts at regular intervals and delivers or mails collections to superior. Attends periodic meetings for instructions. Contacts new subscribers and writes subscriptions."

Although one can infer certain interactions from this description, a description in terms of role sets might be better put as follows:

> "Key persons in the role set of newspaper carrier include the following: (1) The Customer. Customers like to receive their newspaper in a convenient place, unaffected by rain, snow, or wind. They can rarely tolerate a delay in delivery longer than ten minutes off one's usual time. They must be taught to telephone newspaper carrier at home rather than telephone the newspaper with a complaint. Many do not pay promptly but must be re-visited several times. Most of them are chronically short of change. All of them desire that the newspaper carrier shall stay off the grass, stay out of the flower gardens, and indeed, would prefer that he not step on the property at all. Should the newspaper carrier be bitten by the customer's dog, the customer

is likely to blame the newspaper carrier for upsetting the dog. (2) Non-Customers. Other persons who are not customers nevertheless may give the newsboy trouble since they object to his taking short cuts across their property. They also have dogs. (3) The Superior. This individual tries to maintain the fiction that the newspaper carrier is an independent business man. Therefore, he has periodic meetings with the newspaper carriers in order to "counsel" them on their business activities. As a matter of fact, he spends most of his time pressuring the newspaper carrier to increase the number of new subscribers. His pep talks are frequent and must be endured. (4) Other Newscarriers. One occasionally encounters persons who carry newspapers for competing companies (or even for the same company) who attempt to take away one's subscribers. (5) School Teachers. The newspaper carrier must particularly guard against the possibility that failure to keep up his schoolwork or infractions of disciplinary rules may lead to his being kept after school. Should this occur, he may then be late in picking up his papers and delivering them and thus, suffer the unfavorable attention of both his superior and his customers. The resultant role conflict may, in addition, produce feelings of guilt on the part of the newspaper carrier, thus, affecting his degree of job satisfaction."

Although the above job description is facetious, it illustrates the kind of job descriptions that I think will have to be written to be of assistance to the guidance counselor in his judgment of whether the particular client that he deals with can handle the position that may be available. It may also be possible to train the client in the ability to make this kind of analysis of the job at a relatively early stage in his period of employment. He might be taught to draw up a small chart on which are listed the key persons whom he must satisfy, who evaluate his work, who depend on it, and on whom he will depend for satisfactory job accomplishment as well as for other goals which he may have. In a factory, this will include certain fellow workers, the foreman, workers in other shops, one's own supervisor and, perhaps, a helper. In a restaurant, as Whyte's research has shown clearly, a major element in the role set is the customer who will put direct pressure on the waitress and cashier. In the professions, one will include the client, other professionals with whom one works as a team, and the members of the profession in general with whom one enjoys a colleague relationship and whom one regards as a reference group. Perhaps the outstanding study which suggests the importance of such role relationships is that carried out by Kahn and his associates[13] on organizational stress. They found that role conflict had been experienced by about one half of the workers surveyed in their national study.

3. PREPARATION FOR A LEVEL OF CONSUMPTION.

Even for the person whose work is intrinsically satisfying, it is also a means of making a living and therefore a means of maintaining a certain standard of living. More than that, his job is a source of identity and pride; it is both a means for attaining, as well as a part of, a certain style of life. We are saying here that the individual will usually desire not only a dignified job but one that will make possible a dignified life, whatever his standard of dignity is. Kinds of dignity are defined differently in different social classes and subcultures. A study by Form and Stone[14] in Lansing, Michigan found the following kinds of social class differences. A sample was asked the following question: "If your daughter came home one night and told you she was in love with a young man you didn't know, what would be the first question you would ask about him?" The lower stratum informants said they would ask whether the stranger had a good job and was a good provider. The middle stratum was more concerned with his specific occupation and his mobility prospects on the job, his religion, and the reputation of his family. The upper stratum's concern was with education, religion, and financial position and particularly with family. The middle stratum asked the most questions, was the most reluctant to arrive at any final decision, and asked more questions to check up on the genuineness of the love relationship. Middle class persons seemed to emphasize, as a value, the importance of choice, and consequently were reluctant to push their daughter definitely one way or another. They felt, however, that only if the love relationship were extremely strong, could individual choice prevail. Turner,[15] in a study of high school students in Los Angeles, did not find large differences in values between social classes but did discover that individualism and self-reliance were more important to middle class teenagers than they were to working-class teenagers. Such value differences, in so far as they exist, would appear to be important in counseling the client into different types of jobs. Attention must be paid also to ethnic differences, as well as those associated with location, religion, and sex.[16]

4. PREPARATION FOR OCCUPATIONAL CAREER

The definition of the term "career" is the subject of some controversy. Some, like Wilensky,[17] prefer to limit the concept to an "orderly" work history, one in which each job is preparatory to the next job, and the succeeding is either at the same or higher level of prestige. I do not believe it is necessary to restrict the concept only to that kind of situation for if one does, one cannot avoid the conclusion that Wilensky himself reaches when he notes that a very high proportion of his subjects have highly disorderly careers. I think it is possible to use the concept to refer to a succession of positions which have a pattern which is, to some extent, predictable and controllable. It may include a period of unemployment provided that the individual regards that as normal and has ways of handling it. Thus, many seasonal workers expect to be unemployed for part of the year, organize their lives around such unemployment and would be disturbed if it should be interfered with.

As we pointed out above, a high proportion of the population exhibits a great many job changes, but this is no cause for despair nor for the conclusion that the job history of most persons has no structure nor order to it. It should, instead, be an encouragement to search for whatever bases of order there are, even for brief periods. A person's job history may take on a predictable structure for perhaps only three or four years at a time. It is, I think, a part of the task of a counselor to show how a career can be developed by the individual even though several job changes may be involved in it.

Many observers have insisted that we must be prepared to think of a succession of jobs for the individual in the course of a lifetime and therefore to grapple with the problem of how to predict jobs over a long range. We must, it is said, think in terms of a set of basic skills or orientation which will serve the individual in any work that he might be confronted with in the course of his whole life. I shall comment on this point of view below. Here, I wish to call attention to the converse: if the individual will have many jobs, then he should not be prepared too well for any one of them. Argyris,[18] in a study of a bank, discovered that those who employed the workers had a definite personality type in mind. They sought a person who fitted the sterotype of bank clerk--someone who was unaggressive, obsequious, smiling, able to hold back his feelings, able to tolerate a great deal of frustration, and desirous of security. While it was possible that such persons would do well as cashiers and officers who would have to meet customers, this personality type did not do well as an accountant, or bookkeeper, who worked in the back and did not meet the customer. Such persons needed to be much more aggressive, and able to work fast, and work and daydream at the same time. A person whose personality fits a particular job well might thus be a person whom it is impossible to shift from one job to another. Banks currently are pursuing a much more aggressive advertising policy as well as trying to compete actively with other forms of investment. As a consequence a much more aggressive, salesman-type of person is needed than the banks find that they now have.

The individual, therefore, that tries to prepare himself for an organizational requirement would find it to his own interest not to prepare too closely. The very tightness of the fit between his personality and the job requirement may mean that he is not a good prospect for the new job which will surely appear in the company five years later, or even for his present job if it should change, as is quite likely, given the rapidity of technological change in organizations.

Something like this mechanism is at work, in my judgment, in the oft-noted drive of professionals for autonomy. There seems no doubt at all that professionals emphasize their autonomy as a profession in part to protect themselves from the demands of organizational superiors. The structure of the profession is such that it offers them the only possible protection from having their future determined by organizational superiors. The professional desired that the standard of choice and the judgment as to how he is performing shall rest instead with his colleagues. If this is not the case then he becomes beholden to the organization, or to his superior who may need him at one time, but be able to get along without him at a different time.

On the other hand, I do not think that the generalized drive toward professionalization, which is becoming so common is, in fact, a long-range solution to the problem of attempting to maintain one's autonomy in organizations. Although many occupations are seeking to professionalize themselves, in part, to enjoy the benefits that the accepted professions enjoy, not all of them will succeed nor is it desirable that they should. Peral and Riessman[19] have set forth a program of professional elaboration. They suggest that, rather than trying to increase the supply of professionals such as teachers, counselors, and so forth, however desirable that

may be, that one should attempt to make the job of existing professionals easier by re-examining the professional position itself. They propose that teachers in schools be each provided with an aide, an assistant, an associate, and a supervising teacher. These non-professional activities become permanent occupations which may be taught to persons with relatively little education although such persons may well go on to get further training which will make them into professionals. They describe the manner in which such non-professionals may be used in community health programs, neighborhood social work programs, and research. In particular, they maintain that non-professionals may be most effective in the neighborhood in which they live. If such persons are poor, from the same neighborhood, and members of the same kinds of groups as the clients, they are able to develop rapport relationships with the client more easily. Such a person may also be a model for the client, particularly the poor one in a way that the middle-class professional often is unable to be. Non-professionals have intimate knowledge of the neighborhood and other kinds of "savvy" which the middle-class professional often lacks. Their style may be quite different--they may hug the client, accept and repay hospitality without feeling that this violates a professional ethic, and talk to clients on a first-name basis. The non-professional's effectiveness is surely related also to the satisfaction which he himself receives from his work, respect gained from performing a meaningful job in cooperation with professionals, learning a useful skill, and helping others. The poverty and deprivation of the poor are, in this manner, converted into assets.

Another approach to careers suggests the value of looking at occupations in terms of the life cycle. Some occupations should be classified and thought of as "entry occupations." These are the jobs which high school students and recent graduates take but which might be thought of as providing opportunities for persons to discover their abilities, their needs, and their identities. The concepts of success or failure on such jobs would not have much meaning. Other jobs are "peak occupations", in the sense they enable an individual to achieve whatever potential is in him. Such peaks, of course, will occur at different points in the life cycle of the individual; for example, for athletes, the period may be one when the individual is very young; for others it may not occur until they reach their fifties. If the latter is the case, then persons may have to be able to postpone gratification and not be under pressure from ethnic groups or other types of pressure to do otherwise as, for example, was the case in Whyte's[20] study of street-corner society. Whyte found that the corner-boy who desired to go on to college had to save his money. However, it was an obligation of corner-boys that any surplus of money should be shared with one's friends. Hence, the person who wanted to get ahead had to foresake his loyalties to his friends.

Some occupations may be conceived of as "transitional occupations." These are occupations that the individual works at between jobs, and which they do not expect to stay in for very long. This is true for many clerical and semi-skilled jobs. Other jobs are "part-time occupations" for persons who supplement the family income such as wives and students. A final set of occupations are those associated with older ages and would be occupations that require maturity and seasoned judgment. The problems of old age are often mainly problems of income rather than of growing old as such. Many occupations are, as a matter of fact, dominated by the elderly, and they include some of the top occupations--top administrative positions in government, corporation and the Congress.

If what we have been saying about occupational preparation is defensible, then two general conclusions would seem to follow.

1. The End of "Vocational" Counseling.

If the career involves work in an organization, a set of role-relationships, a style of life and a lifetime job history, then clearly we need something much broader than counseling which is limited strictly to the job. It will have to include attention to the relationship between the person's job history or career and the life cycle, including marriage and the kinds of demands and discoveries about oneself that come as one has a family and watches it grow up. It includes counseling for a life in an organization. It includes counseling to enable the person to grow into a style of life which includes learning to live in a community and to change from one community to another, securing learning to handle the changing educational requirements of one's children and oneself, using recreational opportunities for self-development, adjusting to the process of moving which may be expected to be relatively frequent, and perhaps providing the individual with some ideas and help in understanding the society and economy which often disturbs his occupational career so rudely.

2. A Change In Approach To The Decision-Making Process.

A paradox is presented by the fact that although the evidence is overwhelming, that most persons will have several jobs in their lifetime, the counselor can, in fact, do little to help him in handling this problem. For such help to be useful would involve a kind of prescience which no one can possibly have. The counselor, in a sense, must be broader as we have suggested above, but at the same time must adopt a relatively short time-span period.

This conclusion follows from exciting new developments which stem from a seminal article by Cyert, Simon, and Trow[21] on the analysis of a business decision. They examined the decision of a firm to consider the installation of electronic equipment and followed it through until the matter was settled. They found that the behavior of persons as they went about making the decision did not follow the traditional model of decision-making. In the latter model persons are conceived of as weighing alternatives in the light of available knowledge and making estimates of probable effects. This the counselor does also. However, they found that, in many cases, persons simply did not have the knowledge even of what the aternatives might be, let alone knowledge of the probable effects of the various alternatives. Much of their time was spent in a process of search for possible alternatives and they did not fool themselves that they had exhausted them all. Simon, in fact, recommends that businessmen cease thinking that they will be able to discover the optimal decision but be happy with one that will simply be satisfactory, that is, will do the job. He, therefore, speaks not of optimizing but of "satisficing."[22]

The approach has been developed into a full theory by Braybrooke and Lindblom.[23] They speak of the strategy of "disjointed incrementalism." In their analysis, decisions are always made on the basis of very limited knowledge, and typically involve a relatively small change from an existing state of affairs. Further, the choice process is a jagged operation consisting of a series of steps, reversible in many places, and marked often by an adjustment of end to means. By the latter, they mean that often persons do not <u>first</u> look at the end that they seek to attain, and then go about looking for means. Rather the means are already settled by the resources that the individual has available or by his skills. He therefore <u>looks for</u> ends which can be attained by the means which he has.

The approach being described leads also to a reconceptualization of the <u>direction</u> of choice. Instead of thinking of a choice as moving <u>toward</u> a solution of a problem, it is thought of as moving <u>away from</u> a situation which is undesirable. The result is a much more modest goal: one seeks not to eliminate a problem but to alleviate it. Braybrooke and Lindblom state the matter as follows:[24]

> "Since policy analysis is incremental, exploratory, serial, and marked by adjustment of ends to means, it is to be expected that stable long-term aspirations will not appear as dominant critical values in the eyes of the analyst. The characteristics of the strategy (of disjointed incrementalism) support and encourage the analyst to identify situations or ills from which to move <u>away</u> rather than goals <u>toward</u> which to move. Even short-term goals are defined largely in terms of reducing some observed ill rather than in terms of a known objective of another sort. For example, values attached to the distribution of income are not likely to be the attainment of any desired pattern of distribution. They are most likely to be the amelioration of a specific social evil, represented by the proportion of the population disqualified for appropriate education solely by inadequate incomes.
>
> These characteristics of the strategy again parallel a feature of incremental politics. Policy aims at suppressing vice even though virtue cannot be defined, let alone concretized as a goal; at attending to mental illness even although we are not sure what attitudes and behaviour are most healthy; at curbing the expansion of the Soviet Union even though we do not know what positive foreign policy objectives to set against the Kremlin's; at reducing the governmental inefficiencies even though we do not know what maximum level of competence we can reasonably expect; at eliminating inequities in the tax structure even though we do not agree on equity; at destroying slums even though we are uncertain about the kinds of homes and neighborhoods in which their occupants should live.
>
> We do not deny the currency of ideological objectives like freedom and security. We suggest, however, that these abstractions only establish the orientation that most analysts in a particular country or culture share. To influence policy choices at points on which analysts differ--or to play any other direct role--they must first be transformed into the more specific values involved in actual policy choices."

These ideas surely have applicability to the counseling process. Not infrequently, as a matter of fact, when persons speak of occupational choices they may do so in negative terms. They do not say "I want to be a carpenter" or "work in an office," necessarily--at least they may be relatively uncertain and vague about what they might like. But they are very definite indeed in stating what they do not like. They may tell us with great feeling that they will not work in a factory, or that they will not consider living in Chicago, or a job "where the boss is right there in the same room with you." For women, job choices are often limited by the fact of their husband's employment or his plans to move. Thus, what the person wants or what may fulfill him most adequately may simply be impossible. The resulting alternatives become much smaller in number and therefore more manageable. If one further recognized that it is not one's task and it is surely an impossible one to try to prepare the person so that he will meet every eventuality throughout his life, then the counselor takes a shorter time perspective. He thinks in incremental terms of assisting the person in career planning for only, say, the next four or five years when one can make reasonable forecasts about the nature of the job market and the kinds of skills that will be in demand for the job that the counselee can do.

Finally, if one cannot prepare the client for the uncertain future, then perhaps one can train him for uncertainty. Fox,[24] in a study of medical students, found that it was precisely this kind of training that occurred. Medical students were early introduced to the fact that no matter how hard they might study, their knowledge would surely be limited since they could not possibly cover everything. Therefore, in making a medical diagnosis, they could be wrong by virtue of their own limited knowledge. But even worse, they might be wrong because of the limitations of medical knowledge in general--perhaps nobody knew. It was important for the student to learn to distinguish between these two kinds of uncertainty. So, too, the client might be trained to distinguish between situations in which no one can get any help--such as predicting what one's job will be like ten years from now--and situations in which help is attainable from agencies in the neighborhood, including the counselor.

Footnotes and References

* Slightly amended version of the paper presented to A National Interdisciplinary Seminar on Guidance in Vocational Education: Guidelines for Research and Practice, held at the Ohio State University, Columbus, Ohio, January 12-14, 1966. Paper presented on January 12.

1 Quoted in The Washington Post, November 5, 1965, p. D1.

2 Harold L. Wilensky, "Varieties of Work Experience," in Henry Borow (ed.), Man In a World at Work, Boston: Houghton Mifflin, 1964, p. 149.

X 3 Robert Theobald, Free Men and Free Markets, New York: Clarkson N. Potter, 1963, esp. Part II.

4 Harold L. Wilensky, op. cit., p. 134.

5 From Max Weber: Essays in Sociology, ed. by Hans H. Gerth and C. Wright Mills, New York: Oxford University Press, 1958, p. 232.

6 If one makes certain reasonable assumptions, the data in the table may be brought to include practically the whole of the employed population. The excluded agricultural workers add about 1.5 million to the number of employees in small firms, and about 750,000 to the number of small firms (small being defined as 7 or under employees). The 2.5 million domestic workers may each be considered to be employed by a "small firm" (the household) and thus add 2.5 million to the number of such "firms" and 2.5 million to the number of employees in small firms. The government may be said to add about 2,000 to the number of large firms, and (for March, 1962) about 9.2 million to number of employees in large firms. The number of railroads is very small in number but workers in them add about 880,000 to the employees of large firms. Finally, we may count the 9.6 million self-employed as adding that many more "small firms" (each person a firm) and the same number of employees of such small firms. Through this means, a total of over 16 million "firms" result, employing a total of over 67 million persons.

When the above are totaled and percentages calculated as in the table we find that small "firms" (7 or fewer employees) make up 95.2% of all "firms" and that huge group accounts for 29.8% of all employees. At the other end, large firms (employing 50 or more employees) make up only 0.8% of all firms, but together employ 53.1% of all employees.

7 See, for example, Robert Dubin, "Industrial Workers' Worlds: A Study of the 'Central Life Interests' of Industrial Workers," Social Problems, 3, 1956, pp. 131-142.

8 See, for example, Chris Argyris, Personality and Organization, New York: Harper and Co., 1957.

X 9 See Edward Gross, Industry and Social Life, Dubuque, Iowa: Wm. C. Brown Co., 1965, pp. 138-146.

10 See Edward Gross, "The Occupational Variable as a Research Category," American Sociological Review, 24, 1959, pp. 640-649.

11 See Fred H. Goldner, "Demotion in Industrial Management," American Sociological Review, 30, 1965, pp. 714-724.

12 William F. Whyte, Human Relations in the Restaurant Industry, New York: McGraw-Hill Book Co., 1948.

X 13 Robert L. Kahn, Donald M. Wolfe, Robert P. Quin, J. Diedrick Snoek, and Robert A. Rosenthal, Organizational Stress: Studies in Role Conflict and Ambiguity, New York: John Wiley and Sons, 1964.

14 William H. Form and Gregory P. Stone, "Urbanism Anonymity, and Status Symbolism," American Journal of Sociology, 62, 1958, pp. 504-514.

X 15 Ralph H. Turner, The Social Context of Ambition: A Study of High-School Seniors in Los Angeles, San Francisco: Chandler Publishing Co., 1964, Chap. 4.

Footnotes and References (continued)

16 More attention should be given to family job counseling. I refer particularly to counseling of married women whose job orientation is very much affected by their husband's jobs as well as by fluctuating family needs. The evidence seems strong that married women, though an increasing proportion of the labor force with every census year, have a quite different orientation to working than do men. The proportion seeking high level professional and semi-professional careers is actually declining, in comparison to the proportions for men. Women tend, then, to be found increasingly as semi-skilled office and industrial workers, where they seek a job requiring relatively little training, which can be fitted into their free hours, and which can be dropped without serious loss of seniority, fringe benefits, etc. Clearly, then, testing for interests, aptitudes, and abilities will have only limited usefulness for such persons. Discussions of these matters may be found in many places. See, for example, Elizabeth Faulkner Baker, Technology and Woman's Work, New York: Columbia University Press, 1964; National Manpower Council, Womanpower, New York: Columbia University Press, 1957; 1962 Handbook on Women Workers, United States Department of Labor, Bull. 285; Alva Myrdal and Viola Klein, Women's Two Roles: Home and Work, London: Routledge and Kegan Paul, 1956; and the whole of the Spring, 1964 issue of Daedalus.

17 Harold L. Wilensky, "Orderly Careers and Social Participation: The Impact of Work History on Social Integration in the Middle Mass," American Sociological Review, 26, 1961, pp. 521-539.

18 Chris Argyris, Organization of a Bank, New Haven, Connecticut: Labor and Management Center, Yale University, 1954.

19 Arthur Pearl and Frank Riessman, New Careers For The Poor, New York: The Free Press, 1965.

20 William F. Whyte, Street Corner Society, Chicago: University of Chicago Press, 1955.

21 Richard M. Cyert, Herbert A. Simon, and Donald B. Trow, "Observation of a Business Decision," Journal of Business, 29, 1956, pp. 237-248.

22 Herbert A. Simon, "A Behavioral Model of Rational Choice," Quarterly Journal of Economics, 69, 1955, pp. 99-118.

23 David Braybrooke and Charles E. Lindblom, A Strategy of Decision, New York: The Free Press of Glencloe, 1963.

24 Ibid., pp. 102-103.

25 Renee Fox, "Training for Uncertainty," in Robert K. Merton, George G. Reader, M.D., and Patricia L. Kendall, (eds.), The Student-Physician, Cambridge: Harvard University Press, 1957, pp. 207-241.

SOME COMMENTS ON GROSS'S PAPER "A SOCIOLOGICAL APPROACH TO THE ANALYSIS OF PREPARATION FOR WORK LIFE"

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My assignment is to consider some of the implications of Professor Gross' paper for people in guidance and vocational education, rather than to critique the paper per se. However, I cannot pass up this opportunity to commend Professor Gross for this admirable job. The theme of the paper should come through clearly: occupations, and the training for them, simply have to be looked at in broader proportions than merely their technical job requirements. The social context of work is too easily ignored by educators for comfort, just as the significance of technical aspects of training is overestimated. But the important contribution of this paper is that it identifies the major dimensions of the social world of work with clarity. Its potential fruitfulness as a source of guidelines for the training of vocational educators should not be overlooked. Each aspect of the discussion suggests courses of study and research questions of relevance to persons in this field.

If I have any reservations about the paper at all, they pertain to the initial assumption about the relative importance of leisure and work. For the purposes of this paper, it was understandably necessary to take a position on this assumption, but I would like to have some of the questions raised early in the paper treated as hypotheses rather than assumptions. Certainly the impact that leisure is having on American society--and its far reaching implications for vocational education--cannot be easily dismissed, as Professor Gross has suggested.

In any event, however, work will remain one of the important elements of our society, and the nature of occupations clearly is of fundamental importance. There is much about the lifeways of some occupations that one could profit from knowing about before his first job (for example, how many of us here knew before our first jobs, that in some organizations secretaries have total knowledge--and janitors, total power?)

It seems imperative to me that we recognize one thing, however. While the paper is about occupations, its fundamental implications are aimed at the roles of vocational educators themselves. For example, if the implications of this paper were followed, it would mean, first, that people in this field would become better acquainted with the problems of bureaucracies, social mobility, alienation from work, etc. There is an irony here however, at least to the extent that people in guidance and vocational education typically have been trained in psychology (or perhaps economics) to cope with what are essentially sociological problems. Does the present training of vocational educators, then, adequately prepare them for the skills actually needed for their job?

But perhaps more important, if the implications of this paper were traced out fully, eventually educators would be required to look at the sociology of their own jobs more carefully. For, there seems to be the implicit assumption in the paper that vocational educators are in a position to do the kind of training and to perform the roles that seem to be necessary, and that they will want to change their roles accordingly.

Yet, change involves status threats, especially when younger, better trained persons from the social sciences begin to challenge the qualifications of persons trained in a former generation. Vocational education might be viewed as a social movement facing the same problems as other social movements have faced. The central problem is how to maintain outside support and secure resources as the society changes without compromising the major objectives. To put the dilemma in its simplest form, as the society changes, vocational education runs the risk of either failing to adapt to new conditions, or in adapting, the original goals of the movement may be transformed. Members of social movements often become so committed to the established organization that they are reluctant to disband it or even to make the necessary adjustments to preserve the original given objectives, and the objectives themselves may be transformed in order to enhance the organization's position and the positions of its members. An organization

can increase its bargaining power by taking on additional responsibilities and members and by increasing the scope of control over its present members. They may extract a price in the form of additional commitments binding the organization to a course of action not otherwise specifically required by the goals themselves. The ironic chain of events, then, is that in order to achieve goals, some of the energy that otherwise might have been applied to goal attainment becomes channeled into secondary activities required to strengthen the organization's power, presumably to achieve the goals. The process of bargaining for strength can result in complete displacement of goals in favor of increased power.

In vocational guidance, for example, counselors have increased their bargaining positions by assuming responsibility for college counseling, prestigeful activities supported by influential middle-class suburbs willing to pay for their services, while the city schools, pressed by problems of drop-outs, discrimination, etc., are far less adequately staffed. The persons in positions of status and power in vocational education, who are the ones in a position to lead the way to innovation, are the ones most threatened by the prospect. In vocational education, urbanization threatens the traditional prominence of persons in vocational agriculture, the role of the Federal government is threatening regional organizations, the prospect of giving poverty groups more control over the programs designed for them threatens the politicians and academicians, and the suggestions that persons trained in the liberal arts and social sciences take more leadership in vocational education threatens the older generation whose training is thereby out-moded. Persons in the field, consequently, are becoming concerned about preserving their public image, with publicizing their present achievements. These public relations efforts sometimes perform "boundary maintenance" functions: they are sometimes used as a defense against outside pressures to change.

But even if vocational educators wanted to modify their approach and perspective, to what extent can they do so within the present context? While perhaps vocational educators seldom have to contend with biting dogs, there <u>are</u> employers to be contended with and parents and their own administrative superiors and the Federal government which influences the kind of job that they <u>can</u> do. I think, for example, that the suggestion in this paper, that one ought not be too loyal to his line of work or his employer is provocative. But employers <u>expect</u> loyalty, schools evaluate students on this basis, and recommendations are supposed to reflect upon a worker's dedication, conscientiousness, etc. How free are educators to advocate to students a kind of calculated alienation from their work, and still remain in business?

Vocational educators are also employees of large organizations. Several characteristics of their positions, I believe, are responsible for certain types of constraints on what roles they can, and do, play in society.

First, as members of organizations, vocational educators are expected to be loyal to their own administrators. What kinds of constraints are placed on them by their employers?

Also, they make implicit bargains with outside employers to hire their products in exchange for local support; they may be pressured to train people for the local market. In exchange for cooperation and support from influential employers, certain employers may get "first crack" at the better graduates. Moreover, placing a person in a certain type of job, or refusing to place him, may be more relevant to the <u>educator's</u> reputation than to the best interests of the person involved, e. g., an educator who tries hard to place a poor risk worker gambles with his relationship with the employer involved, while placing people in a certain job may be a feather in the vocational educator's cap.

Second, vocational educators are middle-class citizens. As middle-class persons, whose problems are vocational educators trying to solve: those of the lower class students usually channelled into vocational education, their own, or perhaps those of others? Which organizational principles mentioned by Professor Gross (such as the emphasis on impersonality) conflict with the personal values of counselors, and with what consequence? Do vocational educators typically make additional efforts to place people who might be frowned upon by middle-class employers because they swear or drink excessively, or wear duck-tail haircuts? Do they feel responsible for assisting their students with their housing and other problems not directly connected with their work?

This field might have assumed even more responsibilities than it has if it were not for the social and organizational constraints on vocational educators. For example, in addition to simply trying to <u>supply</u> people for jobs, vocational educators might have taken more active leadership in modifying certain elements of the job structure--such as racial discrimination, or discrimination against women.

His middle class and psychological perspectives, in combination, have encouraged the educator to focus on helping the individual in his office rather than on the social conditions responsible for the student's problem. By contrast, some groups seem to have more grasp of the sociological dimension. The work of civil rights and fair housing groups, VISTA, the Job Corps, and minimum wage legislation and right to work laws are not entirely irrelevant to the problems of vocational education. How much leadership have vocational educators assumed for these developments?

As a means of gaining recognition and support, vocational educators have adopted the perspective of the Federal government, devoting many of their efforts to the defense of the national interests rather than to those of their individual clients. The national search for talent does not always reflect the original vision behind the movement as a means of helping individuals to solve their problems. The conception of individuals viewed as national resources, whose lives are "wasted" unless devoted to national needs is reflected in Berdie's comments:

"Thus manpower is the country's most valuable natural resource. Classifying men as a resource to be used has unpleasant connotations for some people, but such a concept is not necessarily degrading since manpower, along with timber or metallic ores or animal products is used for man's own betterment.

Just as other natural resources have to be processed and subjected to various degrees of refinement, so does manpower...The degree of refinement of petroleum depends upon the purpose for which the final product is to be used. Manpower also must be refined progressively as more exacting demands are placed upon the final product." (Berdie, 1954).

What kinds of pressure on counselors determine how they will reconcile the interests of the nation and of the economy with those of the individual clients?

But all of this is by way of illustration. To return to the major point, if the implications or Professor Gross' paper were traced out fully, vocational educators eventually would have to come to grips with the sociological dimensions of not only other occupations, but of their own as well. It seems as important to understand the characteristics of their own jobs as the jobs in which students are placed.

PSYCHOLOGICAL JOB ADJUSTMENT: IMPLICATIONS FOR GUIDANCE IN VOCATIONAL-TECHNICAL EDUCATION

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The best possible way to understand a thing is to develop and test a theory about it. A theory defines the important variables needed to account for the thing we wish to understand, and it specifies the nature of the relationships between the variables.

I do not propose to develop a theory of job adjustment, but I should like to do a bit of speculating about what such a theory might look like in its beginning stages. I can do little more than identify what I believe to be the important variables that should be included in such a theory, and mention what I know from observation and research findings to be the relationships between certain of the variables. A theory specifies in a systematic manner the relationships between the variables. There will be nothing systematic about my comments. I am not certain that research evidence is available concerning the relationships between some pairs and combinations of variables.

In order to understand job adjustment, we need to study both the individual and his job situation. Davis, England, and Lofquist (1964) distinguish work satisfactoriness from worker satisfaction. Work satisfactoriness is explained in terms of the correspondence between worker abilities and ability requirements. Worker satisfaction is a function of worker need set and the reinforcer system.

Some Thoughts Toward a Theory of Job Adjustment

We know that both the individual and the job environment are quite complex in structure. That is, each must be described in terms of several sets of variables each of which is complex in structure. For example, personality is one of the sets of variables needed to describe the individual. But personality itself must be described in terms of several variables.

Let us start by postulating that job adjustment (A) is a function of the individual (I) in interaction with the job environment (E). We can say then:

$$A = f\ (I \times E)$$

This is not a very profound statement, but it provides us with two very practical advantages. First, it sets limits to the dimensions of the problem to be studied. Second, it identifies three sets of variables that need to be considered. That is, we need to study not only the individual (I) and his job environment (E), but also job adjustment (A) itself.

While realizing that theorists do not all agree about the names for certain variables, or about the importance of certain variables, let us nevertheless venture to suggest the sets of variables that are needed to develop a theory of work adjustment. They are listed in Table I.

Table I: Sets of Variables Required to Explain Work Adjustments

I. Individual Variables

A:	Age, sex, race
I_2	Physique, health
I_3	Ability, skills, knowledge
I_4	Personality, values
I_5	Expectations, aspirations, reinforcement
I_6	Group and class identifications

E. Environmental Variables (The Job)

E_1 Community Structure and norms

E_2 Occupation and technology

E_3 The workplace (structure and operations)

E_4 Task demands and opportunities

E_5 Rewards and penalties

E_6 Co-workers and supervisors

A. Measures of Work Adjustment

A_1 Job performance

A_2 Relation with supervisors and peers

A_3 Reactions to rules and norms

A_4 Reactions to rewards and penalties

A_5 Illness and accidents

A_6 Absenteeism and job turnover

Each of the 18 sets listed above represents a broad, inclusive class of variables. For example, intelligence, as a characteristic of the individual, is included in variable I_3 (ability, skills, knowledge). Characteristics of the job itself are included in E_4 (task demands and opportunities). Rate of advancement, as a measure of job adjustment, is included in A_4 (reactions to rewards and penalties.)

There is reason to believe that the sets of variables required to describe the individual are interrelated rather than additive, although the correlations between some of them may not be high. If the variables interact, we can write the following equation to account for the individual.

$$I = f\ (I_1 \times I_2 \times I_3 \times I_4 \times I_5 \times I_6)$$

There is also reason to believe that sets of variables describing the job environment interact. The following equation accounts for the job and its environment.

$$E = f\ (E_1 \times E_2 \times E_3 \times E_4 \times E_5 \times E_6)$$

If elements of job adjustment are interrelated, as we believe them to be, we can write the following equation for job adjustment.

$$A = f\ (A_1 \times A_2 \times A_3 \times A_4 \times A_5 \times A_6)$$

In the equation $A = X\ (I \times E)$ we imply that the six sets of variables describe the individual interact with the six sets of variables describing the job environments to account for the sets of variables describing work adjustment. The multiplication sign (x) used in these equations implies that the sets of variables are intercorrelated. Results of available research suggest that the average correlations between I and E, I and A, and E and A variables are likely to range between zero and .39. The signs for some of the correlations will be negative. Higher correlations will be found now and then by various investigators. Certain individual variables, such as personality and values, may be more highly correlated than individual and environmental variables.

If we need 12 sets, with each set containing several variables to explain work adjustment, it is apparent that we are confronted with a very complicated task. The task is made still more difficult by the likelihood that the variables interact in some degree that is at present unknown. With these considerations in mind, we shall review some of the literature bearing on the problem.

A Brief Review of the Literature

The time available to me does not permit a systematic review of the literature on job assignment. The best I can do is to point out the relationships between different variables, using source materials I have readily at hand.

Individual Variables

Age, sex, race. The very young and the very old are most susceptible to illness (Turnbull, Willians, and Cheit, 1957). Job satisfaction in industry tends to be lowest in the group between 20 and 35 years of age. Thereafter it tends to rise with increasing age (Herzberg, et. al., 1957). Poor mental health is extremely high among young workers in repetitive jobs (Kornhauser, 1965).

Illness is more frequent among female than male employees, but men tend to be ill for longer periods of time (Turnbull, Williams and Cheit, 1957). Men and women do not differ markedly in job satisfaction on the average, but significant differences are found in specific locations (Herzberg, et. al., 1957). Job turnover rates are higher among women than among men, except in the professions.

Race is an important variable, particularly in that it operates as a barrier to obtaining jobs that are suited to the individual's interest and abilities. Little competent research exists on factors related to negro job success (Chalmers and Dorsey, 1962).

Physique and Health. With the increased use of machines physique and physical strength are becoming less important in industrialized societies. Health, however is an important personal, social, and economic factor. Illness is more frequent among the very young and the aged than among intermediate age groups, among female than males, among low income groups than high-income groups; among the unemployed than the employed, and among the unmarried than the married. (Turnbull, Williams and Cheit, 1957). Thus, illness is highly related to the individual's social and economic status. Accident rates are higher among those who are frequently ill (Vernon, 1936). Accident rates tend to decrease with increases in amount of prior training, length of time on the job, and age. (Harrell, 1958). Handicapped workers have been found to score as high as their control counterparts in quality of work performed (Carlson, et. al., 1963).

Ability, skills, knowledge. Ability is an important determiner of performance at all occupational levels - semi-skilled, skilled, and professional (Harrell, 1958; Ryan and Smith, 1954). Suitable matching of job and skill, and skill adequate for successful performance are related to job satisfaction (Herzberg, et. al., 1957). Intelligence differs among the different occupational strata (Tyler, 1964). Knowledge, skill, and especially opportunity to obtain suitable training, vary among the different socio-economic strata (Nosow and Form, 1962). Skilled workers rate higher than unskilled workers in job suitability, but lower in absenteeism and tardiness (Carlson, et. al., 1963).

Personality, values, interactance. Personality is an important determiner of job adjustment. Personality factors are far more frequent than unsatisfactory performance as causes of discharge (Harrell, 1958). The individual tends to join, and to be accepted by, groups and social strata with values similar to his own. The person whose values deviate from those of the group tends to be rejected. (Stogdill, 1959). Individuals differ in their ability to interact comfortably with others. (Moreno, 1953). City workers are less satisfied than small town workers with jobs requiring high degrees of personal interaction (Turner and Lawrence, 1965). Personality patterns that are typical of an occupation do not characterize all members of the occupation (Roe, 1964).

Severe personality maladjustments do not necessarily prevent successful job adjustment. A study of a 1 per cent random sample of all World War II and Korean veterans diagnosed as pychotic and neurotic revealed that 90% was making a satisfactory work adjustment (Cooperman and Sonne, 1963). Good mental health is more prevelant among skilled than among unskilled workers (Kornhauser, 1965).

Expectations, aspirations, reinforcements. Research on learning indicates that it is not the value of a reward, but the individual's reaction to the reward, that reinforces performance. Pay either lower or higher than expected is related to job turnover (Knowles, 1964) and dissatisfaction (Stockford and Kunze, 1950). Failure to satisfy expectations relative to job

assignment, nature of tasks, work conditions, pay, advancement, and the like, are associated with employee dissatisfaction with the job. Job satisfaction, in turn, is more highly related to absenteeism and turnover than to productivity (Stogdill, 1959; Herzberg, et. al., 1957). Factors that contribute to the individual's self esteem, worth, and feeling of success are most highly related to job satisfaction and good mental health (Kornhauser, 1965; Herzberg, Mausner, and Snyderman, 1959).

Young people often aspire to positions that they cannot easily obtain, either because of inappropriate abilities or inability to obtain appropriate training. Whereas professional, technical, office, and skilled jobs are more often desired, high school graduates are more likely to obtain semi-skilled, office, or unskilled jobs than the ones to which they aspire (Bell, 1938).

Group and class identifications. An individual's membership in various social, occupational, and ethnic groups tends to determine his values and his acceptability by other groups. However, the groups with which he compares and identifies himself tend to determine his aspirations and satisfactions. The worker tends to be better satisfied with his job when it is held in high regard by family and friends (Bullock, 1952). Blue collar workers are more strongly identified with their primary reference groups than are white collar workers (Shostak and Gomberg, 1964).

Occupying a position with a higher status level than that of one's father or brother tends to be associated with positive job satisfaction (Form, 1962). The higher the level of one's position on the occupational scale the more likely he is to be business oriented. The lower one's position the greater the likelihood that he will be labor oriented (Glantz, 1962). Professional and white collar workers tend to value self expression as a job characteristic, while manual workers, value independence and job security (Centers, 1948; Morse, 1962).

Environmental (Job) Variables

The job is embedded in a larger environment - cultural, national, community, organizational, and the like. Such environmental factors determine to a high degree the nature of a job and the reactions of the individual to the job.

Community structure and norms. Societies with centralized governments tend to establish permanent committees that are supported by agriculture. Their production organizations are characterized by managerial or separated, rather than collective, ownership (Udy, 1959). The rise of the factory is associated with the movement of people from small communities to large cities. The size and structure of the community determine how the individual will utilize his time with respect to work, travel, and leisure (Miller and Form, 1964).

The rise of the city is associated with the proliferation of differentated trades and professions, each with its own standards and norms. Societal, class, and occupational norms determine the kinds of jobs that the individual will be willing to accept (Douglas, Hitchcock, and Atkins, 1923). Community norms determine the nature of the jobs that are available to individuals from different classes and ethnic groups (Nosow and Form, 1962; Roe, 1956).

Occupation and technology. The occupational structure of a society can be described on terms of the worker task requirements of different jobs (Shartle, 1952, 1964). As technology becomes more complex, the human organization required to carry on the technology becomes more complex (Walker, 1962). When the individual moves from the small craft shop to the factory he is required to surrender a high degree of freedom and individual creativity (Douglas, Hitchcock, and Adkins, 1923).

The work place. As the technology of work becomes more complex, more levels of authority are required to carry on the technology (Udy, 1959). With the increased use of machines, the worker tends to lose control over the job and becomes increasingly alienated from his work (Blauner, 1964). With the increased use of automation, the control of both operational and maintenance functions become more highly centralized, but the human relations competence of the supervisor is not reduced under automation (Mann and Hottman, 1960). Work groups tend to develop norms that regulate output and establish tolerable levels of performance (Roethlisberger and Dickson, 1939; Whyte, 1955). Workers who deviate from the norms tend to be isolated or rejected (Thibaut, 1950).

Task demands and opportunities. Rapid changes in technology and the increased use of automation is changing the nature of task performance, as well as the demands for education and

training (Walker, 1962). New jobs in the future will require less in the way of physical skills and more in the way of judgment and decision (Diebold, 1959). Tasks characterized by high degrees of variety, interaction, knowledge, skill, and responsibility are associated with high job satisfaction among small town workers, but low satisfaction among city workers (Turner and Lawrence, 1965). Poor mental health among factory workers, and its difference between different levels of skill, is not related to repetitiveness, speed of work, or machine pacing; but appears to be related to low self esteem, discouragement, and feelings of failure (Kornhauser, 1965). Among professional and white collar workers, job satisfaction is associated with opportunity for initiative, innovation, and decision (Herzberg, Mausner, Peterson and Capwell, 1957).

Rewards and penalties. Although workers value pay that is perceived to be commensurate with their contributions, they value more highly work experiences that yields a sense of self esteem and success (Kornhauser, 1965; Herzberg, Mausner, and Snyderman, 1959). The satisfaction (reinforcing) value of a monetary reward is determined, not by its absolute value, but by its magnitude in relation to the pay received by other persons and groups with which the worker compares himself (Whyte, 1955; Stogdill, 1959; Stockford and Kunze, 1950). Incentive wage systems increase productivity only over the short run (Barker, 1951).

Supervisors and co-workers. Relations with supervisors and peers are important determiners of job satisfaction (Herzberg, Mausner, Peterson, and Capwell, 1957). Employee satisfaction is more highly related to supervisory behavior than is group productivity (Parker, 1963; Stogdill, 1965). A considerate, employee-centered style of supervision is related to the worker's satisfaction with his freedom on the job. A structuring style of supervision that lets the worker know what to expect is related to satisfaction with the company and its management (Stogdill, 1965).

Job Adjustment Variables

We seek to explain job adjustment in terms of individual and job environment variables. Job adjustment is itself a multi-variate concept. The employer tends to regard job performance as the most important measure of worker adjustment. But there are other measures of job adjustment, the importance of which become apparent when the worker presents a problem to his employer.

Job performance. Job performance has been found to be highly related to workers' ability, knowledge, training, and skill, and to the matching of job requirements with worker qualifications. Performance tends to be regulated in some degree by work group norms. Health, physique, and personality disturbances are not highly related to performance on the job, but do affect attendance at the job, accident rates, and the like.

Relations with supervisors and peers. Relations with supervisors and peers are important not so much because they affect job performance, but because they affect job satisfaction, motivation, mental health, and regularity of attendance at work. Poor relations with supervisors and peers tend also to create problems of discipline, cooperation, coordination, and lowered job satisfaction among work associates.

Reactions to rules and norms. Inability to accept and abide by work rules is a frequent cause of dismissal. The worker who fails to conform to the norms of his work group tends to be isolated or rejected. Isolation and rejection are, in turn, associated with low job satisfaction.

Reactions to rewards and penalties. Pay is not the only reward for work. Satisfaction of expectations relative to pay, work assignment, working conditions, advancement, job tenure, and recognition of contributions, tends to reinforce the expectation of further satisfaction in the work situation. Rewards are more effective than penalties as reinforcers. Incentive wage systems generally increase work output only for short periods of time.

Illness and accidents. Physical condition, muscular coordination, emotional tension, and fatigue are associated with individual accident rates. Proper job assignment would then appear to be a possible factor in controlling accidents and injuries.

Absenteeism and job turnover. Absenteeism and job turnover are symptomatic of discouragement, low job satisfaction, poor mental health, illness, inadequate training, and newness on the job.

Discussion

A sketchy review of the literature is sufficient to reveal the fact that a wealth of data is available on the subject of job adjustment. It supports our initial supposition that numerous variables are related to one or another aspect of job adjustment. The available data do not provide a clear indication of the ultimate structure of a theory of job adjustment. Our initial assumption that all of the 18 sets of variables interact is probably untenable. If some variables do not interact, the problem of predicting job adjustment would be considerably simplified. In reviewing the literature, it was apparent that certain variables, not themselves related to job adjustment, affect and condition other variables that are directly related to job adjustment. Better information than that now available is needed to develop an adequate theory of job adjustment. Systematic, multivariate research is needed. The needed information cannot be produced by sporadic research on small subsets of variables. That is to say that it would be difficult to test a theory of job adjustment using the numerous, but fragmented, scraps of data now available.

The speculations herein presented may have served a useful purpose in that they indicate something of the scope of the problem of job adjustment, and suggest that a considerable body of competent research methodology exists for further systematic investigation of the problem. There is a particular need for research on the factors related to job adjustment of Negroes and other ethnic groups.

Concerning guidance practice, guidance practitioners should consider offering more program services directed toward helping their students cope with anticipated problems of job adjustment, e.g., (role conflict, supervisory relationships, automation, and productivity standards) since most graduates of vocational programs will be directly entering jobs immediately after graduation.

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EXPLORATIONS IN COMPUTER-ASSISTED COUNSELING*

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Introduction

For some time now, the idea that electronic data-processing techniques could be applied to the routine clerical tasks in education has been accepted. We have witnessed a widespread application of these techniques to attendance accounting, grade reporting, and making master schedules.

These foregoing applications pertain to tasks that lie on the periphery of instruction and counseling. Their main effect is to save human time, which can then be spent on tasks requiring judgment and sensitivity. While it seems fairly certain that the automation of scheduling will eventually lead to more flexible instructional programs, the current efforts are aimed primarily at constructing the rigid master schedule associated with the lockstep system.

A different and more challenging hypothesis is that the value of electronic information-processing techniques will increase as they are more directly applied to the central functions of instruction and counseling. The purpose of this document is to examine some of the paths our research has begun to explore in this direction.

SDC Study

We will begin by describing a study that was conducted on the application of automated techniques to tasks of central importance in counseling. The area selected for study was the educational planning function; the procedure employed was to simulate by computer as much as possible of a counselor's behavior in two phases of educational planning: the appraisal of the cumulative folder and the planning interview with the student..

The study was patterned in some respects after the procedures employed by Kleinmuntz (1962).** In his study, he simulated the profile analysis behavior of an interpreter of the Minnesota Multiphasic Personality Inventory Test (MMPI).

The profiles of 126 students from Carnegie Institute of Technology were used for the input sample. Forty-five of the students were called the "maladjusted group," either because they came into the counseling center and talked about emotional problems or because they were identified by a majority of their sorority/fraternity peers as one of the two "most maladjusted" members of the chapter.

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**B. Kleinmuntz. Personality test interpretation by digital computers. Science, 139 (3553), 1963. 416-418.

The profiles of the 126 students were given to ten MMPI interpreters, who were asked to sort for the adjusted and the maladjusted students. The clinician who had the highest number of hits with the lowest error rate was picked for further study. Kleinmuntz spent approximately 30 hours with the expert, or "winner," listening and recording while the interpreter verbalized his thinking as he repeated the sorting task many times. On the basis of this sample of the interpreter's behavior, a 16-rule program was developed at Carnegie Tech to simulate the sorting task on a computer. The first version of the program did not perform quite as well as the clinician. Kleinmuntz used the explicit model as a basis for building a more elaborate model through trial and error. He eventually developed a refined computer program, with 35 rules, which performed better than the expert MMPI interpreter. On cross-validation studies at five other colleges, the "hit rates" of the revised model were about as high as those of the human expert on the original sample.

Kleinmuntz's study demonstrated several interesting points: it showed that clinical behavior could be simulated on computer; it provided support for the idea that the procedures of building a model by computer simulation yields a more explicit statement of diagnostic behavior than can be provided by a verbal description, and it suggests a way of systematically making use of clinical interpretation for prediction purposes.

Although we have patterned our procedure for obtaining the sample of the counselor's behavior after Kleinmuntz, our study differs in a number of ways. We were not interested in demonstrating that we could build a model that would be better than a counselor. No external criteria by which we could compare the machine against the human were defined. By the same token we did not select a counselor for study on the basis of his performance in a criterion situation. Our intention in this first study was to explore the terrain--to identify some of the major problems, both in regard to defining areas for further research and in methodology. Our study, because of its exploratory nature, was also aimed at a much broader spectrum of counselor behavior. We were trying to simulate both a counselor's behavior in the appraisal of the total cumulative record, and his behavior in the educational planning interview. We hoped that the study, in addition to suggesting further areas for research, would provide some concrete information about the kinds of man-machine systems that can be designed for counseling services.

Before selecting a counselor, we were concerned with several problems. Could a counselor be selected in terms of some external criterion? We decided that, since we wanted to study such a broad spectrum of the counselor's behavior, there were no existing criteria for operationally defining the "best" counselor. We decided instead to study counselors who were considered "good" by their supervisors.

A second question concerned the generalizability of our study. We had made recordings of the verbalized "thoughts" of counselors from different parts of the country as they engaged in the cumulative folder appraisal task. These pilot studies made it apparent that there are fairly wide differences among counselors. Some counselors concern themselves almost entirely with the data in the cumulative folders; others talk about the phenomenal experiences of the student as expressed in previous counseling interviews. We considered the idea of studying several counselors at the same time, with the notion that we might build something more general from these procedures, but finally concluded that for this first exploratory study we should examine one counselor intensively. We decided to select an experienced counselor who habitually used the data in the cumulative folder in his appraisal; the data in unexamined cumulative folders would then provide a concrete and fairly standardized data base with which to evaluate the behavior of our simulated model.

Since the task was to help ninth-grade students in their planning for high school, we picked a counselor who had experience in this task and who also worked at the high school level. Our rationale for the latter decision was the assumption that a counselor who had worked with high school students might, consciously or unconsciously, have developed better predictive rules from exposure to the students in the criterion situation.

The counselor selected for the study had long experience as a counselor in the Palo Alto School District, was identified by the Director of Guidance and the Director of Research of the school district as one of their best counselors, and was also working as a vice-principal in one of the high schools.

The following procedures were employed in the data collection. The cumulative folders of 20 ninth-grade students were randomly selected for the study. The counselor was instructed to think aloud as he read through the data in each folder. He was asked to select the data he felt were important and to address himself to the following problems:

1. What broad goals should the student consider?

2. What problems, if any, does the student have?

3. What additional information would be desirable?

4. If problems are apparent, what causes might be hypothesized?

5. What things might the school do to help the student?

The only other instructions given to the counselor were that he should notify us when he was about to express his conclusions and that he should label these as his "output" statements since we wanted to use these statements, word for word if possible, as the output statements of the computer program.

Following the appraisal of the cumulative folders, the counselor called the students in for a regular educational planning interview, during which the students made out a program of courses for high school.

The separation of the appraisal from the interview was somewhat artificial. Most counselors, including the subject of this study, make their detailed appraisal during the interview and not prior to it. However, the artificial distinction was necessary for the study.

The recordings were transcribed and analyzed. A model of the counselor's decision rules in the appraisal task and another model of his behavior in the interview were defined for computer simulation. The cumulative folder appraisal program was written for the Philco 2000 computer.

The automated cumulative folder appraisal system accepts as inputs the data in the cumulative folder--grades, aptitude test scores, parents' occupation, etc. The program analyzes these data, applying the programmed "rules" abstracted from the counselor's verbal behavior, and selects output statements such as the following:

"Student's grades have gone down quite a bit. Ask about this in interview. Possibly there are personal problems."

"Student should be watched closely. He will probably need remedial courses."

"Student is a potential dropout."

"Low counseling priority. No problems apparent."

In the automated interview, the student-program interaction takes place through the medium of a teletypewriter connected to a Q-32 computer.

The interview goes through the following procedures. (Appendix A provides the actual printout of an interview that was conducted during the evaluation study described below.) First, using conventional computer-based programmed instruction techniques, the student is given a 5-minute lesson on use of the teletype. Next, the student's cumulative folder record is inspected and the machine types out the student's courses and grades for the last semester and asks the student to indicate courses in which he is having problems. If the student specifies problem courses, the machine asks him to type, in his own words, a description of the problem for each course. These descriptions are stored on magnetic tape and later are printed out on an off-line printer. The printouts are sent to the counselor.

Following the description of problems, the machine asks the student if he would like to stop the interview to go see his counselor or if he would like to continue. If the student continues, his goals are explored next. The machine asks if the student plans to go to college. If he does, the program assists him in selecting the type of college he hopes to attend. If he does not, the student and the computer explore vocational alternatives in order to establish the student's vocational interests.

Following the selection of college or vocation, the machine assists the student in determining his major field of interest. The student is then given a statement regarding the probable grades that he will make in high school and a statement about his chance of success in his chosen post-high-school activity. These predictions are based on statistics accumulated by the Palo Alto School System.

Then the machine requests that the student select courses for 10th, 11th and 12th grades. The machine evaluates the student's choices and advises him regarding required courses, appropriate course loads, and the relevance of his electives to his chosen major.

Throughout the interview, records are kept by the program and, when certain critical events occur, messages are composed. At the conclusion of the interview, all such messages are printed out for transmittal to a counselor.

EVALUATION OF THE AUTOMATED PROCEDURES

An investigation was conducted between March 22 and March 26, 1965, to assess the simulation and to appraise student acceptance of the automated interview. Forty 9th-grade students were randomly selected from the population of 9th-grade students at the Wilbur Junior High School in Palo Alto, California. The students' total Scholastic and College Aptitude Test scores ranged from the third percentile to the ninety-sixth percentile. The group is somewhat above the national average in aptitude.

A teletype was installed at the school and was connected by telephone line to the Q-32 computer at SDC in Santa Monica. All 40 students took the automated interview. In addition, all of the data in the cumulative folders of the 40 students were analyzed by the appraisal program. Twenty of the 40 students were also interviewed by the original counselor, and the other 20 were interviewed by a second counselor. The second counselor was included in the study to provide some estimate of the generality of the model.

To control the effects of sequence and order, each group of 20 was further divided into two subgroups of ten. One group of ten students went to the computer first for the interview and then went to the counselor. The other group of ten saw the counselor first and then was interviewed by the computer.

Following each interview, either by human or machine, the students were given an opinion questionnaire designed to measure their attitudes toward the interview. When each student had completed both the human and the machine interviews, he was given a standardized interview to obtain more detailed information on his attitudes toward the machine and human interviews.

The results of the study are summarized in four broad categories: (1) those areas in which there appeared to be no marked difference between the counselor and the automated systems; (2) those areas where differences were observed between the automated systems and the counselor; (3) findings on the reaction of students to the automated procedure; and (4) areas that require further study.

1. Areas of no difference between automated systems and counselor. No significant differences were found between the appraisal behavior of the two counselors and the computer appraisal programs on three-fourths of the appraisal statements. Both human and computer performed similarly in terms of identifying the following: changes in the pattern of student's grades; underachievement; overambitious plans; need for remedial work; appropriate and inappropriate post-high-school plans.

2. Areas of difference between automated systems and the counselor. The automated appraisal programs identified significantly more students as overachievers and as potential dropouts than did either of the two counselors. Both of these differences were clearly attributable to the fact that the computer program was generally more pessimistic in predicting the future achievement of students in the lower aptitude levels. A modification of the computer program to change this one function would produce a much greater similarity between the counselors and the automated procedures.

(It was the feeling of the researchers that the computer program provided an excellent model for studying some of the counselor's decision rules. Following the study there was a strong subjective feeling of confidence that the procedure also provided a good way of understanding the counselor's appraisal behavior.)

The schedules made by the students under the automated conditions tended to differ from the schedules made with the counselor present. This was true not only for the specific courses which were selected but also in the number of course schedules that were completed. In this latter sense, the computer was more permissive than the counselors. It did not compel the student to make a complete program of courses nor did it compel him to make any attempt at preparation of a program.

Two interesting differences showed order effects. When the machine interview was administered first, there were greater differences between the schedule produced with machine and the schedule produced with the counselor than occurred when the counselor interview was first. A number of observations led to the conclusion that the counselor exerted more influence on the students than did the interview program.

Also, a significantly larger number of students expressed concern over problems to both counselor and machine when the machine interview occurred first in the sequence. This difference may be attributable to the fact that the computer interview always asked students if they had problems, while the counselors may not have asked. In addition, some students stated emphatically that they felt that the confidentiality of the machine interview was a strong point in its favor.

3. Reaction of students to the automated procedure. Different sets of attitude questions were presented following the automated interview and the human counseling interview. The questionnaire items were tailored to the two different situations. Although no direct comparison can be made at this time, the mean scores on both the post-machine scale and the post-human counseling scale tended to be in the positive direction. The scoring was such that if one-half the items were answered negatively and one-half positively, the total score would be 90 on either of the two scales. The actual mean score for the students on the post-machine interview scale was 105, and the actual mean score for the students on the post-human counselor scale was 119. There were wide individual differences among students in each group. A few students seemed to react very positively to the machine and a few expressed a strong preference for the counselor.

In the standardized post-interview, 53 percent of the students indicated that the machine was not able to take into consideration all of the data necessary to make adequate plans for high school. Most of these students felt the machine did not give enough consideration to personal interests and personality variables.

Fifty-six percent of the students expressed some reservation about course plans made with computer assistance, whereas only 20 percent had reservations about course plans made with the counselor.

Six percent of the students reported that the computer interview bored them and made them restless; 26 percent of the students felt bothered by the fact that the computer did not give them any reassurance as to whether their choices were appropriate.

Only one of the 40 students in the study chose to terminate the machine interview before making 10th-year course plans.

4. Problems for future study. The results of the pilot study indicate that simulation of logical appraisal procedures is more easily achieved than automation of complex interviewing procedures. It would seem from analysis of the data that further study of the appraisal process should consider how the counselor's appraisal decisions based on the quantitative data are modified by the interview.

One of the counselors in the pilot study was from the Wilbur Junior High School in which the study was conducted. The other counselor (the original counselor) was from another school. Of the total number of appraisal statements made by the counselor who knew the students (97 statements), 42 percent (41 statements) were also made by the computer model. Of the total number of appraisal statements made by the original counselor (53), 77 percent (41 statements) were also made by the computer model. This result suggests that the computer model better represents the original counselor. However, the difference may also be attributed to the fact that the counselor from Wilbur Junior High School had more data. Examination of her responses indicated that she was using additional data obtained from first-hand knowledge of the students.

The automation of interview functions needs further study. The study indicated that more than one iteration is required in the analysis and design process to achieve accurate simulation. Most of the differences in the output of the human and the machine interviews could be resolved by a small number of cycles of program modification and system test with another sample of students. However, the problem involves more than accurate simulation or reduction in differences. The data on student reaction suggest that there are individual differences among students in their response to the automated system. The data also suggest that there are sequence effects that should be considered. In some cases, a period of time spent on the machine may make the student more productive in the interview with the counselor. In other cases, the contrast between machine and human could make the student more dependent upon the human. Further study of the machine interview versus the human counselor does not seem advisable. The question should not be that of which is better, but how and to what extent can automated interviewing be successfully integrated into the counseling process. The pilot studies indicate that automated interviewing procedures can be developed. Adequate field study is required to acquire some basis for recommending how such procedures as automated appraisal, and automated interviewing, can be used in actual counseling practice.

An unanticipated result of the work done so far on the automated interview has been the initial design of an advanced integrated student-information system. The student-information system currently has the following features: a student-information data base; an information input system for updating the student-information base through teletype stations; an information retrieval system for printing out student data on the teletype; and the associated programs for appraising the data and conducting the automated educational planning interview.

The student-information data base contains all of the relevant information on the student. At the present time, the stored data are those usually contained in the cumulative folder. However, the information input procedure would permit a teacher, counselor, or other appropriate personnel to modify the data base for any student by adding, changing, or deleting information. This system, in a real school environment, would possibly consist of input-output teletypes placed at appropriate spots in the building. An up-to-date student data base could be maintained simply by typing in relevant new information as it became available. The system is currently programmed so that personnel must know a set of code symbols to retrieve information from the student-information base. Anyone knowing the code can get an immediate listing of information available about any student.

FUTURE PLANS

Future development of the retrieval system will allow the person requesting information to select it by category. Different codes and displays will also be developed for students, teachers, and counselors, so that the student will be able to obtain appropriate screened information of value to himself when he needs it. The data currently stored in the student-information data base can be thought of as "primary data," i.e., data that are essentially unprocessed and unanalyzed. The student-information data base will be expanded to include information resulting from further processing of the primary data, which can be thought of as "secondary data," for example, the output statements similar to those produced by the counseling appraisal program.

At the present time both the counseling appraisal program and the automated educational planning interview use the student-information data base. Other programs will be added to the system. A student tracking system that follows student progress and provides displays to students, teachers, and counselors when the student's performance falls below "expected" levels, will be integrated into the total system. The system will be further enlarged to include numerous other functions, such as diagnostic interviewing and testing; computer-assisted instruction, real-time, flexible, scheduling and control programs that solve scheduling problems on a continuous basis, etc.

We are planning as our next experimantal step the development of a man-machine counseling system in a real educational setting. (Appendix B described a hypothetical man-machine counseling system for illustrative purposes.) We hope to study counselors at a selected field site and to build computer programs for automating some of their functions, such as appraisal. The programs will be adapted to the particular styles of the various counselors at the field site. We view this effort as a three-year study. The first year of work will produce an initial system design in the laboratory. During the second year we will test the first version and revise it until it meets prestated objectives. The third year will involve training the personnel to use the system; testing the procedures, especially those relating to the interface between the man and the machine; and implementing the system in the field. Following implementation, an evaluation of the installed system will be made.

Once the system has been developed and installed, it will provide an excellent vehicle for research studies aimed at improving these systems in general. In addition, the problem of implementing the system in other field settings--i.e., the problem of generalizability--can be further explored.

APPENDIX A

COPY OF SAMPLE INTERVIEW

YOU ARE ABOUT TO PARTICIPATE IN AN INTERVIEW WITH AN AUTOMATED COUNSELOR.
THE COMPUTER WILL HELP YOU PLAN WHAT YOU WANT TO DO IN HIGH SCHOOL AND
IN LATER LIFE.
BUT FIRST, JUST TO LET THE COMPUTER KNOW YOU ARE THERE PLEASE TYPE THE
LETTER A AND A CARRIAGE RETURN (RED KEY ON THE RIGHT-HAND SIDE OF
THE KEYBOARD).

**** A

GOOD...
THE MOST IMPORTANT KEY IS THE CR KEY (RED KEY ON THE RIGHT).
YOU WILL USE IT TO LET THE COMPUTER KNOW THAT YOU HAVE MADE AN ANSWER.
JUST FOR PRACTICE, TYPE THE LETTER B AND CR (RED KEY).

**** B

OK....
SOMETIMES YOU WILL BE ASKED TO ANSWER A YES OR NO QUESTION.
WHEN YOU ARE, JUST TYPE YES OR NO AND A CR
DON'T FORGET THE CR. LET'S TRY IT. HERE IS A QUESTION---
ARE YOU IN CALIFORNIA NOW? PLEASE TYPE YES OR NO.

**** YES

FINE....

MANY OTHER PEOPLE ARE USING THIS COMPUTER RIGHT NOW. ONCE IN A WHILE THE
COMPUTER WILL HAVE TO TAKE CARE OF THEIR URGENT NEEDS. WHEN THIS HAPPENS,
YOU MAY FIND THAT YOU HAVE TO WAIT A MOMENT OR TWO. DON'T WORRY, THE
COMPUTER WILL COME BACK TO TAKE CARE OF YOU AS SOON AS IT CAN. WHEN YOU
HAVE READ THIS, TYPE OK AND CR.

**** OK

GOOD.
BY NOW YOU HAVE NOTICED THAT BEFORE YOU TYPE AN ANSWER, THE TYPEWRITER
TYPES STARS LIKE THIS-

****
THIS IS TO LET YOU KNOW THAT IT IS TIME FOR YOU TO TYPE SOMETHING. YOU SHOULD
NEVER TYPE ANYTHING UNTIL AFTER THE STARS ARE TYPED OUT BY THE COMPUTER.
DO YOU UNDERSTAND?
PLEASE TYPE YES OR NO.

**** YES
ANOTHER VERY IMPORTANT KEY IS THE / OR "SLASH" KEY. IT IS THE GREEN KEY ON
THE BOTTOM RIGHT OF THE KEYBOARD. LOOK FOR THE / KEY (GREEN KEY). WHEN YOU
FIND IT, TYPE / AND CR.

**** /
SOMETIMES YOU WILL HAVE TO TYPE MORE THAN ONE LINE AND THE COMPUTER CANNOT
TELL IN ADVANCE HOW MANY LINES YOU WILL TYPE. IN SUCH A CASE, YOU WILL LET
THE COMPUTER KNOW THAT YOU HAVE FINISHED BY TYPING / AND CR. WHAT YOU
TYPE WILL LOOK SOMETHING LIKE THIS---

**** 1

**** 2

**** /

```
LET'S TRY IT.
TYPE  1  AND  CR,  2  AND CR, AND  /  AND  CR.
(WAIT FOR THE STARS).

**** 1

**** 2

****/

FINE...

PLEASE TYPE YOUR ID NUMBER AND A  CR

**** 42
ONE MOMENT, PLEASE.

IS YOUR NAME  DEBORA ANDERSON

**** YES
ACCORDING TO MY RECORDS THIS IS HOW YOU DID LAST SEMESTER.
   CODE     COURSE              GRADE
    1     P.E.                    A
    2     ENGLISH 1               A
    3     GENERAL SCIENCE         A
    4     EUROPEAN HISTORY        C
    5     ALGEBRA                 B
    6     SCHOOL SERVICE          A

IS THIS CORRECT?  IF SO, TYPE  YES  IF NOT, TYPE  NO

**** YES
ARE YOU HAVING ANY PROBLEMS WITH ANY OF THESE COURSES?
PLEASE TYPE YES OR NO.

**** YES
TYPE THE NUMBER OF EACH COURSE THAT IS GIVING YOU TROUBLE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

**** 4

**** /
WHAT KIND OF PROBLEM DO YOU HAVE WITH  EUROPEAN HISTORY
PLEASE TYPE IN THE NATURE OF THE PROBLEM.  A FEW WORDS WILL BE O.K.
WHEN YOU ARE ALL FINISHED, TYPE  /  AND  CR.

**** I DON'T TURN MY WORK IN ON TIME./
I SEE...
IF YOU WOULD LIKE TO DISCUSS THIS PROBLEM FURTHER, MAKE AN
APPOINTMENT TO SEE YOUR COUNSELOR.

WOULD YOU LIKE TO CONTINUE WITH THIS INTERVIEW AT THIS TIME, OR WOULD
YOU LIKE TO DISCUSS YOUR PROBLEMS WITH YOUR COUNSELOR BEFORE YOU CONTINUE?
TYPE  GO  IF YOU'D LIKE TO CONTINUE.  TYPE  STOP  IF YOU'D LIKE TO STOP.

**** GO
DO YOU PLAN TO CONTINUE YOUR FORMAL EDUCATION BEYOND HIGH SCHOOL?

**** YES

WHICH OF THE FOLLOWING IS MOST LIKE THE SCHOOL YOU PLAN TO ATTEND?
1 IVY LEAGUE COLLEGE
2 OTHER COLLEGE OR UNIVERSITY
3 CALIFORNIA STATE COLLEGE
4 JUNIOR COLLEGE
5 BUSINESS OR VOCATIONAL SCHOOL
6 I HAVE NOT YET DECIDED
TYPE THE APPROPRIATE CODE.
```

```
**** 3
DO YOU INTEND TO MAJOR IN ENGINEERING OR ONE OF THE SCIENCES?
PLEASE TYPE YES OR NO.

**** YES
HERE ARE SOME AREAS OF SCIENCE AND SOME EXAMPLES

CODE     AREA                                EXAMPLES
  1    PHYSICAL SCIENCES.....PHYSICS, CHEMISTRY, GEOLOGY, ETC.
  2    BIOLOGICAL SCIENCES...BIOLOGY, PRE-MED, PRE-NURSING, ETC.
  3    SOCIAL SCIENCES.......PSYCHOLOGY, SOCIOLOGY, ANTHROPOLOGY, ETC.
  4    MATHEMATICS...........MATH, STATISTICS, COMPUTER PROGRAMMING, ETC.
  5    ENGINEERING...........ARCHITECTURE, DRAFTING, ELECTRONICS, ETC.

PLEASE TYPE THE  CODE NUMBER OF THE KIND OF SCIENCE YOU INTEND TO MAJOR IN.

**** 3
ALRIGHT.  LET'S SEE IF WE CAN PINPOINT YOUR AREA
    1   PSYCHOLOGY
    2   SOCIOLOGY
    3   ANTHROPOLOGY
    4   SOCIAL WORK
TYPE THE APPROPRIATE CODE.

**** 1
OK...
THE GRADES YOU GET IN HIGH SCHOOL LARGELY DETERMINE THE TYPE OF COLLEGE YOU
WILL BE ABLE TO ATTEND.
LET'S JUST TAKE A LOOK AT YOUR PROJECTED HIGH SCHOOL GRADES BASED ON YOUR
PRESENT PERFORMANCE.  STUDENTS WHO GOT GRADES LIKE YOURS IN JUNIOR HIGH,
DID AS FOLLOWS AT CUBBERLEY---

    70 PER CENT EARNED   A  OR  B
    20 PER CENT EARNED   C+
    10 PER CENT EARNED   C

ON THE BASIS OF YOUR PROJECTED GRADES, YOUR PRESENT COLLEGE CHOICE INDICATES
THAT YOU ARE THINKING PRETTY REALISTICALLY ABOUT YOUR FUTURE LIFE.

NOW THAT WE'VE GOT SOME IDEA OF WHAT YOU'D LIKE TO DO AFTER HIGH SCHOOL, LET'S
LOOK AT YOUR HIGH SCHOOL COURSE PLANS.  IN THE 10TH GRADE, THE REQUIRED
COURSES ARE---

    ENGLISH 2
    CONTEMPORARY WORLD HISTORY AND GEOGRAPHY
    PHYSICAL EDUCATION

WHAT OTHER COURSES WOULD YOU LIKE TO TAKE NEXT YEAR?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE  YES,
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE  NO

**** YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

**** 70

**** 93

**** 111

**** /
```

OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

ENGLISH 2
CONTEMPORARY WORLD HISTORY AND GEOGRAPHY
PHYSICAL EDUCATION

FRENCH 1
MATH M 1
BIOLOGY 1

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE CHANGE

**** YES
OK....
THAT LOOKS LIKE A PRETTY GOOD 10TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

**** NO
OK....
AT THE 9TH GRADE YOUR PROJECTED 11TH AND 12TH GRADE SCHEDULE IS CONSIDERED TO BE TENTATIVE. FIRM DECISIONS CAN BE MADE ONLY ON THE BASIS OF YOUR YEAR BY YEAR PERFORMANCE. WHAT YOU DECIDE TO TAKE IN THE 11TH AND 12TH GRADES WILL BE GOVERNED LARGELY BY WHAT IT IS YOU WANT TO DO AFTER HIGH SCHOOL. SINCE A PERSON'S PLANS TEND TO CHANGE OVER A PERIOD OF TIME, YOU SHOULD SEE YOUR COUNSELOR TOWARD THE END OF YOUR 10TH YEAR IN ORDER TO EVALUATE YOUR 11TH AND 12TH GRADE PROGRAM IN THE LIGHT OF YOUR CURRENT GOALS.

ALTHOUGH WE WILL BE TALKING ABOUT TENTATIVE PLANS, WHICH YOU WILL BE ABLE TO CHANGE, LET'S LOOK AT YOUR HIGH SCHOOL COURSE PLANS AS YOU SEE THEM NOW.

LET'S THINK ABOUT THE 11TH GRADE.

THE REQUIRED COURSES FOR THE 11TH GRADE ARE---

ENGLISH 3
U. S. HISTORY
P. E.

WHAT OTHER COURSES WOULD YOU LIKE TO TAKE IN THE 11TH GRADE?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE YES.
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE NO

**** YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE CR AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE / AND CR.

**** 71

**** 96

**** 43

**** /
OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

```
    ENGLISH 3
    U. S. HISTORY
    P. E.

    FRENCH 2
    MATH M 25
    CREATIVE WRITING 1

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE  YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE  CHANGE

**** YES
OK....
THAT LOOKS LIKE A REASONABLE 11TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

**** YES
GOOD.  TYPE THE CODES OF THOSE COURSES YOU WILL TAKE IN THE SUMMER.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

**** /
ALRIGHT.  THAT MEANS THAT IN SUMMER SCHOOL YOU WILL TAKE---

    DRIVER EDUCATION
NOW LET'S THINK ABOUT THE 12TH GRADE.
THE REQUIRED COURSES FOR THE 12TH GRADE.ARE---

    GOVERNMENT 2
    PHYSICAL EDUCATION

(ENGLISH 4 IS NOT REQUIRED, BUT YOU MAY WANT TO TAKE IT.)

WHAT OTHER COURSES WOULD YOU LIKE TO TAKE IN THE 12TH GRADE?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE  YES.
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE  NO

**** YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

**** 72

**** 64

****  /
OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

    GOVERNMENT 2
    PHYSICAL EDUCATION

    FRENCH 3
    GIRL'S WOODWORK  S

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE  CHANGE

**** YES
```

OK.....
THAT'S A PRETTY GOOD 12TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

**** NO
IT IS A GOOD IDEA FOR ALL COLLEGE BOUND STUDENTS TO TAKE 4 YEARS OF ENGLISH. GIVE THIS SOME THOUGHT.

I HOPE THIS INTERVIEW HAS PROVIDED YOU WITH SOME INFORMATION TO THINK ABOUT IN PLANNING YOUR HIGH SCHOOL PROGRAM.
IT'S BEEN NICE INTERACTING WITH YOU.
THANK YOU, DEBBIE
THIS IS THE END OF THE INTERVIEW

APPENDIX B

DESCRIPTION OF A HYPOTHETICAL MAN-MACHINE COUNSELING SYSTEM

The following description is provided to illustrate in detail how the man-machine counseling system might operate.

The man-machine counseling system consists of seven full-time credentialed counselors, one senior programming analyst, one computer programmer and one secretary. One of the counselors, the head counselor, is also a research psychologist. Each counselor has a comfortable office where he can meet privately with his counselees. Three teletype machines are available for communication with the computer. Each of these machines is housed in a small cubicle where they can be used in private.

The counselors spend most of their time with students in their offices, although the first hour of the day may be spent in retrieving information, making decisions, and scheduling appointments. The programming analyst and the programmer work on new computer programs, which are frequently being developed to improve the system, and on the maintenance of the present system. The secretary functions as receptionist, scheduler, typist, and clerk.

A counselor's typical day proceeds as follows. On first entering the counseling complex, he checks the tracking list. This list, which contains the names of all students who may be in need of help and the names of their counselors, was prepared the previous evening. The tracking list was prepared by a computer program that checks the information on the student-information data base tape to determine whether any new information has been added that indicates students are in need of help. The list is printed out on a printing machine with the students' names grouped according to their counselors. The list also identifies each student's problem. The lists for each counselor are placed in his mailbox so that they are available to him the next morning.

The counselor checks the list to identify the students he wants to see, and the secretary arranges appointments for those students as early as they can be scheduled.

The counselor next reviews his list of scheduled appointments and prepares for his interviews by obtaining an up-to-date report for each student. This is done through a man-machine dialogue via the teletype.

After the counselor types his opening request to the system, the system responds: O.K. WHAT KIND OF FUNCTION IS THIS? The counselor types RETRIEVAL OF STUDENT INFORMATION. The teletype next asks for the name of the first student. Following this, by typing in the appropriate messages, the counselor either asks for specific categories of data or requests the total cumulative record. After the student information has been printed out by the teletype, the counselor asks the computer to provide him with a list of all the categories of information for which automated appraisals can be made. The teletype types out the following: APPRAISAL CATEGORIES: VOCATIONAL GOALS, EDUCATIONAL PLANS, EDUCATIONAL PROBLEMS, PERSONAL PROBLEMS, ASSETS, WEAKNESSES, COUNSELING PRIORITY, COUNSELING PROGNOSIS, DIRECTION AND NATURE OF CHANGES, ANALYSIS OF AUTOMATED DIAGNOSTIC INTERVIEW, etc. The counselor types the name of each student and specifies the appraisal categories appropriate to each student. The teletype types out the appropriate appraisal reports for each student.

The counselor studies the new information and decides which students he will see for counseling and which students will take automated interviews. He types a message to the computer saying that he now wants to prepare the computer for the student interviews and indicates kind of interview to be conducted for each student. For some students the message will be: CONDUCT EDUCATIONAL PLANNING FOR NEXT SEMESTER. For others, the messages will be: CONDUCT STUDY APPROACH DIAGNOSTIC INTERVIEW, or CONDUCT PRELIMINARY VOCATIONAL COUNSELING INTERVIEW.

The counselor gives the secretary the list of students who are to take automated interviews. When students come to the counseling center, they first report to the secretary who directs them to the counselor or to a teletype.

The students who are assigned to the automated interviews type in their names. The computer checks to make sure the student is actually scheduled for this time. If he is, the student continues with the interview in a manner similar to that described on page of this document. The computer terminates the interview if the student makes responses indicating that the automated interview is not appropriate and the student should see the counselor.

The computer makes a record of all student interviews and stores on a recording tape all responses suggesting that the counselor should take some follow-up action. Each evening, these recordings are printed out on the off-line printer and are placed in the counselor's message box for the next day.

When the students have completed the automated interview, the report back to the secretary. If they wish to see the counselor or the counselor desires to see them, they wait to see the counselor or make another appointment. Some counselors want their students to be able to get information about themselves when they want it. However, the students must check with the secretary before using the machines.

Teachers also use the teletype to insert information on student progress. The teachers have been instructed to insert test scores and other kinds of data descriptive of student behavior into the student-information data base when they become available.

Counselors also put information into the student-information data base. These inputs relate to things that the counselor has learned in the interviews, such as the description of special problems or the fact that a decision of a particular kind has been made. These data also are input into the system by means of the teletype. From time to time, counselors contact the programming analyst and the head counselor because they want to modify the system. They may have a new hypothesis that they would like to have printed out in the appraisal program whenever the appropriate data are found in student records; or they may want to make a change in the interview. The counselors conduct an active research program in which they test their procedures and modify them to achieve better performance. The automated procedures permit counselors to conduct a systematic research program that would have been impossible before the computer was added to the system.

GUIDANCE MATERIALS, INSTRUMENTS, AND PROCEDURES FOR VOCATIONAL-TECHNICAL EDUCATION.

Moderator: Dolph Camp

Assessment instruments: John O. Crites

Theory and practice: David V. Tiedeman

Occupational classification systems and information: Carroll L. Shartle

Data processing and vocational guidance: G. Truman Hunter

ASSESSMENT INSTRUMENTS AND VOCATIONAL EDUCATION

John O. Crites
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In discussing assessment instruments and their use in vocational education, I shall assume that what is meant are standardized psychological tests. More specifically, these tests would include measures of general intelligence, special aptitudes, vocational interests, and various aspects of personality functioning and structure. In other words, I shall not refer to such appraisal and evaluation procedures as the interview, sociogram, and rating scale. Rather, I would like to focus just upon tests as assessment instruments, since they are generally more widely used in counseling and guidance activities. I shall begin by briefly reviewing the development of some of the more common tests which have been constructed over the years, in order to gain an historical perspective on their value and usefulness. Then, I shall attempt to ennumerate some of the practical and theoretical shortcomings in traditional tests which have become increasingly apparent as we have begun to conceptualize vocational choice as a developmental process. Finally, I shall describe and report on some new assessment instruments, being constructed as part of the Vocational Development Project at the University of Iowa, which are designed to measure the maturation of decision-making attitudes and competencies during late childhood, adolescence, and early adulthood. I hope that through a consideration of both old and new assessment devices implications can be drawn for their more effective application in the field of vocational education, whether the problem is one of counseling students or selecting workers or utilizing manpower.

A Brief Historical Review of Assessment Instruments

When Frank Parsons, the acknowledged father of vocational guidance, wrote his handbook in 1909 on"Choosing a Vocation", there were no standardized tests, as we think of them today, to assist in the appraisal of an individual's career prospects. It was not until the First World War that some real progress was made in what are known now as "group intelligence" tests. The Army Alpha and Beta tests, measures of verbal and nonverbal intelligence, respectively, were constructed by Yerkes and his co-workers and were administered to thousands of draftees. From the data which were gathered, the first analyses of differences between occupations in intelligence were made by Fryer and Sparling. Soon afterwards, in 1927, Strong published the first edition of his Vocational Interest Blank, and the vocational testing movement was well on its way. Still, there were very few adequate measures of special aptitudes, although Parsons as well as others had long recognized their importance in vocational adjustment. It was not until the establishment of the Minnesota Employment Stabilization Research Institute (MESRI) in 1931 that the first significant work was initiated on the assessment of special aptitudes. Under the direction of the Committee on Individual Diagnosis and Training, which included such pioneer vocational psychologists as Paterson, Darley, and Dvorak, such measures of special aptitudes as the Minnesota Mechanical Assembly Test, Minnesota Rate of Manipulation Test, Minnesota Spatial Relations Test, and Minnesota Clerical Test were constructed and extensively studied. It should be noted also that it was in the early 1930's that two personality tests, the Bell Adjustment Inventory and the Bernreuter Personality Inventory, which were to become well-known in the years to follow, were first published. Thus, the First World War, the Aspirin Age of the 1920's, and the Great Depression marked the beginning of the development of general intelligence, special aptitude, vocational interest, and personality tests.

The next stage in the vocational testing movement largely involved the activities of the Aviation Psychology Program of the Army Air Forces during the Second World War, although individual researchers, such as Dvorak, were also making significant contributions. The primary task with which such vocational psychologists as Flanagan, Super, and Thorndike were confronted was the selection of personnel for Air Cadet training and their classification as pilots, navigators, and bombadiers. Many tests of intelligence, special aptitudes, interests, and personality were devised and tried out, and eventually a battery of measures which had considerable predictive validity for success in training was developed. Our interest is not so much in what these tests were, since the content of most of them is not appropriate for civilian counseling purposes, but

in the implications of their construction for subsequent developments in testing. The major impact of the Aviation Psychology Program was to emphasize the application of factor analysis as a method for not only identifying the relatively unique dimensions of ability, interest, and personality but also for isolating the basic components in criteria of performance. It was found, for example, that many special aptitudes, such as spatial perception and visualization, which vocational psychologists had previously assumed to be unitary abilities, could actually be broken down further into more basic factors. Thus, we now distinguish among two-dimensional spatial relations perception, three-dimensional spatial visualization, horizontical and vertical spatial orientation, spatial aiming and positioning, and other spatial aptitude factors. Similarly, criteria of training and job success were factor analyzed into their component parts and "criteria" for criteria were established. In short, it can be said that the Second World War ushered in the era of factor analysis in the construction and validation of tests.

Today, our inheritance of tests from the past half century reflects many of the historical trends which I have tried to trace. First, most of the assessment devices which we use in counseling are of the pencil-and-paper, group type, as were the Army intelligence tests of the First World War. Second, we have tests which have been developed in accordance with both the so-called "empirical" approach, as exemplified by the Strong Vocational Interest Blank, and the "rational" approach, as illustrated by the Kuder Preference Record--Vocational. Finally, we now have a host of aptitude, interest, and personality tests which have been developed through factor analytic procedures. Among these are several multi-factor aptitude batteries, such as the General Aptitude Test Battery of the U. S. Employment Service: a number of interest inventories, such as the Guilford-Zimmerman Interest Inventory; and, a few personality tests, such as the Sixteen Personality Factor Questionnaire. In addition, current trends in test development have produced such instruments as the Edwards Personal Preference Record, which was designed to control the effects of social desirability upon item endorsement, and the Minnesota Vocational Interest Inventory, which, for the first time, provides measures of the preferences of nonprofessional workers. Unlike Parsons, who had no tests with which to assess the vocational capabilities of his clients, present-day counselors are faced with the problem of which tests to use out of the multitude available. In Buros' compilation of Tests in Print, he indexes over 2,100 which have been published, and undoubtedly more have appeared since his survey.

Shortcomings of Traditional Assessment Instruments

When we ask "Which of these hundreds of tests should we use in counseling?", we are usually posing the question "Which of them will best predict the future vocational adjustment of a client?" By vocational adjustment we generally mean the client's success and satisfaction on the job after he has entered the world-of-work. The sad but true conclusion which we must draw is that most of our assessment instruments have little or no predictive validity in forecasting these two major criteria of vocational adjustment. Intelligence tests do differentiate between occupations at different levels of education, responsibility, and skill, as the data from both world wars indicate, but there is also a great deal of overlap between them, so that the brightest lumberjack is about as intelligent as an average accountant. At best, there is only a low to moderate positive correlation between intelligence and success, and no correlation with satisfaction. Vocational interest inventories have even lower correlations with success and satisfaction, although the latter criterion of vocational adjustment, in particular, should be predicted by them. The highest correlations which Strong obtained, however, between his Blank and ratings of satisfaction were in the .20 to .30 range. He concluded that interest inventories predict occupational stability, i.e., staying in an occupation for a long period of time, but not occupational satisfaction. Finally, the evidence on personality tests is even more negative. There are only scattered instances of either objective or projective personality measures being related to success and satisfaction.

Aside from the problem of how well tests can predict vocational adjustment, there is another shortcoming of our traditional assessment instruments, which may be even more serious. These measures of ability, interest, and personality were developed within a conceptual framework which has come to be known as the "matching men and jobs" or "trait-and-factor" approach, which consists of three assumptions or principles: first, that by virtue of his unique psychological characteristics each worker is best fitted for a particular type of work; second, that groups of workers in different occupations have different psychological characteristics; and, third, vocational adjustment varies directly with the extent of agreement between worker characteristics and work demands. This way of conceptualizing vocational adjustment is basically sound as far as it goes, although the empirical evidence for differential patterns of occupational aptitudes, interests, and especially personality characteristics is often equivocal or lacking. What the

"matching men and jobs" or "trait-and-factor" concept of vocational adjustment overlooks is the developmental nature of choosing, entering, and progressing in an occupation. Within the past decade and a half, vocational psychologists have become increasingly aware that vocational choice and adjustment are not just point-in-time events; they are processes which begin early and continue until late in life. More and more we talk about the vocational maturity of our clients, whether they are fifth graders, high school seniors, or middle-aged workers. But, we cannot measure vocational maturity, as yet, because our traditional assessment instruments are inappropriate. They are from another era--that of "matching men and jobs", not that of contemporary vocational development theory.

It must not be concluded, however, that the tests which have been developed for so many years have no utility for counseling. They do, but I would like to suggest that it is of a different kind than we have usually assumed. A client generally comes for counseling not only to solve a problem, such as the choice of a vocation, but also to find out what kind of person he is--to understand himself better. In fact, it can be argued that self-understanding, rather than specific decision-making, may be the more important outcome of counseling, whether it is vocational or personal. For, if a client can know himself better--acquire a realistic picture of his assets and liabilities--he should be better prepared not only to solve his immediate problems, but also those he may encounter in the future, after he leaves counseling. Our traditional tests can provide a client with the information he needs, if they are used for description rather than prediction. By description I mean the client's standing in the various norm groups for the tests he has taken. Thus, he may be above average in general intelligence; average in most special aptitudes, except for superior clerical speed and accuracy; interested primarily in Things rather than People; and, introverted in interpersonal relationships. Once a description of a client has been made, it may then be possible to identify through analysis and inference the problems which he is experiencing or may experience as he develops vocationally. But, our existing tests cannot give us an estimate of either a client's degree of vocational development--the vocational life stage he has reached--or his rate of vocational development--the extent to which he has matured vocationally relative to his peers. For this purpose new assessment instruments are needed.

A New Assessment Instrument

To fill this need, at least in part, the Vocational Development Inventory (VDI) has been constructed at the University of Iowa as part of the Vocational Development Project sponsored by the U. S. Office of Education. The VDI consists of two parts, the Competence Test and the Attitude Scale, which are designed respectively to assess the aptitude and attitude dimensions of vocational development. The Competence Test has five sub-tests, each comprised of 30 multiple-choice items with five foils. Part I is the "Problems" test and supposedly measures the ability to resolve conflicts between the factors in vocational choice. Part II is the "Planning" test, in which the task is to order the steps leading to a vocational goal in a logical or chronological sequence. Part III is a test of occupational information covering knowledge of job duties and tasks, trends in the occupational distribution of workers, and employment opportunities for the future. Part IV is the "Self-Knowledge" test, scored against objective test information for accuracy of estimated aptitude, interest, personality, and social traits and characteristics. Part V is the "Goal Selection" test, the items of which require the examinee to choose the "best" (most realistic) occupation for a hypothetical individual who is described in terms of his aptitudes, interests, and personality characteristics. The functions or processes which are supposedly involved in taking the Competence Test, then, are largely what might be designated as comprehension and problem-solving abilities as they pertain to the process of vocational choice.

In contrast, the Attitude Scale is composed only of self-descriptive statements about an individual's vocational attitudes and behaviors. It was designed to elicit the dispositional response tendencies in vocational maturity which are nonintellective in nature, but which may mediate both choice behaviors and choice aptitudes. The items for the scale were developed from a combination of the best features of the rational and empirical methods of test construction. Ten to 20 items were written for each of the following dimensions of vocational maturity: involvement in the choice process, orientation to work, independence in decision-making, bases for choice (i.e., interests, capacities, and values), and conceptions of the choice process. From this initial item pool, a scale was then constructed, each item of which was empirically related to age and grade between the upper elementary school years and the senior year of high school. Illustrative of the items which were finally included in the Attitude Scale are the following:

1. Once you make an occupational choice, you can't make another one.

2. Work is drudgery.

3. You get into an occupation mostly by chance.

4. I plan to follow the occupation my parents suggest.

5. I seldom think about the occupation I want to enter.

An examinee responds to 50 items like these by indicating whether he agrees or disagrees with them, and his vocational maturity score is the total number of responses he makes which are like those of 12th graders, the criterion group used in standardizing the scale.

Considerable research must be done before the VDI is ready for use in counseling, but a start has been made. Experimental forms of the Competence Test will be administered this spring to 5th through 12th graders to determine which items differentiate among these educational levels. Also, the Attitude Scale will be administered for the fifth consecutive year this spring, and sufficient data will then be available to begin longitudinal analyses of its validity. Preliminary studies of its internal consistency and test-retest stability have already been completed, and the results have been encouraging. It is hoped that by this summer a manual on the Attitude Scale can be prepared which will report normative and research data from several independent projects, including investigations of specialty oriented students in business, technical, and trade schools; evaluations of the effects of Neighborhood Youth Corps programs; prediction of college achievement; outcomes of secondary school guidance activities; and, correlations with intelligence, interests, personality variables, family background, school experiences, and vocational success and satisfaction.

Summary

To briefly summarize, my main point in this discussion of assessment instruments has been that our traditional measures of ability, interests, and personality are not sufficient, either practically or conceptually, to do the job that needs to be done in counseling. These tests may best be used for description rather than prediction, and they need to be supplemented with reliable and valid measures of vocational maturity.

GUIDANCE AND VOCATIONAL COMPETENCE: A THEORY FOR IDEAL PRACTICE

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THE STATUS OF PROFESSIONAL THEORY IN GUIDANCE

Theory in Guidance: In 1961 Tiedeman wrote that we are presently almost devoid of theory in guidance.[1] This is a condition which unfortunately still exists: behind it lies a lack of theory in life.[2] The value of theory is not just in what it explains; it is also in what it allows us to know we are without. (If we believe the theory, that is.) A major premise of this paper is the belief that, because we are without theory in guidance, we fail to realize that vocational-technical education is necessarily deprived of interest in the liberating aspect of education.

The purpose of Guidance: In the practice of guidance, an adult places himself in relation to a child or another adult, with the intention of helping that person. The first question is: "What does the counselor help the other to do?" The second question is: "How does the counselor help the other to do it?" Unfortunately the theory of guidance has principally developed in respect of only the second question.

The question of what the counselor helps another person to do is directed at the purpose of guidance. This, we suggest, consists in helping another to assume responsibility for his life. Therefore, the primary object of concern in the practice of guidance, wherever in education it takes place, is the degree of initiative which the person himself assumes and maintains.

Guidance in relation to Behavioral Science: The purpose of guidance is therefore different from the purpose of behavioral science. The purpose of behavioral science, at least as it is now principally patterned on the model of physical science, is for the scientist to learn what is likely to happen to persons who are subject to his theory. Whether or not those persons themselves know what is likely to happen is irrelevant -- in fact the scientist may deliberately withhold such knowledge from them. Thus the behavioral scientist is expressly not concerned with the use to which the persons may put such knowledge as it is made available to them; or with the way in which examination of knowledge may shape their action and so affect the final outcome. In the context of behavioral science, theory can be applied by an adult with the intention of helping another person, without the person's knowledge.

Educational theory: As a result, applications of behavioral science are basically not co-extensive with the purpose of guidance. We need an enlarged theory -- an 'educational' theory -- which places the person at the center. In education, the person exists in relation to facts and/or data which other people hold him responsible for assimilating. A primary concern in considering a person's relationship with facts/data is whether he does eventually come to realize that he alone is responsible for knowing.

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[1] David V. Tiedeman, The Status of Professional Theory. Cambridge, Massachusetts: the author Larsen Hall, Harvard Graduate School of Education, 1961. (Mimeo.)

[2] Gordon A. Dudley, and Wallace J. Fletcher. Personally Determined Career and Entrepreneurial Behavior: Notes and Comments on a Dialogue. Cambridge, Massachusetts; Center for Research in Careers, Larsen Hall, Harvard Graduate School of Education, 1965. (Mimeo.)

The application of educational theory thus poses the dual problems of presentation of facts/data, and responsibility for assimilating/knowing. The guidance mode of educational theory ranks the second of these two problems above the first. Guidance places primary emphasis on responsibility for analyzing and using information; secondary emphasis on presentation. This is why it is to be regretted that guidance theory has developed principally in respect of presentation. Thus the analysis of experience is the primary mode and experience the primary data for the practice of guidance.

A predicament arises from this belief in individual choice, at the same time as the student is required to accept responsibility for assimilating what is offered. The student is subject by the teacher to a dual expectation that he both 'know how' and 'know why'; and by the counselor to a separate dual expectation that he be responsible for know, and for using his knowledge to 'chart a course for his life activities,' including vocational activities. Students who come to understand this predicament achieve understanding of the need to take personal responsibility for solving the vocational problems which confront them; and are able to use such understanding as the basis for purposeful action designed to solve the problems in terms acceptable to themselves as well as to others.

The practice of Guidance: Understanding can come from reflection upon activity, as well as from suggestion and teaching from others. The analysis of activity/experience is the primary mode and data for the practice of guidance. Thus it becomes as important to teach the young how to frame a problem, as it is to teach them efficient modes of choice among alternatives once those alternatives emerge from the definition of problems. It is in the availability of opportunities for reflection upon activity, that vocational-technical education appears to be particularly rich.

IMPLICATIONS OF THE STATUS OF PROFESSIONAL THEORY IN GUIDANCE FOR VOCATIONAL-TECHNICAL EDUCATION

The practice of vocational-technical education has lately been subject to strong criticism from outside its membership. Undoubtedly you practitioners have long recognized the principal difficulties in vocational-technical education which now meet with occasional public scorn. Remember, however, that while such criticism may come from experts, an 'expert' is 'a man from out of town who wears a bow-tie.' Listen and learn from "out-of-town experts," but don't sell your basic contribution short. Vocationalism can be a liberating element in education if conceived and organized well. This is the main point we aim to make through this analysis.

Vocational-technical education necessarily exists in academic communities. In academic communities, thinking is valued over doing. Vocational-technical educators emphasize that one can think while doing. Furthermore, they stress that one can learn from analysis of the very process of doing. Therefore, vocational-technical educators almost by definition cannot be 'right' in academic communities.

What is learned in vocational-technical education differs from what is learned in class alone. The criterion in vocational-technical education is an accomplished task; not just the recall of an alleged fact. Nor is it skill alone this is acquired; it is actual confidence in one's capacity to meet new situations and to do what is necessary to satisfy those with whom one must collaborate. It is in the process of doing in partnership with thinking -- doing primarily in relation to what one knows and thinks, and only secondarily in relation to what the instructors tells -- that initiative is exercised in vocational learning. This is the exercise of initiative for which vocational-technical education offers continuing opportunity; which scientific education places in subordinate relation to assimilation of facts/data; and which liberal arts education finds it hard to make any formal place for at all.

The fact that theory in guidance is in the condition just sketched contributes to the difficulties to which vocational-technical education is presently subject in academic communities. Because we professionals in guidance do not have much theory beyond behavioral science theory, it is not possible to justify the basic condition of vocational-technical education, namely examined experience. As already noted, the primary game of behavioral science is for the scientist to learn what is likely to happen to people, without the participation of those people. This game primarily excludes learning through experience as a mode of acquisition for anyone but the scientist. Yet experience which is examined and criticised as it happens, or soon thereafter, is just what vocational-technical education is organized to provide. You in vocational-technical education should expect more support for your primary mode from those of us in guidance than you receive of late.

How should the modes and data differ in vocational education? This is the question which will come to the fore as we move to further support of each other in an interactive manner in the future. Therefore, the next step in this argument is that of offering a distinction which promises possibility for differentiation in our similar but not identical modes of activity. Perhaps together we can overturn the common belief that thought is suspended during action, and that thought must always be completely tutored before action is permitted.

VOCATIONAL COMPETENCE: A NEW GOAL FOR VOCATIONAL TECHNICAL EDUCATION

We recently drew attention as have others to the impact of increased rate of change in occupational opportunity but, unlike others, did not suggest elimination of supervised practice in vocational-technical education. We have no desire to ignore the present just to be "better" in the future. Therefore, we concluded that:

> "...vocational success in youth and adulthood today depends upon two kinds of competence. The first is competence in acquiring and using the skills and knowledge required by the individual's commitment to a particular program or occupation -- occupational competence.
>
> "The second is competence in dealing with changes in the vocational life, in a manner which will enable the individual to achieve and maintain a continuing degree of mastery over his vocational environment -- vocational competence. The individual today needs to refrain from regarding any situation as permanent and unchangeable. Instead he must maintain a certain degree of tentativeness in his attitude towards his current vocational experience such that he can meet change with resilience, whether it be imposed by others or elected by himself."[3]

Thus each student must develop not only skill in his elected occupation (occupational competence). He must develop his own goal and his own basis for wanting that goal (vocational competence). Otherwise, he will later act automatically; he will not have assumed responsibility for choosing and pursuing his own path in life. The student must be given opportunity to choose; furthermore he must be held accountable for his actions in the pursuit of his elected alternative; finally the student must have opportunity to give up and start afresh if he begins to discover that the demands for action and belief required in his instructor's craft are incompatible with what he presently either accepts and/or wants. The responsibility for supervision of judgments of this nature must rest with the counselor. The counselor must see to it that the student lends his own meaning[4] to the opportunities for choice inherent in the performance of the elected craft. In order to accomplish this aim, the student needs the help of the counselor who is neutral but not unsympathetic to the premises of the instructor's craft (occupational competence); but is committed to the premises of his own craft -- namely, to see that each pupil has adequate opportunity and help in finding his own meaning in life (vocational competence). We shall return to this distinction between the roles of instructor and counselor in a moment.

If the vocational school would espouse responsibility for the cultivation of this will to meaning, it seems likely that some of the frequently expressed misunderstandings between vocational and so-called liberal education could be dissolved. The advocate of liberal education fights for individual responsibility in the selection and substantiation of life goals. Vocational education necessarily inducts students into a craft which then limits their alternatives.

The program of guidance in vocational-education should be given the authority, opportunity and resource necessary for supervision of the student's responsibility for choosing as he passes into the restraints of work from those of study. It will be to the credit of neither vocational-technical instructor nor counselor if either fails to understand the complementary and necessary

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[3] Eileen Morley and David V. Tiedeman. Vocational Competence: The Capacity to Deal Confidently with the Certainty of Change within the Uncertainties of Career. Cambridge, Massachusetts: Center for Research in Careers, Larsen Hall, Harvard Graduate School of Education, 1965. (Mimeo.)

[4] Victor E. Frankl. Man's Search for Meaning: an Introduction to Logotherapy. Boston: Beacon Press, 1959.

nature of both commitment to occupation and tentativeness towards vocation -- i.e. career. Without commitment, the vocational-technical instructor is perfectly right in presupposing that a student-apprentice will not prove out in his occupation. However, without tentativeness, it is equally likely that in today's world, the student apprentice will not prove out in his vocation. Today's citizen needs to develop both commitment and tentativeness towards work. Neither alone is any longer enough. Occupational competence and vocational competence are the goals we both need to get our publics to accept for our united work.

We suggest to you that vocational-technical education possesses a major resource for development of both occupational and vocational competence in parallel. This resource resides in the nature of the student experience, as he: (1) assimilates information and applies his resulting knowledge in activity under direction of the instructor; and (2) examines the experience of that activity under direction of the counselor. Possessing this resource vocational-technical educators and counselors should not fail to make maximum use of it.

Socialization: Becker[5] has pointed out that vocational students lack the opportunity for socialization which is inherent in the university experience. The assumption is usually made that having selected his goal on entry to vocational-technical school, the student needs only to acquire the skills which will permit him to take his place in the plant in which his talent might be needed. Such is far from the case. The vocational student particularly needs opportunities to develop skill in the human relationships to be met within his work life, through instruction and practice and evaluation of experience in human relationships. Otherwise, he may be unable to cope with the formal and informal demands of superiors and colleagues on the job. Weakness in such coping mechanisms leaves him with weakened defense and decreased confidence. Although there is not place to examine this issue in greater depth here, we draw attention to the potential for strengthened competence in interpersonal relationships, as a dimension which the collaborative efforts of instructor and counselor may add to the vocational-technical student experience.

STRUCTURING OF VOCATIONAL-TECHNICAL EDUCATION FOR VOCATIONAL COMPETENCE

The above distinction between occupational and vocational competence -- based as it is on the distinction between commitment and tentativeness -- can also distinguish the work of the vocational-technical instructor from that of the counselor.

Supervision for occupational competence. The instructor provides occupational experience for his students while they are in apprenticeship to him[6] In this condition, the vocational-technical instructor seeks commitment to his field of occupation by his students. Furthermore his supervision of their experience is designed to make his apprentices more skillful and confident in the specific work to which they are apprenticed. Whatever, these student-apprentices elect to do, they must be taught and encouraged to do well. After all, they seek to become masters!

The incontrovertible mark of the vocational-technical instructor is his supervision of students as they practice his craft. The classroom teacher brings students into transaction with facts and ideas alone. The instructor in vocational-technical education brings students into transaction with facts and ideas, materials, machines and people; and in the course of this transaction he enables the student to create a product which has value to himself, to the instructor, and to others. We suggest that teaching through vocational-technical education differs from teaching through lectures insofar as:

(1) Both thought and action are under the direction of the vocational-technical instructor.

OK [5]Howard S. Becker. Schools, Growing Up and Non-College Youth. Stanford, California: the author, Stanford University, 1963. (Mimeo.)

[6]We regret having to use this word in only a loose manner in an audience for whom it ordinarily has a technical meaning. However, we merely mean to connote that form of learning, in which a person places himself in relation to an expert so that he will learn from the expert as he is given gradually increasing responsibility for the execution of tasks designed to produce the same product as the expert ordinarily produces.

(2) Students are encouraged to assume responsibility for their own action within limits prescribed by the instructor.

(3) Vocational-technical supervision is not simply a broadcasting of facts/data. It includes major elements of review, criticism and planning. It thus includes responsibility for helping the student learn through examination of activity/experience.

(4) The principle products of supervision are two-fold: (a) occupational competence; and (b) personal confidence derived from experience of, and not merely the expectation of, power in action.

Supervision for Vocational Competence. The vocational-technical counselor attempts to make this same occupational experience simultaneously of use to the person in acquiring vocational competence. The counselor encourages among students the will to purposeful action through education. Tiedeman has elsewhere defined purposeful action; noted the risk to freedom which is assumed in cultivating the will to purposeful action through Guidance-in-Education; and specified the division of duties between teacher and counselor necessary for minimizing the risk to freedom while seeking the will to purposeful action in education.[7] The necessity of the division of responsibility between instruction and counseling is emphasized here because the instructor in vocational-technical schools approaches the duties of the counselor more closely than does the lecturer-teacher in secondary schools. The task of the vocational-technical instructor is to provide access to a specific occupation however. The task of the counselor is to encourage assumption of responsibility for action in life. Of course the task of the instructor becomes difficult when the counselor does not succeed in getting youngsters to realize their responsibility to know and to act upon knowledge. On the other hand, the counselor suffers similar frustration when the instructor fails to show the path by which the young may preparedly start out upon the course charted by adults.

RE-ORGANIZATION FOR ATTAINING THE IDEAL OF VOCATIONAL COMPETENCE THROUGH GUIDANCE-IN-VOCATIONAL EDUCATION

Today we challenge you to turn vocational education into a liberating education. The task can be done when you incorporate counselors into the staff, provided that:

(1) these counselors have an understanding of the goal, and the capacity to attain that goal reasonably frequently through professional action;

(2) you organize instruction and counseling so that they are related in the complementary fashion outlines; and

(3) you ensure that the option to act with intent is recognized as belonging to the student alone.

Role of the Counselor. Counselors should be expected:

(1) to contribute from the theory of career development to the justification of vocational education, and to the organization of vocational-technical resources to optimize career development in pupils; and

(2) to be committed to the performance of the clinical activities needed to achieve the goal of cultivating the will to purposeful action. (The term 'clinical' here refers to those acts of judgment which the counselor must personally perform in order to cultivate the will to purposeful action most efficiently in each case.)

In these two functions the counselor will be most closely concerned with the vocational development of the individual student, (1) as he achieves integration with regard to the choice of the craft itself, and (2) as he anticipates and moves into the discontinuity which consists of the passage from vocational school to the first job.[8]

X [7]David V. Tiedeman. "Occupational Guidance." In Ziel, H.R. (Ed.) Education and Productive Society. Toronto: W.J. Gage, Ltd., 1965. pp. 124-166.

X [8]David V. Tiedeman, and Robert P. O'Hara. Career Development: Choice and Adjustment. New York: College Entrance Examination Board, 475 Riverside Drive, 1963.

The Complementary Relationship of Instructor and Counselor. Because the basic data used by instructor and counselor in vocational-technical education are so similar, instructor and counselor will need to work in close association through consultation over cases. The powers of each must be clearly delineated, and each must strive to recognize and derive strength from the other's expertness.

Counselor-student ratio. Counselors believe that they can be responsible for not more than 250 students if they are to do an adequate job. This ratio does not take account of class and craft observations and counseling and consulting sessions arising from such observations. Probably one counselor per 100 students is a realistic estimate. If asked to be responsible for more than 150 students, we find it difficult to believe that the counselor could successfully foster the evolution of purposeful action in each.

Auxiliary Psychological Services. The counselor should expect to find that 8 - 15% of students in his charge lack the ego-development fundamental to the will to purposeful action. Although the decision to provide psychotherapy for students should be an individual matter for the administration of a particular vocational school, the school system as a whole cannot afford to ignore the problem. It must determine how to cope with such students; it must decide whether to use counselors qualified in psychotherapy in this area; and if so, how other activities from which their time must be withdrawn shall be undertaken. As you face the problem, remember that the school system ordinarily makes decisions about its psychotherapeutic responsibilities in consultation with psychologists and/or psychiatrists who reside in the community.

AND SO TO ACTION

In conclusion, we urge the vocational-technical school to accept responsibility for the attainment of liberation through education. However, the vocational school suffers in two ways with regard to the objective of liberating through vocational education. In the first place, the public does not expect the vocational school to liberate students through its program. In the second place, the public does not believe that liberation can be achieved by training for a technical goal. In arguing that vocational education should assume the goal of liberation through education, we have pointed to how this goal can be facilitated. If vocational-technical education incorporates vocational as well as occupational competence as a goal for students, the goal of liberation through vocational education becomes possible and guidance services prove indispensable. However, the attempt will require other modifications in program and budget. Therefore although we sincerely hope you will accept our challenge, we will understand if you do not.

OCCUPATIONAL CLASSIFICATION SYSTEMS AND INFORMATION

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Occupational and industrial classification and information schemes are based on the purpose intended for the system. They are basically of two types. Type I is to meet the internal requirements of particular organizations and Type II are those systems which cut across organizations and are oriented toward broader problems including population, labor force, education, counseling and placement.

The Type I or in-house systems predominate in larger business and industrial firms and in municipal, state and federal agencies. The most frequent use of such systems has been to provide hierarchies of jobs which may be related to pay scales. Job descriptions which are usually prepared are an aid in hiring, job training, promotion and transfer. At higher levels in the organization the job information is not only useful in setting salary levels but likewise in working out organizational changes and staffing problems. In our most technologically advanced organizations we have the development of manpower models, and man-man and man-machine systems. Some of the most advanced systems are found in the Department of Defense and in the National Aeronautics and Space Administration and their contractors. Considerable research is done on systems and organizational behavior. In fact it is one of the fastest growing technologies.

The in-house or establishment occupational complex is of course of great importance to us. To counselers and educators it too frequently represents a great unknown and sometimes frightening picture. But it is here that people work and it is in the establishments our trainees will fail or succeed, whether the system is a two person grocery store or an organization of a hundred thousand employees.

Now let us look at Type II occupational classifications and information.

We all know that the Census classification which began years ago with a few titles when occupations numbered a dozen or so, grew somewhat haphazardly into the present arrangement. Obviously the purpose here is to obtain the numbers of persons in various pursuits. This is essential and worthy purpose but unfortunately the census classification became so dominant in the federal government that the Bureau of the Budget, to avoid duplicate effort, placed restrictions on new approaches for years. For example, the Dictionary of Occupational Titles first edition 1939 (printed and released in 1940) had new data--in fact the first comprehensive job data with job analyses from 20,000 establishments, but it was required that its classification bear an unfortunately close resemblance to the Census. I must add, however, that there was a certain rationale for this restriction because the most powerful justification for funds and personnel in developing the D.O.T. was that by defining occupations the statistical data on employment and unemployment collected by the public employment offices would be much more accurate reflection of the true situation.

As one would expect the D.O.T. classification had severe limitations for counseling particularly for the inexperienced and for older persons who must change occupations. There was less difficulty for the older group because the D.O.T. classification did have within its system many logical groupings based on industrial designation and work performed. This was supplemented later by occupational families or groupings where the number of variables could include both job performance and job requirement items--a forerunner to the McBee Keysort display which contains the basic data for the third edition of D.O.T.

The original dictionary had three parts, Definitions in Part I and the code structure in Part II. Part III contained a conversion code from the old Employment Service system to the D.O.T. It was used a few months and was then destroyed.

To cope with the D.O.T. inadequacies for inexperienced applicants a new classification was developed which was a great improvement and was published as Part IV D.O.T. Worker traits received much more emphasis. There were additional input data including an analysis of 10,000 employer orders where job experience was not a reported requirement. This was during a labor shortage period. Part IV has received wide use.

After this there was slow but significant progress including a pilot study in 1956 entitled "Estimates of Worker Trait Requirements for 4,000 Jobs as defined in the Dictionary of Occupational Titles"-- sometimes because of its cover called the "green monster." This newer approach to job classification was utilized for the third edition of the Dictionary with greater emphasis on training requirements and worker abilities and traits.

I should like to point out here that there are two basic approaches to determining (I should say inferring) what aptitudes, abilities and temperaments are required for jobs. One is the testing method and the other is the rating method.

In the testing method we administer tests to workers in jobs. Then using test score ranges and correlational techniques we infer the required abilities, aptitudes or traits. The great injustice of this method is that we tend to freeze the status quo. We are really assuming that worker "A" who is successful in his occupation belongs to some other occupation. In other words we assume perfect vocational guidance and vocational selection.

The second approach is the rating method whereby trained persons observe a job and/or study the written descriptions and rate "how much" or "how important" each of a list of traits is for job success. The difficulty is, of course, that these are estimates not measures. The advantage is that the requirements of the job or occupation are indicated regardless of who now happens to be working in it. Future jobs which are presently only on paper can be rated and selection and training programs can be established so that qualified persons will be available when the jobs open up. If the training program is an appropriate one we would expect that a high proportion of those who complete it will be successful.

In preparing the new D.O.T. both of the foregoing methods were used insofar as possible to arrive at job requirements. While one can always question the validity it seems to me that the new D.O.T. is the best material we have as yet for occupational groupings.

The new D.O.T. contains definitions of 21,741 separate occupations which are known by 35,550 titles. Persons often make a mistake when they think the number of titles is the same as the number of occupations. Because of technological change and improved classification methods there are actually fewer occupations in the third edition than there were in the previous one (including its supplements).

The classification structure of the new D.O.T. is both conventional and new. The first three digits are somewhat conventional groupings such as

00-19	Professional, Technical and Managerial
	001 Architechural Occupations
20-29	Clerical and sales
25	Salesmen
	251 Salesmen, securities
30-38	Service occupations
	311 Waiters, waitresses and related food service occupations
40-45	Farming, fishery, forestry and related occupations
	411 Dairy farming occupations
50-99	Industrial occupations
60	Metal machining occupations
	601 Toolmakers and related occupations

Here we see resemblance to the census system and the International System.

Gone from the new D.O.T. are such classification titles as skilled, semi-skilled and unskilled, but we do find three digits--the last of the six which are based on job complexity in regard to the use of or interaction with data, people, and things. This is new and I think a great improvement. It provides new clues to the entry and the progression possibilities within occupational groups.

It is no easy task to arrive at three functional categories that are applicable to all occupations. It is easy to think of other possibilities but when it comes to applying a scheme to 22,000 entities that is something else again. I have tried some of these myself and all have their perplexities and blind alleys.

There are eight categories under data ranging from synthesizing to no significant relationship.

Under people there are nine levels, the top one being "Mentoring: Dealing with individuals in terms of their total personality in order to advise, counsel and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual and/or other professional principles."

Things represents the 6th and last digit in the Dictionary with nine levels; the top one being the "setting up of machines, fixtures, jigs--"

Applying the total six digit system we find

601.130 Tool and die foreman

601.885 Tool dresser helper

A second new set of occupational groupings is provided which I think should be of particular interest to you. It is known as the Worker Trait arrangement. These groupings are based on estimated required aptitudes, interests, temperaments, physical demands, and general education and special vocational education. There are 117 of these categories with assumed common qualification profiles. They are arranged under 22 broad areas of work such as art, clerical work, entertainment, elemental work, machine work, merchandising, etc.

The profile ratings are the individual characteristics required "of a worker in order to achieve average successful job performance." The components are

General educational development

Six levels ranging from high level reasoning, mathematical competence or language development to simply applying common sense.

Specific vocational preparation

Nine levels ranging from over 10 years such as a symphony orchestra leader to a short demonstration such as a nail puller.

Aptitudes including general learning ability, verbal, numerical, spatial, form perception, clerical perception, motor coordination, finger dexterity, manual dexterity, eye-hand-foot coordination,and color discrimination. There are 5 levels for each. Level 1 represents the top 10 per cent of the population and level 5 the lowest 10 per cent, and the 3 level the middle third.

Interests which are preferences for certain types of work. There are 10 categories such as "working with people for their presumed good."

Temperaments -- with 12 categories and representing different types of occupational situations to which one must adjust such as "working alone and apart in physical isolation."

Physical demands -- such as lifting, carrying, climbing, reaching, seeing, and hearing.

Working conditions such as inside, outside, cold, heat, noise, hazards and fumes.

Thus far I have been speaking of occupational and job classification. Industry classification is likewise important in our picture of the world of work. Some persons identify themselves more with an industry than with an occupation. The D.O.T. does identify occupations with industry but I think this edition places less emphasis on industry per se. This I think is in the right direction. Occupations cut across industries in terms of their content and qualifications. Shifting from one inudstry to another is often necessary. Some industries are on the decline as are some occupations. I feel that it is really the job content and the job environment that is the important thing. I think vocational and technical guidance and training should beware of having its counselees or students industry orient at the expense of the job content orientation.

Time does not permit me to discuss industrial classification in any detail. We do have two well known systems. The National or U. S. System and the International System. We have approximately 1,500 industry groups in the Standard System. Industrial classification is based on the establishment or work place rather than on the firm or company. For example, in the Standard System an oil company refinery would be in one industry and its service stations in another. The Dictionary gives industrial designation to occupations that are found in a particular industry. It is not related to the Standard System. There are 229 such "industries" defined and listed alphabetically from "abrasive and polishing products" to "woodworking." The appropriate job titles are listed after each industrial title. It is interesting to note that the largest listing is under "any industry" and includes over 1700 occupations.

In this paper I have reviewed two types of occupational classifications and information. Type I which is within the employing organization and Type II which is more general and cuts across establishments and industries. The latter is broader and of course much less specific. One of the greatest problems is relating Type I to Type II. To cover everything the two should somehow be combined or at least intimately related. One must know his community and local establishment picture, no matter how complex, and at the same time the overall general occupational and industrial framework. This is a task to behold even for a counselor or educator who represents our top intellectual category.

During and following World War II some encouraging work was done in relating Type I and Type II information. Manning tables, showing the number of positions in each of 8,000 establishments according to D.O.T. code were prepared. Using a sampling procedure industrial manning tables showing the occupational pattern by industry were developed. In ship building for example, the proportion of workers in each D.O.T. classification was shown for a typical establishment.

I think each community should have an occupational atlas. This is possible with our modern computer techniques. Type I and Type II data could be stored and various occupational opportunity patterns could be assembled at will. We should do some action research in several communities to develop methodology and the techniques of application. Some day I am sure this will be developed on a national scale also. It is long overdue.

We also should try out new theoretical orientations experimentally. At various times, for example, we have had additional occupational classification schemes such as those of Roe, Super and others. These may make good sense from a theoretical point of view but the fitting over 20,000 occupations within the framework to make it practicable has not been done. With the new D.O.T. and with the data on each occupation now on cards it is possible for an investigator to try out new theoretical models using an abundance of data on thousands of occupations and hundreds of industrial designations. It is a gold mine and I trust that competent researchers will take advantage of the opportunity. The new D.O.T. is a foundation document from which I am sure we will move forward into many exciting innovations.

DATA PROCESSING AND OCCUPATIONAL GUIDANCE

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Data Processing and Occupational Guidance

Every day another newspaper or magazine article appears which discusses the "brave new world of the computer," the "challenge of automation," the "impact of technology" or some similar topic. Some of these articles take the "gee-whiz, it's wonderful" approach, others blame anything and everything on computing machines, and still others treat the subject in a positive, objective manner.

In the field of occupational guidance for example, much has been written about the use of machine making education impersonnel and stereotyped. But every day it is being demonstrated that the use of any of a wide variety of data processing machines is the only way educational systems can provide truly personal and individual education. Some of the areas in which this is being accomplished include:

-- Test scoring and analysis;
-- Computer-assisted instruction;
-- Simulation training procedures;
-- Research;
-- Teacher education;
-- Job placement; and
-- State and national employment services.

The Use of Computers in Test Scoring and Analysis

A good guidance function requires accurate and timely information about the person involved. Data processing machines, including simple punched card machines, can be helpful in this type of record keeping function. Some of this information should be in the form of test scores either on regular academic subjects or on special aptitude tests or both. Machines already have an important role in test scoring. They will play even a more important part in the future as they do more and more work in test analysis.

Machines have been available for simple test scoring for about thirty years. Up to now, the machine has done just what the name says, it provides a score for the individual test sheet.

As small computers have become available to school districts and colleges, some people have gone beyond getting raw scores and percentile scores. One program prints the raw and percentile score for each student as well as a list showing the distribution of all scores. It then prints an item analysis report. This report shows the number of persons who answered each of the possible true-false or multiple choice options on the test as well as the number who gave no answer to each question. The same kind of item analysis is then repeated three times: once for students who made scores of 85 and above, then for students who made scores from 65 through 84 and finally for the students who scored below 65.

With this kind of information available, a teacher has a far better idea of who and what the test was testing.

If a test is used only to get a score, for the purpose of preparing a report card, it is really not doing very much for the student. In the ideal situation, the entire education system should be devoted to giving the student the best possible education. A testing program should be used to point out a student's difficulties and trigger a procedure to help the individual student to overcome those difficulties.

Imagine, if you will, a test where some or all of the questions in addition to testing subject matter could also be classified as to whether it tests memory or reasoning. The computing

machine can easily summarize for each student whether he does well or poorly in each of these two categories. This kind of information would then be used by a teacher or a guidance counselor to help orient the education program to suit the students individual needs.

The most powerful test scoring and analysis program which I have seen uses an IBM 7094 computer to provide:

- -- raw score, score corrected for guessing and number of items ommitted for each individual;
- -- difficulty, proportion of subjects selecting each response and proportion of omits for each item response as well as identifying extremely easy (p. 95) and extremely difficult (p . 05) items;
- -- statistics on test mean, standard deviation, skewness, kurtosis, standard error of each, test of normality of the distribution, test reliability by Kuder-Richardson Formula 20, pearson correlation between total test score and a criterion score (if criterion score is used);
- -- analysis information on proportion passing, standard deviation, point biserial correlation with total test score (either raw or corrected), point biserial correlation with a criterion score (if present), reliability index, validity index (if there is a criterion score) and plot of item reliability and validity indices (if there is a criterion score);
- -- Tetrachoric inter-item correlations, where desired;
- -- Factor analysis of the inter-item correlation matrix, where desired, to obtain the largest principal components of the symmetric inter-item correlation matrix and perform an orthogonal rotation of these components to the varimax criterion. The largest characteristic roots are presented in order of magnitude and the associated characteristic vectors are tabled and plotted. The rotated vectors are also tabled and plotted; and
- -- Score cards for each individual containing subject identification, raw score, corrected score, number of items omitted and either pass-or-fail for each item, or original response for each item, or both.

With all the information which this program can provide, the student can be helped on an individual basis; the test can be improved; and even the teacher may find out what items are being learned well or poorly and, perhaps, helped to improve his or her teaching in specific areas.

No education system could possibly do this kind of test analysis if the calculations had to be done by hand. Therefore, the availability of computers as a calculation tool should make an appreciable contribution to education and guidance.

Another example of machine analysis of a test is the case involving the Minnesota Multiphasic Personality Inventory test. It is reported that it takes a person one and a half hours to do a job that can be done by a small IBM 1620 computer in 40 seconds. This is an increase in speed of 135 times.

Most tests are given days or weeks or even months after some of the subject matter has been covered. In the next section we shall see the possibility of putting testing much closer to the teaching process.

Computer-Assisted Instruction

Computer-assisted instruction, or CAI for short, is a considerable step past programmed instruction. The latter is a highly structured learning procedure presenting one "frame" or concept at a time. This is usually in book form, but it is also used in so called desk top, stand-alone "teaching machines". This is generally a linear procedure, with not too many branching possibilities. It allows a choice at each point of a limited number of specific answers.

Computer-assisted instruction is a much more powerful and flexible teaching system. It utilizes a computer with its logical processing capability and large storage facility. The student station or interface with the system is called a "terminal." The terminal may include a typewriter or other keyboard, audio facilities, slide or motion picture projectors, a television type of display tube or other devices.

Since a person using a typewriter terminal is relatively slow compared to a computer which can perform hundreds of thousands of operations each second, it is possible to have several terminals connected to the same computer. Therefore several (dozens at least) people can use the same computer system simultaneously. This type of use is sometimes called "time-sharing" or "remote computing."

The program for controlling computer-assisted instruction must be prepared ahead of time, by a capable person, and it must include provision for all possible responses by the user. It can present the student with whatever number of branching paths and remedial exercises which the author-teacher thinks are needed.

The system can provide for student-constructed responses instead of only choices from presented possibilities.

The system (machine and program) can also provide for partially correct responses. For example, if spelling were involved, the system could show which letters were correct by repeating them and leaving blank spaces for the others.

In one system, if a student is not sure of the answer, he can type the work, "help" and the system will actually present a hint or suggestion to help him. In another case, the typewriter used by the student can also act as a desk calculator. By typing "Descal," the entire power of the computer is made available to the student to perform arithmetic calculations.

IBM has prepared a general program called "Course writer" which enables an author preparing computer-assisted instruction material to use a computer without knowing all of the details of computer programming and operation. The person needs to know only a few simple instructions to code his "frames" for machine entry.

In concept at least, this program could allow a person to set up a machine - person dialog not only for a variety of general curriculum areas, but also for a student counselling interview, or for a medical doctor-patient interview.

This shows one of the advantages of the new computer technology. The same machine and program can often be used for many fields and applications other than the one for which it was first prepared. The computer manufacturers have libraries of programs - some general-purpose and some special-purpose--which are available along with the machines. In many cases, this reduces the time required for a machine user to put machine to work. It spreads program development costs over many locations, thus reducing the costs and effort for each use.

In addition to serving as an aid in the instruction process, the computer-assisted instruction system can also perform a testing function. Every student response is in essence the answer to a "test" question. Each student response can be analyzed, categorized and summarized for the teacher.

Since the computer-assisted instruction system can record time, student response time to each question can be measured. This can be related to the confidence a student has in his response. Thus a teacher can have this additional information about a student's knowledge.

The system can categorize all responses, as directed by the course author, and it can keep a running total of all category performance as desired. At any predetermined cut-off level on any characteristic, the system can signal that this special level has been reached and change the presentation to the student. If, for example, a student makes 5 wrong answers in any one lesson, he is told to stop, go back and study the appropriate material and then return at a later date. This is, of course, recorded as part of the total student performance for the instructor to analyze either now or at any later date.

With all of this information available, the educational institution is in excellent position to take action both to improve the education process for the student in terms of his individual needs and to improve the curriculum.

The above description is the kind of performance every good teacher would like to be able to provide. With the number of students a teacher has today, and with the amount of data to be processed, no teacher can possibly do all this by hand. Again, we see that the computer can act as a tool to assist a teacher in the education process.

It should be pointed out that the program for control of the computer-assisted instruction system can be duplicated in a matter of seconds and made available to other similar systems.

Each school, instead of having to develop its own system, can quickly copy the work which has already done. A school with relatively little capability can thus benefit from the work done by the most capable institutions. Likewise, all the institutions in a state might benefit from any cooperative effort.

The Use of Computers in Simulation Training Procedures

We know that engineers build models to simulate the performance of real things -- such as a model airplane in a wind tunnel simulating the performance of a real airplane. We also know that the Link Trainer is used to simulate the cockpit performance of a real airplane. The use of the Line Trainer is a good example of a simulation training procedure.

Mathematical models and computers are being used more and more to simulate real life situations. Such training procedures are sometimes called "games" for want of a better, short descriptive title. For example, "business games" exist for teaching executives something about running a business and making business decisions.

A mistake in real life might not be noticed for a year or two at which time a company might suffer an appreciable financial loss. In the case of simulation, a year may be compressed into an hour or two and a loss of many dollars is truly only a "paper" loss showing up on printed reports coming from a computer. Other "games" exist in such varied fields as banking, farm management, a manufacturing shop, a retail store purchasing operation and many others.

In order to help users adapt computers to simulation activities, some of the computer manufacturers have special-purpose programs useful in setting-up simulation procedures and keeping extensive records on the simulation performance. One such program is the IBM General-Purpose Simulation System III.

These simulation training procedures can be used in education in several ways. They can be used for training for a person for a real life situation. They can be used to give a person a quick glimpse of a kind of business to see if he would like that kind of work. They can also be used as a kind of aptitude test to see if a person has the ability needed for a particular kind of job.

This kind of information will be very helpful to guidance personnel in the future.

The Use of Computers in Educational Research

One college professor recently said that the availability of a modern computer had lengthened his productive working life from 30 to 300 years. This was a rather graphic way of saying that the computer had increased his productivity by 10 times because he no longer had to spend time on routine hand calculations. The computer enables a professional person to spend most of his time on professional activities. One estimate is that modern computers have increased calculation speeds by a million times over hand speeds while the cost of those calculations have decreased by one thousand times.

Much of the research in the field of guidance and vocational education involves the handling of a great deal of data, many variables and a great many calculations.

In the years past, when all of this work had to be done by hand, with only the aid of a slide rule or desk calculator, few people, if any, would start a project which they knew would take years of hand processing. Many worthwhile projects, therefore, were never started or were limited to a few variables or small samples.

Researchers can now tackle full-size problems. This should make a great deal of difference in correlating characteristics, performance, job requirements and a host of other variables.

One example of a tremendous study being undertaken is project Talent, which has its headquarters at the University of Pittsburgh. Their report, dated March 1965, gives an idea of the tremendous amount of data they have collected. Without the availability of computers, it would be impossible to make any meaning from all this data.

The project talent report states that they have available computer programs for correlation matrices, discriminant analysis, factor analysis, mahalanobis D^2, classification probabilities, stepwise regression, analysis of variance, covariance analysis, partial correlation, canonical correlation, multiple regression and multiple contingency analysis along with other standard programs of joint frequency distributions and means and standard deviations.

Computer manufacturers furnish quite a library of mathematical and scientific programs for computers so users can spend their time on problem solving rather than duplicating mathematical routines already written by others.

When we combine the data processing ability for printing, filing and simple data handling, for test scoring, and for high powered research calculations, we see that the whole approach to research will be quite different and far more productive in the future than it has ever been.

The Use of Computers in Teacher Education

The steam engine was replaced by the diesel locomotive in the United States in 12 years. The job of airplane flight engineer came and disappeared in 15 years. Some companies report that half of their employees now work at skills that were relatively non-existent five or ten years ago. In less than 15 years, at least 200,000 full-time jobs as programmers have appeared. Again as many people have had training in programming and do some part time work in this area.

More than 50 colleges have degree programs in the area of computer science. Many junior colleges, post-high schools, vocational and technical schools and private business schools have programs for training programmers and data processing machine operators. A good many teachers will be needed to teach subjects in the field of data processing. Still other teachers will have to teach the use of data processing equipment as a tool -- for instance, in a course on tests and measurements or statistics in the school of education.

It is considered that a college graduate who has not had some exposure to the subject of data processing today, has not been prepared by the college for his place in the working world. Similarly, a teacher or a guidance counselor who has not been given information about data processing in connection with his specific field of education, and something about data processing in general, has not been well prepared for his career. After all, data processing or information processing is becoming more and more a part of our working and living existence.

In addition, we need a whole new generation of teachers at the elementary grade level who are not afraid of mathematics. We also need teachers for adult education who know math and data processing to help in the retraining job which lies ahead of us.

Guidance counsellors also should know what data processing facilities can do to help them improve their jobs. They will have to insist that these facilities be available to assist them in doing the best possible job for the education of the individual student.

The Use of Computers in Job Placement

Few guidance offices are prepared to go through a thorough testing procedure for a student and then match those results against hundreds of job categories and opportunities -- since all of this data handling would usually be done by hand. Fortunately, the computer again shows itself to be a powerful tool for this kind of work.

There are programs in existence which do this job in short order. One such program at the University of Wisconsin matches graduating teacher applicants with job openings.

Another program called IRIS is used by IBM to match any job applicant against all known job opportunities within the company. This matching can be done each month as new job opportunities open up.

One school system is experimenting with a computer system for supplying substitute teachers. When a teacher calls in, his number is entered into a computer. The computer finds the characteristics of that teacher and scans the list of all needed teachers to see if there is any match. If a match is found, the location is reported by the computer, directly to the substitute, in voice response over the telephone from a pre-recorded vocabulary.

Again, we find that the computer as a tool can do a better job, explore more possibilities, give more individual attention, quicker and cheaper than can an office full of clerks.

The Use of Computers in State and National Employment Functions

The way our civilization is going, a person's job market is getting larger. It is also getting to be of state and national concern that people have jobs so they will not depend on relief and so that work can be performed to meet local, state and national requirements.

Each major city has one or more city or state operated employment offices and, of course, newspaper advertising of job opportunities.

If the job inventory in an office is small, however, it is quite likely that the job seeker will not find the job which he wants or the job for which he is qualified.

For this reason, several states, are studying the possibility of a statewide network connecting many cities. The system will have a central computer-controlled filing system. Each office, through some kind of a terminal, can request information on jobs to match certain qualifications. The terminal may be a typewriter or similar device.

It takes little imagination to widen this network to the entire United States. The computers and the telephone lines can handle the work. We don't have to look very far into the future to see this kind of information on job opportunities also available on an organized basis to guidance counsellors.

They will be able to get information on all current job opportunities for employment purposes. Also, the system will be able to summarize job opportunities and show trends in the kinds and locations of job skills, which will be needed in the future.

This kind of information will, in turn, help schools to change their educational programs so they will train people for jobs in the future rather than jobs which no longer exist.

Summary

The computer has been shown as a tool with many areas of application in the fields of education and guidance. It will free professional educators and scientists to do professional work and let our educational system educate each person as an individual. The latter can only be done through extensive computer use, in applications not even thought of today -- created by the ingenuity of man.

GUIDANCE WITH SPECIAL POPULATIONS IN VOCATIONAL-TECHNICAL EDUCATION

Moderator: Frank M. Fletcher

Disabled workers: William M. Eshelman

Unemployed older workers: Abraham Stahler

Minority groups: J. Edward Dickerson

Educationally disadvantaged youth: Roy N. Anderson

DISABLED WORKERS

William M. Eshelman
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U. S. Department of Health, Education, and Welfare

I. Introduction

It is my privilege and pleasure to be able to participate in this panel, and to give you an overview of current activities in behalf of the disabled being conducted under the State-Federal program of vocational rehabilitation. Before relating these activities, let me briefly describe the public VR program so that you will have some measure of understanding and appreciation of its nature and scope of activity.

II. State and Federal Vocational Rehabilitation Program

The public program of vocational rehabilitation has been in existence for 45 years, but has made major strides in only the past 10 years in returning substantial numbers of disabled persons to gainful employment. This has been chiefly due to the impetus provided the program by P. L. 565 of 1954. In November 1965, this program achieved what should be another milestone in its development and capacity to provide even more services to greatly increased numbers of disabled persons. On November 8, President Johnson signed into law the Vocational Rehabilitation Amendments of 1965. Briefly, the provisions of this statute provide for a more favorable matching formula for States to obtain Federal funds for program expansion, special funds for innovative endeavors and program planning, new funds for the construction and staffing of rehabilitation facilities and training allowances for disabled persons while in a training status, and additional funds for the preparation of professional personnel associated with what is commonly referred to as members of the "rehabilitation treatment team."

The Vocational Rehabilitation Administration is a component of the U. S. Department of Health, Education, and Welfare. The program which it administers is of the grant-in-aid type and thus, the establishment of a partnership between State rehabilitation agencies, of which there are now 91, including 37 devoted to serving the blind only.

Through its program of Research and Demonstration grants, the VRA has broadened the flow of new ideas, methods, and patterns of service to facilitate the rehabilitation of disabled persons. During Fiscal Year 1966, this program has made $20.5 million available for project grants. To date, more than 900 projects have been approved embracing all types of disabilities and many of the problems encompassed in vocational rehabilitation. These investigations and demonstrations are carried on by State agencies, universities, and other non-profit institutions and agencies. This national research program embodies a complete cycle-basic research, demonstration of research, and application of these findings to rehabilitation problems throughout the country.

Another important component of the overall VRA operation is the Training Grant Program. Through this program, during Fiscal Year 1966, 24.8 million will be spent toward the following objectives: (1) to increase the supply of personnel in the professional fields involved in rehabilitation of disabled persons by helping training programs expand and by scholarship assistance to students; (2) to participate with professional associations and educational institutions in their efforts to improve the quality of professional preparation for service; (3) to facilitate better communication and working relationships among the professional fields engaged in serving disabled people; (4) to give personnel now serving disabled individuals a better understanding of rehabilitation philosophy and methods through short-terms courses or teaching materials and to provide opportunities for raising their level of knowledge and skill in rehabilitation of the handicapped; and (5) to give professional personnel in various fields an awareness of rehabilitation needs, concepts, and methods.

At the present time, to name a few, grants are being made in the fields of rehabilitation counseling, medicine, physical and occupational therapy, nursing, psychology, social work, and speech pathology and audiology.

Also, it is through the Training Grant Program that State vocational rehabilitation agencies may obtain funds for projects concerned with the training of their employees in order to assume a higher level of competence in serving the clients of the agency.

In 1960, VRA acquired international responsibilities by being given authority to operate a program of financial support for research in rehabilitation in other countries. To do this, use is made of foreign currencies derived from the sale of agricultural surpluses. Receipts of the sales in a particular country are used for the support of rehabilitation studies in that country. Projects are presently being carried on in Israel, India, Poland, and Egypt, to name a few.

In addition to stimulating foreign research projects, a program for the interchange of scientists and research personnel is administered under certain provisions of the International Health Act of 1960. There is a wealth of rehabilitation knowledge and resources to be tapped over the world. This program has proved extremely beneficial for the United States as well as the participating countries.

Combining the aspects of research and training in a relatively new venture, only four years old VRA is supporting 14 special Rehabilitation Research and Training Centers. The centers are equipped with the necessary resources for continuing comprehensive programs of clinical research and training to advance the rehabilitation of the disabled. There are ten medically oriented centers; two centers deal with mental retardation and two others are vocationally oriented centers. Spread across the nation, already these centers are providing services to significant numbers of disabled persons as well as demonstrating the value of drawing together top specialists from a variety of disciplines to work on common problems affecting the disabled.

It is through the State rehabilitation agencies, however, that rehabilitation services are made available to those individuals barred from achieving a socially meaningful and economically productive status in life. The full range of services includes:

Full evaluation, including medical diagnosis, to learn the nature and degree of disability and to help evaluate the individual's work capacities.

Counseling and guidance in achieving good vocational adjustment.

Medical, surgical, psychiatric, and hospital care and related therapy, to reduce or remove the disability.

Artificial limbs and other prosthetic and orthotic devices needed to increase work ability.

Training, including training for a vocation, pre-vocational and personal adjustment training and remedial education.

Service in comprehensive of specialized rehabilitation facilities, including sheltered workshops and adjustment centers.

Maintenance and transportation during rehabilitation.

Tools, equipment, and licenses for work on a job or in establishing a small business.

Placement in a job suited to the individual's highest physical and mental capacities and postplacement follow-up to see to it that the placement is satisfactory to the employee and the employer.

New services resulting from P. L. 333 of 1965:

Reader services for the blind.

Interpreter services for the deaf.

Management services for business enterprise programs.

Another significant provision of the new amendments will enable State vocational rehabilitation agencies to provide services to handicapped individuals to determine whether they can reasonably be expected to engage in gainful employment. Under previous law, State rehabilitation agencies were expected to determine, after diagnosis but before any rehabilitation services were provided, whether or not a handicapped person could become employable after rehabilitation services. For large number of handicapped persons, with severe disabilities or complicated problems or both, this is virtually impossible. As a result, many did not receive services.

Now a handicapped person can be provided services to a maximum of six months to evaluate his employment potential. In the case of mentally retarded individuals (and any others designated by the Secretary of Health, Education, and Welfare) such services can be provided to a maximum of 18 months.

In the fiscal year which ended, June 30, 1965, the State-Federal program of vocational rehabilitation placed in and/or returned to employment some 135,000 disabled Americans. Of this number, 20% were below the age of 20. While this figure might seem impressive, and we are happy with this achievement at this point in the program's development, there are great numbers of people who are not now being served who could be entitled to rehabilitation services. VRA estimates that there are over 3.5 million persons of working age who could be rehabilitated. Currently each year an additional 450,000 people join the group who are disabled and who could be restored to gainful activity through the provision of appropriate rehabilitation services. Thus, while considerable progress has been made--particularly in the last 10 years-- there is still much to be done to meet current and future needs.

In this regard, I would like to tell you something about what I consider to be a very significant part of our new legislative authority, and a part in which many of you might well participate. I refer specifically to the provision of grants for Statewide Comprehensive Planning.

The State-Federal program is now oriented to providing vocational rehabilitation services to all disabled persons who need and can profit from rehabilitation by 1975. There is an urgent need to close the gap between the present figure of 135,000 persons who are now being rehabilitated and this goal.

Many new resources, provided by Federal, State, private, and voluntary actions, have become available in recent years and months. These resources can be utilized most effectively through the fullest interaction among all public and voluntary agencies concerned with the handicapped. In order to assist States in studying, planning, and developing a comprehensive vocational rehabilitation program, Congress has given VRA the authority to administer grants for this purpose. Undoubtedly, many of you and your agencies and universities will be called upon in the near future to participate in this planning venture. I believe that you will agree with me in that it is only through a consortium of agencies in which specific responsibilities are assumed and where services are pooled that the rehabilitation needs of all the disabled can be met.

III. Rehabilitation of Disabled Youth

While my assignment is to discuss the rehabilitation of disabled workers in general, I would like to describe some of the special activities of the vocational rehabilitation program in working with disabled youth. As mentioned earlier, some 20% of the 135,000 rehabilitants in FY 1965 were under the age of 20. Forty percent of all rehabilitants had never been to high school.

A. VRA--Office of Education Relationship

At the national level, both VRA and the U. S. Office of Education recognize the fact that the two agencies have a joint responsibility in seeing that handicapped children and youth are provided necessary rehabilitation services. This cooperative relationship has been strengthened by legislative programs affecting both agencies. At the present time we are conferring with staff in the Office of Education for the purpose of establishing written guidelines and procedures to effect an extension of Special Education--Vocational Rehabilitation programs at the State and local levels. A special effort is being made to encourage State and local Boards of Education and the State Divisions of Vocational Rehabilitation to incorporate joint programming as a regular and on-going policy, and to extend these services to all handicapped groups rather than to a single disability.

B. Mental Retardation

Dramatic advances have been made in the rehabilitation of the mentally retarded. Strong emphasis has been placed on the development of sound patterns for cooperative programs conducted jointly by State special education divisions and vocational rehabilitation agencies. Recent information reveals that cooperative arrangements are underway in some 39 States involving some 287 individual school districts. Many of these projects follow VRA established prototypes. In one type of project, there is an attempt to structure the curriculum so that it is work oriented with the other significant feature that a rehabilitation counselor works side-by-side with special education teacher in preparing the student for community work placement. A more elaborately designed prototype calls for the establishment of a rehabilitation evaluation unit within the special education program. Contributors to the functioning of this unit include: special education teacher, the vocational rehabilitation counselor, school psychologist, work evaluator, school social worker, and other members of the inter-disciplinary rehabilitation team.

The major feature of such projects is the introduction of work training content and counseling services in school settings to facilitate the transition of the retarded youth from school to work.

VRA has also supported for some years a successful, ground breaking series of occupational training centers for the retarded, serving mainly youth. The purpose of these centers include: pre-vocational evaluation, personal-adjustment training, and job training.

C. Selective Service Rejectees

Approximately 25% of the young men called for examinations for military service are screened-out for medical reasons. Through a cooperative VRA-U.S. Public Health Service program these medical rejectees are interviewed at the Armed Forces Examining Station for interest in and referral to appropriate local agencies which offer counseling, training, and medical services.

A recent report (November 1965) shows that 50 States, the District of Columbia, and Puerto Rico have signed contracts to initiate this program, with 43 presently operating, including 13 States where the Governor has designated the State vocational rehabilitation agency to head the program. Rejectees are being interviewed in 54 of the 70 AFES. Many of these young men have found new hope for a productive future through vocational and technical training. A companion program carried on by State Rehabilitation agencies involves on-going casefinding at the local draft board. Here, persons with known disabilities are automatically referred to the State rehabilitation agency.

D. Public Offender

It has been estimated that crime in the Nation today costs us $27 billion. Coincident with the heightened national awareness of this problem has been an upsurge of activity in correctional rehabilitation on the part of State vocational rehabilitation agencies.

While in the past, many rehabilitation agencies have obtained offenders as clients through usual referral sources, i.e., State Employment Service, physicians, and welfare agencies, there is considerable movement currently toward establishing working relationships with State and Federal correctional institutions and parole and probation agencies. Since 1962, VRA has supported 10 research and demonstration projects designed to apply vocational rehabilitation concepts and methods to disabled inmates in State correctional institutions. Oklahoma was the first State to provide intensive service to public offenders on a project basis.

While the emphasis in these projects has been primarily on the adult offender, one of the Children's Village, Dobbs Ferry, New York, provides comprehensive rehabilitation services for emotionally disturbed delinquent adolescents.

Several State rehabilitation agencies are presently conducting special programs which provide comprehensive rehabilitation services to offenders in the younger age groups. For example, working in cooperation with the Family Court of Rhode Island, the State agency

participates in the team operation which evaluates problems of children who appear before the court and ultimately provides restorative services leading to employment. In Georgia, the Division of Vocational Rehabilitation in 1963 began a large-scale program of service to young offenders incarcerated at the Georgia Industrial Institute. This program offers vocational rehabilitation services and encompasses such functions as screening, vocational appraisal, pre-vocational evaluation, physical restoration, pre-vocational training, specific vocational training, counseling and guidance, job placement, and follow-up.

E. Other Cooperative Rehabilitation Endeavors

VRA works closely with the Department of Labor and the Office of Economic Opportunity to help meet the needs of the disabled through programs administered by these agencies. Through these efforts, disabled individuals are able to take advantage of vocational and technical training opportunities under the Manpower Development and Training Act, the Neighborhood Youth Corps, and the Job Corps, and programs administered by the Bureau of Apprenticeship and Training. State rehabilitation agencies are providing an invaluable service in a recently approved BAT project submitted by the Association of Industrial Launderers. This project is designed to place in employment 1,000 mentally retarded persons over an 18 month period. The industry has identified 11 job titles for which 10 weeks of on-the-job training will be provided. State rehabilitation agencies will evaluate and certify all prospective trainees as being work-ready. If the project is successful, other employers such as home industries and auxiliary service industries are expected to follow with similar proposals.

In a closely related BAT project, the National Association for Retarded Children will find jobs in large retail chain-stores for 1,000 retarded children. Here again, the evaluation of the job-readiness of the individual will be made and certified by the State rehabilitation agency.

A program within the Federal government to employ the retarded was initiated two years ago. This program is sponsored by the Civil Service Commission in cooperation with VRA. Up to the present time, approximately 850 persons have been placed, following an individualized appraisal of job-readiness by the State vocational rehabilitation agency. A recent survey reveals that these persons are performing satisfactorily in the following positions: messenger, clerk, typist, janitor, key punch operator, laboratory worker, grounds maintenance worker, and mail clerk.

This brief discussion and examples point out the current trend and progress which agencies and organizations, whether in the health field, rehabilitation field, correctional field, or the field of education, are making on all fronts to join together in meeting the concommitent needs of disabled, impoverished and troubled persons in order to help them achieve a measure of self-worth and to become a contributor rather than a consumer in our work oriented and competitive society.

F. The Key Person in the Rehabilitation of the Disabled

The key staff member in the rehabilitation of the disabled person is the counselor. The heart of the rehabilitation process is counseling. From the initial interview--and on through the steps needed to gain a full picture of the person's aptitudes, interests, ability, physical and mental state, the providing of restorative services, through placement and follow-up in the first weeks of employment to appraise adjustment on the job--the counselor guides the individual through the various stages to successful rehabilitation.

There is agreement among rehabilitation administrators,practitioners and university counselor educators that graduate preparation is necessary for the complex tasks performed by the vocational rehabilitation counselor. Presently, there are 46 universities and colleges receiving VRA funds to support graduate programs in rehabilitation counseling. These programs will provide approximately 500 qualified counselors next year to a field which could use more than 1,000 per year. Of this number, it is estimated that about 40% will enter State rehabilitation agency employment, 35% will take other jobs in the field of rehabilitation, while 9% will pursue doctoral level training. Never before has so much attention been given to the employment of qualified personnel to perform counseling functions. The critical shortage of trained manpower has generated much activity during the past two years in identifying new approaches to training as well as developing new staffing patterns based on the differential use of counseling personnel. Such usage has included the functional separation of the rehabilitation process as well as identification of tasks within the counseling function which could be done by semi-professional personnel. There is much work yet to be done in this area.

VI. Suggestions for Action and Research

The success of a meeting of this type can be measured by the accumulative actions taken by participants when they return to "homebase." May I urge you to get in touch with your State vocational rehabilitation agency to explore mutual avenues of approach whereby the resources you represent, together with those of the State vocational rehabilitation program can be more efficiently and effectively utilized to reach and better serve those disabled persons in need of assistance to live useful and productive lives.

To those of you in research, I believe that there are new dimensions waiting to be charted in the area of programmed instruction for the retarded. Only a beginning has been made. We need to explore further how much can be done in teaching the retarded in school and on the job with programmed materials. For example, at Abilities Incorporated, Albertson, New York, the retarded are doing a complex soldering job on a piece of electronic equipment with the aid of a programmed set of slides accompanied by voice instruction. At the George Mason Occupational Training Center in Arlington, Virginia, the retarded are being taught tool recognition by programmed instruction. The outlines of various tools are painted on a board and the tools subsequently placed over the appropriate outline. Voice instruction via a recording is given the trainee and requests that he pick a particular tool off the board, and lay it aside. After all the tools are removed from the board, the trainee replaces each tool per the instruction of the voice recording. This process is repeated as often as needed by the trainee.

Along with this kind of research, we need to explore new types of jobs for all the disabled. We need to determine if we have become too sterotyped in those jobs for which we are training individuals with certain disabilities.

We need to interest research personnel in the problems of egress from vocational evaluation and training situations. Too many of our rehabilitation workshops are filling up with severely disabled people because of the lack of egress into the labor market. Once in the labor market, there is the problem of job-retention. We need more information on why certain disability groups find it more difficult to remain on the job than to find a job.

The area of improving rehabilitation counselor practices holds challenge for research. The day-to-day decisions made by the counselor determine, to a large extent, how the funds of the agency are to be spent; what services will be purchased or furnished to the disabled client. There is research work to be done in: (a) improvement of the tools used by the counselor, such as predictive or assessment instruments and techniques, and occupational information collection--dissemination methods; (b) counseling techniques, such as group therapy, or counseling problems that can be attacked through studies of attitudes, interest, or motivation; (c) the counselor's role in the rehabilitation process; and (d) the selection, training, and professional development of counselors.

An exceedingly important area to be researched is the problem of developing effective techniques for reaching the uneducated, delinquent adolescent, or young adult from indigent families through the counseling process.

There is a need to direct research toward the rehabilitation problems of those afflicted with heart disease, cancer, and stroke. For example, we need to find out if the youthful cardiac patient can be provided with a bridge from school to work with minimal interference from the disability. This might be accomplished through the development of graded job levels and by providing such work experiences to the person while still in school. Concepts previously developed to provide this transitional service to the mentally retarded might be able to be restructured to meet the needs of heart disease victims.

Conculsion

I have attempted in a very superficial way to describe the State-Federal program of vocational rehabilitation, pointing out the services it offers and describing some of its cooperative endeavors. I have tried to illustrate the place of guidance, counseling and training in assisting the disabled person in achieving gainful employment and have pointed out some areas for research consideration. In closing, I would like to point out that the road to improve services to the disabled cannot be traveled alone. There is a continuing need for agencies and organizations to work together and for administrators, educators, researchers, and practitioners to apply skills and knowledge in an imaginative and resourceful manner.

GUIDANCE WITH SPECIAL POPULATIONS IN VOCATIONAL AND TECHNICAL EDUCATION
GUIDANCE WITH OLDER WORKERS

Abraham Stahler
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While listening to Bill Eshelman's talk I was reminded of how much we who are concerned with the employment problems of the various special worker groups owe to the vocational rehabilitation program. For, to my mind, they have been the real innovators of many if not most of the techniques and methods, instruments and procedures for individuals presenting special employment problems. I think we all owe a great deal of gratitude to the innovators--the imaginative people--who have been in the vocational rehabilitation program.

I was very pleased to note that those who planned this Seminar saw fit to include this particular panel on special population groups. We are now in an era, as must have been emphasized during the past day or two, of unusual and continuing prosperity. There is a feeling among some that anyone who wants a job can get one and that if he is out of work it is simply because he is too lazy to work. Well, we know that this is not true. For, the very groups that we are discussing here today are precisely the ones who are still having an extremely difficult time to obtain employment and it surely is not out of laziness. Not the least of this group, of course, is the older worker. And I am not referring simply to those in their 60's or 70's--but rather primarily those in their 40's and 50's.

The Problem of Unemployment

The older worker problem is essentially a problem of reemployment for middle-aged workers who lose their jobs. While he is employed, the older worker generally does have the benefit of seniority, of longevity on the job, of experience and so on. But once he loses his job, he usually has a much more difficult time in getting into another one than many others in the labor force. For example, older male workers--those 45 to 64 years of age--are out of work on an average of 19 weeks once they become unemployed. In contrast younger men, those under 45, are out of work an average of 13 weeks. The older worker is thus unemployed 50% longer on the average than the younger worker once he loses his job.

The job problems of older workers are an area of serious importance to counselors and to others who are concerned with assisting individuals in preparing for and obtaining suitable employment. For, the older worker plays an extremely significant part in our labor force. Four out of every 10 men and women in our work force are 45 years of age and older and during 1965 this total reached about 30,000,000. Their unemployment rate is not quite as high as that of other groups, because of seniority and other reasons, but an average of nearly 1,000,000 job seekers 45 and over were unemployed during the past year. For many it becomes a problem of chronic joblessness. For example, there were about 300,000 older workers unemployed during the past year for 15 weeks or more--a length of time considered long-term employment--and over 150,000 workers 45 and over were unemployed six months or longer, despite unusually intensive efforts to seek reemployment.

They are caught in a period where they are considered too young to retire and yet too old to get jobs. Unless vocational retraining, realistic counseling and other effective assistance in obtaining reemployment is provided, they are often confronted with a depletion of a lifetime of savings, a swift descent into destitution, and very often destruction of morale. Since most of them are heads of families it doesn't require much imagination to understand the great impact on their financial resources, their prestige and their self-esteem when they are confronted with a virtual hopelessness in resuming their lot as the major bread winner of the family.

Challenge to Vocational Educators and Counselors

The restoration of the unemployed older worker to the status of an employed member of society is indeed a problem and a challenge to vocational educators and counselors. The Department of Labor has been concerned with this problem over the past several years. We have made a number

of studies in the past 10 years of employment problems, and of counseling and of other job-related needs, of the older worker. I would like to share with you some of the experiences we have had, in the hope that they can be of some assistance to you as you attack these problems--more and more ardently, I hope, in the months and years ahead.

We have found that at least 25% of job seekers 45 years of age and over who are unemployed are in serious need of counseling service. It may well be that a much higher percentage of those who are considering training and retraining will require vocational counseling since many of the others might still go back to their former jobs. Due to limited staff resources in the public employment service only about 7% of workers 45 and over receive employment counseling service. There is a tremendous need for expanded counseling service obviously, not only in the public employment service but also in vocational and technical education for the unemployed adult.

Nature of Counseling Problems

The older worker presents a wide variety of special problems with which the counselor will often need to assist. For one thing, although there are tremendous changes taking place in the nature of jobs, workers who have been employed for 20 or 30 years in the same type of work, as many older workers have, find it extremely difficult to accept the fact that they must change, often to an entirely different kind of job. They feel uncomfortable, they feel insecure, and they actually feel confident that somehow they will get back into the kind of work that they had even though opportunities for such work may have become rare or no longer exist in the area. Hence, they need to be motivated to accept what is often a radical change in a job for which they need to be trained despite their mature years. They need also to be helped to understand that even a job for which they are to be trained is no longer something that they can expect to do the rest of their lives--that it is no longer generally true that once you are prepared for a job you are likely to stick in it for the rest of your work days. Actually, it has been estimated that one can expect at least six job changes in the average working life of an adult.

In addition to the problem of reluctance to change one's occupation, the counselor will need to be concerned with a frequent reluctance on their part to accept training, despite the fact that it may be badly needed. Very often the older worker feels that he has been too long out of the classroom, that he is too old to go back to school, and that he could never learn at his age a new type of work.

Another problem is the reluctance a great many have to take tests and undergo other appraisal measures. The older worker is usually afraid that he will not do too well. He is afraid of failure. He is afraid of the unknown. Unlike younger people who are accustomed to taking tests, he is unfamiliar with the test situation. Moreover, he often cannot see the relation between taking tests and what he really wants, which is to obtain reemployment. Moreover, many lack language facility to perhaps a greater extent than those of most other groups, have often slower motor speed, and thus find it difficult to do well in tests, particularly power tests. And so, there is a real problem frequently in attempting to appraise and evaluate the aptitudes, interests, personality traits and other factors of assistance in determining the type of new vocation they may wish to prepare for.

There is also a feeling of defeatism on the part of many, of lack of confidence, or low morale--due often to repeated rejection by employers because of their age or educational level, or for other reasons. This affects not only their confidence in learning a new vocation but also in presenting their new qualifications to a prospective employer. Many of them need a great deal of assistance in helping them to overcome this feeling.

There are many other problems that a counselor must be concerned with in working with the older worker. He must be alert to the fact that the older worker is often less agile than others, that his vison and hearing are often not as acute as it was, that he often has less finger and manual dexterity than he once did, that he often has less eye-hand coordination. His educational level is generally less than that of younger people since education was not stressed as much when he was young as it has been in more recent years. Hence, the types of work that he can successfully learn to perform is often somewhat more limited than for younger people. Moreover, he often lacks an insight into his own present limitations and finds it difficult to accept them. The counselor must be extremely careful, as well as skilled, in assisting him to understand his current limitations and accept them.

Once the older worker has accepted and has gone through the training process, he meets more than many other people resistance from employers because of his age, his educational level or his physical abilities. Moreover, he often does not know how to go about a job search since he hasn't had to look for a job in a good many years. He does not know how to present his qualifications effectively to an employer.

Those, then, are some of the problems, some of the challenges that counselors who work with older people are confronted with virtually every day of their working life. We need to develop, adapt and apply techniques, instruments and information that are different in many ways from those used with younger persons in order to deal effectively with these problems.

Experiences in Dealing with Counseling Problems

Actually, there has been quite a body of experiences building up for use in counseling with older workers. The employment service counselors, for example, have been dealing with these problems for a dozen years or more. Considerable experience has also been had by counselors in vocational rehabilitation agencies, the Veterans Administration, and some school circles, and in a number of private non-profit agencies serving older workers.

We have found that we need to spend more time than with most others in counseling interviews with older persons. Because of the great impact of seeking new employment, often for the first time in many years, they frequently have to talk out their problems at greater lengths than many others with whom we counsel. We need to keep the use of power tests with older workers to a minimum--and to use non-verbal instruments to a greater extent in the appraisal process. We need to dwell much more on past work experience and their reactions to it for clues to potenials and interests relating to new occupations. We find that we need to explore more carefully the possible transferability of demonstrated skills and abilities to new occupational outlets because of the fear so many have to change and the feeling of comfort they have with known types of work. The effective counselor will often try to build on skills and knowledges the older worker has already acquired.

We have found group counseling sessions with older workers to be a useful adjunct to individual counseling. We have found them especially useful with older workers having problems of unrealistic job choice, of negative attitudes toward job change, and of emotional reactions to their situation, and with those who particularly need a great deal of motivation to take training and to seek new employment. They are also of considerable assistance in learning how to go about seeking employment and presenting qualifications effectively to employers. The group counseling session helps them, too, to identify themselves with others with similar problems, finding as they do that they are not alone with such problems.

We find that work tryouts have been extremely useful devices in determining a suitable occupation to train for.

There is great need also for realistic occupational information in counseling with older workers. I understand that this point has been dealt with quite a bit at this session, so I need not elaborate further. At any rate, the State Employment Service offices, I would think, should be your best single source for such information. I would suggest to those doing counseling not only with older workers, but with any group, that close operating relations be developed with employment service local offices. They can be of considerable help in providing up-to-date and realistic occupational and job market information which is indispendable for effective counseling.

Preliminary Findings from Experimental and Demonstration Projects

There is another major area of information that I would like to share with you, based on experiences of the Department of Labor. About two years ago, the Department's Office of Manpower, Automation and Training executed a contract with the National Council on Aging to stimulate and assist communities in developing Experimental and Demonstration projects involving workers age 50 and over. The NCOA is a volunteer, non-profit agency with a membership of leaders from business, labor, social welfare, religion, education and health. The objective of this program has been to work through community organizations in developing E and D projects designed to discover and test methods for preparing workers age 50 and over for reemployment and helping them find suitable jobs. Seven cities, diverse in geographical location and economic makeup, have been selected to develop projects. Each project has a different emphasis. One project, for example, emphasizes the development and testing of techniques for assisting workers faced

with mass layoff to prepare for and obtain suitable employment. Another is primarily concerned with developing and trying new techniques for motivating older workers to enter training, experimenting with non-verbal comprehension and interest measures, and providing psychological support until occupational adjustment is attained. There are a number of other individual projects besides those stimulated by NCOA which are similarly trying out better methods and techniques for assisting older workers. In all these projects counseling has been playing a major role.

The projects for the most part are still in operation, but a number of preliminary findings have emerged thus far. A brief listing of these may be of some value to those counseling with older workers. In several projects--and this you have been hearing a great deal of in anti-poverty projects--the use of trained non-professional persons, who know the unemployed workers and have shared their problems, as an aid to the counselor has been found to be helpful, especially in motivating these people to accept counseling and other services and in helping to sustain morale during the period of service.

Group counseling has been found to be highly useful, as has been the experience in many employment service offices. It has been particularly helpful in dealing with attitudes and work habits.

There has been a surprising frequency and great disparity of differences between educational achievement and educational level of clients with apparently equal educational, employment and cultural backgrounds. For example, two females of the same race and age, each with an eighth grade education who came in at the same time and were given the "Wide-Range Achievement Test" scored 4.3 and 10.3 grade levels, respectively, in word recognition and 2.9 and 9.0 grade levels in arithmetic. Since such disparity has a great bearing on their ability to learn new vocations it was decided to place more emphasis on measuring educational achievement and less on accepting without question the educational level attained in school.

In another project it was reported that special instruments and techniques were needed that would fit in more adequately with the older person's environment and job situation than most of the typical appraisal methods used on younger people. As a result, testing instruments were modified to reflect the culture and experience of the group tested rather than relying on instruments standardized on general population groups. One of the instruments developed was a Picture Interest Test. An artist prepared a set of 30 drawings of a man performing 30 different kinds of jobs. The drawings are paired in various combinations and the older worker is asked to make his selection of the type of job that he would prefer if he had the necessary training and experience. The counselor inquires as to the reasons for his preference and asks for comments on his likes and dislikes. Much insight into interest patterns was gained through interpretation of the man's comments and observations. The essential value of this approach seems to be in its ability to elicit differential expression of interest through the use of simple, familiar, non-verbal materials.

Another instrument developed was a "Following Directions Test" which consists of 20 graded instructions of increasing difficulty. The test was found helpful in trying to judge how the individual can be expected to function in a new learning and job situation.

Further Research and Demonstration Needed

Those are but a few examples of the types of innovation, experimentation and demonstration that are used and are needed to provide the instruments and techniques for counseling effectively with older workers. There is an obvious need for more and better instruments and methods for use with older workers to assess particularly interests, potentials and abilities. There is also a need to know more about not only attitudes but the factors behind attitudes of older workers toward training and mobility. There is a need for more effective techniques to deal with the shocks and fears, the resistances and suspicions that many older workers have on changing jobs and taking tests and entering training. We need to know more about the process of change occurring in individuals during middle age and older years--and the effect of these changes on their interests and qualifications for employment. We need to know more about training methods and procedures that are most effective for older persons as distinguished from those found effective for younger persons. We need to know more about occupational trends not only nationally but in our own localities--about the true educational and skill requirements of occupations--about employer's specifications--and certainly about what skills and jobs are on the increase and which are on the decline.

Conclusion

But we cannot wait until all these are developed and successfully demonstrated to assist us with the counseling of older workers. For the problem of counseling older workers is here and now. They are still a far too largely neglected segment of our society. We do know that most of the existing principles, methods, techniques and instruments can be adapted and applied with a bit of understanding and imagination. And so, the counseling, training, and placement of older workers can and should go on to an ever-increasing degree--while at the same time basic and applied research is carried out to find solutions to the many problems we are confronted with in serving older workers and to develop more and better ways for providing the services they need.

GUIDANCE WITH MINORITY GROUPS IN VOCATIONAL-TECHNICAL EDUCATION

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INTRODUCTION

President Lyndon B. Johnson has referred to the Sixties as the "revolution decade." The high rates at which changes, in all phases of our culture, are taking place justify this classification. At the half-way mark, we find outselves confronted with social problems of tremendous scope and import.

It is no exaggeration to state that the people of the United States are participants in the highest civilization of all ages. In fact, American technological and scientific know-how has given us a most wonderful civilization. We are living in an age that is simultaneously most satisfying and most disappointing. In this sense it is ambivalent in nature. The decade of the sizzling Sixties is anything but logical. It is riding the crest of national gross product, and expanding job opportunities, and at the same time poverty and unemployment is in abundant supply.

Picture, if you will, a man who died thirty-five years ago returning to this earth, a full adult with his faculties of the past intact. How would he re-act to the news that the American economy, while currently realizing a national gross product, estimated to be over 670 billion dollars is also experiencing unemployment in the excess of four million? I am sure that he would find it most perplexing.

Here, he would reason, is an economy with a national gross product over six times greater than the 104 billion dollars national gross product of 1929,[1] yet, unemployment per thousand is more than 27 times greater.[2]

A relationship that shows an increasing growth in job opportunities on the one hand, and in unemployment on the other is anything but consistant. I am sure that our visitor from the nether world would find this most puzzling. In all probability, he would wonder, if excessive unemployment is a concomitant of industrial progress.

The well-being of a large segment of our population has deteriorated, as the result of the tremendous rates at which our American economy has developed. This is due, in part, to the fact that the kinds of jobs that industry will need workers for are changing. Furthermore, the job-seeker will need more education and training, if he is to experience success in his quest for employment.

The minority groups job-seekers, because of their lower educational level, limited work experience, and job discrimination, are the greatest sufferers of the imbalance condition of our social order. Consequently, the problem of formulating a guidance and counseling program, to assist them in adjusting to the rapidly changing world of work, is no easy task. For the simple reason, it must relate effectively with modern trends that are basic to the emerging industrial economy.

From the point of view of job attainment, a minority job-seeker is anyone who is denied employment, on the basis of qualifications that are irrelevant to success in the performance of the job. In other words, a minority is anyone who is denied employment for reasons of color, creed, religion or national origin. However, the discussion in this paper will be confined to non-white minorities.

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[1]Statistical abstract of U. S. 1956, p. 324.

[2]There is less than 1 million persons unemployed in 1929. Moffat, et. al., Economics, Principles and Problems, p.910.

In 1960 the non-white population of the United States totaled 20,491,443[3] persons or about 11.4 per cent of the total population. They are listed as Indian, Japanese, Chinese, Filipino, Negro and others. Since the Negro makes up about 93 per cent of the non-white population, he is America's minority group problem.

In spite of the fact that other minorities are subject to the evils of job discrimination, most concern shown about the problem, is focused on the Negro. It is my opinion that the basic elements of the problem - lack of education and training, poor work habits, discrimination, etc. - are fundamentally the same for all classes of minorities. It is admitted that there are differences, but only in degree. Consequently, a guidance program, designed to help the Negro to resolve his occupational problem, would serve equally well other minorities.

POPULATION

The population of the United States in 1960 numbered 179,323,175 persons. This represents an increase of 18½ per cent over the previous decade. The growth during the 1950's has been referred to as "dramatic in nature," and is expected to continue during the 1960's. The phrase: "population explosion" was and is on the lips of everyone.

The U. S. Department of Labor issued, in 1961, a pamphlet entitled, "Manpower Challenge of the 1960's". One of the several forecast, expressed in the pamphlet, had to do with the rapid growth in population during the Sixties. It was predicted the population in the United States would increase, during the decade, from a 180 million to 208 million.

We have just started the second half of the decade. The experts already are fairly certain that the U. S. Department of Labor's population growth prediction, for the Sixties, is an understatement.

In October, 1965, the Equitable Life Insurance Company, estimated the current population of the United States to be 195,372,002, and that it is expected to reach 230 million by 1970.[4] This 28 per cent increase in population by the end of the decade, exceeds that predicted by the U. S. Department of Labor by 11 per cent. One must go back some 80 years, to the decade of the 1880's, to find a ten-year period, in which the population growth exceeds that predicted for the 1960's.

Labor Force. The increase in the total number of workers during the Sixties will exceed that of any ten-year period in history. The labor force, by 1970, will number better than 87 million workers.

Forty-six per cent of the labor force growth, according to the U. S. Department of Labor,[5] will consist of young workers. In fact, "26 million new young workers will enter the labor force during the 1960's.[6]

By 1970 there will be six million more women in the labor force than there were at the beginning of the decade. The 30 million women workers, in the labor force, means that one of every three workers in 1970, will be a woman.

Older workers will account for 20 per cent of the labor force growth of the Sixties. Two of every five workers, in 1970, will be an older worker.

Our Human Resources. The United States' human resources are in abundant supply. Their development is a must if we are to realize the great potentials made possible by the scientific and technical know-how of this nation. Therefore, each and every segment of our social order must contribute to the task of making the best use of our manpower potential.

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[3]U. S. Census of Population, Vol. 1, Part 1, 1960.

[4]"Open Market Opportunities," James F. Oates, Jr., Pub'd Tuesday, December, 1965.

[5]Manpower Challenge of the 1960, p. 6.

[6]Ibid.

The Occupational and Industrial Structure During the 1960's

Because of our scientific and technological know-how, America is riding the crest of material progress. It is causing every component of our industrial economy to under-go changes of a radical nature. This is noticeable in the structural changes that are taking place in industry, in the labor force composition and in the kinds of occupations industry will have to offer job-seekers. This means, among other things, more job opportunities, greater productivity and a higher standard of living.

Changes in the Industrial Make-up. One of the ironies, of the rapid growth of our economy, is the fact that proportionately fewer workers will be used to produce the goods and services, that will be consumed in the years ahead.

Of the workers used in our productive efforts, during the Sixties, and the years ahead, better than 56 per cent of them will be employed in the service industries. The construction industry is the only one, of the production industries, that is expected to keep pace with the service industries in providing job opportunities in the decade of the '60's. There is, as you know, an actual decline in job opportunities in the agriculture industry. Of the service industries, only in transportation and public utilities will the growth rate, in job opportunities, be slower than it was at the beginning of the decade.

Kinds of Jobs. For the first time, in the history of this Nation, there are more job opportunities in the service industries than in the productive industries.

In the '60's the demand for engineers, scientists, technicians, managerial, sales and clerical workers will increase faster than will the demand for skilled, semi-skilled, and service workers. There will be no measurable change in the number of unskilled workers employed in the '60's, in contrast with the number employed in the '50's. The percent of employment, of agricultural workers, will decline in relation to such employment in the Fifties.

The changes in employment emphasis placed on the several occupational groups, are the consequences of the application of American ingenuity to the development of a better way of life. American technological know-how has given us a predominantly industrial economy; it has led to the placing of greater emphasis on research; business organization, because of it, has grown larger and more complex; it has caused greater emphasis to be placed on record keeping. One result of these developments is the growing need for more education and medical services.

EDUCATION

A high quality of education and training are prime requisites for the worker, who hopes to compete successfully in the current job market. More and more employers will be looking for workers who have, at least, a high school diploma. The young worker, who hopes to have a successful job-career, must prepare himself for a rapidly changing and more complex industrial world. Competition for jobs will be much keener.

In spite of the fact, that a sound formal education is basic to job success in our current world of work, we have been told[7] that approximately three of every ten young workers entering the job-market, during the '60's, will not finish high school. In fact, three of every ten of those, not finishing high school, will not complete the eighth grade.

In the past two decades great strides have been made in closing the educational gap between non-white and white persons in this Country.[8] In spite of this, non-whites are greatly handicapped in their quest for employment. At the beginning of the '60's the median years of school completed for white persons 25 to 29 years of age was 12.3 for both male and female. For non-whites of the same age group the medians for male and female were 9.4 and 10.3 respectively.[9]

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[7]Manpower Challenge of the '60's, p. 16.

[8]See "Special Labor Force Report No. 33, p. 9.

[9]See "Notes on the Economic Situation of Negroes in U. S." U. S. Dept. of Labor, Bureau of Labor Statistics, p. 42.

The quality of the educational attainment of the population is the important thing; however, the mere fact that the median years of education completed total 12 or more means little, if it is inadequate with regards to the needs and demands of industry. The educator must view carefully his role to determine if his service to potential workers in today's job market is effective.

Vocational-Technical Guidance with Minority Groups in a Changing World of Work

It is no exaggeration to say that all job opportunities are open to non-white job-seekers today. The industrial climate is becoming more favorable, due to special effort made by governments, especially the Federal government, to place non-whites in the better jobs. It is also noticeable, that private employers, more and more, are voluntarily moving in this direction. I realize that there still is much, in fact too much, job discrimination. Non-white workers experience disadvantages of large proportions, when compared with white workers.[10] They are concentrated in the less skilled and menial jobs, and are subject to more unemployment than are white workers.

In spite of this, progress in every direction has become so encouraging that no vocational counselor should hesitate to steer non-whites in any and all career directions. His only concern should be with the question, of whether the factors involved support the choice as being the right one.

This, however, has not always been the case. Twenty years ago, the phrase "preparing for a professional career" meant, to the average non-white, the studying of medicine, teaching, law and theology. If he were inclined toward the skills, his choice would come from the construction industry. These are known as the traditional career occupations for non-whites. And there was a tendency for vocational guidance counselors to confine his choice to these categories. If a non-white were so bold as to set his sight on a career, in banking, management, engineering, etc., he would soon learn, from his counselor, that there were no opportunities for him in these fields.

In the 1940's approximately eighty-two per cent of the gainfully employed non-whites functioned in jobs that were to be found in the unskilled, service and farm workers occupational groups. Today, slightly better than 57 per cent of the gainfully employed non-whites are functioning in these occupational groups. In contrast, 31 per cent of the gainfully employed whites, in 1940, were working in unskilled, service and farm workers occupational groups. Currently, the percentage, of gainfully employed whites, that are working in the aforementioned occupational groups is twenty-three. In other words, in 1940, 8 of every 10 gainfully employed non-white workers were employed in the unskilled, farm or personal service occupations, as compared to 3 of every 10 white workers. Twenty years later, the respective employment ratios, of these groups, in the aforementioned occupations are 6 of every 10 and 2 of every 10.

It may be pointed out that currently, non-white workers, for the most part, are prepared to function only in job categories that are either obsolete, obsolescent or in which the competition is extremely high.

It is no secret that this Nation is keenly interested, in the most effective use of its manpower potential. All segments of the community - government, management, labor, educators, etc. - are urged to give serious attention to the problem, of not only preparing the Nation's manpower to function at the maximum of its potentials, but also its utilization to the highest point of productivity.

The responsibility of the educator, in the task of preparing and guiding our manpower potential to the end that its utilization will be most effective, is second to none. With regards to the non-white population, the problem is extremely difficult. Any program to be successful must deal with problems that are basic in our culture. This means that old habits must be replaced with habits conducive to the new trends emanating from a rapidly changing world of work.

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[10] See "Special Labor Force Report," No. 33, U. S. Department of Labor, pp. 1-4.

An effective program of vocational and career guidance, for non-whites, must first recognize that all doors to all job opportunities are open to them. The future problem, in this respect, is one of pushing the doors wide open. However, the latter is contingent upon such factors as discrimination, the lack of education and job experience.

Efforts to correct the insufficiencies of non-whites, with regards to education and job experience, must not ignore the fact that prejudice is basic to these two processes. Consequently, school administrators and guidance counselors must approach the problem of constructing a vocational guidance program, for non-whites, free of all predilections, which tend to color the principle "merit employment." Furthermore, the program must recognize that the training and job experience lags, of non-whites, are due largely to the fact that, they have been denied the right to participate in these experiences. It is generally accepted, by recognized authority, that the inherent capacities of non-whites do not differ materially from those of members of other groups. Until our guidance counselors recognize and accept this truth, they will not be successful in effectuating a program of guidance based upon this tenet.

Selecting Vocational Guidance Personnel. Careful attention must be given to the task of selecting the personnel suitable for vocational guidance and career counseling of non-whites. In the past, and even today, school personnel have been and are guilty of judging non-whites, in the light of the many stereotypes that cast them in the role of inferiors, incapable of certain types of accomplishments.

Many, far too many, youthful non-whites have been advised, by school personnel, to forget their aspirations. Such counsel hasn't always been dispensed with tact. In fact, it too often was designed to embarrass and belittle.

It is imperative that all persons, involved in a program of vocational guidance, for non-whites, be selected with care. And they should be trained to deal with personalities that, due to centuries of denial and rejection, have come to doubt and be suspicious of all positive offers in their interest. Such persons must be objective enough to set aside their prejudices. They also must be motivated by a degree of empathy, that will enable them to identify with the counselee. To do this, a tremendous selling job is necessary. The elements of the program must be organized and presented to the end, that the counselee will feel and accept, the administrators, of the program, as persons of sincerity and good will. Secondly, the program must be practical. That is, it must be based upon the existing job outlook, in regards to the occupational opportunities available to non-whites. In other words, it must recognize the fact that the current labor market represents the beginning of a new era, in job opportunities for non-whites. One in which the "exception," in job acquisition, has become the "rule" and the rule the "exception."

The Role of the Non-White Parent. The non-white parent is, in my opinion, the key to a successful vocational guidance program for non-whites. His heritage, of doubt, suspicion, the lack of confidence and the denial, by implication, of his existence, is a powerful tool, of opposition, that must be reckoned with.

He has been hurt too many times by the "no job" response to his application for work. Consequently, there is a tendency for him to discourage the occupational aspirations of his children, if they fall outside of the boundaries of traditional careers for non-whites.

Use the parent-teacher associations to win the support of non-white parents. Structure the organization with a view to having the parent-members play a more active role. Draw up a prospectus designed to establish the spirit of "working together" for the common good. In other words, win the parent's confidence, and thereby his belief in the brotherhood of man.

The Caste System. The program must be cognizant of the caste system trend, that is developing in our society. The percentage of non-whites caught in its web is much greater than that of the whites. Members of the caste system embrace social values, that are unlike the so-called middle class values. Consequently the program must develop counseling and testing tools that will lend themselves to meaningful communication with such counselees.

Public Employment Service. I think that consideration, of a serious nature, should be given to question of the role, of the state employment service, in an effective vocational guidance program. I am sure that these agencies can be very helpful in supplying factual information, with regards to industrial and occupational trends and labor market information, in general. Schools should involve state employment agencies in periodic seminars or workshops. In this way, vocational guidance personnel will be able to keep abreast with job trends, and employer acceptance of job-seekers on the basis of merit.

EDUCATIONALLY DISADVANTAGED YOUTH

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The title assigned to me for this panel might be looked at from several points of view. If the emphasis is placed upon "educationally" disadvantaged youth, then should our focus of attention be upon the "dropout" or the "push out?" The literature in this area is tremendous.

Another emphasis might be placed upon the term "disadvantaged." There is an expanding literature in this area. This group is also referred to as culturally deprived or culturally different, hard-core groups, and the socio-economically handicapped. But to some the word handicapped seems to be more of a province of the physically handicapped or disabled, and so there seems to be a trend to refer to this disadvantaged group as socio-economically disadvantaged. Other writers refer to them as the underpriviledged, or persons with special needs.

At least there may be more agreement on the term youth. Some will think of them as the typical school age child, six to eighteen, while others will think of them as young people under age twenty-five. So, you see this group comes from all points along the educational continuum -- elementary, secondary, post high school, junior college, college. In reality even the young adult might be our province when we speak of youth. But we need not quible over definitions.

This paper will be organized around four areas, each of which could be expanded considerably. These areas are (1) a vignette of the culturally deprived, (2) some perceptions of this group of education and the school, (3) the role of guidance services in working with the disadvantaged, and (4) some suggestions for guidelines for research and practice.

1. Culturally Deprived

In order to give us a frame of reference to the term "disadvantaged," points of view might be cited from numerous references, but one which synthesizes several points of view and one of the best, as I see it, for this specific audience is the point of view expressed by Barbara Kempl in "The Youth We Haven't Served" in the American Vocational Journal, October, 1965. I quote:

"In identifying the academically and socio-economically handicapped, the Division of Vocational and Technical Education includes those youth and adults who live in communities or come from families where there is a preponderence of the following characteristics:

- -- low income
- -- poor educational background and preparation
- -- poor health and nutrition
- -- family heads are semi-skilled or unskilled
- -- excessive unemployment
- -- belonging to ethnic groups which have been discriminated against or have difficulty in assimilating into the majority culture
- -- isolated from cultural, educational and/or employment opportunities
- -- having emotional and psychological problems which are not serious enough to require constant attention or institutionalization
- -- lack of motivation for obtaining an education or acquiring a job skill -- due to a combination of environmental and other factors
- -- dependency on social services to meet their basic needs
- -- lack of political power or community cohesiveness to articulate and effectuate their needs"

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[1]Barbara Kemp. The Youth We Haven't Served. American Vocational Journal, 1965, 40, 24-26.

It is not to be construed that the educationally disadvantaged youth fits neatly into one of these categories, but most often they will be in several of these categories and for some, probably in all of these categories.

2. Their Perceptions of Education and/or School

The topic assigned is educationally disadvantaged and is used as an adverb -- by means of education or from the viewpoint of education. This may be conceived as "education" or as "school." As Riessman[2] points out, it is education versus the school and that education is desired by the culturally deprived more than is generally recognized. If they want education, then we must examine our school practices and the attitudes of educators toward the meanings of education for this special group.

The middle-class citizen conceives the school system as emphasizing knowledge for its own sake. But this is not always the conception of the culturally deprived. They desire education for vocational improvement. Consequently, there is a wide gap between education and the school.

We do not really understand or really get to know the feelings and the attitudes of the disadvantaged youth by reading about them and their problems by reading Riessman's The Culturally Deprived Child, or Eells' et. al., Intelligence and Cultural Differences, or Hyman's The Values Systems of Different Classes, or Schulberg's What Makes Sammy Run. These vicarious experiences are a part of our own understanding, but we must do more, we need to have some first hand contact with disadvantaged youth to really understand them.

As a counselor educator I felt that it was incumbent upon me to try to understand how some of these "dropouts" perceived their educational and school experiences. I also felt that it was important for me to try to understand the role of a counselor with a group of educationally disadvantaged youth.

It was my privilege to participate in a program called Operation Second Chance made possible by a grant to the North Carolina Department of Administration from the Office of Manpower Automation and Training of the U. S. Department of Labor and the Area Redevelopment Administration at Lincoln County in the Piedmont. The central purpose of Operation Second Chance (OSC) was to train school dropouts for employment. Dr. Norman Chansky, Professor of Psychology and Research in our School of Education was the project director.[3]

It was the hope to teach the jobless a trade and to increase the level of technical competence of the unemployed. Employment status does not happen by change. Rather it is a logical outcome of training. The kind of training program and the degree of competence of the trainee, it is assumed, definitely affect employment, but employment as well as training may be related to personal attributes of the trainee. The more able might be expected to perform better than the less able tasks demanding more mental ability. The more cooperative worker might be expected to work better than the less cooperative at tasks like these in brick masonry. Stated another way, a trainee brings his individual attribute "mix" into the training situation. Elements within this "mix" are related to success in training. These elements plus success in training have a bearing on employment. Employment, however, hinges upon factors like job opportunities, personnel practices, and wage incentives; all of which are extrinsic to training. Some of the reactions found were (1) the dropout's view of the reasons and causes for early school leaving was quite different from that of his teachers and principals, (2) the absence of relevance of learning to the potential dropout's aspirations set the stage for him to become a nonparticipant in school, (3) the withdrawal was spurred on by student's and teacher's rejection because he does not feel a part of the school body, (4) we found he reads below grade level, he fails many subjects, he achieves little relative to ability, and participates little in extra-curricular activities, (5) he was greeted with hostility, pity had been extended to him, too.

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[2]F. Riessman, The Culturally Deprived Child. New York: Harper, 1962.

[3]N. M. Chansky, Untapped Good: The Rehabilitation of High School Dropouts.

The school personnel lack understanding of their special needs and problems, or they ignore them. They do not speak the same language of the school personnel. Certainly they were affected by the prevailing values in the schools, but they often do not have the economic resources, experience, background, or social values to gain them. They set up a verbal facade which becomes difficult to penetrate. This facade was adaptive because it permits them to maintain themselves in a basically unfriendly society. As one said, "If you try to do the work to pass, they would say that you are not trying." They found the OSC teachers more sympathetic and that they cared about individual students. The enrollee found OSC more satisfying than previous public school experience. A majority were excited that they could improve in reading, geometry and history.

As Riessman[4] points out in his chapter on The Slow Gifted Child, that he communicates on a different wave length and cites the deprived child with having the following characteristics:

1. Physical and visual rather than aural
2. Content-centered rather than form-centered
3. Externally oriented rather than introspective
4. Problem-centered rather than abstract-centered
5. Inductive rather than deductive
6. Spatial rather than temporal
7. Slow, careful, patient, perservering (in areas of importance) rather than quick, clever, facile, flexible (1962, pg. 73)

3. The Role of Guidance Services

Now that we have tried to understand how the educationally disadvantaged youth are perceived and how they perceive their public school experience, we may now turn our attention to the role of the guidance services in meeting the needs of disadvantaged youth.

Barbara Kemp[5] stated in a paper read at the recent American Vocational Association Convention in Miami that a survey had been conducted by the Guidance and Counseling Branch of the Office of Education of 109 counselors in 18 major cities revealed that many school counselors working in socio-economically depressed communities of low income families and/or minority ethnic groups have found more satisfaction, more sense of accomplishment, more appreciation, and more challenge than when they worked with youths more attuned to their own cultural value system.

It was interesting to note this finding on the part of school counselors because the school experience of the disadvantaged has been one in which he was the low man on the totem pole. To be sure, schools have been slowly developing programs to increase their holding power, and guidance services have increased, but have they met the needs of various special groups?

Changing school policies is easy enough. Correlating the newer school practices with the newer policies meets several obstacles. Practices once established tend through inertia to maintain themselves. Mentally the counselors and teachers reconcile their old ways with the newer policies. Changing the name of their activity, however, does not change the activity itself.

Counseling is no panacea. Alone it may help the student face life with greater equanimity. Together with the teachers and administrators and other school personnel such as the nurse, the social worker and the school psychologist, the school environment might be changed. Nor is it just a school problem. It is, in fact, a concern of the entire community because the student may be acting out in school problems caused elsewhere.

Clients conduct themselves in a manner to please the counselor. The trained counselor should be prepared for this. Also he should be prepared for counter-transference, or volleys of agression aimed at what he represents. In both situations he should not confuse the client's words with the spirit in which he speaks them.

The school counselor may help the youth face the unpleasant and speak about their fears. This would clear the way for the individual to develop more realistic aspirations for himself,

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[4]F. Riessman, The Culturally Deprived Child. New York: Harper, 1962.

[5]Barbara Kemp, Speech delivered at the American Vocational Association Convention, Miami, Florida, December, 1965.

to devise alternative paths to attaining his goals and removing frustrations, and behave harmoniously with others.

In a counseling situation, students will experience catharsis, to discharge bottled up tension. Frequently the release of this tension is sufficient to allow him to see his problems more clearly as well as the alternative solutions in perspective. Counseling may be supportive. Students have worked out solutions to their problems but are encouraged to actualize them after they have first checked them with an interested adult.

Vocational counseling is a primary need for this group. Through catharsis and supportive counseling it might help the individual to overcome the fear of being unsuccessful.

The counselor's day is more than the regular school day. It may be necessary to have evening office hours for the parents. Especially for this socio-economic group as it is almost impossible for them to come during the school hours.

Group guidance is an important technique and can be used effectively with disadvantaged youth. Gazda, Duncan, and Meadows[6] in a survey of "group" or "multiple" counseling found from a sample of 54 different senior authors that group counseling approximates a 'real life situation' and represents a small community of peers through which each member can 'test reality,' 'practice identification,' 'obtain feedback,' for the purpose of improving 'self-understanding' and 'self-acceptance,' understanding of others and acceptance of others or, generally speaking, improving interpersonal relations.... It also promotes the 'mutual sharing of ideas, problems, experiences and feelings' usually alleviating one's 'feeling of being different...and that group counseling 'facilitates the effective application of peer group pressure.'

One of the disadvantages listed was that this technique requires a more skillful counselor; for example, expertness in group dynamics and greater sensitivity. The majority of the respondents indicated that they had formal training in group work, but when asked to report on the type of group work, the majority mentioned it has been with college students. It would seem that in any training program for group guidance we try to make provisions for our trainees to have the opportunity to work with groups from the socio-economically disadvantaged as well as with college students. A few had worked with dropouts and potential dropouts.

Duncan[7] in a study of short-term group counseling on selected characteristics of culturally deprived ninth grade students, found in his sample that short-term group counseling made deprived ninth grade male students feel more free to report problems both in the area of home and family than do a similar group of females. Through this experimental approach he felt that group counseling was an effective means of having students to begin to deal effectively with some of their problems.

The technique of group counseling may be the "acres of diamonds" for constructive work with the educationally disadvantaged. Certainly it offers a good potential for further research.

4. <u>Some Suggestions for Guidelines for Research and Practice</u>

It is important for the counselor to work with vocational and technical educators to develop attitudes as to the worthwhileness of all types of work. In my opinion this will mean that we need to start in the elementary school. A number of studies have been made which will help us identify the educationally disadvantaged in the elementary grades.

We have already launched a research program for Shaping Flexible Vocational Behavior in Youth at North Carolina State University. The purposes of the program are:

1. To devise teaching and counseling procedures which befit resolution of certain crises in vocational education.

2. To link combinations of abilities, scholastic achievement, vocational interests, and work strategies to receptivity to generalist counseling and generalist technical training at two grade levels: five and eight.

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[6] G. M. Gazda, and J. A. Duncan, and E. M. Meadows. <u>Survey of "Group" or "Multiple" Counseling</u> Mimeographed, Unpublished manuscript, University of Georgia, Athens, Georgia, August, 1965.

[7] J. A. Duncan and G. M. Gazda. <u>Significant Content of Group Counseling Sessions With Culturally Deprived Ninth Grade Students.</u> Unpublished manuscript, University of Georgia, Athens, Georgia, August, 1965.

3. To link combinations of abilities, scholastic achievement, vocational interests and work strategies to age, sex, race, industry-agriculture ratio in a community, occupational responsibility of a parent, and status of place of residence.

4. To explore the viability of several ways to categorize human resources.

It is anticipated that programs to be developed will engage potential dropouts and potentially underemployed future workers in educational experiences which are personally relevant. Such training experiences alone will better prepare the disadvantaged for the world of work. Equally important, however, is this -- by becoming more involved in personally relevant school activities, students will more easily experience success. Their successes will generate and sustain motivation for school. Hopefully the result will be better educated and more competent working citizens.

To start with, the "attribute blends" of age, sex, and racial group will be surveyed.

1. What are the "attribute blends" of fifth, eighth, and eleventh graders?

2. Are the "attribute blends" of Negroes different from those of Caucasians?

3. Are the "attribute blends" of males at each grade level different from those of females?

4. Are there differences in the "attributive blends" between communities predominatly agricultural, manufacturing, and service?

5. Are there differences in the "attributive blends" of communities differing in economic status?

This research program is funded for 18 months and it is anticipated it will be extended two or three years more.

Other suggested programs might be considered are:

1. Studies have been made to determine the competencies needed by school counselors, college counselors, employment counselors, etc., and so we might add another. What are the educational and vocational competencies that will be required of vocational counselors in order to facilitate their work in meeting the need of educationally disadvantaged and the hard-core unemployed. One result of such a study would be the publication of guidelines for the preparation of counselors to serve in this important area of our society.

2. A number of demonstration projects such as Operation Second Chance and many other MDTA programs have been phased out. It is important that some follow-up studies be made to evaluate the programs and the individuals who have participated in these various programs.

3. The development of a sequential series of demonstrations, lectures, film strips, etc., to be used by various programs to help develop good work habits.

4. A research study to determine the level of visual perception of school dropouts enrolled in a training program in comparison to in-school students of the same educational level as that of the dropout. The purpose would be to study visual perception, especially the closure phenomena as a factor in academic achievement. (Higgins-Wertman Test: Threshold of Visual Closure, published by Hawk Associates, 31 South Lake Avenue, Albany 3, New York.)

5. A research project to develop a "measuring device" that could be used to ascertain the relationships between the study habits and work habits of the educationally disadvantaged. Such an instrument will have to be orientated to a grade level from three to six. We have such devices for college students and high school students.

6. A comprehensive study of the Impact of the School System Upon Occupational Choice. This might be a three pronged approach:

(a) The Role Theory of the Vocational Counselor (Neal Gross, Ward S. Mason, and A. W. McEachern, Explorations in Role Analysis, J. Wiley & Sons, New York, 1958). It could be approached from role clarity, role concensus and role conflict of the vocational counselor. Also the "role set" (Robert K. Merton, Social Theory and Social Structure Revised, Free Press, Macmillan Company, New York, 1957).

(b) A second segment might be the relations between cultural role definitions and the subjective role definitions of position incumbents.

(c) A third problem for study concerning the role of the vocational counselor is the functional consequences of his role performance. Broadly conceived, the question simply concerns whether or not the vocational counselor has any influence on the counselee.

Thus the study would concentrate upon (1) the actual behavior of the counselor; (2) the expectations held by those in such positions as principals, teachers and students; and (3) upon the effects of counseling upon student decisions.

In closing, may I say each of us speak effectively of our programs in the degree that others have confidence in us regardless of the level at which we work.

APPROACHES TO IMPROVING THE IMAGE OF VOCATIONAL-TECHNICAL EDUCATION

Moderator: William B. Logan

Public relations: Walter W. Seifert

Vocational education: Byrl R. Shoemaker

Sociology: Shailer Thomas and Ronald G. Corwin

Labor: Otto Pragan

PUBLIC RELATIONS: THE KEY TO UNDERSTANDING AND SUPPORT

Walter W. Seifert
The Ohio State University

Clement Attlee once made a perceptive observation that "The people of this world are islands, shouting at each other over seas of misunderstanding."

As life on this globe becomes increasingly complex, and miracles of science bring peoples closer together in a physical sense, in other very important ways we seem to grow further and further apart.

We all know this is true on the international scene, and most of us professionals are keenly sensitive to its implications in our highly specialized fields. Everywhere I go---to meetings of Physicians, Lawyers, Industrialists, and Educators, I hear the same complaint: "No one outside this profession seems to understand what we are trying to do, why it is vitally needed, and what we have accomplished."

My own profession, Public Relations, builds bridges of understanding between these isolated islands. We believe that public opinion is the ruling force in democracies, and that the people will favor "those who do good and see that they get reasonable credit for it."

That little word "see" is keenly important in this context. It alludes to the fact that you don't automatically receive public credit for your fine product or service. It underscores the truth that virtue is not its own reward in our modern highly-competitive society; that in the words of a Biblical injunction you must "Let your light so shine among men that they will see your good works." It was expressed in rather unacademic terms by this recent poem:

"The man who whispers down a well
About the goods he has to sell
Will never make as many dollars
As the man who climbs a tree and hollers."

Now please don't get the idea I am advocating that our Vocational Technical educators should spend half their time promoting what they do in the other half. A sound public relations program does not require anything like that. Nor does it postulate the heresy that "telling" is as important as the basic "doing." In simplest words, an effective public relations program is based on Performance Recognized, and we must never forget the performance is first.

One of the first considerations in planning PR progress is to recognize the fact that every institution and every academic discipline already has existing public relations. It is "the sum total of what all who know you think about you, feel about you and do about you." This image keeps moving up or down or stays where it is. A planned public relations program will pay heavy dividends, in my view, by moving your existing public image forward.

Justice Holmes and Brandeis, in their famous "Marketplace Decision" said that America makes its decisions day after day in the marketplace of public opinion. They referred especially to our various public forums, including newspapers, radio, television and the millions of back fence gossips that go on all the time. They said that each idea---such as Vocational-Technical Education---is entitled to a full and fair hearing before these formal and informal courts of public opinion. They implied that each proposition must be continuously and articulately represented to the American people or they will vote thumbs down. The also implied that no institution or academic discipline like Vocational-Technical Education can afford the luxury of silence;that those who draw their support from the people must report back to the people all the time.

This is why public relations has quadrupled in size during the 25 years I've been a practitioner. No hospital, no large school system, and no university can possibly escape this obligation to share honest, interesting information. That's why you'll find dozens of specialized people on this campus who spend their time promoting.

Those who fail to report their progress, and just hope for the best, give their critics the entire field. There are always trends that need explaining, questions that cry for answers, and achievements that ache to be told.

To get right down to your field, I submit this evidence as an outsider who has never studied in it, who mashes his thumb each time he wields a hammer, and who wishes he had at lease one course in motor mechanics:

Out in the marketplace of public opinion I've heard for years such statements as these:

"The best kids take the classical course. Only the boneheads take shop."

"Most shop classes in our big cities are largely custodial, to keep the brats from slicing up one another."

And, in recent months, I've often heard it said, "Now that computers will run most machines, we won't need workers anymore." (I always smile at that word "workers" because it carries the implication that management doesn't work.)

I suspect that each of you has logical answers to all of these questions, and I submit that you must speak up and out so your detractors do not speak without rebuttal. This is said in the firm belief that if you "give light" the American people will make good judgments.

In an effort to simplify the rather complex functions of public relations we have grouped them together in the mnemonic RACE.

The "R" stands for research---finding out what your problems are and postulating solutions.

The "A" means action---actually doing things that make news well worth reporting.

"C" is for communication---sharing honest information with all public concerned, so they will understand and favor the enterprise you are engaged in.

"E" completes the cycle with evaluation---ascertaining how well each phase of your public relations programs worked, how many people it reached, and what attitudinal improvements resulted.

At the risk of gross immodesty, I urge each person who wants to engage in public relations activity to take one or more of the professional courses now offered by certain leading universities like Ohio State. For those who find this impossible, I now shall summarize the highlights of the entire curriculum in a brief checklist:

1. <u>Research</u>:

   a. Have you established PR goals?

   b. Do you have a PR budget?

   c. Do you have a PR project timetable and/or flowchart?

   d. Do you know current industrial demands for Vo/Tech/Ed graduates?

   e. Do you study economic trends seeking favoring flaws?

   f. Are you an active member of your professional societies or just a member in name only?

   g. Have you pinpointed the nature and scope of each of the publics that affect the future of Vo/Tech/Ed.?

h. Do you have a planned action program to reach each of these publics continuously and favorably?

i. Do you know exactly what image of Vo/Tech/Ed. you want to transmit?

j. Do you occasionally "test the line" to learn why and how you get the students you do, and why you don't get others who seem logical prospects?

k. Do you follow the progress of your Vo/Tech/Ed. graduates in an effort to prove the value of your courses?

2. Action:

a. Have you the best possible "Product" or "service" to sell? (Vo/Tech/Ed.)

b. Do you encourage and recognize special student projects?

c. Do your people create dynamic displays for special school nights, county fairs, etc.?

d. Do your best students enter state and national competitions?

e. Do you publicize achievements of faculty and students in Vo/Tech/Ed.?

f. Do you speak on your subject to service clubs, freshman assemblies, etc.?

g. Do you involve industrialists in your classroom program as speakers and/or advisers? (An ounce of meaningful participation is worth a ton of cold printed words.)

h. Do you make "news" by tie-ins with special events like community Sesquicentennials? Holidays?

i. Do you prepare visual aids on your local program to make talk aand discussions more graphic?

j. When state or national Vo/Tech/Ed. leaders visit your schools or area do you help them make effective news? (Press-Radio-TV News Conference).

k. Do you organize and publicize field trips by students?

l. Do you see that teachers under your supervision plan, conduct and evaluate local public relations programs?

m. If so, do you organize and present PR workshops to help get the values of Vo/Tech/Ed. well-known?

3. Communication:

a. Do you have a regular program for interpreting and promoting Vo/Tech/Ed. to your present students? (Your best prospects are your present customers.)

b. Do you communicate the values of your field to prospective students? To your staff colleagues? To your school administrators? Your School Board? Your Parent Public? Your Industrial and Civic Leaders? Your General Public?

c. Do you send regular news and feature releases to your school papers?

d. Do you send releases to your local Press, Radio and TV, directed to the right reporters? Do you cover the weekly papers also?

e. Do you sometimes invite star reporters to come to your workshops and cover big stories first-hand? (Now and then on an exclusive basis, not divulged to others?)

f. Do you report your local accomplishments and trends to district, state and national professional publications?

g. Do you communicate with prospective Vo/Tech/Ed. teachers, to help secure the future of your profession?

4. Evaluation:

a. Do you analyze each PR activity from time to time to relate its value to your public relations goals?

b. Do you report on PR progress to your superiors?

c. Do you keep a PR scrapbook, showing positive proof of broad public contacts?

d. Have you ever compared PR results with previous years?

e. Do you evaluate social, political and economic trends plus psychological and academic "climates of opinion" to determine their affect on Vo/Tech/Ed.?

In concluding these necessarily brief suggestions, I'd like to close with a message from Dr. Harold H. Eibling, Superintendent of the Columbus, Ohio, Public Schools.

Dr. Eibling said this about school public relations in a recently recorded talk:

"The practice of public relations is both simple and complex. It is as simple as the daily application of common sense and courtesy, and as complex as pleading a cause in the arena of public opinion.

"Public opinion is important to us in Columbus. We have many publics which form opinions about Columbus schools--the Board of Education, teachers, employees, pupils, parents, service clubs, civic groups, churches, labor unions and industry. These publics will always form opinions of Columbus public schools---good or bad---whether we do anything about influencing their opinions or not. But they cannot form good opinions of Columbus schools if we hide silently inside our school buildings. The more our many publics get to know us, the more likely they are to have good opinions of us."

"Public relations thinking is a requirement for every successful administrator. Thomas Jefferson sounded one of the first notes for school public relations programs when he proclaimed, 'Educate and inform the whole mass of people. They are the only reliance for the preservation of liberty.'

"To meet this responsibility, education must be bulwarked by understanding and support. This is the job of public relations."

APPROACHES TO MODIFYING THE IMAGE OF VOCATIONAL-TECHNICAL EDUCATION

Byrl R. Shoemaker
Director, Division of Vocational Education, State of Ohio

During the years that I served as State Supervisor of Trade and Industrial Education, and then, in more recent years as Director of Vocational Education, members of the Vocational Education Staff have constantly pushed for the employment of a public relations person on a full-time basis as a part of the State Staff personnel. I have consistently resisted this push, because of the belief that the development of a good image for vocational education throughout the State would have little relationship to the efforts of such a public relations person.

During this fall, I have received by way of a clipping service, approximately eight hundred newspaper articles published in newspapers throughout Ohio. Not one of these articles was written by a member of our Staff or by members of local vocational education staffs. In all of those articles, only three could be counted as critical of vocational education.

Approximately ten years ago, when Ralph Howard was still Director of Vocational Education, we brought before our Division Staff some public relations and public information experts. All of them pointed up the values of good communications and the importance of using the various communications media. But, two things from this meeting have remained with me as techniques for developing a good public relations program. The concepts seem very simple, but, many of the important things in life are simple.

1. If your cause is just, fight for it.
2. Do a good job and tell others about it.

I believe that too often we confuse the concept of publicity with the area of public relations. Good publicity is desirable, but it is only a part of good public relations; perhaps it is the minor part of public relations.

I believe that in Ohio we have made a big step toward the development of a good image for vocational-technical education. Throughout Ohio discussions between school personnel and between school personnel and the business community are concerned not with "why" or "whether" vocational education, but, "how" and "when" vocational education.

I believe that our efforts over the past number of years have reached certain publics, and developed within those publics a good image of vocational education. I believe that school administrators throughout Ohio have a good image of vocational education, respect its place in the total curriculum, and are sincerely interested in implementing sound, comprehensive programs of vocational education. I believe that the majority of businesses and industries within Ohio believe in and are supporting the establishment of sound and comprehensive programs of vocational and technical education.

Through our survey services to local communities within the State, we have talked to thousands of representatives from labor, management, and the lay public. We have talked to thousands of people from areas of agriculture, business, distribution, industry, service areas, and homes, including the professions concerned with the development of post-high school technical education programs. Almost one hundred per cent of these groups and the people within those groups have supported the establishment of sound programs, as they have understood these programs. We have evidence, however, through voting at the polls this fall, that we have a need to improve our public relations with, or our image with, parents, uninvolved voters (as far as schools are concerned), and teacher groups.

There is an old Chinese proverb regarding coordinators of cooperative education programs, which goes something like this:

> "Coordinator who wears out seat of pants before he wears out soles of shoes is making contact in the wrong places."

Our efforts in improving the image of vocational education in Ohio might be characterized by the slogan:

"Have services to provide; will travel day or night."

Our tools have included:

1. Facts about employment.
2. Facts about enrollments within our high school programs.
3. Facts about drop-outs and actual college enrollments.
4. Facts about trends in employment.
5. Facts about student interest.
6. Facts about existing vocational programs.
7. Facts about the holding power of our vocational high schools.

Other tools have been aids, films and brochures, and laws permitting the development of sound programs. Our greatest tool, however, has been an able and dedicated staff in supervision, teacher education, and special services, working as a team within the Division of Vocational Education, but organized within the Division on the basis of the major services of agriculture, business and office, distribution, homemaking, and trade and industrial education.

Our basic technique in the area of improving our image has been based upon face-to-face meetings with as many groups of people as can be encouraged to listen to the story of vocational education. Our major service has been a community survey to assist areas to determine their needs for vocational and technical education. The surveys have required much time and effort and the involvment of every service within the Division on each survey. The result of the survey efforts are often slow in coming, and sometimes no results are noted even after a year or so following the survey action. Our staff, however, now recognizes our efforts in conducting the numbers of surveys throughout Ohio as being a prime factor in the improvement of the image concerning vocational education within our State.

The survey procedure involves such activities as administering a vocational planning questionnaire to all students in the tenth and eleventh grades of the school districts participating in the survey. It involves meeting with leaders from all the areas of the business community, including both labor and management, to obtain information from them concerning employment figures; employment trends; employment practices; and the important question of what would they be willing to support in terms of vocational-technical education in their community. The survey procedure, though simplified, takes a lot of Staff time. It is based upon helping a local community to make their own survey, rather than doing one for them. The focus of the surveys has been upon encouraging a number of school districts to go together to provide sufficient tax base and a sufficient student body to provide for a broad vocational and technical education program to serve both youth and adults. Each survey involves at least the following services from the Division of Vocational Education:

1. A meeting with the school administrators of the area interested in a survey by a representative or representatives of the Division of Vocational Education Staff.

2. A meeting with members of all the Boards of Education of the area considering a survey in which a representative of the Division of Vocational Education would explain the need for vocational education and explain the laws permitting the establishment of a joint vocational school district.

3. A planning meeting involving representatives of each of the Vocational Services and representatives from all school districts that would be participating in the survey, at which time assignments of responsibility are made to the local group.

4. The administration of a vocational planning questionnaire to students enrolled in the tenth and eleventh grades of the school districts participating in the survey to determine student interest.

5. A dinner meeting involving representatives from agriculture, business, distribution, industry, and homemaking to acquaint these groups with vocational and technical education and to obtain facts and opinions from these groups regarding the vocational education program to serve their area.

6. The writing of a final report by our Division of Vocational Education Staff. The publication of this report in sufficient quantity, approximately 400 per survey, to provide for broad distribution within the area surveyed.

7. A meeting with the administrators in the area surveyed to interpret the report.

8. Planning services from representatives from our Staff to assist school administrators to develop an operating plan for vocational education within the area.

9. Counsel and assistance in the organization of a joint vocational school district board, and procedures for presenting bond and operating levies to the public.

10. Advice and counsel on a building program.

11. Assistance in the organization and operation of the new program.

12. Financial assistance to local districts in the construction, equipping, and operation of the vocational education programs. Without this twelfth item, there would probably not be the other eleven.

During the 1964-65 school year, our Division of Vocational Education assisted counties or groups of counties to conduct sixteen community surveys.

Since the beginning of our survey procedure, which involves both our Division of Vocational Education and the Division of Guidance and Testing within the State Department of Education, we have conducted forty-four community surveys.

As a result of the efforts of our Staff in this survey service, fourteen joint vocational school districts have been approved by the State Board of Education and by the local Boards of Education involved in the jointures. Three of these jointures have voted their money to provide for construction, equipment, and operation of vocational education programs. Two of the three also have provided for post-high school technical education programs. Two of these three jointures are in operation; one of them serving nineteen school districts in five counties, enrolling 1,100 high school students, 225 post-high school technical students, and 500 adults in evening classes. Two other area schools within the State serving a number of school districts are in the process of organizing jointures.

This fall, however, the five joint vocational school districts which had bond issues and operating levies on the ballot lost their issues. This was in spite of full support by business, industry, chambers of commerce, school administrators, news media, etc. We believe that there are certain extenuating circumstances in Ohio which have affected the passage of these bond issues. The loss of the tax issues, however, points out that we must do a better job on our image with the individual voter and with teacher groups.

Recognizing our problem of communicating with groups, even when we are willing to travel any place, any where, at any time, we are developing three slide films and sound commentaries to be used as tools in informing the public of the need for quality vocational and technical education programs. The first film is completed. This film is intended to explain vocational education to the high school yonngster, to encourage him to make choices in terms of the future and to utilize vocational education programs in those cases when his future lies in employment in other than the professions upon graduation.

A second film is nearing completion which will be used to orient both high school students and students out of high school concerning the area of technical education. As I use the word technical education, I am speaking of the educational program planned to prepare people as para-professionals in two-year post-high school programs. This film will be completed in about a month, and will be used in conjunction with a newly developed technical education planning questionnaire in schools in an area where a post-high school technical program is being considered.

A third film will be completed within the next two months. The third film will be planned to provide an orientation to vocational and technical education for youth and adults for school administration groups, parents, people from the business community, or any other group that is willing to listen to the story of vocational and technical education.

Our Division also has made an effort to expand vocational education in those cities which can offer comprehensive programs on their own. The number of units of vocational education approved in the public schools of Ohio under the State Foundation Program has increased approximately twenty-five percent this one year.

A research study completed recently by the American Institute of Research investigated those relationships between vocational education programs in a local community and community groups, which resulted in more effective vocational education programs pointed toward the importance of:

1. Participation by vocational educators on a face-to-face relationship with community organizations.

2. Direct face-to-face relationships with representatives of labor to enlist their assistance in the organization and operation of a sound vocational program and the placement of the graduates.

3. Direct involvement of employment service personnel in the organization and operation of vocational programs on a continuing basis, rather than numerous, incidental contacts with regard to placing students that the school could not place.

The study would indicate that all mass communication media are important, with the newspaper perhaps being the first or most important media of communication. The study points up, however, that no area of communications is as important as face-to-face relationships with people.

The job of our Division of Vocational Education in improving the image of vocational education might be summarized as follows:

1. Assist local communities to operate sound vocational and technical education programs.

2. Get the facts concerning the need for the expansion of sound vocational and technical education programs.

3. Present these facts to school administrators, boards of education, the business world, etc., in such a manner as to encourage their interest in establishing sound programs of vocational and technical education.

4. Assist local areas to identify the elements of a sound and comprehensive vocational and technical education program needed to serve that area.

5. Help them to organize, build, equip, and operate sound programs of vocational education.

There is no magic formula, no quick solution, just hard work by dedicated and able people with the tools, techniques, initiative, and creativeness to do the job.

SOME COMMENTS ON THE STATUS OF VOCATIONAL EDUCATION IN THE UNITED STATES

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and
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The topic before this panel suggests that the field of vocational education has status problems. We, frankly, are not sure what the image or status of vocational education is, or if it is bad. Perhaps, however, there is a clue in the report of a panel of consultants, which noted, "In an over-crowded curriculum in overcrowded schools, however, vocational education competes in a never-ending battle for its share of attention."[1]

Even if the image of vocational education is not as favorable as vocational educators might like, we do not fully understand why they want more prestige. The prestige of a field is related to its attractiveness to potential clients--in this case students who could benefit from vocational education. It cannot be assumed, however, that increasing the status of vocational education is beneficial to the students. In fact, to elevate their status and their likelihood of success, many vocational programs have already set their entrance standards so high that the very students who could most benefit have been excluded.[2] Concern with improving the prestige of vocational education has arisen because of the attention now being given to training "talented" persons needed in the more prestigeful occupations.

Education in general has been slow to change, and to anticipate change in our society. It has perpetuated the status-quo. The fact that vocational education has not been identified with minority group causes, for example, has protected its prestige. Few vocational educators have refused to place students with employers who discriminate against Negroes, and few have encouraged the defiance of Negroes. In general few vocational educators have played prominent leadership roles in actively improving job opportunities and work conditions for minority group members. In identifying with the status-quo and middle class standards, vocational educators did not anticipate new opportunities and new openings which have arisen for Negroes in business and trades.[3]

Despite these reservations there are ways of improving the status of vocational education which will benefit clients. However, we are not excited about changing images; and we are especially reluctant to talk about changing the image of vocational education unless educators are willing to change their functions as well. There are two ways to improve ones status. One is to gain authority over a needed social function. The second is to identify vocational education with activities that already have prestige. These approaches will be illustrated by looking at two major points: (1) trends in American Society which affect education, and (2) changes in what vocational education teaches.

Some changes now occuring in American society will have an effect on vocational education. Since many of these changes involve the total political and social system, however, they will be difficult to influence. In this sense, changing the image of vocational education requires political pressure and more lobbying in Washington. While increasing the political power of vocational educators may seem to be a formidable task it will be more feasible and more valuable to you and our society than hiring a public relations expert to promote your image.

X [1] U. S. Office of Education, Education for a Changing World of Work: Report of the Panel of Consultants on Vocational Education, U. S. Government Printing Office, Washington, D. C., 1963, p. 206.

[2] Frances Keppel, "Vocational Education and Poverty" in Gordon (ed) Poverty in America, San Francisco: Chandler Publishing Company, 1965, p. 136.

[3] For example, see Is There a Job in Your Future distributed by the Job Corps under the Office of Economic Opportunity. The major stress of this pamphlet is job training, and the learning of skills necessary for full participation in American Society.

The field of vocational education will increase substantially over the next several years. There will also be changes in the field, its content, and the public that it appears to. Many of these changes, however, will be called by other names. They won't necessarily be referred to as vocational education. Let's consider a few illustrations.

There is currently a concern with poverty in this country. The educational emphasis on middle-class problems and curriculums has reduced the relevance of school for a substantial segment of the school-aged population. Due to the indifference of educators to the problems of the poor, a number of special programs with diverse purposes and overlapping jurisdictions have been initiated. Sometimes these programs are controlled by laymen only marginally connected with the public schools. Pressures to coordinate these programs and to establish some order will grow. Unless educators assume leadership in this field, there is the possibility that a system of education which is separate from the public school system will change. Currently, the leadership vacuum that exists in this area provides an opportunity for vocational educators if they are willing to gain control over educational programs for disadvantaged youths.

Many of those living in poverty lack both education and employable skills. As a result, the War on Poverty includes programs which are in effect vocational training. The Job Corps, for instance, involves the learning of occupational skills. In order to play a larger role in poverty programs, however, vocational educators must become experts on poverty. This means some revision in their training programs, and concentrated research and social action drawing on the social sciences.

Another change in the American society is reflected in the educational system: Federal support. Federal spending in the public elementary and secondary schools has increased from 1.8% (1940) of schools to 4.3% (1962) of the total.[4] Given the difficulties of financing school systems through the local tax structure, increased tax support will come from the federal government. We doubt, that the proportion which vocational education receives will be diminished. In 1963, Vocational education programs were the third largest segment of the programs administered by the U. S. Office of Education.[5] If new vocational programs involving preparation for new types of occupations can be developed this share may increase. Since a field's image is to some extent correlated with the amount of money that it has, the image of vocational education should improve.

The extensiveness of this change will depend, however, on the efforts and success of vocational educators to innovate, to develop new programs, and to be responsive to the national needs for vocational education, rather than to purely local or regional needs.

The adult education movement represents a third major development in American society. Training does not stop in secondary schools or soon after, but continues through a forty year period. In effect, vocational education is extended toward new parts of the population. Adult workers must continually return to school to update their skills and to prepare for changes in their occupations. Continuing education has become so necessary that certain professions require continuous updating of skill and credentials. Two of the professions in Ohio which require this updating are school teachers and medical doctors.[6] Continuing education is increasingly common in other occupations, including such extremes as business executives and firemen.

The shorter work week is upon us and the extension of education into occupations should produce not only a better educated work force but also relieve some of the boredom of not working. When we consider that several unions have negotiated for a thirty hour work week and six week vacations the problem of an abundance of leisure time seems closer. Education may take up the slack.

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[4]Statistical Abstract of the United States. Bureau of the Census, U. S. Department of Commerce, 1965, p. 123, Table No. 164.

[5]Ibid., p. 142, Table No. 195.

[6]See the requirements for the Ohio Academy of General Practice which requires 150 hours of University credit every three years in order to maintain good standing.

The implications of adult education are many. There will be no sharp dichotomy between school and work, the two being intertwined throughout a person's life. It will not be possible to relegate education to only the early years of a person's life. Updating of skills is particularly important when dealing with skilled and semi-skilled occupations. These occupations may not be in existence in 15 years. In this field of continuing education, vocational education can make its greatest strides--if it is prepared to move beyond its safe and traditional functions.

These are just some of the changes occuring in our society and in education which will affect the field of vocation education.

The second major aspect of this paper deals with what vocation education teaches. That is, the content of the field.

In the past, vocational education has consisted of learning specific job skills limited to one specific occupation or occupational field. In a mobile population faced with extremely rapid change it is impossible to anticipate exactly what skills are going to be needed in the next 40-50 years. For example, we wonder about a heavy agricultural orientation for a society in which only 6.5% of the labor force are agriculture workers. These changes will mean greater pressure to equip the work force with skills that will not wear out in a short period of time. Perhaps this is an obvious implication of well-known facts. It seems less obvious, however, that vocational education will turn to what may be called a general education. Vocational education no longer consists of teaching people to put a nut and bolt together. Nor is it restricted to blue collar or working class occupations, or a non-mobile population. It is found in many different occupations at different status levels, with different demands and job skills.

We should not assume that just because so called hard academic subjects are required for college, they are therefore unnecessary for anyone not going to college.[7] Some attempt is necessary to provide a generalizable set of skills that can be applied to a variety of occupational settings, a set of skills that would not restrict ones occupational mobility but facilitate it.

Vocational education programs can be put on a more theoretical basis. We don't mean that the field is not already on a scholarly basis. Rather we are suggesting that students can benefit from an analysis of occupations specifically oriented to the problems faced in the labor market. For example, knowledge of the fluctuating job market, more knowledge of the economic trends of occupations and contemporary social issues such as the right to work law or medicare, and the prospects of automation and leisure. Moreover, people can benefit from knowledge beyond mere technical facts, including information on the prestige hierarchy, styles of life, and leisure problems associated with different occupations. Emphasis on these broad trends might be supplemented with teaching about specific job-related problems, such as how to prepare an income tax return or a job application, where to apply for jobs, how to find jobs in other parts of the nation, problems in moving, and how to read economic reports on wage levels and standards of living costs.

Perhaps the long run implication of these developments is that the traditional distinction between academic work and vocational training is no longer appropriate. There are at least three reasons why we say this.

First, the entire society is assuming a more intellectual basis; the sheer fact of being a citizen is overwhelming in an era symbolized by something so abstract as the atom. In this computer-based society even economics can no longer be comprehended in the simple terms of debits and credits. It has been recognized that much academic training has an occupational objective but we have been slower to admit the reverse: that job training cannot be effective unless it is based on a strong academic curriculum.

Second, the composition of the occupational structure is in a constant state of flux. Between 1955 and 1961, a brief period of only 6 years, office and clerical jobs declined twenty-five percent.[8] There is a lag of unknown proportions between vocational education and the economy which results in the preparation of children for declining occupations in the job market. As Brookover and Nosow [9] have pointed out, vocational education for this kind of changing market, especially when it is geared to regional needs, may actually limit opportunities for mobility, compared to the potential provided by more academic training. This general training has to be successfully adapted to the situations and problems of lower class children. No part of the educational system including vocational education has accomplished this.

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[7]Keppel, op. cit., p. 133.

[8]See studies in Grace Graham The Public School in the American Community, New York: Harper and Row, 1963, pp. 151-154.

[9]Wilbur B. Brookover and Sigmund Nosow A Sociological Analysis of Vocational Education in the United States, Department of Health, Education and Welfare, Purchase Order No. SA-15284-62.

Third, and most important, is the fact that job career ladders are not organized around logically related functions or fields (such as the various jobs connected with metal working). Rather, career ladders consist of administratively determined families of occupations (the situs dimension [10])that include jobs as diverse as accountants and buyers. In the same way that engineering is often a stepping stone into administration, a typical career ladder in a factory might progress from truck driver to machine-lift operator, to dispatcher, to supply clerk, to warehouse manager. Consequently, substantial proportions of people prepared for specific fields of work such as metal working or merchandising are likely to abandon them even if the job market remains stable.

This shift to a more intellectual base, and the changing composition and structure of the job market, make vocational education in the traditional sense, suspect. However, the situation presents an opportunity to enhance the effectiveness and the status of the field--if vocational educators choose to broaden the traditional program and expand its now limited range of responsibility. Where vocational education programs often have been used as "dumping grounds"for unwanted students, that function could prove to be their strength provided that these students could be assisted more effectively. Perhaps that objective could be comprehended and the prestige of the field simultaneously increased, if the field were to identify itself with general education specifically adapted to this unique clientele. Both the condition of the lower classes and the prestige of vocational education will rise or fall together, depending on the type of program provided.

The development of a general vocational program will be handicapped by the fact that Federal funds are now allocated for specific vocations such as agriculture, home economic and distributive occupations. The preparation for the kind of job market alluded to seems to call for education for work and for leisure. Three components of such a program can be identified.

First, lower class youth can benefit from specialized academic programs of the type already suggested, that are adjusted to their level of motivation and designed to assist them with their problems as they define them. The curriculum could properly emphasize current issues, such as consideration of the implications of the sit-ins and demonstrations, medicare, or the significance of automation, and they could provide practical experience with politics. To be effective, they would have to service families rather than selected members. It might be more feasible to pay pupils to attend these schools rather than pay them only for routine labor.

Second, the curriculum might emphasize enlarging the avocational interests of adolescents (rather than narrowing them as extra-curricular programs often do). Whereas occupations traditionally have been the primary source of social status, the emerging leisure-based society is likely to alter this situation.

Finally, the program profitably could be reorganized to include various age groups. The present discrimination against married high school students, and the artificial separation of adults in need of education from existing programs from which they could benefit, have handicapped adult education and the continued education of dropouts.

As one point of caution, the way in which such a program is organized will influence its effectiveness. If the program is simply fused with existing programs, it is likely to be absorbed and controlled by more dominate parts of school systems. Clark's [11] study of a junior college in California illustrates how some vocational programs have been transformed into academic ones unless precautionary measures are introduced. A program could develop autonomy from the public schools with the aid of federal funds; however, this development would isolate it from the more prestigeful facets of education and would tend to segregate students enrolled in Vocational programs, and prevent them from transferring into more academic programs. The advantage of the program suggested here is that it is at once academic and pragmatic. It permits students to move in many directions with relative ease as both their interests and the economy change.

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[10] Paul K. Hatt, "Occupations and Social Stratification," American Journal of Sociology, 55, (1950), pp. 533-543.

[11] Burton R. Clark, The Open Door College: A Case Study, New York: McGraw-Hill, 1960.

One final point should be made. During this conference you may feel that you have been inundated with criticism about the faults of Vocational Education, the inability of the system to change and meet the changing American society, and the necessity to provide a general education rather than a set of skills that are quickly worn out. In addition, you may feel that all of these words of wisdom are in error since many of them come from the mouths of academicians who have been locked in their Ivory Tower. There can be no better support of some of the comments that have been made in this paper and in other talks at this conference than a careful reading of the New York Times of January 12, 1966.[12] Plans recently announced in New York City would convert the vocational high schools into comprehensive high schools stressing basic educational skills. Vocational training in the present Vocational high schools will be reduced fifty percent. Such reports from the countries largest school system indicate that the comments in this paper have solid foundation in current trends in our society. At least, these reports should encourage people concerned with vocational education to consider their role and function in American Education.

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[12]"City to End Vocational Schools," The New York Times, Wednesday, January 12, 1966, (special education supplement), p. 60.

THE IMAGE OF VOCATIONAL EDUCATION

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I

I would like to start the discussion with an introductory remark about the relationship of the labor movement towards vocational education. It may be interesting to know what the members and officers of unions think about vocational education. But, before we talk about it, we should understand that there is no single, uniform labor position when it comes to vocational education. We can see at least five segments in the labor force for each of whom vocational education takes a different meaning.

First, in our craft unions, whose membership is mostly made up of journeymen and apprentices, vocational education means primarily related training in their trades as part of apprenticeship training and up-grading. The second group comprises the members of unions who have completed a vocational high school before entering a career of work. The third group are those members of unions who have acquired their skills on the job, without any form of school preparation. In the fourth group are the members of unions who work in low-skilled occupations for which no or very little job preparation is required. Finally, the fifth group is made up of the culturally and economically deprived workers who work in unskilled and low-paying jobs, and many of whom are often underemployed or unemployed.

The workers in each of these five segments have a different reaction to what is bad or what is good about our present vocational education system.

Let me mention in this connection, that the American labor movement throughout its history has been always interested in public education and in training people for work. Beyond this general interest, it has been actively involved, for many decades, in shaping the policies for effective vocational education. I would like to emphasize that the basic concept of the American labor movement, as to the purpose of vocational education, is that all Americans -- not just those who belong to unions -- should work under the most advantageous conditions, educationally and economically, in occupations of their choice, in jobs available in the labor market -- at the present and in the future.

It is very interesting to find out what local labor leaders think about vocational education. I have a list of comments on this question, based on recent personal interviews. I would like to read to you some of their comments but I don't seem to have enough time. So let me summarize these comments:

Almost in all instances these union officers mention that vocational education is a second choice for those who fail in the general high school program; there are too few good students who seek vocational education; vocational education programs often overlook lesser skilled occupations; school administrators do not have much interest in vocational education; many school buildings are dilapidated, equipment is outmoded and teachers do not keep up with new developments and techniques; often the skills taught are determined by the requests of the employers and not by the demands of the labor market.

It can be easily seen that this empirical criticism is not far from the findings of many experts in the field of vocational education.

II

No doubt, it can be said that the image of vocational education among union members is not very good. However, I do not want to overemphasize this point because we know that the results of our vocational education system are better than its reputation. Its successes and failures and its strong and weak points have been described most aptly by the Panel of Consultants on Vocational Education and well known to this audience. I hope we also agree that the Vocational Education Act of 1963 provides the tool to build a system of vocational education and training in our communities and in our states which should respond to both -- the requirements of the labor market as well as the choice and the abilities of the student.

It should be pointed out in this connection that the U.S. Congress has passed training and education legislation every year in the last five years.

In 1961 -- the Area Redevelopment Act, providing for a new type of government-financed training and re-training. In 1962 -- The Manpower Development and Training Act, providing a vast program of retraining of the unemployed. In 1963 -- the Vocational Education Act, in 1964- the Economic Opportunity Act , the many-sided war on poverty, and in 1965 -- the primary, secondary and higher education acts, as well as the Appalachia Aid law that provides federal funds for the construction of vocational schools in the Appalachian states.

I think Congress has done its job, and has done it well. Congress has appropriated many billions of dollars for education and training. But, just as important, it has given to the federal, state and local governments a momentous mandate. This mandate in the area of vocational education and training can be summed up as follows:

1) To bring vocational education in line with our manpower needs;
2) To bring vocational education to all groups of our population -- to the young and adults, to the gifted and slow-learners, to the dropouts and the economically and culturally disadvantaged; and to provide equal economic opportunities to all American regardless of race;
3) To spend money for meaningful research and guidance and counselling;
4) To raise the levels of general education which is the necessary bridge to successful preparation for an occupational skill.

These are important new educational tasks. The governments on all three levels share the responsibility for carrying out these tasks. The local communities and the state agencies determine the needs for vocational education, establish the programs, build the schools, hire the teachers and work out the curricula. However, to be eligible for their share of the federal grants, the local and state school authorities must comply with certain standards set by the U.S. Office of Education.

Quite legitimately the question is raised to what degree has our vocational education system changed since the new Vocational Education Act of 1963 has been in effect. Are the programs in the communities and in the states meeting the directions of the new law? We really do not know. We have more area vocational schools. In some states students are being prepared now for some of the new occupations in demand on the labor market. New programs are being developed for training for the distributive occupations. Perhaps, we can speak with greater certainty about the training programs for unemployed workers under MDTA. We begin to obtain some insight into new trends and practices from the research projects funded by the U.S. Office of Education.

We should know much more by January 1968 when the Advisory Council on Vocational Education, to be appointed by the Secretary of Health, Education and Welfare, under the 1963 Act, will submit its report to the President and to the Congress. In my opinion, the review of this Council must become a vital instrument to measure the successes and failures of the implementation on all levels of the new directions Congress gave us in 1963 for vocational education and training.

III

The essential test before us now is: Will the states and communities take full advantage of the many federal programs adopted by Congress in the past five years? Will they adjust efficiently their systems of education and training to the present and future needs of our Society?

It is here where the whole problem of image and respect for vocational education rests.

Never before have the American people expressed such great faith in the power of education as they do now. Education is expected to prepare a person to earn a living. But, it is also education that is suppose to teach him how to live. We depend on education to solve the problems of racial discrimination, to eliminate poverty and to wipe out the slums -- all this by providing our people with exactly the right kind of training to fill the jobs of their choice at exactly the time they are available. The kind of vocational education which will achieve these goals is based on the simple concept of matching job and man within the framework of the realities of our present and future labor market. This concept provides: First, the majority of our young people will be prepared for work in school. Second, the school will prepare the young people not merely for an isolated, single occupation, but for a "family" of occupations in order to meet the requirements of the changing technology in our society; this education will be less job-oriented to satisfy the demands of an individual employer but occupation-oriented to satisfy the needs of the labor market. Thirdly, vocational education will be part of a comprehensive school system -- from the elementary school to the junior college; to place the students most effectively, this school system will work closely with all manpower agencies, including the Employment Service. Finally, curriculum, teachers and counselors will respond to both -- the demands of the labor market as well as the choice and abilities of the student.

IV

If we strive seriously to advance these goals, the prestige and the image of vocational education will be at the same high level as college preparation today. All parts of the world of work will be proud to do their share --the scientist, the engineer, the salesman, the craftsman and the laborer.

This type of vocational education can only be achieved by cooperation -- cooperation of the government of all levels together with the cooperation of the major parts of our society -- business, labor and agriculture. This cooperation can easily be realized in the activities of viable advisory committees on all levels -- nationwide, statewide, community-wide and ad hoc occupational and school committees. If the members of advisory committees will not be merely a post-facto rubber stamp for the actions of the school authorities, but equal partners in the development of policies and programs, this feedback will lead to the vitalization of vocational education.

Working towards improving vocational education will automatically improve its image and its reputation.

THE ROLE AND SERVICE RESPONSIBILITIES OF GUIDANCE COUNSELORS IN VOCATIONAL-TECHNICAL EDUCATION

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Introduction

There has been no major educational legislation passed since 1958 which failed to provide for guidance and counseling services. Yet, in none of this legislation has the Congress provided guidelines helpful in defining "guidance and counseling." As a result, responsibility for providing operational definitions has been necessarily assumed by those charged with administration of the various laws. Such operational definitions have usually been phrased largely in terms of expected results; it is not surprising that administrator expectations and counselor aspirations do not always coincide.

The administrator cannot avoid responsibility for making judgments with respect to benefits derived from funds allocated to guidance and counseling services. The counselor cannot avoid responsibility for determining and implementing what he considers to be appropriate guidance and counseling methodology. The common meeting ground for intelligent discussion between administrators and counselors would seem to lie in specification of guidance and counseling functions stated in terms of observable goals. What should the counselor do in order to fulfill his responsibilities under the Act? How can both practicing administrators and counselors evaluate effectiveness of guidance and counseling services? These are the two essential questions implied in the title of this assigned paper. Each must be answered.

Any set of perceptions regarding counselor role with respect to the Vocational Education Act of 1963 must be built on a vast number of assumptions regarding the role of vocational education in American Education, the kinds of students in vocational education, the changing nature of our total society - including the occupational society, the kinds of people employed as counselors, and the kinds of new research knowledge needed by counselors. I have previously published some of my major assumptions regarding each of these topics. Those interested in such assumptions should consult such papers as listed at the end of this one. To repeat them here in detailed form would be impossible in a time sense and impractical in terms of completion of this assignment. Therefore, while brief reference will be made to several such assumptions in developing the rationale for certain functions, no attempt will be made to elaborate on any of them.

Organization Of This Presentation

The Vocational Education Act of 1963 is specific in stating that vocational guidance and counseling is to be provided both to vocational education and to prospective vocational education students. (While the term "prospective" is broad enough to justify even elementary school guidance functions, the remainder of the Act makes it seem clear that vocational education funds are not to be used in support of elementary school guidance activities.) Further, it is specific in defining four categories of vocational education students: (a) Persons attending high school; (b) Persons who have completed or left high school and are available for full-time study; (c) Persons already in the labor market who need training or re-training; and (d) Persons who have academic, socio-economic, or other handicaps that prevent them from succeeding in the regular vocational education program. There is no doubt regarding who is to be eligible to receive vocational guidance and counseling under this act.

Furthermore, it is clear that vocational education for secondary students is to take place both in the comprehensive high school and in special vocational schools. Out-of-school youth (both high school graduates and dropouts) will find vocational education under this Act in special area vocational schools and in terminal vocational education programs located in junior college settings. Adults in need of training and/or re-training may find vocational education opportunities in any of these settings while, at least theoretically, separate residential schools will be established and operated under this Act for youth with special handicaps.

It is obvious that considerable differences in counselor role and function can be expected to exist for these various kinds of students and in these various kinds of settings. It is contended here that such differences as do exist will be more readily apparent in the methodology counselors use in implementing their role than in basic nature of counselor role. Therefore, this organization is intended to represent role and service responsibilities of counselors in vocational-technical education irrespective of the student population and the specific setting in which this role is performed. It is hoped that the sacrifice in specificity will be offset by the advantaged to be gained from this search for commonality.

Two additional preliminary points remain. The first consists of making clear that the counselor's job is to serve all students in the school. Therefore, in those settings where both vocational education and non-vocational education students are enrolled, this discussion speaks only to a part of the counselor's job. The second point to be made is that, for each function outlined in this paper, the counselor is viewed as only one person performing this function. That is, no claim is made that the counselor has sole responsibility for discharge of the function. If the administrator is dissatisfied with the extent to which he sees the function being discharged, he may look to the counselor for part of the answer. He will also have to look beyond the counselor to other forces both within and outside of the school for a complete explanation. One of the most unique things about a counselor's role is that there is very little that he does which is truly unique. The counselor's uniqueness is to be found in his relatively greater responsibility and greater competence. That is, most counselors are more concerned with the importance of what they are trying to do than they are with themselves. Their needs for personal recognition are not as great as are their needs for seeing that progress is being made towards the goals of guidance.

With this background, the question of counselor role and service responsibilities can now be approached. This presentation has been organized around an assumption that the counselor is perceived as an active change agent in our society. His influence on various segments of society will provide the basic organizational framework to be used here. An attempt will be made to largely ignore the methodology counselors use in carrying out these functions. That is a different subject.

The Counselor And Prospective Vocational Education Students

The potential of any educational program is limited by the quality and quantity of its students. The long range future of public school vocational education will depend to a very large extent on the kinds and numbers of students who choose to enroll. There is no doubt but what the counselor has a very significant set of functions to perform here. In performing this function, the counselor must work as a counselor - not as a salesman, persuader, recruiter, or coercer of students. Assuming that both counselors and vocational educators can agree to this basic methodology as well as the ultimate goal of securing adequate numbers of quality vocational education students, the following would seem to represent necessary and desirable counselor functions.

1. The counselor must seek to identify prospective vocational education students from some recognizable larger population. As part of Education, vocational education is properly pictured as different from rather than either generally superior or inferior to other parts of Education. This implies that, for some persons, vocational education will be "best" while, for others, it will not. There is no more point in talking about vocational education with an exceptionally high ability student from a socially prominent background where both parents are college graduates and the student himself is highly motivated towards college attendance than in talking with an extremely dull student from a culturally disadvantaged and economically handicapped background about his chances for success in college. While it may be philosophically proper to view all persons as prospective vocational education students, it is not operationally feasible to proceed in such a fashion. Some narrowing from the total population must take place. Once this is accomplished, the resulting pool of prospective students will still be considerably greater than that which would exist if students were left entirely to themselves in the decision making process.

2. The counselor must be knowledgeable and assist prospective vocational education students in becoming knowledgeable regarding alternative educational opportunities. This means that the counselor must be an active learner with respect to all vocational education opportunities in the local setting. It also means counselors must be equally knowledgeable regarding the other kinds of local educational opportunities and as knowledgeable as possible regarding educational opportunities beyond the local community. The goal here is for both counselors and students to extend their horizons of knowledge with reference to educational

alternatives available to students. This implies responsibility for collection, organization, and dissemination of educational information as important counselor functions. Moreover, it demonstrates basic counselor commitment to students rather than to vocational education programs.

3. The counselor must be knowledgeable and assist prospective vocational education students in becoming knowledgeable regarding alternative occupational opportunities towards which various kinds of training may lead. Section 5 (a) (4) of the VEA is specific in stating that arrangements will be made with the public employment service looking towards the receipt and consideration of information regarding employment opportunities in the local community and elsewhere. That is, there is clear responsibility for counselors to become knowledgeable regarding local employment opportunities twoards which vocational education training may lead. There is equally clear responsibility for learning about occupational opportunities beyond the borders of the local community. To the extent that adequate occupational information can and is supplied counselors by local public employment offices, counselors should welcome it and become acquainted with its basic nature and contents. There is no implication that occupational information should be limited to that supplied by the public employment offices. Neither is there any implication that, if the public employment office fails to supply the counselor with information, the counselor should simply do without. That is, the counselor must secure such information, become knowledgeable regarding its basic nature, and transmit it to students. He can use all the help others may choose to make available to him. If such help is not forthcoming, the counselor must actively perform this function more nearly on his own.

4. The counselor must be knowledgeable and assist prospective vocational education students in becoming knowledgeable regarding relationships between educational and occupational information. The current gulf between educational and occupational information must be quickly narrowed if counselors are to perform this function. It is becoming increasingly important to discuss occupations in terms of education and training required for entry. It seems eminently desirable for counselors to collate their educational and occupational information materials in such ways that their relationships become clear to both counselors and students. Some published information now available to counselors has been organized around recognition of this collating need. Most has not.

5. The counselor must assist prospective vocational education students in making educational-vocational decisions. Performance of this function demands that counselors work with prospective vocational education students at several times in their lives. That is, this function properly involves much more than simply making decisions regarding whether or not to enroll as a vocational education student. To limit vocational education funds to this very narrow counselor activity would be poor use of both available monies and counselor talent. Decisions regarding enrollment as a vocational education student should properly represent only one of the several points in vocational decision making where counselors help students. Furthermore, the criterion to be used by administrators of vocational education programs in assessing counselor effectiveness in performing this function cannot be simply one of numbers of students enrolling in vocational education. Rather, the criterion must become one of the proportion of students enrolling who have really chosen to do so and are aware of the bases for these decisions. A second criterion may consist of the proportion enrolling whose chances for success in vocational education appear reasonably good. The criterion of increases in numbers of students enrolling in vocational education programs will, if the counselor is performing this function well, be appropriate to use in a global evaluation of vocational education offerings in the school but not as a means of evaluating counselor effectiveness. That is, whether or not more students enroll in vocational education should be a function of the relative quality of this as opposed to other educational opportunities available to students.

In summary, perhaps the best way of describing the counselor's function with prospective vocational education students is to state that he should be truly honest in his relationships with such students. This is important to say, trite as it may sound. Vocational education will be best served in the long run if counselors devote their time with prospective vocational education students to presenting as comprehensive a picture as possible both with respect to the student and to his educational-occupational opportunities along with professional assistance to such students in the decision making process.

The Counselor and Vocational Education Students

To assume that students have received adequate counseling and guidance prior to enrolling in vocational education is not to assume that their needs for counseling have been fully met for all time. It is expected that a great deal of counseling and guidance will be needed by

students enrolled in vocational education. As with any other counselees, the goals of this counseling should be primarily developmental as opposed to preventive or remedial in nature. The hoped for end product will be individuals who are better able to assume self responsibility for decisions reached and better able to choose wisely from among alternatives available to them.

There is no reason to suspect that the range of normal counseling problems will be different for vocational education students than for any other students. At the same time, there are certain kinds of normal student problems which the counselor should be particularly cognizant of when dealing with these students. This section has been organized around such expected problems of students.

1. The counselor should help each vocational education student see himself as a worthy and worthwhile member of society. Even the best of counseling prior to entry into vocational education cannot be expected to solve this problem for many students. General cultural and societal biases are too strong - biases which will cause many students to regard themselves as "second class" students who have made "second best" choices. It is much easier to say that vocational education represents the best choice for a particular student than to have the student (or many counselors) really believe this to be true. One ingredient essential for helping people realize they are worthwhile is that they believe what they are doing is worthwhile. If the student is to feel important, he must see that what he does is important. The counselor cannot ignore this student need nor fail to accept responsibility for helping vocational education students with these problems associated with development and maintenance of a positive self concept.

2. The counselor should help each student in the process of educational-vocational development. No amount of counseling with a student prior to his entry into a vocational education can really lead the student to know what it would be like to be in the program. This realization must come as a result of his direct experience as a vocational education student. Any program which operates in such a way that no student doubts the wisdom of his decision to enroll is probably suspect. Professional counseling is called for at those points where students are questioning the wisdom of their educational-vocational decisions. The student should expect counseling assistance at those points where relationships between his educational experiences and anticipated occupational choices are unclear to him. Further, he should expect counseling assistance where he is trying to confirm or refute the vocational decisions which led him to enter vocational education. Again, these are not events that occur at a particular, specific point in time and need to be dealt with only once. They are part of educational-vocational development and can be expected to occur with many vocational education students.

3. The counselor should help each student plan and implement actions to be taken following vocational education training. For most students, this will involve activities related to job placement. The fact that the VEA makes it possible for schools to transfer student information to the public employment service for use in occupational guidance and placement does not relieve the vocational education institution from job placement responsibilities. With some students, the counselor's activities may consist almost entirely of helping the student establish relationships with public employment service counselors. With many, the counselor will work with students who seek employment independently of the public employment service. With still others, the counselor's activities may consist of helping the student plan for still futher training in a different type of educational program. The counselor has a responsibility for helping all vocational education students plan some concrete actions following the time the student completes or leaves the training program.

The Counselor And Teachers Of Vocational Education Students

If the goals of guidance in vocational-technical education are to be accomplished, it is essential that teachers of vocational education students be active participants in the total guidance program. The counselor has certain professional leadership roles to play in helping teachers fulfill their guidance responsibilities to students.

1. The counselor should assist teachers of vocational education in learning more about the students they teach. This includes both the presentation of student information to teachers and helping teachers accumulate such information for themselves. Some of these activities will pertain to groups of vocational education students, but much will be concerned with attempts to

learn more about and so understand better individual students in vocational education. The expertise of the counselor in student appraisal methods and procedures should be shared with teachers of vocational education students.

2. The counselor should assist teachers of vocational education in incorporating pertinent occupational information in their course content. Occupational information collected by the counselor should be as available to teachers of vocational education students as it is to the students themselves. The counselor can and often should act as a liaison between the vocational education teacher and business, labor, and industrial personnel in the local community. While the teacher will likely have many such contacts of his own, the counselor should be able to help him extend both his range of contacts and his range of influence.

3. The counselor should assist teachers of vocational education in their attempts to provide guidance and counseling to students. Assisting teachers in developing plans for taking individual differences into account is one example of this kind of activity. Obtaining information for teachers which teachers need in their counseling of individual students is a second example. It is perfectly reasonable to expect that some vocational education students will be both more willing and more able to talk their problems over with one of their teachers than with a counselor. It is equally reasonable to assume that the counselor may be a valuable consultative resource for the teacher in such situations. Still a third example would be counselor activities supporting placement efforts of vocational education teachers on behalf of students.

In all of these kinds of activities, the counselor can prove himself to be a valuable source of consultative help to the vocational education teacher. If vocational education students are to receive maximally helpful guidance, it will be recognized that a two-way consultative relationship exists here. That is, the vocational education teacher will serve as consultant to the counselor fully as often as the counselor serves as a consultant to the teacher.

The Counselor and Administrators of Vocational Education Programs

In any given local setting, counselors and administrators of vocational education will find a wide variety of innovative and unique ways of working together in the interests of vocational education students. The following ways in which the counselor serves as a change agent through relationships with administrators are illustrative only of minimal activities which should exist in all school systems.

1. The counselor should supply the administrator with basic bits of information regarding students holding implications for the structure of vocational education. Normative results from standardized tests, group summaries of personal history data, summaries of student vocational plans, and results from follow-up studies of former students are illustrative of the kinds of information involved in this activity. Such information, collected as a routine part of data needed by the counselor in performance of his guidance duties, may in many cases serve the administrator in formulation of broad school policies, in public relation efforts, and in gross evaluations of program effectiveness.

2. The counselor should supply the administrator with basic facts regarding labor market information. As with appraisal data, such information is collected by the counselor for guidance and counseling uses. This same data can serve a most useful function to the administrator concerned with problems associated with curricular changes required to meet continuing occupational changes both in the local community and elsewhere. Where such information is combined with results from student follow-up studies, the administrator has the further advantage of knowing something with respect to differential weighting to be given to local as opposed to state, regional, or national labor market changes.

3. The counselor should supply the administrator with basic bits of information obtained from prospective vocational education students who failed to enroll as well as those who did enroll in vocational education programs. Such information will allow the administrator to improve his judgments regarding the potential need for vocational education as well as make certain kinds of assessments regarding the extent to which needs for vocational education are being met.

In at least these three basic ways, the counselor is seen as an active change agent through information he supplies the administrator. It should be noted that the counselor has not been pictured here as a determiner or maker of either curricular or more general school policies.

(For example, he is not a selection officer responsible for admitting or denying admittance to prospective students.) Rather, he serves as one of many resources the administrator calls upon in his policy-making deliberations.

The Counselor And Employers

The counselor should not function as a job placement officer, for, to do so, implies certain commitments to prospective employers holding potential for interfering with the counselor's primary commitment to students. In spite of this, there are certain very important counselor activities with employers which should be carried out by those counselors seeking to serve vocational education students.

1. The counselor should seek to involve employers in the vocational guidance program of the school. Such specific activities as employer participation in community occupational surveys, employer talks to groups of students in the school, and student visits to business and industry are illustrative of ways in which this function is commonly performed. The counselor must be concerned with obtaining both employer support and participation in activities such as these.

2. The counselor should seek to make employer needs for workers known to students and student needs for jobs known to employers. This includes both the kinds of part-time jobs students often find while going to school and the full-time jobs students hope to secure upon completion of training. This dual collection and exchange of information holds potential both for decisions students make about employers and decisions employers make about students. The counselor can function effectively as a means of encouraging students and employers to meet without directly recommending either to the other.

3. The counselor should supply prospective employers with specific bits of information requested by employers providing the student agrees to its release. In some vocational education settings, a formal placement office will be established. In others, no such office will exist. In either event, the counselor's responsibility for release of student information is the same, i.e., no information is released to employers without the express consent of the student. It should be noted that the counselor does not and cannot feel a similar responsibility to keep employer data confidential from students. The counselor should give the student any information about the employer which appears to hold promise of helpfulness in decisions being considered by the student. This kind of function is illustrative of specific reasons why the counselor should not function as a job placement officer.

The Counselor And The Community

The counselor must see himself as functioning outside the school setting as well as with students and staff in the school. In addition to employer relationships just discussed, there are two other important kinds of counselor activities which should be specified.

1. The counselor should work actively with others interested in meeting the guidance and counseling needs of youth. The school counselor has no corner on concern for counselees. If the needs of youth are to be met, the school counselor needs the help and services of many people. Included among these are other counselors such as those located in public employment, vocational rehabilitation, religious, community mental health, and recreational settings. The school counselor's relationships with such other counselors will depend on their mutual qualifications and professional confidence each develops in the other. In addition to others who may properly be regarded as part of the broad counseling and guidance movement, there are a host of others in any community interested in and dedicated to a concern for youth. Included among them may be representatives of social work agencies, service clubs, religions organizations, and business and professional organizations in the community. The counselor has a responsibility for working with all such groups and individuals in the interests of vocational education students.

2. The counselor should seek to become an active change agent in the community in terms of community perceptions of vocational education and students in vocational education. If the counselor doesn't believe in vocational education and its students, he should seek to serve students in other settings. If he does believe in vocational education and its students, he should seek to transmit this belief to a wide range of others in the community. This can be done best through presentation of facts collected by counselors from students enrolled in vocational education and from students who have completed vocational education programs. It is the counselor's responsibility to transmit such facts beyond the walls of the school. In too many communities, the vocational education student and prospective vocational education student hears negative comments made about vocational education from many sources. Such comments and the attitudes which generate them have a depressing and demoralizing influence on those students who express an interest in vocational education. They are unfair to the student who is trying to

make rational decisions and to vocational educators who are trying to meet his needs for job training. The professional counselor cannot simply allow such community attitudes to continue to exist without making some attempt to alter them. By this, it is not implied that the counselor should seek to combat one bias with another. In addition to being basically unethical, such an approach would probably be quite ineffective. Instead, it is the counselor's job to produce the kinds of evidence - facts - truth - which hold potential for changing such community attitudes. When such facts become known to the counselor, he should use a variety of means - including school publications, speeches, and community mass communication media - for making them known to all members of the community.

Summary

An attempt has been made here to picture the role and service responsibilities of guidance counselors in vocational-technical education through specifying general activities in which counselors should engage. Each function has been stated in the form of goals which should be attainable to some extent in any vocational education setting. By stating functions in this manner, it is hoped that both counselors and vocational educators will be in a better position to evaluate effectiveness of guidance in vocational-technical education. That is, each goal function listed can be translated in terms of a criterion for use in evaluation.

Some progress can be made towards attainment of these goals in any setting. None will be attained fully if the counselor is seen as the only person performing a guidance function. Each of these goals is stated in such form that evaluation can be based on progress towards reaching the goal rather than in terms of its absolute attainment. That is, none of these goals has a perfection point which represents a final achievement. Special stress has been placed on avoiding a discussion of counselor methodology in progressing towards these goals. It is anticipated that well prepared and dedicated counselors will find a wide variety of methods and procedures for use if the goals themselves are accepted.

If this paper has any positive contribution to make, it will be in helping vocational educators and counselors decide together on answers to the basic question of why guidance personnel should be supported with vocational education funds. If agreement can be reached on this question, then the perceived importance of these goals will play a major role in other basic decisions required for the establishment and maintenance of effective working relationships between counselors and vocational educators. It is time we progressed in this direction.

Reference To Supplementary Writings Of My Point Of View

1. "Needed Counselor Competencies in Vocational Aspects of Guidance." Paper presented at the Arlie House Conference, George Washington University, December 13, 1965.

2. "Education As Preparation For Employment." Paper prepared for the Presidents Commission on Automation and Technology. October, 1965.

3. "The Challenge of Guidance to Vocational Education." Paper presented at the American Vocational Association meetings. December, 1965.

4. "New Challenges For Guidance In Vocational Education." National Association of Secondary School Principals Bulletin, May, 1965.

5. "High School Guidance And The Specialty Oriented Student Research Program." Vocational Guidance Quarterly, Summer, 1965.

6. "Communicating Guidance Information To Specialty Oriented Students." Audiovisual Education, January, 1965.

A REACTION TO HOYT'S PRESENTATION ON "THE ROLE AND SERVICE RESPONSIBILITIES OF GUIDANCE COUNSELORS IN VOCATIONAL-TECHNICAL EDUCATION"

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I have the advantage of having had a copy of Dr. Hoyt's talk for about a week. I have read it several times; each time I found connotations which didn't appear in previous readings. As a consequence, I am sure you who have heard the talk only, will not grasp all the implications which you will when you see it in print. This makes me wonder whether we can come to any kind of an agreement here this morning.

It seems to me there are two major factors which we must consider - and I have heard them mentioned several times during the meeting - (1) you organize everything possible that is mechanical or repetitive in nature; so, (2) you have time for human factors. If we can use computers; if we can reduce mechanical factors to formulas, then time saved can be devoted to personal needs which, at least today, are still uncertain.

Yet, we have evidence that certain pills may change the learning ability of a person. An article in the Chicago Tribune explains how scientists can take an embryo from one animal, plant it in another, and watch it grow. What the future holds in understanding of personality could change our whole approach to counseling. However, my assignment is to react to what Dr. Hoyt has said. I agree and I am sure everyone will agree with Dr. Hoyt that vocational administrators and counselors will have points of view that vary with their personal experiences and the particular economic, social or geographic setting in which they serve. Every community is somehow unique; we cannot take per se what succeeds in one case and transfer it to another with the same effect. My work in vocational education in four distinctly different communities convinces me that this is true.

However, one statement Dr. Hoyt made is a universal: "the potential of any educational program is limited by the quality and the quantity of its students." Applied to vocational education this doesn't mean that great numbers of students must be counseled into every vocational course. It doesn't mean that all students must have IQ's of 130. What it does mean is that the number of students and their ability must be reasonably related to the demands of the labor market.

Some of our great men in vocational education, particularly Prosser and Allen, used very simple statements to define what vocational education was intended to do. Dr. Prosser said that the purpose of vocational education is "to help a man to get a job, to keep a job, or to improve on a job." It cannot be stated more directly. This is the counselor's function in vocational education - to help a man to get a job, to keep a job, or to improve on a job. Surely, vocational educators and administrators must agree that any role assigned to a counselor must be consistent with and related to these purposes.

The functions must involve relationships with prospective vocational students, enrolled vocational students, teachers, administrators, employers, and the public as a whole, as Dr. Hoyt has outlined. The same facts about vocations must be known whether the potential student is in high school, a dropout, an employed person who is upgrading, or one who has a handicap. It is necessary to know what a person does, what he must know, and the social skills needed to function effectively in a specific occupation. The counselor relates this knowledge to the person - his capacities, interests, and opportunities. He must use many techniques. One way of looking at occupations is Thorndike's breakdown into abstract, social and mechanical intelligences.

We need a common professional language. The various disciplines involved in vocational education, including the counselors, the psychologists, the sociologists and others have languages of their own which do not promote effective communication. To illustrate: There is a book in the library at Columbia University which was one of the first efforts to explain supervision in education. It contains a story in which a supervisor entered a classroom and asked the teacher to teach a lesson. The teacher said to one of the little children, "What is that plant over there?" The student replied, "That's a feather." Truly, a fern does look like a feather.

Actually, terms used within a discipline may be misinterpreted or have a different meaning in another discipline. Whether you call it a fern or a feather is immaterial but, terms must mean the same thing to parents, practical vocational educators, and counselors. This is one reason why all must function as a team.

Some influences have prevented realization of the best results from guidance. Among these is the negative attitude toward vocational education. Otto Pragan's dilemna of last night, "Do you refer to a bottle of Scotch as being half empty or half full?" states the case. Too often we say, "What's wrong with vocational education?" Why not say, "How can we further improve vocational education?"

Too many speakers, I think, have had limited experience with vocational education. The cases they contact are most likely the problem cases. We who are engaged in vocational education are aware of its weaknesses and its great values. It's time to realize that the bottle is "half full." Another statement that always amazes me is the idea that vocational students think they are second class. I don't know any vocational students who are enrolled in good vocational programs who think they are second class. In fact, I have seen positive evidence that the vocational student in a good school actually feels superior.

The crux of the whole problem is lack of variety in vocational offerings. Frequently, the counselor is frustrated. He may know that a student has special talents but the appropriate education or training just isn't available. Consequently, some substitute program is arranged. There is then no real basis for evaluating the judgment of the counselor or what success the student might have had. The solution is in the development of the area vocational schools or centers where a great many vocational education opportunities can be provided. This variety must be available if counselors are to be successful in referring people with varying talents to appropriate programs.

Again, I think there is too much emphasis on classifying students as vocational or college preparatory. There isn't any real justification for such a division. I am not sure that I disagree with Dr. Hoyt, I may be calling his fern a feather. The only valid and functional approach a counselor can take is to care for and recognize the primacy of the individual. About the same time that I received Dr. Hoyt's paper, I also received Edgar Dale's Newsletter (December 1963) in which he says, "To care deeply for persons is to see them not as plumbers, scientists, clerks, lawyers, mathematicians or as white, yellow or black. It is to see them as unique individuals." This is the root of the counselor role.

I remember such a counselor - Emily Griffith. She was a tiny woman, not quite five feet tall, but when she entered a room she was the center of attraction. For many years she was both principal and counselor at the Opportunity School in Denver. She inspired people, she made them feel worthwhile, and she changed "I can't" to "I can."

Emily Griffith used to say, "I wouldn't store the records for the school in a shoe box under the stairs - if we had any other way to do it, but I'm not going to take the time away from people to keep records." In the counselor's role the individual is important. Emily Griffith's kindly assurance, "You can do it" typifies this role.

There are too many examples of success through the vocational approach to education to justify classification of students according to academic achievement. Some years ago, in Kansas City, the personnel director of a large company, said he had concluded that they would no longer select engineers to handle trouble shooting problems in automation. He said, "A skilled man has special abilities. In a trouble shooting situation the trouble shooter is asked to make judgments, decisions based on incomplete data in a difficult-to-define situation where time is of the utmost importance." "I am sure," he said, "in my own mind, that the trouble shooting technician is not somebody who was too dumb or too poor to have obtained a technical degree, he is an expert, taking second place to nobody."

I think there is a great force which is constantly cataloging, classifying, and assigning us to areas of operation - not necessarily specific jobs, but areas. The abilities and interests begin to show in the elementary school student. I agree with Dr. Hoyt that it is unfortunate that no provision is made in the Vocational Act of 1963 for guidance in the elementary school. Through organized counseling we could assist in discovering the interests and abilities of youngsters and to encourage their development.

Counselors need to identify and classify interests and abilities according to broad groupings or clusters of occupations. In Gary, we have been exploring a system of clusters as a basis for vocational guidance in the junior high and elementary school, and for curriculum development in the area vocational-technical school. I have about fifty copies of some material that will describe it for you who are interested.

Briefly, the ten clusters are: Building Construction and Maintenance, note that we have added maintenance; the common thread that runs through all of these occupations is the physical construction involved in the original structure and fixtures, and the subsequent care of them. Business and Commerce is the second cluster; the common thread that ties these occupations together is contact with the public in promoting distributing, accounting and reporting. The Communications field includes all of the graphic and performing arts; the common thread involves transmission of ideas and information. The Extractive Industries are concerned with the production and/or conversion of material resources found in the earth or produced therefrom. The Health and Personal Services cluster includes occupations concerned with the care and improvement of personal health, appearance, nutrition and the general well-being of people. In the Marine Trades we are concerned with the construction, operation, and maintenance of ships and boats of all sizes. Mechanics and Metal Working occupations are tied together by production, maintenance and repair functions involving metals of all kinds, sizes, shapes, types, alloys and finishes, and use of test and power machine tools. Protective Services has the common thread of protection of people and property. And, in Technology we are concerned with electro-chemical and mechanical fields; with the combination of applied science, math, design, mechanics and instrumentation. The Textile and Leather cluster involves use and care of various kinds of fabrics, leather, fur and findings. We have not included professional occupations but they can be classified in these same ten clusters for counseling purposes.

We have had some opportunity to apply this cluster system. Last summer we had some 480 13-15 year old youngsters in a "Preview of Occupations" program. Each student observed at least three or four different types of businesses in each of the ten clusters - at least forty different types of businesses and many different occupations. The evaluation has not been written as yet, but a quick comparison of occupational choices at the beginning of the program and after it was over has been made. The results indicated that while students switched from one occupation to another, changes were within a cluster. For example, a student might choose carpentry and later choose bricklaying. We believe this cluster system will make it possible to relate talents observed at elementary and junior high school levels to occupational interests and vocational education programs at the high school lebel. It is unrealistic for one-third of a student body to choose professional occupations in which only 12% of the people are actually engaged. Conversely, when 29% of the labor force is involved in the Metal and Metalworking industry in a community, an expression of interest by only 7% of those preparing for the labor force is also unrealistic. The counselor must choose appropriate media in assisting the student to make appropriate vocational choices.

Another factor referred to in Dr. Hoyt's paper is the division of responsibility. Here, again, I may be calling his fern a feather because there are many different kinds of situations, and he has deliberately said that we are merely defining the functions of a counselor. But, I find that many of the functions he has defined are in reality the functions of the vocational coordinator. I think the counselor-teacher relationship should be reversed; the teacher should be keeping the counselor informed. It is difficult for teachers to keep up with their occupations - let's not limit their responsibility. Neither should the counselor relieve the vocational coordinator of his responsibility to find out what the needs of business and industry are and to organize the program in relation to them. We need to clarify these relationships because in the long run a counselor cannot possibly be an expert in all occupations.

Dr. Hoyt's list of functions visualizes the counselor as an active change agent in the community. He envisions the counselor as a staff person with the basic responsibilities to assist the students and to serve as a resource for others. I don't think anyone should argue with that concept. As a vocational educator, I think most of his statements are correct and perhaps all of them would be in some situations. However, as opportunities for try-out training increase, students should need less assistance in choosing an occupation and more emphasis may be given to the less tangible personal problems which arise in people's lives.

I think, finally, that attention should be given to identifying those factors in guidance and counseling which may be classified as mechanical - repetitive operations calling for little judgment - so the professional counsler may devote his entire time to the human, intangible, and frequently unpredictable problems which cannot be organized.

GUIDELINES FOR PRACTICE

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I consider it both a privilege and a serious responsibility to be asked to serve as one of the summarizers of this very comprehensive conference. You should be informed, however, that among other shortcomings, I have an uncanny ability to create dilemmas for myself. Thus it was, in preparing last evening for this final session, I was confronted with the uncomfortable realization that during the past three days I had dutifully taken down not only everything the speakers said, but everything they should have said as well! The considerable material to be absorbed in such a limited time period and the high expectations held for the outcome of this conference have made me, in this assignment, feel a little like the "shotputter who backed into the javelin-thrower and ended up making a record for the broad jump!"

It is helpful, I think, to consider the ideas brought out in this conference against a backdrop of the past. A brief excursion into the history of guidance in this country is all that is necessary to discover the common heritage which exists between this movement and that of vocational education. In the beginning, guidance was primarily vocational in nature. Occupational information, one of several tools in the counselor's armamentarium of techniques, received impetus in the year 1906 in the work of the National Society for the Promotion of Industrial Education. At that time, an awareness of the need for occupational studies grew out of attempts to develop a curriculum for industrial art. Later, with the passage of the Smith-Hughes Act of 1917, the guidance aspects of vocational education became more firmly set. The marriage was formerly recognized in 1946 with the passage of the George-Barden Act, an act which permitted federal support for guidance in vocational education.

Now, like the history of so many marriages, the early years often prove difficult, as each partner with a personality of its own, each different from, yet similar to the other, strives to determine that which it can give to the other, without in the course of doing so losing its own professional identity. Fortunately, we have in the Vocational Education Act of 1963, a reaffirmation, in the public mind at least, of the goodness of this marriage. But this comes at a time when the world in which we live is undergoing a major upheaval, and the two marriage partners are experiencing almost overwhelming pressures to change. The problem is further compounded by the fact that change is often experienced by the two partners in dissimilar ways.

In order to help us understand how change is affecting us and, at the same time, cement the vocational education-guidance relationship, we choose finally to invite in behavioral and social science consultants. This is at once both a blessing and a curse. On the one hand, we know, as Dr. Walter Arnold has pointed out, that educators must invoke the knowledge and understandings of many disciplines in helping us to deal adequately with our multidimensional problems. It is to our advantage to communicate with these other disciplines with all their diverse elements, for this communication promotes a gradual clarification of concepts, stimulates a subtle change of attitudes, and provides possibilities for making an infinite variety of combinations and recombinations in our thinking about education and guidance. But at the same time, as the discussions and reports of this conference so clearly indicate, there is no easy way to orchestrate the different beliefs, assumptions, and expectations found among the several disciplines in their views about vocational education, the nature of human development, or even the evolution of the social order.

An overall assessment of the conference points to the critical need to continue joint explorations with other disciplines, thereby breaking down the academic compartmentalization and fragmentation which has, for too long, existed. We come away from this conference with an awareness of the urgency of continuing to work toward a common set of shared assumptions about the individual and his vocational development, both within education and between education and other disciplines.

Purpose of Education

The differing conceptions of guidance articulated during the past three days makes the task of formulating guidelines for practice difficult. It occurred to me last evening that we can never hope to communicate intelligently about guidance without considering first the more fundamental question of what education is about.

Have we paused long enough to consider the goals which guide vocational education? One educator, during a group discussion, said that his purpose is to teach a primary skill. Another stated that he wants to help the individual make something of himself. Rosen apparently would have vocational education set a goal of meeting current manpower needs. Taken together, these expressions of purpose would indicate that contemporary vocational philosophy holds dear the idea that the individual must become some useful thing in society. Undoubtedly this goal reflects an historical imbuement with a Protestant ethic which judges a man by his wordly achievement within a merchant value system. The school has said to youth: "Look, your value and worth is contingent upon becoming useful and productive."

Guidance very early aligned itself with the goal of "usefulness" by striving to bring individual behavior up to some level or in to the pattern that society decided. Ability tests and other appraisal procedures found a prominent place in the scheme of guidance. These devices have been employed not alone to predict potential success for a useful calling, but as much to determine whether or not training and further guidance is economically feasible for the individual. Test results can provide a comfortable rationalization for discarding responsibility to those whose development will require too much of us!

What has been the effect of this emphasis in guidance, education, and society? It has created a human condition which Jules Henry[1] calls the essential nightmare - a nightmare that "must be dreamed in order to provide the fears necessary to drive people away from something (in our case failure) and toward something (success)." This condition finds the individual in a real bind - for a measure of self regard is required to achieve society's goal, but the process by which one is brought to this goal may be destructive of positive self attitudes in many persons.

Embroiled as he is in this terrible nightmare, the individual grows increasingly alienated from his own inner self. He seeks knowledge, but not out of a real love for knowledge, rather to prove his usefulness. He avoids human involvements because he is too driven to have time for them, and, besides, involvements open him to the evaluations of others and these others may confirm his fear of being unworthy, not useful. The youngster of average ability clamors to get into college in the belief that this is the only way he may prove his usefulness. The so-called disadvantaged youngster drops out of school, for he cannot tolerate the destruction to self. And the nightmare goes on.

So when Tiedeman speaks of a goal of liberation through vocational education, I have to listen. The paper prepared by Tiedeman and Morley provides a helpful frame for focusing the comments of several conference speakers who have argued for a broadened concept of vocational education. A goal of liberation signifies that the highest function of any education, including that devoted to vocation, must be to help people understand the meaning of their lives.

The liberating value of vocational education will depend on the spirit in which it is undertaken. Even a narrow training in technique contributes something to this goal, for a confrontation with technique aids in discovery of potentialities; successful mastery of technique builds confidence by giving the individual a greater measure of control over his life. But vocational education which is truly liberating goes beyond this in assisting the student to learn the trade in its total context of human behavior and social aspiration. Meaning is created through educational efforts which enable the student to discover himself and his own aims, and to understand his relation to fellow man and larger purposes. Indoctrinating him in the expectations which will make him acceptable to the employer is oppressive, but casting these expectations as problematic situations to which he can react by fashioning a range of responses is liberating. Meaning for the individual is built up as he is helped to understand the basis of his actions and encouraged to choose for himself what he will be in different situations.

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[1] Jules Henry. Culture Against Man. New York: Random House, Inc., 1965.

Vocational education, then, is being asked to consider the problem of living along with livelihood. We are not to make the mistake of assuming that man needs only to satisfy material wants or obtain a larger share of merchant goods. Human satisfaction seems to be approached through a process of liberation by which the individual comes to feel himself as a value-determining agent. In keeping with this broadened goal for vocational education, it is possible to set forth a few guidelines for guidance practice.

Guidelines for Practice

1. Guidance is A Process of Helping the Individual to Examine His Life Experiences to the End that He May Know and Choose Himself and His Actions More Clearly and Purposefully.

Gross has shown us how the individual today, lacking information, often has to adjust ends to means in making decisions. This begs the more critical problem for guidance, namely: the inability of people to see the range of means available to them. It is of concern that the home, the school, and society often promote a subtle, even ruthless, coercion of means-end matching, depriving the individual of opportunity for choosing and creating goals and means of value to him. The effect this cocercion has in narrowing perceptions and preventing people from freely choosing is a human tragedy.

Providing more information of an educational and occupational nature most certainly would aid decision-making, but the greater need is that of encouraging intelligent appraisals on the part of the student of a broad range of means. He needs to discover what he will allow himself to know and do in various situations calling for action. This means rendering conscious those coercing factors which constrict his range of alternatives. The student should be encouraged to question the old rules learned in the home, the advice of an energetic vocational teacher who is set upon "selling" his program, and the mundane prohibitions which society so often seems to say are beyond his right to question. Guidance will foster in the individual a conscious awareness that he does have choices, and assist him to verbalize and make explicit those choices he is presented with, and to translate these into action.

2. Both Teachers and Counselors Have Roles to Play in Guidance, but the Counselor should Make a Unique Contribution to the Vocational Program.

Thirteen vocational directors with whom I talked this past year were unanimous in stating that the counselor they employ must be a special kind of person. A considerable number of them indicated that he should be a good model. More often than not, they meant by this he should be a "father figure", a dean of men type.

Adolescents do need adult role models, but the kind with whom they can identify and test their emerging self perceptions. It is unfortunate that many people attracted to counseling careers are preoccupied with meeting needs of their own. Caught up in an essential nightmare of their own, these counselors impose conditions which do not permit the development of secure and meaningful relationships with students. With such models, the adolescent does not feel free to try roles and values on for size and to reject those which fall short of fitting his emerging self structure.

Tiedeman mentioned that the vocational teacher's first commitment is to his subject and field. This commitment necessarily sets limits on the ability of the teacher to respond to the student in any way other than as a devoted disciple and practitioner of his trade. The counselor, in contrast, has a primary commitment to the student. It may be a small difference, but a significant one. The difference enables the counselor, to a greater degree than is true of the teacher, to employ his powers in permitting the student to be - to be himself. Of course the counselor, too, has commitments of sundry kinds, commitments which may affect his helping relationships. But if he has been adequately prepared, his training will have given him some understanding of these commitments and how they enter into his counseling. This experience in self-awareness enables the counselor to become more open in his relationships and to supplement in unique ways the counseling done by vocational teachers and administrators.

3. The Educational-Vocational Framework Provides the Most Logical Rationale for Pursuing Discovery of Self.

Dr. Arnold asked: "Why do counselors neglect vocational guidance?" One might speculate that the disproportionate amount of time counselors spend on matters of college choice, registration and program planning (as research has shown) is related to the insecurity they experience in counseling for vocation. If this is a valid assumption, vocational-technical schools could provide a valuable service by offering programs which update counselors' knowledge of industry and work. The vocational school is far better equipped than the university to provide this type of education, for it is a natural laboratory representing a certain segment of the work world - a segment least familiar to the majority of counselors. Not only would such programs do much to upgrade counselor competency in the vocational area, they would also provide the guidance worker with a better understanding of the philosophy behind vocational education.

Very likely the lack of attention to vocational guidance can be attributed in part to the increasing concern of counselors with personal development - i.e., helping students realize more fully "who they are." We have already seen that this objective comprises the essence of guidance. But counselors and vocational educators have yet to understand the significance of helping students explore self in relation to the world in which they will work and live. If our guidance programs are to touch the lives of each and every one, there has to be some framework which offers a socially acceptable means for exploring self, and this framework has to be broad enough to permit entertainment of the full range of counselee concerns related to life development. It has become clear to me that a student's perceptions of the world of work and related educational opportunities offer rich material for developing meanings about himself. And it seems equally clear that current theory and research in career development provides the concepts needed to show that occupational exploration is not a separable part of the counseling process nor is personality independent of career. As one group of theorists has said: "Career development is self development viewed in relation with choice, entry and progress in educational and vocational pursuits.[2]

4. The Criterion to be Employed in Defining the Role and Functions of the Counselor in Vocational Education is Psychological Consistency.

The counselor engages in helping relationships characterized by a high degree of trust. It is not possible to organize his role in vocational education around some set of functions which may fit conveniently into an organizational chart. The model which must be adopted is not administrative neatness, but psychological consistency. It is not so much a question whether or not the counselor should engage in selection or job placement, but rather the manner in which he is to be involved in these activities. If his involvement is of such a nature that he must obligate his first loyalty to someone other than the student, or if in performing functions in these areas he is forced to make evaluative judgments which jeopardize his image as a helping person, then it is unlikely that he will receive unqualified respect of the students or obtain their trust.

Vocational educators have been critical of counselors in the secondary school who function in quasi-administrative rather than counseling roles. Since professional counseling is an emerging development in vocational-technical schools, vocational education is presented with an opportunity to establish exemplary guidance programs. There are signs, however, that the counselor in vocational education may find himself in the position of some school counselors who perform a multitude of functions having little or no relation to counseling. The reason this possibility arises is because administrative staffing in the vocational school has not kept pace with the rapid expansion of program; the counselor may be seen as the agent of relief for some major problems confronting the director. Wise leadership on the part of directors will be required in planning these new programs of guidance, if students are not to be denied the benefit of effective counseling.

5. There is a Job for Both Vocational Educator and Counselor in Providing Experiences Which Enable the Student to Identify Suitable Social Work-roles.

Gross mentioned the desirability of analyzing occupations in terms of roles and role relationships. As part of his occupation every worker assumes one or more social roles. He may be a leader or a follower, a supervisor or a subordinate, an initiator or a compromiser, et cetera.

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[2] D. V. Tiedeman and R. P. O'Hara. Career Development: Choice and Adjustment. New York: College Entrance Examination Board, 1963.

Hopefully, in their school lives youngsters will have opportunities to project themselves into these and other roles and try them on for size. Probably the richest source of these role try-out opportunities for most young people is part-time work experience. The vocational shop offers a role playing laboratory for some. To receive maximum educational value, however, the observations and stimuli provided by these real life experiences must be brought back into the classroom and discussed and analyzed in relation to self. There are many proper questions to ask. What roles do the various workers play? What kind of lives do they live? Do they seem to have a range of available satisfactions? How are they handicapped by controls imposed by organizations? What does all this mean to you, the student, and the kind of person you wish to become? Is there anything in what you have observed today that might provide a structure for your life, a use of your powers, a sense of being justified? The purpose of these questions is to help the individual identify behavior patterns and roles which will do justice to his self.

6. The Myth of the Individual With A Single Occupational Value Can No Longer be Supported As A Basis for Vocational Guidance Practice.

We have yet to modify the thinking of an earlier period which regarded vocational guidance as a matching of individual characteristics with an appropriate trade or occupation. Perhaps because of our claims in the past, vocational educators believe the guidance specialist, armed with a knowledge of tests and occupational information, can identify in the individual a pattern of abilities and strengths which point infallibly to a specific calling. Crites' paper supports the notion that this myth can no longer be retained in light of what we know about human development and the changing occupational scene. The myth is further challenged by recent theory in occupational psychology, studies of both occupational mobility and job evolution, and research on the relation of personality and occupation.

This new knowledge and understanding would lead us to raise questions, also, regarding the way in which vocational education is evaluated. You are aware that the Vocational Education Act of 1963 emphasizes placement as a fundamental criterion for establishing the value of our programs. Obviously the placement criterion has been promoted by those who are inclined to view the individual primarily as an economic resource; it is an evaluative criterion which fails to recognize human needs or the nature of human development.

Several vocational directors in attendance at this conference are cognizant of the inadequacy of a placement criterion, and they have spoken against it in the discussion sessions. These directors see the learning of a skill as something more than just providing the individual with a living or meeting society's needs. They envision a vocational education which along with the skill training offers certain humanistic values and liberating qualities - one that produces men as well as workers. The self exploration which is possible in mastering a skill is added justification for this kind of education. We shouldn't be too concerned if a student completes a program of training and chooses not to engage in the occupation, provided he has gotten more from the course than mere mastery of a technique! The counselor in vocational education will expect changes in career objective; the counselor's interest will be to help the individual understand as fully as possible the meaning of the change for him and the person he is trying to become.

7. Guidance in Vocational Education Cannot Escape Its Responsibility to Develop the Abilities and Talents of <u>All</u> Individuals.

Vocational educators say: "We are not able to serve two masters. We can't take all the low ability students, but we are willing to take our fair load." The concern expressed here, one which we all share, is that vocational education does not become simply a dumping ground. But when we staked out our area to be that of educating for vocation, we automatically assumed some responsibility for everyone who has a purposeful role to play in the work economy. We may find it difficult to serve two masters well, but we have no choice other than to serve them both.

If guidance can be accused of undue commitment to the college-bound, vocational education might be admonished for showing partiality to the student with technician potential. In exercising a commitment to the more able student (or to the program with most prestige), we must not disregard those individuals with less talent and ability, or those who in some other way are disadvantaged. I am inclined to think that vocational education will continue to be looked to for leadership in developing programs which will enable disadvantaged youngsters to build satisfying lives. This is a needed social function to which Thomas and Corwin have called attention. When counselors and vocational educators take the lead in meeting this need, the status of each will improve.

In Summary

Undoubtedly the guidelines presented here will be supplemented several-fold as each of you have occasion to review and reflect on the conference proceedings. I dare say we have only begun to discover the full implications of guidance in vocational education.

This conference leaves no doubt about the job ahead. Young and old alike must be prepared, through training and guidance, for a society which tomorrow will demand more of them in breadth and responsibility. It is helpful to remind ourselves as we face this task that the strength of our nation in the past has rested on the natural differences in individual talents and the freedom of each individual to develop and express his talents in his own unique way. It may well be that the principal value coming forth from the collaboration of vocational educators and counselors will be an ever deeper devotion to this fundamental democratic value.

GUIDELINES FOR RESEARCH

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The guidelines for research which are discussed below are based on a set of premises concerning the current status of vocational guidance, vocational education, and the relation between the two. These premises or assumptions are as follows:

1. Conceptions of vocational guidance have been changing and broadening. As a result, the entire field of vocational guidance is in need of systematic re-examination. The National Vocational Guidance Association has begun to undertake this reappraisal task as part of a project titled "Reconceptualization".

2. Vocational education is also in a state of rapid metamorphisis in that its techniques and some of its goals have been changing and it has expanded to include a number of recently emerging fields of training not considered part of traditional vocational education.

3. The strengthening of vocational guidance and vocational education requires that these fields of practice become more sensitive to the insights and concepts of the behavioral sciences. Since both vocational guidance and vocational education deal with the student as a learner, both need to know what the behavioral sciences can potentially contribute to the understanding of the student as a learner.

4. The supporting disciplines (behavioral sciences such as psychology, sociology, labor economics, etc.) need to learn much more about the aims and problems of technical and vocational educators if they are to be of maximum assistance to them. In the past, recommendations from experts in the supporting disciplines to vocational educators concerning needed changes in practice and research have not always been well informed.

5. Vocational educators must learn considerably more than they now know concerning the tradition of research as a means of discovery about human behavior and its improvement through training. Many of the conceptions of behavior found in vocational education, and the practices based on such conceptions, are the results of impressionistic and priori views of behavior.

6. Vocational educators and counselors in the school setting are not just two professional groups performing independent tasks. Their work assumes meaningfulness and effectiveness as they learn to work more closely together in the pursuit of common educational goals. This assumption is an endorsement of Dr. Walter Arnold's assertion that "Vocational education and guidance can no longer be separated."

7. The main objective of research on career development is <u>not</u> the prediction of vocational choice but rather an attempt to describe and account for the manner in which youth grows up vocationally. Vocational development research is principally a search for the psychological meaning of vocationally relevant acts.

Identifying Areas of Needed Research on Guidance in Vocational Education

1. Until recently, vocational guidance research has largely ignored the study of pre-adolescent youth. Since many of the attributes which are learned in early childhood, such as concepts of mastery, coping behavior, and achievement motivation, bear upon later vocational planning and adjustment, more research is needed on younger children so that we may discover the conditions under which these traits are learned.

2. The values that people hold about occupations are culturally acquired. However, we do not yet understand very much about the psychological processes by which this acquisition occurs. Research needs to be designed that will reveal how children, for example, develop their occupational valuing system as well as their generalized vocational motives. Only through such research can we ultimately learn why youth turns away from certain occupational fields without really knowing what they constitute and becomes enamored of others through the development of occupational stereotypes, many of them naive or false.

3. As new fields emerge and the nature of the industrial order becomes increasingly complex, it becomes more important that those responsible for vocational curriculum construction, training, and counseling have access to improved systems for the classification of occupations. While work is currently proceeding on new approaches to the grouping of occupations, no generally useful system for the functional sorting out of fields of work is yet available. We must therefore discover the work factors which possess the highest degree of communality, and hence transferability, from job to job as a basis for constructing improved occupational classification systems for use in vocational education and guidance.

4. A larger percentage of secondary school and post-secondary school students hold part-time jobs than at any time previously. Experience with such work is logically expected to assist youth with problems of realistic vocational planning, but we suspect that this expectation is not generally borne out by the facts. Research is needed to compare the vocational maturity status of youth who have had outside work experience with those who lack such experience. Furthermore, research studies should be designed to ascertain whether youth with previous work experience are more responsive to vocational counseling and profit more fully from it than do students without previous work experience.

5. While research has emphasized chiefly the influence of trained counselors upon the vocational plans of students, investigations are needed which will study the impact of other adults and authority figures on the vocational thinking of youth. For example, successful vocational education teachers can actually serve as adjunct counselors who assist their students to think more clearly about the meaning of their training experience in terms of planning and future choice-making. We need studies of what might be called "miniature counseling" or micro-counseling which will assess the influence of the vocational teacher on the career development of the student. Beyond that, evaluation studies are called for which will investigate the comparative effectiveness of different systems or schemes by which the vocational educator and counselor work together as a team to promote vocational development in students.

6. Curriculum research is needed that will begin to furnish some answers to the question of what kinds of formal course experiences are most likely to lead to the specified goals or behavioral outcomes of vocational education. Despite all the discussion about needed curricular changes, very few studies have yet been designed with this sort of cause-effect relationship in mind. Because the counselor is a resource specialist who possesses useful knowledge about student motives and about developmental and learning processes, he can contribute in significant ways to the analysis of problems of curriculum research and curriculum revision.

7. The average working life expectancy for American high school girls today is approximately 25 years. Yet many of these young women have seriously underdeveloped work motivation. There is an urgent need for research on cultural variables, both within and outside the school setting, that may be utilized to accelerate vocational readiness in girls. For example, what are the characteristics of the adult woman worker to whom a high school girl may be exposed, such as a teacher, that makes her an effective occupational role model? Another problem: what can research tell us about the revamping of the patterns of schooling such that they will become more accomodative of the tendency of women to interrupt their education through obligations of marriage and family.

8. The quality of commitment that a vocational education student may have to vocational planning and the attitude that he shelters toward work in general and his vocational curriculum in particular will depend upon a variety of life history and background factors that are frequently unclear to his teachers and which, indeed, may not yet be well understood by occupational research workers. Studies are needed, therefore, which investigate the comparative effects of selective life experiences, such as history of parental unemployment, parent's occupation, values held by the peer group, etc., upon such indicators of vocational development as level of occupational aspiration, accuracy of occupational knowledge, and strength of career planning motivation.

9. We continue to assume in normal economic life that the intellectual traits of the individual, such as his aptitudes and trained skills, are the only important personal variables that contribute to occupational success or failure. However, research has long shown that personality and character traits are at least as important in occupational success and advancement as the cognitive traits. Can research be designed that will help vocational education improve its student selection and training practices by incorporating more about what can be known concerning the relationship between personality variables on the one hand and training and job performance on the other?

10. A good deal of pressure exists to encourage culturally disadvantaged youth to enter vocational education programs inasmuch as they often seem not to prosper in purely academic or college-preparatory programs. Yet such disadvantaged youth have often been exposed to background variables which are serious deterrents to success in any type of formal training program, including a vocational education program. Through research we need to identify those factors related to restricted socioeconomic status which limit the youth's promise as a trainee. For example, among seriously disadvantaged youth, we commonly find a low capacity for long-range planning, limited task orientation, low achievement motivation, and noncompliance with institutional rules. Research is urgently needed which will allow more prompt identification of these limiting traits and which suggests avenues to their modification through counseling.

11. New types of post-secondary but sub-collegiate occupational specialties have recently been emerging, such as computer programmer, computer technician, social worker aide, and psychiatric aide, on which very little empirical research has yet been done and about which little is known. If vocational training programs in such new fields are to avoid some of the pitfalls experienced in older fields of vocational training, systematic and intensive research will need to be designed to identify important worker trait requirements so that curriculum development and vocational counseling can proceed on a sounder and better informed basis. Furthermore, pilot guidance programs will need to be established for selected samples of students in such new programs and evaluation of the guidance programs will need to be carried out. Among the questions which will need to be answered are those centering on what kinds of students should be encouraged to enter these programs, what course-related work experience they ought to be exposed to, and what relationships exist between performance in the training program and subsequent performance on the job itself.

12. Guidance within vocational education has not prospered in the past for many reasons, notably for the reason that relations and communication between vocational educators and counselors have hardly been ideal. Research is now needed that will focus on a study of interpersonal relations and attitudes between the members of these two fields. What, for example, is the vocational educator's concept of the counselor? Who is he? What does he do? Conversely, what is the counselor's stereotyped impression of the vocational educator? How can each learn to recognize and draw upon the particular strengths of the other to improve the effectiveness of his own work with students? All research in this area should be directed toward the identification of common professional goals and of the complimentary competencies through which these goals may be served.

13. It is unfortunately true that the typical training of the counselor does not equip him to work effectively in the setting of the vocational or technical school. In fact his training may often bias him unwittingly against the values of vocational education programs. Research can and should be done on the relation of the counselor's socioeconomic background and professional training to his occupational attitudes and values. A related study might investigate the effect of the counselor's cultural biases upon certain counseling practices such as, for example, his tendency to express unconscious approval and/or disapproval of students with varying socioeconomic backgrounds and social habits.

14. Since some students who enter vocational education curricula do not readily think in terms of long-range goals, the strategy of instruction should include the scheduling of frequent, short-term recognitions and rewards. In this connection the current work in reinforcement counseling, growing out of behavior modification theory, seems most promising. Research studies should be designed, therefore, which have as their objective the identification of effective social reinforcers for vocational and technical school students and with the schedules of reinforcement that appear conducive to high morale, improved self-esteem, and satisfactory progress in the program of training.

SEMINAR OVERVIEW: CONCLUSIONS AND RECOMMENDATIONS

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Historically the seminar represented a milestone in guidance in that this was the first time in several decades that representatives of both guidance and vocational education convened on a large scale to discuss problems of mutual concern. It is hoped that the seminar established the initial momentum for continued cooperative efforts between guidance and vocational education as well as other relevant disciplines.

At this time it is difficult to assess the ultimate impact of the seminar. In addition to improving interdisciplinary relations, it appears that the ultimate pay-off would be in terms of future action initiated by the individual participants in their respective guidance programs. There is already some evidence of this: a sizeable proportion of the participants indicated via a follow-up survey that they have already started projects generated by the seminar and others have reported plans to do so in the near future.

Although the following seminar overview conclusions and recommendations do not represent consensus of the more than two hundred participants and consultants, they do reflect a range of opinions expressed through prepared papers, post-seminar survey comments, and group discussions. The following statements do not exhaust the voluminous list of recommendations but do echo the sentiments of the varied professional groups present. Some were stated in different ways by different participants and the chairman has taken the liberty to reword comments to convey clusters of opinion.

1. Roles and service responsibilities of guidance for vocational-technical education:

(a) The general agreement on types of services provided suggest that the guidance program should be responsible for a myriad of services ranging from the traditional vocational testing to extensive follow-up guidance services to alumni of high schools. Many participants were quite emphatic in their list of services which should be provided in high schools, e.g., consulting services to the teaching staff and administration; participation in curriculum planning; personal adjustment counseling; educational counseling; liason with community agencies, referral services, parents, and industry; job adjustment counseling; extensive occupational information services; research; and more intensive vocational assessment. The majority of the participants and consultants recommend more depth in individual services and a wider range of services.

(b) Although there was fairly clear consensus on guidance services and goals, there seemed to be lack of clarity as to how the goals should be achieved. Frequently general goals were recommended, e.g., "closer liason relationships with the community", but the operational implementation of the goal was ambiguous. Related to (a) above, the public expectancies for guidance are high and far outweigh our present guidance staff manpower capacities. For example, moderately intensive personal adjustment counseling is expected as one of the many services, but this is rarely achieved with any consistency due to the excessive student-counselor ratio in most school systems. The discrepancy between what the general public (e.g., parents, the community, the school administration, etc.) expects from guidance and what can be realistically achieved with current staff facilities places guidance in a vulnerable position. It would appear that guidance will continue to suffer from adverse critisism for falling short of its expectancies as long as the discrepancy exists. To remedy the problem would necessitate a painstaking crusade for guidance (already in progress in some states) and lengthy negotiations with the public. The public will have to eventually increase its support (lower student-counselor ratios, increased staff, and facilities) to achieve the wide range of quality services desired.

(c) A third aspect of the three-fold role and service responsibility problem (related to (a) and (b) above) is the severe shortage of guidance manpower to achieve the kind of programs which are recommended. If guidance is expected to achieve the goals briefly outlined in (a) above, then the schools will have to provide much larger staffs than the traditional one-man "Mr. Everything" Counselor. In reality what is needed is a total

pupil personnel program headed by an experienced-well trained Coordinator and staffed by a number of specialists. For example, if it is expected as many have advocated, that guidance programs should provide more extensive occupational information, data on labor economics, and liason with the department of labor and the industrial community, this service alone would require a full time specialist and represent one member of the total team. The pupil personnel team would also need full or part-time specialists in test administration, placement, research, etc. to meet the public expectencies. It is unrealistic to expect a single guidance counselor functioning in a 500 to 1 student-counselor ratio school system to provide the multiple services demanded by the public. In effect, guidance administrators will have to specify the staff requirements needed to fulfill the expected services. Even if the school systems and governmental agencies are willing to provide the necessary money for the total pupil personnel program, this will not solve the problem since there is a shortage of trained personnel. A study is currently under way by the federal government to assess the interagency counselor manpower needs; unofficial reports indicate that the nation falls tremendously short of meeting the need. Some states have attempted to solve the guidance personnel shortage by employing counselor aids to perform some of the more routine tasks of the guidance program. Others have experimented in similar ways with guidance assistants. Many participants have recommended sub-professional guidance personnel with bachelor degrees or less who specialize in different aspects of the guidance program, e.g., occupational information, test administration, community relations, etc. and who work under the supervision of the pupil personnel coordinator.

(d) It was suggested that guidance consider the team approach concept used successfully over the years by others, notably rehabilitation. The team approach would incorporate a more complete pupil personnel team of specialists as suggested in (c) above. Others expand this approach to include assistance from the teaching staff, i.e., many feel that vocational teachers possess valuable experience to assist with occupational and job adjustment counseling and that there should be more formal linkage in the schools. Vocational teachers have been providing this kind of service both informally and formally for many years. Guidance personnel should not perceive this as an encroachment upon their professional competencies but as a welcome addition in view of personnel shortages. There seems to be a very sincere willingness on the part of vocational teachers and administrators to cooperate as fully as possible.

2. The training of guidance personnel for schools:

(a) There have been several recent conferences specifically on this topic. One at Queens College in New York and the other at Airlie House sponsored by George Washington University. Reactions from the participants from this conference seemed to be in agreement with the recommendations from the previous conferences suggesting modifications for counselor training. Recommendations have ranged from suggesting that counselors have an industrial practicum experience to survey courses in labor economics and vocational education. Without listing all of the specific recommendations, the general feeling is that there is a need for the inclusion of more "World of Work" exposure for the guidance counselor in a vocational school and perhaps in a general academic high school as well.

(b) It has also been suggested that counselors become competent in "Work adjustment counseling" to provide more comprehensive occupational preparation for vocational students.

(c) Continued education was advocated to keep the counselor up-to-date on new developments, labor economic trends, and community referral services. This could be accomplished through institutes, short courses, field trips, etc.

(d) The question was raised by some participants as to the level of training required by guidance assistants or counselor aids who are working as a sub-professional in the pupil personnel program under the supervision of the certificated guidance counselor. Some feel that sub-professional guidance assistants could be trained at bachelor degree or less. Services provided by guidance assistants will not be spelled out here since they were previously discussed above.

(e) The frequently heard complaint that guidance personnel are not familiar enough with vocational education and vice versa suggests that perhaps each group could provide reciprocal exposure as part of their training program. Survey courses in vocational education and guidance might prove beneficial.

3. The problem of educating our culture to the changing world of work and improving the image of vocational education:

(a) Earlier exposure to the world of work starting in elementary and continuing through junior and senior high school.

(b) Continued efforts among guidance counselors and vocational educators in educating the community.

(c) The reflection of positive attitudes about vocational education by school personnel in their interaction with the public in general.

(d) Many participants feel that the best "image builder" is the vocational school product per se, i.e., insuring that the vocational school graduate exemplifies a favorable image within the community.

(e) Vocational education should take a more active role in communicating extensively with the general public, the school systems and the colleges. Too often students discontinue college due to an inappropriate decision for higher education and are good candidates for vocational programs but are often unaware of the vocational and technical education programs.

(f) More frequent contacts with parents keeping them better informed as to the educational opportunities for their children.

(g) Some participants feel that there is a "social class" bias and because of this many good potential students are lost. For example due to the status symbol of higher education, parents and students find college associate degree programs more attractive thereby resisting the technical school offering essentially the same curriculum.

(h) Some argue strongly for more attractive vocational programs in terms of expended curriculums, better geographical locations, more attractive buildings, and top quality equipment and facilities.

(i) There seems to be considerable discontent with the paradox of the large number of high school students enrolled in college preparatory programs (compared to vocational programs) yet a disproportionate percentage of college graduates and professionals in our occupational structure.

(j) Guidance counselors do not want to be perceived as "recruitors" for vocational programs. Counselors feel they should be loyal to the individual student and respect his decision to pursue whichever educational course seems appropriate for him based on an adequate knowledge of his own capabilities and alternatives. Too often students do not see alternatives beyond the dichotomy of work or college; the counselor needs to help the student expand his horizon of alternatives.

4. The appropriateness of our current guidance materials, instruments, and procedures for vocational education:

(a) Most participants were in agreement that our current guidance materials, instruments, and procedures leave much to be desired and in several critical areas are seriously deficient, e.g., predicting job success and satisfaction. On the other hand many were quick to point out that the value of our current materials and instruments should not be underplayed since they do provide considerable help despite their limitations.

(b) Test norms were criticized for being too frequently biased toward college and middle class populations.

(c) Although our occupational information has been continuously improving, many participants feel that it is not comprehensive enough and should include more of the sociological and psychological aspects of occupational behavior.

(d) More frequent use of group counseling in vocational guidance was recommended for its economic and interpersonal values.

(e) Despite the considerable displeasure with the current status of guidance materials, instruments, and procedures, the seminar consultants and research participants report that there is hope for the future. A number of very promising research activities are in progress and we can expect general improvement in the range and quality of guidance techniques.

5. Our effectiveness in dealing with special populations in vocational education, e.g., minority groups, unemployed adults, the educationally disadvantaged, and the disabled presents a major challenge of the era:

(a) Most participants agree that the most important contribution in this area is early identification and prevention of problems typically encountered by these groups. Occupational training opportunities have broadened considerably and pilot-demonstration projects are in progress for continued attacks on the problems.

(b) In many instances the difficulties of the special populations are recognized as a much larger sociological problem and not solvable by education per se. The proponents of this view recommend a large scale interdisciplinary and interagency attack on the problem.

(c) It was recommended that vocational schools and guidance programs should more frequently use the numerous community referral services, e.g., rehabilitation, youth opportunity centers, the Urban League, mental hygiene clinics, tutorial services, etc. as early as feasible.

(d) The special population also presents a unique problem in the development of appropriate vocational assessment techniques and procedures. More comprehensive knowledge of transfer of training, specialized recruitment and selection techniques, specialized counseling, and specialized training programs were also recommended.

(e) School personnel should question how well they really know the special problems which confront these populations. Some evidence indicates that there is considerable discrepancy between how the problems and situations are perceived by the school personnel per se as compared to the perceptions of the actual students.

6. What are the research frontiers and future contributions of the supporting disciplines for vocational education:

The following suggestions represent a composite of recommended research for the supporting disciplines as follows:

(a) Psychology: Various participants and consultants suggested needed research in the areas of job adjustment, the process of learning, transfer of training, (i.e., the transferability of the basic vocational skills from one occupation to another), the development of vocational assessment techniques, counseling techniques, research designs for evaluation, curriculum development, and career decision making.

(b) Sociology: Although a wide range of research was suggested for this discipline the participants seemed especially interested in the social significance of work; the work climate of large organizations; communication problems between disciplines; the role of leisure in the future; problems associated with the economically depressed urban and rural areas; geographic occupational mobility; and social stratification.

(c) Labor economics: The participants were especially interested in research pertaining to occupational forecasting, projected labor trends, unemployment, curriculum development, and educational cost analysis.

(d) There was unanimous agreement among the participants that more interdisciplinary research projects emphasizing career development, occupational choice, curriculum planning, job adjustment, the transferability of skills across occupations, and in general more frequent communication among the disciplines.

(e) Another rather strong recommendation called for much closer cooperation among the governmental agencies. It was suggested that governmental agencies with common ultimate goals, i.e., occupational training and employment engage in more cooperative large scale thrusts on some of the problems. Closer cooperation between the U.S. Office of Education and the U.S. Department of Labor was especially indicated. Hopefully the cooperative interagency thrust would filter down to the community action level for closer coordinated efforts, e.g., the school, the United States Employment Service, rehabilitation, special education, etc.

7. The economic versus psychological man issue, i.e., the degree to which guidance and vocational education should prepare students for vocational competence (non-technical aspects of work) in addition to occupational competence (skill development):

(a) The majority of the participants felt very strongly about preparing the potential employee more comprehensively to include both occupational and vocational competence. Several consultants spoke on this issue urging that we pay more attention to the broader vocational competencies of the individual, i.e., the non-technical aspects of the individual's future career life.

(b) In helping the individual become more fully prepared for his career, it was been recommended that he be given some indoctrination about the need for continued education, adjusting to job changes, adjustment to supervisory behavior, use of leisure time, work values, knowledge of fringe benefits, and the climate of organizational settings.

(c) Each of the non-technical preparatory aspects mentioned in (b) above if implemented would necessitate innovations in our current guidance programs (techniques, procedures, and staff). For example, to provide job adjustment training, specialized group counseling programs might be needed. Vocational educators working in cooperative work-study school systems report that it is mandatory that they spend a large proportion of their time assisting the student with his work adjustment. Students who are experiencing their initial job exposure are often quite naive about the vast range of "in-house work requirements" which can cause considerable distress and adjustment problems.

8. Research in career patterns:

A number of suggestions were made by the participants on this issue as outlined below:

(a) A closer look at the actual reality of an orderly career pattern for non-professional occupations.

(b) More consideration of research findings from other disciplines in formulating a theory of career development.

(c) More depth research in developmental antecedents to occupational choice and future career patterns.

(d) Research on work adjustment behaviors especially in large organizations.

(e) Improvement in career counseling techniques, assessment, and the learning process.

(f) There was considerable concern with the dessemination lag and the adoption of innovations, i.e., expediting research results into action. In this regard, some participants urged that there be more "research translators" who bridge the gap between research and practice.

(g) Research designed to assist the older worker to adjust to continued job change.

(h) The possible introduction of early similated work experience, possibly in junior high school, to broaden the "world of work" learning experience.

(i) The possibility of using research coordinating units within the state departments of vocational education as a means for implementing career research and guidance.

9. The collection and dissemination of occupation information:

(a) In general it was recommended that the developers of OI materials consider the use of data processing and computers, more realistic descriptions of occupations, long range career progressions for given occupations, experiments with different classification systems, and the individual differences of the consumers.

(b) Make more frequent use of interagency cooperation especially at the community level for keeping up-to-date with local trends possibly in the form of a community atlas.

(c) Consideration of the use of a variety of media approaches to disseminating occupational information.

(d) More projects on job analysis and task analysis to identify the transferability of skills especially for older workers.

(e) Reduce the time lag between knowledge of new occupational trends (shortage and overages) and vocational training programs.

(f) There is considerable hope for improvement in the future as evidenced by a number of research projects currently in progress.

In conclusion, it has been a privelege for The Center to sponsor the guidance seminar as one of its initial national activites. In the future The Center hopes to continue to play a major role to further strengthen the cooperative efforts of guidance and vocational education. The Center is uniquely equipped through its interdisciplinary staff consortium to provide a variety of services, e.g., the development of research projects, an information clearinghouse, inter-institutional studies, coordinating agent, leadership development, dissemination of innovation, and catalyst for new ideas and programs. At the time of this writing, several new activities are already under way and others are contemplated for the future. The Center welcomes cooperative efforts with other institutions and professional associations. It is hoped that the seminar participants and others will perceive The Center as a vehicle to focus on major priority problems.

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John Swisher

PARTICIPANT TABULATION BY STATES

Alabama	4	Nevada	1
Arkansas	1	New Jersey	1
California	6	New Mexico	1
Colorado	4	New York	4
Florida	2	North Carolina	3
Georgia	1	North Dakota	1
Idaho	2	Ohio	73
Illinois	5	Oklahoma	4
Indiana	2	Oregon	3
Iowa	3	Pennsylvania	8
Kansas	1	South Carolina	3
Kentucky	7	South Dakota	1
Maryland	2	Tennessee	3
Massachusetts	3	Texas	4
Michigan	3	Utah	2
Minnesota	5	Washington	2
Mississippi	4	Wisconsin	2
Missouri	3	Wyoming	1
Montana	1	Washington, D. C.	12
Nebraska	2		

Total Participants 190

Total Number of States 39

APPENDIX B

GROUP DISCUSSION

Grp. No.	Chairman	Recorder	Topic
1	W. Wesley Tennyson	Lyle D. Schmidt	The roles and service responsibilities of guidance personnel in vocational education.
2	Dolph Camp	Charles E. Weaver	Administration of guidance programs.
3	Kenneth B. Hoyt	Anthony Riccio	The training of guidance counselors for vocational education.
4	Carroll L. Shartle Marvin J. Levine	Louis A. McElroy	Utilization of human resources and manpower.
5	H.H. London	William J. Schill	Recruitment and selection of students for vocational education.
6	John O. Crites David V. Tiedeman	Samuel H. Osipow	Theories and Research in career patterns and vocational choice.
7	Duane M. Nielsen Henry Borow	Virgil E. Christensen	Guidelines for research in guidance and vocational education.
8	William B. Logan	Ann M. Martin	Education "society" about vocational education.
9	Ago Ambre	James W. Hensel	Occupational information: classification systems, sources, and dissemination.
10	Roy N. Anderson	Ramsey M. Groves	Guidance with special populations: (with emphasis on the educationally disadvantaged).

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STATE OF OHIO
DEPARTMENT OF EDUCATION
COLUMBUS, 43215

A SURVEY OF INDUSTRIAL ARTS ENROLLMENTS IN OHIO SCHOOLS

E. E. HOLT
SUPERINTENDENT OF PUBLIC INSTRUCTION
SEPTEMBER 1965

VT000397

Division of Elementary and Secondary Education
Glenn A. Rich, Director

A Survey of Industrial Arts Enrollments in Ohio Schools

This Publication Prepared By
Edgar Hare, Supervisor, Industrial Arts

September, 1965

5619
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A SURVEY OF INDUSTRIAL ARTS ENROLLMENTS IN OHIO SCHOOLS

A survey was made to determine the number and per cent of students enrolled in industrial arts programs in the high schools of Ohio. Reports of the High School Principal, Form 23, for the 1964-1965 school year, were used as the source for this information. Principals reported their industrial arts offerings as Industrial Arts I, Industrial Arts II, Industrial Arts III, Industrial Arts IV, Industrial Arts 7, Industrial Arts 8 and by areas. The headings were determined to be: wood; metal; electricity; graphic arts; drawing; power mechanics; industrial crafts; Industrial Arts I; Industrial Arts II; Industrial Arts III; Industrial Arts IV; 7th; 8th. Areas of a crafts nature, such as plastics, ceramics, textiles, leather, lapidary, etc., were placed under industrial crafts; photography was placed under graphic arts; blueprint reading under drawing; welding under metals and auto mechanics under power mechanics. No attempt was made to determine how extensive the areas were covered either by content or time scheduled.

Only those schools that were listed as comprehensive were included. No federally reimbursed programs of vocational education were included. Only those schools chartered as 4 year high schools, grades 9-12; 6 year high schools, grades 7-12; senior high schools, grades 10-12; and junior high schools, grades 7-9 were used in the study. There are some elementary schools that offer industrial arts in Grades 7 & 8 but these were not included in the totals. All percentages were rounded to the nearest tenth.

Graph I, Per Cent of Boys Enrolled in Industrial Arts, illustrates the interest in industrial arts offerings. While a program of industrial arts is required by the High School Standards, it is not required that the students enroll. This percentage, 46.2%, includes the enrollments of 36 schools where no industrial arts is offered. Included in these 36 schools are 34 local and 2 private and parochial.

Graph II, Per Cent of Boys Enrolled in Industrial Arts by Areas, suggests some pertinent facts. Drawing, with 18.4%, shows the highest enrollment. Industrial Arts I is a close second with 18.1%. Industrial Arts I, II, III, IV are all-inclusive terms and may include any or all specific areas. This same condition exists for Grade 7, 10.2% and Grade 8, 10.7%. Wood, 10.4% and metal, 9.1% make up the major portion of the remaining enrollment. This indicates that probably more attention should be devoted to improving the offerings in electricity, 3.0%; graphic arts, 3.3%; power mechanics, 2.5%; and industrial crafts, 1.4%.

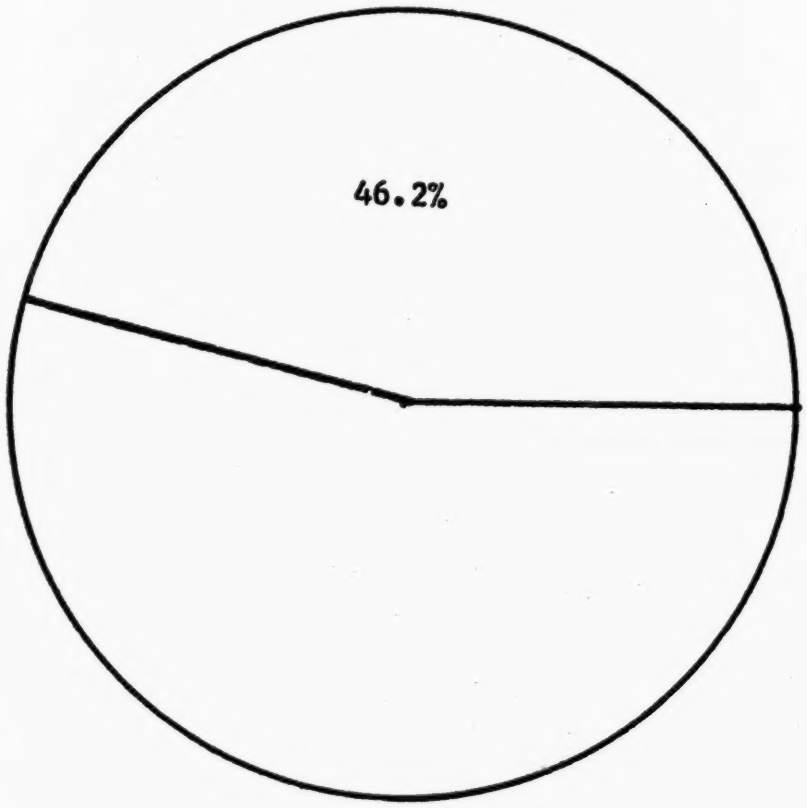
Graph III, Per Cent of Enrollment by Type of School, indicates some conditions which are important. Cities, many of which have supervisors of industrial arts, show a high percentage of enrollment, 54.3%. This percentage is also indicative of well-equipped laboratories, adequate facilities, and well-rounded programs. Students apparently feel there is educational value in industrial arts. Local, 38.7%, and exempted village schools, 38.1%, are nearly equal in enrollment as is to be

expected since these schools parallel each other as to size, facilities and equipment. Private and parochial, 15.6%, shows a decided decline in enrollment.

Charts IV and V, Per Cent of Enrollment in Industrial Arts by Areas in Types of Schools, highlight some specific details. In city schools the enrollment by areas is consistently higher than the other three types except in drawing where the private and parochial schools show a high percentage, 66.7%. This high enrollment by areas in cities is due to the fact that these schools have unit or general unit laboratories rather than General Shops which are found in smaller schools. Industrial Arts I, II, III, IV show a high percentage in local and exempted village categories again due to the General Shop facility. City schools show a much higher enrollment in Grades 7 and 8, 14.0% and 13.9%, respectively, than the other three types of schools. Many cities require industrial arts of all boys enrolled in either Grade 7 or Grade 8 or both.

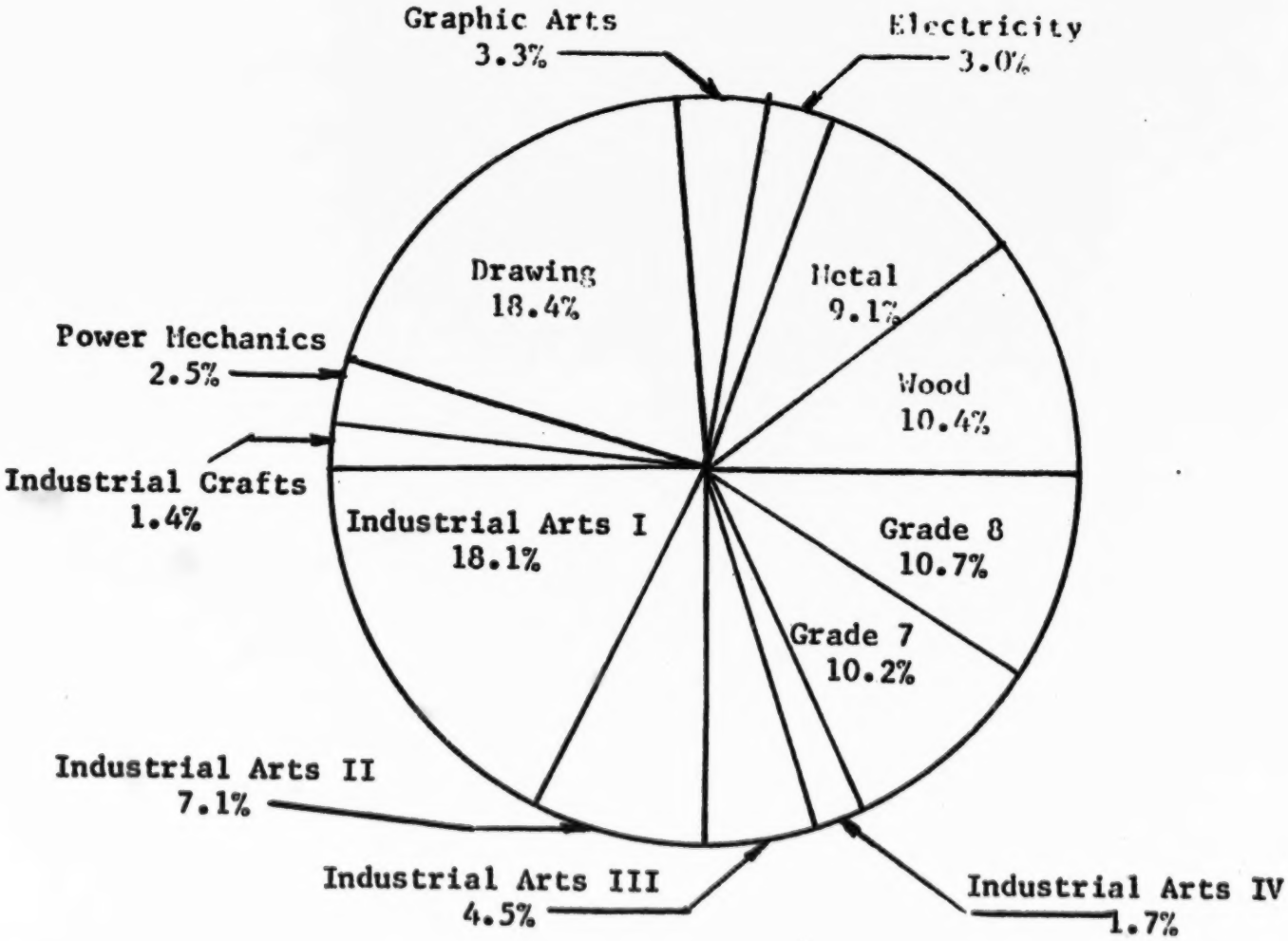
The findings of this survey indicate that on the basis of enrollment, breadth and depth of program, facilities, and supervision, the larger high schools are able to provide a more comprehensive program of industrial arts.

I PER CENT - BOYS ENROLLED IN INDUSTRIAL ARTS



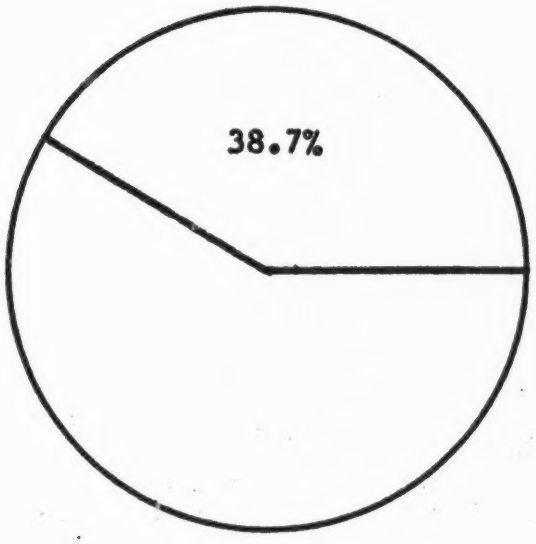
TOTAL BOYS ENROLLED	404,857
BOYS ENROLLED - INDUSTRIAL ARTS	187,089

II PER CENT - BOYS ENROLLED - INDUSTRIAL ARTS BY AREAS



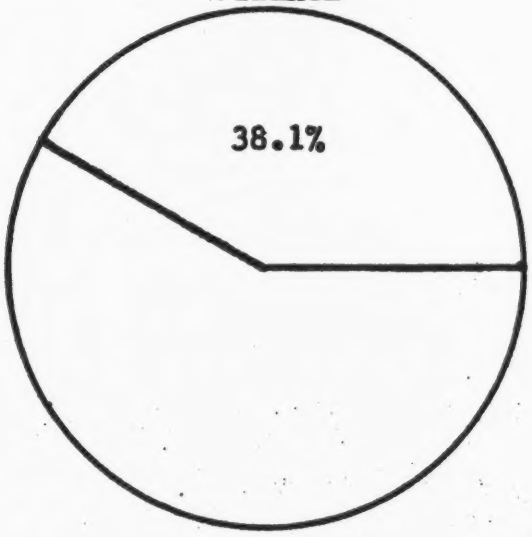
III BOYS ENROLLED IN INDUSTRIAL ARTS BY TYPE SCHOOL

LOCAL



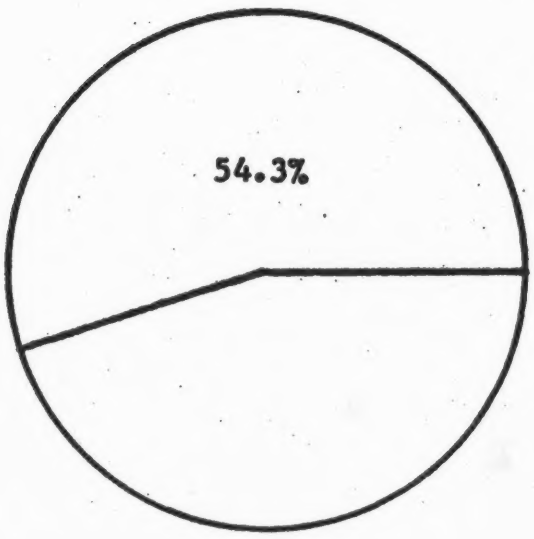
BOYS ENROLLED	121,106
BOYS ENROLLED - IND. ARTS	46,862

EXEMPTED VILLAGE



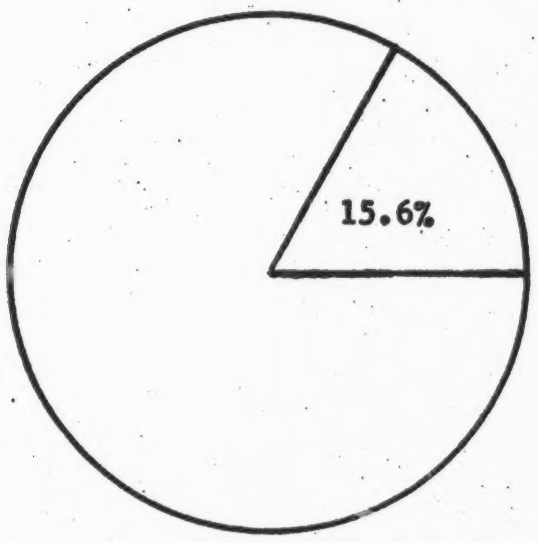
BOYS ENROLLED	20,620
BOYS ENROLLED - IND. ARTS	7,857

CITY



BOYS ENROLLED	236,067
BOYS ENROLLED - IND. ARTS	128,150

PRIVATE AND PAROCHIAL



BOYS ENROLLED	27,064
BOYS ENROLLED - IND. ARTS	4,220

PER CENT OF ENROLLMENT - INDUSTRIAL ARTS BY AREAS IN TYPES OF SCHOOLS

IV

	% LOCAL	% EXEMPTED VILLAGE	% CITY	% PRIVATE AND PAROCHIAL
Wood	6.3	4.6	12.4	7.4
Metal	6.2	5.6	10.9	3.7
Electricity	1.5	1.9	3.6	1.8
Graphic Arts	1.3	0.9	4.3	1.0
Drawing	16.7	20.4	17.9	66.7
Power Mechanics	1.3	0.9	3.2	0.7
Industrial Crafts	1.4	0.2	1.4	2.7

V

Industrial Arts I	29.2	24.6	14.2	6.4
Industrial Arts II	18.0	15.5	2.8	2.9
Industrial Arts III	12.7	11.8	1.1	2.3
Industrial Arts IV	5.0	4.3	0.4	0.9
Grade 7	3.2	1.9	14.0	3.2
Grade 8	4.5	7.4	13.9	0.2

PER CENT OF ENROLLMENT - INDUSTRIAL ARTS BY AREAS IN TYPES OF SCHOOLS

IV

	% LOCAL	% EXEMPTED VILLAGE	% CITY	% PRIVATE AND PAROCHIAL
Wood	6.3	4.6	12.4	7.4
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V

Industrial Arts I	29.2	24.6	14.2	6.4
Industrial Arts II	18.0	15.5	2.8	2.9
Industrial Arts III	12.7	11.8	1.1	2.3
Industrial Arts IV	5.0	4.3	0.4	0.9
Grade 7	3.2	1.9	14.0	3.2
Grade 8	4.5	7.4	13.9	0.2

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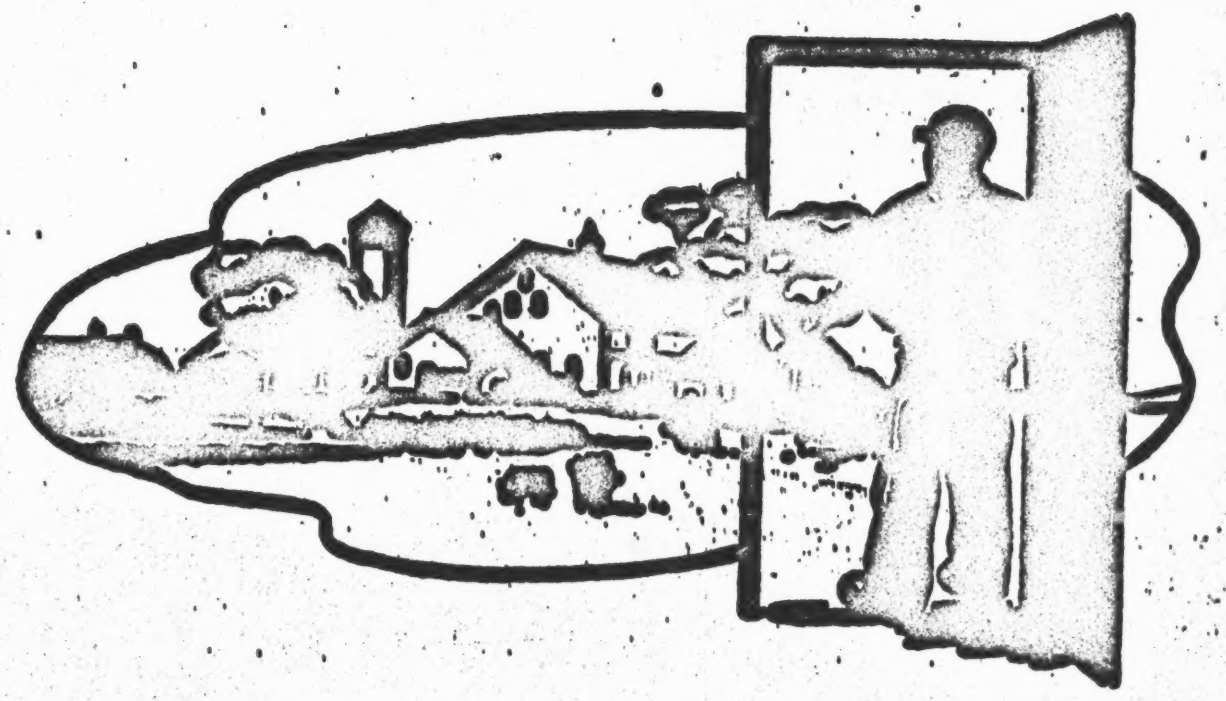
FINAL REPORT

INSTITUTIONAL ON-FARM TRAINING PROGRAM

WEST VIRGINIA

1946-1963



VOCATIONAL AGRICULTURE SERVICE
BUREAU OF VOCATIONAL AND ADULT EDUCATION
WEST VIRGINIA DEPARTMENT OF EDUCATION
CHARLESTON, WEST VIRGINIA
1963

VT 00399

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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FINAL REPORT

INSTITUTIONAL ON-FARM TRAINING PROGRAM

WEST VIRGINIA

1946 - 1963

John M. Lowe

Consultant, Vocational Agriculture

Vocational Agriculture Service
Bureau of Vocational and Adult Education
West Virginia Department of Education
Charleston, West Virginia
1963

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FOREWORD

During World War II the 78th Congress of the United States made provision for an extensive program of education and training for veterans under the Service Men's Adjustment Act. Institutional On-Farm Training was that part of the program designed to assist those veterans whose work objective was farm operator. The program was designed to give veterans who were operating farms an opportunity to receive intensive instruction on both a group and individual basis.

The organization and administration of the Institutional On-Farm Training Program was the responsibility of the West Virginia State Board of Education. The immediate responsibility for the implementation and supervision of the program was delegated to the Vocational Agriculture Service of the Division of Vocational Education. The program was operated locally by County Boards of Education and was financed by the Veterans Administration.

The Institutional On-Farm Training Program made a significant contribution to the progress of both agriculture and education in West Virginia during the seventeen years of its existence. This publication serves as both a history and final report of the program.

During its period of operation more than 9,000 veterans were enrolled in the IOF Program. Nearly 60% of these veterans who were approved for training completed their training. The training allowances these men received along with their group and individual instruction enabled many of them to progress from farm partners and renters to farm ownership. Many of these men are now successfully operating commercial farms in West Virginia.

John M. Lowe, retired State Director of Vocational Education, has been responsible for summarizing the records and preparing this report. He has been uniquely qualified for this responsibility as he was intimately concerned with the establishment and operation of the program for the first eleven years of its existence. He has spent many hours in finding and checking the information contained in this report and must be commended for the accuracy and completeness of this historical record.

This program of agricultural education and training is now officially ended. Its results will continue for many years as it opened the door of opportunity for many veterans and helped them become established in farming and in community life. In many cases it has been the beginning of a continuing program of adult education in a local community. The effectiveness of the training program is proved by the facts and figures contained in this report. Its accomplishments will be instrumental in improving future programs of instruction in farming and agricultural occupations.

Homer E. Edwards
State Supervisor
Vocational Agriculture

THE INSTITUTIONAL ON-FARM TRAINING PROGRAM

1946 - 1963

- HISTORICAL -

It's Beginning

During and following World War II, the Congress of the United States made provision for an extensive program of education for veterans under the following public laws:

1. Public Law 16 - 78th Congress - March, 1943 - An Act providing for Vocational Rehabilitation of Disabled Veterans of World War II.

2. Public Law 346 - 78th Congress - June, 1944 - Servicemen's Readjustment Act of 1944. This Act provided for the education and training of Veterans who served in the active military or naval service of the United States on or after September 16, 1940, and was referred to as the "G.I. Bill of Rights".

3. Public Law 377 - 80th Congress - August, 1947 - Supplemented Public Laws 16 and 346.

4. Public Law 550 - 82nd Congress - October, 1952 - Veterans' Readjustment Act of 1952. This Act extended the benefits of Public Laws 16 and 346 to Veterans of the Korean conflict.

These and subsequent Congresses appropriated money to the Veterans Administration to be used in carrying out the provisions of the several acts.

The program of education and training for farm veterans was known as the Institutional On-Farm Training Program, commonly referred to as the IOF program.

Under the authority of the public laws just enumerated and various amendments thereto enacted by the Congress, the Regional Office of the Veterans Administration at Huntington entered into agreements with the Boards of Education of the different West Virginia counties to provide education and training for eligible farm veterans in their respective counties.

After several planning conferences attended by members of the Greenbrier County School System, the staff of the Vocational Agriculture Service, Division of Vocational Education, State Board of Education, and personnel from the Huntington Veterans Administration Office, the Greenbrier County Board of Education signed the first contract with the VA to provide IOF Training. This contract became effective March 16, 1946, and the first class was started April 1, 1946, with Frank McClung as teacher. James Duckworth was employed in Greenbrier on May 1, 1946, as teacher and coordinator of the IOF program in that county.

Other counties which signed contracts with the VA, employed teachers and started IOF classes prior to July 1, 1946, were:

Clay - O. K. Wilfong, teacher
Hampshire - Paul C. Rouser, teacher
Jackson - Fred W. D. Parsons, teacher
Mason - Clifford Dunn, teacher
Nicholas - Wallace Cox, teacher
Pocahontas - O. J. Beard, teacher
Randolph - Russell T. Linger, teacher
Wayne - J. Richard Malcolm, teacher
Hardy - M. H. Deahl, teacher

Following Greenbrier and the above named counties, and within the next few months, 32 other counties initiated training programs for their farm veterans under contracts with the Regional Office of the Veterans Administration at Huntington, and four counties - Brooke, Hancock, Marshall and Ohio - operated programs under separate contracts with the Regional Office of the Veterans Administration at Pittsburgh, Pennsylvania.

These counties continued to operate their IOF programs under individual contracts with the Regional Offices of the Veterans Administration until May 1, 1947. Under that plan each county made its own contract with the Veterans Administration, received its funds directly from the Veterans Administration and made its reports directly to the Veterans Administration. There was no provision for state supervision or in-service training for instructors.

However, during the period prior to the time that the West Virginia Board of Education entered into the contract with the Huntington Regional Office of the Veterans Administration (May 1, 1947), the State Supervisor of Vocational Agriculture assisted in preparing county plans for IOF training and approved the plans when completed. He also approved schools and training facilities (farms) for the training of veterans under Public Law 346, (the non-disabled veterans).

The first state wide conference for county IOF training personnel was held at Lewisburg, West Virginia, on August 20, 21, and 22, 1946. The conference was sponsored by the Vocational Agriculture Service and was attended by approximately 75 supervisors, coordinators and instructors employed by the counties in their IOF training programs.

Persons participating in the conference included:

John Montgomery, Superintendent, Greenbrier County Schools and Chairman, Superintendents Committee on IOF Programs.
H. N. Hansucker, State Supervisor of Vocational Agriculture.
S. D. McMillen, Assistant Supervisor of Vocational Agriculture.
H. E. Edwards, Training Officer, Veterans Administration.
I. R. Lytle, Training Officer, Veterans Administration.
Harlan Duncan, State Department of Education.

Topics discussed included provisions of Public Laws 16 and 346 for the training of farm veterans, plans for operating the program, administration and supervision, and approval of facilities.

West Virginia Board of Education
Signs Contract
With The
Veterans Administration

At a meeting of the West Virginia Board of Education held in Bluefield on February 6, 1947, members of the County Superintendents Committee on IOF Training and a representative of the Huntington Regional Office of the Veterans Administration appeared before the Board and requested it to enter into a state wide contract with the VA for the administration and supervision of the IOF Training Program in West Virginia.

The members of the Superintendents Committee on IOF Training present at the meeting were:

John F. Montgomery, Superintendent, Greenbrier County (Chairman)
Glen Dowdy, Superintendent, Monroe County
R. S. Dispanet, Superintendent, Hardy County
Stark Wilmoth, Superintendent, Randolph County
Olen Rutan, Superintendent, Brooke County
The VA representative was Ray Bradley.

Members of the Superintendents Committee not present at the February 6th meeting were:

Paul Watson, Superintendent, Preston County
Eric Clutter, Superintendent, Pocahontas County
Alden Spencer, Superintendent, Doddridge County

The Board considered the request of the Superintendents Committee favorably, provided a satisfactory contract could be obtained with the Veterans Administration and approved by the Attorney General of West Virginia. The Board agreed that the contract should provide:

1. For a tuition fee agreeable to, or recommended by, the Superintendents Committee on IOF Training.

2. For reimbursement by the Veterans Administration to the West Virginia Board of Education to cover actual expenses incurred by the Board in the administration and supervision of the program.

The Board then, by resolution, designated its President (Raymond Brewster), its Secretary (H. K. Baer), and the State Director of Vocational Education (John M. Lowe) to prepare a contract for a state wide IOF Veterans Training Program with the VA, subject to the approval of the Attorney General of West Virginia, and present it to the Board for its approval.

In accordance with the foregoing resolution, the Attorney General of West Virginia (Ira J. Partlow), was asked the following questions:

1. "May the State Board of Education enter into a contract with the VA for the administration and supervision of the IOF Training Program?"

2. "May the President of the State Board of Education sign a contract and designate its Division of Vocational Education to administer and supervise the same?"

At its meeting on April 18, 1947, the Board received and acknowledged an opinion of the Attorney General of West Virginia relative to the two questions.

The first question was answered in the affirmative and the reply to the second was as follows: "That the State Board of Vocational Education may authorize its President to sign the contract in question and may designate its Division of Vocational Education to administer and supervise the activities provided for in the contract".

The Board then agreed, by resolution, to enter into a state wide contract with the VA, covering the IOF Training Program, and authorized the President or the Executive Officer (W. W. Trent) to sign the contract and designated the Division of Vocational Education and the Vocational Agriculture Service to carry out the administrative, financial, and supervisory functions of the contract under the direction of the State Board of Vocational Education.

Pursuant to the resolution of the Board adopted April 18, 1947, the President signed a contract with the Regional Office of the VA at Huntington to provide the administration and supervision for the IOF Training Program, effective May 1, 1947.

This contract covered all the counties of the state except Brooke, Hancock, Marshall and Ohio. These four counties came under the jurisdiction of the Pittsburgh, Pennsylvania Regional Office of the Veterans Administration.

On January 23, 1948, the West Virginia Board of Vocational Education approved the requests of the Boards of Education of the above named four counties, made through their respective superintendents of schools, to provide for the approval of facilities, the in-service training of teachers, and for the general supervision of instruction in the IOF Program in those counties. These Boards of Education agreed to reimburse the State Board of Vocational Education for these services at the same rate paid by the other counties of the state, namely, $1.15 per veteran per month.

The state wide contract with the Regional Office of the Veterans Administration at Huntington and the agreement with the four northern panhandle counties not covered in that contract were renewed from time to time with amendments and adjustments approved by the parties involved.

A list of the contracts between the State Board of Education and the VA showing the period covered by each contract and its financial provisions follows:

Contract No.	Period Covered	Terms
VA 15r-ve 132 VA 15r-vr 277	May 1, 1947 - June 30, 1947	$35.00 Arrears
VA 15r-re 132 VA 15r-vr 277	July 1, 1947 - Sept. 30, 1947	$35.00 "

Contract No.	Period Covered	Terms
VA 15r-re 132	Sept. 1, 1947 - Sept. 30, 1947	$23.00 Arrears
VA 15r-vr 277	Supplemental	
VA 15r-vr 132	Oct. 1, 1947 - Dec. 31, 1947	$23.00 "
VA 15r-vr 277	Renewal	
VA 15r-ve 132	Jan. 1, 1948 - June 30, 1948	Net cost-advance
VA 15r-ve 132	July 1, 1948 - June 30, 1949	Net cost-advance
V3015V-145	July 1, 1949 - June 30, 1950	" "
" 261	July 1, 1950 - June 30, 1951	" "
" 376	July 1, 1951 - June 30, 1952	" "
" 457	July 1, 1952 - June 30, 1953	" "
" 509	July 1, 1953 - June 30, 1954	" "
" 526	July 1, 1954 - June 30, 1955	" "

Contract No. V3015V 526 was renewed for each fiscal year after 1954-1955 until 1962.

STATE PLAN FOR INSTITUTIONAL ON-FARM TRAINING

Prior to the time the West Virginia Board of Education entered into a state wide contract with the Veterans Administration for conducting the Institutional On-Farm Training Program (May 1, 1947), the Vocational Agriculture Supervisory Staff assisted County Boards of Education and the Veterans Administration in developing plans for providing Institutional On-Farm Training in Agriculture for veterans.

These plans called for the contracts to provide for the training in Agriculture to be executed between each County Board of Education and the Veterans Administration. The Vocational Agriculture Supervisory Staff acted in an advisory capacity in preparing the plans. The State Supervisor of Vocational Agriculture approved the individual county plans for conducting the training and he approved the qualifications of instructors employed in the program.

Immediately following the signing of the contract for Institutional On-Farm Training by the West Virginia Board of Education and the Veterans Administration, a State Plan for organizing and conducting the Institutional On-Farm Training Program was prepared.

This plan was the result of many hours of careful study and deliberation by members of the State Vocational Agriculture Supervisory Staff; the Vocational Agriculture Teacher Training Staff, West Virginia University; the County Superintendents' Committee for Institutional On-Farm Training, composed of eight county superintendents of schools; and representatives of the Veterans Administration, Huntington, West Virginia.

The State Plan was then presented to, and approved by, the West Virginia Board of Education. Thus it became the official guide for organizing and conducting the Institutional On-Farm Training Program in West Virginia. The plan was amended from time to time as changing conditions and policies warranted.

The State Plan included the following sections:

1. The aims and objectives of the training program.

2. Procedure for organizing the program.

This section called for a Memorandum of Understanding to be executed between each County Board of Education desiring to conduct a training program and the State Board of Education setting forth the provisions for operating the Institutional On-Farm Training in the county.

3. Approval of Institutions.
4. Course of Instruction.

The following courses of instruction were offered where veterans selected them as their occupational objectives:

General Farming
Dairy Farming
Fruit Farming
Livestock Farming
Poultry Farming
Truck Farming
Nursery Management
Greenhouse Management

5. Length of Course.
6. Full-time Course.

Each veteran enrolled in the program was required to spend a minimum of 40 hours a week on an approved farm in addition to the institutional training provided by the school.

7. The County Advisory Committee.

a. Membership
b. Duties

It was the duty of this County Advisory Committee to recommend for approval all farms for Institutional On-Farm Training.

8. Teachers.

a. Providing teachers
b. Qualifications
c. Certification
d. Salaries
e. Retirement
f. In-service training
g. County coordinator

9. The Instructional Program.

a. Enrollment
b. Requirements

The plan called for each enrolled veteran to receive:

(1) A minimum of 200 hours of organized group instruction in Agricultural and related subjects a year, at least 8 hours of which were required each month.

(2) A minimum of 100 hours of individual instruction a year, of which not less than 50 hours were to be on his farm and not more than 50 hours of on-farm small group instruction.

(3) At least two visits by the teacher to each farm each month.

c. Course of Study

The subject matter included in the course of study was determined by the individual training programs of the veterans enrolled in the group. All courses of study were based on the training objectives of the trainees and both group and individual instruction followed the course of study as planned in order that each trainee might accomplish his vocational objective.

10. Veterans Procedure for applying for training.

11. Subsistence Allowance

When a veteran enrolled in an approved course of Institutional On-Farm Training, the Veterans Administration paid him full subsistence allowance provided that any compensation for labor plus subsistence allowance aid not exceed $175.00 a month for a veteran without a dependent or $200.00 a month for a veteran with a dependent or dependents.

The Veterans Administration paid the subsistence allowance direct to the veteran and not through the West Virginia Board of Education.

12. Reimbursement to County Boards of Education for operating the Program.

The West Virginia Board of Education through its Division of Vocational Education, Vocational Agriculture Service, reimbursed County Boards of Education monthly for their actual costs and expenditures in operating the program in accordance with an expenditure schedule set forth in the Memorandum of Understanding.

Approved expenditures included:

a. Salaries of instructors, coordinators, and clerical personnel needed.

b. Travel expense of instructors and coordinators.

c. Consumable classroom instructional supplies.

d. Building operation and maintenance, depreciation, and rent.

e. Training aids for individual veterans.

13. Records and Reports.

Reports and records to be submitted by County Boards of Education to the West Virginia Board of Education were listed in this section of the State Plan.

STATE ADMINISTRATIVE, SUPERVISORY AND CLERICAL STAFFS

1946 - 1963

West Virginia Board of Education

The West Virginia Board of Education by legislative action serves as the State Board for Vocational Education. (See code of West Virginia, Chapter 18, Article 10, Section 5 & 8).

Members of the Board when the original contract for IOF Training was signed with the Veterans Administration (May 1, 1947) were: Raymond Brewster, Huntington, President; Mason Crickard, Charleston, Vice-President; Mrs. Julian G. Hearne, Wheeling; Mrs. Thelma Brand, Fairmont; R. D. Bailey, Pineville; W. L. Hart, Morgantown; W. W. Trent, State Superintendent of Schools, Ex Officio; H. K. Baer, Charleston, Secretary.

The 1947 West Virginia Legislature repealed, amended and re-enacted certain sections of Article II, Chapter 18, of the Code of West Virginia dealing with organization and functions of the West Virginia Board of Education, herein, afterwards referred to as the State Board of Education.

The law as amended provided for a State Board of Education to consist of nine members appointed by the Governor and the State Superintendent of Schools, Ex Officio, without a vote. The law further provided that the terms of office of the members then in office should expire June 30, 1947.

The Governor (Clarence W. Meadows) appointed the following persons as members of the new State Board for terms of office beginning July 1, 1947: Mason Crickard, Charleston; Mrs. Thelma B. Loudin, Fairmont; Ross H. Tuckwiller, Lewisburg; W. H. Nelson, Beckley; Raymond Brewster, Huntington; Brooks Cottle, Morgantown; Lawrence R. Lynch, Clarksburg; Garland L. Dunn, Martinsburg; Joseph Rosier, Fairmont; W. W. Trent, State Superintendent of Schools, Ex Officio and Executive Officer (1947-1957); H. K. Baer, Secretary (1947-1963).

Others who served on the State Board of Education during the continuation of the contracts with the Veterans Administration, covering the IOF Training Program (May 1, 1947 - June 30, 1963) were: James K. Holliday, Montgomery; Lacy I. Rice, Martinsburg; Charles A. Williamson, Charleston; James H. Rowland, Beckley; Paige Woolridge, Bluefield; Dr. J. H. Murray, Jenkinjones; James E. Ansel, Moorefield; Elizabeth V. Hallanan, Charleston; C. Lee Spillers, Wheeling; Arthur H. Spangler, Bluefield; J. C. Jefferds, Charleston; Samuel Baskerville, Charleston; Perce J. Ross, Buckhannon; Mrs. Claude R. Davisson, Weston; Mrs. Anagene P. Bartram, Kenova; Charles H. Brown, Kingwood; Stephen J. Russek, Wheeling.

The following served as State Superintendents of Free Schools; and Executive Officer of State Board of Education: R. Virgil Rohrbaugh, 1957-1962, and Rex M. Smith, 1962-1963.

Supervisory Staff

The members of the staff of the Division of Vocational Education who were responsible for the administration and supervision of the IOF Training during its operation were:

John M. Lowe, State Director of Vocational Education, 1947-1957.

S. D. McMillen, State Director of Vocational Education, 1957-1964; State Supervisor of Vocational Agriculture, 1952-1957; Assistant State Supervisor of Vocational Agriculture, 1947-1952.

Fred W. Eberle, Assistant State Director of Vocational Education, 1961-1963; Acting State Director of Vocational Education, 1963.

H. N. Hansucker, State Supervisor of Vocational Agriculture, 1947-1952.

H. E. Edwards, State Supervisor of Vocational Agriculture, 1957-1963; Assistant Supervisor of Vocational Agriculture, 1947-1957. **

W. H. Wayman, Assistant State Supervisor of Vocational Agriculture, 1953-1963; District Supervisor of Vocational Agriculture, 1947-1953. **

Guy E. Cain, Assistant State Supervisor of Vocational Agriculture, 1957-1963; District Supervisor of Vocational Agriculture, 1947-1957. **

John B. Swecker, District Supervisor of Vocational Agriculture, 1947-1951. *

R. Clarke Butler, District Supervisor of Vocational Agriculture, 1951 (4-1/2 months).

Byrl L. Law, District Supervisor of Vocational Agriculture, 1949-1950.

John J. Harvey, District Supervisor of Vocational Agriculture, 1951-1953.

J. D. Anderson, Supervisor of Equipment, 1948 (7 months).

Joseph Bailey, Assistant Supervisor of Vocational Agriculture, 1957-1963.

Carl Thomas, 1962-1963 (7 months).

Mrs. Hilda Morris, Chief Accountant, 1947-1957.

William E. Dawson, Chief Accountant, 1957-1963.

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* Salaries paid from IOF Training Funds during entire period of employment.

** Salaries paid from IOF Training Funds during a part of period of employment.

Clerical Staff
(Salaries paid from IOF Funds)

Mrs. Violet D. Smith	July 1, 1947 to April 23, 1948
Mrs. Martha K. Roberts	March 1, 1948 to September 30, 1949
Miss Carline Dorr	September 12, 1949 to April 23, 1951
Mrs. Virginia Gillespie	April 1, 1949 to May 31, 1950
Mrs. Marie Sayer	July 9, 1951 to April 30, 1953
Miss Charlotte Morrison	August 1, 1947 to March 14, 1948
Mrs. Nancy H. Murray	September 1, 1948 to October 11, 1949
Mrs. Martha West	June 1, 1950 to January 31, 1951
Miss Dorothy Coberly	August 1, 1948 to September 27, 1950
Miss Betsy Blundon	October 1, 1949 to September 27, 1950
Miss Norma Sayer	September 25, 1950 to March 7, 1952
Mrs. Frances P. Pandorg	July 1, 1951 to December 31, 1953
Miss Anne Barnette	November 16, 1953 to May 31, 1955
Mrs. Virginia C. Kutz	October 1, 1947 to April 15, 1949
Miss Mary Jo Lucas	April 1, 1953 to December 31, 1953
Mrs. Charlotte Fleming	January 1, 1954 to May 31, 1963

Other employees on the clerical staff for periods of less than six months were:

Betty Schroll	1948	3 months
Ilene Short	1947	1 month
Ann Lowe	1948	2 months
Helen Alyes	1948	5-1/2 months
Joan Kittle	1950-51	4 months
Ora B. Hamilton	1951	2-1/2 months
Kitty Hall	1953	5 months
Wilma Jo Costlow	1954	1 month
Ruth Way	1955	1 month

+ DATES

Administration Circulars Prepared and Released

Circular 1. November 10, 1947 - Duties and Responsibilities of the regular Vo-Ag teacher in the Institutional On-Farm Program.

Circular 2. November 15, 1947 - Preparing IOF Forms 1, 2 and 4.

Circular 3. January 15, 1948 - Report of Income Institutional On-Farm Training (IOF Form 11 and VA Form 7-1922).

Circular 4.	February 15, 1948 - Preparing IOF Forms 3, 7, 8, 9, 10.
Circular 5.	March 10, 1948 - Policies Relating to the Purchase of Consumable Classroom Instructional Supplies and Equipment.
Circular 6.	May 1, 1948 - Preparing Applications for IOF Training--Public Law 346 (IOF Form 5 and VA Form 7-1921).
Circular 7.	June 1, 1948 - Summary Report of Attendance (IOF Forms 4A, 4B and 4C).
Circular 8.	September 1, 1948 - IOF Course of Study.
Circular 9.	December 1, 1948 - Professional Ethics.
Circular 10.	December 15, 1948 - Report of Interruption (IOF Form 3).
Circular 11.	February 1, 1949 - IOF Certificates (IOF Form 12).
Circular 12.	February 1, 1949 - Providing On-Farm Instruction for Veterans.
Circular 13.	April 1, 1949 - IOF Training in the Employer-Trainee Category.
Circular 14.	August 1, 1949 - Entrances, Interruptions and Re-entrances, Institutional On-Farm Training.
Circular 15.	August 1, 1950 - Improving the IOF Program.
Circular 15A.	November 10, 1950 - New Procedures.
Circular 16.	May 16, 1951 - Cut-off Dates for P.L. 346.
Circular 17.	September 15, 1952 - Summary of In-Service Training Conferences.
Circular 18.	December 1, 1952 - Public Law 16 - Records and Reports.
Circular 19.	February 1, 1953 - Summary of Recommendations - IOF Conferences.
Circular 20.	August 15, 1953 - Public Law 550 Procedures - Institutional On-Farm Training.
Unmarked Circular	June 1, 1948 - Developing a four year Course of Study for IOF Trainees.
"	July 1, 1948 - A Course of Instruction for IOF Trainees.
"	November 1, 1948 - Increase the size of the Farm Business.
"	November 1, 1948 - Leading Group Discussions.

TEACHING PERSONNEL

Certification of Teachers

As in any new educational program the problem of the recruitment, certification, and in-service training of teachers to serve in the IOF training program was of primary importance in getting the classes started and in improving the quality of instruction as the program developed.

Early in 1947 requirements were established for the certification of instructors to teach agriculture and related subjects to farm veterans enrolled in the IOF classes. These requirements were included in the approved State Plan for Organizing and Conducting Institutional On-Farm Training in Agriculture for Farm Veterans and were as follows:

1. Teacher of vocational agriculture who held valid teaching certificates in West Virginia qualified as local supervisors or teachers of IOF training classes.

2. All other teachers of such classes were required to obtain Special Certificates which were classified as--

   Category "A". Minimum qualification - Graduation from a college of agriculture.

   Category "B". Minimum qualifications - Two or more years of college agriculture plus three or more years of successful farm experience.

   Category "C". Minimum qualifications - Two or more years of college training plus five or more years of farm experience as a farm owner, manager, partner or renter after reaching the age of 21 years.

   Category "D". Minimum qualification - Graduation from high school plus five or more years of successful farm experience as a farm owner, manager, partner, or renter after reaching the age of 21 years and within the past ten years. Individuals over 35 years of age who were highly experienced and successful farmers were not required to be high school graduates. A teacher qualifying under Category "D" could serve only until a better qualified teacher could be secured.

For the most part salaries of teachers were set in keeping with the kind, or category of his certificate.

With consideration for the foregoing qualifications, special teachers for the IOF program were recruited from former teachers of vocational agriculture; agriculture college graduates; and successful farmers, with or without, college training.

Such persons were issued special certificates by the Division of Certification, State Department of Education upon recommendation by the county superintendents of schools and approval of their qualifications by the State Supervisor of Vocational Agriculture.

The IOF training instructors were employed by the county boards of education and assigned to high schools having department of vocational agriculture as assistant teachers of vocational agriculture, and to schools not having departments of vocational agriculture as special teachers of vocational agriculture. The salaries and travel expenses of all IOF instructors were paid by the county boards of education from Federal funds transmitted to them monthly by the Veterans Administration through the State Board of Education.

The following table shows the certification by counties, of local supervisors and teachers who were engaged in IOF training, full-time or part-time, between March 1946 and June 1963. The table shows that there were 537 local supervisors and teachers employed in the 50 counties which operated IOF training programs sometime during the 17 year period. This figure of 537 represents 504 different individuals as 6 teachers were employed in 3 different counties and 21 teachers were employed in 2 different counties thus accounting for 33 duplications in the table.

Further, the certification table shows that there were 54 teachers who taught farm mechanics only. These teachers, usually local mechanic, were employed on a part-time basis to supplement the instruction by the regular teachers of the classes of farm veterans.

CLASSIFICATION OF CERTIFICATES HELD BY
IOF INSTRUCTOR-COORDINATORS AND SUPERVISORS

Check List

	Vo-Ag	Special "A"	Special "B"	Special "C"	Special "D"	Farm Mech.	Total
Barbour	4	2		2	5	1	14
Berkeley	6	1		2	3	3	15
Boone							
Braxton	7	6	1	3	3		20
Brooke		1	1		1		3
Cabell	2	3		1	1	1	8
Calhoun	2			1	10	1	14
Clay	3	1		1	1	2	8
Doddridge	2	1		3		1	7
Fayette	1	1			2		4
Gilmer	6				7		13
Grant	1	2		2	2		7
Greenbrier	14	3	1	2		1	21
Hampshire	5	1	2	3	2	4	17
Hancock		2					2
Hardy	4	3		4		6	17
Harrison	2	3					5
Jackson	6	11		6		1	24
Jefferson	4	1	3	3			11
Kanawha	1	1		1			3
Lewis	5	3	1	2	2	2	15
Lincoln	3	1		4	2	1	11
Logan							
Marion	2				1	1	4
Marshall	2	7		4			13
Mason	5	3		5		1	14
McDowell							
Mercer	2	2		2		3	9

CLASSIFICATION OF CERTIFICATES HELD BY IOF INSTRUCTOR-COORDINATORS AND SUPERVISORS

Check List

	Vo-Ag	Special "A"	Special "B"	Special "C"	Special "D"	Farm Mech.	Total
Mineral	3	3		1	1	3	11
Mingo							
Monongalia	4	4					8
Monroe	4	1	1	1	4	2	13
Morgan	2	5	2		1	1	11
Nicholas	2		2		1	1	6
Ohio		4					4
Pendleton	4	1		3	4	2	14
Pleasants					1		1
Pocahontas	5	1			3		9
Preston	13	8		1		1	23
Putnam	4			6	3	2	15
Raleigh	3	3					6
Randolph	4	6	1	3	1	3	18
Ritchie	6	4		3	4		17
Roane	3	6	1	3	4	4	21
Summers	4			2	1		7
Taylor	1				2	1	4
Tucker	1	2	1	1	1	2	8
Tyler	1	3	1	2	2		9
Upshur	6	1		2			9
Wayne	4	7	1			1	13
Webster			3				3
Wetzel	2	5	1	2			10
Wirt	2		3		4	2	11
Wood	1	3		1	2		7
Wyoming	OK	OK	OK	OK	OK	OK	OK
	168	126	26	82	81	54	537
Less	18	9	3	2	1		33
Net	150	117	23	80	80	54	504

The Teacher of Vocational Agriculture And The IOF Training Program

From the beginning of the IOF Training Program in 1946, until its termination on May 31, 1963, teachers of vocational agriculture employed in the high schools of the State assisted in the supervisory and instructional phases of the program. During this span of more than 17 years, 137 high school teachers of vocational agriculture were employed on a part-time basis to teach farm veterans or to supervise IOF instructors in their respective communities. Of this number (137) 51 performed supervisory service only and 37 taught farm veterans only, and 48 teachers served as both supervisors and instructors.

These regular Vo-Ag teachers received some additional remuneration for their work with the Institutional On-Farm Training Program. The amount of additional remuneration was determined by the extent of their duties over and above their regular contractual commitments and did not exceed the following amounts a month:

With one assistant instructor	$15.00
With two assistant instructors	$25.00
With three assistant instructors	$30.00

In addition to the 137 high school teachers of Vo-Ag who assisted with the IOF program, thirteen former teachers of vocational agriculture or teachers holding certificates to teach vocational agriculture in high school were employed to teach IOF classes. These teachers received the same salary as regular Vo-Ag teachers in the county. Thus, a total of 150 teachers of vocational agriculture were employed in the IOF Training Program in some capacity during the more than 17 years it was in operation.

Many teachers of Vocational Agriculture assisted with the IOF Program who did not receive additional pay therefor. This assistance was given to the administration and supervision of the program, to the instructional phase, and to the individual veteran.

In November 1947, IOF Circular No. 1 was prepared and distributed outlining the duties and responsibilities of the regular Vo-Ag teacher in the Institutional On-Farm Program.

In-Service Training of Teachers

The in-service training of teachers and coordinators employed by the various counties in their IOF training programs was the responsibility of the Vocational Agriculture Service, Division of Vocational Education, State Board of Education, and the Department of Rural Organization (later Department of Agricultural Education) at West Virginia University.

This in-service training was accomplished through intensive short courses, workshops, group and individual conferences, the preparation and distribution of teaching aids, and by the use of circular letters.

Persons on the agricultural education teacher training staff at West Virginia University at some period during the 17 year span of IOF training, and who assisted in the in-service training of teachers, were:

Dr. D. W. Parsons	1946 - 1951
Dr. C. W. Hill	1946 - 1956
Dr. R. C. Butler	1948 - 1963
Joe Paul Bail	1951 - 1954
John B. Swecker	1956 - 1960
Warren G. Kelly	1957 - 1963
O. Claude McGhee	1960 - 1963

During the period from 1946 to 1963 four statewide short courses for IOF training personnel were organized and conducted by the State Supervisory and Teacher Training Staffs. They were assisted by representatives of the Veterans Administration and by subject matter specialists of the College of Agriculture, West Virginia University.

The first of these state wide short courses was held in Lewisburg, August 20, 21, and 22, 1946. The second state wide short course was held at the West Virginia University, Morgantown, July 19-23, 1946, as were the third and fourth short courses, on July 25-29, 1949, and August 14-18, 1950.

Topics discussed at these four state wide short courses included: Planning Instruction, Classroom Teaching Methods, On-Farm Group Instruction, On-Farm Individual Instruction; and in the fields of technical agriculture, soil conservation, plant and animal pathology, farm economics, forestry, horticulture, animal husbandry, dairy, poultry, and agricultural engineering.

In addition to the four state wide courses just listed, a number of one and two-day conferences were held throughout the state for IOF teachers, coordinators, supervisors and county school officials.

These shorter meetings were held to keep IOF personnel up to date on training plans and procedures, teaching methods, agricultural practices, and administrative policies.

Summary of In-Service
Workshops and Conferences
1946-1963

Dates	Place	Length	Attend	Staff
State wide:				
Aug. 20-22, 1946	Lewisburg	20 Hours	75	Hansucker, Edwards, McMillen Lytle VA
July 19-23, 1948	Morgantown	32 Hours	210	Supervisory and Teacher Training Staffs, Agriculture Instructor
July 25-29, 1949	Morgantown	32 Hours	200	Supervisory and Teacher Training Staffs, Agriculture Instructor
Aug. 14-18, 1950	Morgantown	32 Hours	150	Supervisory and Teacher Training Staffs, Agriculture Instructor
District:				
June 3 - July 11, 1947	6 Places	15 Hours		Toben, Chambliss, Hill Vo-Ag Supervisor
Aug. 7-8, 1947	Lewisburg	12 Hours		Parsons, Hill, Edwards
Aug. 1947	Morgantown	12 Hours		Parsons, Hill, Edwards
Nov. 19-25, 1947	4 Places	6 Hours		Edwards, Lytle
Dec. 10-19, 1947	11 Places	4 Hours		Hansucker, Edwards
Oct. 28-30, 1948	Morgantown	15 Hours		Edwards, Parsons, Hill
Jan. 31 - Feb. 10 1949	8 Places	3 Hours		Vo-Ag Supervisors and Teacher Trainers
Dec. 5-15, 1949	12 Places	3 Hours		Edwards, District Vo-Ag Supervisor
Oct. 23-31, 1950	6 Places	6 Hours		Edwards, Dist. Supervisor
Mar. 16, 1951	Kingwood	5 Hours		Parsons, Wayman

Dates	Place	Length	Attend	Staff
Jan. 4-17, 1952	7 Places	6 Hours		Edwards
Sept. 10-16, 1952	5 Places	6 Hours		Edwards
Dec. 3-11, 1952	5 Places	6 Hours		Edwards, Reger
Jan. 5-9, 1953	5 Places	6 Hours		Edwards, Brookover
Aug. 20-26, 1953	5 Places	6 Hours		Edwards
Mar. 7-9, 1955	3 Places	3 Hours		Edwards, Dist. Supervisor

Graduate Research Problems And Special Topics On The IOF Training Program At West Virginia University

Graduate students in the College of Agriculture, Home Economics, and Forestry, West Virginia University, submitted a number of theses, problems and special topics dealing with different phases of the IOF Training Program as partial fulfillment of the requirements for their advanced degrees.

Many of these studies were used by state and district supervisors and teacher-trainers as guides in the operation of the IOF Training Program.

A list of the theses, problems and special topics follows:

Theses:

1. A Study of the Progress of a Group of Veterans Enrolled in IOF Training in Hardy County, West Virginia .... Lacy E. Cochran, 1954.

2. The IOF Training in Tucker County, West Virginia .... Robert A. Felton, 1954.

3. Evaluation of IOF Training in Marshall County, West Virginia .... Harold Stuart Jones, 1950.

4. An Evaluation of the Progress of a Group of Veterans Enrolled for IOF Training in Fayette County, Pennsylvania .... Donald R. Mercer, 1951.

5. A Progress Study of Veterans Who Were Enrolled in IOF Training in Harrison County, West Virginia .... Orian A. Post, 1957.

6. An Evaluation of the Progress of a Group of Veterans Enrolled for IOF Training in Upshur County, West Virginia .... John B. Swecker, 1950.

Problems:

1. A Course of Instruction for IOF Trainees in General Farming.... Henry L. Bailey, 1948.

2. A Study of Thirty-six Veterans Enrolled in the IOF Training Program in Harrison County, West Virginia .... Ernest F. Bond, 1950.

3. Farm Placement Opportunities for World War II Veterans in the University High School Area .... R. C. Butler, 1945.

4. Progress Made by Thirty Veterans Enrolled in the IOF Training in Clay County, West Virginia .... Lowell N. Cook, 1951.

5. An Evaluation of the Progress of a Group of Self-Employed Veterans Enrolled for IOF Training in West Virginia .... Homer E. Edwards, 1953.

6. A Study of Progress Made by Veterans in the IOF Training in Lewis County, West Virginia .... James C. Falkenstine, 1950.

7. A Study of IOF Trainees in Pendleton County, West Virginia .... Byrl L. Law.

8. A Four-Year Course of Study for the Veterans Enrolled in the IOF Training Program at Linden, West Virginia .... Sherrill D. McMillen, 1948.

9. A Study of Sixty-eight Veterans Enrolled in the IOF Training Program in Wetzel County, West Virginia .... George S. Mullett, 1951.

Special Topics:

1. Transition from IOF Training to Young Farmer Classes .... Harry W. Eakin, 1963.

2. An Analysis of the Farm Management Problems of Veteran Trainees .... Robert A. Felton, 1952.

As aids to IOF teachers, coordinators, supervisors, and school administrators, a number of publications were prepared by the State Supervisory and Teacher Training Staffs, and distributed to county IOF personnel.

An incomplete list of such publications follows:

1. Teaching Methods for Out-of-School Groups .... C. W. Hill, 1947.

2. Providing On-Farm Instruction for Veterans .... H. E. Edwards, 1949.

3. Procedures Used in Developing a Four-Year Course of Study for the Institutional On-Farm Training Program .... S. D. McMillen, 1948.

4. Professional Ethics for Instructors of Institutional On-Farm Training in Agriculture for Veterans .... H. E. Edwards, 1948.

5. Approved List of Consumable Instructional Supplies and Training Aids .... Institutional On-Farm Training .... Vocational Agriculture Service, 1948.

In addition to the foregoing mimeographed publications, the State Supervisory Staff mailed to IOF teachers, coordinators, supervisors and school administrators a large number of circular letters dealing with changes in VA

regulations, teaching aids, procedures, records and reports on classes and trainees, financial records and reports, and many others having to do with operational procedures.

THE TRAINING PROGRAM

Enrollment

Veterans were entered into the Institutional On-Farm Training on the first day of each month after one copy of all necessary forms were in the hands of the State Supervisor of Vocational Agriculture by the 24th of the preceeding month. These necessary forms were:

1. VA Form 7 - 1921 - Application for Course of Institutional On-Farm Training, with certificate of entitlement or service discharge attached.

2. IOF Form 5 - Application for Farm Approval.

3. IOF Form 6 - Veteran's Individual Training Program, including one copy of the Veterans Farm Lease or Partnership Agreement.

The veterans subsistence payments began as of the date of his enrollment in training.

Length of Course

The duration of an approved course for each veteran was as long as, but no longer than was necessary to attain the training objective of that particular veteran. A veteran who performed part of his course at the employee of another person was enrolled for a 12 months course. A veteran who performed part of his course on a farm under his own control was enrolled for up to 48 months.

Course of Instruction

Each veteran enrolled was required to receive a minimum of 200 hours of organized off-farm group instruction in agricultural and related subjects a year, at least 8 hours of which were required each month. All courses were based on the training objectives of the trainees.

A large part of the off-farm group instruction was given when farm work was not pressing. In many cases as many as 130 hours, in one or more intensive courses, were provided in three months for veteran groups, with at least 8 hours of instruction given in the remaining months of the year.

Where adequate shop facilities were available, up to 30 hours a year of farm shop instruction was provided.

For the most part the conference method of teaching was followed in the off-farm group instruction with the use of demonstrations, visual aids, guest speakers and reference materials as supplemental methods.

Attendance at agricultural meetings, not to exceed 12 hours a year could be counted as a part of the 200 hours of off-farm group instruction, provided prior approval was given by the instructor.

Each veteran was required to receive not less than 100 hours of on-farm instruction a year of which up to 50 hours could be group instruction applicable to a group of veterans. Usually this instruction was provided for small groups of three to five trainees although at times such instruction was provided for all trainees in a group. In all cases, the IOF instructor was present.

A minimum of 50 hours a year of on-farm individual instruction was required for each trainee. Such instruction was given on his farm by the IOF instructor with at least two visits by the instructor to the farm each month.

Thus, each veteran who completed a planned training program satisfactorily received:

1. 200 hours of off-farm group instruction a year for the period of his entitlement which was one-four years, depending on his length of military service and his training objective. The 200 hours could include up to --
   a. 30 hours of instruction in farm mechanics, and,
   b. 12 hours of attendance at agricultural meetings.

2. 50 hours, or less, of on-farm group instruction a year.

3. 50 hours, or more, of on-farm individual instruction a year.

On-farm group and individual instruction were provided for a minimum of 100 hours a year.

Interruption of Training

If, for any reason, a veteran was dropped from the rolls, the IOF instructor reported the effective date of the interruption to the VA, the State Supervisor of Vocational Agriculture and the county office, on IOF Form 3.

Reasons for interruption were:

1. Completion of the course.

2. Voluntary interruption by trainee. (He could re-enter training within 4 months).

3. Unsatisfactory progress.

4. Unsatisfactory attendance.

5. Unsatisfactory conduct.

6. Left training facility (the farm approved for part of his training).

Completion of Training

When a veteran completed his training because:

1. His entitlement ended, or

2. He completed the course, or

3. He was declared rehabilitated (disabled veteran) or,

4. He was declared trained, he was issued a certificate upon application by the county school system (IOF Form 12). The certificate gave the number of months of training completed, the date of completion and the name of the school which provided the training. The certificate was signed by:

   a. The State Supervisor of Vocational Agriculture,

   b. The County Superintendent of Schools,

   c. The IOF Instructor, and

   d. The Vo-Ag Teacher.

Often the certificates were presented to a group of eligible veterans at a public "graduation" exercise held at the school.

THE PROGRAM

Extent Of The Institutional On-Farm Training Program

During May 1947, the first month the Institutional On-Farm Training Program operated under the state wide contract between the State Board of Education and the Huntington Regional Office of the Veterans Administration, 31 counties conducted courses under its provisions in which 2,255 farm veterans were enrolled. Within a short time, 5 other counties started programs: Doddridge and Wood in June 1947, Raleigh in July 1947, and Fayette and Webster in October 1947. The 4 northern panhandle counties which operated their IOF training under individual contracts with the Pittsburgh Regional Office of the Veterans Administration started their training for farm veterans as follows: Brooke, March 1947; Hancock, July 1947; Marshall, July 1946; and Ohio, January 1947.

The following table gives the date of the first and last months the different counties operated programs and the number of veterans enrolled during the first and last month of operation.

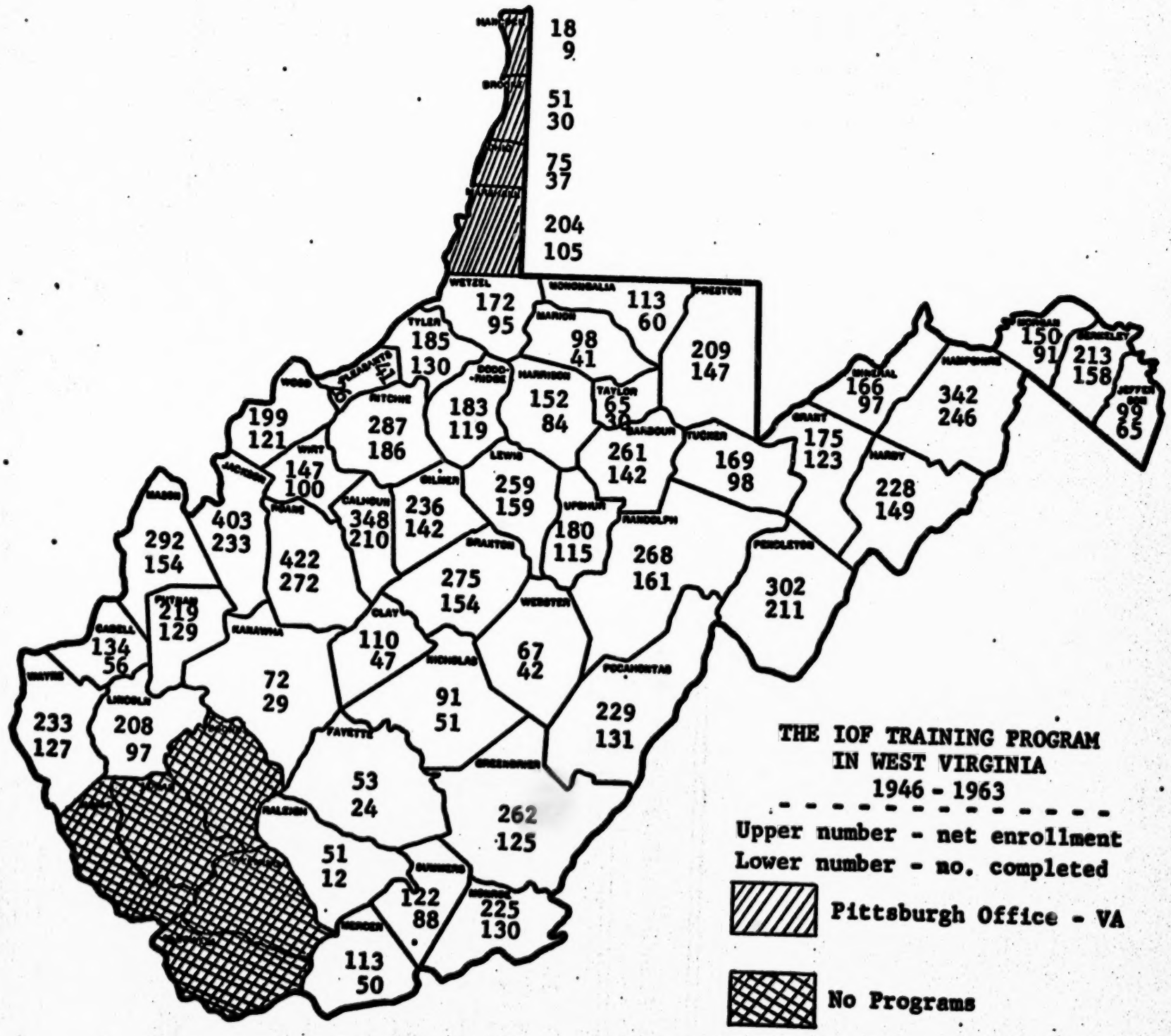
LENGTH OF TIME COUNTIES
PROVIDED TRAINING

	Beginning Date	Closing Date		Beginning Date	Closing Date
Barbour	Oct. 1946	Nov. 1960	Mineral	July 1946	--
Berkeley	July 1946	Feb. 1962	Mingo	--	--
Boone	--	--	Monongalia	Oct. 1946	Oct. 1954
Braxton	Aug. 1946	Dec. 1961	Monroe	July 1946	Oct. 1960
Brooke	Mar. 1947	Aug. 1952	Morgan	July 1946	May 1952
Cabell	Oct. 1946	May 1962	Nicholas	June 1946	June 1952
Calhoun	Oct. 1946	July 1960	Ohio	Feb. 1946	Mar. 1952
Clay	June 1946	Mar. 1954	Pendleton	Sept. 1946	Apr. 1962
Doddridge	June 1947	July 1959	Pleasants	Jan. 1947	Dec. 1952
Fayette	Oct. 1947	June 1955	Pocahontas	June 1946	Mar. 1960
Gilmer	Dec. 1946	Mar. 1962	Preston	Aug. 1946	July 1961
Grant	Aug. 1946	Dec. 1959	Putnam	July 1946	Aug. 1958
Greenbrier	Mar. 1946	Dec. 1959	Raleigh	July 1947	Mar. 1957
Hampshire	June 1946	May 1963	Randolph	June 1946	July 1954
Hancock	Oct. 1947	Aug. 1950	Ritchie	Nov. 1946	Aug. 1962
Hardy	June 1946	Sept. 1961	Roane	Sept. 1947	May 1963
Harrison	Aug. 1946	May 1963	Summers	July 1946	Jan. 1955
Jackson	June 1946	May 1960	Taylor	Sept. 1946	May 1963
Jefferson	Nov. 1946	July 1953	Tucker	Aug. 1946	July 1959
Kanawha	Oct. 1946	June 1959	Tyler	Jan. 1947	Feb. 1957
Lewis	July 1946	Aug. 1961	Upshur	Sept. 1946	May 1963
Lincoln	July 1946	Mar. 1959	Wayne	June 1946	Apr. 1960
Logan	--	--	Webster	Oct. 1947	Nov. 1955
Marion	Dec. 1946	June 1958	Wetzel	Jan. 1947	Apr. 1959
Marshall	Aug. 1946	Apr. 1953	Wirt	July 1946	Feb. 1953
Mason	June 1946	Oct. 1959	Wood	Oct. 1946	Oct. 1959
McDowell	--	--	Wyoming	--	--
Mercer	Nov. 1946	Mar. 1961			

NUMBER OF VETERANS IN TRAINING
AND
AMOUNT OF TRAINING PROVIDED
1946-1963

County	No. Enrolled	No. Trans.	Net Enr.	No. Comp.	No. Drop	% Comp.	Months of Training Provided			
							Total	Per Tr. Comp.	Per Tr. Drop	Per Trainee
Barbour	263	2	261	142	119	54.4	6,542	37.1	10.4	24.9
Berkeley	213	0	213	158	55	74.2	4,684	26.6	8.5	22.0
Boone	No Program									
Braxton	280	5	275	154	121	56.0	7,215	36.3	12.9	25.8
Brooke	54	3	51	30	21	58.6	1,215	33.5	9.6	22.9
Cabell	138	4	134	56	78	41.8	2,478	28.5	10.8	17.0
Calhoun	355	7	348	210	138	60.3	9,745	36.3	14.6	27.5
Clay	113	3	110	47	63	42.7	2,107	31.0	9.8	18.6
Doddridge	184	1	183	119	64	65.0	4,597	32.2	11.7	25.0
Fayette	53	0	53	24	29	45.3	1,270	36.7	13.4	24.0
Gilmer	238	2	236	142	94	60.2	6,494	36.7	13.4	27.3
Grant	178	3	175	123	52	70.3	4,545	32.5	10.0	25.5
Greenbrier	265	3	262	125	137	47.7	4,797	27.2	10.0	18.1
Hampshire	347	5	342	246	96	71.9	8,398	29.8	11.1	24.2
Hancock	20	2	18	9	9	50.0	455	33.0	14.4	22.7
Hardy	237	9	228	149	79	65.3	5,607	31.1	11.1	23.6
Harrison	157	5	152	84	68	55.3	3,231	30.4	9.3	20.6
Jackson	413	10	403	233	170	57.8	10,077	34.2	11.7	24.4
Jefferson	105	6	99	65	34	65.6	2,007	24.8	9.8	19.1
Kanawha	76	4	72	29	43	40.3	1,508	34.3	10.9	19.8
Lewis	266	7	259	159	100	61.4	6,317	33.3	9.6	23.7
Lincoln	211	3	208	97	111	46.6	4,880	34.3	13.4	23.1
Logan	No Program									
Marion	100	2	98	41	57	41.8	1,893	30.9	10.6	18.9
Marshall	207	3	204	105	99	51.5	5,036	34.8	13.5	24.3
Mason	294	2	292	154	138	52.7	6,017	30.0	9.9	20.5
McDowell	No Program									

County	No. Enrolled	No. Trans.	Net Enr.	No. Comp.	No. Drop	% Comp.	Months of Training Provided			
							Total	Per Tr. Comp.	Per Tr. Drop	Per Trainee
Mercer	114	1	113	50	63	44.2	2,099	29.5	9.7	18.4
Mineral	169	3	166	97	69	58.4	3,591	30.4	9.3	21.2
Mingo	No Program									
Monongalia	115	2	113	60	53	53.1	2,396	31.1	9.6	20.8
Monroe	229	4	225	130	95	57.8	4,504	26.4	10.5	19.7
Morgan	152	2	150	91	59	60.7	3,336	28.3	12.4	21.9
Nicholas	93	2	91	51	40	55.9	2,204	34.1	11.1	23.7
Ohio	86	11	75	37	38	49.3	1,838	33.0	12.6	21.4
Pendleton	311	9	302	211	91	69.9	7,983	32.5	11.2	25.3
Pleasants	41	0	41	26	15	63.4	992	32.8	9.3	24.2
Pocahontas	230	1	229	131	98	57.2	5,077	32.1	8.8	22.1
Preston	209	0	209	147	62	70.3	6,377	38.2	12.1	30.5
Putnam	226	7	219	129	90	58.9	5,620	34.4	12.1	24.9
Raleigh	53	2	51	12	39	23.5	766	33.1	9.0	14.5
Randolph	273	5	268	161	107	60.1	6,550	33.1	10.9	24.0
Ritchie	295	8	287	186	101	64.8	8,084	36.6	11.8	27.4
Roane	429	7	422	272	150	64.5	11,070	34.0	11.5	25.8
Summers	124	2	122	88	34	72.1	3,415	34.8	9.7	27.5
Taylor	72	7	65	35	30	53.8	1,483	29.0	12.6	20.6
Tucker	175	6	169	98	71	58.0	4,530	36.3	12.6	25.9
Tyler	185	0	185	130	55	70.3	5,419	36.8	11.4	29.3
Upshur	182	2	180	115	65	63.9	5,006	37.1	11.0	27.5
Wayne	233	0	233	127	106	54.5	5,169	30.9	11.7	22.2
Webster	67	0	67	42	25	62.7	1,940	38.6	12.7	29.0
Wetzel	178	6	172	95	77	55.2	4,539	36.6	12.7	25.5
Wirt	148	1	147	100	47	68.0	4,305	37.1	12.4	29.1
Wood	199	0	199	121	78	60.8	5,063	34.5	11.3	25.4
Wyoming	No Program									
TOTALS	9,355	179	9,176	5,443	3,733	59.3	224,488	33.1	11.3	24.0



THE IOF TRAINING PROGRAM
IN WEST VIRGINIA
1946 - 1963

Upper number - net enrollment
Lower number - no. completed

Pittsburgh Office - VA

No Programs

NUMBER OF TRAINEES IN THE INSTITUTIONAL ON-FARM TRAINING PROGRAM BY MONTHS 1946 - 1963

Month	1946 1947	1947 1948	1948 1949	1949 1950	1950 1951	1951 1952	1952 1953	1953 1954	1954 1955	1955 1956	1956 1957	1957 1958	1958 1959	1959 1960	1960 1961	1961 1962	1962 1963
July		2,718	3,790	3,637	3,354	2,100	996	517	294	199	188	167	161	125	52	27	7
August		2,894	3,796	3,593	3,275	2,010	953	494	301	193	184	160	162	117	46	28	6
September		2,995	3,726	3,516	3,127	1,868	906	474	296	194	183	158	163	103	49	27	5
October		3,069	3,662	3,540	2,973	1,743	861	456	277	187	158	154	166	96	47	24	6
November		3,182	3,614	3,524	2,833	1,649	809	431	268	191	174	159	158	97	42	23	6
December		3,223	3,613	3,492	2,597	1,545	777	416	257	186	173	159	151	93	41	20	6
January		3,251	3,571	3,434	2,469	1,474	741	403	237	186	173	158	149	87	41	18	5
February		3,336	3,573	3,440	2,344	1,399	708	385	233	188	168	157	147	83	42	14	4
March		3,436	3,609	3,400	2,242	1,313	670	362	239	196	162	161	145	73	41	13	4
April		3,550	3,607	3,393	2,195	1,218	610	337	237	199	166	163	135	69	36	11	4
May	2,255	3,658	3,642	3,365	2,122	1,118	574	333	226	199	161	164	132	66	37	8	4
June	2,503	2,741	3,699	3,382	2,061	1,052	543	324	217	196	165	162	131	61	32	7	
TOTAL	4,758	39,053	43,902	41,716	31,592	18,489	9,148	4,932	3,082	2,314	2,055	1,922	1,800	1,070	506	220	57
No. Counties Operating Programs	43	46	46	46	46	46	44	40	37	32	30	31	30	26	17	12	5

FARMING STATUS OF VETERANS AT THE COMPLETION OF THEIR TRAINING

County	O	P	R	L	Total
Barbour	78	40	13	11	142
Berkeley	28	36	21	73	158
Boone					
Braxton	104	24	21	5	154
Brooke	12	8	5	5	30
Cabell	26	8	8	14	56
Calhoun	152	23	17	18	210
Clay	29	9	5	4	47
Doddridge	77	9	7	26	119
Fayette	20	1	3		24
Gilmer	101	24	11	6	142
Grant	44	41	9	29	123
Greenbrier	36	34	6	49	125
Hampshire	79	52	20	95	246
Hancock	4	5			9
Hardy	61	37	17	34	149
Harrison	22	18	14	30	84
Jackson	127	71	7	28	233
Jefferson	7	12	13	33	65
Kanawha	15	10	3	1	29
Lewis	59	61	12	27	159
Lincoln	56	3	37	1	97
Logan					
Marion	18	11	3	9	41
Marshall	51	33	12	9	105
Mason	58	39	20	37	154
McDowell					
Mercer	13	15	8	14	50

O-Owner P Partner R-Renter L-Laborer

FARMING STATUS OF VETERANS AT THE COMPLETION OF THEIR TRAINING

County	O	P	R	L	Total
Mineral	49	8	22	18	97
Mingo					
Monongalia	30	11	5	14	60
Monroe	31	33	10	56	130
Morgan	37	8	11	35	91
Nicholas	14	36		1	51
Ohio	8	17	3	9	37
Pendleton	54	72	44	41	211
Pleasants	18	2	3	3	26
Pocahontas	44	44	7	36	131
Preston	86	47	6	8	147
Putnam	76	9	35	9	129
Raleigh	7	2	2	1	12
Randolph	62	55	11	33	161
Ritchie	114	23	40	9	186
Rone	166	50	22	34	272
Summers	67	12	6	3	88
Taylor	15	9	1	10	35
Tucker	49	32	13	4	98
Tyler	78	28	21	3	130
Upshur	76	20	13	6	115
Wayne	57	17	18	25	127
Webster	26	8	7	1	42
Wetzel	55	8	31	1	95
Wirt	69	22	6	3	100
Wood	66	32	12	11	121
Wyoming	--	--	--	--	---
Total	2631	1249	631	932	5443
Per cent:	48.3	22.9	11.6	17.1	

O-Owner P-Partner R-Renter L-Laborer

Farming Status Of Veterans

At The Completion Of Their Training

The farming status of veterans at the completion of their training was determined as follows:

1. Owner - A veteran who owned, managed, and operated his farm.
2. Renter - A veteran who paid cash rent or crop share rent.
3. Partner - A veteran who shared the entire farm business with another.
4. Laborer - A veteran who received a cash wage, with or without, a minor share of some crops.

The table on the preceeding page shows the number of veterans who were in each of the four categories listed above:

Training Objectives Of Veterans Who Completed Training

After a veteran was enrolled in the IOF training program he and his instructors developed his individual training program which was based upon his training objective. His training objective was based upon the location, type, and size of the farm upon which he was to receive his on-farm instruction.

As would be expected in this State the training objective of a great majority of veterans was general farming. However, the training objective of a considerable number of veterans was some type of specialized farming such as poultry, dairy, and livestock farming. The following table shows the training objectives of the 5443 veterans who completed their training.

TRAINING OBJECTIVES OF VETERANS WHO COMPLETED TRAINING

County	Number Completed Training	General Farm	Poultry	Dairy	Fruit	Live-stock	Truck & Small Fruit	Florist	Farm Mgr.	Misc.
Barbour	1,421	133	5	3				1		
Berkeley	158	74	8	17	47	2	5	3		2
Boone										
Braxton	154	131	10			11			2	
Brooke	30	29		1						
Cabell	56	34	5	7				8	2	
Calhoun	210	167	10	2		31				
Clay	47	43	4							
Doddridge	119	115	2	1				1		
Fayette	24	12	6			3	3			
Gilmer	142	134	1	2		3	1		1	
Grant	123	120	3							
Greenbrier	125	70	6	14		9		2	24	
Hampshire	246	149	13	3	71	2	1		7	
Hancock	9	6		3						
Hardy	149	109	40							
Harrison	84	71	3	6					2	2
Jackson	233	178	3	28		19		1	4	
Jefferson	65	47	2	3	11				2	
Kanawha	29	18	4	4	1	1	1			
Lewis	159	144	3	6		3		1	1	1
Lincoln	97	83	9	1		3	1			
Logan										
Marion	41	31		9				1		
Marshall	105	102		3						
Mason	154	100	4	37	4	6	1	1	1	
Mercer	50	29	3	11		2		5		
Mineral	97	78	7	4	4		3		1	
Mingo										
Monongalia	60	39	3	16	1			1		
Monroe	130	102	3	6	2		1		16	

TRAINING OBJECTIVES OF VETERANS WHO COMPLETED TRAINING

County	Number Completed Training	General Farm	Poultry	Dairy	Fruit	Live-stock	Truck & Small Fruit	Florist	Farm Mgr.	Misc.
Morgan	91	51	3	1	31	1			4	
McDowell										
Nicholas	51	36	5	4		6				
Ohio	37	26		10			1			
Pendleton	211	201	9	1						
Pleasants	26	24		1					1	
Pocahontas	131	124	3	2					1	1
Preston	147	140	3	3		1				
Putnam	129	121	3	3		1	1			
Raleigh	12	6	4	1			1			
Randolph	161	146	2	5		7		1		
Ritchie	186	169	5	3		9				
Roane	272	227	6	3		36				
Summers	88	80	6	2						
Taylor	35	29		6						
Tucker	98	97		1						
Tyler	130	119	5	5		1				
Upshur	115	106	2	6		1				
Wayne	127	63	19	24		7	4	8	1	1
Webster	42	29	5			8				
Wetzel	95	95								
Wirt	100	95	2			2			1	
Wood	121	93	6	20		1	1			
Wyoming										
TOTAL	5,443	4,425	245	288	172	176	25	34	71	7

APPROVAL OF
TRAINING AGENCIES & SCHOOLS
FARMS & TRAINING FACILITIES
VETERANS TRAINING PROGRAMS

Approval Of Schools

Prior to the signing of the state wide contract for providing Institutional On-Farm Training between the State Board of Education and the Veterans Administration effective May 1, 1947, approval of schools, farms, individual and training programs was the responsibility of the Veterans Administration. During that period, however, the State Supervisor of Vocational Agriculture approved county plans for conducting the program and presented them to the Veterans Administration for final action. Thus, in a sense, he approved the training agency (the County Board of Education).

After May 1, 1947 and until August 1950, the State Supervisor of Vocational Agriculture approved secondary schools of the State to conduct Institutional On-Farm Training under Public Laws 346 and 377. The Veterans Administration continued to approve schools for training farm veterans under Public Law 16 (disabled veterans). In approving school to conduct the training preference was given to those schools in which there were departments of vocational agriculture.

On January 2, 1948, the Secretary of the State Board of Education, H. K. Baer notified H. G. Hooks, Manager, Veterans Administration, Huntington, that the State Supervisor of Vocational Agriculture (H. N. Hansucker) had approved 78 secondary schools in West Virginia to conduct Institutional On-Farm Training under the provisions of Public Laws 346 and 377. Each of these schools was approved for nine courses of instruction as follows:

1. General Farming
2. Dairy Farming
3. Fruit Farming
4. Livestock Farming
5. Poultry Farming
6. Truck Farming
7. Nursery Farming
8. Greenhouse Operation
9. Farm Manager

Beginning in August 1950 the approval of schools became the responsibility of the State Approval Agency which was the Department of Veterans Education and Training in the State Department of Education. In August 1950 and in subsequent months, Andrew V. Ruckman and later J. Lawson Adkins, Directors of Veterans Education and Training notified the VA that 91 schools were approved to conduct Institutional On-Farm Training having adequate equipment, instructional material and teaching personnel to offer that type of training to veterans.

VA regulations required that all schools be approved, or reapproved, by the State Approval Agency to conduct Institutional On-Farm Training Programs under the provisions of Public Law 550 (Korean Veterans). Accordingly on May 28, 1953, J. Lawson Adkins, Director of Veterans Education and Training, submitted a list of 49 such approved schools to Daniel N. Maxwell, Training Facilities

Section, VA, Huntington. On September 1, 1955 one high school (Mannington) was added to the list.

A list of schools approved for IOF training by the different approval agencies under the provisions of the various Public Laws pertaining to the education and training of farm veterans follows.

SCHOOL APPROVED TO PROVIDE INSTITUTIONAL ON-FARM TRAINING

COUNTY	SCHOOL	Approved by: State Supervisor Vo-Ag	State Approval Agency	State Approval Agcy. P.L. 550
Barbour	Belington High School	x	x	
	Kasson High School	x	x	
	Philippi High School	x	x	x
Berkeley	Bunker Hill High School	x	x	
	Hedgesville High School	x	x	
	Martinsburg High School	x	x	x
Braxton	Burnsville High School	x	x	
	Gassaway High School	x	x	
	Sutton High School	x	x	x
Brooke	Wellsburg High School*		x	
Cabell	Barboursville High School	x	x	x
	Milton High School	x		
Calhoun	Calhoun Co. High School	x	x	x
Clay	Clay Co. High School	x	x	x
Doddridge	Doddridge Co. High School	x	x	x
Fayette	Nuttall High School	x	x	x
Gilmer	Glenville High School*	x	x	x
	Normantown High School		x	
	Sand Fork High School		x	
	Troy High School		x	
Grant	Petersburg High School	x	x	x
Greenbrier	Frankford High School		x	x
	Lewisburg High School	x	x	x
	Smoot High School		x	
Hampshire	Romney High School	x	x	x
Hardy	Mathias High School	x	x	
	Moorefield High School	x	x	x
	Wardensville High School	x	x	
Harrison	Bridgeport High School	x	x	x
	Lost Creek High School	x	x	
Jackson	Gilmore High School		x	
	Ravenswood High School	x	x	
	Ripley	x	x	x
Jefferson	Charles Town High School	x	x	x
	Page-Jackson High School		x	
Kanawha	Elkview High School	x	x	x
Lewis	Walkersville High School		x	x
	Weston High School	x	x	x
Lincoln	Guyan Valley High School		x	

* Did not have a Vo-Ag Department.

SCHOOL APPROVED TO PROVIDE INSTITUTIONAL ON-FARM TRAINING

COUNTY	SCHOOL	Approved by: State Supervisor Vo-Ag	State Approval Agency	State Approval Agcy. P.L. 550
Lincoln	Hamlin High School	x	x	x
Marion	Fairmont High School*	x	x	
	Fairview	x		x
	Mannington			x
Marshall	Cameron High School		x	
	Moundsville High School		x	
	Sherrard High School		x	
Mason	Pt. Pleasant High School	x	x	x
Mercer	Mercer Co. Voc. School*	x		
	Spanishburg High School	x	x	x
Mineral	Elk Garden High School*	x		
	Keyser High School*	x	x	x
Monongalia	Clay-Battelle High School	x	x	
	Morgantown High School	x	x	x
Monroe	Gap Mills High School		x	
	Greenville High School	x	x	
	Peterstown High School	x		
	Union High School	x	x	x
Morgan	Berkeley Springs High School	x	x	
Nicholas	Nicholas Co. High School	x	x	x
Ohio	McKinley Voc. School*		x	
Pendleton	Circleville High School	x	x	
	Franklin High School	x	x	x
Pleasants	St. Marys High School*	x	x	
Pocahontas	Green Bank High School	x	x	x
	Hillsboro High School	x	x	x
	Marlinton High School	x	x	
Preston	Aurora High School		x	x
	Bruceton High School	x	x	x
	Fellowsville High School	x	x	
	Kingwood High School	x	x	x
	Terra Alta High School	x	x	x
Putnam	Buffalo High School	x	x	
	Hurricane High School	x	x	
	Winfield High School	x	x	x
Raleigh	Raleigh Co. Voc. School*		x	x
	Shady Spring High School	x		
	Trap Hill High School		x	
Randolph	Elkins High School	x	x	x
	Harman High School	x		
	Pickens High School*	x		
	Tygart Valley High School	x	x	
Ritchie	Cairo High School	x	x	
	Harrisville High School	x	x	x
	Pennsboro High School	x	x	
Roane	Spencer High School	x	x	x
	Walton High School	x	x	
Summers	Sandstone High School		x	
	Talcott High School	x	x	x
Taylor	Grafton High School	x	x	

*Did not have a Vo-Ag Department.

SCHOOL APPROVED TO PROVIDE INSTITUTIONAL ON-FARM TRAINING

COUNTY	SCHOOL	Approved by: State Supervisor Vo-Ag	State Approval Agency	State Approval Agcy. P.L. 550
Tucker	Parsons High School	x	x	x
Tyler	Sistersville High School		x	x
	Tyler Co. High School	x	x	x
Upshur	Buck-Upshur High School	x	x	x
Wayne	Buffalo Valley High School	x	x	
	Fort Gay High School*		x	
	Wayne Co. High School	x	x	x
Webster	Cowen High School*	x	x	x
Wetzel	Magnolia High School	x	x	x
Wirt	Elizabeth High School	x	x	
Wood	Central Jr.-Sr. High School	x	x	x

*Did not have a Vo-Ag Department.

Thus there was a total of 100 different schools in West Virginia approved to conduct Institutional On-Farm Training Programs. Each of these schools had departments of vocational agriculture except twelve as indicated on the foregoing list of approved schools.

Approval Of Farms

From the beginning of the Institutional On-Farm Training Program each veteran enrolled was required to spend a minimum of 40 hours a week on an approved farm in addition to institutional training provided by the school. Farms were recommended for approval by county advisory committees which were organized in each county which operated an IOF Training Program. The members of the advisory committee were appointed by the county superintendent of schools and meetings of the committee were held under his direction or under the direction of a member of his staff designated by him.

The committee was composed of not less than three members made up of the county agricultural agent, county representatives of other agricultural agencies, and successful farmers. Vocational Agriculture teachers in most instances served as consultants to the committees.

It was the duty of the county advisory committee to recommend for approval all farms in the county for Institutional On-Farm Training. In approving farms the committee was guided by the following policies:

1. For the veteran who performed part of his course on a farm under his own control.

   a. That the farm was equipped properly.
   b. That the size and quality of the farm was such that it would be a satisfactory facility for his training and productive enough to insure him an income sufficient, under normal conditions, for seasonal living at least by the end of his training program.

c. That the individual training program met the needs of the veteran in the type of farming for which he was training, for proficiency in planning, producing, marketing, farm mechanics, conservation of resources, food conservation, farm financing, farm management, and the keeping of farm records and accounts.
d. That the veteran was assured control of such farm at least until the completion of his course as evidenced by a written lease or partnership agreement.

2. For the veteran who performed part of his course as the employee of another:

a. That the farm was equipped properly.
b. That the farm was of a size and character that would occupy the full time of the veteran and permit instruction in all aspects of the management of a farm of the type for which the veteran was being trained.
c. That the course met the particular needs of the individual veteran in the type of farming for which he was in training, for proficiency in planning, producing, marketing, farm mechanics, conservation of resources, food conservation, farm financing, farm management, and the keeping of farm and home accounts.
d. That his employer had agreed to instruct him in various aspects of farm management in accordance with the training schedule developed for the veteran by his instructor working in cooperation with his employer.

The recommendation of the county advisory committee was then submitted to the State Supervisor of Vocational Agriculture for final approval.

A farm was approved for one veteran only except in case the veteran was to perform part of his course as the employee of another person.

Approval Of Veterans Individual Training Program

After the farm on which the veteran was to receive part of his training was recommended for approval by the county advisory committee, the IOF instructor developed a training program for each veteran. In case the veteran was to be employed on the farm of another person the employer assisted in outlining his training program. The outline was then submitted to the State Supervisor of Vocational Agriculture for approval, along with the recommended approval of his farm.

FINANCING THE
INSTITUTIONAL ON-FARM TRAINING PROGRAM

Financial Arrangement Between
The Regional Office of the Veterans Administration
at Huntington and the
State Board of Education

With some exceptions, the Institutional On-Farm Training Program was financed entirely with Federal funds appropriated by Congress under the provisions of the several acts pertaining to the education and training of veterans. The exceptions were the salaries and travel expenses of State and county school administrators and members of their clerical staffs who devoted part of their time to administering the Institutional On-Farm Training Program and whose salaries and travel expenses were paid from State and county funds.

The original contract with the Veterans Administration provided that the West Virginia Board of Education would be reimbursed by the Veterans Administration for the actual cost of providing the Institutional On-Farm courses not to exceed $35.00 per trainee per calendar month, with the understanding that five (5%) per cent of the total cost would be used for State administration.

The reimbursement by the Veterans Administration was made monthly in arrears on invoices submitted by the West Virginia Board of Education.

A supplemental agreement to the original contract, effective September 1, 1947, changed the maximum charge per trainee per month from $35.00 to $23.00.

Beginning January 1, 1948, the contracts provided for the Veterans Administration to make advance payments to the State Board of Education for each four-months period immediately preceeding July 1, November 1, and March 1. The estimated amount of this advancement was based on the cost statement for the preceeding four-months period as prepared by the Vocational Agriculture Service, Vocational Division of the State Board of Education.

Also, the contract provided:

1. that in the event the amount advanced by the Veterans Administration did not cover the actual costs (State administration and supervision, tuition and fees, books, supplies and equipment) as evidenced by invoices covering the four-months period just closed, prepared by the State Board of Education and submitted to the Veterans Administration, the VA would pay the deficit;

2. that in the event the amount advanced by the Veterans Administration exceeded the gross total amount due the State Board of Education as shown on the invoices submitted, the State Board of Education would refund the excess amount to the VA by check payable to the Treasurer of the United States.

Under these provisions of the contract, the State Board of Education refunded to the Treasurer of the United States, a total of $229,958.71 by checks, as follows:

Date of Check	Amount of Check
September 27, 1949	$91,625.51
October 2, 1950	46,000.00
November 1, 1950	46,000.00
April 10, 1951	23,000.00
July 27, 1951	13,228.42
October 28, 1952	4,789.05
November 2, 1953	1,548.26
January 5, 1956	3,767.47
	$229,958.71

Financial Arrangements Between the State Board of Education and County Boards of Education

At the end of each calendar month each county board of education which conducted an Institutional On-Farm Training program for the preceeding month submitted a cost statement for the month to the State Board of Education. (IOF Form 1) This cost statement covered:

1. Salaries paid to supervisors, coordinators and teachers.
2. Travel expenses paid to supervisors, coordinators and teachers.
3. Consumable instructional supplies purchased.
4. Charges for the operation and maintenance of building used for instructional purposes.
5. Approved training aid purchased for individual veterans.

The foregoing costs were required to be in keeping with the provisions of the Memorandum of Understanding between the State Board of Education and the County Board of Education, and the approved lists of consumable instructional supplies and training aids.

Upon receipt of the cost statement and accompanying affidavit from the County Board of Education, a requisition against the appropriate fund in the State Treasury was prepared and a check in payment of the amount due the county was forwarded to the County Treasurer (the Sheriff). In case the cost statement from any county included training aids purchased for one or more veterans, such expenditure was substantiated by a statement from each veteran to the effect that he had received such training aid. (IOF Form 2)

Following are tables giving pertinent information pertaining to the financing of the Institutional On-Farm Training program for the entire period 1947-1963.

1. Total receipts and total disbursements.
2. Receipts and disbursements for administration and for tuition.
3. Detailed statement of costs of State administration.
4. Statement of the amount of disbursement paid to each county with cost per trainee per month.

COSTS OF TUITION BY TRAINEE-MONTHS

County	Amount Paid	Number Enrolled	Months Training Provided	Cost Per Trainee-Month
Barbour	$ 128,647.93	263	6,542	$ 19.82
Berkeley	90,426.96	213	4,684	19.30
Boone	No Program			
Braxton	128,858.62	280	7,215	17.86
Brooke	(2)			
Cabell	52,229.64	138	2,478	21.08
Calhoun	160,329.93	355	9,747	16.45
Clay	55,516.82	113	2,107	26.35
Doddridge	104,729.48	184	4,597	22.78
Fayette	27,022.28	53	1,270	21.28
Gilmer	115,885.48	238	6,494	17.84
Grant	87,124.90	178	4,545	19.17
Greenbrier	91,313.39	265	4,797	19.03
Hampshire	137,451.79	347	8,398	16.37
Hancock	(2)			
Hardy	108,185.95	237	5,607	19.29
Harrison	73,288.77	157	3,231	22.68
Jackson	201,243.77	413	10,077	19.97
Jefferson	46,012.75	105	2,007	22.92
Kanawha	31,020.69	76	1,508	20.57
Lewis	131,782.94	266	6,317	20.86
Lincoln	111,895.86	211	4,880	22.93
Logan	No Program			
Marion	35,560.47	100	1,893	18.79
Marshall	(2)			
Mason	126,268.36	294	6,017	20.98
Mercer	44,661.83	114	2,099	21.28
Mineral	76,689.92	169	3,591	21.36
Mingo	No Program			
Monongalia	62,857.49	115	2,396	26.23
Monroe	64,133.98	229	4,504	14.24
Morgan	60,059.54	152	3,336	18.00
McDowell	No Program			
Nicholas	47,725.74	93	2,204	21.65
Ohio	(2)			
Pendleton	131,432.51	311	7,983	16.46

(2) Payment for tuition received from Pittsburgh Office of Veterans Administration.

COSTS OF TUITION BY TRAINEE-MONTHS

County	Amount Paid	Number Enrolled	Months Training Provided	Cost Per Trainee-Month
Pleasants	$ 21,036.87	41	992	$ 21.21
Pocahontas	96,690.01	230	5,077	19.04
Preston	150,148.44	209	6,377	23.54
Putnam	115,949.36	226	5,620	20.63
Raleigh	19,723.28	53	766	25.75
Randolph	137,790.82	273	6,550	21.04
Ritchie	179,013.73	295	8,084	22.14
Roane	216,187.23	429	11,070	19.53
Summers	70,128.70	124	3,415	20.53
Taylor	34,633.37	72	1,483	23.35
Tucker	86,681.09	175	4,530	19.18
Tyler	95,989.98	185	5,419	17.71
Upshur	94,484.20	182	5,006	18.87
Wayne	96,845.78	233	5,169	18.73
Webster	42,158.50	67	1,940	21.73
Wetzel	93,408.86	178	4,539	20.58
Wirt	85,509.91	148	4,305	19.87
Wood	101,927.85	199	5,063	20.13
Wyoming	No Program			
TOTAL	$4,270,685.77	8,988	215,944	$ 19.78

In addition to the $4,270,685.77 which the State Board of Education paid to the 46 counties to cover costs of tuition, the State Board purchased and distributed to the counties farm record and other books in the amount of $13,458.04.

The amount paid for these books increased the average cost per trainee-month for the State to $19.84.

RECEIPTS

INSTITUTIONAL ON-FARM TRAINING PROGRAM

1947-48 - 1962-63

Year	Source Of Receipts			Total
	United States Treasury	4 Northern Panhandle	Misc.	
1947-48	867,735.43	$	$	$ 867,735.43
1948-49	$ 1,029,730.61	2,403.50		1,032,134.11
1949-50	954,724.62	2,500.10		957,224.72
1950-51	829,701.99	303.60	3.54	830,009.13
1951-52	529,682.47	1,952.70		531,635.17
1952-53	276,605.49	188.60		276,794.09
1953-54	133,882.19			133,882.19
1954-55	63,379.48			63,379.48
1955-56	25,874.90			25,874.90
1956-57	12,633.18			12,633.18
1957-58	10,096.00			10,096.00
1958-59	8,062.99			8,062.99
1959-60	6,648.91			6,648.91
1960-61	2,872.60			2,872.60
1961-62	2,937.36			2,937.36
1962-63	78.00			78.00
TOTAL	$4,754,646.22	$7,348.50	$3.54	$4,761,998.26

DISBURSEMENTS

INSTITUTIONAL ON-FARM TRAINING PROGRAM

1947-48 - 1963-64

Year	To Counties Tuition	Purpose: Instructional Supplies	Purpose: Adm. & Supv. Expense	Purpose: Refund U.S. Treas.	Total
1947-48	$ 813,411.42	$ 4,697.97	$ 34,077.91	$ -	$ 852,187.30
1948-49	873,423.87	4,058.34	36,504.35	-	913,986.56
1949-50	893,615.69	1,764.37	39,183.52	91,625.51	1,026,189.09
1950-51	729,480.94	1,510.27	31,410.66	115,000.00	877,401.87
1951-52	473,832.75	1,047.09	32,261.05	13,228.42	520,369.31
1952-53	261,514.55	240.00	20,737.67	4,789.05	287,281.27
1953-54	132,946.47	140.00	9,333.49	1,548.26	143,968.22
1954-55	48,524.07	-	6,430.20	-	54,954.27
1955-56	13,054.47	-	6,354.74	3,767.41	23,176.68
1956-57	8,436.64	-	9,224.64	-	17,661.28
1957-58	5,958.06	-	917.08	-	6,875.14
1958-59	5,860.84	-	374.76	-	6,235.60
1959-60	5,610.00	-	868.70	-	6,478.70
1960-61	3,102.00	-	445.21	-	3,547.21
1961-62	1,914.00	-	322.45	-	2,236.45
1962-63	-	-	328.39	-	328.39
	-	-	4,534.34*	-	4,534.34
1963-64	-	-	906.08	-	906.08
	-	-	13,680.50*	-	13,680.50
TOTAL	$4,270,685.77	$13,458.04	$247,895.74	$229,958.71	$4,761,998.26

*These amounts totaling $18,214.83 were used, with the approval of the State Board of Education and the Board of Public Works, to construct a classroom building at Cedar Lakes.

The Institutional On-Farm Training accounts of the Vocational Division, State Board of Education were audited:

1. For the period from July 1, 1947 to June 30, 1950 by the office of the State Tax Commissioner.

2. For the period from July 1, 1950 to June 30, 1955 by the office of the State Tax Commissioner.

3. For the period from July 1, 1955 to January 10, 1964 (final audit) by the office of the Legislative Auditor.

REIMBURSEMENT PAID TO COUNTY BOARDS OF EDUCATION TO COVER COSTS OF THEIR IOF TRAINING PROGRAM

1947 - 1963

County	Amount Paid	County	Amount Paid
Barbour	$ 128,647.93	Mineral	$ 76,689.92
Berkeley	90,426.96	Mingo	(1)
Boone	(1)	Monongalia	62,857.49
Braxton	128,858.62	Monroe	64,133.98
Brooke	(2)	Morgan	60,059.54
Cabell	52,229.64	Nicholas	47,725.74
Calhoun	160,329.93	Ohio	(2)
Clay	55,516.82	Pendleton	131,432.51
Doddridge	104,729.48	Pleasants	21,036.87
Fayette	27,022.28	Pocahontas	96,690.01
Gilmer	115,885.48	Preston	150,148.44
Grant	87,124.90	Putnam	115,949.36
Greenbrier	91,313.39	Raleigh	19,723.28
Hampshire	137,451.79	Randolph	137,790.82
Hancock	(2)	Ritchie	179,013.73
Hardy	108,185.95	Roane	216,187.23
Harrison	73,288.77	Summers	70,128.70
Jackson	201,243.77	Taylor	34,633.37
Jefferson	46,012.75	Tucker	86,681.09
Kanawha	31,020.69	Tyler	95,989.98
Lewis	131,782.94	Upshur	94,484.20
Lincoln	111,895.86	Wayne	96,845.78
Logan	(1)	Webster	42,158.50
Marion	35,560.47	Wetzel	93,408.86
Marshall	(2)	Wirt	85,509.91
Mason	126,268.36	Wood	101,927.85
McDowell	(1)	Wyoming	(1)
Mercer	44,661.83		
		TOTAL	$ 4,270,685.77

(1) No Program

(2) Received reimbursement through Pittsburgh Regional Office of VA.

SUMMARY

The IOF Training Program in West Virginia covered a span of seventeen years and two months - from the time the first farm veterans enrolled in classes on April 1, 1946 until the last of such veterans terminated their training on May 31, 1963.

During that period of time, fifty of the fifty-five county boards of education in the State conducted IOF Training Programs through 100 approved schools, eighty-eight of which maintained departments of vocational agriculture. The IOF training in the four northern panhandle counties of Brooke, Hancock, Marshall and Ohio was under the jurisdiction of the Pittsburgh regional office of the VA. Five counties; Boone, Logan, McDowell, Mingo and Wyoming did not operate IOF classes. A few veterans from Boone and Wyoming counties attended classes in neighboring counties.

To conduct the IOF Programs, 504 coordinators and instructors were employed by the 50 county boards of education. One-hundred and fifty of the 504 men were qualified teachers of Vocational Agriculture. The fifty counties provided 244,488 trainee-months of training, an average of 33.1 months for each veteran who completed his training and an average of 11.3 months for each veteran who did not remain in training until he had completed all the training to which he was entitled.

A total of 9,355 veterans were enrolled in classes over the seventeen year period of which 5,443 satisfactorily completed the training.

From May 1, 1947, when the State Board of Education entered into the contract with the VA to provide the IOF training, the cost of operating the program was $4,512,919.00, exclusive of tuition costs in the four northern panhandle counties, an average of approximately $21.00 a month for each trainee.

It is now (1963) approximately fifteen years since the first farm veterans enrolled in IOF classes completed their training, and each year since that time hundreds of other veterans completed training. While no definite information is available regarding the present status of former trainees, it is known that a large number are continuing as successful farmers throughout the State. Many have advanced through successive steps from farm laborer to renter, or tenant, to partner to full owner and operator. Many former IOF trainees also continued their training by enrolling in classes for young and adult farmers provided by the departments of Vocational Agriculture in the high schools of the State.

Thus the IOF Training Program made a significant contribution to the total program of Agricultural Education in West Virginia.

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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OFF-FARM AGRICULTURAL OCCUPATIONS IN PENNSYLVANIA

Agricultural Mechanics | Agricultural Supplies | Agricultural Products

Ornamental Horticulture | Forestry | Agricultural Resources

Employment Opportunities and Technical Education Needs

Teacher Education Research Series, Volume 7, Number 1, 1966

by Norman K. Hoover, David R. McClay, Glenn Z. Stevens

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FOREWORD

This study of employment opportunities and technical education needs for workers in off-farm agricultural occupations was a cooperative effort by the Department of Agricultural Education, The Pennsylvania State University, and the Division of Agricultural Education, the Pennsylvania State Department of Public Instruction.

The project was initiated by the Department of Agricultural Education, The Pennsylvania State University, as Agricultural Experiment Station Project No. 1483. Project leaders were N. K. Hoover, D. R. McClay, and G. Z. Stevens. A grant was obtained from the Bureau of Technical and Continuing Education, Pennsylvania Department of Public Instruction, to help finance the project. Area Agricultural Education Advisers organized the work at the county level and teachers of agriculture conducted most of the interviews for collecting data.

The project leaders acknowledge assistance given by the following:

Division of Agricultural Education, Pennsylvania Department of Public Instruction.

Bureau of Employment Security, Pennsylvania Department of Labor and Industry.

Area Agricultural Education Advisers and Teachers of Agriculture

Pennsylvania Department of Agriculture

Personnel of the State and Federal Government Agencies who provided data for the study at the State level.

Members of the County Selection Committee for each of the counties who assisted with compiling the list of businesses for their respective counties.

The managers of businesses who gave freely of their time for the interviews.

Graduate Assistants in Agricultural Education, Ivan C. McGee, Robert E. Steffy, E. Lamar Love, Charles W. Smith and William I. Lindley.

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INTRODUCTION

New programs are needed in agricultural education because phenomenal changes have taken place in the agricultural industry in recent years. A multitude of off-farm agricultural businesses and services has emerged to aid farmers and ranchers. Many employees in these businesses and services require knowledge and skills similar to those needed in production agriculture. The rural-urban complex of our society also has undergone phenomenal changes which have implications for employees in ornamental horticulture and agricultural resources who require knowledge and skills in plant, soil, and animal sciences.

Agricultural leaders for a decade have known that agriculture and farming are no longer synonymous. Recognition of this fact was reflected through research, in professional magazine articles, in professional papers presented at conferences, and through other communication media. The concept culminated in the summary report of the President's Panel of Consultants on Vocational Education. It recommended that:

> The vocational agriculture program, under Federal reimbursement, should be broadened to include instruction and increased emphasis of management, finance, farm mechanization, conservation, forestry, transportation, processing, marketing the products of the farm, and other similar topics.

Congress, in 1963, recognized that agriculture is more than farming by implementing the recommendation of the President's Panel of Consultants in PL 88-210. The Act states in Section 10b:

> Any amounts allotted (or apportioned) under such titles, Act, or Acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupation involves work of the farm or of the farm home, and such education may be provided without directed or supervised practice on a farm.

The Federal legislation needed to develop new programs in agriculture was supplemented by the Pennsylvania State Legislature in 1963. Act 463 provides for further expansion of vocational-technical education through area schools and technical institutes. Act 484, known as the Community College Act, provides for technical education in Community Colleges.

Purpose of the Study

The purpose of the Study was to obtain information for occupational guidance in agriculture and for planning new programs in agricultural education. Specific objectives of the study were:

1. To identify agricultural occupations and job titles in Pennsylvania and to estimate the current number of employees and annual entry opportunities.
2. To list competencies needed for entry and advancement and to determine job characteristics such as salary, required education and experience, desired residential background, and other related information.
3. To group or cluster job titles by competencies for common educational purposes and to determine instructional areas in agriculture.

Procedure

Agricultural occupations may be defined as those occupations in which workers need competencies in one or more of the primary areas of plant science, animal science, agricultural business management and marketing, and agricultural mechanization. Information about these occupations was secured by use of a survey form through personal interviews with qualified persons in businesses and services that have employees who need agricultural competencies.

The following 29 selected Pennsylvania Counties were surveyed in order to obtain the desired data:

Adams	Crawford	Lebanon
Armstrong	Cumberland	Mercer
Berks	Dauphin	Mifflin
Bedford	Erie	Montgomery
Blair	Franklin	Schuylkill
Bucks	Fulton	Snyder
Butler	Indiana	Somerset
Chester	Lancaster	Union
Clarion	Lawrence	Venango
	Lehigh	Westmoreland

A list of all businesses in these counties was obtained from the Bureau of Employment Security, Pennsylvania Department of Labor and Industry. A County Selection Committee in each county made up of representatives from agriculture teachers, Agricultural Extension, County School Office, Chamber of Commerce, County Commissioners, agricultural businesses, non-agricultural businesses, school administrators, guidance counselors, and local Bureau of Employment Security personnel was appointed by the area agricultural education adviser. This committee selected those businesses that were thought to have employees who needed agricultural competencies and added other businesses and services that were not included in the Bureau of Employment Security list.

Businesses and services identified by the County Selection Committee were categorized into occupational families with sub-divisions within the families. For example the Agricultural Supplies family had sub-divisions of: feed and supplies, farm and garden supplies, hardware stores, bulk spreading of lime and fertilizer, gasoline and oil distribution, agricultural chemical manufacturing, and feed manufacturing.

Data were obtained by teachers of agriculture and area advisers who interviewed a random sample by sub-divisions of the businesses and services identified by the County Selection Committee. Additional data were obtained by interviews with persons at the State level who provided information for the following businesses or services for the state as a whole:

State Government
- Department of Agriculture
- Game Commission
- Fish Commission
- Department of Justice
- Department of Labor and Industry
- Department of Forestry and Waters
- Department of Public Instruction
- Department of Military Affairs
- Department of Highways
- Department of Property and Supplies
- Department of Public Welfare
- Department of Health
- State Police Commission
- Historical and Museum Commission

Agricultural Stabilization and Conservation Service
Soil Conservation Service
United States Department of Agriculture
Private Practicing Veterinarians
Teachers of Vocational Agriculture and Supervisory Staff
College of Agriculture, The Pennsylvania State University
Farm Credit Administration
Pennsylvania Farmers Association
Dairy Laboratory Directors
Pennsylvania Milk Control Commission
Dairy Herd Improvement Association
Pennsylvania Artificial Breeding Cooperatives
Farm Machinery Personnel
(working independently of retail sales and services)
Chemical Company Personnel
(working independently of retail businesses)

Seventeen counties were surveyed in 1964 and a preliminary report was published. The last twelve counties were surveyed in 1965. This publication is a final report of the 29 counties studied and a projection of these data to state estimates. The number of businesses interviewed in the 29 counties varied according to the occupational family and the number of businesses in a family. The number and per cent of businesses surveyed are presented below in tabular form.

Occupational Family	No. Businesses and Services	No. Interviewed	Per Cent Interviewed Within Family
Ag. Supplies and Equipment	1,014	319	32*
Ag. Machinery Sales and Services	386	137	36
Livestock, Dairy and Poultry Products	842	278	33
Fruits, Vegetables, Crops and Forestry Products	391	144	37
Ornamental Horticulture	1,403	427	30
Agricultural Resources	121	62	51
Agricultural Services	258	73	28
Total	4,415	1,440	33

* Percentages have been rounded to the nearest whole number.

PRESENTATION OF DATA

Data for this study were obtained by interviewing management personnel of 1,440 businesses and services in 29 Pennsylvania counties. Additional data were obtained from personnel representing State level agencies and services. All percentages in the report have been rounded to the nearest whole number.

Businesses and services that employ persons needing agricultural competencies were categorized into seven occupational families as shown in Table 1. An analysis of Table 1 shows that there were 4,415 businesses and services employing a total of 75,669 persons. Of these, 34,850, or 46 per cent, needed agricultural competencies to be proficient in their work. Three occupational families -- Ag. Supplies and Equipment, Livestock, Dairy and Poultry Products, and Ornamental Horticulture -- account for 74 per cent of the 4,415 businesses.

Employment, Employment Opportunities and Related Information

In this phase of the study of off-farm agricultural occupations in 29 Pennsylvania Counties, 163 job titles were identified. Specific information obtained about these job titles was:

1. Number of current employees needing agricultural competencies.
2. Number of employees expected five years hence.
3. Number of employees to be hired during the next five years.
4. Salary data by job titles.
5. Preferred residential background.
6. Educational level desired for entry and for advancement.

TABLE 1

NUMBER OF AGRICULTURAL BUSINESSES AND SERVICES,
ESTIMATED PERSONS EMPLOYED BY OCCUPATIONAL FAMILY,
SUMMARY FOR 29 COUNTIES

Occupational Family	No. Businesses and Services	All Persons Employed	Employees Needing Agricultural Competencies	
			Number	Per Cent
Ag. Supplies and Equipment	1,014	13,235	7,111	20
Ag. Machinery Sales and Service	386	5,132	2,626	8
Livestock, Dairy and Poultry Products	842	18,523	9,194	26
Fruits, Vegetables, Crops and Forestry Products	391	10,494	2,901	8
Ornamental Horticulture	1,403	21,391	9,307	27
Agricultural Resources	121	990	1,247	4
Agricultural Services	258	5,904	2,464	7
Totals	4,415	75,669	34,850	100

Employment and Employment Opportunities

The number of current employees, the number expected five years hence, and number of employees to be hired during the next five years are shown in Table 2. A total of 34,850 employees needed agricultural competencies; 27,720, or 80 per cent, were full-time employees and 7,130, or 20 per cent, were part-time employees. These same businesses expected to have a total of 37,795 employees five years hence. This would be an increase of 2,945 employees of which 80 per cent would be full-time employees.

Employers expect to hire an estimated 12,171 employees during the next five years. This number reflects the expected growth in size of business and the turnover. Of the 12,171 persons expected to be hired, 7,880, or 65 per cent, would be full-time employees.

There were 136 departments of vocational agriculture in the 29 counties studied. If persons to be hired during the next five years were to have some technical education in agriculture, each department would have to provide 12 graduates for full-time employment and 6 graduates for part-time employment per year.

Table 2 also shows that three occupational families -- Ag. Supplies and Equipment, Livestock, Dairy and Poultry Products, and Ornamental Horticulture -- account for 25,612, or 73 per cent, of the 34,850 employees who need agricultural competencies, 27,620, or 73 per cent, of the 37,795 anticipated employees five years hence, and 8,582, or 71 per cent, of the 12,171 employees to be hired during the next five years.

TABLE 2

ESTIMATED NUMBER OF EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES, CURRENT, EXPECTED FIVE YEARS FROM NOW, AND TO BE HIRED IN NEXT FIVE YEARS, IN AGRICULTURAL BUSINESSES AND SERVICES, BY OCCUPATIONAL FAMILY, SUMMARY FOR 29 COUNTIES

	Employees Needing Agricultural Competencies					
	Current		Expected 5 Years From Now		To Be Hired in Next 5 Years	
Occupational Family	Total	Per Cent Full-time	Total	Per Cent Full-time	Total	Per Cent Full-time
Ag. Supplies and Equipment	7,111	91	7,693	90	2,663	88
Ag. Machinery Sales and Service	2,626	92	3,051	94	1,049	93
Livestock, Dairy and Poultry Products	9,194	82	9,354	85	1,708	80
Fruits, Vegetables, Crops and Forestry Products	2,901	91	3,109	88	917	87
Ornamental Horticulture	9,307	62	10,573	63	4,211	28
Agricultural Resources	1,247	76	1,434	72	766	70
Agricultural Services	2,464	76	2,581	75	857	81
Totals	34,850	80	37,795	80	12,171	65

Employees, in addition to being categorized into six occupational families, were further categorized by "level of employment." The levels of employment were: professional, managerial, technical, sales, clerical, and service. "Service," as a term denoting level of employment, is used as the 1965 revision of Dictionary of Occupational Titles uses it; namely, skilled, semi-skilled, and unskilled occupations.

Table 3 shows the number of employees who need agricultural competencies by level of employment. The service level of employment accounted for 60 per cent of all employees in the twenty-nine counties. Managerial level and sales level of employment accounted for an additional 26 per cent of the employees. Professional, technical, and clerical accounted for the remaining 14 per cent. There was approximately 1 professional employee for every 14 full-time employees and 1 manager for every 6 full-time employees.

Median Salaries of New Employees

Employers were asked in the interview to indicate the beginning wage or salary and the highest wage or salary for each job title in their respective businesses. The wages or salaries, whether reported by the hour, week or month, were converted to annual salaries.

Employees in off-farm agricultural occupations had a wide range of annual median salaries. Table 4 shows the median salaries of beginning employees by occupational family and level of employment and Table 5 shows the highest median salaries by occupational family and level of employment.

TABLE 3

ESTIMATED NUMBER OF PERSONS EMPLOYED WHO NEED AGRICULTURAL COMPETENCIES IN SIX OCCUPATIONAL LEVELS OF EMPLOYMENT, SUMMARY FOR 29 COUNTIES

Occupational Family	Number of Persons by Occupational Level of Employment						
	Professional	Managerial	Technical	Sales	Clerical	Service	Total
Ag. Supplies and Equipment	74	1,430	180	1,126	425	3,876	7,111
Ag. Machinery Sales and Service	233	530	18	322	121	1,402	2,626
Livestock, Dairy and Poultry Products	512	1,056	416	1,731	230	5,249	9,194
Fruits, Vegetables, Crops and Forestry Products	194	434	132	201	13	1,927	2,901
Ornamental Horticulture	68	1,181	204	580	61	7,213	9,307
Agricultural Resources	117	204	37	2	16	871	1,247
Agricultural Services	812	164	645	244	51	548	2,464
Totals	2,010	4,999	1,632	4,206	917	21,086	34,850
Per Cent	6	14	5	12	3	60	100

Beginning median salaries ranged from a low of $2,583 for service level of employment in the Fruits, Vegetables, Crops, and Forestry Products family to a high of $7,805 for professional level of employment in the Ag. Supplies and Equipment family. These median salaries were reported as the salaries that persons entering jobs, by level of employment and by occupational family, could expect to receive at the time they entered.

The professional level of employment had the highest median salary for employees entering jobs and the clerical and service level of employment had the lowest median salaries. Beginning salaries of managerial, technical, and sales level of employment tended to be higher than clerical and service level of employment.

The median salary range for highest annual salary, Table 5, ranged from $2,998 for service level of employment in the Fruits, Vegetables, Crops, and Forestry family to $20,036 for professional employees in the Agricultural Service family. Median salaries were higher for those levels of employment which required more technical education.

Desired Residential Background of New Employees

Residential background, as a factor in employability of persons in off-farm agricultural occupations, was designated as farm, rural non-farm, urban, and no preference.

Table 6 shows the preferred residential background of new employees by employers. Farm reared employees were preferred by 53 per cent of the employers, 14 per cent preferred rural non-farm employees, 1 per cent preferred urban employees, and 32 per cent had no preference for residential background.

TABLE 4

MEDIAN BEGINNING ANNUAL SALARIES OF EMPLOYEES WHO NEED AGRICULTURAL COMPETENCIES BY OCCUPATIONAL LEVEL OF EMPLOYMENT, SUMMARY FOR 29 COUNTIES

Occupational Family	Median Beginning Annual Salary by Occupational Level of Employment					
	Professional	Managerial	Technical	Sales	Clerical	Services
Ag. Supplies and Equipment	$7,805 67*	$4,826 355	$5,820 47	$4,276 245	$2,970 71	$3,473 953
Ag. Machinery Sales and Service	$7,428 96	$4,695 114	$5,327 21	$4,196 51	$3,249 27	$3,508 361
Livestock, Dairy and Poultry Products	$5,825 524	$5,620 248	$5,044 68	$4,649 221	$3,990 34	$3,513 930
Fruits, Vegetables, Crops and Forestry Products	$5,321 346	$5,117 69	$5,187 9	$6,163 51	$2,874 5	$2,583 496
Ornamental Horticulture	$6,666 14	$5,523 414	$3,482 35	$4,030 130	$3,555 28	$3,765 1809
Agricultural Resources	$5,262 201	$4,449 15	0 0	0 0	$3,249 7	$3,318 134
Agricultural Service	$7,041 1656	$5,695 27	$2,929 43	$6,332 34	$3,249 3	$3,999 54

* The figures below each median salary are the number of job titles for which employers reported a beginning salary.

TABLE 5

MEDIAN HIGHEST ANNUAL SALARIES OF EMPLOYEES WHO NEED AGRICULTURAL COMPETENCIES BY OCCUPATIONAL LEVEL OF EMPLOYMENT, SUMMARY FOR 29 COUNTIES

Occupational Family	Median Highest Annual Salary by Occupational Level of Employment					
	Professional	Managerial	Technical	Sales	Clerical	Services
Ag. Supplies and Equipment	$12,142 70*	$6,486 330	$6,772 42	$4,488 553	$3,916 77	$4,575 622
Ag. Machinery Sales and Service	$10,202 85	$6,116 123	$6,346 18	$5,500 26	$4,300 26	$5,374 367
Livestock, Dairy and Poultry Products	$10,257 443	$9,156 283	$6,316 59	$5,225 396	$6,213 37	$5,633 906
Fruits, Vegetables, Crops and Forestry Products	$11,950 345	$7,468 69	$11,607 11	$9,338 49	$6,490 6	$2,998 445
Ornamental Horticulture	$9,187 15	$8,200 380	$5,833 22	$5,031 123	$5,999 18	$7,971 2122
Agricultural Resources	$9,780 202	$8,333 10	0 0	0 0	$3,812 7	$5,374 112
Agricultural Service	$20,036 1789	$6,428 27	$4,750 43	$8,166 38	$4,374 3	$5,799 68

* The figures below each median salary are the numbers of job titles for which employers reported a highest salary.

Employers in approximately one-third of the ornamental horticulture and agricultural resources businesses preferred farm reared employees whereas employers in the remaining occupational families had a higher preference for farm reared employees with a range from 51 to 76 per cent. These data indicate that farm and rural non-farm reared youth have a definite advantage over prospective employees from urban areas for those occupations that are farm related.

Employers in 49 per cent of the horticulture businesses had no preference of employee background. This may be explained by the fact that this occupational family, while involving plant science, primarily is not farm related.

Desired Educational Level for New Employees

The employers were asked to indicate the educational level that they desired of new employees for initial employment in their businesses. These data are shown by occupational families in Table 7.

A summary of 29 counties shows that 337, or 11 per cent, of the employers have one or more job titles for which they would employ persons with less than a high school education and 1,561, or 57 per cent, have job titles for which they would employ persons with only a high school education. There were 404, or 14 per cent, employers who wanted some employees with technical education and 304, or 10 per cent, who wanted some employees with a college education. Two hundred and forty, or 9 per cent, of the businesses wanted some employees with at least a bachelors degree for initial employment.

TABLE 6

RESIDENTIAL BACKGROUND OF NEW EMPLOYEES PREFERRED FOR INITIAL EMPLOYMENT BY OCCUPATIONAL FAMILY AS EXPRESSED BY EMPLOYERS INTERVIEWED

Occupational Family	Number of Job Titles	Percentage Distribution by Residential Background Preferred: Farm Per Cent	Rural Non-Farm Per Cent	Urban Per Cent	No Preference Per Cent
Ag. Supplies and Equipment	651	68	13	1	17
Ag. Machinery Sales and Services	289	76	17	2	5
Livestock, Dairy and Poultry Products	416	51	11	2	36
Fruits, Vegetables, Crops and Forestry Products	249	51	14	0.4	35
Ornamental Horticulture	811	36	14	1	49
Agricultural Resources	75	39	20	0	41
Agricultural Services	131	62	12	2	24

TABLE 7

EDUCATION LEVEL OF NEW EMPLOYEES DESIRED FOR INITIAL EMPLOYMENT BY OCCUPATIONAL FAMILY AS EXPRESSED BY EMPLOYERS INTERVIEWED

Occupational Family	Number of Job Titles	Percentage Distribution of Job Titles by Educational Level Desired				
		Less Than H. S. Per Cent	H. S. Grad. Per Cent	Tech. Ed. Per Cent	Some College Per Cent	Bachelor Degree or Higher Per Cent
Ag. Supplies and Equipment	678	6	62	11	11	10
Ag. Machinery Sales and Service	343	5	64	16	9	5
Livestock, Dairy and Poultry Products	480	13	51	15	10	11
Fruits, Vegetables, Crops and Forestry Products	310	13	51	22	5	9
Ornamental Horticulture	811	18	50	12	13	8
Agricultural Resources	91	26	44	10	15	4
Agricultural Services	139	7	52	17	12	13

Estimates for Pennsylvania by Counties of Employees Needing Agricultural Competencies

The agricultural occupations study for 29 Pennsylvania counties provided an estimate of the number of off-farm agricultural employees in Pennsylvania. In the next phase of the study the data obtained were used as a basis for estimating the number of off-farm agricultural employees in each of the other 38 counties.

To estimate the number of off-farm agricultural employees, it was necessary to find items of information that have a positive, linear relationship with the number of workers needing agricultural competencies. One of these items, the number of businesses employing workers needing agricultural competencies, was determined for the 38 counties not surveyed by County Selection Committees. The procedure was the same as that used for the 29 counties. Seventeen other items of agricultural information for each county, taken from the Pennsylvania Crop Reporting Statistics, were:

1. Proportion of county land in farms
2. Number of farms
3. Average value of land and buildings per acre
4. Motor trucks on farms
5. Tractors on farms
6. Average number of dairy cows per farm
7. Average number of beef cattle per farm
8. Average number of hogs per farm
9. Average number of sheep per farm

10. Average number of chickens per farm
11. Value of all field crops
12. Forest products sales
13. Nursery products sales
14. Maple syrup production
15. Total cash crops, all commodities
16. Value of commercial fertilizer used
17. Value of lime used

By linear regression procedures, coefficients were computed for each of the variables. The multiple regression equation from the data for the 29 counties surveyed was used to estimate for each county the total number needing agricultural competencies. Part-time current employees and employees to be hired during the next five years were estimated from the ratio of these groups to full-time current employees in the 29-county summary. Table 8 shows the estimates for Pennsylvania by counties for current employees and employees to be hired during the next five years.

TABLE 8

ESTIMATED NUMBER OF EMPLOYEES WHO NEED AGRICULTURAL COMPETENCIES, BY COUNTIES FOR PENNSYLVANIA, CURRENT AND TO BE HIRED DURING THE NEXT 5 YEARS

	Employees Needing Agricultural Competencies			
	Current		To Be Hired In Next 5 Years	
County	Full-time	Part-time	Full-time	Part-time
Adams	798	182	256	109
Allegheny	1,655	824	514	653
Armstrong	482	128	201	63
Beaver	732	221	222	132
Bedford	450	196	218	126
Berks	1,234	570	651	178
Blair	896	346	350	310
Bradford	366	85	131	46
Bucks	1,496	283	194	135
Butler	840	198	150	30
Cambria	494	127	171	75
Cameron	196	50	73	25
Carbon	394	123	133	78
Centre	530	109	190	58
Chester	2,378	351	672	489
Clarion	532	151	175	92
Clearfield	494	109	173	57
Clinton	334	72	118	33
Columbia	844	243	275	153
Crawford	574	186	214	118
Cumberland	826	220	268	48
Dauphin	854	128	252	75
Delaware	1,342	592	409	446
Elk	258	61	94	28
Erie	541	357	190	287
Fayette	1,022	260	338	141
Forest	185	46	71	25
Franklin	724	184	238	68
Fulton	268	76	126	30
Greene	338	98	117	58
Huntingdon	481	99	162	42
Indiana	653	342	324	395
Jefferson	413	84	148	41
Juniata	461	95	146	38

TABLE 8 (continued)

County	Employees Needing Agricultural Competencies			
	Current		To Be Hired In Next 5 Years	
	Full-time	Part-time	Full-time	Part-time
Lackawanna	1,671	655	506	467
Lancaster	3,785	795	1,451	402
Lawrence	514	338	106	94
Lebanon	1,056	170	225	33
Lehigh	1,416	243	159	161
Luzerne	1,032	313	304	188
Lycoming	542	117	191	66
McKean	525	119	184	63
Mercer	776	168	318	94
Mifflin	291	81	90	38
Monroe	713	234	233	158
Montgomery	2,615	601	677	302
Montour	264	72	91	39
Northampton	866	233	274	137
Northumberland	631	151	205	81
Perry	455	101	151	49
Philadelphia	368	152	123	109
Pike	235	81	85	51
Potter	320	72	118	38
Schuylkill	535	136	229	107
Snyder	376	98	156	26
Somerset	762	182	270	184
Sullivan	203	56	77	29
Susquehanna	462	115	159	64
Tioga	443	99	157	50
Union	266	82	152	58
Venango	176	66	52	18
Warren	406	111	144	67
Washington	1,134	322	363	204
Wayne	665	175	231	76
Westmoreland	850	246	210	166
Wyoming	400	96	141	52
York	1,266	292	417	173
Totals	50,104	13,968	16,213	8,526

Classification of Job Titles for Off-Farm Agricultural Occupations

The persons needing agricultural competencies employed in 29 counties were classified under 163 job titles (Table 10). Of these, 40 job titles for "current full-time employees," 37 for "expected five years from now," and 30 "to be hired during the next five years" accounted for 75 per cent of all employees in these three categories. Table 9 shows that most of the job titles with the largest numbers of current workers will have the largest numbers five years from now and will account for the largest numbers to be hired within the next five years.

TABLE 9

JOB TITLES THAT ACCOUNT FOR 75 PER CENT OF ALL EMPLOYEES FOR CURRENT FULL-TIME EMPLOYEES, EXPECTED 5 YEARS FROM NOW, AND TO BE HIRED DURING THE NEXT 5 YEARS

	Current Full-time Employees	Expected 5 Years from Now	To Be Hired During Next 5 Years
Agricultural Supplies and Equipment			
Ag. Supplies Manager	x	x	x
Ag. Supplies Fieldman	x	x	x
Ag. Supplies Bookkeeper	x	x	x
Ag. Supplies Product Salesman	x	x	x
Ag. Supplies Service Mechanic	x	x	x
Ag. Supplies Equipment Operator	x	x	x
Ag. Supplies Delivery Truck Driver	x	x	x
Ag. Supplies Sales Clerk	x	x	
Ag. Supplies Applicator			x
Agricultural Machinery Sales and Service			
Ag. Machinery Manager	x	x	
Ag. Machinery Salesman	x	x	x
Ag. Machinery Mechanic	x	x	x
Ag. Machinery Parts Manager			x
Ag. Machinery Engineer		x	x
Ag. Machinery Fieldman		x	x

TABLE 9 (continued)

	Current Full-time Employees	Expected 5 Years from Now	To Be Hired During Next 5 Years
Livestock, Dairy and Poultry Products			
Meat Processing Plant Manager	x	x	
Poultry Products Plant Manager	x	x	
Meat Processor	x	x	x
Poultry Processor	x	x	x
Meat and Poultry Products Salesman	x	x	
Stockyard Worker	x	x	
Dairy Products Plant Manager	x	x	
Dairy Products Lab. Technician	x	x	
Dairy Products Plant Worker	x	x	x
Dairy Products Driver Salesman	x	x	x
Dairy Products Plant Truck Driver	x	x	x
Dairy Products Plant Processor	x		
Egg Candler			x
Livestock Buyer	x		
Fruits, Vegetables, Crops and Forestry Products			
Fruit and Veg. Processing Worker	x		
Crops Processing Worker	x	x	x
Forester	x	x	x
Forest Products Processor	x	x	x
Ornamental Horticulture			
Nursery Manager	x	x	
Park Superintendent	x	x	x
Nursery Grower	x	x	x
Nursery Worker	x	x	x
Greenskeeper	x	x	
Groundskeeper	x	x	x
Tree Pruner	x	x	x
Nursery Salesman	x		
Floral Designer	x		
Florist	x	x	
Agricultural Resources			
Animal Keeper	x	x	x
Agricultural Services			
Ag. Construction Worker	x	x	x
Dairy Herd Improvement Tester			x
	40	37	30

TABLE 10

JOB TITLES BY OCCUPATIONAL FAMILIES FOR EMPLOYEES NEEDING AGRICULTURAL COMPETENCIES IN 29 COUNTIES

Job Titles	Current Full-time	Current Part-time	To Be Hired In Next 5 Years Full-time	To Be Hired In Next 5 Years Part-time
Agricultural Supplies and Equipment				
Ag. Supplies Manager	1,236	3	329	0
Ag. Supplies Production Manager	133	0	12	0
Ag. Supplies Sales Manager	58	0	18	0
Ag. Supplies Service Manager	24	0	0	0
Ag. Supplies Office Manager	38	0	8	0
Ag. Supplies Research Director	10	0	0	0
Ag. Supplies Fieldman	194	4	89	4
Ag. Supplies Bookkeeper	295	32	109	19
Ag. Supplies Secretary	27	3	3	0
Ag. Supplies Product Salesman	938	153	384	69
Ag. Supplies Sales Clerk	181	36	39	21
Ag. Supplies Service Mechanic	379	32	247	19
Ag. Supplies Applicator	132	46	79	20
Ag. Supplies Equipment Operator	1,891	267	561	144
Ag. Supplies Delivery Truck Driver	943	56	471	18
Agricultural Machinery Sales and Service				
Ag. Machinery Manager	449	2	53	0
Ag. Machinery Service Manager	61	0	12	0
Ag. Machinery Parts Manager	101	6	78	2
Ag. Machinery Sales Manager	63	0	5	0
Ag. Machinery Office Manager	34	4	5	4
Ag. Machinery Engineer	126	0	98	0
Ag. Machinery Fieldman	130	0	92	0
Ag. Machinery Bookkeeper	66	7	18	0
Ag. Machinery Secretary	15	8	0	0
Ag. Machinery Office Clerk	0	0	0	0
Ag. Machinery Salesman	202	30	93	6
Ag. Machinery Sales Clerk	0	0	0	0
Ag. Machinery Mechanic	797	68	397	36
Ag. Machinery Mechanic's Helper	33	23	33	16
Ag. Machinery Field Mechanic	92	11	29	0
Ag. Machinery Welder	50	10	6	0
Ag. Machinery Parts Man	111	4	27	0

TABLE 10 (continued)

Job Titles	Current Full-time	Current Part-time	To Be Hired In Next 5 Years Full-time	To Be Hired In Next 5 Years Part-time
Ag. Machinery Set Up Man	44	24	16	4
Ag. Machinery Warehouseman	7	0	0	0
Ag. Machinery Deliveryman	44	4	15	4
Agricultural Products: Livestock, Poultry and Dairy				
Meat Processing Plant Manager	383	4	14	4
Poultry Products Plant Manager	196	9	20	0
Hatchery Manager	99	3	17	0
Livestock Market Manager	101	15	0	3
Meat and Poultry Products Sales Manager	36	0	3	0
Veterinarian, Meat Quality Control	33	0	0	0
Meat Grader	98	0	18	0
Poultry Grader	40	0	6	0
Meat Processor	1,736	351	130	37
Poultry Processor	515	242	259	99
Egg Candler	117	36	75	30
Meat Plant Worker	27	0	3	0
Meat and Poultry Products Salesman	864	54	53	3
Livestock Buyer	154	54	24	7
Poultry Buyer	22	0	3	0
Livestock Auction Secretary	25	57	0	4
Meat and Poultry Plant Bookkeeper	28	10	6	0
Stockyard Worker	188	449	27	97
Meat and Poultry Products Deliveryman	134	11	70	7
Hatchery Worker	141	59	38	11
Dairy Products Processing Plant Manager	253	15	43	4
Dairy Products Plant Production Manager	71	0	3	0
Dairy Products Sales Manager	27	0	12	0
Dairy Products Plant Fieldman	29	0	8	0
Dairy Products Laboratory Technician	189	7	63	0
Dairy Products Quality Control Technician	54	0	3	0
Dairy Products Plant Office Manager	8	0	0	0
Dairy Products Plant Bookkeeper	21	6	3	0
Dairy Products Plant Processing Supervisor	133	8	18	8
Dairy Products Plant Processor	163	7	38	8
Dairy Products Plant Worker	418	146	82	3
Dairy Products Salesman	40	27	15	0

TABLE 10 (continued)

Job Titles	Current Full-time	Current Part-time	To Be Hired In Next 5 Years Full-time	To Be Hired In Next 5 Years Part-time
Dairy Products Driver Salesman	925	0	161	0
Dairy Products Plant Mechanic	61	0	25	0
Dairy Products Plant Truck Driver	246	49	131	11
Agricultural Products: Fruits, Vegetables, Crops and Forestry Products				
Fruit and Veg. Market Manager	70	4	17	0
Fruit and Veg. Proc. Manager	35	3	0	0
Fruit and Veg. Sales Manager	12	0	2	0
Fruit and Veg. Product Manager	12	0	3	0
Fruit and Veg. Fieldman	37	0	5	0
Fruit and Veg. Quality Control Specialist	8	3	0	3
Fruit and Veg. Office Manager	4	0	0	0
Fruit and Veg. Salesman	115	47	16	24
Fruit and Veg. Proc. Plant Foreman	25	6	6	0
Fruit and Veg. Processing Worker	217	14	23	4
Fruit and Veg. Market Worker	36	107	4	28
Fruit and Veg. Buyer	8	0	0	0
Fruit and Veg. Inspector or Grader	12	0	0	0
Fruit and Veg. Truck Driver	44	0	44	0
Crops Marketing and Processing Manager	75	0	42	0
Crop Quality Control Specialist	71	0	24	0
Crops Marketing and Processing Salesman	36	0	6	0
Crops Processing Plant Foreman	30	0	9	0
Crops Marketing and Processing Bookkeeper	3	0	3	0
Crops Buyer	3	0	3	0
Crops Processing Worker	636	30	309	36
Forest Products Manager	124	2	9	0
Forester	201	4	82	0
Timber Inspector or Grader	18	0	5	0
Forest Products Processing Supervisor	79	0	22	0
Forest Products Sales Manager	18	0	24	0
Timber Buyer	14	0	11	0
Sawmill-Lumber Equipment Operator	27	6	5	2
Forest Products Processor	206	39	122	7
Forest Products Deliveryman	51	9	2	15

TABLE 10 (continued)

Ornamental Horticulture	Current		To Be Hired In Next 5 Years	
Job Titles	Full-time	Part-time	Full-time	Part-time
Nursery Manager - Greenhouse Manager	438	80	34	24
Garden Center Manager	87	0	10	0
Orn. Horticulture Sales Manager	7	0	0	0
Florist	181	6	12	8
Park Superintendent	227	10	122	8
Tree Service Manager	72	0	9	0
Landscape Architect	56	0	36	0
Golf Course Superintendent	102	3	16	0
Orn. Horticulture Specialist	22	4	5	0
Landscape Consultant - Landscape Aid	39	0	0	0
Floral Designer	143	65	17	40
Ornamental Horticulture Bookkeeper	49	12	2	0
Nursery Salesman	165	75	4	16
Garden Center Salesman	51	122	21	127
Nursery Sales Clerk - Garden Center	69	51	11	164
Nursery Grower - Greenhouse Grower	262	64	92	44
Nursery Worker	771	1,224	205	1,565
Garden Center Mechanic	39	21	6	36
Greenskeeper	441	603	52	376
Groundskeeper	2,045	1,108	428	632
Tree Surgeon	34	0	10	0
Tree Pruner - Tree Pruner Helper	430	68	77	0
Ornamental Horticulture Truck Driver	48	13	2	0
Agricultural Resources				
Recreation Farm and Business Manager	74	25	0	24
Soil Conservationist	97	0	49	0
Soil Conservation Technician	31	0	28	0
Soil Conservation Aid	6	0	4	0
Zookeeper	6	10	4	5
Aviary Manager	3	3	1	1
Fish Hatchery Manager	6	0	2	0
Wildlife Conservation Officer	101	0	74	0
Park Superintendent	25	0	38	0
Park Worker	13	0	7	0
Game Farm Worker	116	5	31	7
Animal Keeper	470	188	282	185
Camp Counselor	5	63	0	24

TABLE 10 (continued)

Agricultural Services

Job Titles	Current Full-time	Current Part-time	To Be Hired In Next 5 Years Full-time	To Be Hired In Next 5 Years Part-time
Veterinarian	0	0	0	0
Artificial Breeding Technician	128	0	50	2
Dairy Herd Improvement Tester	117	0	120	0
Farm Auctioneer	38	0	2	0
Ag. Service Salesman	42	6	11	0
Blacksmith	6	0	0	0
Chick Sexer	3	6	0	0
Sprayer Operator	33	5	22	10
Farm Building Construction Manager	44	0	10	0
Ag. Construction Workers	328	206	151	78
Rural Electrification Employer	70	0	8	0
Bank Teller	37	0	8	0
Agricultural Consultant, Bank	2	11	0	3
Farm Appraiser	25	0	3	0
Farm Loan Officer	39	0	4	0
Public Accountant	4	0	0	0
Production Credit Manager	34	0	15	0
Farm Organization Fieldman	11	0	4	0
Breed Association Fieldman	12	0	4	0
Farm Insurance Specialist	56	145	14	12
County Agricultural Agent	76	0	26	0
Vocational Agriculture Instructor	181	0	62	0
Agricultural Journalist	18	3	4	6
Ag. Market Specialist	9	0	5	2
A. S. C. S. Compliance Supervisor	42	26	15	11
A. S. C. S. Field Reporter	5	173	0	40

Competency Areas in Which Off-Farm Agricultural Employees Need Technical Education

A major purpose of the study was to identify the clusters of competencies and job titles associated with entry and advancement in off-farm agricultural occupations. The specific occupational areas studied were: agricultural supplies, agricultural mechanics, food products, forestry, and ornamental horticulture.

There were 1691 separate job title interviews made with a random sample of employers in the 17 Pennsylvania counties initially surveyed. Factor analysis for competencies needed to enter and to advance in off-farm agricultural occupations was applied to the data as a descriptive, correlational technique. The list of 60 competencies was resolved into 11 factors that can readily be translated into major course content areas. The factors grouped into three areas are:

Competency factor groups in agriculture
- Plant science
- Animal science
- Agricultural mechanics
- Agricultural business management

Competency factor groups in business and distribution
- Business management and economics
- Sales and business skills
- Job and employee characteristics
- Employee-supervisor relations

Competency factor groups in trade and industry
- Building construction technology
- Industrial mechanics
- Industrial quality control

The factoring for job titles provided meaningful groups of job title factor groups by occupational areas as follows:

Agricultural Supplies Occupation Area
- Manager
- Salesman
- Bookkeeper
- Technician
- Service worker

Agricultural Mechanization Occupation Area
- Manager
- Salesman
- Parts manager
- Bookkeeper
- Mechanic

Food Products Occupation Area
- Manager
- Plant manager
- Salesman
- Livestock dealer
- Service worker

Forestry Occupation Area
- Manager
- Technician
- Grader
- Service worker

Ornamental Horticulture Occupation Area
- Manager
- Technician
- Service worker

Tables 11 through 15 show the most clearly defined competency factor groups and the several clusters of job titles for the five occupational areas. For the competency factor groups and job title groups in which employers indicated that the level of training from To Enter to To Advance should be increased, an asterisk is used.

TABLE 11

LEVELS OF TRAINING BY COMPETENCY FACTORS NEEDED TO ADVANCE IN OFF-FARM AGRICULTURAL SUPPLY OCCUPATIONS BY FACTORED JOB TITLE GROUPS

	Levels of Training Needed by Factored Job Title Groups				
Competency Factors	Manager	Sales-man	Book-keeper	Techni-cian	Service Worker
Plant Science	High	High*	Med.*	High*	High*
Animal Science	High	High*	Low	Low	High*
Agricultural Mechanics	High	High*	Low	Med.	Med.
Agricultural Business Management	High	High*	High	Med.	Med.*
Business Management and Economics	High*	Low	Low	Low	High*
Sales and Business Skills	High	High*	High	High*	High
Job and Employee Characteristics	High*	Low	Med.	Low	Med.
Employee-Supervisor Relations	High	High*	High	High	High
Building Construction Technology	Med.	High*	Low	Low	Low
Industrial Mechanics	Low	High*	Med.*	Med.*	Low
Industrial Quality Control	Med.*	High*	Low	Med.*	Med.*

* Levels of training needed increased from To Enter to To Advance

TABLE 12

LEVELS OF TRAINING BY COMPETENCY FACTORS NEEDED TO ADVANCE IN OFF-FARM AGRICULTURAL MECHANICS OCCUPATIONS BY FACTORED JOB TITLE GROUPS

	Levels of Training Needed By Factored Job Title Groups				
Competency Factors	Manager	Sales-man	Parts Manager	Book-keeper	Mechanic
Plant Science	High	High	Low	Low	Med.
Animal Science	High	High	Low	Med. *	Med. *
Agricultural Mechanics	High	High	High	Med. *	High*
Agricultural Business Management	High	High	Med.	High	Med. *
Business Management and Economics	High	High	Med.	High*	High*
Sales and Business Skills	High	High*	Med.	High*	High*
Job and Employee Characteristics	High	High*	Med.	Med. *	Med.
Employee-Supervisor Relations	High	High*	High	Med.	High
Building Construction Technology	Low	High*	Med.	Low	Med.
Industrial Mechanics	High*	High*	Low	High*	High*
Industrial Quality Control	Low	Med. *	Low	Low	Med.

* Levels of training needed increased from To Enter to To Advance

TABLE 13

LEVELS OF TRAINING BY COMPETENCY FACTORS NEEDED TO ADVANCE IN OFF-FARM FOOD PRODUCTS OCCUPATIONS BY FACTORED JOB TITLE GROUPS

	Levels of Training Needed by Factored Job Title Groups				
Competency Factors	Manager	Plant Manager	Sales-man	Livestock Dealer	Service Worker
Plant Science	Low	Low	Low	High*	Low
Animal Science	High	Med.*	High*	High*	Med.
Agricultural Mechanics	Med.	Low	Med.*	High*	Med.
Agricultural Business Management	High	Med.*	High*	High	Med.*
Business Management and Economics	High	Low	High	Med.	Med.*
Sales and Business Skills	High*	High*	High*	High*	Med.*
Job and Employee Characteristics	High	Med.*	High	High*	Low
Employee-Supervisor Relations	High	Med.*	High	High	High
Building Construction Technology	Med.*	Low	Low	Low	Med.*
Industrial Mechanics	Med.*	Med.*	Low	Low	Med.*
Industrial Quality Control	Med.*	Med.*	Low	Low	Med.*

* Levels of training needed increased from To Enter to To Advance

TABLE 14

LEVELS OF TRAINING BY COMPETENCY FACTORS NEEDED TO ADVANCE IN OFF-FARM FORESTRY OCCUPATIONS BY FACTORED JOB TITLE GROUPS

	Levels of Training Needed by Factored Job Title Groups			
Competency Factors	Manager	Technician	Grader	Service Worker
Plant Science	High*	Low	High	Med.
Animal Science	Low	Low	High*	Low
Agricultural Mechanics	High*	High*	High	Low
Agricultural Business Management	High*	Low	High	Low
Business Management and Economics	Low	Med.*	High	Med.
Sales and Business Skills	Med.*	Low	High*	High*
Job and Employee Characteristics	Low	Med.	High	Med.*
Employee-Supervisor Relations	High*	High	High	High
Building Construction Technology	Med.*	Med.*	High	Med.*
Industrial Mechanics	Low	High*	High	Low
Industrial Quality Control	Low	Low	High	Med.*

* Levels of training needed increased from To Enter to To Advance

TABLE 15

LEVELS OF TRAINING BY COMPETENCY FACTORS NEEDED TO ADVANCE IN OFF-FARM ORNAMENTAL HORTICULTURE OCCUPATIONS BY FACTORED JOB TITLE GROUPS

	Levels of Training Needed by Factored Job Title Groups		
Competency Factors	Manager	Technician	Service Worker
Plant Science	High	High	High
Animal Science	Low	Low	Low
Agricultural Mechanics	Med.*	Med.	Low
Agricultural Business Management	High*	Med.*	Low
Business Management and Economics	High*	High*	Med.*
Sales and Business Skills	High*	High*	Med.*
Job and Employee Characteristics	Low	Med.	Low
Employee-Supervisor Relations	High	High	Med.
Building Construction Technology	Low	High*	Med.*
Industrial Mechanics	Low	High*	High*
Industrial Quality Control	Low	Med.*	Med.*

* Levels of training needed increased from To Enter to To Advance

SUMMARY OF THE STUDY

Generalizations that may be drawn from the findings are:

1. If persons to be hired during the next five years are to have some technical education in agriculture, each school teaching agriculture will have to provide 12 graduates for full-time employment and 6 graduates for part-time employment per year.
2. Employers expect about a fourteen per cent increase in the number of employees needing agricultural competencies in the next five years. This parallels the anticipated expansion in the total labor force.
3. Three occupational areas -- Agricultural Supplies and Equipment, Livestock, Dairy and Poultry Products, and Ornamental Horticulture -- account for 74 per cent of the businesses, 73 per cent of the current employees needing agricultural competencies, and 71 per cent of the employees to be hired in the next five years. Of 163 job titles, 37 account for 75 per cent of new employees, not including professional workers, in the next five years.
4. Agricultural competencies needed are mainly determined by the products handled by the business. Many of the agricultural subjects taught to students preparing for production farming also will be needed by students who enter off-farm agricultural occupations.
5. Salesmanship, human relations, and business management are competencies that are needed by all employees, but in varying degrees. There are many instances in which vocational agriculture may support, or be supported by, other vocational subjects taught.

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Commonwealth of Pennsylvania
DEPARTMENT OF PUBLIC INSTRUCTION
Bureau of Statistics
Harrisburg 17126

August 20, 1965

To: Pennsylvania High School
Guidance Counselors

From: Carl D. Morneweck, Director
Bureau of Statistics

Re: Admission of High School Graduates
of the Business Education Curriculum
to Colleges and Universities

Early in 1965 the Bureau of Statistics in cooperation with Dr. William Selden, State Supervisor, Business Education, Bureau of Vocational, Technical, and Continuing Education made a study of the colleges and universities in Pennsylvania relative to the admission of high school graduates who completed the business education curriculum. The policies were abstracted from the form of inquiry shown below.

1. Do you admit to any of the degree programs of your institution high school graduates who completed the business education curriculum? _____Yes _____No. If so, for which department, program, school, or college?

If your answer to question 1 is Yes, please answer the following questions.

2. In addition to the State Requirements shown below for high school graduation, which specific subjects do you require?

English - 3 units
Social Studies - 2 units
Mathematics - 1 unit
Science - 1 unit
Health and Physical Education - 1 unit

3. Is it mandatory for prospective students to take the examination of the College Entrance Examination Board for admission? _____Yes _____No. If yes, what score should a student attain to be eligible for admission? _____

4. Indicate any other examinations a prospective student is required to take.

5. Indicate approximately what percentage of your first-year students comes from each fifth of the high school graduating class. _____first fifth, _____second fifth, _____third fifth, _____fourth fifth, and _____fifth fifth.

VT000403

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
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The above form of inquiry, of a voluntary nature, was sent to 93 colleges and universities, and 85 institutions responded to the inquiry. Of the 85 colleges and universities which returned this inquiry, 41 admit graduates of a high school business education curriculum, 4 admit them under limiting conditions, and 40 do not admit them. The comments of the colleges appear below.

Academy of the New Church College, Bryn Athyn

1. In general high school graduates who completed the business education curriculum are admitted to the college which features a liberal arts program.

2. In addition to state requirements for graduation, no specific subjects are required.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. The score a student should attain was not indicated as it is used for placement instead of a screening service.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 20 - first fifth; 32 - second fifth; 35 - third fifth; 10 - fourth fifth; and 3 - fifth fifth.

Albright College, Reading

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Allegheny College, Meadville

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Allentown College of St. Francis de Sales, Center Valley

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Alliance College, Cambridge Springs

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs except under the following conditions:

All applicants must have 15 total units to enter. Of these, 12 must be in academic areas (4 units in English, 2 units in mathematics, 3 preferred in the physical sciences, and 3 preferred in the social sciences) and the other 3 units can be made up of business subjects, industrial arts, etc.

Alvernia College, Reading

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Beaver College, Glenside

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs except under the following condition:

   Only in the rare cases in which two years of foreign language, two of academic mathematics, and a laboratory science have been included or added as post graduate courses.

Bryn Mawr College, Bryn Mawr

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Bucknell University, Lewisburg

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Cabrini College, Radnor

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Carnegie Institute of Technology, Pittsburgh

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Cedar Crest College, Allentown

1. High school graduates who completed the business education curriculum are not generally admitted to any of the degree programs.

   The only student of this type admitted within recent years had 14 academic units. If an unusually well-qualified student, in the high school business education program, applied to Cedar Crest, the college would not automatically rule unfavorably on her application. Since her academic background would be limited, she would have to be very bright and have a good personal reading background for favorable consideration.

Chatham College, Pittsburgh

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Chestnut Hill College, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

College Misericordia, Dallas

1. High school graduates who completed the business education curriculum are admitted to secretarial science.

2. In addition to state requirements for graduation, specific subjects required include: modern language - 2 units; mathematics - 2 units; Latin - 2 units (A.B. candidates only).

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain the score of 400 to be eligible for admission.

4. A prospective student is required to take achievement--mathematics and verbal--examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 46 - first fifth; 34 - second fifth; 10 - third fifth; 9 - fourth fifth; and 1 - fifth fifth.

Combs College of Music, Philadelphia

1. High school graduates who completed the business education curriculum are admitted to the Bachelor of Music Curriculum provided grades are acceptable and there is evidence of music talent.

2. In addition to state requirements for graduation, specific subjects required include: foreign languages - 2 units; music - 5 years on an instrument or voice.

3. It is not mandatory for prospective students to take the examination of the College Entrance Examination Board for admission.

4. A prospective student is required to take music examinations and auditions. Examinations are prepared by Combs department heads and are in theory and in the individual instrument major of each student.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 42 - first fifth; 20 - second fifth; 33 - third fifth; 4 - fourth fifth; and 1 - fifth fifth.

Curtis Institute of Music, Philadelphia

1. High school graduates who completed the business education curriculum are admitted.

2. In addition to state requirements for graduation no specific subjects are required. Curtis has a secondary education department and admits those who have not completed high school.

3. It is not mandatory for prospective students to take the examination of the College Entrance Examination Board for admission.

4. A prospective student is required to take auditions. Students are accepted on talent only - entirely scholarship institution with a limited enrollment.

5. The approximate percentage of first-year students from each fifth of the high school graduating class: The first fifth was marked with an "X".

Dickinson College, Carlisle

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Drexel Institute of Technology, Philadelphia

1. High school graduates of the business education curriculum are not admitted to any of the degree programs except under the following conditions:

   Will accept students from high schools who may have completed the business education curriculum provided they have taken, in addition to the business education curriculum, the required units of work as set forth in the catalog of the college for admission to the three undergraduate colleges of Drexel. It is difficult, if not impossible, for a person to meet fifteen units of college preparatory work and at the same time complete the business education curriculum.

Duquesne University, Pittsburgh

1. High school graduates who completed the business education curriculum are admitted to Duquesne University. If a student has the required twelve academic units in his curriculum, he would be eligible for admission.

2. In addition to state requirements for graduation, specific subjects required include: social studies - 1-2 units recommended; language - 2 units recommended; mathematics and science - 3 units of mathematics and 2 units of science are required for science majors, recommended for all others. Total minimum number of academic units required for admission is 12.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. To be eligible for admission a student should attain a combination of scores and achievement - arithmetical means were verbal 505 and mathematics 514.

4. A prospective student is required to take the College Entrance Examination Board Achievement Examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 41.0 - first fifth; 31.0 - second fifth; 19.9 - third fifth; 4.8 - fourth fifth; 1.2 - fifth fifth; and 2.1 were unranked.

Eastern-Baptist College, St. Davids

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs except under the following conditions:

   The college has not as yet, but would be willing to admit such a student if he met all of the other admission requirements.

Eastern Pilgrim College, Allentown

1. High school graduates who completed the business education curriculum are admitted to Bible College and Junior College.

2. No specific subjects are required in addition to state requirements.

3. It is not mandatory for prospective students to take the examination of the College Entrance Examination Board for admission.

4. A prospective student is required to take a battery of tests, including an I.Q., Personality, English Placement, and Bible tests.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 17 - first fifth; 14 - second fifth; 28 - third fifth; 23 - fourth fifth; and 18 - unknown.

Elizabethtown College, Elizabethtown

1. High school graduates who completed the business education curriculum are admitted to business education.

2. In addition to state requirements for graduation, specific subjects required include: economics - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. There is no definite score a student should attain to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 60 - first fifth; and 40 - second fifth.

Franklin and Marshall College, Lancaster

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Gannon College, Erie

1. High school graduates who completed the business education curriculum are admitted to the business division of the college.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 450 on both mathematics and verbal to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 20 - first fifth; 25 - second fifth; 35 - third fifth; 15 - fourth fifth; and 5 - fifth fifth.

Geneva College, Beaver Falls

1. High school graduates who completed the business education curriculum are admitted to any program except mathematics, science, or language.

2. In addition to state requirement for graduation, specific subjects required include: algebra - 1 unit; and plane geometry - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 400 verbal or 850 verbal and mathematics to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 30 - first fifth; 40 - second fifth; 29 - third fifth; and 1 - fourth fifth.

Gettysburg College, Gettysburg

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Gratz College, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Grove City College, Grove City

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Gwynedd-Mercy College, Gwynedd Valley

1. High school graduates who completed the business education curriculum are admitted to the associate degree programs in the secretarial and medical secretarial programs.

2. In addition to state requirements for graduation, no specific subjects are required for the programs stated above.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board. A student should attain a score of 450 for the secretarial and medical secretarial programs.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 31.8 - first fifth; 22.1 - second fifth; 19.0 - third fifth; 16.3 - fourth fifth; 8.8 - fifth fifth; and 2.0 - unranked.

Haverford College, Haverford

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Holy Family College, Torresdale, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Immaculata College, Immaculata

1. High school graduates who completed the business education curriculum are admitted to a general liberal arts program.

2. In addition to state requirements for graduation, specific subjects required include: mathematics (algebra and geometry) - 2 units; science - must be a laboratory science; foreign language - 2 units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 500 - mathematics and verbal - to be eligible for admission.

4. A prospective student is required to take three achievement tests.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 25 - first fifth; 50 - second fifth; and 25 - third fifth.

Juniata College, Huntingdon

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

King's College, Wilkes-Barre

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Lafayette College, Easton

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

LaSalle College, Philadelphia

1. High school graduates who completed the business education curriculum are admitted to the School of Business Administration (all data pertain to the School of Business Administration only).

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; and foreign language - 2 units. A total of 16 units are required for admission. No office machine courses are accepted.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. The score varies for admission: most weight is put on the quality of the student's performance in high school.

4. A prospective student is required to take College Entrance Examination Board-Scholastic Aptitude Test plus achievement tests in English Composition, one mathematics test, and a foreign language test if applicant plans to elect same language in college.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 31 - first fifth; 33 - second fifth; 21 - third fifth; 10 - fourth fifth; and 5 - fifth fifth.

Lebanon Valley College, Annville

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Lehigh University, Bethlehem

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Lincoln University, Lincoln University

1. High school graduates who completed the business education curriculum are admitted to liberal arts (business).

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; science - 1 unit; and foreign language - 2 units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a combined score of 900 (Scholastic Aptitude Test).

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 25 - first fifth; 30 - second fifth; 30 - third fifth; 10 - fourth fifth; and 5 - fifth fifth.

Marywood College, Scranton

1. High school graduates who completed the business education curriculum are admitted to Marywood College. There are no separate entrance requirements for individual departments.

2. In addition to state requirements for graduation, specific subjects required include: Latin - 2 units; modern foreign language - 2 units; mathematics - 1 unit; laboratory science - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. The desired score a student should attain to be eligible for admission is 500.

4. A prospective student is required to take 3 achievement tests of the College Entrance Examination Board - English composition, modern language, and one other.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 53 - first fifth; 28 - second fifth; 15 - third fifth; and 4 - fourth fifth.

Mercyhurst College, Erie

1. High school graduates who completed the business education curriculum are admitted to any department.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; foreign language - 2 units; total of 13 academic units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. There is no cut-off score. Our median score last year was 499.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 47 - first fifth; 34 - second fifth; 12 - third fifth; 5 - fourth fifth; and 2 - fifth fifth.

Messiah College, Grantham

1. High school graduates who completed the business education curriculum are admitted to liberal arts and Bible.

2. In addition to state requirements for graduation, specific subjects required include: academic mathematics - 1 unit; science - 1 unit; plus 2 additional academic units preferably in language.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a total score of 800 to be eligible for admission.

4. No other tests are required for admission. School and College Aptitude Test (SCAT) and Sequential Test of Educational Progress (STEP) are given as part of freshman orientation. These same tests are also given again at the end of the sophomore year.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 46 - first fifth; 35 - second fifth; 15 - third fifth; and 4 - fourth fifth.

Moore College of Art, Philadelphia

1. High school graduates who completed the business education curriculum are admitted but the college preparatory curriculum with art included is preferred.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; science - 1 unit; foreign language - 2 units; and as much art as can be included in the college preparatory program.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 500 to be eligible for admission.

4. A prospective student is required to take art assignments provided by the Moore College of Art.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 37 - first fifth; 29 - second fifth; 19 - third fifth; 13 - fourth fifth; and 2 - fifth fifth.

Moravian College, Bethlehem

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Mount Mercy College, Pittsburgh

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Muhlenberg College, Allentown

1. High school graduates who completed the business education curriculum are admitted.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; science - 1 unit; foreign language - 2 units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student is not required to attain a specific score to be eligible for admission.

4. A prospective student is required to take the College Entrance Examination Board Tests for placement.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 58.9 - first fifth; 24.0 second fifth; 11.4 - third fifth; 4.5 - fourth fifth; and 1.2 - fifth fifth.

Our Lady of Angels College, Glen Riddle

1. High school graduates who completed the business education curriculum are admitted to the liberal arts program.

2. In addition to state requirements for graduation, specific subjects required include: foreign language - 2 units; mathematics - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 400 to be eligible for admission.

4. A prospective student is required to take writing sample.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 38 - first fifth; 13 - second fifth; 35 - third fifth; 11 - fourth fifth; and 3 - fifth fifth.

The Pennsylvania State University, University Park

1. High school graduates who completed the business education curriculum are admitted to any college for which applicants have required entrance units. For exact information relative to any college, it is suggested that the office of dean of admissions and registrar be contacted.

2. In addition to state requirements for graduation, it is suggested that the college be contacted for its exact requirements.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. The score required varies.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 57.1 - first fifth; 30.3 - second fifth; 9.5 - third fifth; 2.8 - fourth fifth; and 0.3 - fifth fifth.

Philadelphia College of Art, Philadelphia

1. High school graduates who completed the business education curriculum are admitted. Their admission depends upon which academic courses they completed in high school and whether they had any art training.

2. In addition to state requirements for graduation, specific subjects required include: social studies or history - 1 unit; mathematics - 1 unit; and science - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score above 450 to be eligible for admission.

4. A prospective student is required to take an English Composition Achievement examination.

5. The approximate percentage of first-year students from each fourth of the high school graduating class is: 27 - first fourth; 45 - second fourth; 20 - third fourth; and 8 - fourth fourth.

Philadelphia College of Bible, Philadelphia

1. High school graduates who completed the business education curriculum are admitted to any major program on probationary status.

2. In addition to state requirements for graduation, no specific subjects are required.

3. It is not mandatory for prospective students to take the examination of the College Entrance Examination Board for admission.

4. A prospective student is required to take the American College Testing examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 20 - first fifth; 50 - second fifth; 25 - third fifth; and 5 - fourth fifth.

Philadelphia Musical Academy, Philadelphia

1. High school graduates who completed the business education curriculum are admitted to the academy.

2. In addition to state requirements for graduation specific subjects required include: mathematics - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 400 to be eligible for admission.

4. A prospective student is required to take the American Council on Education Psychology Examination for college freshmen and placement tests in English, ear training, and theory.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 20 - first fifth; 40 - second fifth; and 40 - third fifth.

Philadelphia College of Pharmacy and Science, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Philadelphia College of Textiles & Science, Philadelphia

1. High school graduates who completed the business education curriculum are admitted to Business Administration, Textile Management, and Fabric Design.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student's score to be eligible for admission is dependent upon his other credentials.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 10 - first fifth; 20 - second fifth; 40 - third fifth; 20 - fourth fifth; and 10 - fifth fifth.

Rosemont College, Rosemont

1. High school graduates who completed the business education curriculum are admitted to the liberal arts course if they have sufficient academic credits as well.

2. In addition to state requirements for graduation, specific subjects required include: language (classical or modern) - 3 units; mathematics - 1 unit; and four additional academic units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 500 or better to be eligible for admission.

4. A prospective student is required to take the College Entrance Examination Board achievement tests in English, a foreign language, and a third of the candidate's choice, the writing sample, and, if possible, the language listening test.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 67 - first fifth; 31 - second fifth; and 2 - third fifth.

Saint Francis College, Loretto

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Saint Joseph's College, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Saint Vincent College, Latrobe

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Seton Hill College, Greensburg

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs unless they also have 15 or 16 academic units.

State College, Bloomsburg

1. High school graduates who completed the business education curriculum are generally admitted to the business education course, and it is possible to be admitted to others.

2. No specific subjects are required in addition to state requirements for graduation if a high school diploma has been granted.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of about 900 total to be eligible for admission; but, admission is related to high school achievement.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 46 - first fifth; 35 - second fifth; 16 - third fifth; 2 - fourth fifth; and 1 - fifth fifth.

State College, California

1. High school graduates who completed the business education curriculum are admitted, but very few (5 a year), for elementary education or English.

2. In addition to state requirements for graduation no specific subjects are required.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. The score a student should attain to be eligible for admission depends on high school grades - verbal 400 to 475; mathematics 400 to 475.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 35 - first fifth; 32 - second fifth; 24 - third fifth; 6 - fourth fifth; and 3 - fifth fifth.

State College, Cheyney

1. High school graduates who completed the business education curriculum are admitted to elementary education provided such students have sufficient academic work to qualify.

2. In addition to state requirements for graduation, a total of 16 academic credits is required.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a total Scholastic Aptitude Test above 800 (total of verbal and mathematics phases) to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 13.5 - first fifth; 28.3 - second fifth; 23.6 - third fifth; 20.4 - fourth fifth; 8.5 - fifth fifth; 4.0 - involved in a pre-college readiness program; and 1.7 - unranked.

State College, Clarion

1. High school graduates who completed the business education curriculum are admitted.

2. No specific subjects are required in addition to state requirements for graduation.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 950 plus additional requirements pertaining to rank, etc., to be eligible for admission.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 48 - first fifth; 32 - second fifth; 16 - third fifth; and 4 - fourth fifth.

State College, Edinboro

1. High school graduates who completed the business education curriculum are admitted.

2. In addition to state requirements for graduation, no specific subjects are required.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 28 - first fifth; 36 - second fifth; 27 - third fifth; 8 - fourth fifth; and 1 - fifth fifth.

State College, Indiana

1. High school graduates who completed the business education curriculum are eligible for admission consideration in all departments and programs.

2. Graduation from high school is the primary pre-requisite for entrance.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a 450 verbal and 450 mathematics score to be competitive with other applicants.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 65 - first fifth; 30 - second fifth; and 5 - third fifth.

State College, Kutztown

1. High school graduates who completed the business education curriculum are admitted to all departments provided aptitude and achievement scores are high enough.

2. In addition to state requirements for graduation, the college prefers 2 years of a foreign language for liberal arts, secondary, and library curricula.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 450 verbal and be in the upper half of his graduating class to be eligible for admission.

4. A prospective student is required to take 3 achievement examinations for placement and counseling.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 47 - first fifth; 32 - second fifth; 15 - third fifth; 3 - fourth fifth; and 2 - fifth fifth.

State College, Lock Haven

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

State College, Mansfield

1. High school graduates who completed the business education curriculum and who have a very high potential are admitted to elementary education.

2. In addition to state requirements for graduation, the college preparatory curriculum is preferred.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of approximately 900 total - 400+ minimum verbal - to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 24 - first fifth; 25 - second fifth; 27 - third fifth; 16 - fourth fifth; and 8 - fifth fifth.

State College, Millersville

1. High school graduates who completed the business education curriculum are not restricted but they usually are women who seek elementary education curriculum.

2. In addition to state requirements for graduation, no specific subjects are required. A business education student has deficiencies in mathematics and science. The applicant is advised to attend high school summer sessions after high school graduation to take courses in these areas. Favorable recognition is given to a person who has above average intelligence, strong verbal skills, and who appears to have the general potential to handle college-level work.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. We seek 450 verbal and 450 mathematics for all applicants.

4. A prospective student is not required to take any other admission examinations. Achievement tests in mathematics and/or foreign language, depending upon curriculum and major, are given.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 45 - first fifth; 28 - second fifth; 20 - third fifth; 6 - fourth fifth; and 1 - fifth fifth.

State College, Shippensburg

1. High school graduates who completed the business education curriculum are admitted to the business education curriculum.

2. In addition to state requirements for graduation, no specific subjects are required. One of the general requirements as adopted by the Board of Presidents of the State Colleges is as follows: College authorities will make an appraisal of the student's secondary school record to determine his capability to do satisfactory college work.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. In order to be eligible for admission, a student should attain a score commensurate with the score of those who are admitted to the other teacher education curricula.

4. After admission a student is required to take the English Cooperative Test for placement purposes.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 38 - first fifth; 34 - second fifth; 23 - third fifth; and 5 - fourth fifth.

State College, Slippery Rock

1. High school graduates who completed the business education curriculum are admitted to elementary education and secondary education if major is in area other than mathematics or science.

2. In addition to state requirements for graduation, no specific credits are required. Transcript must show credits appropriate to area of specialization.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of approximately 430-480 for verbal and 400-450 for mathematics to be eligible for admission.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 40 - first fifth; 42 - second fifth; 15 - third fifth; 2 - fourth fifth; and 1 - fifth fifth.

State College, West Chester

1. High school graduates who completed the business education curriculum are admitted to all programs.

2. In addition to state requirements for graduation, no specific subjects are required. High school graduation is the basic requirement.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 450 or better to be eligible for admission.

4. A prospective student is required to take the English Composition Achievement Test of the College Entrance Examination Board.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 37 - first fifth; 31 - second fifth; 19 - third fifth; 8 - fourth fifth; 3 - fifth fifth; and 2 - not ranked.

Susquehanna University, Selinsgrove

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Thiel College, Greenville

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs except under the following conditions:

   Some may have both academic and business backgrounds.

University of Pennsylvania, Philadelphia

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

University of Pittsburgh, Pittsburgh

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

University of Scranton, Scranton

1. In general high school graduates who completed the business education curriculum are not admitted to any of the degree programs. A few exceptional students who had extra credits have been admitted.

Ursinus College, Collegeville

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Villa Maria College, Erie

1. High school graduates who completed the business education curriculum are admitted to the college providing they meet our entrance requirements as listed below.

2. In addition to state requirements for graduation, specific subjects required include: Latin or modern language - 2 units (same language); mathematics - 1 unit; laboratory science - 1 unit; social studies - 1 unit; and electives - 4 units.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of over 400 in both verbal and mathematics to be eligible for admission.

4. A prospective student is not required to take any other examination.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 35 - first fifth; 40 - second fifth; *20 - third fifth; and *5 - fourth fifth. *Students admitted from college preparatory schools or high schools where admission is on the basis of examination only. Admitted to college on basis of high school grades, principal's recommendation, and Scholastic Aptitude Test scores.

Villanova University, Villanova

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Washington and Jefferson College, Washington

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

Waynesburg College, Waynesburg

1. High school graduates who completed the business education curriculum are admitted to business education if they meet the minimum units required.

2. Specific subjects required in addition to state requirements for graduation include: mathematics (algebra or plane geometry) - 1 unit; foreign language (same language) - 2 units; science - 1 unit. From the above areas at least one additional unit is needed plus 3 electives - a total of 16 units is needed for admission.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of approximately 450 verbal and 400 mathematics. Admission also depends on high school rank, etc.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 23 - first fifth; 26 - second fifth; 36 - third fifth; 12 - fourth fifth; 1 - fifth; and 2 - other.

Westminster College, New Wilmington

1. High school graduates who completed the business education curriculum are admitted if regular admission requirements are satisfied.

2. In addition to state requirements for graduation, specific subjects required include: mathematics - 1 unit; and foreign language - 2 units.

3. It is necessary for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 500 each, verbal and mathematics, to be eligible for admission.

4. A prospective student is required to take 3 achievement tests of the College Entrance Examination Board.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 85 - first and second fifth; 14 - third fifth; and 1 - fourth fifth.

Wilkes College, Wilkes-Barre

1. High school graduates who completed the business education curriculum are admitted to the secretarial curriculum - this curriculum may be abandoned next year.

2. In addition to state requirements for graduation, specific subjects required include: social studies - 2 units; mathematics - 1 unit; and science - 1 unit.

3. It is mandatory for prospective students to take the examination of the College Entrance Examination Board for admission. A student should attain a score of 500 verbal and 450 mathematics to be eligible for admission.

4. A prospective student is not required to take any other examinations.

5. The approximate percentage of first-year students from each fifth of the high school graduating class is: 45 - first fifth; 35 - second fifth; 15 - third fifth; 3 - fourth fifth; and 2 - fifth fifth.

Wilson College, Chambersburg

1. High school graduates who completed the business education curriculum are not admitted to any of the degree programs.

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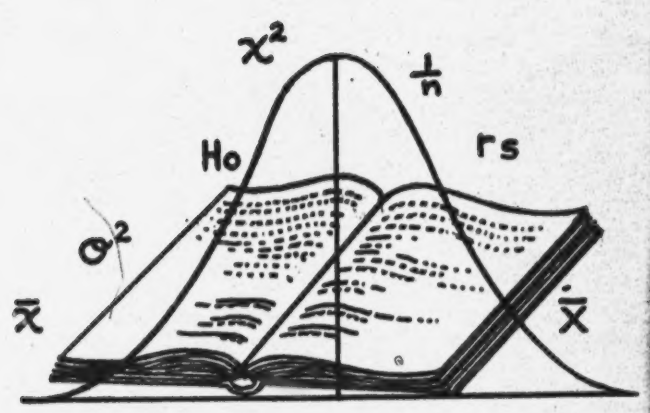
RELATIONSHIPS AMONG SELECTED MOTIVATIONS INTO VOCATIONAL EDUCATION



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RELATIONSHIPS AMONG SELECTED MOTIVATIONS INTO VOCATIONAL EDUCATION

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Lawrence W. Drabick

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RELATIONSHIPS AMONG SELECTED MOTIVATIONS
INTO VOCATIONAL EDUCATION

The field of vocational education, long limited to agriculture and home economics in the vast majority of North Carolina high schools, now appears on the verge of vigorous expansion into the trades and industries, business and distributive fields. Continuing increase of industry and manufacturing in the state, with an associated need for individuals qualified to enter manufacturing trades and perform skilled labor functions, is a positive force for expansion of the high school vocational education program. That direct force is abetted by a strong and steady population movement from production agriculture occupations and rural locations into the ever-expanding urban areas of the state. This movement is reflected in an increasing demand for vocational skills heretofore taught in but a few urban high schools. Finally, recent emphasis upon vocational education by the Federal government, strongly expressed in legislation aimed at upgrading and increasing vocational education at the public school level, is being responded to eagerly by many schoolmen.

It may be accepted as a given that programs of vocational education, in a variety of fields, will be initiated, expanded, and enhanced in many North Carolina high schools. Together with this increase in the program will come a concomitant call for expansion of the corps of trained vocational education teachers. Here, the state and the responsible teacher trainer institutions face a potential crisis. The previously small demand for vocational education teachers outside the fields of agriculture and home economics has limited the growth of college departments providing such personnel. Even in the field of agriculture, where

a strong program of teacher training has long existed, it frequently has proven impossible to provide candidates for all available teaching positions. Any major increase in demand for vocational education teachers will exceed the limits of current training resources and supply.

It therefore becomes vitally important to investigate the processes by which trained vocational education teachers are made available in the state. In particular, attention must be centered upon the recruitment process, for the limited number of individuals coming into the field must be expanded if an increased future demand for teachers is to be met.

A factor closely associated with recruitment is the source and nature of the forces which motivate young people into vocational education. It was the purpose of this study to examine the relative influence of a number of potentially motivating factors upon the decision to enter vocational education of persons currently engaging in or preparing to engage in the field.

Theoretical and Operational Considerations

In its purest form, motivation is a psychological factor. It consists of that union of drives and associations which activate an individual to perform in a certain manner under a given set of conditions.[1] However, the individual is functionally operative only in a context which involves other human beings. His behaviors are to some extent predicated upon his perceptions of the

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[1] The basic theory of motivation used herein is derived rather broadly from, Schreier, Fred T., Human Motivation. Glencoe, Illinois The Free Press, 1957.

response which they will engender in others, and perhaps even more upon remembrance of past experience vis a vis other persons. In the final analysis, motivation must be considered to have a sociological aspect as well.

We are concerned with motivation as a causal factor, providing an answer to the recurring question, "Why?" Specifically, we wish to know why it is that people choose to enter vocational education. An understanding of the variables which underlie that decision might make it possible to be more selective among individuals who express a desire to enter the field. On the other hand, such knowledge might make possible more affective appeal to persons sharing characteristics of those who previously have made that choice.

In the sociological sense, motivation may be considered to have two facets. On the one hand, there are those forces which shape and mold the individual, implanting in him characteristics which are expressed as desires to participate in certain activities or which develop a particular type of personality. For this study, we have referred to such factors as "predisposing." On the other hand, each person has particular desires and attainments he hopes to achieve which in affect serve as ends and pull him constantly forward into new and developing areas of life. These factors we have referred to as "dimensional," although in much motivation theory they are simply called goals.

We have, then, two types of factors, each of which is motivational. Those antecedent factors which in effect operate from the current position of the individual, pushing him to some new

position in life. And those intervening factors which effectively pull the individual, exerting their influence from the perceived conditions which will exist in the position toward which he strives. For each person there must be an uncountable number of both push and pull factors. For this study, we found it necessary to limit attention to a few of each.

With rare exceptions, each individual is subject to the influence of family, school and peer group. These three predisposing factors were utilized for test of their relative influence upon motivations into vocational education. Similarly, most people are acquainted with altruism and self interest as factors influencing decision and action. Since these variables are descriptive of what the individual hopes to attain as a result of specific action, they meet the definition of pull factors and were used as the dimensional factors of the study. Altruism was perceived as a unitary variable, but self interest was considered to be expressed in a number of ways. For this study, it was decided to utilize the variables of income, prestige, social mobility, and the desire for knowledge as operational measures of self interest.

It is possible to consider the predisposing factors independently, comparing the relative effects of the variables under test. Likewise, one may investigate the relative influence of the dimensional factors as an independent force. In all likelihood, however, neither the predisposing nor the dimensional variables operate independently. More likely, they interact

with one another and ultimate occupational decisions are results of concerted action by variables from both spheres. In analysis of the data, the interactive affects of predisposing and dimensional factors were investigated to determine the combinations which seemed most affective of the decision to enter vocational education.

It has been suggested that motivation is to some extent a product of the social context in which it coalesces. If this were so, one would expect the nature of motivation to change over time, coterminous with changes in the social milieu. The reasons serving as the bases for entry into vocational education might therefore be expected to vary over time, necessitating constant interpretation if the data were to remain valid. To ascertain the extent to which this might be the case, on a short run basis, the study included persons whose decision to engage in vocational education was made some time ago as well as students now preparing for entry into the field.

Even though one single factor or combination of factors might prove decisive in the motivation of many persons who enter vocational education, it is inconceiveable that all persons who enter the field are motivated identically. Given that motivation into vocational education may not be uniform, the question arises of whether the nature of motivation is in any way related to the

success which the individual will attain in the occupation. As an example, let us suppose that some persons are motivated into vocational education by altruism while others are moved by reasons of self interest. It could be argued that altruistic motivation is more apt to be rewarded in this occupation than is self interest and that resultant frustration will cause those motivated by self interest to be less successful as teachers of vocational education. This rationale was part of the framework of the study and data were obtained to provide a partial answer.

The Sample

The sample consisted of two parts. The first was composed of the population of full time undergraduate students of vocational education in the School of Education, North Carolina State University, May, 1965. The majority of these students were interviewed in a group situation. Those students unable to attend the group session were contacted individually, later. Eighty-four students qualified to participate in the study. Twelve provided incomplete data, reducing the number to valid schedules to 72.

The other part of the sample consisted of 15 high school teachers. They were randomly selected from the population of 1956-1960 vocational education graduates at North Carolina State who were employed as high school vocational education teachers during the spring 1965. These respondents were interviewed at the scene of their employment.

The Schedule

The schedule was oriented around the two aspects of motivation which served as the focus of the study. One series of statements was used to determine the relative importance of three selected predisposing variables. A second series was designed to determine the relative effect of the five dimensional variables. The interactive effect of predisposing and dimensional variables was obtained by selective combination of statements from each section. A limited number of questions was included to obtain data on occupational satisfaction, success, family status and similar background information.

The general design of the schedule was as follows. A phrase was composed to be representative of each variable, predisposing and dimensional. For the predisposing variables this was simply a matter of using, "members of my family," "my high school experience," and "friends of about my own age." The phrases representative of the dimensional variables were little more subtle. For example, the phrase, "I could make a major contribution to society," was used to represent altruism.

Phrases representative of the predisposing and dimensional variables were combined in a standardized statement form. An example would be: "Members of my family helped me to see that I could make a major contribution to society by engaging in vocational education." Statements incorporating all possible combinations of the key phrases were constructed.

These statements were then presented in combinations within which respondents were forced to assign orders of importance. As tests of the predisposing variables, sets of three statements were presented. Within each set, the dimensional variable was continued constant, while the range of variation in the predisposing variables was presented.[1] The respondent thus was forced to indicate whether he believed family, school, or peers to have been of most importance in his decision to enter vocational education relative to the specific dimensional variable included in the statement. Possible scores ranged from 3 to 1, with the former assigned to the statement considered to have been of most importance in the decision to enter vocational education.

To test the importance of the dimensional variables, sets of five statements were presented in which the

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[1] As an example, one set of forced-choice statements pertaining to the relative importance of the predisposing variables was as follows:

_____ Members of my family helped me to see that I could gain the respect of other people by engaging in vocational education

_____ My high school experience helped me to see that I could gain the respect of other people by engaging in vocational education

_____ Friends of about my own age helped me to see that I could gain the respect of other people by engaging in vocational education

predisposing variable was maintained as a constant while the complete range of dimensional variables was presented.[1] Respondents were forced to assign an order of importance to these statements relative to the decision to enter vocational education. The most important statement was given a value of five and the least important a value of one.

Conceivably, not all respondents would interpret the phrases as representative of the variables they had been chosen to illustrate. Perhaps not everyone would believe "making a contribution to society" to be altruistic, for example. To reduce the potential for false assignment of value in the analysis of the data, a "back-up" phrase was constructed for each of the dimensional variables. Duplicate sets of complementary statements therefore appeared in the questionnaire and the scores accruing to them were combined in assessment of scoring relative to each variable.

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[1] As an example, one set of forced-choice statements pertaining to the relative importance of the dimensional variables was as follows:

_____ Members of my family helped me to see that I would be able to help other people by engaging in vocational education

_____ Members of my family helped me to see that I would be able to buy the material possessions I would like to own by engaging in vocational education

_____ Members of my family helped me to see that I could be considered a person of importance by engaging in vocational education

_____ Members of my family helped me to see that I could improve my occupational standing by engaging in vocational education

_____ Members of my family helped me to see that I would gain increased knowledge by engaging in vocational education

Analysis of the Data

Method

The basic purpose of the analysis was to determine whether order could be observed in the rankings of the predisposing and dimensional variables which were derived from respondent replies. Additionally, it was desired to see whether any association could be shown between the variables given as most influential in motivating respondents into vocational education and these two factors: quality ratings assigned to teachers and students; and the satisfaction with vocational education expressed by students.

Hypotheses. The following hypotheses were devised to test the data.

1. There is a consensus within the order of ranks assigned the predisposing variables by the teachers.

2. There is a consensus within the order of ranks assigned the predisposing variables by the students.

3. There is a consensus between the order of ranks assigned the predisposing variables by the teachers and the students.

4. There is a consensus within the order of ranks assigned the dimensional variables by the teachers.

5. There is a consensus within the order of ranks assigned the dimensional variables by the students.

6. There is a consensus between the order of ranks assigned the dimensional variables by the teachers and the students.

7. .There is a consensus within the order of ranks assigned the combination of predisposing and dimensional variables by the teachers.

8. There is a consensus within the order of ranks assigned the combination of predisposing and dimensional variables by the students.

9. There is a consensus between the order of ranks assigned the combination of predisposing and dimensional variables by the teachers and the students.

10. There is a relationship between the type of variable which most motivated respondents into vocational education and the quality of their subsequent work.

11. There is a relationship between the type of variable which most motivated students into vocational education and their subsequent satisfaction with the field.

Analysis. Review of the relationships within and between the ranks assigned the predisposing and dimensional variables was undertaken by rank order analysis. Test of the relationships within the teacher and student groups was accomplished with the Kendall coefficient of concordance: W.[1] Test of the relationships between teacher and student groups was completed with the Spearman rank correlation coefficient: r_s.

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[1] The statistics used for analysis of the data may be found in, Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences. McGraw-Hill Book Company, Inc., New York, 1956. The Kendall coefficient of concordance appears on pages 229-238. The Spearman rank correlation coefficient is found on pages 202-213. The Chi-square test for k independent samples is treated on pages 175-179.

Analysis of the relationship between the quality rankings of the respondents, satisfaction with vocational education, and type of variable most influential in the decision to enter vocational education was conducted by use of the Chi-square test for *k* independent samples.

Findings

The Predisposing Factors. Rank order analysis is a test of the uniformity within ranks assigned various subjects by a group of respondents. In the case of the predisposing factors, the coefficient of concordance was used to determine whether the ranks assigned family, school, and peers as variables influencing the decision to enter vocational education were similar within the two respondent groups, teachers and students. The results of the test as they apply to the teachers are presented in Table 1. This table is given in detail to expedite comprehension of the statistic. Future tables showing results of using the coefficient of concordance will be presented in skeleton form.

Table 1. Relationships Between Ranks Assigned the Influence of Three Predisposing Variables by 1955-1960 Vocational Education Graduates Teaching in North Carolina, May, 1965.

Teacher	Rank of Predisposing Variable		
	Family	School	Peers
1	2	3	1
2	2	3	1
3	2	3	1
4	2	3	1
5	2	3	1
6	2	3	1
7	1	3	2
8	1.5	3	1.5
9	1	3	2
10	2	3	1
11	2	3	1
12	2	3	1
13	2	3	1
14	2	3	1
15	3	2	1
R_j	28.5	44.0	17.5
$R_j - \frac{\Sigma R_j}{N}$	-1.5	14	-12.5
$\left(R_j - \frac{\Sigma R_j}{N}\right)^2$	2.25	196.0	156.25

LEGEND

R_j = sum of each column

$\frac{\Sigma R_j}{N}$ = accumulation of all R_j divided by the number of columns

s = the accumulation of $\left(R_j - \frac{\Sigma R_j}{N}\right)^2$

$$W = \frac{s}{1/12\ k^2\ (N^3-N)} = \frac{354.5}{1/12\ (15)^2\ (3^3-3)} = .787 \qquad p < .01$$

There was considerable uniformity in the rankings given the predisposing variables by the teachers. Most of them considered school to have exercised the greatest influence upon their decision to enter vocational education. The next greatest influence was exercised by the family while peers were least influential. The W value was .787, which is significant for this set of rankings beyond the .01 level. The null hypothesis of no relationship among the rankings of the predisposing variables by the teachers must be rejected.

Students assigned exactly the same ranking to the predisposing variables as had the teachers, Table 2. The school experiences of the respondents were perceived as most influential in the decision to enter vocational education followed by the family and peers in that order. The level of rejection of the null hypothesis was even greater than it had been for teachers. It must be concluded that there is uniformity in the ranking of the predisposing variables as motivational factors into vocational education for these students.

Table 2. Relationship Between Ranks Assigned the Influence of Three Predisposing Variables by Students of Vocational Education, North Carolina State University, May, 1965.

	Accumulated Value of Ranks Assigned		
	Family	School	Peers
R_j	148.0	187.5	96.5
	W = .402		$p < .001$

Examination of Tables 1 and 2 makes it obvious that the teachers and the students ranked the predisposing variables identically. It therefore was unnecessary to compare the rankings of the two groups statistically. It may be assumed that, in relation to the ranking of influence of the predisposing variables upon the decision to enter vocational education, these teachers and students are from the same population.

The Dimensional Variables. Altruism was the dimensional variable accorded the greatest influence upon the decision to

enter vocational education by teachers, Table 3. It was followed by mobility, prestige, the desire for knowledge, and income, in that order. The null hypothesis of no relationship among the rankings assigned the dimensional variables by the t teachers was rejected at the .01 level. The order observed in the rankings was a result of uniformity in the influence of the dimensional variables as perceived by the teachers.

Table 3. Relationships Between Ranks Assigned the Influence of Five Dimensional Variables by 1956-1960 Vocational Education Graduates Teaching in North Carolina, May, 1965

	Accumulated Value of Ranks Assigned				
	Altruism	Income	Prestige	Mobility	Knowledge
R_j	64.5	34.5	39.0	50.0	36.5
	$W = .280$		$p < .01$		

Student ranking of the dimensional variables appeared to result from a somewhat more pragmatic attitude than had that of teachers, Table 4. Mobility, the opportunity to improve themselves occupationally, was the variable to which the greatest value was accorded by students. Their second choice prestige bore out this pragmatic approach. Altruism, the desire for knowledge, and income followed in order of importance. There was a great deal of agreement in the ranking of the dimensional variables by the students resulting in a W value significant beyond the .01 level. It must be concluded that the order observed in the ranking is a product of similar influence by the variables upon the entry of these students into vocational education.

Table 4. Relationship Between Ranks Assigned the Influence of Five Dimensional Variables by Students of Vocational Education, North Carolina State University, May, 1965.

	Accumulated Value of Ranks Assigned				
	Altruism	Income	Prestige	Mobility	Knowledge
R_j	224.0	175.0	234.5	245.0	201.5

$W = .605$ $p < .01$

A statistical analysis was necessary to determine the significance of the variation in ranking of the dimensional variables by teachers and students. The Spearman rho was used for that purpose, with the results shown in Table 5. The table is shown in detail to aid understanding of the statistic. Further tables reporting results of analysis with this statistic will be presented in skeleton form.

Table 5. Comparison of Ranks Assigned the Influence of the Dimensional Variables, Teachers and Students.

Dimensional Variable	Ranking: Teachers	Ranking: Students	d_i	d_i^2
Altruism	1	3	-2	4
Income	5	5	0	0
Prestige	3	2	1	1
Mobility	2	1	1	1
Knowledge	4	4	0	0
			$\Sigma d_i^2 =$	6

Legend
d_i = difference in rank by groups
d_i^2 = the difference squared

$$r_s = 1 - \frac{6(\Sigma d_i^2)}{(N^3 - N)} = 1 - \frac{6\ (6)}{(5^3 - 5)} = .70$$

Value of r_s not significant

The value of rho in Table 5 is not significant for these data. The null hypothesis of no relationship between the ranks assigned the dimensional variables by the teachers and the students cannot be rejected. It must be assumed that the students and the teachers tested were from different populations. Put another way, the goals which motivated these two groups into vocational education were different. The teachers had been motivated more by a sense of altruism while students were motivated to greater extent by desires to improve their position in life and to obtain prestige.

Combined Predisposing and Dimensional Factors. It has been shown that the predisposing variable of school had exerted the greatest influence upon entry into vocational education for both teachers and students. It likewise has been shown that the dimensional variable of altruism was most influential for teachers while the variable of mobility served that function for students. It has been suggested that in the final analysis the decision to enter vocational education quite probably is an end product of the influence of both predisposing and dimensional variables functioning simultaneously. The combined effect was therefore studied to ascertain which combination was accorded the greatest value by the respondents.

Not unexpectedly, teacher valuations of combined variables resulted in establishment of school and altruism in the first rank, Table 6. The dominant effect of altruism upon the attitudes of this group may be observed in all the rankings. Those combinations which included school tended to be ranked high while those which

included peers tended to be ranked low. Those including family tended to rank centrally. The W value for these data was significant beyond the .001 level. Teachers were in close agreement with one another in their ranking of the combined variables, indicating a uniformity of attitude and motivation into vocational education.

Student ranking of the combined variables also resulted in placement of the school-altruism combination in the first rank, Table 7. It was most closely followed by other combinations which included prestige and mobility. The highest rankings tended to be associated with combinations which included school, while the lowest rankings were related to combinations in which peers were included. The value of W was significant and it must be concluded that there is a consensus of attitude among the students which was related to the reasons for which they entered vocational education.

Table 6. Relationships Between Ranks Assigned the Influence of Combined Predisposing and Dimensional Variables by 1955-1960 Vocational Education Graduates Teaching in North Carolina, May, 1965.

	Accumulated Value of Ranks Assigned														
	Family and Altruism	Family and Income	Family and Prestige	Family and Mobility	Family and Knowledge	School and Altruism	School and Income	School and Prestige	School and Mobility	School and Knowledge	Peers and Altruism	Peers and Income	Peers and Prestige	Peers and Mobility	Peers and Knowledge
R_j	157.0	95.5	118.5	135.5	86.5	205.0	109.5	146.0	157.5	137.0	133.5	80.0	74.5	89.0	75.0

W = .315 $p < .001$

Table 7. Relationships Between Ranks Assigned the Influence of Combined Predisposing and Dimensional Variables by Students of Vocational Education, North Carolina State University, May, 1965.

	Accumulated Value of Ranks Assigned														
	Family and Altruism	Family and Income	Family and Prestige	Family and Mobility	Family and Knowledge	School and Altruism	School and Income	School and Prestige	School and Mobility	School and Knowledge	Peers and Altruism	Peers and Income	Peers and Prestige	Peers and Mobility	Peers and Knowledge
R_j	611.0	540.0	638.0	698.5	523.5	789.5	456.5	717.5	682.0	671.5	434.0	469.0	500.0	493.0	416.0

W = .134 $p < .001$

The relationship between the rankings assigned the combined variables by teachers and by students was tested by Spearman rho, with the results shown in Table 8. The differences in the two rankings were minor in comparison with those which might have occurred and the null hypothesis of no relationship between the groups was rejected. On the basis of the ranks assigned to the combined variables, teachers and students may be assumed to have been drawn from the same population.

Table 8. Comparison of Ranks Assigned the Combined Variables, Teachers and Students

$\sum d_i^2 = 134$	$r_s = .76$	$p < .01$

<u>Relationships of the Effect of Predisposing and Dimensional Variables Upon Entry Into Vocational Education and the Quality and Satisfaction of Students</u>. An assumption of the study was that there should be a relationship between the effective predisposing and dimensional variables and some characteristics of persons in vocational education. The small n of the teacher sample precluded its use in this part of the study and subsequent remarks pertain only to the student population.

Respondent characteristics chosen for a test of relationship to the motivating variables were "quality" and "satisfaction." Quality was obtained by having the appropriate department heads rate all students on a scale of "excellent, good, fair, and poor." Satisfaction was determined from a composite score based on the

student's replies to questions concerning (1) whether he would again enter vocational education if given opportunity once more to make the decision, (2) whether he now regarded vocational education "very satisfactory, somewhat satisfactory, only slightly satisfactory, or unsatisfactory," as a potential occupation, and (3) a quantified rating of eight occupations among which was teacher of vocational education.

The data resulting from these tests are shown in the form of percentages of response in the following tables. Chi-square analyses were made and the results are presented with the appropriate tables.

A definite relationship was obtained between the importance of the various predisposing variables as factors inducing entry into vocational education and the rating of the respondent given by the department heads, Table 9. Those students who believed their family to have been of most influence upon their decision to enter vocational education were more frequently rated excellent, while those who believed their peers to have exerted greatest influence were most frequently rated either fair or poor. School had influenced the greatest portion of those students rated as good.

Table 9. Relationships Between the Predisposing Variable Most Influential Upon Entry Into Vocational Education and Rating of Student by Department Heads, by Percentage of Response Based on Predisposing Variable.

Predisposing Variable Most Influential Upon Entry Into Vocational Education	Rating of Student by Department Head			N
	Excellent	Good	Fair and Poor	
Family	50.00	16.67	33.33	12
School	12.50	54.17	33.33	48
Peers	14.29	28.57	57.14	7

Chi-square value not significant

The small value of many expected frequencies precluded chi-square analysis of the table relating predisposing variables and quality of students. Reduction of cells by omission of those students influenced by their peers, the category responsible for most of the small expected frequencies, resulted in a chi-square value significant beyond the .01 level.

Test of the relationship between the dimensional factors given as most influential and the ratings accorded the students also revealed empirical trends, Table 10. Students who considered altruism to have been their major reason for entering vocational education tended to be rated good or less, as were those who thought the search for knowledge had most influenced them. Students who perceived income and mobility to have influenced them were most frequently considered good students. Those who gave prestige as the factor which had motivated them into vocational education most frequently were perceived as fair or poor students.

Table 10. Relationships Between the Dimensional Variable Most Influential Upon Entry Into Vocational Education and Rating of Student by Department Heads, by Percentage of Response Based on Dimensional Variable.

Dimensional Variable Most Influential Upon Entry Into Vocational Education	Rating of Student by Department Head			N
	Excellent	Good	Fair and Poor	
Altruism	16.67	44.44	38.89	18
Income	14.29	71.42	14.29	7
Prestige	33.33	20.00	46.67	15
Mobility	26.32	52.63	21.05	19
Knowledge	18.18	36.36	45.46	11

Chi-square value not significant

There was an observable tendency for the students rated excellent to have been influenced more greatly by the pragmatic variables of prestige and mobility. Those students rated fair and poor, conversely, were more likely to be affected by purposes of altruism or a search for knowledge, although they too were affected by a desire for prestige.

The effect of the predisposing variables in influencing entry into vocational education appeared to be strongly related to the satisfaction found by the students in that field, Table 11. The majority of those who believed their family to have been most influential were highly satisfied with vocational education while most of those who believed peers to have been most influential were not. Among respondents who perceived the school as having exerted most influence upon the decision to enter vocational education the greatest percentage expressed satisfaction in the medium range.

Table 11. Relationships Between the Predisposing Variable Most Influential Upon Entry Into Vocational Education and Satisfaction of the Student With That Field, by Percentage of Response Based on Predisposing Variable.

Predisposing Variable Most Influential Upon Entry Into Vocational Education	Student Satisfaction With Vocational Education			N
	High	Medium	Low	
Family	41.67	33.33	25.00	12
School	37.50	45.83	16.67	48
Peers	28.57	14.29	57.14	7

Chi-square value not significant

The dimensional variables of altruism and mobility were most closely associated with a high degree of satisfaction with vocational education, Table 12. Students who had considered these two variables to have most affected their entry into vocational education were more likely to express themselves as highly satisfied with the field. On the other hand, entry into vocational education based upon a desire to make money was most likely to lead to dissatisfaction. And students who had entered the vocation in order to gain prestige or search for knowledge were most frequently in the medium range of satisfaction.

Table 12. Relationships Between the Dimensional Variable Most Influential Upon Entry Into Vocational Education and Satisfaction of the Student With That Field, by Percentage of Response Based on Dimensional Variable.

Dimensional Variable Most Influential Upon Entry Into Vocational Education	Student Satisfaction With Vocational Education			N
	High	Medium	Low	
Altruism	50.00	33.33	16.67	18
Income	14.28	42.86	42.86	7
Prestige	26.67	53.33	20.00	15
Mobility	57.90	21.05	21.05	19
Knowledge	27.27	54.55	18.18	11

Chi-square value not significant

Conclusions

Significant uniformity exists within teacher and student groups relative to the variables which motivated them into vocational education. For each, the predisposing variable of school was mot important. Evidently the school atmosphere imposes upon the occupational decisions made by individuals who enter this field. The family was less influential, although playing an important role for many respondents. The peer group, frequently accorded major importance in the decision-making processes of adolescents, was of limited influence in the decision to enter vocational education. This circumstance raises a question of the relative importance of the peer group in other decisions among neo-intellectuals which relate to their occupational choices.

Within-group uniformity extended also to the effect of the dimensional variables. Teachers appeared to have been influenced more by altruistic purposes than had students. This may have been a result of wide-spread social attitudes prevalent at the time the two groups had entered the field. Students professed to have been influenced most extensively by the opportunity to improve their position in life and to obtain prestige. Whether the latter attitudes are productive of teachers as dedicated to their profession, and the students in their charge, is questionable. However, they should in no way affect the professional competence of the current students and may even be more realistic.

Combined scores derived from the interaction of the predisposing and dimensional variables continued to reveal within-group uniformity. For both teachers and students, the combination of school and altruism had exerted the greatest influence upon the decision to enter vocational education. However, the pragmatic attitude of the students was shown by the fact that combinations of variables which included either mobility or prestige were of nearly equal importance with the school-altruism combination. This had not been the case for the teachers.

Considerable uniformity of opinion existed in comparisons between the teacher and student groups. Their ranking of the influence of the predisposing variables was identical. But they varied in the ranking of the dimensional variables to the extent that they statistically must be considered from different populations. This event occurred due to the altruistic orientation of the teachers and the pragmatic values of the students. However, when the rankings of the two groups were compared for the combination of predisposing and dimensional variables uniformity of rankings again prevailed. In the interactive milieu associated with the combined affects of the two types of motivation, similar attitudes toward vocational education apparently are created.

These data indicate that the quality of students and their satisfaction with vocational education as an occupation are to some extent related to the motivations which brought them into the field. Those students rated excellent most frequently

considered their families as the most important predisposing variable. This also was the case for those who expressed the greatest satisfaction with vocational education. Conversely, students rated fair or poor, as well as those who expressed the least satisfaction with vocational education, were most apt to have been influenced by their peers. The school had been the motivating factor most effective for the greatest proportion rated as good and for the largest percentage expressing medium satisfaction with vocational education.

The picture was not so clear cut in reference to the relationships between the dimensional variables and the quality and satisfaction of students. Income and mobility seemed to be most clearly associated with better ratings as students while prestige was more closely associated with low quality ratings. On the other hand, altruism and mobility (variables which are in effect opposed to one another) were most closely related to high satisfaction with vocational education.

While the school apparently is the most effective agent in motivating large numbers of students into vocational education, it is clear that students motivated by their families are more apt to be both successful and satisfied in that field. This finding possibly could be converted to empirical use in either of two ways: concentration of public relations and recruiting upon the family; or selection of applicants on a basis of family interest and guidance. Oppositely, students who had been motivated by their peers seemed to be the greatest risks. They scored low on both success and satisfaction. It would seem that their entry should be discourage.

The low value given to income as a motivation into vocational education seems directly traceable to the low salaries customarily paid to teachers. In our society, materialistically oriented as it is, opportunity to improve one's financial position inevitably attracts individuals of competence and initiative. It is to the credit of vocational education that it has been able to this point to attract many persons of merit without the aid of major and competitive financial incentives.

In this connection, the value placed upon the social position of the school teacher cannot be overlooked. Many persons apparently are entering the field in full appreciation of limited financial opportunity because they perceive teaching as a means to improvement of their social position. It would be to the benefit of vocational education to assist in any way possible in the continued elevation of the prestige and respect which accrues to the teacher.

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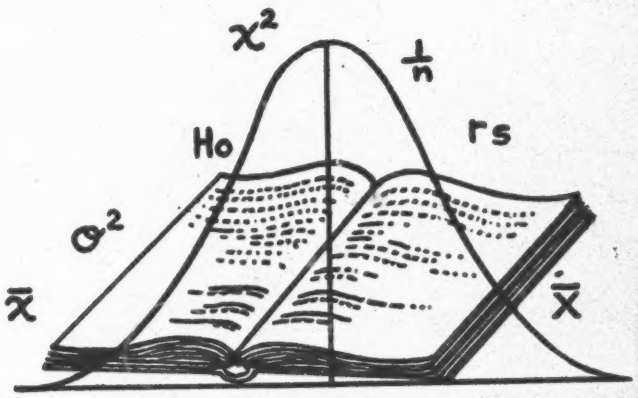
OCCUPATIONAL DESIRES AND EXPECTATIONS OF NORTH CAROLINA HIGH SCHOOL SENIORS



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OCCUPATIONAL DESIRES AND EXPECTATIONS OF NORTH CAROLINA HIGH SCHOOL SENIORS

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Many people in the United States today subscribe to the philosophy that each individual should be educated to the limit of his capacity, thus raising his personal occupational potential and in turn raising the socio-economic level of society as a whole. Current federal and state retraining and/or extended educational programs are but one indication of a more generalized dissatisfaction with present progress toward that goal.

Two pertinent questions derive from the philosophical position stated above: "What is the relationship between the occupational desires and expectations held by individuals?"; and, "To what extent is variation between occupational desire and expectation related to personal and social characteristics?"

Assuming that differences do exist between occupational desires (the occupational level which the individual would like to attain if there were no inhibiting factors) and expectations (that occupational level which he believes he actually will attain) of individuals, with consequent personal and social loss, and assuming that these differences are to some extent the results of factors over which individuals have little control, an obvious implication is that society must make some systemic changes designed either to motivate individuals to greater effort, or to create an environment in which aspirations are more nearly attainable, or both.

Statement of the Problem

This study was concerned with the relationship between occupational desires and expectations of North Carolina high

school seniors, concentrating upon that population because they find themselves most immediately faced with the necessity of engaging in the occupational decision making process. Further, it was desired to know the extent and direction of those differences, should they exist. Finally, investigation was conducted to determine whether background factors associated with the individuals might be related to the extent and direction of observed differences.

Hypotheses

It is assumed that various socio-economic factors affect the occupational desires and expectations of young people. As an example, it is generally accepted that the class position of the family from which the student comes will affect his occupational goals. Generally, students from higher status families do not have the monetary problems which stifle vaulting ambition nor are they as limited in occupational vision as the student from the lesser status family.

It similarly is assumed that the occupational desires of the sexes differ as a result of socialization. In our society, it is the male who typically is perceived as the source of income for the family while the female role is more typically visualized as keeping the home and rearing the children.

If we accept that socio-economic factors of this nature do affact the occupational ambitions of students, then we may proceed one step further in logic and say that such factors potentially are related to the anticipated differences in

prestige between desired and expected occupations. For example, to return to the class, factor, one might presume that the desired and expected occupations of students from the higher class families would be more nearly in harmony than would those of students from lower class families. The reasons are obvious. One might be that the student from the upper class family will not so frequently interpret as an insurmountable hurdle the necessity of financing an education which will allow him to obtain a high level occupation, and therefore will not find it necessary to lower his expectations.

On the basis of such interpretation, the following hypotheses were proposed for test.

1. The prestige of desired occupations will be greater than will the prestige of expected occupations.

2. The difference in prestige between desired and expected occupations will be greater among the male complement of the sample than among the female.

3. The difference in prestige between desired and expected occupations will be greater among the Negro complement of the sample than among the white.

4. The difference in prestige between desired and expected occupations will be inversely related to the IQ of the respondents.

5. The difference in prestige between desired and expected occupations will be inversely related to the social class of the respondent's families.

6. The difference in prestige between desired and expected occupations will be directly related to the number of siblings.

7. The difference in prestige between desired and expected occupations will be greater among respondents residing in town than respondents residing in the country.

Need for the Study

Some indication of existing differences between occupational desires and expectations of students, and especially any background factors associated with this difference, should prove very helpful to parents, teachers, guidance counselors, educational administrators, and legislators.

If the nature and extent of differences between desired and expected occupations could be shown to be related to socio-economic variables of the environment, the educational structure would be provided with information which it could utilize to minimize the personal and social loss of occupational under achievement. This would provide the basis for a guidance system divorced from dependence: solely upon the student aptitudes, and incorporating the frequently more important environmental factors in decision-making for the future of the student. While student competencies are largely invariant, there is reasonable opportunity to alter environmental conditions so as to attain maximization of student potentials.

Scope of the Study

The sample was composed of 1069 seniors from 23 high schools (see Appendix A) in North Carolina, representing each of the non Metropolitan Economic Areas of the state. Twelve white and eleven Negro schools were included. Selection was based upon mean size of schools offering a comprehensive curriculum in each economic area.

Design of the Report

The report was divided into two major sections. One investigates the direction of difference between desired and expected occupational scores among subsamples of the respondent group. The other deals with relationships of certain background factors to direction and extent of difference between desired and expected occupations.

Method of Analysis

Three relationships between desired and expected occupation were used as bases for tests throughout the report. Respondents having no difference between their occupational desires and expectations formed the first of these categories; respondents desiring higher occupational levels than they expected formed the second category; and respondents expecting higher level occupations than they desired formed the last.

Indicated levels of significance were obtained by the chi-square statistic. An explanation of this method is presented in Appendix C.

Prestige scores for levels of occupations were obtained from the Modified North-Hatt Scale. An explanation of this Scale is found in Appendix B.

COMPARISON OF DIRECTION OF DIFFERENCES BETWEEN DESIRED AND EXPECTED OCCUPATIONAL SCORES AMONG RESPONDENT SUBSAMPLES

Sex-Linked Affects Upon Direction of Difference

Students provided the names of occupations in which they desired to engage, as well as the occupations in which they expected to engage. To obtain a standard of reference, these occupational titles were coded into prestige ranges according to a modified version of the North-Hatt Scale.

In Table 1 below, all responses were categorized according to the prestige scores of the respondents desired and expected occupation. Each of the three resulting types of response was further classified by sex. The relationships shown differ beyond the .001 level of significance.

Table 1. Direction of Difference Between Desired and Expected Occupational Scores, Male and Female

Direction of Difference	Per Cent of Respondents	
	Male (N=410)	Female (N=539)
None	52.44	50.46
Desired Higher	40.49	35.81
Expected Higher	7.07	13.73

Responses reflected in Table 1 indicated nearly half the sample to have no difference between their desired and expected occupational levels. It was thought prior to the study that most respondents would exhibit some difference. Perhaps a partial answer for this finding lies in the analytical procedure used. Class intervals of ten were used in comparing the differences. A respondent may have desired an occupation with a prestige score of 79, and expected an occupation with a prestige score of 70, and the analytical method used would indicate no difference.

Approximately equal percentages of males and females responded as having no difference between the prestige level of their occupational desires and expectations. It was thought that more females than males would have no difference, on the basis of females being more realistic in occupational choice than males, a factor compounded by a limited occupational market for females.

One of these respondents reflecting a difference between occupational scores 78 per cent desired a higher occupational level than they expected. Male responses were more prominent than female in that category, as was anticipated. The limited occupational market and the normalized household role of females was expected to reduce the level of their desired occupations.

An unexpected finding reflected in Table 1 was the relatively large number of respondents indicating expectation:

of an occupation with a higher prestige score than the one they desired. More than twice as many females as males responded in that category. Perhaps some parents encourage their children to engage in higher prestige occupations than the children actually desire. The young son may desire to be a businessman or agriculture worker, but his parents may push him toward being an engineer or doctor. The young daughter may wish to become a secretary, but her parents may strongly encourage her to become a school teacher or nurse.

Since female response outnumbered male response in expectation of a higher occupational level than the one desired, it may be that marriage plans were partly responsible for that difference. Marriage is assumed to change the occupational outlook of the female to a greater extent than it does that of the male. A housewife rated lower in the North-Hatt Scale of occupational prestiges than many other occupations and, while this hypothesis was not tested, many females may expect to become school teachers or nurses, while they would rather be housewives. This condition may be related to the time at which the students were interviewed. Female high school students probably idealize the normative housewife role, while anticipating a temporary occupational career.

Race-Linked Affects Upon Direction of Difference

In Table 2 response was categorized according to the three possible relationships between prestige of desired and expected occupation, and by race.

Table 2. Direction of Difference Between Desired and Expected Occupational Scores, White and Negro

Direction of Difference	Per Cent of Respondents	
	White (N=567)	Negro (N=382)
None	47.97	56.28
Desired Higher	41.45	32.46
Expected Higher	10.58	11.26

More Negro than white respondents were categorized as having between desired and expected occupational level. It was expected that more whites would indicate no difference. Negroes generally compose a somewhat lower socio-economic class, and one would expect their occupational expectation level to be lower, without a necessary corresponding depression of occupational desire. Negroes apparently recognize their social limitations and lower their occupational desires, in effect being more realistic than whites.

Significantly more whites than Negroes indicated a desire for a higher prestige occupation than expected. One would think the reasons for this finding are similar or the same as those involved in more Negroes than whites having no difference in the desired and expected occupational level.

Approximately equal percentages of whites and Negroes indicated an expectation of a higher prestige occupation than desired. On the basis of this finding one may conclude that race does not influence the group expecting a higher prestige occupation than desired.

Sex-Linked Affects Upon Direction of Difference Among Whites

In Table 3 response was again categorized according to the three possible relationships between prestige of desired and expected occupation, and by sex among white respondents.

Table 3. Direction of Difference Between Desired and Expected Occupational Scores, White Males and Females

Direction of Difference	Per Cent of White Respondents	
	Male (N=255)	Female (N=312)
None	49.80	46.48
Desired Higher	43.14	40.06
Expected Higher	7.06	13.46

More than 51 per cent of the respondents reflected some difference between occupational desire and expectation levels. Of those indicating a difference, 80 per cent desired a higher occupational level than they expected. These findings were comparable to those for the total sample.

Notable results in Table 3 indicate that among white respondents more males than females expressed no difference between the level of their desired and expected occupation. Also, more males than females expressed a desire for a higher level occupation than expected, while a greater percentage of females than males expected a higher level occupation than desired. Again, these findings were comparable to those involving the total sample.

Sex-Linked Affects Upon Direction of Difference Among Negroes

Response was categorized in Table 4 according to the three possible relationships between prestige of desired and expected occupation, and by sex among Negro respondents.

Table 4. Direction of Difference Between Desired and Expected Occupational Scores, Negro Males and Females

Direction of Difference	Per Cent of Negro Respondents	
	Male (N=155)	Female (N=227)
None	56.77	55.95
Desired Higher	36.13	29.95
Expected Higher	7.10	14.10

Less than 45 per cent of the Negro respondents indicated a difference in level between their desired and expected occupation. This compares to the more than 51 per cent of white respondents who expressed such a difference in Table 3. Of the Negro respondents indicating a difference, 74 per cent expressed a desire for a higher prestige occupation than they expected.

Again more male than female respondents indicated no difference between their desired and expected occupational level, and more males than females desired a higher level occupation than expected. About twice as many females as males expressed an expectation of a higher prestige occupation than desired. These findings were comparable in both

direction and degree to those obtained when sex was used as a control among whites and within the total sample.

Race-Linked Affects Upon Direction of Difference Among Females

In Table 5 response was categorized by race among females and according to the three possible relationships between prestige of desired and expected occupation.

Table 5. Direction of Difference Between Desired and Expected Occupational Scores, Female Whites and Negroes

Direction of Difference	Per Cent of Female Respondents	
	White (N=312)	Negro (N=227)
None	46.47	55.95
Desired Higher	40.07	29.95
Expected Higher	13.46	14.10

Differences among female respondents, shown in Table 5, were very similar to those between all whites and all Negroes of the sample, Table 2. Table 5 responses indicated more Negroes than white to have no difference in prestige between desired and expected occupation; more whites than Negroes to desire a higher prestige occupation than expected; and approximately equal proportions who expected a higher prestige occupation than desired. It is probable that the findings in this table are explained by the same rationale provided for the findings in Table 2, involving all whites and all Negroes.

Race-Linked Affects Upon Direction of Difference Among Males

In Table 6 response was categorized by race among males, according to the three possible relationships between prestige of desired and expected occupation.

Table 6. Direction of Difference Between Desired and Expected Occupational Scores, Male Whites and Negroes

Direction of Difference	Per Cent of Male Respondents	
	White (N=255)	Negro (N=155)
None	49.80	56.77
Desired Higher	43.14	36.13
Expected Higher	7.06	7.10

Again differences were similar in both degree and direction to those involving all whites and Negroes. Percentages among males in this table were higher in the first two categories than among all females, and the percentages for females in the third category were higher than with males. Of course, the differences among males and among females averaged the results involving all males and all females but the differences were related to race and sex; not races within the sexes.

Conclusions

Approximately half of the sample response revealed no difference between prestige score of the desired and expected occupation. The methodology used in this report may have

been partially responsible for this unexpected finding. Class intervals of ten were used in comparing the prestige differences. Thus, responses indicating no difference in prestige between occupational desires and expectations may have actually ranged from 0 to 9 points difference. While this method submerged some differences between desired and expected occupational prestige, it may be defended on two bases: (1) it provided a minimum by which to gauge the extent of prestige differences; (2) it applied equally to all parts of the sample.

Of the approximately one-half of the total response showing a prestige difference, some 80 per cent expressed a desire for a higher prestige occupation than expected. The remaining responses indicated an expectation for a higher prestige occupation than desired. This was a somewhat unexpected finding. Perhaps this is a result of children being encouraged by their parents to enter a higher prestige occupation than they desire.

Females may be considered more realistic in selecting occupations than are males. It was thought more females than males would have no difference in prestige score between their desired and expected occupations. This assumption was reversed by the sample response.

With sex used as a control variable among white respondents, males tended to be slightly more realistic than females in that more males expressed desires for occupations with the same prestige as the ones they expected. Similar

findings existed when sex was used as a control variable among Negroes. Sex is of little explanatory value concerning that part of the sample showing no difference in prestige level of desired and expected occupation.

More males than females indicated a desire for a higher prestige occupation than the one expected. These findings may spring from the fact that the field of occupations for females is more limited than for males. Also, many high school senior females may desire to marry and become housewives(an occupation rated relatively low on the North-Hatt Scale),while actually expecting to be nurses, school teachers, etc. These same reasons apparently account for the finding of more females than males expecting a higher prestige occupation than desired. Differences between male and female responses among whites, and among Negroes, were very similar to those involving the total sample. It was therefore concluded that race had little affect upon occupational prestige differences existing between male and female responses.

Negroes tended to be more realistic than whites in that more Negro than white responses indicated no difference in prestige score between desired and expected occupation. Negroes tend to have their aspirations hampered by lack of opportunity, and consequently probably become more realistic in selecting occupations. Responses indicated more whites than Negroes desired a higher prestige occupation than expected. Again, Negroes obviously have less opportunity, therefore lowering their aspirations to be more in line with

their expectations. Approximately equal numbers of each race indicated an expectation of a higher prestige occupation than desired.

Differences between white and Negro responses among males, and among females, were similar to those involving the total sample. Sex apparently had little affect upon differences existing between white and Negro responses.

RELATIONSHIP OF CERTAIN BACKGROUND FACTORS TO DIRECTION AND EXTENT OF DIFFERENCES BETWEEN OCCUPATIONAL SCORES

Direction of Difference and Intelligence

To investigate the relationship between intelligence and the difference in occupational prestige scores, response was categorized according to the three possible relationships between desired and expected occupational scores, and into three intelligence groups, Table 7. The intelligence groups were low (I. Q. range below 90), medium (I.Q. range 90-109), and high (I. Q. range beyond 109).

Table 7. Relationship of Direction of Difference Between Desired and Expected Occupational Scores to Intelligence

Direction of Difference	Per Cent of Respondents Intelligence		
	Low (N=293)	Medium (N=410)	High (N=131)
None	55.63	47.32	51.14
Desired Higher	33.45	42.19	36.65
Expected Higher	10.92	10.49	12.21

Response indicated respondents of low intelligence to be more realistic than those of high intelligence in that more respondents of low intelligence indicated no difference between desired and expected occupational prestige levels. Further, respondents of medium intelligence were less realistic in this sense, than either of the other two categories. Response among those expressing a desire for a higher prestige occupation

than expected further substantiated that conclusion. There was little difference among the intelligence groups insofar as response indicating an expectation of a higher prestige occupation than desired.

It was expected that respondents of high intelligence would have the least difference between desired and expected occupational prestige scores. For the high intelligence group should be better able to attain their occupational aspirations and would be expected to perceive this. Respondents of high intelligence apparently did have less difference between their occupational aspirations and expectations than respondents of medium intelligence.

However, respondents of low intelligence apparently had less difference than either those of high or medium intelligence. Individuals of lower intelligence may be more cognizant of their limitations. In all probability they do not aspire so high occupationally as do those of higher intelligence, thus tending to decrease the difference between their occupational desired and expected prestige levels.

Also, students of lower intelligence are less likely to plan for education beyond high school. The high school seniors of lower intelligence participating in this study probably were more certain about their occupational future than those of higher intelligence. Differences reflected in Table 7 may have meaning, but were statistically insignificant.

Intelligence and Extent of Differences Among Those Desiring A Higher Prestige Occupation Than Expected

In Table 8 response indicating a desire for a higher prestige occupation than expected was categorized into the three intelligence groups and according to the extent of the difference.

Table 8. Relationship of Intelligence to Respondents Desiring Higher Prestige Scored Occupations Than Expected

Extent of Difference Points	Per Cent of Respondents Intelligence		
	Low (N=48)	Medium (N=96)	High (N=34)
1 - 9	68.75	61.46	76.47
10 - 19	22.92	32.29	8.82
Over 19	8.33	6.25	14.71

Again respondents of medium intelligence apparently had the greatest difference between the prestige scores of desired and expected occupations. As was anticipated respondents of high intelligence indicated less difference between the prestige scores of desired and expected occupations than did respondents in the other two intelligence categories. Differences shown in Table 8 were not statistically significant.

Intelligence and Extent of Difference Among Those Expecting A Higher Prestige Scored Occupation Than Desired

In Table 9 response indicating an expectation of a higher prestige occupation than desired was categorized into the three intelligence groups and on the extent of the difference.

Table 9. Relationship of Intelligence to Respondents Expecting Higher Prestige Scored Occupations Than Desired

Extent of Difference Points	Per Cent of Respondents Intelligence		
	Low (N=32)	Medium (N=44)	High (N=16)
1 - 9	65.62	68.18	81.25
10 - 19	21.88	25.00	12.50
Over 19	12.50	6.82	6.25

Of those respondents indicating an expectation of a higher prestige occupation than desired, the higher intelligence respondents tended to have the least difference. This was generally expected on the basis of respondents of higher intelligence being more realistic and having less difference between the prestige scores of their desired and expected occupation than those of lower intelligence. The differences exhibited in the Table were not statistically significant.

Direction of Difference and Father's Occupational Prestige Score

To test the relationship between social class and the differences between prestige of desired and expected occupations, response was categorized according to the three possible affinities between prestige scores of desired and expected occupations, and on the basis of the prestige score of the respondent's father's occupation, Table 10. The occupational prestige scores of the respondent's fathers were categorized as low and high, with 70 as the "breakpoint."

Table 10. Relationship of Direction of Difference Between Desired and Expected Occupational Scores to Prestige Score of Father's Occupation

Direction of Difference	Per Cent of Respondents Father's Prestige Score	
	Low (N=760)	High (N=94)
None	50.93	54.25
Desired Higher	38.68	31.91
Expected Higher	10.39	13.83

It was expected that respondents whose fathers had high occupational prestige scores would exhibit the least difference between the prestige ratings of desired and expected occupation. Usually the higher the occupational prestige score, the higher the socio-economic status of the family. Thus it was thought that respondents of the high occupational prestige families

would obtain more opportunity and encouragement to attain their occupational goals. Table 10 results supported this rationale, for more respondents of high occupational prestige families indicated no difference between the prestige score of their desired and expected occupation.

A greater percentage of respondents from low occupational prestige families indicated a desire for a higher prestige occupation than the one they expected to attain. This was expected in that those of lower occupational prestige families probably do not receive the opportunity and encouragement needed to attain their occupational goals.

Slightly more respondents of high occupational prestige families than low indicated they expected to attain a higher prestige occupation than the one desired. Apparently the high occupational prestige families tend in some cases to push their children into higher prestige occupations than the children desire.

Differences in Table 10 appear to have educational meaning. However, they were not statistically significant.

Respondent's Father's Occupational Prestige and Extent of Difference Among Those Desiring A Higher Prestige Occupation Than Expected

Response indicating a desire for an occupation of higher prestige than expected was categorized on the basis of extent of difference, and according to whether the father's occupational prestige score was high or low.

Table 11. Relationship of Extent of Those Desiring Higher Occupational Scores Than They Expect to Prestige Score of Father's Occupation

Extent of Difference Points	Per Cent of Respondents Father's Prestige Score	
	Low (N=164)	High (N=14)
1 - 9	68.29	50.00
10 - 19	23.78	35.71
Over 19	7.93	14.29

The results, shown in Table 11, indicated that those respondents whose father had a low prestige occupation had the least difference between their desired and expected occupational score. Since opportunity would obviously be more limited for those from the low occupational prestige family, they apparently lower their occupational desires to be closer to their expectations. The differences in Table 11 were not found to be statistically significant.

Respondent's Father's Occupational Prestige and Extent of Difference Among Those Expecting A Higher Prestige Occupation Than Desired

Response indicating an expectation of a higher prestige occupation than the one desired was categorized on the basis of extent of difference, and according to whether the father's occupational prestige score was high or low, Table 12.

Table 12. Relationship of Extent of Those Expecting Higher Occupational Scores Than They Desire to Prestige Score of Father's Occupation

Extent of Difference Points	Per Cent of Respondents Father's Prestige Score	
	Low (N=25)	High (N=4)
1 - 9	76.00	75.00
10 - 19	20.00	25.00
Over 19	4.00	0.00

The prestige score of the respondent's father's occupation had almost no affect upon the extent of difference among those respondents expecting to attain a higher prestige scored occupation than the one desired. Apparently the family occupational prestige has no affect upon those in this particular category.

Relationship of Father's Educational Level to Direction of Difference Between Respondent's Desired and Expected Occupation

Separation of response was made on the basis of the three possible directions of difference, and according to the respondent's father's educational level. Response indicating a father with an eight grade or less education was placed in the low category; ninth through twelfth in the medium category; and over twelfth in the high category, Table 13.

Table 13. Relationship of Direction of Difference Between Desired and Expected Occupational Scores to Father's Education

Direction of Difference	Per Cent of Respondents Father's Education		
	Low (N=485)	Medium (N=344)	High (N=86)
None	48.87	52.03	58.14
Desired Higher	40.82	36.63	30.23
Expected Higher	10.31	11.34	11.63

It was expected that respondents whose fathers had the highest educational level would have the least difference between prestige of desired and expected occupations for they would probably get more encouragement and encounter fewer socio-economic barriers than those whose fathers had little education. This expectation was borne out by the data, as shown in Table 13. Greater percentages of respondents indicated no difference between the prestige of desired and expected occupations as the educational level of their fathers increased. Further, decreasing percentages indicated a desire for an occupation of higher prestige than that expected directly proportional to the increase in educational level of the fathers. It might be concluded that there is better preparation and fewer adjustments to occupational reality in these families where the father is better educated.

Respondents whose fathers had a low educational level more often indicated a desire for a higher prestige scored occupation than the one expected. They apparently do not get the encouragement or have the resources available to expect to attain high occupational goals.

The father's educational level had little relationship to the proportion of respondents expecting a higher prestige occupation than desired.

None of these differences were statistically significant.

Respondent's Father's Educational Level and Extent of Difference Among Those Desiring a Higher Prestige Occupation Than Expected

The portion of response indicating a desire for a higher prestige occupation than expected was categorized on the basis of extent of difference, and according to the educational level of the respondent's father, Table 14.

Table 14. Relationship of Extent of Those Desiring Higher Occupational Scores Than They Expect to Father's Education.

Extent of Difference Points	Per Cent of Respondents Father's Education		
	Low (N=113)	Medium (N=67)	High (N=12)
1 - 9	63.72	71.64	58.33
10 - 19	30.09	20.90	25.00
Over 19	6.19	7.46	16.67

Respondents whose fathers had a medium level education had the least difference between the scores of their desired and expected occupation. Those whose fathers had a high educational level indicated more difference than those whose fathers had a low educational level. Apparently respondents whose fathers had a high educational level tended to aspire higher, causing greater differences between scores of desired and expected occupations. Those whose fathers had a low educational level may have tended to expect lower prestige occupations causing greater difference between scores of desired and expected occupations. Thus those respondents whose fathers had a medium level education appeared to be more realistic than the other two categories. Again differences were not statistically significant.

Respondent's Father's Educational Level and Extent of Difference Among Those Expecting a Higher Prestige Occupation Than Desired

In Table 15, the portion of response indicating an expectation for a higher prestige occupation than desired was categorized on the basis of extent of difference, and according to the educational level of the respondent's father.

Table 15. Relationship of Extent of Those Expecting Higher Occupational Scores Than They Desire to Father's Education

Extent of Difference Points	Per Cent of Respondents Father's Education		
	Low (N=18)	Medium (N=9)	High (N=2)
1 - 9	72.22	88.89	50.00
10 - 19	22.22	11.11	50.00
Over 19	5.56	0.00	0.00

Again, respondents whose fathers had a medium educational level had the least difference between the prestige scores of their desired and expected occupation. Also, respondents whose fathers had the highest educational level had the most difference. These findings were again apparently due to the possibility that those whose fathers had a high educational level expected higher prestige occupations than those whose fathers had a low or medium educational level; and those whose fathers had a low educational level desired occupations of lower prestige than those whose fathers had a medium or high educational level. These differences were not found to be statistically significant.

Relationship of Mother's Educational Level to Direction of Difference Between Respondent's Desired and Expected Occupation

Separation of response was made on the basis of the three possible directions of difference, and according to the respondent's mother's educational level.

Table 16. Relationship of Direction of Difference Between Desired and Expected Occupational Scores to Mother's Education

Direction of Difference	Per Cent of Respondents Mother's Education		
	Low (N=324)	Medium (N=512)	High (N=92)
None	48.76	51.17	61.96
Desired Higher	41.36	36.72	31.52
Expected Higher	9.88	12.11	6.52

Response, reflected in Table 16, was very similar to Table 13 in which influence of father's education was tested. The respondents whose mothers had the highest educational level more frequently exhibited no difference between prestige scores of desired and expected occupations. Motivation from parents, highly-education oriented environment, and fewer socio-economic barriers undoubtedly contribute to such a situation.

Respondents whose mothers had the lowest educational level indicated in greater percentage a desire for a higher prestige occupation than expected. Again the environmental setting of limited opportunity probably accounts for this fact.

Response indicating an expectation of a higher prestige occupation than desired was least among respondents whose mothers had the greatest amount of education. This would be expected, in that those respondents would probably be motivated to aspire higher. But, in Table 13, the father's educational level had no influence upon expectation of a higher prestige occupation than desired. Possibly the mother's educational level, and indeed the mother per se, has more influence than the father on the child's occupational desires and expectations.

Difference shown by the Table were just beyond the statistically significant range.

Respondent's Mother's Educational Level and Extent of Difference Among Those Desiring Higher Prestige Occupation Than Expected

The portion of response indicating a desire for a higher prestige occupation than expected was categorized on the basis of extent of difference, and according to the educational level of the respondent's mother, Table 17.

Table 17. Relationship of Extent of Those Desiring Higher Occupational Scores Than They Expect to Mother's Education

Extent of Difference Points	Per Cent of Respondents Mother's Education		
	Low (N=80)	Medium (N=101)	High (N=12)
1 - 9	65.00	68.32	58.33
10 - 19	28.75	23.76	33.33
Over 19	6.25	7.92	8.34

Just as was true of the father's education, the educational level of the respondents' mothers was related to the probability of expecting an occupation of lesser prestige than that desired. The reasons for such a condition are probably the same as with the influence of the father's education. Apparently respondents whose mothers had a high educational level tended to aspire higher, causing greater difference between scores of desired and expected occupations. Those whose mothers had a low educational level probably tended to expect lower prestige occupations also causing difference between scores of desired and expected occupations. Therefore those whose mothers had a medium level education appeared to be more realistic in occupational choices than the other two categories. The differences were not statistically significant.

Respondent's Mother's Educational Level and Extent of Difference Among Those Expecting a Higher Prestige Occupation Than Desired

The portion of response indicating an expectation of a higher prestige occupation than desired was separated on the basis of extent of difference, and further categorized in accord with the educational level of the respondent's mother, Table 18.

Table 18. Relationship of Extent of Those Expecting Higher Occupational Scores Than They Desire to Mother's Education

Extent of Difference Points	Per Cent of Respondents Mother's Education		
	Low (N=11)	Medium (N=14)	High (N=4)
1 - 9	63.64	92.86	50.00
10 - 19	27.27	7.14	50.00
Over 19	9.09	0.00	0.00

Respondents whose mothers had a medium educational level exhibited the least difference between the prestige scores of their desired and expected occupations. Respondents whose mothers had the highest educational level had the most difference. Again, these findings were apparently due to the possibility that those whose mothers had a high educational level expected higher prestige occupations than those whose mothers had a low or medium educational level. And those whose mothers had a low educational level desired lower prestige occupations than those whose mothers had a medium or high educational level. These differences were not statistically significant.

Relationship of Number of Siblings to Direction of Difference Between Desired and Expected Occupation

The sample was divided according to the three possible directions of occupational prestige difference, and each of these three divisions was separated according to the number of siblings in the family of the respondent. Zero - 2 siblings were categorized low, 3-5 medium and over 5 high, Table 19.

Table 19. Relationship of Direction of Difference Between Prestige of Desired and Expected Occupation to Number of Siblings

Direction of Difference	Per Cent of Respondents Number of Siblings		
	Low (N=351)	Medium (N=362)	High (N=213)
None	51.00	55.80	42.72
Desired Higher	36.75	33.98	46.95
Expected Higher	12.25	10.22	10.33

Differences reflected by Table 19 were significant beyond the .02 level, indicating that number of siblings was related to the direction of prestige differences between desired and expected occupations. Respondents having low and medium numbers of siblings more frequently indicated no difference between the prestige of desired and expected occupations.

A limited number of children more often characterizes a family of higher socio-economic status. And higher socio-economic level families provide children with greater encouragement and opportunity, in turn giving them greater cause to expect

to attain their occupational goals. The reverse also holds true. This rationale may account for the observed relationship between number of siblings and the direction of difference in prestige of desired and expected occupations.

A greater percentage of respondents having a high number of siblings indicated a desire for a higher prestige occupation than expected. Again, it seems that a lower socio-economic level family offers less encouragement opportunity, perhaps causing the child to feel that he will not attain his occupational goals.

There was very little difference among the proportions expecting a higher prestige occupation than desired. Apparently the number of siblings did not influence response appreciably among this group.

Number of Siblings and Extent of Difference Among Those Desiring a Higher Prestige Occupation Than Expected

In Table 20 response indicating a desire for a higher prestige occupation than expected was categorized by number of siblings, and further separated according to the extent of the difference.

Table 20. Relationship of Extent of Those Desiring Higher Prestige Occupations Than They Expect to Number of Siblings

Extent of Difference Points	Per Cent of Respondents Number of Siblings		
	Low (N=71)	Medium (N=72)	High (N=53)
1 - 9	69.01	66.67	64.15
10 - 19	22.54	26.39	26.42
Over 19	8.45	6.94	9.43

A family containing a small number of children generally constitutes one of higher socio-economic standing than one with a higher number of siblings. The off-spring of these higher socio-economic class families tend to receive more encouragement and encounter fewer barriers in striving to attain their occupational goals. Thus, it would seem that respondents of families with a smaller number of children would have the least difference between the prestige levels of their desired and expected occupations. The findings of Table 20 supported this hypothesis.

Number of Siblings and Extent of Difference Among Those Expecting a Higher Prestige Occupation Than Desired

In Table 21 response indicating an expectation of a higher prestige occupation than desired was categorized by number of siblings, and according to the extent of the difference.

Table 21. Relationship of Extent of Those Expecting Higher Prestige Occupations Than They Desire to Number of Siblings

Extent of Difference Points	Per Cent of Respondents Number of Siblings		
	Low (N=10)	Medium (N=10)	High (N=8)
1 - 9	80.00	60.00	100.00
10 - 19	20.00	40.00	0.00
Over 19	0.00	0.00	0.00

In Table 21 the amount of response was small, no distinct pattern was obvious, and the differences were statistically insignificant. Apparently the number of siblings had little relationship to respondent expectations of a higher prestige occupation than desired.

Relationship of Direction of Difference Between Desired and Expected Occupations to Place of Residence

Response was categorized according to the three possible directions of difference, in occupational prestige and upon whether the respondent resided in town or in the country, Table 22.

Table 22. Relationship of Direction of Difference Between Prestige of Desired and Expected Occupations to Place of Residence

Direction of Difference	Per Cent of Respondents Place of Residence	
	Country (N=606)	Town (N=333)
None	49.01	54.65
Desired Higher	39.60	35.44
Expected Higher	11.39	9.91

High school seniors residing in town tended to have less difference between the prestige level of their occupational desires and expections than those residing in the country. Town residents often tend to be in higher socio-economic classes than country residents, and this aids members of the family at

working age to expect to more nearly realize their occupational desires. Also, town residents have had more contact with the various occupations, and this knowledge perhaps causes them to be more realistic than country residents about their occupational future. In Table 22 more response of town than country residents indicated no difference in prestige between their desired and expected occupations.

More respondents of country than town residence expressed a desire for a higher prestige occupation than expected, and an expectation of a higher prestige occupation than desired. These findings probably stem from the same rationale presented in the preceding paragraph. Differences exhibited in Table 22 were statistically significant beyond the .05 level.

Place of Residence and Extent of Difference Among Those Desiring a Higher Prestige Occupation Than Expected

In Table 23 that portion of response expressing a desire for a higher prestige occupation than expected was further divided on the basis of respondent residence.

Table 23. Relationship of Extent of Those Desiring Higher Prestige Occupations Than They Expect to Place of Residence

Extent of Difference Points	Per Cent of Respondents Place of Residence	
	Country (N=144)	Town (N=54)
1 - 9	65.97	66.67
10 - 19	25.00	27.78
Over 19	9.03	5.55

Respondents claiming a town residence indicated slightly less difference between the prestige of their desired and expected occupations. However, the differences were not statistically significant, and it might be concluded that place of residence had little affect upon extent of differences among respondents desiring a higher prestige occupation than they expected to attain.

Place of Residence and Extent of Difference Among Those Expecting a Higher Prestige Occupation Than Desired

In Table 24 that portion of response expressing an expectation of a higher prestige occupation than desired was further separated according to whether the respondent resided in town or country.

Table 24. Relationship of Extent of Those Expecting Higher Prestige Occupations Than They Desire to Place of Residence

Extent of Difference Points	Per Cent of Respondents Place of Residence	
	Country (N=18)	Town (N=11)
1 - 9	72.22	81.82
10 - 19	22.22	18.18
Over 19	5.56	0.00

Less difference was indicated between prestige of desired and expected occupations by respondents residing in town. Again, respondents in town appeared to be more realistic, probably because of more encouragement, opportunity, and occupational knowledge. The differences among response in Table 24 were not statistically significant.

Conclusions

In this chapter certain background factors were tested to determine whether they had any influence upon direction and extent of difference between prestige scores of desired and expected occupations of the respondents. In many cases the differences were not statistically significant. However, in most cases the differences seemed to have direction and meaning.

Intelligence

The intelligence of the respondent seemed to have some relationship to his desired and expected occupational prestige levels. For example, more respondents of low intelligence indicated desired and expected occupations having no difference in prestige. Perhaps the less intelligent respondents were more cognizant of their limitations, and thus appeared to be more realistic in selecting occupations.

Highly intelligent respondents more frequently than those of medium intelligence indicated no difference in prestige between desired and expected occupations. The more intelligent individuals probably perceived themselves as being more capable of doing what they desire.

Among respondents desiring a higher prestige occupation than expected, differences were the opposite of those among respondents indicating no difference between prestige of desired and expected occupations; i. e., respondents of low intelligence composed the smallest per cent of this category, and respondents of medium intelligence the greatest percentage.

Intelligence apparently was unrelated to the response of those who expected a higher prestige occupation than desired.

In testing the extent of difference among those desiring a higher prestige occupation than expected, respondents of medium intelligence appeared to have the most differences. Again, apparently the low intelligence individuals recognize their limitations and lower their aspirations, and the high intelligence individuals perceive themselves as having the ability to achieve their occupational aspirations.

Father's Occupational Prestige

The father's occupational prestige level should influence the difference in prestige between the respondent's desired and expected occupations. Generally, the higher the occupational prestige of the father, the higher the socio-economic level of the family, enabling the individual to get more encouragement and encounter fewer socio-economic barriers in striving to attain his occupational goals.

This rationale was supported in that more respondents whose fathers had high occupational prestige levels indicated no difference in prestige between their desired

and expected occupations. Also, more respondents whose fathers had a low occupational prestige level expressed a desire for a higher prestige occupation than expected.

In testing extent of difference among those desiring a higher prestige occupation than expected, respondents whose fathers had low prestige occupations indicated the least difference. Since opportunity would obviously be more limited for those from the low occupational prestige family, they apparently lowered their occupational desires to be consistent with their expectations.

Parents' Educational Level

Greater percentages of respondents indicated no difference between the prestige of desired and expected occupations as the educational level of their fathers increased. This was expected, for respondents whose fathers had the highest educational level would probably receive more encouragement, and encounter fewer socio-economic barriers, in striving to attain their desired occupation.

The father's educational level affected students who desired a higher prestige occupation than expected, for there was more response in that category among those whose father had a low educational level. The rationale for this would be that the respondents whose fathers have a low educational level find it socially and financially more difficult to attain their occupational aspirations.

The father's educational level apparently had no affect upon those expecting to attain a higher prestige occupation than desired.

For those respondents desiring an occupation of higher prestige than they expected to attain, the least differences were expressed by those whose father had a medium level of education. Perhaps those whose father had a high educational level tended to aspire higher than they reasonably could attain, and those whose father had a low educational level tended to expect occupations of much less prestige than they wished, causing greater differences between scores of desired and expected occupations. Respondents whose fathers had a medium level of education seemed more realistic in the balance they obtained between desired and expected occupations.

The educational level of the respondent's mother affected desired and expected occupational levels in the same way as did the father's educational level.

Siblings

Number of siblings affected the differences between respondents' desired and expected occupational levels. Respondents having limited numbers of siblings more frequently indicated least differences between the prestige of desired and expected occupations.

A limited number of children more often characterizes a family of higher socio-economic status. And higher socio-economic level families provide children with greater encouragement and opportunity, in turn giving them greater cause to expect

to attain their occupational goals. The reverse probably accounts for the fact that a greater percentage of respondents who had a high number of siblings indicated a desire for a higher prestige occupation than expected.

Residence

Respondents of town residence more frequently indicated no difference and least difference between the prestige level of desired and expected occupations. Town residents often tend to be in higher socio-economic classes than country residents, they have had more contact with the various occupations, and a greater variety of occupations is available in their environment. These factors perhaps aid them in being more realistic than country residents about their occupational future.

APPENDICES

APPENDIX A

A List of the Schools Participating in the Study

Economic Area I

Bethel School, Haywood County

Economic Area 2

Glen Alpine School, Burke County; Lincoln Heights School, Wilkes County

Economic Area 3

South Granville School, Granville County; Mary Potter High School, Granville County

Economic Area 4a

Ledford High School, Davidson County; Peabody School, Montgomery County

Economic Area 4b

Mount Pleasant-McAllister School, Cabarrus County; Dunbar School, Rowan County

Economic Area 5

Piedmont High School, Union County; Western Union School, Union County

Economic Area 6

Union High School, Sampson County; Sampson High School, Sampson County

Economic Area 7

Murfreesboro High School, Hertford County; Central High School, Gates County

Economic Area 8

Grantham School, Wayne County, Frink High School, Lenoir County

Economic Area 9

Elise School, Moore County; Rosenwald School, Robeson County

Economic Area 10

Camden County High School, Camden County; S. W. Showden High School, Beaufort County

Economic Area 11

Burgaw School, Pender County; E. E. Smith School, Duplin County

APPENDIX B

The North-Hatt Scale of Occupational Prestige

The North-Hatt scale of occupational prestige was compiled from the response of a national sample. It was designed to determine the relative value people assigned to a variety of occupations. Respondents were asked to rate the 90 occupations given as "excellent, good, average, somewhat below average, or poor." Each occupation was then given a score based upon the response to it by all respondents. For example, a physician was rated 93, a county judge 87, undertaker 72, lumberjack 53, and bartender 44.

This method of rating occupations proved very useful, but the original 90 occupations were inadequate. Several researchers have added to the list, giving it greater unity. A modified version of the North-Hatt scale was used to determine the prestige of occupations recorded by respondents in this study.

APPENDIX C

Chi-Square and the Level of Probability

The chi-square statistic is used to determine whether observed differences between two groups are due to chance. If the difference is not due to chance then it is assumed to be a result of some specific variable, hopefully the one under study.

The value of the chi-square determines the level of significance at which it may be accepted. For example, a particular value of chi-square (under the conditions of the study) may be significant at the .05 level. This means that in only 5 times out of a hundred would such a chi-square value be due to chance factors rather than to the study variable. The .01 level usually is set as the minimum level of acceptance; the .01 level (one chance out of a hundred that the result is not due to the test variable) or the .001 level (one chance out of a thousand) are much stronger and more reliable.

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1965

Farm Business Management Report

and

Individual Farm Business Analysis Guide

by the

Agriculture Department

St. Cloud Area Vocational-Technical School

Saint Cloud Public Schools

Saint Cloud, Minnesota

Cooperating Agencies

State and County Services of U. S. D. A.

Institute of Agriculture, University of Minnesota

Vocational Division, Minnesota Department of Education

VT 00408

1965 FARM BUSINESS MANAGEMENT REPORT

Agriculture Department, Area Vocational-Technical School
St. Cloud Public Schools, St. Cloud, Minnesota

Prepared by Edward J. O'Connell, Area Vo-ag Coordinator

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INTRODUCTION TO THE 1965 FARM BUSINESS MANAGEMENT REPORT

The data presented in the 1965 Farm Business Management Report was prepared from 195 farm business records that were analyzed by the individual instructors in cooperation with the local farmers enrolled for classes in farm management education.

The following list of agriculture instructors submitted analysis reports from their local schools:

Department	Instructor	Number of Analysis
Albany	James Kastanek	11
"	Ronald Novotny	5
Browerville	Howard Knobloch	1
Cambridge	Russell Almendinger	2
Cokato	Alan Dalen	4
Dassel	Phillip Toedter	8
Evansville	William Wendlandt	10
Foley	Lawrence Reiten	34
"	Roland Bjorklund	9
Kimball	Leo Wirth	5
Litchfield	Arvid Anderson	9
Long Prairie	Robert Johnson	22
Melrose	Mal Bren	4
North Branch	Wilton Johnson	1
Ogilvie	Eugene Tolzman	4
Osakis	Norman Bohmbach	8
Paynesville	LeRoy Hillbrand	2
St. Cloud	Raymond Anderson	29
"	Robert Underwood	27

Total: 16 schools, 19 instructors, 195 farms

There were additional individual analysis reports that were not sent in to the area center and therefore not included in the above list.

The contents of the 1965 Farm Business Management Report is divided into three parts:

1. The introduction, which is a general description of the report and the analysis system used.
2. The statistical summary of data from the information on 195 farms in central Minnesota counties.
3. A section containing supplementary data, or other items related to the analysis.

The farm record used was the Minnesota Farm Account Book. The record book includes a depreciation schedule plus cash and accrual figures on the whole farm, as well as the parts and production enterprises. Therefore, the business analysis presents the results on a cash and accrual basis for the whole farm and the enterprises. The data is summarized in the third section of the area report, for the most part, in terms of averages per groups in particular areas of analysis. One basic factor is used to rank the cases in a particular grouping. Those most successful on basis of the common basic factor of comparison are included in the average for the top 20% of the group. Those least successful are in the bottom 20%. All cases represent the 100% group average.

Analysis of the Cash Statement

The accounting results on the cash basis are reported on pages 9 and 10 of the area report and on Form 1 of the individual analysis. Cash purchases and sales include the purchase or sale of fixed assets, as well as operating expenses and income. Net cash income, total cash sales minus total cash purchases, is the first financial conclusion. Net cash income is the result of using all monies from savings, charge accounts, long or short term loans, other credit or annual sales of farm production during a year. The net cash is what remains to provide the family living, pay the debts, make savings or acquire capital control for future financial progress. Net cash income is directly related to the circulation of money in any business year or period within the year. Since all cash income is money available for spending on acquiring future income, the total farm sales are important to the community trade area.

In addition to the cash money circulated in farm operation, one has control of farm capital resources such as land, equipment, buildings plus livestock, crops, feed and seed not converted to cash in a business year. The difference or change in the total value of farm capital resource inventories at the beginning and ending of the year show up as a decrease or an increase in farm capital value. The decrease is subtracted or the increase is added to the net cash farm income. The summary of farm capital is shown on page 28 of the area summary and on Form 3 of the individual analysis.

Farmers usually receive some family living from the farm in the form of meat, milk, eggs or crop produced on the farm. The market value of these products is added to the net cash farm income. It is generally true that farmers board their hired help. The cost of board is subtracted from the net cash income. The value and use of the farm house are excluded from the business analysis.

Therefore, net cash farm income plus or minus the change in farm capital value, plus family living, minus the board of hired help, gives us the total accrued return to the capital and family labor resources used. This result is called the return to capital and family labor. The return to capital and family labor may then be broken down to a specific return on farm capital, unpaid family labor and earnings to the operator himself.

Although opinions vary, we have figured farm capital should earn 5% interest on the investment. The 5% is figured on the average of the beginning and ending total inventory of farm capital. One should recognize that depreciation charges were taken in arriving at end inventory. It should also be noted that the actual cash interest cost was not included in the total cash purchases figure. In this way, the earnings expected are standardized for analysis of capital use. It may also be correct to assume that actual interest in total or on parts of investment incumbered by debt may be more or less than the 5% rate used.

In order to arrive at the earnings of the operator himself, we must eliminate the value of unpaid family labor by assigning a value to it. By subtracting the interest on investment and the value of unpaid family labor from the return to capital and family labor, we arrive at operators labor earnings. The operator labor and management earnings are the result of cash and accrued material value. This figure may correspond to wages earned by an employee on a salaried job.

Analysis of the Accrual Statements

The accounting results on the accrual basis are reported on pages 11 and 12 in the area summary and on Form 2 and 3 of the individual analysis. The basic purpose of accrual accounting is to combine and allocate fixed and operating costs into specific areas where resources of fixed and operating capital are used for specific purposes. The distribution and allocation of costs and returns in this system of analysis is made specific to parts within the two broad areas of accrued costs and accrued returns.

Accrued Cost Analysis

The first area of accrued cost distribution includes the use of land, machinery, equipment and buildings. This resource area is basic to the operational and depreciation cost summarized on page 11 of the area report and Form 2 of the individual analysis. Form 2 is called "enterprise expenses, decreases and capital costs." The divisions set up on the form for the distribution of costs are based on the divisions used in the five year depreciation schedule and the F. A. 22 research form used at the University of Minnesota.

It is evident that the divisions used provide a way of allocating costs specific to operational and asset categories as the summary shows. It is also evident that this distribution of accrual costs is not specific to production results on stock or crop enterprises. It may be possible to develop a simple way of allocating accrued costs into livestock or crop enterprise categories. This would greatly assist the need for information on input-output relationships on crop and stock enterprises beyond the area of return above feed costs on stock. Some work sheets are being tried with individual farm business analysis work with the farmer.

The basis for the accrual method of calculating the annual cost of using fixed capital is based on the principle that fixed assets are a separate manageable account. The beginning inventory, plus purchases and trades minus the sales and depreciation, equal end inventory. Therefore, beginning inventory, plus purchases and trades minus sales and end inventory, equal depreciation. Capital gains or losses on specific items in the account may increase or decrease the total farm depreciation cost to the asset account. This depreciation, capital gains or losses reported in the individual analysis, should check against the income tax depreciation schedule taken from the same farm business record. The depreciation cost arrived at is clue to management of fixed capital, taxes, obsolesence, replacement, modernization and specific use costs of selected items in the account.

Form 2 of the individual analysis is organized to show the allocation and combination of accrued costs per section of asset use as the assets are grouped in the record book and farmers depreciation schedule. The purchase or sale of land is not carried to the depreciation section of costs for the whole farm. The result of land transactions shows up as increase or decrease in capital on the farm capital summary on Form 2. The summary of accrued costs is shown on page 11 of the area report. The accrued cost per asset used is shown on page 25 of the area report.

Accrual Returns Analysis

The second area of accrual accounting is the accrual returns and costs in the area of crop and livestock enterprises that are summarized on pages 11 and 12 of the area report and on Form 3 of the individual farm business analysis. Form 3 is called "enterprise returns, increases and labor earnings." The divisions set up for the distribution of costs and returns are based on enterprise categories.

The method of arriving at the annual share of fixed cost per livestock enterprise asset is the result of handling inventories, sales, purchase and transfers between enterprises as a separate account. The difference between the debit and credit totals in the enterprise account becomes the net increase or decrease. This system segregates the fixed costs from the operating costs used to get production from the resource. By adding the net inventory decrease or increase to the total production, we have an accrued return per enterprise. Feed costs are transferred directly from the crop and feed section of the record book to enterprise columns all on direct calculation of return over feed cost per enterprise.

The crop and feed increase is summarized and calculated to acquire a business year increase. Since this calculation involves inventories, it is necessary to calculate the annual crop increase in order to make annual crop cost calculations.

Experience has shown that THE TOTAL RETURN OVER FEED COST ON ALL LIVESTOCK AND THE CROP, SEED, FEED INCREASE ARE IMPORTANT CLUES TO MANAGERIAL ABILITIES. THESE TWO FIGURES REPRESENT THE TWO BASIC PRODUCTION AREAS ON A FARM. The balance or relationship of the two figures may be a clue to success or failure in the enterprise areas that do not show up in a whole farm result. These two figures are, in general, the result of using accrued costs. They also represent the two large areas of production on a farm and as a result offer one a better way to evaluate the farm management factors listed on page 28.

The labor earnings calculated on accrual accounting, or the cash accounting system, should result in the same figure. In the case of the individual analysis, the cross check for correctness in the final answer is that the operator labor earnings on Form 1 should agree with that answer developed from distribution of costs on Form 2 and Form 3.

Livestock Enterprise Analysis

Dairying is the most important livestock enterprise in the central area. The heaviest cow population in Minnesota is found in Stearns and Ottertail counties. The analysis is based on 173 farmers who milk cows. The basis for ranking the herds was butterfat per cow. One should not consider butterfat per cow as the only criteria for measuring managerial success in the dairy business. We used the same ranking for analysis of the young stock or "other dairy cattle" enterprise. We did not combine young stock with cow herd results. Farm visitation indicated combination analysis may be of little value in comparing livestock programs for young stock not used for herd replacement. Instructors may desire a follow up more extensively on the relationship of the dairy enterprise in terms of return per dollar feed cost and related fixed costs.

The production of swine has taken three directions: (1) production of market hogs only (2) production of feeder pigs only and (3) a combination of selling feeder pigs and feeding out pigs as market hogs. Very few farmers purchased feeders to be fed out for market hogs.

The farms included in the market hog analysis sold very few or no feeder pigs. Thus, feeder pig sales did not effect the market hog analysis. The farms included in the feeder pig analysis did not sell market hogs. In addition, we grouped the farms with the combination market hog and feeder pig operation into a separate analysis. IT IS VERY NECESSARY THAT INVENTORY AND FEED CONSUMPTION DATA BE KEPT SEPARATELY FOR EITHER TYPE OF HOG OPERATION.

The number of poultry enterprises was adequate to compile an analysis. All the operations were not typical of the larger sized poultry operations. The upper half, of those in the analysis, include a few cage-laying operations.

Beef cattle production, as beef cow herds or feeder cattle operations, is limited in this area. Feeder cattle operations, in the analysis, are not typical of usual setups where the three main beef breeds are fed.

Sheep production is not a major enterprise. We have included them in the analysis although there were only seven farmers raising sheep.

Analysis of Farm Crop Enterprises

The individual analysis of the crop production enterprise is made on Form 8 at the close of the harvest season in October or November. This procedure is followed in order that results are timely, immediately checked and can be used in individual or class instruction.

The results of specific crop cost analysis made by some instructors for use in their own local programs is not included in this summary. Work sheets are provided for follow up on this by the local teacher.

Net Worth and Family Living Cost Data

The submission of data, in regard to the assets and liabilities, is a voluntary matter on the part of the farmer. Farm credit knowledge must be confidentially used in farm-management instruction and planning. We have summarized the data about the farms where information was available. In order to make further study of the farm credit situation, we are requesting that more data be gathered in regard to types, amounts and sources of farm credit used.

In many cases, farmer's wives keep track of living costs in detail. We have not summarized the data. If farmers or teachers are interested in considering these facts about family living, they may be summarized in future reports.

Farm Management Measures of Ability

Research work at the University of Minnesota has developed a set of factors that may be used to measure managerial success of farm operators. These seven factors are listed on page 28 of the report. Since the final

figure used or given is a specific measure resulting from many factors, the measure becomes a clue to problem identification and more detailed study. The factors are not mutually interdependent of each other, nor are they as specific a measure on diversified farms as they are on specialized farms. It is up to the operator to find out why, when, where and how the results come about. This is a step in identifying problems, finding the best of alternative solutions to problems and deciding on a plan of action that can be implemented for most profitable use of resources.

The farm sales volume of dollars is an indication of farm business volume in a trade area or a school district. All of it is spent for family living expenses, debt payments, savings, farm operation costs and assets bought. The total farm sales volume represented in this report is $3,299,550.32 for 1965. After consideration of cash operating expenses, increase and decrease in farm capital value, board of hired labor, interest on investment, family food off the farm and the value of unpaid family labor, these farmers had $841,490.46 left for operator labor and management earnings. These per farm operator labor earnings may be considered as wages paid by the self-employed businessman to himself. The average earnings for labor were $4,382.00 per operator.

The number of farmers submitting business analysis by way of their local high school vo-ag instructors continue to increase as schools can acquire qualified instructors for the educational work.

The number of farmers sending in records each year for analysis is as follows:

1946	16	1953	54	1959	70
1947	60	1954	55	1960	77
1948	60	1955	Summary on 179 farms	1961	80
1949	80			1962	70
1950	50	1956	12	1963	102
1951	49	1957	57	1964	132
1952	62	1958	50	1965	195

The clerical and accounting work was completed by four clerical workers under the supervision of Mrs. John Seeley. The printing of the individual analysis forms and the report cover were done by the graffic art classes at the area school. The clerical and supply costs of operating the program are paid for by farmers. The salary and mileage costs for instruction are paid by the schools who sponsor the educational program.

Additional copies of the report may be obtained for 25¢ per copy as long as the supply lasts.

The cooperative and progressive work done by instructors who have remained in the program is resulting in growth and acceptance of this type of adult farmer education in other schools who at this time are unable to acquire well qualified teachers. The cooperation received from individuals at the University of Minnesota, the Minnesota State Department of Education, farm credit agencies, school administrators and particularily the farmers is most necessary and sincerely appreciated.

Other farmers not in this program may desire to acquire information or want to participate in a farm management instruction program at their school. They may contact the local agriculture department or the vo-ag program coordinator at the St. Cloud area school.

E. J. O'Connell, Area Vo-Ag Program Coordinator
J. K. Michie, Superintendent J. C. Wakefield, Director
Area Vocational Technical School

The System of Farm Business Analysis Used at the St. Cloud Area Vocational School

The farm business analysis service used in conjunction with a farm management education program includes two parts: (1) the individual farm business analysis and (2) any summary of data from individual analysis prepared by the area school analysis center from individual farm business data.

The individual analysis used at St. Cloud was developed at St. Cloud from a revision of the work sheets used in farm management research in the Agriculture Economics Department, University of Minnesota. The data collected, the general system and the factors of managerial consideration used are very similar. The revision used differs in the organization of the work sheets, resulting in their direct use as an individual analysis report separate from any summary. The analysis, as an instructional or managerial tool, then conforms to the individuality of the farms, the farmers, instructors and instructional activity.

There are two plans for making the confidential and individual analysis of the farmer's business record:

Plan A

1. The farm record book, kept by the farmer, is closed by the local instructor in cooperation with the farmer as soon as possible after the close of the year.
2. The record book remains with the farmer or the local instructor and is not sent to the area center.
3. The individual farm analysis is prepared by the local instructor in cooperation with the farmer. A copy is given to the farmer and local instructor. The copy sent to the area school for use in preparation of area summaries is returned later to the local instructor. Analysis of enterprises may be made any time on a lot or periodic basis.

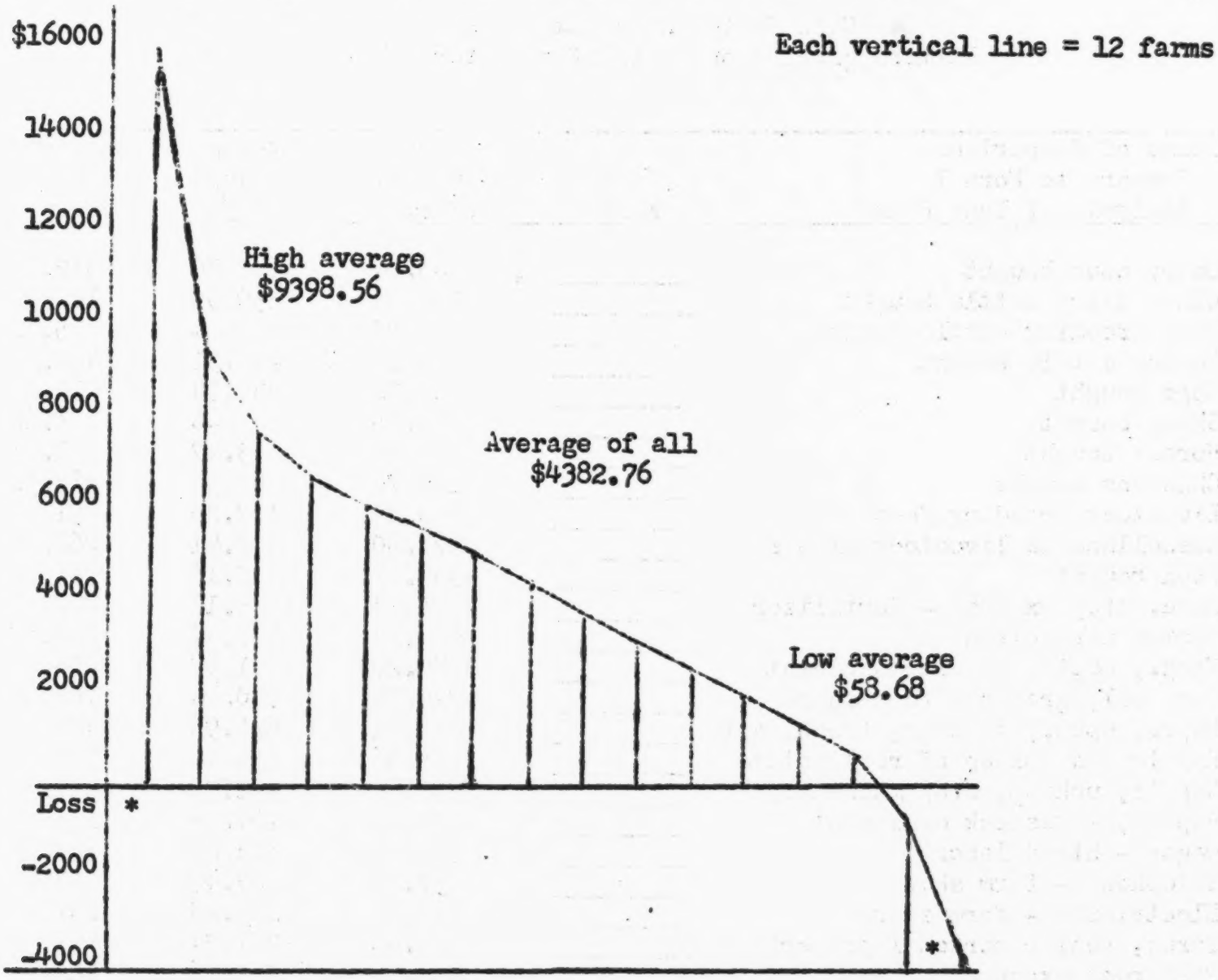
Plan B

1. The farm record book, kept by the farmer, is closed by the local instructor.
2. The closed record book is sent to the area analysis center. The instructor must also forward check sheets in regard to crop data, feed consumption and livestock numbers.
3. The area analysis center prepares the individual analysis and copies are sent back to the instructor.

The preparation of the individual analysis under plan A or B is identified with the individualistic character of farms, farmers and instructors. This is in contrast to the "averages per group" in our summary report.

In plan A, the analysis work may be considered as timely case study necessary for the teachers' preparation of the annual instruction program. It may provide a practical way to develope understanding and usefulness of farm records and business analysis as a tool of use in the decision-making process managers follow. Plan A is used at least the first two years of enrollment in a program. It may be used a third or fourth year. Farmers are asked to shift to plan B when the individual analysis activity gets to be in the nature of a repetitional service function rather than an educational function.

Range of Operator Labor Earnings on 192 Farms - 1965



Range of Management Factors in the High Earnings Group
(Showing contrasts between farms)

	High farm	Low farm
1. Operator labor earnings	$ 15855.48	$ 6777.65
Return to capital & family labor	$ 17985.63	$ 7872.75
2. Crop yield index	121.2 %	156. %
3. Crop selection index	79.3 %	85.4 %
4. Return per dollar feed cost	$ 2.33	$ 1.44
5. Animal units per 100 tillable acres	209.	39.
6. Work units per farm	466.6	429.5
7. Work units per worker	311.	245.4
8. Power, mach., bldg., eqpt., cost per work unit	$ 8.45	$ 5.66

Range of Management Factors in the Low Earnings Group

1. Operator labor earnings	$ 1606.16	$ -4108.08
Return to capital & family labor	$ 3387.66	$ -2291.33
2. Crop yield index	132. %	157.7 %
3. Crop selection index	73. %	86.9 %
4. Return per dollar feed cost	$ 1.65	$ 1.56
5. Animal units per 100 tillable acres	30.	24.4
6. Work units per farm	279.	244.9
7. Work units per worker	279.	188.4
8. Power, mach., bldg., eqpt., cost per work unit	$ 9.79	$ 26.78

Cash Statement of Expenses
Farmers grouped on basis of operator labor earnings

Items of Comparison Compare to Form 1 Analysis of Your Farm	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
Dairy cows bought	_____	$ 306.04	$ 196.86	$ 312.86
Other dairy cattle bought	_____	154.08	259.99	101.22
Beef breeding cattle bought	_____	15.19	--	25.42
Feeder cattle bought	_____	288.96	411.31	440.31
Hogs bought	_____	186.78	339.94	80.66
Sheep bought	_____	13.25	--	5.66
Horses bought	_____	.86	3.47	1.11
Chickens bought	_____	109.70	89.55	268.52
Livestock breeding fees	_____	103.29	117.29	91.95
Miscellaneous livestock expense	_____	377.80	482.41	268.60
Feed bought	_____	3357.67	4917.16	3751.86
Misc. crop expense - fertilizer	_____	1099.24	1625.11	872.63
Custom work hired	_____	666.77	867.47	619.59
Mach., eqpt., R. estate bought	_____	3984.20	5891.67	3005.29
Gas, oil, grease - farm share	_____	720.84	900.44	706.96
Repr., upkp., tractor, truck, auto	_____	475.61	626.96	450.73
Repair and upkeep of real estate	_____	185.06	258.44	179.90
Repair, upkeep, crop machinery	_____	361.69	492.09	357.53
Repair, livestock equipment	_____	119.49	164.32	133.07
Wages - hired labor	_____	337.09	623.68	229.28
Telephone - farm share	_____	57.87	67.49	53.96
Electricity - farm share	_____	247.26	265.28	231.09
Taxes, real & personal property	_____	585.40	721.74	497.37
Farm rent expense	_____	456.10	789.56	186.75
General farm expense	_____	206.47	225.20	190.06
Total cash purchases	_____	$ 14416.71	$ 20337.43	$ 13062.38

Comparison of Cash Expenses to Cash Income

Average cash purchases	_____	$ 14416.71	$ 20337.43	$ 13062.38
Average cash sales	_____	$ 17185.15	$ 24490.82	$ 14554.70
Total amount of cash purchases made per dollar cash sales	_____	$ .84	$ .81	$ .93

Cash Statement of Receipts and Earnings
Farmers grouped on basis of operators labor earnings

Items of Comparison Compare to Form 1 Analysis of Your Farm	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
Dairy cows sold	_____	$ 1060.16	$ 1314.35	$ 865.52
Cream sold	_____	41.43	104.13	94.02
Whole milk sold	_____	8693.95	10640.30	7371.23
Other dairy cattle sold	_____	1013.16	1515.66	632.38
Beef breeding cattle sold	_____	83.95	4.92	316.48
Feeder cattle sold	_____	698.51	974.84	344.20
Hogs sold	_____	2292.04	4859.39	1242.62
Sheep and wool sold	_____	65.58	128.43	.96
Horses sold	_____	2.32	6.53	5.83
Chickens sold	_____	45.80	41.62	126.64
Eggs sold	_____	713.91	690.38	2213.81
Crops sold	_____	1008.39	2035.77	445.73
Mach., equip. and R. est. sold	_____	108.88	121.45	127.92
Gas tax refunded	_____	142.70	167.47	136.92
Income from off farm work	_____	458.62	685.11	206.59
Miscellaneous farm income	_____	741.04	1155.97	402.18
Cash rent received	_____	14.71	44.50	21.67
Total cash farm sales	_____	$ 17185.15	$ 24490.82	$ 14554.70
-Total cash farm purchases	_____	14416.71	20337.43	13062.38
Net cash farm income	_____	$ 2768.44	$ 4153.39	$ 1492.32
+Increase in farm capital (1)* or	_____	$ 4092.32	$ 7834.06	$ 1955.95
-Decrease in farm capital (2)**	_____	483.26	25.39	1255.01
+Family living off the farm	_____	367.83	425.17	329.84
Net farm receipts	_____	$ 6745.33	$ 12387.23	$ 2523.10
-Board of hired labor	_____	$ 79.26	$ 121.87	$ 136.89
Return to capital and unpaid family labor	_____	$ 6666.07	$ 12265.36	$ 2386.21
-5% Interest on investment	_____	2145.24	2668.77	2104.60
-Unpaid family labor	_____	138.07	198.03	222.93
Operators labor earnings	_____	$ 4382.76	$ 9398.56	$ 58.68
*(1) Number of farms with an increase in farm capital		151	35	20
**(2) Number of farms with a decrease in farm capital		41	1	16

Change in capital on the cash statement represents the increase or decrease in the total value of the difference between the total farm beginning and ending inventory.

Accrual Statement of Expenses and Decreases
Farmers grouped on basis of operator labor earnings

Items of Comparison Compare to Form 2 (Machinery, Equipment, Buildings)	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
1. Beginning inventory	_____	$ 15076.67	$ 18307.10	$ 16481.68
2. Mach., equip., R.estate bought	_____	3266.88	5072.23	2644.17
3. Total of 1 + 2	_____	$ 18343.55	$ 23379.33	$ 19125.85
4. Mach., equip., R.estate sold	_____	$ 96.38	$ 121.45	$ 61.25
6. Ending inventory	_____	16370.51	20950.72	16944.52
7. Total of 4 + 5 + 6	_____	$ 16466.89	$ 21072.17	$ 17005.77
8. Depreciation mach., equip., buildings (3-7)	_____	$ 1876.66	$ 2307.16	$ 2120.08
9. Horse feed	_____	-	-	-
10. Custom work hired	_____	$ 666.77	$ 867.47	$ 619.59
11. Gas, oil, grease bought	_____	720.84	900.44	706.96
12. Repair auto, truck, tractor	_____	475.61	626.96	450.73
13. Repair and upkeep real estate	_____	185.06	258.44	179.90
14. Repair and upkeep of crop mach.	_____	361.69	492.09	357.53
15. Repair of livestock equipment	_____	119.49	164.32	133.07
16. Electricity - farm share	_____	247.26	265.28	231.09
17. Total operation cost (8 thru 16)	_____	$ 4653.38	$ 5882.16	$ 4798.95
18. Custom work income	_____	$ 192.55	$ 487.36	$ 127.77
19. Gas tax refund	_____	142.70	167.47	136.92
20. Net operation cost (17 - 18, 19) (See page 25 of report)	_____	$ 4318.13	$ 5227.33	$ 4534.26
21. Livestock breeding fees	_____	$ 103.29	$ 117.29	$ 91.95
22. Miscellaneous livestock exp.	_____	377.80	482.41	268.60
23. Wages of hired labor	_____	337.09	623.68	229.28
24. Board of hired labor	_____	79.26	121.87	136.89
25. Value of unpaid family labor	_____	138.07	198.03	222.93
26. Telephone - farm share	_____	57.87	67.49	53.96
27. Personal prop. & R.estate tax	_____	585.40	721.74	497.37
28. Farm rental expense	_____	456.10	789.56	186.75
29. General farm expense	_____	206.47	225.20	190.06
30. 5% Interest on investment	_____	2145.24	2668.77	2104.60
31. Total accrued decreases operating costs and expenses	_____	$ 8804.72	$ 11243.37	$ 8516.65

Change in farm capital on the accrual statement of expenses is specific to machinery, equipment and buildings.

Change in farm capital on the accrual statement of returns is specific to the inventory change on each livestock enterprise.

Accrual Statement of Returns, Increases and Earnings
Farmers grouped on basis of operator labor earnings

Items of Comparison Compare to Form 3 (Livestock and Crops)	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
1. Ending inventory	_____	$ 9999.59	$ 12567.00	$ 9357.31
2. Livestock sales	_____	5258.64	8845.74	3534.62
3. Butchered	_____	223.44	283.09	187.39
4. Transferred out	_____	1286.73	1777.95	938.61
5. Total 1 + 2 + 3 + 4	_____	$ 16768.40	$ 23473.78	$ 14017.93
6. Beginning inventory	_____	$ 9334.41	$ 11167.80	$ 9535.91
7. Livestock purchases	_____	1074.86	1301.12	1235.76
8. Transferred in	_____	1286.73	1777.95	938.61
9. Total 6 + 7 + 8	_____	$ 11696.00	$ 14246.87	$ 11710.28
10. Increase in livestock (5-9)	_____	$ 5072.40	$ 9226.91	$ 2307.65
11. Livestock products sold	_____	$ 9452.14	$ 11434.81	$ 9679.06
12. Products used at home	_____	114.43	124.18	109.12
13. Products fed to stock	_____	169.04	252.30	144.06
14. Total value of products 11 + 12 + 13	_____	$ 9735.61	$ 11811.29	$ 9932.24
15. Value of products plus inventory increase 10 + 14	_____	$ 14808.01	$ 21038.20	$ 12239.89
Dairy cattle	_____	$ 8793.39	$ 10964.64	$ 7556.04
Other dairy cattle	_____	2481.05	3417.71	1621.38
Beef cattle	_____	104.24	23.28	293.47
Feeder cattle	_____	364.24	675.74	65.83
Swine	_____	2427.55	5162.41	1071.43
Sheep	_____	58.94	125.23	1.57
Poultry	_____	577.40	667.52	1625.45
Horses	_____	1.20	1.67	4.72
Total value of products plus inventory increase	_____	$ 14808.01	$ 21038.20	$ 12239.89
16. Feed cost for livestock	_____	8532.29	11652.50	8134.60
17. Return over feed cost (15-16)	_____	$ 6275.72	$ 9385.70	$ 4105.29
18. Crops, seed & feed increase	_____	5889.94	9858.01	3967.37
19. Off farm labor income	_____	266.07	197.75	78.82
20. Miscellaneous farm income	_____	755.75	1200.47	423.85
21. Total Returns plus increase (Form 3)	_____	$ 13187.48	$ 20641.93	$ 8575.33
22. Total expense plus decrease (Form 2)	_____	$ 8804.72	$ 11243.37	$ 8516.65
23. Operators labor earnings	_____	$ 4382.76	$ 9398.56	$ 58.68
Relation of expense + decreases to returns + increases	_____	$ .70	$ .52	$ 1.02

Analysis of Dairy Herd Feed Costs and Return
Herds grouped on butterfat production per cow

Items of Comparison Compare to Form 4 Analysis of Your Herd	Your Farm	Average of 173 Farms	Average of top 20 %	Average of low 20 %
Herd Data:				
Number of Cows Kept	_____	29.3	33.6	26.7
Volume of Product as Milk	_____	296116#	434567#	197501#
Volume on Butterfat Basis	_____	10971#	15234#	7064#
Total Return Per Dollar Feed Cost	_____	$ 1.81	$ 1.87	$ 1.72
Net Increase in Herd Value	_____	$ -242.02	$ -278.51	$ -76.59
Value of Total Production	_____	9,996.32	14,872.58	6,541.44
Total Returns-Increase-Products	_____	$9,754.30	$14,594.07	$6,464.85
Total Feed Cost Per Herd	_____	5,412.46	7,904.79	3,798.47
Return Over Feed Cost Per Herd	_____	$4,341.84	$ 6,689.28	$2,666.38
Per Cow Data:				
Pounds of Butterfat Produced	_____	356.	457.	259.
Pounds of Milk Produced	_____	9855.	12979.	7055.
Increase in Cow Value	_____	$ -8.52	$ -9.02	$ -2.57
Total Value of Product	_____	334.69	441.31	240.40
Total Returns-Increase+Produce	_____	$ 326.17	$ 432.29	$ 237.83
Total Feed Cost Per Cow	_____	183.51	235.32	142.81
Return Over Feed Cost Per Cow	_____	$ 142.66	$ 196.97	$ 95.02
Total Return Per Lb. Butterfat	_____	$ .91	$ .94	$ .90
Feed Cost Per Lb. of Butterfat	_____	.52	.51	.55
Return Over Feed Cost Per Lb.BF	_____	$ .39	$ .43	$ .35
Total Return Per Cwt. of Milk	_____	$ 3.24	$ 3.35	$ 3.00
Feed Cost Per Cwt. of Milk	_____	1.84	1.82	1.83
Return Over Feed Cost per Cwt. Milk	_____	$ 1.40	$ 1.53	$ 1.17
Work Units Per Herd (10 hr. Day)	_____	293	336	267
Return Over Feed Cost Per Work Unit	_____	$ 14.27	$ 19.70	$ 9.50

Analysis of Dairy Herd - Continued

Items of Comparison Compare to Form 4 Analysis of Your Farm	Your Farm	Average of 173 Farms	Average of Top 20 %	Average of Low 20 %
Feed consumption per cow:				
Roughage	_____	2.6 T	2.9 T	2.4 T
Silage	_____	5. T	5.7 T	4.4 T
Concentrates	_____	3868 #	5207 #	2519 #
Feed Cost per cow:				
Roughage	_____	$ 52.84	$ 63.04	$ 46.35
Silage	_____	33.76	40.54	29.63
Concentrates	_____	90.76	126.81	60.26
Pasture	_____	6.15	4.93	6.57
Total feed cost per cow	_____	$ 183.51	$ 235.32	$ 142.81
Per pound value of concentrates	_____	$ .023	$ .024	$ .024
Average market price per cwt. milk	_____	$ 3.33	$ 3.42	$ 3.09

Graphic Comparisons on Dairy Management

Pounds of Butterfat Per Cow	Pounds of Milk Per Cow	Feed Cost Per Cwt. of Milk	Feed Cost Per Cow	Return Per Dollar Feed Cost
550 #	15900 #	$3.45	$330.	$2.80
510	14700	3.20	300.	2.60
470	13500	2.60	270.	2.40
430	12300	2.35	240.	2.20
390	11100	2.10	210.	2.00
350	9900 (Ave.)	1.85	180.	1.80
310	8700	1.60	150.	1.60
270	7500	1.35	120.	1.40
230	6300	1.10	90.	1.20
190	5100	.85	60.	1.00
148	3900			.90

Feed Costs and Returns on Other Dairy Cattle
Farmers grouped on basis of butterfat production per cow

Items of Comparison Compare to Form 6 Analysis of Your Farm	Your Farm	Average of 173 Farms	Average of Top 20 %	Average of Low 20 %
On Basis of Animal Unit:				
Increase in value per a.u.	_____	$ 153.74	$ 182.52	$ 130.44
Feed cost per a.u.	_____	100.49	125.07	93.52
Return over feed cost per a.u.	_____	53.25	57.45	36.92
Number of animal units	_____	18.7	22.3	16.
Number of work units	_____	65.4	78.1	56.
Net return per work unit	_____	$ 15.26	$ 16.50	$ 10.57
Feed consumed per a.u.				
Roughage	_____	1.8 T	1.8 T	2.2 T
Silage	_____	3.2 T	4. T	2.8 T
Concentrates	_____	1141. #	1627. #	750. #
Milk products	_____	341 #	418 #	411 #
Feed costs per a.u.				
Roughage	_____	$ 33.20	$ 35.68	$ 35.58
Silage	_____	21.57	27.98	18.39
Concentrates	_____	28.87	42.08	18.62
Milk products	_____	11.34	14.62	15.18
Pasture	_____	5.51	4.71	5.75
Total	_____	$ 100.49	$ 125.07	$ 93.52
On Basis of Total Enterprise:				
Increase in value per enterprise	_____	$ 2,722.96	$ 3,910.06	$ 2,073.17
Feed cost per enterprise	_____	1,812.34	2,638.04	1425.05
Return over feed cost per enterprise	_____	$ 910.62	$ 1,272.02	$ 648.12
Total return per dollar feed cost	_____	$ 1.65	$ 1.60	$ 1.50
Feed consumed per enterprise				
Roughage	_____	32.5 T	36.5 T	33.8 T
Silage	_____	62.7 T	89.4 T	52.7 T
Concentrates	_____	21326 #	35642 #	10779 #
Milk products	_____	5619 #	7863 #	6340 #
Feed costs per enterprise				
Roughage	_____	$ 610.27	$ 764.61	$ 573.13
Silage	_____	407.67	639.51	269.84
Concentrates	_____	521.74	879.50	273.66
Milk products	_____	173.16	256.64	218.09
Pasture	_____	99.50	97.78	90.33
Total	_____	$ 1,812.34	$ 2,638.04	$1,425.05

The method of handling young stock varies considerably from those who raise better quality herd replacements to those who sell young stock off as market cattle. Because of the variation, we haven't combined young stock with dairy cow figures.

Feed Costs and Returns on Beef Breeding Cattle Herds

Compare to Form 6 Analysis of Your Farm	Your Farm	Average of 4 Farms
Number of animal units	_____	21
Pounds of beef produced	_____	5698 #
Increase in value of herd	_____	$ 1333.31
Total feed cost for herd	_____	895.77
Return over feed cost per herd	_____	$ 437.54
Return per dollar feed cost	_____	$ 1.74
Total return per animal unit	_____	$ 72.49
Feed cost per animal unit	_____	48.31
Return over feed cost per animal unit	_____	$ 24.18
Total number of work units	_____	73.4
Return over feed per work unit	_____	$ 7.11
Feed consumed per animal unit		
Concentrates	_____	388 #
Silage	_____	1.9 T
Roughage	_____	.9 T
Value of feed consumed per animal unit		
Concentrates	_____	$ 7.45
Silage	_____	11.95
Roughage	_____	17.96
Pasture	_____	6.27
Milk products	_____	4.68
Total feed cost	_____	$ 48.31
Feed consumed per enterprise		
Concentrates	_____	6548 #
Silage	_____	31.1 T
Roughage	_____	18.8 T
Feed costs per enterprise		
Concentrates	_____	$ 136.40
Silage	_____	196.56
Roughage	_____	389.81
Pasture	_____	116.75
Milk products	_____	56.25
Total feed cost	_____	$ 895.77

Feed Costs and Returns on Feeder Cattle
Farmers grouped on return per dollar feed cost

Items of Comparison Compare to Form 6 Analysis of Your Farm	Your Farm	Average of 11 Farms	Average of Top 20 %	Average of Low 20%
On basis of cwt.:				
Increase in value per cwt.	_____	$ 26.85	$ 25.61	$ 31.27
Feed cost per cwt.	_____	18.50	12.75	26.73
Return over feed cost per cwt.	_____	$ 8.35	$ 12.86	$ 4.54
Total return per dollar feed cost	_____	$ 1.60	$ 2.12	$ 1.17
Feed consumed per cwt.				
Roughage	_____	.14 T	.17 T	.1 T
Silage	_____	.69 T	.27 T	1.5 T
Concentrates	_____	855 #	531 #	572 #
Milk products	_____	1 #	4 #	-
Feed costs per cwt.				
Roughage	_____	$ 2.30	$ 2.42	$ 1.51
Silage	_____	4.19	1.66	9.14
Concentrates	_____	11.61	8.23	16.08
Pasture	_____	.33	.18	-
Milk products	_____	.07	.26	-
Total	_____	$ 18.50	$ 12.75	$ 26.73
On basis of total enterprise				
Increase in value per enterprise	_____	$ 5020.75	$ 2403.02	$ 4131.16
Feed cost per enterprise	_____	3603.33	1208.83	3556.07
Return over feed cost per enterprise	_____	$ 1417.42	$ 1194.19	$ 575.09
Feed consumed per enterprise				
Roughage	_____	27.9 T	16.4 T	4 T
Silage	_____	166.6 T	21.7 T	292 T
Concentrates	_____	86463 #	49143 #	54100 #
Milk products	_____	152 #	558 #	-
Feed costs per enterprise				
Roughage	_____	$ 545.91	$ 240.83	$ 82.00
Silage	_____	990.32	140.83	1757.31
Concentrates	_____	1946.87	766.31	1716.76
Pasture	_____	110.45	25.00	-
Milk products	_____	9.78	35.86	-
Total	_____	$ 3603.33	$ 1208.83	$ 3556.07
Number of animal units	_____	56.	14.	70.
Number of work units	_____	46.7	24.9	29.
Return over feed per work unit	_____	$ 33.02	$ 49.95	$ 18.16
Pounds of beef produced	_____	18662 #	9985 #	11744 #
Cost per cwt.	_____	$ 18.02	$ 20.50	$ 15.71
Selling price per cwt.	_____	$ 21.24	$ 20.54	$ 19.96

Feed Costs and Returns on Sheep

Compare to Form 6 Analysis of Your Farm	Your Farm	Average of 7 Farms
Number of animal units	_____	11.9
Increase in value of herd	_____	$ 1504.82
Total feed cost	_____	913.97
Net return over feed cost	_____	$ 590.85
Total return per dollar feed cost	_____	$ 1.75
Number of work units	_____	17.8
Net return per work unit	_____	$ 21.19
Feed consumed per enterprise		
Concentrates	_____	16739 #
Silage	_____	26 T
Roughage	_____	17.6 T
Feed costs per enterprise		
Concentrates	_____	$ 332.37
Silage	_____	182.93
Roughage	_____	379.39
Pasture	_____	19.28
Total	_____	$ 913.97
Feed consumed per animal unit		
Concentrates	_____	2095 #
Silage	_____	2. T
Roughage	_____	1.4 T
Feed costs per animal unit		
Concentrates	_____	$ 21.28
Silage	_____	13.87
Roughage	_____	39.26
Pasture	_____	3.59
Total	_____	$ 78.00

Note: Animal unit = 7 sheep or 14 lambs

Feeder Costs and Returns in Producing Feeder Pigs
Farmers grouped on return per dollar feed cost

Items of Comparison Compare to Form 5F Analysis of Your Farm	Your Farm	Average of 47 Farms	Average of Top 20 %	Average of Low 20 %
Number of litters per farm	_____	27.	22.	16.5
Number of pigs born per litter	_____	9.	9.4	8.2
Number of pigs weaned per litter	_____	6.7	7.1	6.
Percent death loss on pigs	_____	25 %	22.5 %	26.5 %
Number litter farrowed per sow	_____	1.6	1.7	1.5
Pounds of pork produced	_____	9487	5319	4313
from sows	_____	2937	1670	1956
from pigs	_____	6550	3649	2357
Number of feeder pigs sold	_____	183	162	89
Average weight of feeders sold	_____	37 #	36 #	30 #
Price received per feeder pig	_____	$ 14.69	$ 15.13	$ 13.41
Return per dollar feed cost	_____	$ 2.74	$ 4.32	1.43
Total returns per litter	_____	$ 139.92	$ 132.51	$ 107.91
Total feed cost per litter	_____	56.99	30.80	72.17
Return over feed cost per litter	_____	$ 82.93	$ 101.71	$ 35.74
Total return per weaned pig	_____	$ 21.14	$ 19.34	$ 18.33
Total feed cost per weaned pig	_____	8.65	4.55	11.98
Return over feed cost per weaned pig	_____	$ 12.49	$ 14.79	$ 6.35
Sow + pig feed consumed per litter	_____	2326 #	1192 #	3053 #
Sow + pig feed consumed per pig	_____	346 #	180 #	485 #
Pig feed eaten per weaned pig	_____	60 #	23 #	68 #
Number of work units per farm	_____	59.5	48.	36.4
Return over feed cost per work unit	_____	$ 36.96	$ 47.08	$ 16.48

Feed Cost and Return on Market Hogs
Farmers grouped on return over feed cost per cwt.

Items of Comparison Compare to Form 5 M Analysis of Your Farm	Your Farm	Average of 24 Farms	Average of Top 20 %	Average of Low 20 %
Total Pounds of pork produced	_____	29177 #	22959 #	9226 #
Total value of pork produced	_____	$ 6529.68	$ 5633.55	$ 1823.01
Total feed cost of production	_____	3362.74	2441.72	1332.89
Return over feed per enterprise	_____	$ 3166.94	$ 3191.83	$ 490.12
Return per dollar feed cost	_____	$ 1.98	$ 2.50	$ 1.36
Total return per cwt. of pork	_____	$ 22.39	$ 24.19	$ 18.99
Total feed cost per cwt. of pork	_____	11.92	10.04	13.98
Return over feed per cwt. of pork	_____	$ 10.47	$ 14.15	$ 5.01
Feed consumed per cwt. of pork:				
Corn	_____	261 #	169 #	336 #
Grain	_____	84	89	113
Commercial feed	_____	151	141.8	168
Sub total	_____	496	399.8	617
Skim milk	_____	11	-	55
Roughage	_____	4	21	-
Total pounds	_____	511 #	420.8 #	672 #
Feed costs per cwt. of pork:				
Corn	_____	$ 4.80	$ 3.00	$ 6.17
Grain	_____	1.76	1.91	2.02
Commercial feed	_____	5.12	4.94	4.91
Pasture, skim milk, roughage, silage	_____	.24	.19	.88
Total cost	_____	$ 11.92	$ 10.04	$ 13.98
Total number of work units	_____	58.5	45.8	19.5
Return above feed per work unit	_____	$ 52.35	$ 70.77	$ 24.85
Number of farms that farrowed sows	_____	17	4	2
Number of sows farrowed per farm	_____	11.5	11	2.2
Number of litters farrowed per sow	_____	1	.8	.6
Number of pigs farrowed per litter	_____	6.2	7.5	3.
Number of pigs weaned per litter	_____	4.9	6.7	2.2
Percent death loss on pigs	_____	15 %	8.2 %	11.7 %
Number farmers buying feeders	_____	5	1	1
Total weight of feeders bought	_____	1855	125	98
Average cost per cwt. of feeders	_____	$ 9.19	$ 12.20	$ 6.67
Average weight of market hogs	_____	236	244	235
Average price received per cwt.	_____	$ 20.10	$ 19.19	$ 18.93
Average number of animal units	_____	31.1	23.2	11.7

Feed Cost and Return on Mixed Production of Market Hogs & Feeder Pigs
Farmers grouped on return over feed cost per cwt.

Items of Comparison Compare to Form 5 M Analysis of Your Farm	Your Farm	Average of 13 Farms	Average of Top 6 Farms	Average of Low 7 Farms
Total pounds of pork produced	_____	23119 #	18621 #	26973 #
Total value of pork produced	_____	$ 6729.20	$ 6004.81	$ 7349.54
Total feed cost of production	_____	3118.32	2087.06	4002.00
Return over feed per enterprise	_____	$ 3610.88	$ 3917.75	$ 3347.54
Return per dollar feed cost	_____	$ 2.21	$ 2.72	$ 1.78
Total return per cwt. of pork	_____	$ 28.70	$ 32.25	$ 25.66
Total feed cost per cwt. of pork	_____	13.33	12.27	14.23
Return over feed per cwt. of pork	_____	$ 15.37	$ 19.98	$ 11.43
Feed consumed per cwt. of pork:				
Corn	_____	245 #	247 #	245 #
Grain	_____	85	82	88
Commercial feed	_____	173	139	202
Sub total	_____	503	468	535
Skim milk	_____	14	30	-
Roughage	_____	1	-	1
Silage	_____	-	-	-
Total pounds	_____	518 #	498 #	536 #
Feed costs per cwt. of pork:				
Corn	_____	$ 4.67	$ 4.94	$ 4.43
Grain	_____	1.66	1.65	1.67
Commercial feed	_____	6.85	5.41	8.09
Pasture, skim milk, roughage, silage	_____	.15	.27	.04
Total cost	_____	$ 13.33	$ 12.27	$ 14.23
Total number of animal units	_____	39.5	34.3	43.9
Total number of work units	_____	58.8	42.	73.1
Return above feed per work unit	_____	$ 70.62	$ 90.99	$ 53.15
Number of farms that farrowed sows	_____	11	6	5
Number of sows farrowed per farm	_____	18	19	18
Number of litters farrowed per sow	_____	1.2	1	1.3
Number of pigs farrowed per litter	_____	9	8.9	9
Number of pigs weaned per litter	_____	6.8	6.6	7
Percent death loss on pigs	_____	22.9 %	26.7 %	19.6 %
Number farmers buying feeders	_____	2	-	2
Total weight of feeders bought	_____	9751 #	-	9751 #
Average cost per cwt. of feeders	_____	$ 35.30	-	$ 35.30
Average weight of market hogs sold	_____	165.5 #	184.6 #	149 #
Average price received per cwt.	_____	$ 22.28	$ 22.09	$ 22.44
Number sold:				
Sows	_____	14	18	11
Hogs	_____	100	93	106

Feed Costs and Returns on Poultry Flocks
Farmers are grouped on basis of return per dollar feed cost

Items of Comparison Compare to Form 7 Analysis of Your Farm	Your Farm	Average of 16 Farms	Average of Top 8 Farms	Average of Low 8 Farms
Average number of hens kept	_____	1492	2763	222
Percent death loss on hens	_____	18.9 %	16.9 %	20.8 %
Number of chicks bought or hatched	_____	328	593	71
Number of pullets bought	_____	604	1137	63
Increase in value of total flock	_____	$ -1631.30	$ -3280.12	$ -82.47
Value of eggs produced by the flock	_____	7532.35	14590.91	473.79
Total returns per flock	_____	5851.05	11310.79	391.32
Total feed cost per flock	_____	4584.68	8561.52	607.85
Return above feed cost per flock	_____	$ 1266.37	$ 2749.27	$-216.53
Return per dollar feed cost	_____	$ .94	$ 1.27	$ .60
Total return per hen kept	_____	$ 3.31	$ 4.67	$ 1.96
Feed cost per hen kept	_____	3.38	3.55	3.22
Return over feed cost per hen	_____	$ -.07	$ 1.12	$ -1.26
Total return per dozen eggs	_____	$ .23	$ .26	$ .20
Feed cost per dozen eggs	_____	.28	.20	.35
Return above feed cost per dozen eggs	_____	$ -.05	.06	-.15
Eggs produced per hen kept	_____	162	218	107
Average price received per dozen eggs	_____	$ .27	$ .29	$ .25
Total number of work units	_____	131.7	219.8	43.5
Return above feed cost per work unit	_____	$ 5.94	$ 11.21	$ .66
Feed consumed per hen				
Grains	_____	119.2 #	90. #	148.4 #
Supplements	_____	15.8 #	18.5#	13. #
Total weight of feed per hen	_____	135. #	108.5#	161.4 #
Feed consumed per dozen eggs				
Grains	_____	11.2 #	4.9#	17.3 #
Supplements	_____	1.1 #	1. #	1.2 #
Total weight of feed per dozen eggs	_____	12.3 #	5.9#	18.5 #
Feed cost per hen				
Grain	_____	$ 2.41	$ 2.32	$ 2.51
Supplements	_____	.97	1.23	.71
Total cost	_____	$ 3.38	$ 3.55	$ 3.22
Feed cost per dozen eggs				
Grain	_____	$ .21	$ .13	$ .28
Supplements	_____	.07	.07	.07
Total cost	_____	$ .28	$ .20	$ .35

Distribution of Work Output and Livestock Production
Farms grouped on basis of operators labor earnings

Items of Comparison Compare to Form 8 Analysis of Your Farm	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
Distribution of work:				
Dairy cows	_____	263.8	289.1	245.1
Other dairy cattle	_____	59.8	77.	48.3
Beef	_____	6.3	1.1	7.4
Feeders	_____	6.	6.8	6.3
Hogs	_____	26.9	52.7	11.
Sheep	_____	.7	1.	-
Poultry	_____	15.5	19.8	10.9
Total work units on stock	_____	379.	447.5	329.
Total work units on crops	_____	105.	144.5	85.6
Total work units per farm	_____	484.	592.	414.6
Distribution of animal units				
Dairy cows	_____	26.4	28.9	24.5
Other dairy cattle	_____	17.1	22.	13.8
Beef	_____	2.3	.3	2.2
Feeders	_____	4.4	8.	5.2
Hogs	_____	13.	27.6	6.2
Sheep	_____	.5	1.	-
Poultry	_____	3.	2.4	8.5
Total animal units per farm	_____	66.7	90.2	60.4
Total tillable acres per farm	_____	176.	250.1	137.
Number of animal units per tillable acre	_____	.71	.462	.437
Average number of workers	_____	1.4	1.5	1.3
Work units per worker	_____	361.8	402.	321.1

Number of Work Units for Classes of Livestock and Acres of Crops

Livestock	No. of Work Units	
Dairy cattle	10.	Per cow
Other dairy stock	3.5	Per a.u.
Beef Breeding herd	3.5	Per a.u.
Feeder cattle	.25	Per cwt.
Sheep-flock	1.5	Per a.u.
Sheep-feeders	.3	Per cwt.
Hogs-market	.2	Per cwt.
Feeder pigs-large	2.	Per litter to 40#
Feeders-from 100#	1.	Per feeder
Hens	20.	Per 100 hens
Turkeys	.5	Per 100 lbs.

Crops	No. of Work Units
Alfalfa	.6 Per A
Other hay	.4
Corn hogged	.4
Corn shredded	1.5
Corn silage	1. Per A
Grass silage	.4 Per A
Corn husked	.7 Per A
Soybean-grain	.5 Per A
Small grain	.5 Per A

A work unit is based on 10 hours. An animal unit is based on the amount of T.D.N. consumed.

One Animal Unit Equals:

1	Cow - bull	2 1/2	Sows
2	Other dairy	5	Market hogs
1 1/4	Beef cows	10	Pigs
3 1/3	Other beef cattle	7	Sheep
1	Feeder steer	14	Lambs
1100#	Turkeys	50	Hens

Comparison of Crop Grown, Acre Yields and Land Use
(Refer to County Five Year Average Yield - Page 26)

Items of Comparison Compare to Form 8 Analysis of Your Farm		Average of All farms				Average of the High 20 %				Average of the Low 20 %			
Kinds of Crops Grown	Your Farm	No. of Growers	Yield Index	Acre Yield	Acres Grown	No. of Growers	Yield Index	Acre Yield	Acres Grown	No. of Growers	Yield Index	Acre Yield	Acres Grown
All crops grown	_____		117.2				127.3				114.7		
Corn silage	_____	183	103.7	10.3	34.5	34	128.3	8.9	33.5	33	88.4	6.	35.8
Other silage	_____	32	97.3	5.9	12.8	6	137.8	8.6	17.7	4	63.4	3.7	15.
Corn grain	_____	156	102.7	50.8	34.5	34	115.6	57.	55.6	29	94.8	47.4	22.7
Soybeans	_____	56	68.5	11.8	44.2	14	77.8	13.7	76.9	11	54.7	9.7	17.1
Oats	_____	161	117.1	52.	25.7	23	130.3	59.	26.5	29	117.3	51.4	23.1
Wheat	_____	10	102.6	23.4	22.2	1	81.	20.	37.	2	72.	16.2	11.
Rye	_____	18	110.3	20.2	41.1	8	122.4	21.2	59.9	1	67.	11.	70.
Flax	_____	4	141.9	14.	42.4	1	146.6	14.	47.				
Other crops	_____				18.				49.				4.
Alfalfa hay	_____	182	152.3	3.1	41.2	36	151.8	3.1	55.	33	159.	3.2	35.7
Other legume	_____	27	134.1	2.5	21.3	3	111.1	1.1	13.	7	155.6	3.	23.9
Grass hay	_____	42	100.3	1.8	12.6	4	77.5	1.5	12.5	10	101.1	1.7	17.1
Harvested acres			_____		149.8				211.2				121.4
Tillable acres			_____		176.				250.1				137.
Total acres in farm			_____		269.6				337.5				230.3
Owned			_____		202.8				245.9				172.3
Rented			_____		66.8				91.6				58.
Percent of land in high return crop	_____				65 %				73.6 %				65.2 %

Operation Costs for Farm Power, Buildings and Equipment Use
Farmers grouped on basis of operator labor earnings

Items of Comparison Compare to Form 2 Analysis of Your Farm	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
Truck	_____	$ 603.87	$ 742.88	$ 555.18
Tractor	_____	988.38	1109.05	1029.76
Electricity	_____	247.26	265.28	231.09
Auto - farm share	_____	345.00	368.63	396.69
Total power cost	_____	$ 2184.51	$ 2485.84	$ 2212.72
Crop machinery	_____	$ 1054.77	$ 1313.05	$ 1094.56
Livestock equipment	_____	397.96	479.84	445.22
Building and fences	_____	680.89	948.60	781.76
Total non-power cost	_____	$ 2133.62	$ 2741.49	$ 2321.54
Net operation cost (Power, machinery, equipment and building costs)	_____	$ 4318.13	$ 5227.33	$ 4534.26
Breakdown of power costs including depreciation Mechanization in relation to work units:				
Total power cost per work unit	_____	$ 4.76	$ 4.33	$ 5.52
Crop machinery cost per work unit	_____	2.27	2.29	2.72
Livestock equipment cost per w.u.	_____	.81	.84	1.11
Building cost per work unit	_____	1.46	1.67	2.01
Total power, machinery, equipment and building cost per work unit	_____	$ 9.30	$ 9.13	$ 11.36
Tractor cost per harvested acre	_____	$ 7.52	$ 5.89	$ 9.34
Crop machinery cost per harv. acre	_____	7.77	6.88	9.95
Total tractor and machinery cost per harvested acre	_____	$ 15.29	$ 12.77	$ 19.29
End inventory value of power, machinery, equipment and buildings per farm worker	_____	$ 12479.60	$ 13882.30	$ 14154.74

Five Year Average Yields (Base Period 1960-64)
(For Use in Preparation of Farm Crops Analysis Form 8)

County Data	All Hay(2)	Corn Grain	Silage (1/7 of corn)	Soy Beans	Oats	Rye	Barley	Flax	All Wheat
Anoka	2.0	53	7.6	14	39	16	--	--	--
Benton	1.7	49	7.	16	42	16	18	--	22
Chisago	2.3	57	8.1	13	51	16	28	--	22
Douglas	2.1	45	6.4	16	45	20	34	10	23
Hennepin	2.7	60	8.6	19	55	19	33	--	25
Isanti	2.1	57	8.1	15	49	18	29	--	22
Kanabec	2.0	51	7.3	14	41	15	29	--	21
Meeker	2.8	61	8.7	20	54	19	37	14	24
Milacs	1.9	47	6.7	12	46	14	26	12	24
Morrison	1.6	44	6.3	12	34	16	21	--	20
Ottertail	1.5	41	5.9	16	42	19	34	11	24
Sherburne	1.9	43	6.1	13	38	18	--	--	20
Stearns	2.1	49	7.	14	44	17	31	9	22
Todd	1.9	43	6.1	15	43	18	28	11	21
Wadena	1.4	37	5.3	12	31	18	30	--	12
Wright	2.9	58	8.3	19	52	18	34	13	25
Minnesota	2.1	61	8.7	21	47	19	34	11	25

(1) Data selected from "Minnesota Agricultural Statistics" Crop and Livestock Reporting Service, State Department of Agriculture.
(2) The more the alfalfa, the greater the average yield.
(3) Approximately 1/7 of the bushel corn yield equals tons of silage.
(4) Approximately 2000 lbs hay equals 6000 lbs silage equals 8000 lbs green chop.

Crop Classification System Used on Form 8

Class A (100%)*	Class B (50%)	Class C (25%)	Class D (0 %)
Alfalfa Hay	Corn silage	Oat silage	Small grains
Alfalfa Silage	Sweet corn	Non-legume hay, pasture or silage	Wild hay
Alfalfa Pasture	Soybeans		
Corn Grain			
Govt. Programs			

Work Units Per Crop Acre (U. of Minn.)

Alfalfa silage	1.	Green chop forage	.4
Grass silage	1.	Small grains	.5
Corn silage	1.	Alfalfa hay	.6
Corn husked	.7	Other (non-leg.) hay	.4
Corn hogged	.4	Fallon	.5
Corn shredded	1.5		

*This is a weighting system used for class of crops.

1965 Therometer Chart of Management Measures

Using your figures from the analysis, locate your standing with respect to the various measures of farm organization and management efficiency. The averages for all farms included in this summary are located between the lines across the center of this page. Those with loss operations may not register efficiency. Farm management factors are clues to problems in operation and organization.

Labor Earnings	Crop Yield Index	Crop Choice Index	Return Per $100 Feed	Livestock Units Per 100 A.	Work Units Per Farm	Work Units Per Worker	Pow., Mach., Eqpt., Bldgs., Exp. Per Work Unit
16000	170	100	269	130	1150	590	
15000	165	98	262	125	1100	570	0
14000	160	95	255	120	1050	550	100
13000	155	92	248	115	1000	530	200
12000	150	89	241	110	900	510	300
11000	145	86	234	105	850	490	400
10000	140	83	217	100	800	470	500
9000	135	80	210	95	750	450	600
8000	130	77	203	90	700	430	700
7000	125	74	196	85	650	410	800
6000	120	71	189	80	600	390	900
5000	115	68	182	75	550	370	1000
4000	110	65	175	70	500	350	1100
3000	105	62	168	65	450	330	1200
2000	100	59	161	60	400	310	1300
1000	95	56	154	55	350	290	1400
0	90	53	147	50	300	270	1500
-1000	85	50	140	45	250	250	1600
-2000	80	47	133	40	200	230	1700
-3000	75	44	126	35	150	210	1800
-4000	70	41	119	30	100	190	1900

Measures of Farm Organization and Management Efficiency 1965
Farmers grouped on basis of operator labor earnings

Factors of Comparison Compare to Your Individual Analysis	Your Farm	Average of All Farms	Average of Top 20 %	Average of Low 20 %
1. Operator labor earnings	_____	$ 4382.76	$ 9398.56	$ 58.68
Return to capital and labor	_____	$ 6666.07	$ 12265.36	$ 2386.21
2. Crop yield index based on 5 year county average yields	_____	117.2%	127.3 %	114.7%
3. Crop selection index or percent of land in high return crops	_____	65. %	73.6 %	65.2 %
4. Return per dollar of feed cost on all productive livestock	_____	$ 1.76	$ 1.85	$ 1.56
5. Productive animal units per 100 acres tillable land	_____	71.	46.2	43.7
6. Total work units per farm (a work unit = a 10 hour day)	_____	484.	592.	414.6
7. Total work units per worker	_____	361.8	402.	321.1
8. Power, machinery, equipment and building cost per work unit	_____	$ 9.30	$ 9.13	$ 11.36

Statement of Farm Assets, Liabilities and Net Worth
Farmers grouped on basis of operator labor earnings

Compare to Form 3 Analysis of Your Farm		Average of All Farms	Average of Top 20 %	Average of Low 20 %
Ending inventory values:				
Land	_____	$ 12637.89	$14394.60	$ 12212.30
Equipment and buildings	_____	16370.51	20950.72	16944.52
Livestock	_____	9999.59	12567.00	9357.31
Crop, seed and feed	_____	4638.16	7234.94	3146.51
Total farm capital	_____	$ 43646.15	$ 55147.26	$ 41660.64
Farm liabilities	_____	$ 16697.27	$ 23005.05	$ 18909.41
Number of farms reporting		98	10	21
Net worth per farm	_____	$ 33781.09	$ 53596.35	$ 28719.92
Number of farms reporting		98	10	21

A Four Year Comparison of Farm Management Factors
Farmers grouped on basis of operator labor earnings

Group 1 Average all farmers	Average 1965	Average 1964	Average 1963	Average 1962
1. Operator labor earnings	$ 4382.76	$ 2468.26	$ 2813.49	$ 3749.23
Return to capital & labor	$ 6666.07	$ 4562.38	$ 4971.73	$ 5449.34
2. Crop yield index	117.2 %	80.8 %	123.5 %	131.3 %
3. Crop selection index	65. %	59.9 %	60.2 %	64.2 %
4. Return per dollar feed cost on all livestock	$ 1.76	$ 1.58	$ 1.61	$ 1.71
5. Productive a.u. per 100 acres	71.	43.	41.	43.
6. Total work units per farm	484.	486.6	447.8	446.
7. Work units per worker	361.8	369.4	326.5	348.
8. Net operating cost per w.u.	$ 9.30	$ 8.28	$ 9.69	$ 9.84
Group 2 Top 20%				
1. Operator labor earnings	$ 9398.56	$ 6833.92	$ 6415.34	$ 7381.07
Return to capital & labor	$ 12265.36	$ 9702.48	$ 9004.48	$ 9654.73
2. Crop yield index	127.3 %	108.9 %	130.1 %	136.1 %
3. Crop selection index	73.6 %	69.6 %	59.9 %	65.1 %
4. Return per dollar feed cost on all livestock	$ 1.85	$ 1.75	$ 1.82	$ 1.92
5. Productive a.u. per 100 acres	46.2	37.9	37.9	46.
6. Total work units per farm	592.	598.33	587.9	573.
7. Work units per worker	402.	403.6	365.	419.
8. Net operating cost per w.u.	$ 9.13	$ 8.01	$ 9.03	$ 8.45
Group 3 Low 20%				
1. Operator labor earnings	$ 58.68	$ -1582.10	$ -471.56	$ 419.99
Return to capital & labor	$ 2386.21	$ 544.38	$ 1855.18	$ 2014.93
2. Crop yield index	114.7 %	65.9 %	120.1 %	134.5 %
3. Crop selection index	65.2 %	66.1 %	54.2 %	62.3 %
4. Return per dollar feed cost on all livestock	$ 1.56	$ 1.27	$ 1.33	$ 1.46
5. Productive a.u. per 100 acres	43.7	40.5	33.	46.
6. Total work units per farm	414.6	473.8	350.8	400.
7. Work units per worker	321.1	354.6	278.3	320.
8. Net operating cost per w.u.	$ 11.36	$ 10.07	$ 12.67	$ 11.64

Comparison of Farm Management Factors on the 24 Highest of the 36 Farms in the High Earning Group

Code No.	Operator Labor Earnings	Return to Capital and Labor	Cash Purchases Per Cash Sales	Crop Yield Index	Crop Selection Index	Return Per $ Feed Cost on All Stock	A. Units Per 100 Acres	Total W.U. Per Farm	Work Units Per Worker	Power, Eqpt. Bldg. Cost Per Work Unit	Net Return over feed Cost on Stock	Crop Seed Feed Increase
221	$15855.48	$17985.63	$ .52	121.2%	79.3%	$ 2.33	209.	466.6	311.	$ 8.45	$16267.50	$ 6488.35
80	14652.76	16615.70	.90	136.9	90.4	1.86	92.	740.4	493.6	8.02	18538.21	6510.58
135	13559.30	14888.30	.70	145.	67.9	1.84	31.7	443.4	341.	9.14	7400.84	13638.70
271	13319.48	15805.65	.81	138.8	78.9	1.81	78.7	637.3	490.2	10.59	16293.33	8702.88
57	11839.55	19804.91	1.40	101.5	88.	1.78	31.3	1188.	365.	6.96	17395.22	17154.18
99	11590.28	16463.32	.72	85.8	67.4	1.29	21.	716.4	318.4	10.17	3559.86	17091.86
225	11024.99	15588.99	.80	144.	83.6	1.52	41.1	831.6	415.6	10.82	9300.85	15355.46
145	10458.70	12140.40	.55	110.8	61.	2.19	44.	519.	346.	5.36	11152.96	5649.88
45	10246.06	16728.74	.85	131.7	76.3	2.06	12.5	943.9	471.9	14.91	14932.65	24026.70
262	10095.18	12072.04	.70	152.	77.4	1.76	74.4	422.9	422.9	7.41	10056.01	6579.08
268	10037.70	12192.45	.43	130.4	54.1	2.78	55.	320.	213.3	8.82	9880.89	5555.05
215	9789.95	11773.45	.59	128.3	83.6	1.72	28.3	558.2	419.6	9.47	7628.81	11385.02
117	9768.72	11012.22	.85	117.7	56.3	1.88	45.	896.6	597.7	4.48	13288.24	8284.58
216	9763.80	12684.90	.64	148.2	91.4	1.56	58.4	873.5	436.8	6.75	8513.01	13367.80
247	9404.62	11363.70	2.13	134.9	73.4	2.59	91.7	204.3	204.3	14.45	10258.57	4473.72
289	9332.00	13893.36	1.00	132.6	74.7	1.60	19.1	373.7	311.4	12.49	3294.05	14866.67
226	9309.89	11885.74	1.30	156.	78.6	1.32	25.5	479.9	479.9	9.03	3408.22	13579.20
222	9043.63	11290.33	.65	115.	75.	1.80	34.8	619.4	619.4	10.10	11210.85	7598.79
81	8888.45	12990.57	.71	192.7	81.2	2.15	44.	708.5	404.8	9.08	10872.44	10074.50
249	8734.99	11132.89	.51	82.7	73.2	1.99	33.8	673.8	539.	5.55	10367.42	6430.78
128	8669.91	9568.91	.89	94.6	77.7	2.35	37.	242.3	242.3	19.42	9114.75	4989.92
241	8574.18	11119.53	.67	123.3	71.4	1.50	25.2	531.2	354.	6.99	5498.86	12810.80
121	8002.30	10636.12	.68	160.	70.3	1.96	51.	481.2	437.5	8.54	8777.18	7531.18
236	7977.93	10543.23	.60	145.2	62.2	1.49	51.2	576.4	576.4	6.48	7981.13	8069.98

Comparison of Farm Management Factors on 24 Lowest of 36 Farms
in the Low Earning Group

Code No.	Operator Labor Earnings	Return to Capital and Labor	Cash Purchases Per Cash Sales	Crop Yield Index	Crop Selection Index	Return Per $ Feed Cost on All Stock	A. Units Per 100 Acres	Total W.U. Per Farm	Work Units Per Worker	Power, Eqpt. Bldg. Cost Per Work Unit	Net Return Over Feed on Stock	Crop Seed Feed Increase
34	$-4108.08	$-2291.33	$ 1.42	157.7%	86.9%	$ 1.56	24.4	244.9	188.4	$ 26.78	$ 2945.86	$ 3379.86
119	-3494.10	942.08	.75	85.2	56.	1.80	29.	922.8	461.4	10.52	8358.26	3519.67
3	-2892.84	- 883.54	.88	265.	50.	.88	66.	134.9	134.9	21.88	- 396.80	2401.21
196	-2821.19	104.18	.87	107.7	49.5	1.34	35.	540.8	300.	10.05	2698.45	6445.75
124	-1749.00	- 388.75	1.33	116.1	66.3	1.67	71.	349.2	268.6	24.43	5497.22	3699.40
13	-1171.30	1949.60	1.28	125.5	65.2	1.15	38.4	543.	543.	11.73	2327.16	7464.13
270	-1121.18	1437.93	1.59	90.4	50.	1.21	91.8	255.3	255.3	14.87	2211.35	4067.48
182	-1056.29	710.51	1.54	121.3	62.2	1.46	57.	228.8	228.8	10.54	1613.47	1900.45
265	- 814.03	1029.97	.73	108.8	93.	1.35	29.	333.4	444.	14.74	2141.79	4844.34
282	- 732.10	1539.58	.59	107.4	52.7	1.77	83.	269.	269.	7.74	3628.03	153.41
94	- 197.22	1140.21	1.06	93.4	65.8	1.46	52.	440.2	440.2	5.94	2438.79	1951.82
79	- 107.77	2189.91	1.00	82.8	80.2	2.18	34.	413.3	356.3	11.87	6095.80	2579.29
15	35.61	2139.56	.80	166.8	54.4	1.24	77.6	545.4	363.6	8.98	3219.99	4866.38
286	69.08	1963.13	1.04	114.	78.3	1.74	37.	495.	412.5	8.20	4738.32	2341.51
74	290.13	1474.08	.74	100.	56.8	1.23	16.	126.4	252.8	7.10	271.94	1766.12
199	348.69	3156.48	.65	106.7	43.5	1.42	20.	545.8	303.	8.84	3823.84	8242.76
102	366.65	1461.04	.82	66.7	69.7	1.72	18.	403.3	268.8	9.90	3441.36	2123.30
114	452.54	5321.23	.72	146.7	76.3	2.27	47.	638.1	364.6	10.71	10699.47	2311.74
193	582.26	4940.56	.67	113.	45.7	1.14	19.	598.8	333.	7.51	1455.30	9151.99
243	651.77	1988.47	1.01	88.4	39.	1.37	45.8	302.9	201.9	6.70	2175.66	3462.85
56	685.91	4953.23	.68	109.7	94.6	1.32	--	338.	169.	28.06	13614.31	1494.09
93	818.49	3488.41	.83	137.1	73.4	1.90	40.	503.	378.2	10.29	5848.04	3987.40
174	884.86	3150.66	.89	126.	55.6	1.72	50.	385.9	257.3	9.91	5201.17	3788.93
256	975.01	1608.56	1.01	83.7	67.4	1.46	35.6	355.	355.	10.01	2781.03	3662.23

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Education and Training for the World of Work

A Vocational Education Program for the State of Michigan

By
Harold T. Smith

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A Vocational Education Program for the State of Michigan

By

Harold T. Smith, Ph.D.

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THE INSTITUTE, a privately sponsored nonprofit research organization, was established on July 1, 1945. It is an activity of the W. E. Upjohn Unemployment Trustee Corporation which was formed in 1932 to administer a fund set aside by the late Dr. W. E. Upjohn for the purpose of carrying on "research into the causes and effects of unemployment and measures for the alleviation of unemployment."

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June 1963

HAROLD T. SMITH

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Part I. A Vocational Education Program for the State of Michigan

Introduction

The need for a greater emphasis on the preparation of both youth and adults for today's world of work is everywhere becoming recognized. As important as general education is for the development of the individual and the preservation of our culture and way of life, it is not enough for the great majority of people who must operate our machines, shops, and offices and provide our services. More and more occupations require skills and specialized knowledge for which there must be prior training.

The relative increase in the demand for people with skills and the relative decrease in demand for those without skills or with obsolete skills are logical results of the technological advance that has been going on for a long time. The present increase in the pace of technological advance, including automation, and the accompanying population explosion have only magnified them. As a consequence, hundreds of thousands of people remain unemployed. They consist of high school graduates as well as school dropouts, adults who have been squeezed down and off the employment ladder, women wishing to enter or reenter employment, the culturally disadvantaged, and other groups that might be identified.

The causes of unemployment are as complex as the industrial order itself. The lack or the immobility of any essential resource, including skilled labor, and particularly the lack of entrepreneurial ingenuity and enterprise, may check the growth of the economy before it can possibly provide enough jobs suitable for the many unskilled now out of work. But insofar as the individual is concerned, one common cause for unemployment is lack of a salable skill. The choice for many, therefore, may be either to acquire a salable skill or to settle down on public aid as a way of life.

Because of the present acuteness of unemployment, society has become preoccupied with providing short intensive training programs for one or another of the groups of unemployed, and rightly so. But over and over again such attempts at training have been blocked by the lack of training essentials: there may be no facilities, equipment, or materials; no curriculum; no instructional aids; or indeed no teachers. These are products of educational systems and institutions and of years of experience and development, the lack of which cannot be overcome easily or quickly.

The development of an adequate vocational education system, therefore, is prerequisite to a successful program of training and retraining. How to provide such a system as an integral part of total education and avoid deadend tracks for those who take vocational training constitutes one of the major educational challenges of the present day.

For reasons that are explicable, Michigan has only recently come to realize the severity of its need for a well-conceived statewide program of vocational-technical education for all of its people. The vigor of the state's economy and the ability of its industries to absorb large numbers of the unskilled and the semiskilled on its assembly lines obscured the fact that so many ill-prepared people are in our midst. The result is that Michigan has taken no firm steps toward developing a system of vocational education for all of its people, although it is beginning to do a great deal of thinking about it. Michigan is fortunate that, in the meantime, a heterogeneous mixture of vocational education institutions has not developed. The way is open to design a system especially suited to Michigan and to implement it with a minimum of investment loss and of disturbance to established interests.

For help in determining what to suggest for Michigan that will make vocational education and training for the world of work an integral and effective part of the state's total educational system, we have looked to experience elsewhere throughout the nation. The great forces alluded to above — the pace of technological change and the population explosion — and the ever-growing economic and social problems of unemployment that have resulted from them have come within the knowledge of all well-informed citizens and educators.

Most of the large industrial cities, where the problems are most concentrated and acute, are now actively engaged in efforts to make vocational education and training an integral part of their educational objectives. Some of the eastern states with long industrial experience, such as Connecticut, Massachusetts, and New York, are actively engaged in expanding their programs in one way or another into statewide systems of voca-

tional-technical education for secondary school youth, out-of-school youth, and adults.

California's experience in coping with its great influx of population over the past 35 years has resulted in a unified comprehensive system of high schools, community colleges, and adult training programs that is worthy of note. The recent experience in some of the southeastern states in developing a system of area schools for carrying vocational-technical education to the people is most challenging; the experience of Minnesota and Wisconsin and the thinking in Illinois, Iowa, Ohio, and other states in the Middle West also have much to suggest.

The lessons to be learned from the experience of other states make the direction in which Michigan should go in its planning quite clear. Furthermore, so fast have the problems grown and so rapidly has the thinking of educators risen to match the problems that our suggestions for Michigan have become in no way novel or unorthodox. In fact, we should emphasize that this entire report presents, not primarily a set of recommendations emanating from us, but rather, a prediction as to the course of action towards which Michigan will inexorably be forced to move. We are motivated to make the report simply by the conviction that the state will meet its problems more effectively and more economically if it approaches them systematically and with foresight than if it drifts into a frantic piecemeal solution to each manifestation of the problems as points of crises arise. The problems of training for the world of work are with us, and they are growing in intensity with every passing day. The experience of other states is making clear what courses of action are necessary, and the time for Michigan to act has arrived.

Conclusions, Suggestions, and Recommendations

For the convenience of the reader, we present here our major conclusions, suggestions, and recommendations without argument or support. In doing so, we trust that those who appraise and pass judgment upon them will first read the full report.

A Mature System of Vocational and Technical Education in Michigan

Purpose

Vocational and technical education must be treated as an integral part of total education, which it is. Total education should introduce school youth to the world of work along with the world of the professions and of culture. It should enable youth to move into their next role in life whether that be to attend college, the professional school, or the vocational-technical school; or to enter directly into employment. But there should be no deadend tracks.

The educational system should provide adults and out-of-school youth, wherever they may live, the opportunity for general and vocational-technical training or retraining while on the job.

The system should provide the facilities, the curricula, the teaching skills, and the organizational knowledge required for such special short courses and crash training programs as are constantly being required for the benefit of the unemployed and others needing them.

Institutions Needed

The institutions needed are (1) the comprehensive area postsecondary and adult education institution, located ultimately at the heart of every commuting area in the state; (2) the comprehensive high school, which every high school should strive to be; and (3) the cooperative area vocational facility or education center located at the heart of every commuting area that is not yet able economically or otherwise to support a postsecondary institution. The center would be in fact an embryo postsecondary and adult education institution.

The comprehensive area postsecondary and adult education institution. The hub of the whole vocational education system of tomorrow, by whatever name it is called, will be the comprehensive area postsecondary and adult education institution. The national trend is in this direction, and the reasons for it are clear. Most individual high schools cannot offer the variety of programs needed. More and more vocational-technical courses beyond the high school level are needed. The public favors later initial employment than at high school graduation. Employers favor the older employee and the one who has taken his vocational training at a postsecondary institution. The postsecondary institution will have better facilities and a more specialized staff in many fields than the high schools can have. For these reasons, more and more youth, when postsecondary education is available to them, are likely to postpone their vocational training until after high school graduation. Adults tend to favor the postsecondary institution over the high school for their training and retraining for the additional reasons that the teaching methods and the professional climate may be more to their liking.

The logical institution to provide area postsecondary and adult education services in Michigan is the modern community college. Such an institution must not be confused with its predecessor, the two-year liberal arts junior college, which still prevails throughout much of the Middle West. The modern community college is a comprehensive institution serving a commuting area by offering the services that the people need.

Michigan now has 16 community colleges, two more are under organization, and others are being planned. They are the state's only area institutions.

By action of the State Superintendent of Public Instruction, the Michigan community colleges are *authorized* to provide the five programs of (1) guidance, counseling, and placement; (2) lower level college transfer courses; (3) training preparatory to employment or improvement in employment, and retraining to meet technological change; (4) continuing education for cultural, civic, and avocational growth; and (5) community services. These are the services more and more widely expected of the modern community college.

The Michigan community colleges are struggling to attain the modern concept of their purpose. The 1963 bulletin entitled, *The Role and Character of Michigan*

Community Colleges, prepared by the Michigan Council of Community College Administrators, opens with the following paragraphs:

> A community college is a locally controlled, public, two-year institution of higher education which offers broad, comprehensive programs of instruction for persons of post-high-school age.
>
> A community college expands opportunities for education beyond the high school by (1) offering programs in occupational, technical, and semi-professional training for students planning to enter a vocation as well as the first and second year college academic courses for students planning to transfer to four-year colleges or universities, (2) adhering to an "open door" general admission policy but being selective in those whom it retains, graduates and recommends for placement, (3) responding to the particular educational needs of the community it serves, (4) drawing upon its community's total resources in organizing its instructional programs, (5) enrolling students on a full or part-time basis, and (6) offering day and evening classes and programs of instruction, and, if economically feasible, on a year-round basis.

The foregoing statement, although a compromise statement, is a long step ahead. It reflects a clear intent on the part of the community college leadership to assume the new responsibilities.

In our opinion, the statement is lacking in one respect. It omits a service that has attained considerable importance in the less densely populated areas of California and has started in a small way in Michigan itself. It is for the community colleges to open their facilities to the high schools of their respective areas, on a sound contractual basis, for appropriate secondary courses, either academic or vocational, that the individual high schools cannot afford to offer. The community colleges can thereby serve as area education centers for the high schools of their areas. If they should not do so, parallel area institutions must develop to serve the high schools, for the area institution constitutes the only known device by which training beyond that which the individual high school can offer may be made available to youth or adults.

The state of Michigan must look forward to the time when there is a modern community college or an area vocational education center in the heart of every commuting area.

The comprehensive high school. Every high school should be comprehensive. It should provide such elementary and preparatory vocational programs as class enrollment and cost will justify. Particularly where there is no postsecondary or secondary area institution within commuting distance, it should provide such afternoon and evening training programs for adults and out-of-school youth as are needed and which the school is equipped with facilities, curriculum, and qualified staff to teach.

Not many individual high school districts are large enough to afford an adequate vocational education program. They can only do so through area institutions serving the high schools of their areas or by cooperatively developing shared facilities with other districts.

The secondary vocational education center. The high school districts of those commuting areas that cannot yet support community colleges to serve them as vocational education centers should plan to act cooperatively as early as possible and feasible and organize secondary vocational education centers to serve as their collective departments of vocational education for the benefit of youth and adults. Such centers are virtually embryo community colleges, and they should be organized and located with that in mind.

Metropolitan area special high schools. The Detroit public school system, with its nine school districts under the jurisdiction of one board of education and one superintendent of schools, is already implementing a citywide program of comprehensive secondary education that possesses a great deal of promise. The plan is that all high school programs shall be genuinely comprehensive and include such preparatory and basic vocational courses as the need dictates. In order to make this possible, certain high schools, designated as special district high schools, are to specialize in those vocational courses that are exceptionally costly and for which the demand is relatively small and offer them for the benefit of all the high schools of the district. Certain of these special district high schools may serve as citywide high schools and offer such courses as are essential to the economy but for which the demand is still smaller. Students wishing to take special courses are to transfer to the appropriate special district high school for all of their work.

The community colleges are not built into this program; they are not asked to serve as vocational education centers for the high schools. In the first place, there are no community colleges in Detroit proper and only two in nearby suburbs. The two could not begin to supply the services required. But beyond this, it appears from experience elsewhere that in metropolitan areas where fully comprehensive and special district high schools can be afforded, the high schools may best serve themselves. Even if community colleges were available, high school students could not be transferred to them for all of their courses, and transporting students to a community college for a single course would likely prove impracticable.

Any outstate school district or group of school districts with two or more high schools could follow the Detroit plan and ask the high schools or some of them to specialize in certain costly vocational courses for the benefit of all. If, however, the community college system develops throughout the state as it should, those

districts with a community college in their midst should look to the community college first for such courses; or if a community college is contemplated in the future, it would seem wiser to organize and build a vocational education center to serve the several high schools in anticipation of the establishment of the community college.

Flexibility of the Total System

The system proposed is extremely flexible, and it lends itself to a minimum of duplication of facilities and of economic waste. Furthermore, much time and effort will be saved by knowing in advance the direction in which we are going.

Our proposal is that community colleges be established at the heart of commuting areas throughout the state as rapidly as they can be afforded, and that, as one of their community responsibilities, they serve as education centers for the high schools of their respective areas and make available to high school students the more advanced and more costly vocational (and other) courses that the high schools individually cannot afford to offer. At the same time, the high schools in those commuting areas that do not yet have community colleges should establish cooperative area secondary vocational education centers to serve them in anticipation of the establishment of community colleges.

The development of the two approaches simultaneously will facilitate the spread of comprehensive education throughout the state; and the two institutions, the community college and the education center, should gradually meet and ultimately blend into the total educational system. Furthermore, if it should develop that the community colleges prove unable or unwilling to perform the area services needed by the high schools, we should expect the cooperative area vocational education centers to take the field and in time to develop into comprehensive postsecondary institutions.

Recommendations for Implementation

The state of Michigan has a long way to go before it will be able to provide the network of secondary and postsecondary educational institutions that can carry a comprehensive program of general and vocational education to all of the people in all areas of the state.

It is of first importance that the objective of education and training for the world of work be adopted by the Legislature as a deliberate goal of the Michigan educational system. The action needs to be supported by all of the leaders in government and education from the governor of the state to the officials and boards of community colleges and secondary schools and to all such groups as professional associations and parent teacher associations.

Strong action and leadership by the State Legislature will mean much; indeed it will make or break any program that is undertaken.

1. The Legislature must determine the public institutions to be used; that is, the secondary schools and the area vocational education centers, the postsecondary area institutions, and the four-year baccalaureate and professional institutions.

2. The Legislature should specify the fields of operation of each of these institutions.

3. The community college should be unequivocally established as Michigan's postsecondary area institution, assigned to supply the comprehensive educational programs and community services that have come to be expected of comprehensive area institutions. It should be strictly limited to two-year lower division college work and to technical and vocational programs of not more than 3 years in length leading to an associate degree. It should be prohibited by law from evolving into a four-year baccalaureate institution.

4. The Legislature should determine the priority of the establishment of the several institutions in new geographic areas. The proper distribution of community colleges and, in fact, that of all higher education facilities would be greatly enhanced if the location of four-year institutions or their branches required approval by a strong state board of education. When an area will support the first 2 years of college work, the community college, with its broader community services, should be established first. Only after there has developed a demand for upper division college work should the establishment of a four-year institution or its branch be considered, and then to operate side by side with the community college.

5. The state of Michigan does not now have an overall state board of education; but the revised Constitution, which will become effective on January 1, 1964, provides for one. The new board is vested with leadership and general supervision over all public education, including adult education and instructional programs in state institutions, although with some reservation in regard to institutions of higher education granting baccalaureate degrees. The new board is to appoint a state superintendent of public instruction and a community and junior college advisory board, both responsible to the board.

If the new board is to be able to carry out its full responsibility for coordinating and supervising all public education in the state, it must have well-defined authority to make policy decisions within the framework and intent of the revised constitution and supporting law. The board's policy decisions must take precedence over those of the governing boards of the several institutions. To be effective, the board will need strong legislative and public support. Indeed, much may yet need to be done in order to make it effective.

6. The state of Michigan is now bearing an inadequate share of the cost of education below the university level, and it is distributing its support among the local school districts in such a way as to penalize

them for offering the more costly courses, among which are many of the most needed vocational courses. The formula in use for determining the state's share of the cost of elementary and secondary education is intended to insure a minimum annual operating expenditure for the education of every child. For the school year 1962-63, that minimum was established at $224. If a school district's income from all available tax and contractual sources falls short of the minimum amount, plus certain extras, the state makes up the difference. This difference is the state's share. The state's share of support for the community colleges is limited to the same minimum amount provided for elementary and secondary schools without deducting any offsetting income.

The formula fails the student in that it may discourage his district from offering him the more costly courses that he needs and that society may want him to have. Also, contrary to the prevailing national trend, the state pays no share of the cost of school plant and equipment, except that it has begun to do so for community colleges.

The present formula for state support of public schools should be revised. It should become a formula, such as is now used by a number of other states, that provides a larger amount of state aid for the costlier vocational courses than it does for other less costly courses. The formula should include allocations for capital outlay as well as for operation.

7. Greater state support of community colleges will undoubtedly be required. A state support formula needs to be devised for community colleges that will reflect the heavier operating costs and capital outlay for certain vocational courses.

8. The entire matter of state support of education needs to be examined from the standpoint of sources of revenue, the total amount of state support to be provided, and the formulas by which state support will be allocated to various regions of the state in terms of population, need, and so on. This, however, is but one of the many problems of state taxation and expenditure policy that need reexamination. It is to be hoped that the Legislature is on the verge of tackling these long-standing problems; solutions are notoriously overdue.

9. Michigan has counted upon federal aid through the various national vocational education acts to encourage vocational education in the high schools and more recently in the community colleges in the four secondary fields of agriculture, home economics, trade and industry, and distributive occupations, and in post-secondary fields of vocational education.

Federal funds have been stimulative, but the administration of the funds has allowed a crystallization of their use that has tended to freeze secondary vocational education in the four fields without reference to change in needs. It has even discouraged the multiplication of courses in that the more courses allowed, the thinner must the aid be spread. It would be much better if federal aid under the various national vocational education acts were built into the formula for state support of vocational education.

10. The community college law should provide that any school district not a part of a community college district be responsible for contributing to the support of each community college in which any of its residents are enrolled anywhere in the state. The amount of the contribution should be equal to the total operating and capital cost per student at the college attended. Such a "chargeback" arrangement would have the effect of making the community college educational program a regular part of a complete state system, and it would encourage the formation of community college districts within the system. This provision is in effect in a few other states with good results.

A similar "chargeback" arrangement should be made to nonparticipating secondary school districts for students sent to a secondary area education center.

Other Conclusions and Recommendations

The above recommendations cover our major points with respect to vocational education facilities and their organization, financing, and implementation. Some other matters, however, are worthy of attention.

1. Our whole attitude toward people's ability to learn has changed markedly during the past few years or even months. We are coming to suspect that anyone who can learn to talk acceptably can also learn to read acceptably and perhaps finally to become employable. On the other hand, we have come to see that education must begin where the individual is, and that it may be a long road from the beginning of education to the acquirement of a skill. The culturally disadvantaged, the embittered school dropout, and others may have an emotional block to overcome before much progress can be made; while the older worker, the housewife returning to the labor market, and others who have had some training or even have possessed a skill may move more rapidly.

2. All out-of-school as well as in-school vocational training programs depend upon existing educational institutions for facilities, equipment, curricula, teaching aids, and teachers. A state or a city that has not developed vocational education institutions will be unable to carry out special training programs in an adequate fashion. There will be too many shortages and too many bottlenecks.

3. The elementary school and the junior high school must come to meet the problems of the culturally and economically disadvantaged and other potential school dropouts. The schools can learn much about coping with these youth from the new training programs that are now beginning in some of our great city welfare departments. We have in mind in particular the Cook County, Illinois, training program that has been car-

ried on for more than a year now by the Department of Public Aid and the Chicago schools.

4. It should be the aim of the public schools to let no one leave school, even by graduation, without reasonable preparation for what he will do next. In this connection, school attendance laws and child labor laws and their administration should be reexamined and revised as necessary to make it more possible to provide the school dropout and potential dropout with more realistic choices related to a work and study program that will prepare him for the world of work than is now the case. There should be no legal age of 16 or 18 until which time a student must "sit it out" in school or be legally squeezed out of school. The job-bound youth should be preparing for job entry and should remain in school until that has been accomplished.

5. Emergency crash training programs are worth while for the few individuals trained and placed in jobs and for what we may learn from them. But their limitations are very great. Available jobs are most limited in the areas where there is the greatest unemployment and where the problem of mobility of labor has not been solved. Our technique for selecting trainees needs to be greatly improved. The great majority of the unemployed are not ready for intensive short courses. Perhaps it is most significant that the vocational education institutions in Michigan and many other states are not prepared to provide the facilities, the equipment, the curricula, the teaching aids, and the teachers necessary to make the training program a success.

6. If youth camp-type programs for out-of-school youth are to do much more than keep youth off the streets for a period of time, they should do four things for a youth before he leaves the program: (1) teach him how to work, to attain satisfaction from work; (2) make sure that he is functionally literate and is thereby ready to receive training for a skill; (3) acquaint him with both national and local job markets, and show him how to look for a job; and (4) graduate him into a job or training for a job, aided if necessary by transportation and maintenance grants.

7. Although apprenticeship training is on the decline, industry can and does do a lot of training for its own needs. Business and industry are counting more and more upon the schools, however, to provide the preparatory training needed for employment and also the technical background for the more technical jobs; but they must always train their employees for the semiskilled jobs and fit them into specific jobs at any level. Business and industry can do and are doing more than they have done in the past in retraining those who are about to be displaced by mechanization.

8. Not enough is known yet about what makes a good vocational teacher. The conventional requirements for certification are quite inadequate. There is much to be learned before certification requirements for vocational education teachers should be rigidly fixed.

9. Closely related to the problem of teaching is that of counseling, counseling with both students and parents. The importance of counseling is so great that the success or failure of a comprehensive educational program may turn upon it. Every effort needs to be made to keep occupation and job information up to date and immediately available to counselors and teachers. Although we must look to government for much of the occupational information, the schools must provide the necessary liaison arrangements and skillful counseling personnel.

10. Under present conditions, an unemployed adult's decision to take training courses may destroy his eligibility for unemployment compensation or public aid. In such a case, idleness rather than enterprise is encouraged. Some pattern should be worked out — although not necessarily as a part of the unemployment insurance or general assistance programs — that will encourage persons who would benefit from training to take it. Rewards should be for enterprise, rather than for idleness. The good experience that the Cook County Department of Public Aid has had thus far with its requirement that those selected for training must take training as a prerequisite for receiving public aid is very encouraging. It supports the hope that a more rehabilitating public aid program of training and work than that which we now have may someday be devised.

11. Everything possible needs to be done by all who are interested in vocational education to create a more favorable public image of it. Vocational education needs to be recognized and treated as an integral part of total education. We forget that much of our cultural education was vocational in its origin — that laboratory science, for example, has attained full academic respectability only within the past few decades.

On the other hand, vocational education, more than general education, cannot escape being judged almost immediately by its product. It, therefore, is in a good position to contribute much to its own public image by doing a good job.

The Plan of This Report

We now proceed with our full report. The plan is to set forth what should be expected of vocational and technical education in our present-day society, and then to suggest what institutions, what administrative organization, and what financial structure are needed in Michigan before those expectations can be fulfilled. We are not concerned with such matters as course content and teaching methods; these must be left to the professional educator.

We have drawn heavily upon the experience and thinking of practically all of the states of the nation, and documentation could be carried to great length. In place of extensive documentation, however, we have included in Part II of the report statements of what is being done or thought in vocational education in certain

selected states. We believe that these statements will be more helpful than extensive documentation. This report, therefore, is not a scientific work in the usual sense of the term; rather, it is intended to be informative and suggestive.

Although the statements in Part II are not official statements of the various state departments of education, each has been written by a responsible and knowledgeable person. Furthermore, the states represented were not selected at random, but each was selected because of the problems being faced or because of action being taken or proposed in relation to vocational-technical education. The statements are of great interest for what they may suggest.

I. Secondary Institutions Needed for Vocational Education

Secondary education in its early form was designed to provide its students with the basis for culture and to prepare them to enter a profession or training for a profession; the goal was both cultural and vocational. With the passing of time and as more people came to attend high school, the goal became a dual one — college entrance for the college-bound student, and general education for the non-college-bound student. The former goal retained the reality of a combined cultural and vocational purpose; the latter lost sight of the vocational. High school offered general and cultural education to many who had never before had it, but it failed to lend reality and motive to the program in that it failed to prepare the student for job entry — his next step in life.

The omission was not noticed at first, nor was the seriousness of it understood and appreciated. The magic of high school graduation in itself provided some motivation, but beyond that, the desire to do a good quality of classroom work was not supported by an awareness of immediate purpose and the belief that the material being studied mattered very much. The vocational was not made a part of the educational program for the job-bound student.

Vocational education, as we understand it today, is becoming a part of secondary education through two avenues. One is through the establishment and evolution of the trade high school, and the other is by way of the Smith-Hughes and George-Barden Acts, which provide federal reimbursement to high schools for offering vocational courses in certain specified fields. The trade high school has come to require that the student take considerable work in nonvocational or semivocational courses such as English, mathematics, science, and social science; but it has not brought vocational education into the regular secondary schools. The federal vocational education acts are bringing vocational courses into the secondary schools, but the courses are only slowly being made a part of the total educational program. Too often, the vocational programs and the college preparatory programs are simply offered under the same administration and the same roof, and the school continues to offer single-track programs that are not comprehensive programs at all.

If the proposition is truly accepted that each level of education must prepare the student for his next role in life, whether that be in college, professional school, technical school, homemaking, or a job, our secondary schools must become far more comprehensive than they now are. In order to provide the right kind of vocational programs for the two-thirds of our youth who now enter the world of work without a skill, and in order to help carry the increasing load of adult education that now exists and lies ahead, our facilities for offering secondary as well as postsecondary vocational education must be greatly expanded.

Possible ways by which Michigan may be able to provide a truly comprehensive secondary program of education for its young people are suggested by experience—experience in Michigan itself, and experience throughout the nation.

Institutions for Secondary Vocational Education in Other States

The trade high school had its origin in the more heavily industrialized states of the East and spread to a few states of the Middle West before the passage of the Smith-Hughes Act in 1917. The evolution of the strictly trade school into a modern school of a substantial comprehensive character is exemplified in Connecticut, as reported in Part II of this report. The General Assembly enacted legislation in 1907 authorizing any town or school district to establish and maintain, with the approval of the State Board of Education, a free public trade school. Because no such schools were established, the General Assembly took action in 1909 to authorize and direct the State Board of Education to establish, organize, manage, and supervise such schools. The local districts were required to supply the sites and buildings and, with some small exceptions, maintain them.

Eleven schools were subsequently established under this law. They were strictly trade schools. They ran 8 hours a day, 5½ days a week, and 50 weeks a year. Students and teachers rang time clocks and in other ways attempted to maintain a factory atmosphere.

In 1945 the State Board responded to the trend toward providing a more comprehensive education and

adopted a program whereby 50 percent of the students' time was to be spent on general and related subjects such as English, mathematics, science, and social studies. The school day was cut to 6½ hours, and the school year to 10 months.

Because the buildings provided by local districts were too often inadequate, and because difficulties developed over the location of sites, the state began in 1949 to build its own buildings and in 1951 to purchase the building sites.

Three universal trends are reflected in the evolution of Connecticut's trade high schools: the trend to provide vocational and technical education free of tuition, the trend to move away from local financing and administration toward state financing and administration, and the trend for vocational schools to become comprehensive in subject matter.

Because of the presence of four postsecondary technical institutes, one of which can be reached by daily commuters from almost any point in the state, the Connecticut trade high schools have not tended to become postsecondary in their course offerings, as is the trend in those states that have no such postsecondary institutions.

Wisconsin has had since 1911 a state system of area vocational high schools to which students may transfer, with counsel, from regular high schools. The Milwaukee vocational school is probably one of the world's finest. These schools are comprehensive to the extent that they require students to spend half of their time on the basic tool and cultural subjects; and in the absence of a state system of postsecondary institutions, they are being called upon to provide more and more vocational courses of a postsecondary character.

Minnesota has a system of area vocational schools. The schools were originally secondary institutions. But they have become substantially postsecondary in their course offerings, and they are now under pressure to offer the first 2 years of college work. This is happening even though junior colleges are operating in the state. The junior colleges, however, have been academically oriented in their philosophy and origin and are finding it difficult to assume the area services that are expected of the modern area community college, even though they are under pressure to do so.

The Comprehensive High School

Almost all of the states are trying to find a way to bring vocational education into the regular high school program in order to provide a total comprehensive educational program for all of the students. Some states are making a supreme effort to do this by providing a full line of vocational programs in each high school.

In metropolitan and other heavily populated areas where school districts are large enough to supply a sufficient tax base and to provide adequate class enrollments, and particularly where the industrial mix is sufficiently balanced to provide job markets in broad occupational areas, a single school can be highly comprehensive. But the great majority of high schools over the country are too small or too imbalanced to support so complete a program. They must find some other way to make a complete comprehensive program of education available to their students. This leads to a consideration of the cooperative area vocational school or education center.

Area Vocational Education Systems

Since World War II, a number of states have launched aggressive industrial development programs of which statewide area systems of vocational education are an important part. These area vocational education systems seem to have reached their greatest development in some of the southeastern states of the country. They are best represented in Part II of this report by Kentucky and North Carolina.

In introducing the new systems, these states have not been handicapped by old theories, institutions, or traditions. They have been able to start from the premises that new industry demands skilled employees as never before, that there are the people to be trained, and that the federal government stands ready to subsidize certain vocational-technical education under the various general vocational education acts. The essential idea is to provide training in the skills wanted by the industries and business services of the state and to offer it within commuting distance of all the people. The training is to be available to high school and post-high-school youth as a part of their regular school programs and to employed and unemployed adults and school dropouts during late afternoons and evenings.

In order to accomplish the purpose, a state is divided into areas in terms of population centers and transportation facilities, which we call commuting areas. At the principal population center of each area is located a vocational-technical laboratory or shop called a vocational education center, which serves, in a sense, as the department of vocational education for the surrounding high schools. Where an area is large, there may be strategically located one or more satellite education centers, serving somewhat as branches of the parent center, at which the more popular vocational courses may be taught. The students remain members of their home high schools; they are simply transported by school bus to the vocational center on certain days of the week for selected vocational courses. The home high school usually continues to teach the general courses in vocational agriculture and homemaking, and it may teach any vocational course that it is equipped to teach and for which there is sufficient local demand. The remaining more popular vocational courses may be taught at the satellite centers, as noted; and the more advanced vocational and technical courses, those that require costly equipment and those for which the de-

mand is smallest, may be taught only at the parent center. The adult programs may be taught at the parent center, at satellite centers, or at local high schools, depending upon the presence of the necessary equipment and staff; but the tendency is for the adult training load to fall mainly upon the centers.

The area centers may be financed entirely by the state or jointly by the state and the school or county districts located in the area. The more rapid progress has been made under state financing, and the longrun trend seems to be definitely toward state financing. But it does not necessarily follow that total state financing would always be best under all circumstances.

A moment ago, we observed the tendency for trade schools to become more and more comprehensive. From the experience of the area vocational schools, such as those in Minnesota, and now from the short experience of the area vocational education centers in the Southeast, we can conclude that where such schools offer vocational and technical courses to both secondary and postsecondary students, the schools tend to become more postsecondary in character, and high school students tend to defer vocational training or the more advanced vocational training until after high school graduation. There are several reasons for the latter.[1] Other subject areas are pressing upon the high school student's time. The student may more safely defer choosing a vocational career, for either full-time or part-time on-the-job training will be available to him after high school graduation. The instruction may be superior in the postsecondary institutions because of better shops, more specialized staffs, and greater maturity of students and of teaching. The public seems to favor a higher employment age than that of the average high school graduate. When there is a choice, employers elect to employ the post-high-school youth. Some school counselors doubtless advise students and may exert pressure upon them to defer vocational training until after graduation. And, of course, there is the prestige of going to college.

This trend to defer vocational training until after high school graduation is likely to continue, and over an extended period of time, it may go very far. But such deferment will make it all the more difficult for all except the very large high schools to provide the vocational education programs needed by the many students who will not go on to college or even graduate from high school. The trend makes some cooperative secondary system of area vocational schools or education centers all the more necessary.

New York now has before its Legislature a four-part plan to improve its secondary vocational education program and to extend it throughout the state. The plan is of special interest to Michigan because New York's population and industrial mix is somewhat comparable to that of Michigan. Part I is to upgrade and modernize existing industrial-technical education facilities in the five largest cities. Part II is to expand secondary industrial-technical education programs in 22 urban areas. Certain city schools will specialize in such vocational education programs as are peculiar to their needs and supply the special programs for all of the schools in the city and the surrounding suburban areas. In other words, these city schools will provide especially well-equipped shops or vocational education centers to which the surrounding schools may send their students for such advanced and costly vocational courses as they themselves cannot afford to offer. Part III provides for the establishment of vocational education centers in 26 identified rural cooperative areas of approximately 20 miles radius to serve virtually as departments of vocational education for the surrounding schools. Students will be commuted from their home schools to these centers on certain days for the vocational courses that the home schools cannot afford to offer. Part IV provides for payments to those rural youth who do not live within commuting distance of an area vocational education center to help pay the cost of attending a vocational education institution in residence.

The declared intent of the program is to provide opportunities for basic skill development for secondary youth in every location of the state; to provide preparatory training opportunities for school dropouts and unemployed high school graduates; to offer retraining opportunities to the unemployed in the economically depressed areas; to provide training opportunities that will reduce the number of unemployable in the non-English-speaking populations; to provide upgraded and updated training for employed industrial workers; to permit older workers whose skills are becoming obsolete to obtain skills necessary to the new industrial requirements; and to expand and strengthen instructional services available to apprentices in the skilled crafts.

California, because of its fast-growing population and its great expansion of industry, has been wrestling with the problems of vocational training of people at all levels and ages for the past 35 years. The overall problem there has always been acute and pressing because so many people have been attracted into the state primarily by its climate and have counted upon finding jobs, for which they may have need of skills, after their arrival. On the other hand, the problem may have been made easier in California in that more of the state's new citizens have been of a common American culture than were those in most of the older eastern states.

It is of special interest to Michigan that, almost from the beginning, California has depended upon the high school and the comprehensive postsecondary school, there called the junior college, to provide vocational education for both regular students and adults. Perhaps because the junior college has been in existence as an area institution for 50 years and began quite early to

[1]See Chapter XII, California, and Chapter XV, Minnesota.

perform the area services that are coming to be expected of the modern community college, the state never developed area or trade high schools or even cooperative secondary area vocational education centers. This situation has doubtless encouraged the trend, noted a moment ago, for students to postpone their vocational training until after graduation from high school. But also, it has contributed to the inability of a great many high schools throughout the state to provide an adequate program of vocational education for their students. There is a void in the California system at this point.

In order to help fill this void, some of the junior colleges in the large unified school districts outside the heavily populated areas provide some area services for high schools. Through inter- and intra-district contractual arrangements, these junior colleges make their vocational education facilities available for the use of 11th and 12th grade high school students. The students are transported from their high schools to the junior college for certain vocational laboratory or shop courses that the individual high schools cannot afford to offer. The junior college thus serves as an area vocational education center for the high schools. It is reported that, based on experience thus far, this dual area usage of the junior college vocational education facilities provides for a wider variety of occupational preparation opportunities, for greater depth of specific training, for more extensive equipment, and for a more specialized staff than would be feasible under any other arrangement. This program needs to be greatly expanded.

Illinois has had a thorough study of its vocational education needs made by a highly specialized staff. The staff's report has spelled out in much detail its recommendation for an area system to be developed over a period of 10 years. Although Illinois has not done much yet toward implementing the program, we have reproduced in Part II of this report the staff's summary and recommendations. They show how it appeared to a group of experts that the area program could be used to serve the needs of a midwest industrial state.

The recommended program for Illinois provides that the state be divided into 10 regions and 44 subregions. A comprehensive community college should be located at the chief population center of each region, and its extension centers might be located at one or more of the smaller cities in a region.

The recommendation does not contemplate that the community colleges or their subregional extension centers should serve as centers for the high schools. All high schools are expected to be comprehensive in their offerings. But because only the very large high schools can afford to be sufficiently comprehensive to meet the needs, the staff recommended that the high schools of subregions cooperate in operating vocational education centers, similar to the centers in the southeastern states, where the students may be taken on certain days of the week for courses that can be best offered at the centers. It is proposed that the state finance outright the cost of sites, buildings, and equipment for the vocational education centers.

Only a few of the older highly industrialized states have had much experience with the area vocational-technical education center as a part of their total public school systems. It will be noted in Part II of this report that Pennsylvania has plans for such a program, but that implementation is blocked by lack of funds and other obstacles. Ohio has made a sincere effort to provide the vocational courses needed through its high schools, and has had some success in those high schools that are large enough to support a full comprehensive program. But a full line of vocational programs cannot be afforded in any but the larger high schools, and even in them, the more advanced postsecondary programs are not generally available. Ohio is now studying the area center to determine how it might be adapted to the needs of the state. Indiana has mapped out a four-step program for introducing a twenty-area system of vocational-technical education.

Cataloguing of the states could go on to the last state, but not much would be added by doing so. The disposition to make vocational education an integral part of total secondary education and to carry it to all of the people is very strong. Only the very large high schools in diversified and well-balanced areas can hope to provide a full line of vocational programs by themselves; the rest must find some other way. The separate vocational high school may become quite comprehensive within itself, but it does not bring vocational education into the total program for all students. Urban high schools in heavily populated areas may specialize in certain vocational fields and serve students for each other. Schools of a commuting area may build cooperative area vocational education centers to serve as their collective departments of vocational education. The community colleges may open their facilities to the high schools of their respective areas and serve as vocational (or academic) education centers for them. Or almost any combination of these cooperative devices may be used as circumstances dictate.

Now let us turn our attention to Michigan.

Institutions for Secondary Vocational Education in Michigan

Leon J. Alger, Research Consultant for the Division of Vocational Education of the Michigan Department of Public Instruction, has provided us with the statement of the program of vocational education in Michigan high schools in Part II of this report.

As has been the case in other states, many Michigan high schools have tended to limit their vocational education offerings to those for which they may secure reimbursement from the state and federal governments

under the Smith-Hughes and the George-Barden Acts, as amended. These offerings are in the four fields of agriculture, homemaking, trade and industry, and distributive occupations.

In 1961-62 reimbursed vocational education programs provided training for approximately 68,000 high school youth, slightly less than 20 percent of the total enrolled in high schools and about 25 percent of those who need a salable skill when leaving high school.

According to the June 30, 1962, Annual Report of the Michigan State Board of Control for Vocational Education, Michigan had at that time 537 high school districts, of which 229 or 43 percent provided agricultural education; 90 or 17 percent provided distributive and/or office education, although many more schools offered dual-purpose courses in typing, shorthand, and bookkeeping; 336 or 63 percent provided home economics education; and 93 or 17 percent provided trade and industrial education. Only 12 of the 537 high school districts offered programs in all four fields. A few of the large high schools offered classes for technicians.[2]

Because vocational education programs in high schools are generally limited to those occupational fields having a local demand for skills, the student must take training in one of those fields or obtain no vocational training at all. The likely result is to train too many youth for a local industry when many of them must become employed elsewhere in other fields. Many of the 537 high school districts are too small to have a sufficient number of students to make up efficient-size classes in needed vocational subjects, even in agriculture; and they are too small to finance such classes effectively if they were offered.

Is is obvious that the degree of comprehensiveness in all but a few of the state's high schools is not very great. Furthermore, there are no area education centers, such as we have observed in some of the southeastern states, to provide vocational programs for the surrounding high schools; and there are just a few instances of two or more schools cooperating in a vocational training program. Under these circumstances, one might expect that there would be a number of strictly vocational secondary schools in Michigan, but there are very few of them, and their number is decreasing. Perhaps as much by accident as by intent, Michigan is committed to comprehensive secondary education, but its program is short on the vocational side.

Michigan is not a uniformly populated and industrialized state. There is the heavily populated and highly industrialized Detroit metropolitan area, and there are the outstate areas varying from substantial population centers of a hundred thousand or more to the sparsely settled rural areas of outlying regions. In considering the kind of secondary vocational education institutions Michigan should have, we shall begin with the Detroit area because that is where the problem has been most conspicuous and consequently where the most thinking and planning have been done, and because the planning done in Detroit has much to suggest for the other areas of the state.

The Detroit Area Program

Most of the large metropolitan cities of the United States — New York, Chicago, Los Angeles, Philadelphia, Milwaukee, Denver, and others — are well aware of their vocational education problems and needs, and they are taking action or laying plans for action to meet them. This is true also of Detroit.

There are nine school districts in the Detroit Public School System, each somewhat comparable in size to the school district of Grand Rapids. All nine are under the general jurisdiction and supervision of the Detroit Board of Education and the Detroit Superintendent of Schools.

In the fall of 1958 the Detroit Superintendent of Schools appointed the Detroit Schools Committee "to explore the present and probable future demands for employable skills on the part of young people about to enter the labor market; and to make recommendations concerning (1) the training which should be a part of the public school program in proper, convenient localities, and (2) appropriate relationships among the components of the total education program."

The Committee made its report in June 1961, and early in 1962 the Detroit Board of Education published the report with its actions concerning the recommendations.[3] With very few exceptions, the Board of Education approved the Committee's recommendations, and implementation of the proposed program is being vigorously pushed. The report is worthy of the full attention of all school administrators and others interested in the adaptation of education to our present-day vocational needs.

A comprehensive educational program. At the very beginning of its report, the Detroit Schools Committee firmly established its belief in a comprehensive educational program. It stated, on the one hand, that "ability to communicate through reading and writing, habits of dependability, specific knowledge of the city and nation in which we live and of the rights and obligations of citizens . . . are essential to the success of every individual in the world of work." On the other hand, the Committee said that "there is little merit in designating any single course of study in the high school as being 'College Preparatory.' Quite to the contrary, there are

[2]Michigan State Board of Control for Vocational Education, *Annual Descriptive Report for the Fiscal Year Ended June 30, 1962* (Lansing: Division of Vocational Education, Department of Public Instruction), pp. 2 and 7.

[3]Board of Education of the City of Detroit, *Preparing Pupils for the World of Work*, report and recommendations of a Special Staff Committee appointed by the Superintendent of Schools (Detroit: The Board, 1962), 72 pp., lithographed.

many courses of study in high schools which may lead to college entrance if the proper selection of elective subjects is made and a good scholastic record is maintained. It is generally misleading to call one course 'College Prep' and another 'Business' or 'Vocational' when the evidence is clear that many high school graduates who have followed a business course of study or a vocational course of study or a general course of study are admitted each year to the colleges of their choice and make good records in higher education."

Again, the Committee report states that, "Without excluding or minimizing the goals of cultural enrichment or preparation for family life and political citizenship, all curricula should recognize and identify those elements which have a significant bearing on employability and effective performance in a job situation. The practice of classifying courses as 'College Preparatory' has tended to conceal or obscure the very practical nature of communication, mathematics, and other traditional academic skills."

The Committee saw clearly that two separate educational programs, one college preparatory and the other job preparatory, even though offered under one administration and one roof, do not make a unified comprehensive educational program.

The Detroit plan is that each of the nine school districts should have the responsibility for determining the needs of its students and for developing specialized courses and programs to meet those needs. Each comprehensive high school should offer all of the programs needed except those for which the number of students is too limited or the specialized facilities and equipment required are too costly to justify doing so.

In order to meet the need for these exceptional programs, the Committee recommended that one high school in each of the nine school districts should be designated a special district high school and offer those programs that are not numerically or economically justified at all high schools. Furthermore, because some programs developed in the special district high schools may be unique in a single district or in single high schools, the Committee recommended that such district schools then function as citywide facilities for those special programs and serve several or even all of the districts in the entire school system.

The Board of Education approved the general plan for special district high schools with the qualification that not all of the recommended services might be offered at one location in a district, but that the services might more advantageously be divided up among two or more high schools in the district. The Board also approved in principle the idea of a citywide high school for highly specialized or technical courses, largely for unusually talented students.

The criteria listed for including a vocational course in the program of all high schools are: (1) the required skills are relatively simple, but the training tends to qualify individuals for "entry" occupations; (2) there is a large demand for this training in the area, and possible employment opportunities are extensive enough to justify the training period; and (3) the degree of skill required is not highly specialized, and it may be transferable.

Criteria listed for including a program in only a special district high school are: (1) the training is needed for the benefit of industry or society; (2) the enrollment from the entire district justifies the demand, but not in every high school; (3) special equipment is required; (4) special training is necessary, and teachers are scarce; and (5) such training is necessary for entrance into employment in a given field. The requisites for offering a course only on a citywide basis are much the same except that the number of students requesting the training is too small to justify offering it in each of the special district schools.

Which courses will be offered by the individual high schools and which by the special high schools will vary from district to district and from school to school depending upon the school facilities and the makeup of the students. In general, however, such vocational courses as typing, elementary business, homemaking, and shop fundamentals, and "courses in laboratory experience to provide familiarity with materials, tools, instruments, mechanisms, and sources of power" will be offered in all high schools. The special district high schools will offer the more unique and technical courses and the more advanced courses in every vocational field. In fact, the Committee recommended that the special district high school should be prepared to carry the full range of specialties from the science and arts programs for the exceptional college-bound or profession-bound students to the simplest world-of-work training involved in short-term specific-skill classes for students from those high schools that do not provide such programs. This, of course, would be the ideal.

Adult day and evening programs. The Committee recommended a separately administered and financed program of adult day and evening classes to be carried on by the comprehensive high schools, the special district high schools, such post-high-school institutions as may in time develop, and a separately organized and operated adult training center.

The adult program should provide a variety of opportunities such as (1) to complete high school; (2) to acquire training for job mobility; (3) to obtain post-high-school technical training; (4) to acquire knowledge and skills as part of the overall leisure-time activity program for the citizenry; and (5) to take related apprenticeship training courses.

The Board of Education took no action concerning this recommendation, however, pending the attention and study it will receive in the community planning for community schools, a project now partially completed.

The Committee recommended also that Cass Techni-

cal High School should continue to be developed as a citywide technical institute and to provide technical courses to high school students of grades 10 to 12, to post-high-school students, and to adults in an evening program; but the Board of Education felt that this recommendation was premature and should not be approved pending further determination of the post-high-school plans for the state.

Summary of the proposed Detroit secondary school program. The Detroit program of secondary general and vocational education, as recommended by the Committee, is quite complete through the senior high school. It might well serve as a pattern for smaller metropolitan areas having fewer school districts or even only one district with more than one high school, and it offers many suggestions for the urban and rural schools. We can do no better than to endorse the program and to encourage its successful implementation.

The need for two-year postsecondary technical education and the need for a more expanded program for adult education were fully recognized by the Board of Education, although no program for meeting these needs was approved by it. Detroit, just as the rest of the state of Michigan, will be unable to establish anything like an adequate program of postsecondary vocational-technical education and an adequate adult training program until there is clearly determined at the state level what kinds of institutions should provide such programs and how they may be financed. The recommendations of the Committee, however, point the way that every large community must go in supplying comprehensive education for those who need postsecondary or adult training or retraining.

Proposal for Outstate Areas

What can Michigan do to make it possible for its outstate areas to provide vocational education for all of their people, both in-school youth and out-of-school youth and adults, wherever they may live, for today's jobs, wherever they may be?

Just as other states with small local school districts, Michigan is encouraging the consolidation of districts located in a homogeneous area within which daily commuting is feasible. Consolidations, up to a point, may strengthen the entire school program, but they will not produce many high schools large enough to afford an adequate line of vocational courses. No high school can afford to offer a full line of vocational courses without an enrollment of at least 2,000 students, and not even then unless the supporting community is a diversified one of considerable balance. Nearly all of the outstate high schools, therefore, must find some cooperative way of providing a well-balanced program of school and community vocational education if they are to have one.

There have been just a few instances in Michigan each year of successful cooperation by two or three high schools in common training projects. In general, the programs, once initiated, have been successful. But their initiation is difficult and time consuming because there are so many problems — legal, jurisdictional, financial, and emotional — that have to be resolved. In theory, the contract arrangement can be used to advantage in those local communities where the citizens are serious about providing youth and adults with an opportunity to secure certain vocational training or retraining. In fact, for some time to come it may be the only means by which the more sparsely populated areas of Michigan can provide anything beyond courses in general agriculture, home economics, and secretarial work for their people. But we do not know of a state, with the possible exception of Missouri, where the contract arrangement among groups of schools has made a substantial contribution to the total need for vocational education, and there is no reason to believe that it can do so in Michigan.

The Michigan law could be improved in this respect. It provides that a constituent school district of an intermediate district may, under contract, supply "special education" for its neighboring constituent districts. "Special education," however, is defined as education for such as the physically and mentally handicapped, and it does not include vocational education. This omission from the law of any mention of contracts to supply vocational education does not necessarily preclude such contracts, but it reflects a climate that is not conducive to them. It might be helpful if vocational education were included in the definition of "special education."

It is our conclusion, based on present practices and trends throughout the nation, that the only way by which vocational-technical education can be taken to the people of outstate Michigan with any degree of success is through a system of comprehensive high schools and a statewide area system of comprehensive postsecondary institutions, into which our existing community colleges should develop. The ways by which this can be done are for the high schools of each commuting area to construct and operate a vocational education center of their own, or to contract with an existing community college to serve as a center for them.

The need, however, is for both secondary and postsecondary programs, and the demand for postsecondary vocational-technical education is very great. Since in their beginning form the centers are not likely to be able to provide the postsecondary programs needed, and since the community colleges can provide both services, the state should, by every reasonable means, encourage the spread of community colleges throughout the state as rapidly as possible, and also encourage them to serve as vocational education centers for the high schools.

In serving the high schools, the community colleges will not admit high school students into classes with postsecondary students, but only into secondary level classes with secondary students. The students will re-

main members of their home high schools and be transported by school bus daily or two or three times a week to the community college for the vocational courses just as they are to vocational education centers. The sending school must pay the community college for the cost of the courses, but classes of sufficient size to justify offering the courses needed and wanted are more possible, and unnecessary duplication of plant, shop equipment, and specialized staff is avoided. It must be a part of the contract that the offering institution will provide late afternoon and evening classes for the benefit of adults, or this essential service will not be available.

The most suitable instrument for enabling high schools in those outstate areas that do not have a community college and cannot organize one to provide their young people with a reasonably full line of vocational courses is the area shop or vocational education center, now in use in the southeastern states and as proposed in Illinois and elsewhere. In fact, the special district high schools proposed for Detroit are an adaptation of the area center to Detroit. The special district high schools of Detroit, however, are total schools in which the students enroll and have all of their work. The vocational education center proposed for outstate Michigan is not a total school; it is the vocational education department of all of the participating schools in the population area. It is a separate vocational education plant with the necessary equipment and staff to provide training programs in trade and industry, in agriculture and home economics, and in any other field as desired. The system is quite elastic. Under it, some high schools will continue to teach certain vocational courses, such as secretarial courses and beginning agriculture, and most of them will continue to teach the basic homemaking courses. In large and more sparsely settled areas, a vocational education center may have satellite training units located strategically throughout the area, perhaps in connection with well-equipped high schools, where the more popular and elementary vocational courses can be taught. This arrangement lessens the commuting problem and also lessens the load on the major center.

Wherever such vocational education centers are in operation, they tend to assume not only the responsibility for providing vocational training for young people but also the major responsibility for adult training and retraining. They have the equipment, the businesslike atmosphere, and the professional staff that adults like. In one state, Kentucky, it is a part of the plan that the high school will not offer trade and technical education for either regular students or adults; the vocational education centers will provide all of that for both groups. In fact, no limitation need be placed on the courses that may be taught by a center.

We have noted that education centers are soon called upon to offer postsecondary vocational and technical courses and thereby tend to become more and more postsecondary in character unless postsecondary institutions are already in the field and are providing the services needed. The centers are, in fact, embryo postsecondary institutions, and they should be planned and located with that in mind.

The system of vocational-technical and adult education needed in Michigan should evolve from two sources: the expansion of the area community colleges, and the organization of area secondary vocational education centers. The important point is not which of the two systems comes to dominate, but that the two ultimately meet and blend into one. For this reason, education centers should be located at the time of organization at points where postsecondary institutions should ultimately be established.

The State Department of Public Instruction should determine what changes are needed in existing laws and what new laws are needed, if any, to make it possible, reasonable, and even attractive for the school districts of an area to unite and form an area district for the purpose of contracting with a community college to serve as a vocational education center, or to establish a center of its own.

II. The Postsecondary Program Needed in Michigan for Vocational Education

A great increase in the demand for technical and other advanced vocational skills — skills in such as automotive, drafting, electrical and electronics, and metallurgical technology; machine tools and hydraulics; medical technology and nursing; business management and supervision; numerous trades; and others — developed immediately after World War II. Much of the training for these skills is beyond the secondary school level. Appropriate four-year institutions offer it for resident students, but they cannot serve the great majority of the non-college-bound high school graduates and employed adults who are in great need of such training. Private institutions have been drawn into the field and, indeed, have pioneered in it. But their services are necessarily expensive, and they cannot meet the total need. Except in certain sections of the nation, institutions designed to bring such training to the job-bound high school graduate and the employed adult have been generally lacking.

For the purpose of stimulating the offering of the needed training, Congress provided funds under Title VIII of the National Defense Education Act of 1958 to be used by the states on an equal matching basis to reimburse institutions that offer such training for the extra cost incurred in doing so. Many of the serious efforts throughout the United States to provide postsecondary vocational-technical training on an adequate scale have stemmed from this Act.

Postsecondary Vocational-Technical Institutions in Other States

Some of the more industrialized states of the East have public technical institutes that provide postsecondary technical training, but generally not on an area commuting basis. New York State has 21 junior colleges and 6 two-year agricultural and technical institutes; and strangely enough to the Middle West, the junior colleges began as vocational-technical institutions and only more recently came to offer the college transfer courses. It is significant that New York is now attempting by act of law to require all of these institutions to offer the two-year college program in order to relieve the load on the state university and the state colleges.

Connecticut is now establishing four state-owned and -operated strictly vocational-technical postsecondary area institutions. Two are in operation now, and two are expected to open in the fall of 1963.

In California the comprehensive two-year college, there called the junior college, has been prepared to accept the responsibility for providing vocational-technical programs for post-high-school students and out-of-school adults on a statewide area basis. But the California junior colleges are not like the conventional junior colleges of the Middle West. They are and always have been public, tuition-free, area (community) colleges supported jointly by the area and the state and publicly administered. They are a part of the total public school system of the state. It has been long understood by all parties concerned that junior colleges should not become four-year institutions, and not one ever has. No other public institution offering vocational-technical training beyond the high school level has developed in the state. High school graduates are expected to enter the junior college for postsecondary vocational or technical training.[1]

There has developed a recent trend for the junior college to replace the high school as the sole provider of vocational education for both young people and adults. Indeed, there is some feeling that this trend may be going too far; that there is a need for sufficient vocational education in high schools to serve those who will not go on to college and also those who need preparatory work in high school as a prerequisite for technical or semiprofessional work in the junior college.

In the newer industrial states, the vocational education centers serving the secondary schools are being called upon to provide postsecondary technical training. This seems to be the case even where junior colleges

[1]The upper eighth of high school graduates are eligible to enter the university; the upper third are eligible to enter the state colleges; all are eligible to enter the junior colleges, with the possibility of transferring to a senior college upon junior college graduation, if stipulated lower division courses and grade requirements are met.

exist. For example, North Carolina has 21 junior colleges, five of which are publicly financed, but they are all collegiate in philosophy and orientation and do not offer vocational-technical courses. Kentucky's two-year colleges offer no vocational-technical courses of any kind.

Up to the present time, Ohio, Indiana, Illinois, and many other states have not counted substantially upon the two-year college to provide vocational and technical training for high school graduates and other adults, but Illinois, Iowa, and a few other states are now giving it a central place as the key institution in their proposed statewide area postsecondary vocational education systems.

We have observed that Minnesota's area vocational-technical schools have grown up in the shadow of the junior colleges because the latter did not provide and seemed unable to provide the vocational-technical programs needed. The Minnesota junior colleges have been typical midwestern junior colleges. They were established initially as privately supported institutions, and their philosophy, training, ambition, and obligations have been to provide 2 years of accreditable four-year college work. They have lacked funds for adequate plant and equipment and have not found the financing of current operations easy. Most vocational-technical courses are relatively expensive, and it is quite understandable that junior college administrators have not diverted funds into the vocational-technical area when the acknowledged major program is suffering for lack of funds. It may be very significant that during the past few years the state of Minnesota has appropriated funds for helping junior colleges build more adequate plants. At the same time considerable pressure is being brought upon both the junior college and the vocational-technical school to become comprehensive, with the junior college offering more vocational-technical subjects for high school graduates and adults and the vocational school offering lower level college courses. It appears that, in time, the vocational-technical schools may become in fact community colleges.

If we may summarize, states are now calling upon such existing institutions as are qualified to offer postsecondary and adult vocational-technical training programs on an area basis. When such institutions have not been available or have seemed unable or ill disposed to meet the needs, a new state system of area postsecondary institutions has tended to develop. We believe that this is inevitable.

The industrial East is using its existing technical institutes to the fullest and is building new institutes, as we have observed in New York and Connecticut. California seems to be the only state that has had a statewide system of comprehensive community colleges capable of meeting the new need. In the newer industrial states where the community college has not yet come into being or is still in its early stages of philosophy and development, the publicly supported area vocational education center is springing up. We have observed the tendency for these centers to become more and more postsecondary in character and finally to become comprehensive by offering lower level college courses. Minnesota seems to be in an intermediate stage, with both the community colleges and the vocational-technical area schools under pressure to become comprehensive.

National figures on community college enrollments in vocational-technical courses are representative of no particular state because of the uneven development of the colleges in the various parts of the country. For example, the figures will be weighted heavily by what exists in New York and California. But national enrollments in technical training programs under Title VIII of the National Defense Education Act of 1958 are shown for 1960-61 in Table 1 for what the figures are worth. Thirty-five percent of the students in preparatory programs (regular day students) and 34 percent of those in extension courses (adult classes) were enrolled in community colleges, and 49 percent of those in postsecondary preparatory programs were enrolled in community colleges. These are impressive figures; the importance of the community college as an area vocational-technical institution clearly stands out.

The community college is in a unique position. It is a community area institution. It may offer lower division college courses and postsecondary vocational-technical courses to its regular students; it may provide afternoon and evening programs needed by employed adults to increase their knowledge and culture or to upgrade their skills; and it can serve as an area vocational center for the high schools of its area.

Postsecondary Vocational-Technical Institutions in Michigan

Michigan, perhaps more than most states, has technical and advanced vocational education programs being conducted in one field or another in all of its four-year baccalaureate state institutions. Some of these institutions, particularly Michigan State University, Ferris State College, and Northern Michigan University, offer vocational courses all the way from 1 week to 4 years in length in both resident and extension classes throughout the state. Northern Michigan University, in the Upper Peninsula, is at present operating on the principle that it should provide the people with whatever education they may want — academic, professional, vocational, or technical. Theoretically, if this philosophy could be adhered to over a long period of time, this institution, with proper state support, could establish vocational education branches or centers throughout the Peninsula, perhaps even on a mobile basis, that could provide vocational and technical training to high school graduates and other adults and even to high school students

Table 1

Enrollment in Technician Training Programs Under Title VIII — National Defense Education Act of 1958

July 1, 1960 — June 30, 1961

Kind of School	Number of Schools	Number Enrolled				
		Total	In preparatory programs			In extension courses
			Total	Secondary	Post-secondary	
Total	620	122,952	39,224	11,788	27,436	83,728
Comprehensive high school	168	18,771	4,611	3,664	947	14,160
Vocational-technical high school	66	13,861	4,457	1,432	3,025	9,404
Technical high school	49	14,462	5,968	4,988	980	8,494
Vocational or trade school	106	15,300	6,404	1,316	5,088	8,896
Technical institute	25	11,375	1,828	108	1,720	9,547
Community (or junior) college	176	42,587	13,743	250	13,493	28,844
Four-year college	17	5,522	1,830	21	1,809	3,692
State board for vocational education	13	1,074	383	9	374	691

Source: Preliminary report of Area Vocational Education Branch, U. S. Office of Education.

on an area basis. Such branches or centers might, in time, become full-scale postsecondary institutions on their own. This program could be good provided that the comprehensive needs of the people are kept in mind. But no four-year institution with prospects for granting advanced degrees, in Michigan or any other state, has ever been able to retain any such philosophy for very long. The prestige that accompanies graduate and professional schools is simply too great.

We have observed in discussing secondary vocational education that Michigan has not developed any kind of a state system of secondary vocational schools or even vocational education centers that might develop into postsecondary schools. The only nonbaccalaureate institutions in Michigan that offer a significant amount of postsecondary vocational-technical education on an area basis are the community colleges. Large firms, such as those in the automotive industry, offer vocational and technical training primarily to meet their own needs; and private schools offer training in certain selected technical fields. There are no postsecondary public educational institutions other than the community colleges that are in a position to offer vocational training to communities on an area basis.

When federal funds were made available to the states on a matching basis to reimburse postsecondary institutions for the cost of providing vocational-technical training on an area basis under Title VIII of the National Defense Education Act of 1958, Michigan officially turned to the community colleges as the only postsecondary institutions available to supply such training. It is expecting them to develop into a statewide area system of truly comprehensive institutions and to offer vocational and technical programs to high school graduates and employed and unemployed adults at whatever levels and in whatever fields the training may be needed. Indeed, we consider it fortunate for the long pull that Michigan does not have a dual system of postsecondary area institutions, as have a number of states. Although Michigan is not now providing the vocational and technical programs needed, it should be able to move ahead more rapidly because of having only one system. This, of course, presumes that the community colleges will assume full responsibility for providing the people with the vocational-technical education that they need.

The alternative is not the status quo. It is to establish a system of postsecondary vocational-technical institutions parallel to the community college system that will provide the vocational-technical education presently needed. This would be a time-consuming and costly thing to do; and if we read the trends in other states correctly, we should expect these new institutions to become comprehensive over a period of time and to become, in fact, dual-purpose community colleges.

There are 16 community colleges in Michigan, two more are being organized, and others are in prospect. They are of various origins and differ in tradition and purpose. Some are already providing a substantial amount of vocational and technical education, and some are providing very little of it. In general, they have a long way to go and some real hurdles to clear before they can even begin to meet the state's need for area technical education and adult vocational training.

The Michigan Community Colleges

The first Michigan junior college was established in Grand Rapids in 1914. Eight more such colleges were established before 1940. Seven have come into being since World War II. Two are now being organized, and others are in prospect.

The existing Constitution of Michigan — to be replaced on January 1, 1964, by a revision voted by the people on April 1, 1963 — contains no reference to the community colleges; it was written too early. In 1918 the Michigan Legislature provided enabling legislation for junior colleges, and in 1951 the name "community college" was adopted, apparently to designate the colleges as locally controlled public institutions rather than either state or privately controlled institutions and to indicate a broader educational role in providing a comprehensive program oriented to community needs. As amended, the law now provides that, subject to certain conditions as to population, size, referendum, and supervision, any single school district or any two or more school districts operating grades kindergarten through 12, or any special community college district comprised of one or more contiguous counties or of two or more kindergarten through 12 grade school districts, may establish a community college. The one very important common condition is that the establishment must have the approval of either the State Superintendent of Public Instruction or the State Board of Education. This requirement and the administration of the distribution of state and federal funds to the community colleges provide the principal legal basis for such state supervision over the community colleges as has existed.

In 1955 the Michigan Legislature adopted a resolution creating a joint legislative committee to "study the recommended ways and means whereby the increasing needs of the State for higher education may be met in the most effective and economical manner." In June 1956 the joint committee, known as the Michigan Legislative Study Committee on Higher Education, secured the well-known educator, John Dale Russell, to direct a complete survey of higher education in Michigan. An eminent staff was secured, the survey was made, and the findings and recommendations, consisting of 12 Staff Studies and the Final Report, were published under the general title of *The Survey of Higher Education in Michigan.*[2]

Staff Study No. 1, made by S. V. Martorana of the United States Office of Education, is entitled, *The Community College in Michigan,* and Chapter IV of Dr. Russell's Final Report is given over to the findings and recommendations concerning the community college.

Michigan is most fortunate in having this Survey. Even though the Survey was made before the passage of the National Defense Education Act of 1958, designed to stimulate area postsecondary technical education, it needs little revision in view of the Act. The Final Report clearly defines the philosophy of the modern community college and its role in the total educational system.

The five recognized functions usually attached to the community college are: (1) to provide general education to all students, whatever their vocational interests may be; (2) to offer transfer and college-parallel courses in preprofessional fields and in the arts and sciences; (3) to provide organized occupational programs for students who will seek to enter employment immediately after leaving the college; (4) to offer adult and community-service programs of a wide variety; and (5) to provide a full program of student personnel and guidance services for those enrolled.

We would add one more function, although it could be a part of number 4, namely, to serve as a vocational education center for the high schools of its area as the need arises and provide certain secondary vocational education courses that the high schools individually cannot afford to offer. We have already observed that such service is now being provided by some of the California junior colleges in the less densely populated areas and by a few Michigan community colleges, although, in Michigan, in the academic rather than in the vocational field. There is no reason why such service should not be rendered in either field or both.

The Russell report concluded that the then-existing 14 "Michigan community colleges on the whole accept and are making energetic efforts to accomplish the five functions" listed above, although they "are still placing major emphasis on offerings in preprofessional fields and in the usual lower-division arts and sciences programs for transfer credit."[3] The report points out further that the community colleges are the chief source of supply for technicians and semiprofessional personnel in Michigan: they offer more organized occupational programs of less-than-bachelor's degree length than do either the state-controlled colleges and universities or the privately controlled institutions, and more students are enrolled in and complete these programs in them than in either of the two other groups of colleges.

The foregoing findings indicate direction and progress; but up to the present time the actual accomplishments in providing comprehensive programs are far from those needed. It is true that the community colleges give general lip service in their catalogues to the five functions listed, but not all of them seem fully committed to these objectives. According to a statement concerning the community colleges in Michigan that was prepared for the Education Committee of the Constitutional Convention in October of 1961, only 4 of the 16 colleges offer what might be termed a comprehensive program for students desiring to enter a vocation immediately after graduation. A comprehensive guidance function has been attempted in only three of the institutions, although all institutions offer some type of guidance service. General adult education, with and

[2]Copies of all Staff Studies and the Final Report are available, while they last, from the Michigan Legislative Study Committee on Higher Education, P.O. Box 240 (fourth floor, State Capitol), Lansing, Michigan.

[3]John Dale Russell, *Higher Education in Michigan, the Final Report of the Survey of Higher Education in Michigan* (Lansing: Michigan Legislative Study Committee, September 1958), p. 94.

without credit, is offered in four of the institutions. A broad program of community service has not been attempted in any of the community colleges, although one institution has made some commendable beginnings in that area.[4]

Referring solely to reimbursed programs, the State Board of Control for Vocational Education has reported that during 1961-62, 10 of the 16 community colleges provided training in practical nursing and other health occupations for 977 students; only 4 provided distributive cooperative training for 151 students, and Flint and Muskegon served 123 or 82 percent of them; 6 provided office cooperative training for 197 students, and Flint and Muskegon served 138 or 70 percent of them. Eleven provided industrial technical training for 9,363 students, but Henry Ford served 6,410; Flint, 1,121; and Jackson, 540, or a combined 86 percent of the total. Three community colleges — Delta, Gogebic, and North Central Michigan — provided no training in any one of the four fields.[5] Most, if not all of the community colleges, however, offered certain nonreimbursed programs, such as office and secretarial and certain preprofessional programs.

Thirteen of the 16 community colleges are operated by single school districts designed to operate grades kindergarten through 12. Some of these districts provide entirely too small a tax base to finance an adequate comprehensive educational program, and they may not include a proper commuting area. The three community colleges — Northwestern Michigan College, North Central Michigan College, and Delta College — that are operated by countywide or multi-countywide community college districts, oddly enough, had no enrollments last year in distributive or office cooperative education or in industrial-technical education; of the three, only Northwestern Michigan College provided practical nurse and other health occupation training.[6] These three colleges, which have the district strength to do a well-rounded comprehensive job of area community education, are spending their energies primarily on the college transfer student; and one in particular, organized since the Russell report was written, appears, in fact, to be interested primarily in becoming a four-year baccalaureate institution.

The foregoing are not very impressive accomplishments with respect to the objective of education for the world of work. Why, one may ask, cannot the community colleges move more rapidly into a balanced comprehensive program that will meet the total needs of the community? Without doubt, the basic reason lies in their origin and early philosophy. They were established as lower division colleges to enable students to take the first 2 years of college while living at home; and it appears that, by and large, the public still thinks of the community college in this vein. The prestige attached to "going to college" is very great, and most parents want their children to take a college course rather than a technical or a vocational course. Parents forget that less than one out of every three students find their way into a baccalaureate institution and that fewer graduate. The community college should be equipped to help the others find their way into other areas of activities and ways of making a living.

Community college administrators and faculty have been college oriented too, and they cannot easily make a sudden change in their life-time educational philosophy. Even this rests in part on public attitude. An officer of the Michigan Council of Community College Administrators informs us that public pressures in favor of the academic course and pressures upon the community college to become a four-year baccalaureate institution are so great that, in his opinion, it is highly important that the State Legislature act promptly to establish by law the comprehensiveness of the community college program and to define the community college once and for all as a comprehensive area postsecondary institution. With this we heartily agree. If the community colleges are to constitute Michigan's system of area education, such an act by the Legislature would seem to be of prime importance.

In this connection, the Russell report favors the California provision that where both a community college and a baccalaureate institution may be needed in the same area, the community college should be established first; that when the time comes to establish the baccalaureate institution, a separate institution should be organized, and the two institutions should be operated side by side. We have already observed that in California no junior college has ever become a four-year institution, and that it is not likely to do so.

Covering the state. One of the gaps in the service rendered to the state by the community colleges, a gap equally serious to that in the scope of the programs offered, is in geographic coverage. Three of the colleges are in the greater Detroit metropolitan area, and one is now being organized there; eight are in the southern half of the Lower Peninsula; four, including Delta, are in the northern half of the Lower Peninsula; and only one is in the Upper Peninsula, although a second one is being organized there.

The Russell report recommended that a number of additional community colleges be established in locations that offer a good potential for the development of institutions of satisfactory size. Staff Study No. 1 identified 23 such locations as being of first order of

[4]Ferris N. Crawford, *Some Facts Concerning Community Colleges in Michigan,* presented to the Education Committee of the Michigan Constitutional Convention, October 26, 1961 (Lansing: Superintendent of Public Instruction), 13 pp., mimeographed.

[5]Michigan State Board of Control for Vocational Education, *Annual Descriptive Report for the Fiscal Year Ended June 30, 1962* (Lansing: Division of Vocational Education, Department of Public Instruction), p. 4.

[6]*Ibid.*

priority and 14 other locations of second order of priority. Two new colleges have been established since the report was written; two more are now being established; and others are being planned. In identifying the 23 areas of first priority, Mr. Martorana did not include areas in which public or private four-year institutions are located. Since then, however, Lansing Community College has been established in the same area with Michigan State University, and it is proving its need. Its success tends to verify the growing conviction that the four-year college does not provide the area services that a two-year college is expected to provide, and that the presence of the former does not preclude the need for the latter. With this qualification, Mr. Martorana estimated that the addition of 23 more community colleges would bring 97 percent of the population of Michigan within commuting distance of a two-year or a four-year institution. The remaining 3 percent would have to depend on their high schools and the establishment of area secondary vocational education centers for their vocational training opportunities.[7]

It will be recalled that the Detroit Board of Education took no action concerning that part of its Special Staff Committee's recommendations dealing with postsecondary and adult programs, pending further study. The *Six County Study of Community Needs* proposed that the six-county Detroit area needed 5 new community colleges immediately and that 15 more should be planned.[8]

In order to guide effectively the spread of area postsecondary institutions throughout the state, the State Board of Education should have jurisdiction over their locations. The Board should maintain an up-to-date map of the state showing the commuting areas and their population centers. Such a map should then play an important part in determining the locations of new community colleges and also of secondary vocational education centers because the centers tend to develop into postsecondary institutions.

In this connection, the Russell report recommends that the present specific stipulation of 10,000 population now found in the community college law be abolished for the reason that the best safeguards to good practice in establishing community colleges are (1) the requirements of sound studies of the localities requesting the institution; and (2) the approval of a competent state agency. Such studies should include a comprehensive survey of population distribution and characteristics, occupational and business activities of the people, tax base, school enrollments, geography of the area, transportation routes and facilities, and all other important factors.

Making such studies and mapping out the state into possible future community college districts will require the cooperation and assistance of all the pertinent agencies of the state and should be done in consultation with all interested parties.

Adult education and the community college. The community colleges of Michigan have barely begun to accept responsibility for adult vocational education, and that program may become very large, particularly in the metropolitan areas. The organization of separately administered adult vocational education departments within the college is likely to be found necessary, and separate buildings and facilities may be required. If it should develop in the more heavily populated areas that separate adult training institutions are required, well and good, but the community colleges should be called upon to do their best before this should happen; and then the new institution should be kept under the jurisdiction of the area board of education.

The city of Flint, which has one of the more comprehensive community colleges in Michigan, and also a branch of The University of Michigan, has, speaking relatively, a very successful adult education program known as The Mott Community Education Program of the Flint Board of Education. As the name implies, the Flint Board of Education supervises and administers the Program, and the Mott Foundation finances it. The training projects are considered, evaluated, and recommended by a special committee representing the Board and the community.

The Program has its own adult education building and administrative center, but it uses all of the available appropriate educational facilities in the area. In the winter of 1961-62, more than 1,100 separate classes were offered in 45 community school adult education centers. Individual enrollments are exceeding 90,000 a year.

Although having the advantage of private financial backing, the Mott Program very likely indicates the direction that adult education in metropolitan areas will take. It is a community institution in the best sense, administered under the area board of education, and closely bound up with the total educational system.

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[7]We have noted that the proposed New York State area education program suggests a system of public grants for youth living in areas where postsecondary vocational training cannot be made available to help them go away from home for such training.

[8]*Six County Study of Community College Needs, Citizens Advisory Council Final Report* ([Detroit: The Advisory Council], August 1, 1960), 117 pp.

III. Financing Vocational Education in Michigan

State Support of Public Schools in Michigan

The trend since the thirties has been toward increased state support of public schools. In the nation as a whole, the percent of revenue from state sources used in the support of public elementary and secondary schools rose from 15.74 percent in 1930 to 54.0 (estimated) percent in 1960. In Michigan, the state's contribution to local school districts increased from $22 million in 1932-33 to $300 million in 1957-58, a rate of increase exceeding that of the nation.[1]

Michigan, therefore, accepts the philosophy that the state must pay a major share of the cost of educating its children. But Michigan's most recent share in support of the combined operating budgets of the elementary and secondary schools was still only 39 percent, while the local district's share was 57 percent, and the federal government and miscellaneous sources supplied 4 percent. Furthermore, Michigan is becoming one of the few states that do not share in the cost of elementary and secondary school capital outlay.

Local public support of the Michigan schools comes entirely from the general property tax. State support comes from (a) the Primary School Interest Fund (a carryover from the sale of school lands); (b) the Sales Tax Diversion; (c) certain supplemental taxes such as the corporate franchise tax and taxes on cigarettes, distilled spirits, telegraph and telephone services, and insurance companies doing business in Michigan, some of which taxes are intended to be temporary emergency taxes; and (d) general legislative appropriations. The need for revision of the sources of school revenue is a part of the need for a drastic reform of Michigan's overall tax system, a discussion of which will not be undertaken here. Our interest is in the distribution of the available funds as it affects the offerings in vocational-technical education and training.

The state of Michigan undertakes to supplement the operating revenue of each local school district sufficiently so that the district will have what is considered to be a minimum number of dollars per pupil, a "gross allowance," with which to provide education for its students. Each year the State Aid Act specifies what this "gross allowance" or "pupil enrollee allowance" shall be.[2] The allowance was raised from $130 to $190 in 1956 and later to $205, where it remained through 1961-62. It was $224 for the year 1962-63. In a particular district this per-pupil allowance is multiplied by the number of pupils enrolled. To the result are added special amounts allowed the district for such items as tuition aid, transportation aid, special education aid, and aid for financial distress. From the resulting total is subtracted local property tax revenue (up to the rate of 3¼ mills when the pupil enrollee allowance was $205 and now at the rate of 3⅞ mills since the pupil enrollee allowance is $224) and the district's share from the Primary Interest Fund.[3] The balance is the amount of state support.

Under the foregoing state support distribution formula, the school district is free to apply the unearmarked funds received to its operating expenditures as it sees fit. The effect is to discriminate against offering certain vocational courses and even certain academic courses because they may be more costly to offer than are conventional classroom courses. Under these circumstances, the less wealthy school districts can scarcely be expected to offer an adequate line of vocational subjects and a full comprehensive program. The formula guarantees the district a certain amount of money per student, but it does not guarantee, and even discourages, the offering of some vocational education courses that many students should have.

[1]William H. Roe, *Financing Michigan's Schools,* Department of Administrative and Educational Services, Professional Series Bulletin no. 25, 2d ed., rev. (East Lansing: Bureau of Educational Research, College of Education, Michigan State University, 1958), p. 13.

[2]Although the term "state aid" is in common usage throughout the United States, we are avoiding the term whenever possible and are substituting some such term as "state support" or the "state's share" for it; the term "state aid" seems to contradict the state's constitutional and moral responsibility for the education of its youth.

[3]The change in the millage rate from 3¼ to 3⅞ is designed to provide no increase in state support to the districts having the largest property valuation and the maximum increase to districts having the smallest property valuation; those districts in between share the increase according to their property valuations.

A Minimum Classroom or Teacher Unit Foundation Formula

In order to remove the element of discrimination against vocational education and even to encourage and stimulate it, more and more states are coming to use some version of a foundation formula whereby state support can be weighted in relation to the costs of offering the various programs. The districts can then offer their pupils the courses needed without being penalized because of the higher costs.

In California, a base support is provided a local school in terms of average daily attendance of all students enrolled in approved classes, including vocational education classes. Then, because certain measurable excess costs are incurred in offering vocational education programs, additional state support, based on a teacher unit rather than a student attendance unit, is provided for such programs. In 1961-62 the foregoing formula produced the following approximate averages for vocational instruction.

Teacher of Students in Full-Time Attendance	*Average State Support*
Education in agriculture	$1,000
Distributive education	650
Homemaking education	700
Trade and industrial education	650
Teacher of Part-Time or Extension Classes	
Homemaking education	$ 20 per class
Trade and industrial education	$ 140 per class

The Florida Foundation Program is based upon student average daily class attendance and the number, rank, and experience of the teachers. In calculating state support, the average daily attendance required in vocational courses is one-half of that required in general education courses. Ohio and Kentucky have similar programs.

In Pennsylvania, the unit for state support calculations is the student average daily membership (ADM). The amount per ADM is established by law; for example, for home economics, $20 per ADM; for agriculture and trade and industry, $35 per ADM; and for distributive education, $50 per ADM.

New York State has been a leader in perfecting the use of the foundation formula. In addition to supplying some of the weights mentioned above, the New York formula provides weights to compensate for great variations in population density and for the impact of wide variations in cultural background, having in mind the added cost necessary to provide adequate training for the culturally disadvantaged.

Stanley E. Hecker of the College of Education, Michigan State University, has provided a very complete illustration of how a typical basic classroom unit foundation program might work in a given district of a hypothetical state. For the benefit of professional educators and legislators, the illustration is included in detail as an appendix to this report; but it is shown in abbreviated form in Table 2. We believe that some such classroom unit foundation program would add greatly to the ability of many school districts in Michigan to become more comprehensive and to provide needed vocational training for their youth and adults, training that otherwise could not be afforded.

Michigan is depending solely upon the use of federal funds matched by state and local funds under the terms of the several national vocational education acts to stimulate vocational education in the high schools. The federal and state funds are used to reimburse local schools for part of the vocational teachers' salaries and travel.

Table 2

Classroom Unit Foundation Program for a Hypothetical School District

EDUCATIONAL NEED	
Basic classroom units (based on number of students, land area covered, and number and type of schools)	69.5
Extra vocational classroom units (based on meeting regulations for state approval)	3.0
Extra special-education classroom units (based on meeting regulations for state approval)	3.0
Subtotal	75.5
Administrative and special instructional services units (one additional unit for each six in the subtotal)	12.6
Supervisory units (one additional unit for each 100 or major fraction thereof in the subtotal)	1.0
Total classroom units from which financial need is determined	89.1
FINANCIAL NEED	
For instructional salaries, 89.1 units (based on education level of teachers, and other factors)	$474,534
For other current expenses, 89.1 units (based on $1,500 per unit)	133,650
For capital outlay, 89.1 units (based on $500 per unit)	44,550
For transportation need (not related to units)	40,000
Total financial need	$692,734
District's share (based on property valuation in the district)	$400,000
State's share (the balance)	$292,734

Michigan is now spending over $9 million yearly for vocational education, more specifically for administration, teachers' salaries and travel, and teacher training. About $3 million is paid from federal and state funds and $6 million from local funds. The amount does not cover cost of such items as buildings and equipment, which, according to current Michigan practice, the local districts must supply. The combined state-federal vocational education funds make up less than one-half of one percent of the state's local school district budget, and state funds alone, slightly in excess of $1.5 million, make up a little more than one-half of one percent of the total state appropriation of $292 million for elementary and secondary schools. Furthermore, while over the past 10 years the local share of the cost of vocational education has risen 86 percent and the federal share 134 percent, the state share has increased only 29 percent. Also, reimbursement rates to local schools for vocational education have been gradually declining until they now average roughly 30 percent of the vocational teacher's salary and 45 percent of his travel expenses; in fact, in certain instances reimbursement of salaries has fallen to as low as 20 percent. Reimbursement was at one time expected to cover half of salaries and all or nearly all of travel expenses. The decline is due to added programs without increased appropriations. Schools are thus penalized for adding more vocational programs.

Due to the inadequacy of our state support distribution formula and, undoubtedly, a shortage of revenue, the state of Michigan has not provided for the support of vocational education in the public schools as it should. It desperately needs a distribution formula that will enable schools to provide truly comprehensive programs without penalty, and even to encourage the vocational courses where they are needed. The problem of providing such a formula should not be too difficult.

It would be most helpful to the cause of secondary vocational education if the method of distributing federal aid to states under the Smith-Hughes and the George-Barden Acts were changed so that less crystallization would tend to take place in the use of the funds than now is the case and so that new programs designed to meet new vocational training needs might be encouraged more readily than they now are. Change is hard enough to bring about without having to run the risk of losing federal funds in the process, for every situation creates its own vested interests. Instead of having the distribution of the funds so definitely tied to specific vocations such as agriculture, home economics, or trade and industry, it would seem better if the funds were given to a state, still on an equal matching basis and still based on an approved state plan, for the state's total vocational education program. Just how this should be accomplished is beyond the scope of this report.

Financing Area Vocational Education Centers in Michigan

Under the present system of financing secondary education in Michigan, area vocational education centers organized and operated by the participating school districts of a commuting area would have to be built with funds raised by an additional millage tax on the property of the districts. State funds are not available for plant construction. Operating costs would be charged back to the districts on a contract basis, and each local district's share would be met from the property tax. Students attending the vocational center would remain members of their home high schools and be counted in the total enrollment upon which state support is based. Also, each local school would receive its share of reimbursement from federal and state funds under the national vocational education acts for the vocational courses taken by its students at the center.

We doubt that many, if any, area centers would or could be established in Michigan under the present system of financing, particularly in the less wealthy regions of the state where centers are badly needed; the property tax simply would not provide the necessary revenue. Under a classroom unit foundation system of financing, used more and more elsewhere, and which we believe should be adopted in some appropriate form in Michigan, an amount per classroom unit for capital outlay as well as for operating costs is included in the formula. For example, the Kentucky formula provides $600 per teacher-classroom unit for capital outlay, and Professor Hecker's illustrative formula, noted earlier, provides an amount per classroom unit for capital outlay. The total amount would be allocated back to the participating districts on a contract formula basis. Each participant would receive its share of state support for the students sent to the center just as it would if the vocational courses had been provided in its own school. Nonparticipating districts should pay a "chargeback" covering the full per-student cost, including the cost of overhead and capital outlay, for students sent to the center.

The experience of other states with school district cooperation in building area vocational education centers has not been good except where the state pays at least 50 percent of the cost of constructing the centers, and the trend is definitely in favor of the state's paying a larger and larger share. In view of the existing load on the property tax in Michigan, and in view of Michigan's lack of experience in school district cooperation, it does not seem possible that Michigan can be an exception. If secondary vocational education centers are to be established in Michigan, it seems clear that the state will have to take the initiative in both finance and leadership.

Financing Community Colleges in Michigan

Operating Budgets

During the school year 1961-62 the financial support of the operating budgets of the community colleges in Michigan was provided approximately as follows: from charges to students, 41.5 percent; from local property tax receipts, 19.6 percent; and from state and federal funds, 38.9 percent.[4]

The operating cost per student in 1961-62 varied from a low of $246 in one institution offering a very limited program to a high of $733 in an institution offering a full comprehensive program from early morning until late at night. The median was $489. The average yearly tuition charge made by the Michigan community colleges is higher than the average charge made by the community colleges of the neighboring states; in 1960-61 it was $180 in Michigan as compared with $134 in Great Lakes and Plains areas. The tuition charges made in Michigan in 1961-62 varied from none to $270 with a median of $180 for resident students and from $180 to $400 with a median of $248 for nonresident students. This wide spread in tuition charges made in Michigan suggests that the higher charges may be made largely out of financial necessity. They may be made in part, however, out of the state's struggle to arrive at a sound tuition and financing policy. The trend among the states is toward making no tuition charges at all, particularly in those states that are facing squarely the need for comprehensive area postsecondary institutions.

To some people, the 19.6 percent share of the community college operating budgets provided for by local property taxes may seem small; but except for some state assistance during the past 6 years, the local districts have been required to provide all plant and equipment in addition to their share of operating budgets out of property taxes supplemented by private gifts. There is a limit to the support that a local community can or will provide for community colleges, particularly where the district remains small. We doubt that an adequate system of postsecondary area education can be built in Michigan upon so limited a tax base.

The state of Michigan began making appropriations for the operating budgets of its community colleges in 1945-46 to help provide technical education and vocational training for World War II veterans. The annual appropriation has been increased from time to time until in 1961-62 it amounted to $4,382,490. The appropriation is distributed among the community colleges on the basis of full-time equated enrollments, except that the amount per student must not exceed the "pupil enrollee allowance" specified for elementary and secondary schools ($205 for 1961-62 and $224 for 1962-63) nor more than 50 percent of the cost per full-time enrollee at a college.

This is an inadequate formula by which to determine the state's share of the support of community colleges. In the first place, the unweighted "pupil enrollee allowance" specified for elementary and secondary students is not a logical basis for determining the minimum needs for community colleges.[5] In the second place, the formula does not take into account the relative wealth of the community college districts as it does of the elementary and secondary school districts. But the main criticism is that this system of distribution encourages the community colleges, as it does the high schools, to offer the less costly courses, and it discourages them from offering the more expensive courses among which are many of the vocational and technical courses.

We are suggesting, of course, that a foundation system be used, tailored to Michigan, whereby the distribution of state funds to community colleges would be based on classroom units with extra units for the more costly programs. This is the same general plan being proposed for the distribution of state support to high schools, although the minimum cost base, the units of cost, the rates per unit, and the weighting in favor of the vocational-technical programs should all be different. The purpose would be to equalize the cost of the local district of offering the various kinds of courses, and perhaps in this day of great need for vocational and technical training, even to favor the offering of vocational and technical courses. It has been suggested, however, that weighting might be carried advantageously beyond the vocational-technical to certain other costly courses such as specialized science and language laboratory courses, and that the community colleges might find it advisable to reconstruct their accounting so as to show the cost of offering all courses.

From the foregoing and from the experience of other states, we must conclude that 38.9 percent of the community colleges' combined operating budgets is not enough for the state and federal governments to bear if the colleges are to provide a worthwhile comprehensive program for the people of their respective areas.

The Russell report recommended that a minimum foundation program for community colleges, based on cost per student, be established and periodically revised. The report then recommended that the state contribute to the support of the community colleges an amount equal to one-half of the minimum foundation program, that not more than one-fourth of the support of the minimum foundation program should be obtained from tuition fees, and that the remainder should be supplied from local government funds. It was a part of the recommendation that the local government should be

[4] Michigan Council of Community College Administrators, *The Role and Character of Michigan Community Colleges* (1963), 8 pp.

[5] A California junior college student in full attendance may earn 1½ to 2½ average daily attendance units for the school, depending on how many hours a day he is in classes.

permitted to supply a larger support either to provide a program of higher quality than that envisioned in the minimum foundation program or to reduce or eliminate the contribution from student fees. But it was also a part of the recommendation that if a community college district, after having levied the maximum taxes authorized by the state constitution and statutes, cannot raise sufficient revenues for the support of one-fourth of the minimum foundation program, the difference should be made up from state funds appropriated for equalization purposes.

We agree with the recommendation with the understanding that the greater cost of offering certain vocational-technical courses will be taken into account in devising the minimum foundation program.

Capital Outlay

Financing capital outlay is a major problem in any area school program. The present physical facilities of the Michigan community colleges are generally inadequate to enable the colleges to fulfill the educational functions assigned to them. Nine of the 16 community colleges are now utilizing buildings that were previously used or are now being partly used for elementary and secondary schools. Some of the facilities are rapidly becoming overcrowded. These are makeshift arrangements, and such facilities generally do not contribute to efficiency in instruction and to student and faculty morale. Seven of the community colleges, however, some counting heavily upon private benefaction, have embarked upon long-term building programs with facilities and sites distinctly separate from the elementary and secondary schools. Private benefaction cannot be counted upon to provide a major portion of all the plant and equipment that is needed by community colleges in the state of Michigan; in the main, these facilities must come to be provided at public expense.

As noted repeatedly, it has been a basic tenet in Michigan that the local school district should provide its own plant and equipment from the local property tax without assistance from the state. This principle was applied to community college districts until 1956, when the Legislature began making annual appropriations to the Superintendent of Public Instruction for construction, alteration, refurbishing, or remodeling of community colleges. The appropriations amounted to $1.2 million for 1956-57 and 1957-58 and $1 million for each of the next 4 years, $6.4 million in all for the 6 years.

It has been provided in the appropriation acts that no more than $300,000 may be distributed to an individual district, and that the amount distributed must not constitute more than 50 percent of the total cost of the capital outlay for a project. Furthermore, funds appropriated must be used or committed within the year for which they are appropriated or be returned to the state's general fund.

An appropriation of $6.4 million over a six-year period is entirely too small an overall amount; $300,000 per project is too small an amount to provide an adequate challenge in view of present-day costs of construction; and 1 year is too short a time in which to plan and arrive at the point of commitment concerning the more important projects. The system makes long-term planning most difficult.

In spite of the inadequacy of the amount, it is reported that the $6.4 million appropriated for the 6 years has provided for 24 percent of the cost of capital outlay made by the 16 community colleges during that time while the districts have supplied (from property taxes and gifts) 76 percent of the cost. What these figures really show is the inadequacy of the capital outlay for the kind of program that the community colleges are expected to provide. The community colleges estimate that, on a 50-50 matching basis, the State Legislature will need to appropriate approximately $5 million per year for the next 5 years in order to make possible the orderly planning of new facilities and the remodeling of existing buildings. This is for the 16 existing community colleges, and Michigan needs more than twice that many community colleges if it is to provide area postsecondary comprehensive education, including vocational and technical education, for all of its people.

The Russell report recommended that the state continue to assist the community colleges in financing capital outlay projects to the extent of 50 percent of the total cost of approved projects, except that consideration should be given to the possibility of providing from state funds more than 50 percent of the needed capital outlay in districts having very limited wealth and bonding capacity in proportion to their needs for educational services. Furthermore, the amounts to be appropriated for this purpose should be set up on a realistic budget basis so that the Legislature may know what projects are expected to be financed from the funds appropriated; and all such projects, first proposed by the community colleges, should have the approval of the appropriate state agency.

The Russell report recommended that the assistance from the state be allowed to apply on the costs of site acquisitions and improvements and of such facilities as parking areas and student centers, but not on the costs of dormitories or residence halls, because the role of the community college is to serve commuting students. The report concedes that resident facilities may be justifiable in a few locations where the population is sparse and the geographical area served is large, but it cautions that such facilities should be approved only where definite justification can be shown. Furthermore, when approved, construction of the facilities should be financed by issuing self-liquidating bonds.

Although there are some notable exceptions, the experience of other states supports the above recommendation. Where the community college districts are

large enough to provide a substantial tax base, construction of plant and equipment may be financed jointly by the district and state on a 50-50 basis or some ratio rather close to that. On the other hand, we are forced to conclude that, where community college districts of adequate size cannot be organized, the districts cannot provide substantially for adequate plant and facilities, and the state must undertake a larger share. In general, the trend is in the direction of more and more state financing of plant and equipment. Indeed, it may be proper to ask why postsecondary area education should not enjoy the same state support as do the four-year baccalaureate institutions.

Financing a Statewide Community College System

Community colleges serve many students from outside their respective districts. In doing so, they recoup a part of the cost by charging these students a higher tuition than the local district students pay. But this by no means covers the total cost. This system throws an extra cost burden on the nonresident students, and the districts from which these students come bear no part of the cost. Aside from the burden thrown upon the community colleges, this system has deterred some areas adjacent to a community college district from coming into the district and sharing in the support of the college, or it has contributed to the failure of an area to establish a community college of its own.

In order to meet this situation, the Russell report made a recommendation that is now in effect in a few states, with good results. The recommendation proposed a statewide plan by which any district not maintaining a community college would be responsible for contributing to the support of each community college in which any of its residents are enrolled anywhere in the state. The support should be based on the total cost per student of the college attended.

Such a "chargeback" arrangement would have the effect of making the 13th and 14th grades a regular part of a complete state school system, and it would require the people in every community to support community colleges to the extent that they have residents attending them. The report added that the rapid growth of community colleges in Michigan would seem to indicate that the people are about ready for such a step.

We add that a similar "chargeback" should be made to nonparticipating school districts sending students to secondary area vocational education centers.

IV. State Supervision of Vocational Education in Michigan

State-Level Supervision in Michigan Today

A revised State Constitution, voted by the people of Michigan, is to become effective on January 1, 1964. Until then, the old Constitution will remain in effect.

Under the old Constitution, the State Board of Education has been only one of several boards governing public education. It consists of four members, three elected for a term of 6 years, and the Superintendent of Public Instruction elected for a term of two years.

The duties and responsibilities of the State Board of Education have not been those that the name ordinarily implies. The Board has not had jurisdiction over education in the elementary and secondary schools of the state. Its responsibility has been the general supervision of Michigan rehabilitation institutions and four former state teachers colleges: Central Michigan University, Eastern Michigan University, Northern Michigan University, and Western Michigan University. The remaining four-year baccalaureate institutions, including The University of Michigan, Michigan State University, Wayne State University, and Ferris State College, and the two-year community colleges have their own governing boards. Michigan has not had an overall educational policy-making board.

The State Superintendent of Public Instruction has had such general supervision over all public instruction in the state as has existed. He is an ex officio member of all boards having control of public instruction in any state institution, with the right to speak but not to vote. He has not been governed by any of them, nor has he been able to look to them for authority for his policy decisions.

In 1918 the Michigan Legislature created the State Board of Control for Vocational Education to cooperate with the United States Office of Education under the terms of the Smith-Hughes Act and to serve as a policy-making body in the administration of reimbursable funds for vocational education. This Board originally consisted of four members: the Superintendent of Public Instruction, who serves as its executive officer; the Chairman of the State Board of Education; the President of The University of Michigan; and the President of Michigan State University. In 1955 the Legislature provided for three additional members to represent employers, employees, and agriculture.

Operationally, there has come to be a Division of Vocational Education in the office of the Superintendent of Public Instruction headed by an Assistant Superintendent for Vocational Education, generally known as the State Director of Vocational Education. In the Division there are at present five service chiefs, a finance accountant, a research consultant, and consultants in various services. The Division deals only with those vocational courses for which there are federal funds.

The State Superintendent is now, in fact, held responsible for state supervision of community colleges, and he has endeavored to assume that responsibility within the limits of the law. The present supervision includes:

1. Approval for initial establishment
2. Approval of programs to qualify for state subsidy for operation
3. Distribution of state aid subsidies for operation
4. Approval of architectural plans for building construction
5. Approval of capital outlay projects for which state subsidies are requested on a matching basis (subject to additional approval of the state administrative board)
6. Distribution of capital outlay matching funds for approved projects[1]

Furthermore, in his position as approval authority for initial establishment, the Superintendent of Public Instruction has adopted as a policy that it is *appropriate* for community colleges to provide education consistent with the purposes of the individuals and the society of which they are a part for all persons above the twelfth-grade age levels, subject only to the restrictions in the state statutes, and he has also indicated unequivocally that the educational functions *appropriate* for community colleges to fulfill include those enumerated in Chapter II. The weakness inherent in his pronounce-

[1]Ferris N. Crawford, *Some Facts Concerning Community Colleges in Michigan*, presented to the Education Committee of the Michigan Constitutional Convention, October 26, 1961 (Lansing: State Superintendent of Public Instruction), p. 4.

ment, however, is that the authority for it rests solely on his position as "approval authority for initial establishment." The Superintendent's position is weakened immediately after the establishment has taken place.

The Division of Vocational Education is assisted by two professional and two nonprofessional advisory groups. One of the professional groups is the Michigan Council for Vocational Administration composed of 18 local school superintendents, one from each of the Michigan Education Association regions. Because it is regional, the membership tends to represent those vocational programs that are present in the smaller school systems, the majority of which have only agriculture and/or homemaking programs. The other professional advisory group is made up of the local directors of vocational education, who generally represent the larger school systems.

The two nonprofessional advisory groups are the Advisory Committee on Title VIII of the National Defense Education Act and the Michigan Curriculum Program. The latter is a cooperative arrangement through which state curriculum committees, interested individuals, and other voluntary and official agencies work together to improve Michigan's schools. The curriculum committees are advisory in nature and deal with specific curricular areas in vocational education such as agricultural education, business education, guidance, home and family living, and trade and technical education.

We will not attempt to appraise the effectiveness of the Curriculum Program except to say that tangible results, such as a library of curricula on vocational education and training, are not much in evidence. The use of the Advisory Committee on Title VIII has been limited primarily to considerations relating to reimbursable programs under Title VIII. The Committee has not become an important factor in promoting an integrated program of comprehensive postsecondary education. The Division of Vocational Education has been too exclusively oriented to the secondary program of vocational education, and the community colleges have not embraced the vocational education part of their programs with enough sincerity to make effective advisory committee work in the postsecondary area possible.

State-Level Supervision in Other States

Those states that have been able to make the greatest progress in developing a state system of vocational education have had strong central policy-making boards of education. The authority of a board may stem from the state's constitution, but it is the responsibility of the legislature to pick up where the constitution leaves off and make sure that the state board is definitely charged with the responsibility of making policy and guiding and directing the total public educational program of the state as defined by the constitution and the legislature. This is evident in the statements of the several states presented in Part II of this report.

New York and Connecticut in the East have strong boards established by law and tradition. North Carolina, Kentucky, and Florida in the Southeast have strong boards with substantial powers prescribed by law.

In the Middle West, Ohio asserts that the state board exercises strong leadership throughout the state, but the extent of its authority is not so clear. The proposed program for Illinois provides that "a state board of education should be created and assigned general policy-making responsibilities for the public junior colleges and the public elementary and secondary schools." It adds that there should be an appointed state superintendent who would serve as the chief executive of the board.

Minnesota has three boards that tend to compete with each other in the area of higher education. They are the State Board of Education, the University Regents, and the State College Board. In 1959 the State Legislature authorized the appointment of a state liaison committee for the purpose of resolving such differences and duplications of function as tend to develop among the boards; and there was the underlying implication that if this committee could not accomplish the purpose, the Legislature might have to do so through further legislation.

Perhaps California has the most constructive suggestions for Michigan in the area of state supervision. We have already observed that the areas of operation for the state university, the state colleges, and the community colleges have been definitely established. This makes possible an orderly expansion of the total educational program according to an overall plan.

The supervision of public education in California from the kindergarten through the community college is under the jurisdiction of a single policy-making State Board of Education consisting of 10 lay citizens appointed for four-year terms. This Board takes up where the constitutional provisions and the law stop, and from there on it determines the general policies for the government of the public schools and community colleges. Its rules and regulations have the effect of law.

The State Superintendent of Public Instruction is responsible to the Board for the administration of the entire program. He has a substantial department of six divisions of which the vocational education staff is an integral part. There is also a Bureau of Junior College Education, headed by a bureau chief, responsible to the State Superintendent.

The county superintendents of schools in the 58 counties of the state perform an intermediary role. They are supported mainly by the state. Their services include curriculum development, special subject matter consultations, care of business affairs, and keeping records.

The major tenets of the California school system are embodied in law, and the State Board's job is to administer the law and to fill in policy-making gaps as necessary to comply with the intent and spirit of the law. On the other hand, a high degree of local autonomy and responsibility prevails throughout the state, without which there could be no strong system of public education. In recognition of this and to capitalize on it, it is said that, to a large extent, the administrative function of the State Department of Education is performed by means of professional direction and leadership rather than by direct intervention in local school district operations and administration. In fact, a part of the State Superintendent's staff is dispersed throughout the state and spends a great deal of time in liaison work with lay committees and advisory groups of all kinds.

It can be observed from the statement of the several states in Part II of this report that all strong state boards, no matter what the source of their strength is, lean heavily upon state-level and local-level lay advisory committees, for the boards must be sure of the soundness of their policy decisions, and they must exercise real leadership in the implementation of the decisions. A state board cannot be effective without the guidance, counsel, and support of these advisory groups.

Supervision Needed in Michigan

The weaknesses in Michigan's state-level supervision of education become apparent. There have been entirely too many boards and still no policy-making board to which the State Superintendent of Public Instruction is responsible for the administration of public school education. The causes of this situation lie deep beneath the surface. Rather than point them out, we will endeavor to state positively what is needed before Michigan can have strong state-level supervision of education, or indeed a well-integrated program of education at all. We believe that the essential ingredients can be found in the experience of other states, and that they are as follows:

1. There is need for the Legislature to supplement the State Constitution as necessary to define the objectives of the state's educational program, including both the vocational and the academic, and to provide the basis for a master plan for all education in the state.

2. There is need for the Legislature to determine the public institutions to be used, that is, the elementary and secondary schools (including area vocational education centers), the postsecondary area institution (which we believe should be the community college), and the four-year baccalaureate and professional institutions.

3. The Legislature should specify the fields of operation for each of these institutions.

4. The Legislature should determine the priority of the establishment of the several institutions in new geographic areas.

5. The Legislature should make provision for adequate financing of the total system.

6. Finally, there is need for a strong state board of education. The board should have well-defined authority over all public education of the state from kindergarten through the institutions of higher education. It should have the authority to make policy decisions as necessary to carry out constitutional provisions and legislative acts and intents relating to the total educational program. This board should not take the place of the local governing boards of the various institutions, but its policy decisions should take precedence over those of the governing boards, including those of the four-year baccalaureate institutions.

There is no need for two state boards, one for general education and the other for vocational education, because vocational education is a part of the total program. It has worked out in other states which have had both a state board of education and a board of vocational education that the two boards have combined into one operating board or otherwise have come to operate as one board.

The Superintendent of Public Instruction should be responsible to the State Board of Education for the administration of the program. He should have an ample staff and should develop a strong liaison program throughout the state.

The revised State Constitution goes a long way toward providing a strong State Board of Education, but it leaves much to be done by the Legislature. Section 3 of Article VIII provides for a State Board of eight members elected at large for terms of 8 years as prescribed by law. The Board is vested with "leadership and general supervision over all public education, including adult education and instructional programs in state institutions, except as to institutions of higher education granting baccalaureate degrees."

The State Board is to appoint a State Superintendent of Public Instruction for a term of office determined by the Board. He is to be chairman of the Board without the right to vote, and he is to be responsible to the Board for the execution of its policies. He is to be the principal executive officer of a State Department of Education having powers and duties prescribed by law.

Section 7 of Article VIII states that the Legislature shall provide by law for a State Board for public community and junior colleges that shall be advisory to, and whose eight members shall be appointed by, the State Board of Education.

The foregoing provisions of the revised Constitution, when supplemented by the necessary supporting legislation, should make it possible for Michigan to have the strong state-level educational leadership and supervision that it needs. This seems quite clear for public education through the community college level. But the ability of the new State Board of Education to bring public education policy at a higher level under state

control is not clear. That is likely to depend heavily upon the attitude and support of the Legislature, the state administrative officers, and perhaps finally, the will of the public.

Policy control over the four-year institutions of higher education, however, is outside of the scope of this report except in one respect, and that is the disposition of some of the major universities to establish branches in areas of the state when the establishment of community colleges, with their broader community services, should have prior consideration. The present sprawling tendency of these universities needs to be brought into line with an overall state plan for institutional coverage.

V. Considerations Other Than Those Relating to Needed Programs

Introduction

In the process of making this study, we concluded that the two major needs with respect to vocational training and retraining are (1) the deliberate choice of education for the world of work as an objective of the educational system; and (2) the provision of vocational education facilities, properly organized and coordinated, within which a good program of education and training could be carried on. These two needs, therefore, have been the focus of the report up to this point.

The explorations that led to these conclusions, however, ranged in many directions; and it is our purpose now to record some observations and conclusions drawn from those explorations. This will not be done in a systematic and exhaustive way. But even so, our observations may prove of interest and value to those who are concerned with vocational education.

First, we include some descriptive material pertaining to what is now going on in vocational education under federal aid and training programs. There is the present on-going program of vocational education under the Smith-Hughes and George-Barden Acts and the National Defense Education Act of 1958; and there are the emergency programs under the Area Redevelopment Act of 1961 and the Manpower Development and Training Act of 1962.

Second, when we look at vocational training from the standpoint of the groups of persons for whom such training has been thought to be important, we discover that, although training is usually a part of the problem, there are also other problems. We shall comment on some of these problems, particularly with respect to the culturally disadvantaged, the functionally illiterate, the school dropout, and the recipient of public aid.

Third, when we look beyond the major vocational education needs related to objectives and facilities, we find that there are still other problems. Three of these problems — vocational guidance, research, and availability of trained teachers — will be discussed briefly.

Federal Aid to Vocational Education

The Smith-Hughes and George-Barden Acts

Vocational education in the secondary schools was launched by the Smith-Hughes Act of 1917. The Act appropriated $7.2 million annually to be allotted to the states on the basis of rural, urban, and total population for expenditure on an equal matching basis for vocational education in agriculture, home economics, and trade and industry in the secondary schools. Later laws extended the program to Hawaii, Puerto Rico, Virgin Islands, and Guam. In order to be eligible to receive a share of the funds, a state is required to provide an approved state plan for the use of the funds and to designate a state board to administer the program.

In 1946 the program was greatly expanded by the George-Barden Act. Today, Title I of this Act covers training in agriculture, distributive occupations, home economics, trade and industry, and fisheries occupations. The total authorized annual appropriation under Title I of the Act, still based on the 1950 Census, is $29,642,080. The total of permanent appropriations (Smith-Hughes Act) and authorized appropriations (George-Barden Act and amendments) for federal aid to secondary vocational education, based on the 1950 Census, is $37,035,410.[1]

The National Defense Education Act of 1958

Title VIII of the National Defense Education Act of 1958 added Title III to the George-Barden Act of 1946. It authorized appropriations up to $15 million for the fiscal year ending June 30, 1959, and for each of the 3 succeeding fiscal years, to be apportioned among the states according to population and occupation distribution for expenditure by the states on an equal matching basis for area vocational education programs. For the purpose of the Act, an area vocational education

[1]Title II of the George-Barden Act, added by the 84th Congress (P. L. 911), authorized an annual appropriation up to $5 million for instruction (not secondary) in practical nursing.

program (1) consists of one or more less-than-college-grade courses conducted under public supervision and control on an organized systematic basis, (2) is designed to fit individuals for useful employment as highly skilled technicians or skilled workers in recognized occupations that require scientific or technical knowledge, and (3) is made available to residents of the state or an area of the state designated and approved by the State Board of Control for Vocational Education. The trainees must either have completed junior high school or, regardless of their school credits, be at least 16 years of age and able to profit by the instruction.

The Act was timely in that the demand for such training was an actuality. As already noted, it has stimulated greatly the emergence of area postsecondary institutions designed to supply technical and advanced vocational courses on a commuting area basis to high school graduates and out-of-school youth and adults.

The Impact of Federal Aid Under the Foregoing Acts

Michigan received $2,011,445.68 of federal aid under the foregoing acts for the year 1961-62. Table 3 shows the services for which reimbursement was received and the number of in-school and out-of-school students benefiting. Table 4 shows the average rates of reimbursement of costs received during the peak five-year periods as compared to the average rates received during the 5 years of 1958-62 and the reduction in the average rates of reimbursement from the earlier periods to the latter period.

Of the 537 secondary school districts in the state in 1961-62, there were 229 or 43 percent offering agricultural education and 336 or 63 percent offering homemaking education. Enrollments in these two services totaled 52,898 and made up 78 percent of the total in-school enrollments in reimbursed vocational education programs. Distributive and office education and trade and industry education were each offered in only 17 percent of the Michigan school districts and to only 12,368 in-school students. Only 12 school districts or slightly over 2 percent offered programs in all 4 fields.

Except for agriculture and homemaking, the number and percent of Michigan high schools offering federal and state reimbursed vocational courses is very small, and it must be concluded that reimbursed vocational education in the Michigan high schools is not reaching a substantial number of students in the services where it is now most needed.

The whole enrollment of 78,481 out-of-school students in reimbursed courses does not seem to stand up well in comparison with the 90,000 annual enrollments in the Mott Community Education Program of the Flint Board of Education alone, noted earlier. And yet it indicates that the real demand for business and industrial training is by those out of school. This is the field for the postsecondary and adult education area school.

Table 3

Reimbursed Vocational Education Enrollments in Michigan Schools, by Service

1961-1962

Service	In-School Students	Out-of-School Youth and Adults	Total Enrollments
All services	67,505	78,481	145,986
Agriculture	12,455	4,310	16,765
Distributive and office	6,051	13,827	19,878
Homemaking ...	40,443	20,430	60,873
Trade and industrial	6,317	34,631	40,948
Practical nursing	0	1,828	1,828
Area technical programs	2,239	3,455	5,694

Source: Michigan State Board of Control for Vocational Education, *Annual Descriptive Report for the Fiscal Year Ended June 30, 1962,* p. 1.

We noted in an earlier chapter that Michigan is depending upon federal and state reimbursement to provide the state's share of support for the extra cost of offering vocational courses in high schools. Table 4 shows that this is not working out satisfactorily. Over the past 20 to 25 years, the portion of the cost of offering vocational courses in the several fields covered by reimbursement has dropped from approximately two-thirds of the cost to approximately one-fourth of the cost, except that for courses in agriculture it has dropped to only 38 percent. The local schools have been required to bear only an additional 29.2 percent of the cost of courses in agriculture while bearing an additional 35.2 to 48.0 percent of the cost of other reimbursed courses. The demand for training in fields other than agriculture has increased more than has the demand for training in agriculture, so that the funds for reimbursement must be spread thinner in the other fields. The system, therefore, provides the least federal-state support where the need has increased the most. We do not know, of course, what the effect of the system is on the offering of needed vocational courses that are not reimbursed, but it must be negative and may be substantial.

We do not object to the reimbursement system as a device for stimulating vocational training in new fields where new and added facilities are needed promptly. The new demand for area technical programs at the present time is a case in point. But reimbursement for courses in the fields of agriculture, home economics, and trade and industry has been going on substantially unchanged for 45 years, and reimbursement for courses in business subjects has been going on for 20 years. Imbalances

Table 4

Average Rates of Reimbursement for Vocational Education in Michigan Schools, by Service

Peak 5-year period and 1958-62 period

Service	Peak 5-Year Period	Average Percent of Reimbursement of Costs		Reduction in Average Percent of Reimbursement
		In peak period	In 1958-62 period	
Agriculture	1938-42	67.2	38.0	29.2
Homemaking ...	1934-38	55.2	20.0	35.2
All-day trade and industrial	1936-40	58.8	20.6*	38.2
Cooperative—trade and industrial .	1941-45	68.0	27.0	41.0
Cooperative — distributive ...	1938-42	75.0	27.0	48.0
Cooperative — office	1941-45	68.2	27.0	41.2

Source: Same as Table 3, pp. 59-64.
*20 percent for the last 4 years.

and crystallization of imbalances are sure to develop in so long a time.

Granting the need for a special emphasis on area vocational and technical education at the present time, we believe that it would be better if federal funds for vocational education were given to the states, under a state plan, to be distributed to the local institutions on a basic classroom unit foundation formula for state support of education, such as proposed in Chapter III, with extra units or weights built into the formula to compensate for the extra cost of offering vocational courses. The receiving schools would then be free to offer the more costly vocational courses without penalty.

The Area Redevelopment Act and the Manpower Development and Training Act

It is possible that the subsidies provided in the Area Redevelopment Act of 1961 and the Manpower Development and Training Act of 1962 may help to make training the unemployed, even training the ill-prepared unemployed, a reality, just as the national vocational education acts sparked the introduction of vocational education for youth in the public schools. The advantages made available by these new acts should be used to the fullest wherever possible. But the programs are job-oriented, emergency crash programs; they are in no sense a substitute for a worthy vocational education system. In fact, their success depends heavily for facilities, curricula, teaching aids, and teachers upon the existence of a well-developed vocational education system.

The Area Redevelopment Act is designed to provide assistance for the development of industry in defined depressed areas. A part of its program is to aid in the retraining of unemployed workers for jobs in existing or new industries in depressed areas. For this purpose, Congress authorized annual expenditures of $4.5 million for training and $10 million for subsistence benefits, payable for a maximum of 16 weeks in amounts equal to the average unemployment insurance paid in the state where the training is taken. The United States Department of Labor and the local Employment Security office recruit and test trainees, and the United States Department of Health, Education, and Welfare makes arrangements with the local or state vocational training officials to provide the specific job training required.

The Manpower Development and Training Act consists of two parts. One authorizes the undertaking of a broad program of research studies to develop information on many aspects of the nation's manpower requirements and resources. A comparable provision was placed in the Smith-Hughes Act 45 years ago. Nothing of importance ever came of it, however, and little attention is being given now to this part of the Manpower Development and Training Act. Research of production resources, of new services likely to be wanted, of market trends and information, and of various possible sources of employment, for example, would help to direct training into the right channels and contribute greatly to employment in the future.

The second part of the Act, generally considered to be the main part, makes available over a three-year period ending June 30, 1965, $435 million of federal funds to help pay for training programs, not just in depressed areas, but anywhere, to equip workers with skills for jobs known to be available. Training is conducted in the same manner as are vocational education programs under the general vocational education acts, more specifically, the Smith-Hughes and George-Barden Acts. At the national level, the programs are under the direction of the Secretary of Health, Education, and Welfare; and at the state level, they are generally under the direction and supervision of the state department or division of vocational education.

Through June 30, 1964, the federal government will pay the total cost of vocational training for the unemployed. During the third year, the cost of training the unemployed will be shared equally by the federal and state governments. The cost of training others than the unemployed will be borne equally by the federal and state governments throughout the program. For the purpose of the program, workers in farm families with an annual net income of less than $1,200 are considered unemployed. The Act provides for payment of weekly allowances for not more than 52 weeks to selected unemployed persons who have a minimum of 3 years of experience in gainful employment and who are heads of families or households. Unemployed youths who are

over 19 but under 22 years of age and who do not qualify for a regular training allowance may receive an allowance at the rate of not more than $20 a week. The usual weekly training allowance will be an amount equal to the average weekly unemployment insurance payment in the state, except that the trainee shall not be penalized for taking the training. Adjustments of the training allowance are provided for employed persons. A trainee may receive transportation and subsistence expenses for separate maintenance not to exceed a rate of $35 a week, and also 10 cents a mile for transportation where transportation is necessary.

Michigan moved rapidly to launch training programs under ARA and MDTA, and the accomplishments shown in Table 5 were reported by the Division of Vocational Education of the State Department of Public Instruction on March 18, 1963. Thirty-seven programs involving 1,065 trainees had been completed, and 29 programs involving 1,039 trainees were in progress.

The programs completed presumably were those started first. They were those in which the schools had had experience in teaching and for which they were equipped with teachers, course material, and other essentials. Of the 1,065 trainees, 49 percent were in 16 secretarial, office, and business programs, and 31 percent were in 15 automotive, machine operating, and welding programs. Sixty-five percent of the trainees were in programs which we have classified as mainly for women, and 35 percent were in programs mainly for men.

The 29 programs in progress were serving more men. Of the 1,039 trainees, 57 percent were in programs mainly for men and 43 percent in programs mainly for women. Thirty-eight percent of the trainees were in 14 automotive, machine operating, and welding programs; 10 percent were in 4 cooking programs; and 9 percent were in 10 woodworking and surveying programs. Thirty-five percent of the trainees were in 5 nursing programs, and 8 percent were in 3 secretarial and office programs.

For those trained, the efforts are doubtless worth while, and if a flow of a thousand people in training can be maintained over a period of several years, the social impact should be significant. In comparison with the total number of people unemployed in Michigan, however, the number of people likely to be trained under the programs seems quite inadequate. The director of the Research and Statistical Division of the Michigan Employment Security Commission has stated that it is quite likely that the number of actual trainees in all of the training programs that have, are, or will be instituted in Michigan under ARA and MDTA will not exceed 10 percent of the number that were anticipated by some of the supporters of this legislation in Washington and elsewhere. We fear that this statement is correct.

These programs are crash, emergency, job-oriented programs. First, the Michigan Employment and Security Commission offices must locate the jobs for which trained workers are needed and will be employed. Next, the Employment Security offices must seek out, screen,

Table 5

Training Programs in Michigan Under the Area Redevelopment Act and the Manpower Development Training Act Completed or in Progress, as Reported on March 18, 1963

Programs[a]	Number of Programs						Number of Enrollees					
	Completed		In progress		Total		Completed		In progress		Total	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent
Total	37	100	29	100	66	100	1,065	100	1,039	100	2,104	100
Mainly for men	17	46	21	73	38	58	371	35	591	57	962	46
Automotive	6	16	4	14	10	15	78	7	118	11	196	9
Machine operating	5	14	8	28	13	20	175	17	223	21	398	19
Welding	4	11	2	7	6	9	78	7	60	6	138	7
Woodworking	2	5	2	7	4	6	40	4	61	7	101	5
Cooking	0	—	4	14	4	6	0	—	105	10	105	5
Surveying	0	—	1	3	1	2	0	—	24	2	24	1
Mainly for women	20	54	8	27	28	42	694	65	448	43	1,142	54
Secretarial, etc.	16	43	3	10	19	29	517	49	82	8	599	28
Nursing	3	8	5	17	8	12	150	14	366	35	516	25
Waitress	1	3	0	—	1	1	27	2	0	—	27	1

Source: Division of Vocational Education of the Michigan Department of Public Instruction.
[a]The groupings are ours.

and select the most likely trainees. Then, the Division of Vocational Education of the State Department of Public Instruction must secure able teachers with practical experience in the field and equipped with appropriate course material. And finally, the necessary equipment and teaching space must be made available.

The hurdles are not proving easy to clear. Communities have not been particularly imaginative in coming up with jobs, and jobs may not be available where unemployment is greatest. Prospective employers may be reluctant to assure jobs for trainees. Qualified teachers are scarce and are likely to have full loads. Few will have either the practical experience or the necessary course material for teaching the specialized skills required. A few states have built up a supply of industry-experienced and trained teachers upon whom they may call on relatively short notice. California has claimed to have 7,000 such persons. Some states, notably California, have on file a substantial supply of courses of study, accumulated from past experience, and have curriculum-building research centers to help set up course material for new training programs. Such is not the case in Michigan; each teacher must locate and organize his own course material as best he can. In fact, the training programs completed and in progress in Michigan are those more commonly offered in high schools and adult training classes and for which, therefore, materials and teachers are available.

States must look to such institutions as they have to carry crash training programs. Some have area schools at both the secondary and the postsecondary level that regularly provide training for adults and out-of-school youth as an important part of their total programs. There are no such in Michigan other than the community college; and in an all-day conference held at Michigan State University on December 1, 1962, on the MDTA program, the community college was scarcely considered as a possible factor in the program. The baccalaureate state schools are doing a little, but the high schools are expected to carry the main load.

At this same conference, there was almost bitter complaint that industry is not providing equipment needed in training programs to the extent contemplated, and consequently, government expenditures for equipment were running almost double the amount budgeted for the purpose.

Michigan has not built up over the years the kind of vocational education system in terms of institutions, curricula, teachers, and traditions that enables it to make the most of crash training programs. Perhaps if it had done so, we would not need the crash program so badly.

The School Dropout

Not all who leave school early fail to acquire a skill or to find some way by which to make a living. In fact, a goodly number rise to high positions in business and industry, government, and elsewhere; and many become self-employed or small business entrepreneurs. But the same conditions that cause many youth to drop out of school — failure to learn to read and write functionally or to do simple arithmetic, failure to achieve emotional or psychological stability and poise, and the lack of family and other environmental stimulation — cause them to fail when out of school. Employers do not want to employ them. They not only are considered to be immature and unskilled, but they are suspected of being of low intelligence and competence or otherwise undesirable as employees. They are subject to selective service, and employers do not really need them. These youth, therefore, become known as school dropouts. They drop out into idleness and oblivion only to show up again on the welfare rolls or in the police courts.

Out-of-school training of the school dropout is particularly difficult to accomplish because of the emotional block that he has developed against any kind of formal learning. Any training, in or out of school, that he may be persuaded to undertake must necessarily begin in the very areas in which he failed in school and which he came so thoroughly to hate. He is very likely to have all of the handicaps of the functionally illiterate adult plus an intense hatred for anything that resembles school.

For those out-of-school youth who are ready for it, some form of vocational training may be the principal vehicle around which a more complete rehabilitation program can best be built, and many efforts to provide such programs on at least a pilot basis are now being undertaken.

The Detroit Board of Education and the Council for Youth Service sponsor a Job Upgrading Program for 16- to 20-year-olds, under which students attend school 3 hours a day and work 24 hours a week. There are now 10 centers in operation serving approximately 1,000 youth each year. This is good insofar as it goes, but there is a continuous long waiting list, and the number being served is woefully inadequate in view of the thousands of 16- to 20-year-olds estimated to be out of school and unemployed.

The Chicago Board of Education has arranged work-training programs for school dropouts with a number of Chicago business firms. The Double E program — for Education and Employment — was started with Carson, Pirie, Scott & Company. It is now in its second year and embraces such firms as Illinois Bell Telephone Company, Science Research Associates, The Fair Store, the Conrad Hilton Hotel, and the Continental Illinois National Bank and Trust Company. The Double T program — for Training and Tryout — provides ground training and jobs in such areas as food and hospital service and the needle trades. The Double C program — for Census and Counseling — will provide permanent school records of all Chicago dropouts and enable the schools to keep in touch with them. The academic end of these programs is work related, and the teachers concentrate on the development of vocational compe-

tence. On the other hand, they stress the arts of self-expression, letter writing, and newspaper reading, and how to handle personal finance and to buy intelligently.

The total program has been pronounced a success, but not a perfect success. Officials have noted that 32 of the 108 dropouts cleared for the first year's program had not been placed at the year's end. The usual manufacturing jobs have been scarce, and new fields of employment must be found. It is felt, however, that this problem can be met.

A businessman's organization in France, known as the Society for the Defense and the Development of the Commerce and Industry of Marseilles, has been sponsoring a program of rehabilitation and training for underprivileged idle teenagers 14 to 17 years old, since 1949. In the spring of 1962, 320 youth were in training under the program, and it was expected that the number would soon increase to 400. The instructors are not regular school teachers. They are professionals and skilled workers with experience in youth movements. No fixed study program is set up in advance because the youth to be taught may be quite belligerent toward everything relating to school. In that case, the beginning must be with the elementary principles of discipline, honesty and truthfulness, cleanliness, and even modesty. The actual program features both school education and manual training leading into the various vocational fields. It is said that the program now has a body of alumni and former sponsors of such size and influence that placing the trainees is no longer a difficult matter.[2]

The foregoing programs can be quite helpful for those young people who have the educational requisites to take the training, but they are of no value to the hardened functional illiterates. These youth must start with reading, writing, and arithmetic, as do illiterate adults.

The Cook County (Illinois) Department of Public Aid has just launched a specially designed course embodying the use of specially prepared material and electronic laboratory equipment for 40 selected functionally illiterate school dropouts. It is an important part of the plan that each youth should progress as rapidly as his abilities and interests dictate. The sponsors have high hopes for the course.

If mass youth-salvaging programs, such as the presently proposed Youth Camp, are to accomplish much more than to keep youth off the streets for a period of time, they must do four things for him before he leaves the program. The first is to provide him with the opportunity to learn how to work — to experience the satisfaction of achievement by honest work — for how to work is something that everyone has to learn. The second is to help the functional illiterate become literate so that he may be able to receive training for a job. The third is to acquaint him with the labor markets, both local and national, and teach him how to look for a job. The fourth is to "graduate" each youth, as he becomes ready for it, into a job or training for a job, with provision for followup as necessary until he is 21 years of age. It is recognized immediately that these accomplishments must be achieved with individuals, rather than with groups en masse.

These youth-salvaging experiments are worth while, not only for the benefit of the few youth that they may help directly, but for what the public and the schools may learn from them. In the last analysis, the conditions that cause a youth to become a dropout must be met and met early by the schools. The solutions must be preventative measures taken early; remedial measures taken later may only scratch the surface.

We said earlier that no youth should graduate from high school without qualifying for his next role in life. We now say that no child or youth should be "promoted" to any next step in school before he has acquired the necessary prerequisites to provide him a reasonable chance for achievement at the new level. To promote an unprepared child is a concealed acknowledgment that the school is failing in its service to the child. On the other hand, to allow a child to "sit it out" at any grade level must not be tolerated. He must experience the satisfaction of achievement, some achievement other than that of defeating both the teachers and the school and even getting graduated into oblivion.

The question may be asked whether we are expecting too much of our schools. Without debating the question in the overall, we must insist that we are not expecting enough of our schools in relation to the potential school dropout, although we may be expecting too much of the individual teacher. If the child will not respond to the sincere efforts of a competent teacher, he should have the early help of others in the school who are spending all of their time in dealing with those like him. This must be done within the framework of the school. It will take organization, staff, and special equipment; but if the school fails, society may be called upon to take care of the dropout all the rest of his life.

We must agree that vocational education alone is not the solution to the problems of the potential school dropout; but industrial arts, manual training, or even regular vocational courses may be the best vehicle upon which a well-conceived rehabilitation program may be built. Every program or combination of programs that the counselor thinks is best for the youth should be possible. If it is believed that he should have industrial arts or some special introductory vocational work outside his grade level, that should be possible. If it is felt that it will benefit a physically mature youth to take an available part-time job and remain part time in school, regardless of his age, that should be possible. It ought to be possible to allow a youth to take a full-time job, under school supervision, with the provision that he supplement the job with related evening vocational training. There would need to be the further understanding

[2] "Training Program for School Dropouts," *France Actuelle* (Paris) Vol. XI, no. 9 (May 1, 1962), p. 7.

that if, for any reason, the youth should lose the job, a new program would necessarily be worked out with him. As a last resort, it might be considered necessary to assign a youth to some social agency or to institutional care, but he still would be of concern to the school.

This proposal implies greater elasticity of school programs and greater discretion on the part of school counselors and teachers in recommending programs for disadvantaged youth than now generally exist. But it is not an idle proposal born out of desperation. A number of state laws now provide for part-time work and part-time school attendance for the early school-leaver. The school attendance law in New York State, for example, provides that a youth may drop regular school at 16 years of age provided that he has a job and also takes 4 hours a week of schooling in a continuation school. He must continue the training until he becomes 17 years of age, when the law permits any student to drop out of school. California law requires full-time attendance until age 18, except that at age 16 part-time attendance may be permitted at the rate of 3 hours a day if the student is unemployed or 4 hours a week if he is employed.

A number of the large cities in this country and abroad are conducting experiments in combined work and school programs. The Great Cities School Improvement Program consists of experiments of various kinds aimed at helping the culturally disadvantaged. New York City has probably had the longest experience in trying to meet the problem. The Higher Horizons Program, launched in 1956 and designed to keep students in school, has now been extended to at least 65 elementary and junior high schools. Another experiment in New York City provides a half-day school and half-day work program for those who are under 16 and who expect to leave regular school at 16. Also, the continuation school program is used to encourage 16-year-olds with jobs to stay on after becoming 17 until their training is completed.

Properly carried out, the above proposal would require that every job-bound youth stay in school or in a school program of training or of training and work, tailored to his needs and best interests, until he becomes qualified for and moves successfully into employment. Qualifying for employment, rather than high school graduation, should be the goal. A youth determined at any time to be unable to qualify for employment would necessarily be transferred to some social agency, and in any case, the responsibility of schools for a youth would necessarily end when he reaches the age of majority. There should be no earlier age — 16, 17, or 18, for example — at which an unprepared youth may drop entirely from school. When such arbitrary age limits exist, the more important it is that a combined work-training program be provided.

Before work-training programs such as proposed above can be carried very far in Michigan, two laws may need to be modified and administered differently than they have been in the past. They are the compulsory school attendance law and the child labor law. Enough has been said about the former.

The Michigan child labor law and its administration need to be reexamined and recast, if necessary, to make sure that they allow youth to take worthwhile jobs, jobs that will inspire pride and self-respect, as a part of a combined school-work program. Those who qualify for man-size jobs and can pass an appropriate physical test, at whatever age, should be eligible to take the jobs. Most youth arrive at the time when they want to learn to work before they are now allowed to work at challenging jobs, and to be denied the right to do so is damaging. Surely, it is possible to devise ways of protecting youth from the evils of "child labor" without denying them the right to have work experience at the time when they are psychologically ready for it. We all have to learn to work, just as we have to learn everything else that we come to know.

Training and Retraining for Out-of-School Adults

Out-of-school adults cannot be treated as a homogeneous group. Their employment skills and abilities extend from no skills at all to the highly technical. Too many adults today are unemployed, and some of the unemployed are at least temporarily unemployable. Some in all of these groups, from the highly skilled technician to the functional illiterate, have need for vocational training.

Formal apprenticeship programs are now training only about 12 percent of the skilled craftsmen; and probably due to restrictive rules and regulations, the length of the training period, and the high cost of the training to both the trainee and the employer, apprenticeship training is on the decline. On-the-job training in modern business and industry is substantial, and business and industry may always have to provide the final training in skills in order to adapt the skills to particular needs.

More and more firms large enough to do so are helping their employees upgrade their skills, acquainting them with more than one job, and training them for new jobs created by the introduction of new products. But the smaller firms and those without substantial research and development programs find such inside retraining programs difficult to carry out, and even the larger firms do not find it feasible to provide all of the training that their employees must have. The training is too costly, and trainees will be lost constantly to other firms who do not have training programs of their own. Industry, therefore, is looking more and more to the schools to provide their employees with the prerequisites for training, all the way from training in job literacy to education in science and technology; the more advanced the skill, the more education the schools must provide. The most significant fact, therefore, is the necessity for cooperation

by the schools and industry, with the schools assuming the responsibility for teaching the prerequisites for all skills and the basic elements of the higher and more technical skills, and industry assuming the primary responsibility for teaching the semiskills or lesser skills and for adapting the higher skills to particular situations. This cooperation should exist throughout the entire educational spectrum.

It is recognized that the most retrainable people are those who already have a skill. They know what a skill is, obviously have the ability to learn a skill, and are motivated by the knowledge of what a skill can do for them. The possession of a learning technique and motivation are proving to be far more important, within reasonable limits, than the age of the learner. It is exceedingly important that technical training and training in skills needed by society be available to these people in order that they may upgrade their skills or acquire new skills and make their old jobs available, when they still exist, to others not so advanced in training as are they. This is important to society, even though it may not be to the immediate benefit of the trainee's immediate employer.

The correct vocational education program for employed adults, therefore, would supply the training in skills and technology needed by society, and the training would be offered in late afternoon and evening classes within commuting distance of all who are eligible to take it. Such classes must be designed for adults, and the teaching methods and other techniques used must be geared to adults experienced in their respective trades. The training should be provided in postsecondary and adult education institutions. But some of the more elementary training can be provided by high schools or their vocational education centers. Where postsecondary or adult education institutions do not exist, the high schools must do the best they can to provide the more advanced training.

Training for Those in Prolonged Unemployment

Unemployed adults should have the same opportunities for training as employed adults, but the problems to be met in providing training for them are far more acute and complex. Just as others, the unemployed must qualify for the training proposed. They must be able to use and understand the written and spoken language of the job sufficiently well to take the training, and even with the training, they must have the personal qualities that will make them employable.

It is not easy to disentangle the problems involved in training the unemployed from those arising from employer-employee rules and relationships and from public welfare policies and practices. The unemployed may try to hold out for the old job — a job that may never again exist — for the sake of utilizing old skills and retaining seniority rights. Welfare rules and regulations too often reward the unemployed for taking no chances and risking no new enterprise. The security provided by the welfare check may cause him to stay in the same town or the same state when he ought not to do so. If a new job does not work out well, there is all the trouble and risk of delay in getting back on the welfare roll. Sometimes being in training removes the trainee from the unemployed classification and thereby stops his support from public sources.

Industry's efforts to alleviate the hardships suffered by those laid off may also miscarry. General Electric Company, for example, provides those laid off with tuition refunds for training in new skills, lump-sum payments for relocation, and lower vesting requirements in pensions; at the same time it encourages realistic state unemployment compensation benefit levels, gives one-half pay when state benefits run out, and continues life and medical insurance without cost for the employee and his family for a year after layoff. But in a great number of cases, the urgent need for security overcomes everything else, and the employee wants to stay around for at least a year to see if by chance a job will open up. As long as his benefits last, it seems that he will avoid taking a gamble; he will not move to a new location; and he will not learn a new skill, especially if the tuition payment uses up money that he could otherwise draw upon after his unemployment benefits expire.[3]

Somehow, by some manner, the rewards need to be for choosing enterprise rather than idleness. The issue becomes one not only of opportunity but also of motivation. What choices, other than idleness, do the unemployed have? What choices, of which training is one, can be made available to them? And how can the unemployed be motivated to take the risks involved in choosing something other than idleness? Society needs to experiment further in providing choices involving training and public employment — not made work, but worthwhile work that every city, town, or county needs to have done. Our welfare laws and administrative regulations should be redrafted with the need for training and the need for some alternative to idleness included among the essential considerations.

This is not an idle dream. More and more thought is being given to the problem. Chronic unemployment, the tendency for existence on welfare to become a way of life, and the ever-growing cost of welfare make it urgent that a way be found to move people into reemployment more rapidly or to enable them to perform worthwhile services in return for their benefits.

We have in mind those unemployed who have exhausted their unemployment compensation allowances and are living on some form of general aid. Who are these people? What are their needs, and what can be done about them? Every city and community of substantial size is concerned with this problem. Many pilot

[3]Earl S. Willis, "General Electric's Plan for Financing Retraining," *Management Record*, Vol. XXIV, no. 4 (April 1962), p. 24.

studies and programs are being undertaken to determine how best to cope with it. But none exceeds in thoroughness, size, and imagination the effort being made by the Cook County (Illinois) Department of Public Aid and the Chicago Board of Education.[4] The program is based on a very excellent and detailed study of those on permanent aid.[5]

The Cook County (Illinois) experience. As of mid-December 1962, 270,000 men, women, and children in Cook County were receiving public aid. They equaled 5.1 percent of the population of the county, or 7.5 percent of the population of the city of Chicago, and 25 percent of the Negro population; in fact, 82.2 percent of them were Negroes. Public aid to these people was amounting to $15.7 million a month. Of the sample of those of employable age studied, 680 in all, 87.6 percent had either been born in Illinois or had resided there over 5 years, and 69.7 percent had either been born in Illinois or resided there over 10 years. They were not predominantly newcomers, as is sometimes presumed. Half of the sample group were between 26 and 40 years of age with an average age of 32.3 years.

From the sample studied, it is estimated that approximately 60,000 of the 270,000 receiving public aid are able-bodied adults of employable age, and that if these could be made employable and be placed in jobs, all but 50,000 to 60,000, mainly the old and infirm, would be removed from public aid.

Of the 60,000 able-bodied adults that should be employable, approximately 19,000 or 32 percent, were men, and 41,000 or 68 percent were women, mostly married and unmarried mothers on aid for dependent children.

In spite of the predominance of Negroes, the common causal denominator — one that runs throughout the entire group — is not race or color, as much of a handicap as these may be, but ignorance. Of the total sample, 93.4 percent were reported as having been promoted through the fifth grade and therefore should be functionally literate. But when measured by the New Stanford Reading Test, only 49.3 percent were found to be functionally literate, and most of these scored so little above the minimum that serious reading difficulties were indicated.[6] In fact, only 44 or 6.5 percent scored the maximum, indicating that they had completed the learning of the basic fundamentals of reading. All of those of age 16 to 21 had been promoted through the fifth grade, but only 59.9 percent of them tested out as functionally literate. Functional literacy decreased almost steadily as the ages increased, with only 6.7 percent of those 58 to 63 years of age testing out as functionally literate. Sixty percent of this age group had been promoted through the fifth grade.

One conclusion drawn from the above must be that a large majority of the 60,000 able-bodied adults living on public aid are quite unemployable by present-day industry and will never be employable without substantial training. A few may be ready to train for some vocational skill. These few are constantly being pressed into rehabilitation and training programs, but training for the majority must start with reading and arithmetic— the fundamental tools for vocational learning.

The Cook County study supports the observation that the postwar business recoveries have not resulted in reemployment of those squeezed down and out of employment by the preceding business recessions as business recoveries formerly did. The old jobs have remained filled by other people, or they no longer exist, and the new jobs require qualifications that the unemployed do not possess.

So we have a growing body of relatively young people coming to live quite permanently on public aid as a way of life. Most of them can read very little or not at all, and their only communication with the larger society is through the radio and television. They have become economically, socially, and culturally isolated from the rest of society and are actually developing a more or less permanent way of life based on public support and yet apart from the society that provides the support. Almost 60 percent of those supported by public aid in Cook County are children, and children continue to be born, in and out of marriage, and to be reared in this isolated way of life. They are wholly unprepared economically, socially, or culturally to cope with school or any organization of the larger, outside society. The isolated way of life, therefore, tends to become self-perpetuating and threatens to go on generation after generation at greater and greater public expense and at the same time to generate delinquency and crime against the larger society.

The Cook County Department of Public Aid has its rehabilitation centers and job-placement programs, now serving more than 13,000 persons, and the Chicago Board of Education has its vocational education training centers for adults. But these do not reach the 60,000 able-bodied adults whose lack of elementary education disqualifies them for job training. Therefore, with the facts in hand, a program for training these illiterates was worked out with the Chicago Board of Education, and publicly announced in March 1962. The Board of Education supplies the teachers and curricula, and the Department of Public Aid screens and supplies the trainees and provides the large amount of social service that must accompany the training.

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[4]Comparable programs, although not so far along, are being conducted in Baltimore, Maryland, and in Norfolk, Virginia.

[5]*A Study to Determine the Literacy Level of Able-Bodied Persons Receiving Public Assistance*, prepared under the direction of Dr. Deton J. Brooks, Jr., Director of Research and Statistics, Cook County Department of Public Aid (Chicago: The Department, August 1, 1962), 166 pp.

[6]Even 37.9 percent of the 504 reported as having completed the 8th grade and 21 percent of the 87 reported as having been graduated from high school tested out as functional illiterates. These 191 made up 55.4 percent of the functional illiterates.

It is a part of the program that those selected for training must accept the training or forfeit their eligibility for public aid. Thus far, however, acceptance of training and class attendance have been good, so that the withholding of aid has not become an issue.

As of December 1962 approximately 8,000 adults were in training under this program, and 10,000 more were screened and ready for training. Two hundred and ten experienced teachers, mostly moonlighters from the Chicago schools, were providing the instruction.

The results have surpassed expectations. Unlike young children, adults have acquired a spoken language and, therefore, do not have to stop and verbalize as much as do children in learning to read. When they once get the idea of letters, sounds, and words, they may acquire in a matter of weeks as much as will children in several years. Also, different adults will advance at different rates.

Because of this and because adults will progress faster if they are permitted to read in terms of their own experience, the conventional elementary reading books are of little value, and new appropriate reading materials must be devised. Therefore, 40 Chicago teachers spent the summer of 1962 preparing new course materials, based on the experience of the preceding months.

Thus far, all of the trainees are in the prevocational training stage. As they become functionally literate, they should be transferred into the existing adult vocational training programs and finally into jobs. For most of the trainees, these transitions will be big steps, and an enormous amount of wise counseling and guidance will be needed to help them take each step.

The Department of Public Aid sees no reason why at least 50,000 of the estimated 60,000 able-bodied men and women now receiving public aid cannot be brought into the training program provided that the public understands the social and economic importance of doing so. The immediate problem, of course, is that of finance. Will the Board of Education be provided with the funds required for the needed teachers, curriculum, and facilities? Will the Department of Public Aid be provided the funds for carrying its part of the program of testing, screening, and counseling? We can only trust that if the public is well informed, it will intelligently vote in terms of the larger good.

There is a strong feeling growing throughout the country that able-bodied recipients of public aid should be required to work for their public support whenever that is possible. We should insist that such work be worthwhile work of value and not meaningless made work; that it should be rehabilitating work, work that encourages self-respect and dignity in the worker. The real danger in such a program is that it might lend itself to the development of slave labor and a permanent way of life based on slave labor not much better than a way of life based on free public aid.

A more promising suggestion is that public aid recipients be given the choice of working or training.[7]

Guidance and Counseling

It is obvious that an ideal school program must count heavily upon guidance and counseling, with emphasis on the personal and cultural during the student's early years, and with more and more emphasis on the vocational as the student moves into the high school and post-high-school years. Indeed, the program requires a quantity and quality of counseling scarcely yet attained, and it assumes an availability of information about present and future job openings that does not yet exist.

Every child is an individual and is entitled to individual counsel and guidance concerning preparation for his next probable step in life. What should be his program in view of his ambitions, abilities, and shortcomings? What is the right program for the especially able, or for the culturally, socially, intellectually, or physically disadvantaged? The answers are individual answers upon which a great deal may depend.

A very important and difficult part of guiding the child is counseling with his parents. The prestige of going to college is so great in our society that almost all parents want their children to go to college. It is rare that a parent can be objective, realistic, or understanding concerning his child's limitations and shortcomings or special talents.

The amount of job information needed by counselors is phenomenal — it extends all the way from knowledge of jobs immediately available for the lesser skilled and the unemployed to knowledge of probable trends in jobs for the more highly skilled and the technician.

We cannot accept unqualifiedly the bald statement, so often made, that training does not and even cannot create jobs, nor can we accept unqualifiedly the companion statement that training must be only for immediately foreseeable jobs. It was found in Denver, for example, that the knowledge that older workers were being trained for garden and yard service uncovered a demand for such service; people had not been asking for garden and yard workers because of having become convinced that no such workers were available. New skills are resources available to enterprisers. But it is essential for the sake of both high individual motivation and good social investment that training lead to jobs, not 10 years hence, but reasonably soon. It is important that jobs requiring the lesser training be well defined and immediately available, particularly for the unemployed trainee. Jobs requiring post-high-school technical training, on the other hand, may not need to be defined so specifically or available immediately; they must be real possibilities, nevertheless.

[7]Arthur Silverman, *Vocational Training of the Unskilled* (Milwaukee: Milwaukee County Department of Public Welfare [November 17, 1960]), 13 pp., mimeographed.

It is most important, therefore, that every counselor and individual trainee have access to the most up-to-date employment information that society can provide concerning existing jobs and job prospects and probabilities. There is little doubt that an expansion of this service would constitute a valuable social investment and that the service is a proper one for government to render. Much essential information is, in fact, now being assembled; but it is made available too late, and proper use is not being made of it. With an improvement in the technique for gathering data, and with our new ability to process data rapidly by means of the computer, job analyses and prospects could be made available to counselors more currently than they now are.

The provision of better job information and the development of mature counselors who have adequate psychological and vocational knowledge and experience are two long-term problems that cannot be ignored.

Research in Vocational Education

There is developing for the first time a serious nationwide interest in research in vocational education; and Michigan finds itself in the vanguard of the new research. The State Division of Vocational Education has one full-time research consultant and a small research staff. The consultant and the staff do some research on their own, but the chief purpose is to stimulate research by the universities and colleges and also by the high schools and other institutions teaching vocational skills. Several research projects are now in process, but the major accomplishment has been the Michigan Vocational Education Evaluation Project, which the State Division of Vocational Education has largely financed. The Project has been under way for about 3 years and is now almost completed.

The Evaluation Project has been conducted under the general direction of Michigan State University and headed by Professor Lawrence Borosage of the College of Education, but almost all of the major universities and more than 200 educators of the state have had a part in it. The findings are sure to be of great value, but the interest aroused by the large participation may be of even greater consequence. In fact, even before the project is actually completed, other studies are stemming from it.

Early in 1963 Michigan State University was granted a $211,000 contract by the United States Department of Labor's Office of Manpower, Automation, and Training to conduct a three-year research project on retraining unemployed workers. The goal is to determine whether retraining programs confer net economic advantages upon the individual participants, society as a whole, and the government budget, and if so, how large such net advantages may be.

The whole area of vocational education bristles with questions that need to be answered. Any attempt to list them would constitute a substantial study in itself, but a few examples may be given.

What do we know about the learning processes of youth, adults, or school dropouts in view of their cultural and social backgrounds, their experiences of success or failure, and the kinds of manipulative skills to be learned?

What do we know about curriculum building for teaching manipulative skills? We are finding again in implementing the Manpower Development and Training Act programs that a competent tradesman from industry or a trade teacher from high school is handicapped frequently to the point of complete frustration for lack of an organized curriculum and course materials for the course undertaken. There needs to be a state curriculum laboratory designed to plan and to help teachers plan curricula for new courses, and the curricula need to be kept on file in a curriculum library for reference and use by new teachers and those building curricula for new courses. We know from the experience in other states that the number of courses for training skills in industry can run into the hundreds.

What makes a good teacher in the various vocational fields? What kinds of teacher training produce the best teachers in the different vocational areas? Beyond a certain point, is it simply more subject-matter skills, more teaching methods, or more liberal arts and cultural courses that are needed? Does teacher training need to differ for the teaching of different skills and vocations? How can we improve market and job information for better counseling? For that matter, what makes a good counselor, and how can he be trained? There are endless experiments to be conducted with industry in order to know how best to serve industry and how industry may contribute to training.

What research projects are most worth while at any given time? A brief survey made by one of the task forces of the Michigan Vocational Education Evaluation Project has disclosed that most of the research done up to the present time in Michigan has been in the fields of agriculture and home economics, and that very little indeed has been done in the fields of trade and industry and business education. Surely, research in the trade and industry and business education fields should be high on the list of studies needed.

There has been organized a Michigan Educational Research Council, and the Evaluation Project is likely to suggest or recommend that this Council be strengthened so that research proposals may be submitted to it for appraisal as to timeliness, feasibility, and probable value, with the further expectation that the Council may be able to help find funds to finance those proposals deemed of most likely value. The lead Michigan has so recently taken in vocational education research can be of inestimable value to industrial growth and employment in the future. Appreciation of its worth and its encouragement and support are important.

Vocational Education Teachers

One of the most stubborn problems to be met in the expansion of vocational education is the limited supply of competent teachers.

Subject-matter competence is a primary requisite for any teacher, but particularly for the vocational teacher. For certain preparatory courses such as agriculture, home economics, industrial arts, office training, and some distributive education courses a satisfactory depth of subject matter may be acquired in college. But occupational subject matter in many trades and industries is not taught in college, and if it were, quite generally it would soon become out of date. With rare exception, depth of subject matter in these fields can be acquired and maintained only through occupational experience.

Even if an individual should know that he would like to do occupational teaching, he would have grave difficulty in acquiring simultaneously the necessary experience in industry and the academic and teacher training courses usually required for a degree and a teacher's certificate. Furthermore, few people in industry are aware that they might become teachers; they are sought out and recruited because there is no other source of supply. Only then do they become concerned with academic and teacher training subjects. At best, such beginning teachers are faced with years of extension and summer classes, and they must frequently return to industry in order to bring their vocational knowledge and skills up to date.

The problem of acquiring competent vocational teachers is aggravated by the traditions and standards that have developed in the teaching profession. Rank, prestige, status, and salary scales are geared to years of schooling, degrees obtained, and seniority. Furthermore, the salary scale for teachers may not compare favorably with journeymen's pay, and teachers' pay raises may be smaller and more infrequent. Why should any skilled journeyman shift to full-time teaching under these circumstances?

Part-time vocational teachers who teach a special course or an extension class while remaining in industry fare better than full-time occupational teachers. They do not expect to become a part of the teaching fraternity. Their combined pay is better. They have less difficulty in keeping up in their skills. And they usually are not held to the same certification requirements as the full-time teachers.

One of the reasons why area and professional vocational schools are sometimes favored over the comprehensive public schools, including the community colleges in some states, is that the former may have the greater freedom in selecting and hiring teachers for their subject-matter competence and skills without being tied down too much by certification requirements, salary scales, and prestige considerations that have grown up in the academic teaching world. Because of the foregoing circumstances, we consider it fortunate that teachers in Michigan's community colleges, like teachers in its four-year colleges and universities, are not now required to hold certificates, as they formerly were.

Full-time vocational education teachers in the Michigan high schools are generally required to hold the same certificates as other teachers. Exceptions can be allowed, however, and a vocational teacher may be granted a temporary certificate to teach the particular courses of his trade in adult training programs.

The present elasticity in certification requirements for vocational education teachers should be retained until more is known about what makes a good vocational teacher. Furthermore, it will facilitate recruitment of the increased number of vocational education teachers who are going to be needed as vocational education comes to assume the load that is inevitably ahead.

Few states have met the problem of occupational teacher qualifications and certification adequately. To do so will be a real challenge to the vocational educator. California has worked out a "broad-based teacher licensure structure" for vocational teachers, and it claims to have arrived at patterns of recruitment, selection, training, and placement that work fairly well. Problems persist, however, particularly in relation to salary scales. This is accomplished by two devices: a series of contractual agreements with teacher preparation institutions paid for out of vocational education funds; and the assignment of staff members of the state department, some at headquarters and some on the campuses of the teacher training institutions, to coordinate and assist in the teacher preparation process.

One wonders about paying public institutions for conducting teacher training programs when that would seem to be their public duty, even though such contractual arrangements have been the national pattern since the inception of the Smith-Hughes Act in 1917. As a part of the Michigan Vocational Education Evaluation Project, the teacher training institutions of Michigan were frankly asked whether they would continue offering the teacher training programs if the financial compensation for so doing were gradually withdrawn. Enough of the institutions said that they would so that the Project has recommended to the State Board of Control that it adopt the following policies:

a. That reimbursement on present programs of vocational teacher education be reduced over a three-year period so that by the school year 1964-65 general reimbursement would be eliminated.

b. That beginning 1964-65, reimbursement be provided only for those services that are considered essential to the promotion and further development of vocational education, and which services would not be provided adequately without such reimbursement. The findings of the Project study suggest that included in these services might be the following:

Assisting teachers, counselors, and coordinators through visits to local programs.

Developing and distributing instructional materials (including programmed materials).

Conducting in-service training conferences for teachers, counselors, and coordinators.

The services most needed and to be reimbursed under this plan might be expected to change as the needs change. Reimbursement for services provided under this arrangement should cover all costs. This policy could be implemented, in part, beginning with the school year 1962-63.

c. That at least 25 percent of the funds budgeted for teacher education be designated for research and experimentation. Teacher education institutions should be invited to submit proposals with the understanding that any proposal accepted may be financed in full through the use of these funds.

The Project further recommended that a committee be appointed by the State Board to review and recommend to the State Director proposals for research and experimentation which should be funded under *c* above.[8]

The State Board of Control is already putting the recommendations into effect, and some additional research is being sponsored and financed out of the funds made available.

We strongly support the recommendations, including those of paragraph *b* proposing the continuation of the use of contracts for certain essential services that might not otherwise be provided. The great need that teachers, counselors, and coordinators have for help in keeping up with the fast march of the vocations and the teaching of vocations justifies the visits from the teacher training institutions. We have already referred to the great need for help in writing curricula and instructional material for new programs and revising old programs. This is a service that the teacher training institutions should be able to provide. Occupational teachers must be recruited from industry, and they must be provided with in-service training as a part of their total teacher training program. Without such in-service training, adequate recruitment of satisfactory teachers from industry cannot successfully be carried out.

Furthermore, vocational education teachers, just as industrial employees, live under the threat of having their occupational skills become obsolete, and it ought to be reasonably feasible for them to acquire new occupational teaching skills while on the job.

Some of our state schools — Michigan State University, Ferris State College, Northern Michigan University, and perhaps others — should build appropriate training programs for teachers of occupational skills as has long since been done for teachers of agriculture and home economics, and as some institutions (most recently Ferris State College) have already started to do. It involves some changes in the formal academic requirements for degrees for occupational vocational teachers, and it requires some new procedures. The appropriate educational value of occupational skills has to be recognized, as has that of agriculture and home economics. Journeymen who enter the teacher training program should receive credit for the skills acquired in industry.

The usual teacher education courses required should be confined to those that are relevant. The training institution must make arrangements with industry to provide the trainee with the practical instruction and experience needed in his chosen occupational skill. This might involve employment during summers or even for extended periods during the regular school year. Practice teaching must necessarily be done in schools teaching the skills, much as elementary and secondary practice teaching is now done. There must be a cooperative program carried on by the training institution — the vocational school or comprehensive high school — and business and industry.

[8]Ralph C. Wenrich, *A Study to Determine More Effective Ways of Using State and Federal Vocational Education Funds in the Further Development of Vocational Teacher Education in Michigan*, a part of the Michigan Vocational Education Evaluation Project (Ann Arbor, Michigan: Office of Research Administration, June 1962), pp. 24 and 25.

Part II. Systems of Vocational Education in Certain Selected States

VI. Development of Vocational-Technical Schools in Connecticut

BY EMMETT O'BRIEN[1]

The State Trade Schools — The Beginning

The state system of vocational-technical schools in Connecticut was established in 1910. In 1903 the Governor appointed a commission "to investigate practical means and methods of Industrial and Technical Education." This commission reported to the 1905 session of the General Assembly. In the light of later developments, the following statements contained in the report are especially significant.

"The need for schools of this sort seems to your commission to be *immediate* and *pressing*. Connecticut's record in industrial life is one of which our citizens are justly proud. The inventive capacity of sons of Connecticut is recognized everywhere. The skill of our workmen, members of a generation about to pass off the stage, is beyond dispute. This natural adaptability and this acquired skill have been prominent factors in developing and maintaining the prosperity and good repute of our Commonwealth." And further, "Your commission has been moved to advocate the assumption by the state of a part of the burden of the establishment and maintenance of trade schools in order that the state may justly insist that instruction be free to *all her sons*. If the schools were maintained by the towns exclusively it is fair to suppose that the advantages would be enjoyed only by the residents of the larger towns and this would be a calamity."

As a result of the work of the 1903 commission and its report, the 1907 session of the General Assembly enacted legislation "concerning the establishment of free public schools for insruction in the principles and practices of trades." This act authorized any town or school district to establish and maintain a free public school in the principles and practices of such trades as might, with the approval of the State Board of Education, be designated by the *local school* authorities. Such schools, if and when organized, were *"to be open to all residents of this state."*

This act provided that building, equipment, courses of study, and teacher qualifications be subject to the approval of the State Board of Education, and that schools operated under the provisions of the act would receive state reimbursement for one-half the cost of support and maintenance not to exceed $50,000 annually. This "state aid" was to be extended during the succeeding 2 years to not more than two schools.

It will be noted that this law, passed in 1907, provided only for "state aid" to towns, but perhaps more significantly, it stressed the following:

1. Free instruction to any state resident
2. State approval of courses to be offered
3. State approval of the facilities and standards of training
4. State approval of teacher qualifications
5. A plan for regional or area service for trade schools

Furthermore, in the administration of the program, the town school boards were considered agencies of the state.

The program provided for by the act failed to be implemented by any community or group of communities. In 1909, therefore, the General Assembly, feeling that action should not be delayed longer, repealed the permissive feature of the 1907 law and *"authorized and directed the State Board of Education to establish two such schools* in towns best adapted for the purposes."

These schools were to be free public schools and were to provide both day and evening instruction in the "arts and practices of trades." The Board was authorized directly to establish, organize, manage, and supervise such schools, and to expend not more than $50,000 per year for the purpose.

A town in which a school was located was required to supply a building and maintain it, including the cost of heat, light, and power, and one-half of the janitorial service; the state would equip the building and pay the salaries of the teachers.

[1] Director of the Division of Vocational Education, Connecticut State Department of Education.

The State Board, having $100,000 at its disposal, proceeded to establish such schools in New Britain and Bridgeport.

Subsequently, it established 11 additional schools as follows:

Putnam	1913
Torrington and Manchester	1915
Danbury	1917
Meriden	1918
Stamford	1919
Middletown	1925
Willimantic	1928
Hartford	1929
Norwich	1942
Waterbury	1953
Hamden	1956

These schools ran 8 hours a day, 5½ days a week. Students and teachers rang time clocks. The school year was 50 weeks with 2 weeks' vacation for students and instructors. Only major national holidays were observed. There were no other vacation periods.

Students were admitted at any time during the year and were graduated individually at the end of 4,800 hours of satisfactory performance. Two-thirds of the time was spent on shopwork. The other one-third was devoted to "related work"—blueprint reading and shop mathematics—taught in relation to the tradework in the shop and limited in scope and depth of content. There was little general education taught. A primary purpose of the program was to produce, under school auspices, an atmosphere as nearly similar to that in industry as possible.

There was very little selection of students, guidance services were limited, and it was common practice for the sending schools to refer to the state trade schools those students who were not academically minded. The dropout rate was high.

In spite of the limited character of the program, concentrating as it did on shopwork, the schools graduated many fine young men who became successful mechanics and solid citizens of their communities. It is not uncommon today to find many of these graduates in positions of importance in the industries of Connecticut.

The Vocational-Technical Schools — A Broadened Program

Over the years many changes in social, economic, and technological conditions took place, and the programs in the state trade schools did not keep pace with these changes. The schools were doing a good job of *trade training,* but they were neglecting the development of the individual student. His potentials were not being realized, and the instruction was not such as to offer a challenge to the better students. The heads of some schools believed that some revisions were in order. Accordingly in 1945, the State Board of Education adopted a changed policy.

The essential parts of the new policy were as follows. A broadened program of general education was to be adopted. The schools were *to educate* as well as *to train.* A program of instruction was adopted whereby 50 percent of the student's time in school was to be spent in general and related instruction and 50 percent in shopwork and in related *trade theory.* Four years each of English, social studies, science, and mathematics were to be taught. There were also to be guidance services and health and physical education in each school. The school day was to be cut from 8 hours to 6½ hours, and the school year to 10 months. The names of the schools were to be changed from "State Trade Schools" to "Vocational-Technical Schools," prefixed by the name of some individual prominent in the community because of his contribution to industry, government, or education. For example, the State Trade School of Hartford became the A. I. Prince Vocational-Technical School. Mr. Albert I. Prince was an editor of the *Hartford Times* and for many years had served as Chairman of the State Board of Education.

State to Provide Buildings

In 1947 a question arose concerning the facilities in which these schools were operated. It was considered impossible to conduct the new-type program in the old elementary schools, factory buildings, and other makeshift structures in which the trade schools had been operating. The Legislature, therefore, at the request of the Board, amended the enabling act to permit the state to build its own buildings. In 1948 a 10-year, long-range program was adopted to provide new modern buildings, well equipped and in good locations. In 1949 three schools were requested. The Legislature approved five, although the $7 million appropriated for them was the amount requested for the three schools. In subsequent legislation, from 1949 to 1961, $43,238,500 has been appropriated, the funds being raised mostly by bond issues.

It is important to note that in the development of this new program we first set up a statewide citizens' consulting committee, composed of 17 prominent people selected from industry, labor, education, and the public. The committee voted to support the program, and so informed the State Board of Education.

In addition to the statewide committee, local consulting committees were established in each area where a school was proposed. These local committees usually appointed several subcommittees such as site committees, curriculum committees, and legislative committees.

Also, every statewide organization of any significance was provided with a copy of the program, and someone from the vocational division met with them to explain the program whenever the opportunity to do so occurred.

In the beginning, the town in which the school was to be located was required to provide the site. Difficulties developed in several localities over the sites,

however, and in 1951 the Legislature provided that the state should purchase the sites.

When the state took over the construction of the new buildings and the purchase of sites, it assumed the entire cost of plant and operations. The new buildings are modern and well equipped, and are in dignified locations. They have libraries, combination auditoriums and gymnasiums, cafeterias, science laboratories, classrooms, and plenty of parking space—a far cry from the old days when any old factory building was considered good enough for housing a trade school.

Use of Statewide Curriculum Committees

The program is kept up to date by the use of statewide curriculum committees, which work closely with craft committees from the industries. There is such a committee for each trade or subject matter in the curriculum. Each committee has a resource person attached to it—usually a director, assistant director, or some person especially qualified in that field. The coordinating link with the local community is the local advisory or consulting committee, appointed by the Commissioner of Education. These committees are made up of members from management and organized labor (not necessarily equally represented), school people in the area, and the general public. It should be understood that all policies are finally made by the State Board of Education.

The State Board of Education is made up of nine members, one representing each of the eight counties, and one representing the state at large. The members are appointed by the Governor for overlapping terms of 6 years, three being appointed every other year. The present makeup of the Board is five men and four women. The present chairman is an industrialist and banker from New Haven.

The Commissioner is appointed by the State Board on a continuing contract. The Division of Vocational Education is on a par with three other divisions, and the director of each division reports directly to the Commissioner. Each director is a member of the Administrative Council, which, in effect, serves as the Commissioner's Cabinet. The organization chart of the Division of Vocational Education is shown on the following page.

All trade and industrial education, both day and evening, is provided by the state. Other vocational programs, such as agriculture, home economics, and distributive education, are operated under local boards of education in local high schools and reimbursed from federal funds. Consultative services for agriculture, home economics, and distributive education are provided from the Central Office of the Vocational Division in the State Department of Education.

There is a state law providing for the construction of vocational agriculture facilities by a town or center, reimbursed 100 percent by the state. There is also an operating grant provided to the town whereby the state pays for the "excess cost" of providing vocational agriculture, including young farmer and adult farmer programs. The law also provides for a consulting committee, advisory to the local board in which the center is located and made up of 1 representative for each 50 farmers in the area.

The vocational-technical schools are all regional secondary schools. For some courses, such as tool and diemaking, a 13th year is required.

Transfer from a local high school to a vocational-technical school may be made at any time, but is usually made at the beginning of a school year. The vocational-technical school makes the final decision to admit a student, but every attempt is made to get agreement, on a guidance basis, between the two schools. Similarly, transfers can be made from the vocational-technical school back to the high school on agreement between the two schools. A transfer student must be in good standing and be recommended by the principal of the sending school. Previous school record, attendance, punctuality, citizenship, and test results are the basis for the transfer.

It should be noted that three vocational-technical schools, located in areas where there are junior high schools, admit students from the end of the ninth grade only. In other such schools, an exploratory period in the ninth grade is provided.

The vocational schools are not designed to qualify students for admission to college, although some students are admitted to engineering colleges on an individual basis by comprehensive examinations. In fact, about 10 percent of the graduates do go on to higher education.

The vocational-technical school students in both day and evening classes pay no tuition. A mandatory transportation act requires the local board of education to pay for daily transportation to the vocational school, the state reimbursing the town for 50 percent of the cost. Maximum reimbursable transportation cost is $300, but a local board may pay more than this if it so desires. If at any time the transportation cost is $200 or over, the local board may elect to pay maintenance.

Each vocational-technical school has a guidance counselor; he is usually someone who has qualified for guidance while a member of the staff of a vocational-technical school. He works very closely with the counselors in the sending schools. We have frequent meetings of the counselors in our schools, and we sometimes have combined meetings of counselors and industrialists of the area.

We use the State Employment Service, and our use of it is increasing. We have for years put the responsibility for placement on the school, which keeps constant contact with industry. We place better than 90 percent of our graduates in trades for which they are trained.

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CONNECTICUT STATE DEPARMENT OF EDUCATION
Hartford

ORGANIZATION CHART

DIVISION OF VOCATIONAL EDUCATION

Director
Assistant Director

Research Consultant — **Facilities Planning**

Executive Assistant — **Accountant Auditor**

Bureau of Technical Institutes, Chief

State Technical Institutes
- Hartford
- Norwalk
- Waterbury
- Norwich
- Bridgeport (proposed)

Curriculum Development
Industrial Contacts
Personnel
Evening Technical Institute Program

Hartford	Stamford
New Britain	Norwalk
Hamden	Danbury
Meriden	Waterbury
Norwich	Torrington

Bridgeport

Bureau of Vocational-Technical Schools, Chief

14 Vocational-Technical Schools
Trade Preparatory Courses
Adult Education Programs
Industrial Supervisory Training
Licensed Practical Nurse Training
Curriculum Development
Teacher Education
School Services—Library, Physical Education and Health, Guidance, Audio-Visual.

Bureau of Vocational Services, Chief

Agricultural Education
- School Programs
- Young Farmer and Adult Courses

Distributive Education
- Cooperative High School Training
- Adult Classes

Home Economics Education
- Secondary School Programs
- Adult Classes

Special Services
- State Employee Training
- Fireman Training
- School Custodian Training

We have experience in training the unemployed and in training for new industries. The instruction may be given by our regular teachers, or we may employ teachers from industry. We provide the latter teacher training through our supervisory staffs.

We do not have a good system of followup on our dropouts. Many who drop out get jobs and return to our schools for evening instruction. Some failures are due to inability to read or to handle mathematics, and in some of these instances, dropouts return to the sending school for more instruction, even though we do provide remedial work in subjects such as reading and mathematics.

Our graduate surveys provide a measure of our performance, and we learn from them what needs strengthening and what changes should be made. We plan to close out programs that become outmoded or obsolete. New programs are carefully considered by curriculum and craft committees and must be approved by the State Board of Education.

Teacher Training for Vocational-Technical Schools

An important aspect of our program is teacher training. Each new instructor is urged to matriculate in a bachelor's degree program at one of several state colleges. Basic instructor training, required for certification, is given by members of our central office staff, who are affiliated members of the college faculty. More than one-half of the teachers in our schools have at least the bachelor's degree.

Graduate programs are provided at several state colleges and the state university. Because all of our administrators are promoted from within the ranks, our people are encouraged to take advanced degrees. Our directors are required to have a bachelor's degree plus 30 semester hours. Two of our present directors are graduates of our schools who have gone on to get their bachelor's and master's degrees, and in one case, the doctorate.

Evening School and Adult Programs

A most important part of our operation is our evening school adult program, which is operated in every school. The program is flexible, and new courses requested by unions or others can be started promptly. When programs are large enough, they are supervised by assistant directors. In other cases, they are supervised by day school instructors, who serve on a per diem basis. Before a class is started, we must be assured that it will have an enrollment of 15 students. If the average daily attendance falls below 10 and there are no mitigating circumstances, the class is closed.

Working closely with the State Labor Department Apprenticeship Division, we provide technical and related instruction for apprentices in industry. In each one of our vocational-technical schools we have provided a special classroom for this activity. These classes, known as PTX (part-time extension), are usually in the evening, although some of them, where the employer sends the apprentice for 4 or 8 hours and pays him, are in the daytime.

As a part of our trade and industrial education program, we maintain a staff of four people to conduct supervisory training in industries. These programs are provided in the plants and are usually held on company time. They include such courses as quality control, human relations, job simplification, and job instructor training. This service is in considerable demand. The general idea is that we train certain designated people who in turn can train others. In this way, the program can fan out to cover a large number of people. The companies that we serve pay the cost of travel and clerical service incidental to the classes.

We conduct also a fireman training program for the fire departments of the state. A full-time man, a former battalion chief of one of our large cities, supervises the program, and he employs other instructors to conduct regional training schools for local departments. We make arrangements with the University of Connecticut to conduct a fire college each year, which involves fire chiefs, fire marshals, and other top administrative officers. In the program we have investigative officers, fire insurance officials, experts in arson, and others who conduct a series of lectures for administrative officials.

Another service, provided for the public schools of the state, is a program for school custodians, in which instruction is given on the care and maintenance of public property. Instructors in the program are our own vocational-technical school staff (carpenters, electricians, and plumbers), as well as experienced custodial supervisors and representatives of companies manufacturing cleaning fluids, pneumatic systems, and the like. This program is offered during vacation periods and consists of four courses which are progressive in character and operate for approximately 1 week each.

It should be noted that, because all of these programs are state operated, considerable flexibility is present. Transfer of personnel and use of our state-owned buildings make it easy to determine the need for a program and to start it without undue delay. Approval of local boards and local superintendents is not required, and there are no geographical limitations resulting in questions as to who pays tuition and other costs.

The Technical Institute Program

In 1956 and 1957 we promoted a research study on the "Need for Technicians in Connecticut." The study was prepared by our Department and a committee from Connecticut industry; and the interviewing was done by personnel from industry. The results were reported in "Bulletin No. 82, State Department of Education."

As a result of this study, which indicated the need for technicians, the State Board requested from the Legislature funds, raised by bond issues, for four technical institutes.

The technical institute is a two-year postsecondary school emphasizing mathematics and science; it is intended to train engineering aides who work under the direction of a graduate engineer. Graduates occupy such jobs as design draftsmen, test technicians, quality control technicians, sales engineers, methods engineers, and a host of similar assignments.

The Legislature granted funds for institutes at Hartford, Norwalk, Waterbury, and Norwich. The Hartford State Technical Institute has been in existence since 1946. It operated in temporary quarters until 1960, when it moved into a new building especially designed for it. The Norwalk State Technical Institute started operation in September 1962. Construction of both the Norwich Institute and the Waterbury Institute was started in June 1962, and these institutes will be in operation in the fall of 1963.

The Hartford State Technical Institute is ECPD approved (Engineers' Council for Professional Development). We expect to request approval for the additional institutes when they have met the requirement (5 years) for ECPD approval.

The State Board of Education voted in May 1962 to grant associate degrees in applied science to the graduates of the state technical institutes.

In the development of these institutes we relied heavily on citizens' consulting committees and subcommittees, similar to those used in establishing vocational-technical schools. They suggested the curricula, course names and descriptions, sites, and the general layout of the buildings and laboratories. Their counsel was of incalculable value in the development of these institutions.

In the spring of the year 1962 we set up a new statewide Consulting Committee on Industrial and Technical Education composed of top-level people from industry, labor, education, and the general public. This committee is advisory to the State Director, the Commissioner of Education, and the State Board.

The programs offered at the Hartford Institute are mechanical technology with a metallurgical option, electrical technology with an electronics option, tool technology, and civil technology. In September 1963 nuclear technology and data processing will be offered. In the above-mentioned course in mechanical technology, an option is offered in the second year whereby the student may concentrate on metallurgy.

The programs offered at Norwalk Institute are electrical technology with an electronics option, mechanical technology with a metallurgical option, tool technology. and industrial chemistry.

The Norwich and Waterbury Institutes will offer the basic technologies of mechanical, electrical, and tool technology, and probably industrial chemistry.

Technical institute day students pay tuition of $100 a year, and evening students pay $5 per course.

Evening Technical Institute Programs

Although the day programs of instruction in both the vocational-technical schools and the technical institutes are of primary importance, the evening school programs of adult education have special significance. These evening programs provide instruction to persons already employed who come to our schools for the purpose of upgrading their skills and adding to their technical knowledge. In addition, it is possible for an evening school student to qualify in about 5 years for a diploma from a technical institute. The evening schools serve more than twice as many students as the day schools.

Teacher Training for Technical Institutes

All teachers in the technical institutes must have a degree in engineering, science, or mathematics, two courses in professional preparation for teaching, and 3 years' experience in industry. Senior instructors and department heads must have also 4 years of successful teaching experience in a technical institute. Directors and assistant directors must have the degree, 30 semester hours of professional training, and 5 years of teaching in an industrial or technical institute.

Summary

Connecticut's modern vocational-technical schools have developed from the old-time trade school.

The technical institute program has been a logical and natural development growing out of the needs of industry.

The findings of a survey of the graduates of the technical institute in Hartford made in 1961 support the opinion that the technical institute is a proper institution for Connecticut.

Consulting committees of interested and competent citizens have been a key factor in the development of our program of trade and industrial education.

Operation of the trade and industrial program directly by the state is desirable for the following reasons:

1. Policies and procedures can be determined at a central source.
2. There are no geographical limitations.
3. Particular programs can be decided upon and operation begun quickly without waiting for local boards, superintendents, or others to make up their minds.
4. When the trade and industrial program is a part of a regular school, academic-minded administrators neglect the program in budgets, personnel, and other parts of the operation.

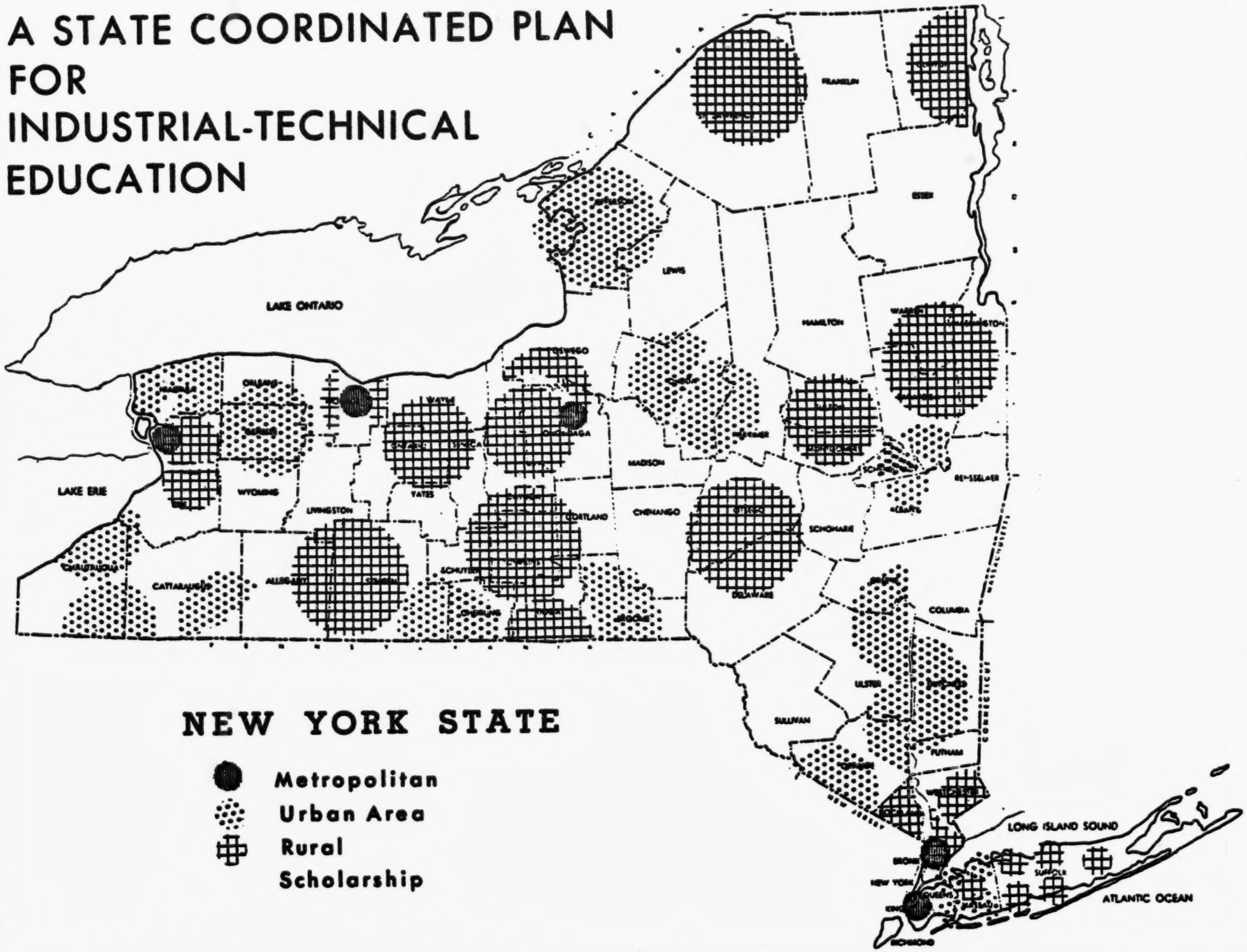
5. A statewide system makes it easier to transfer personnel to points where they are needed.

6. Individuals who are potential leaders or directors can be identified and given early responsibility. *All of our administrators are products of our system.*

7. A large area can be covered efficiently by concentrating adequate facilities in one place, thus eliminating the necessity to duplicate equipment.

8. It is difficult, if not impossible, to get local boards to provide needed buildings and facilities, and in some cases, in our experience, adequate maintenance of the buildings and facilities.

A STATE COORDINATED PLAN FOR INDUSTRIAL-TECHNICAL EDUCATION



VII. A State-Coordinated Plan to Modernize and Extend Industrial-Technical Education to Meet the Demands of the 1960's in New York[1]

By The University of the State of New York
The State Education Department

Effective utilization of manpower resources is essential to the industrial and economic position of the state. The new manpower skills involved in automation, the upgrading and updating of skills because of changes in technology, the redistribution of employment due to relocation of industries and the special manpower requirements for national defense, all tend to create circumstances which adversely affect the economic well-being of New York State and its citizens.

A number of other factors are adding to the complexity of the problem. Uneducated and unskilled non-English speaking people are swelling the numbers of unemployed in the large metropolitan centers. Continuing large numbers of high school graduates and dropouts, similarly unemployable, are entering the labor market. Sharp changes in the distribution of age groups and the increasing proportion of women in the work force create additional difficulties in fulfilling the skill demands of our economy.

Industrial-Technical Training Is an Economic Resource

A comprehensive statewide system of industrial-technical education for secondary school youth, out-of-school youth, and adults can meet the demands of industry for technicians and skilled craftsmen in the decade ahead. With appropriate cooperation of the industrial, labor, and governmental agencies concerned, and with manpower planning in accordance with technological developments and expansion, a comprehensive system of industrial-technical education becomes an economic resource which can insure the continuing industrial leadership of the state, hold and attract industry, and foster the economic well-being of its citizens.

The State Education Department with the cooperation and advice of local school leaders and the State Departments of Labor and Social Welfare has been developing a long-range four-point program of state and local action. Further consultations with representatives of the State Department of Commerce, industry, labor, and other affected groups have been scheduled for an early date.

Briefly stated, the plan is as follows:

Part I. The Metropolitan Plan — to upgrade and modernize existing industrial-technical education facilities in the five largest cities. The principal needs in New York, Buffalo, Rochester, Syracuse, and Yonkers lie in the direction of (a) new curriculums to replace those which do not provide reasonable employment possibilities, (b) revision of those curriculums which are essential to the economy of the state, but which have not kept pace with industrial change, (c) modernization of shop and laboratory space, and (d) replacement of outmoded and otherwise unuseable equipment.

These improvements will provide a revitalized, refurbished program of industrial-technical education for approximately 60,000 secondary school students and 75,000 out-of-school youth and adults, consistent with the economic needs of the state and the individual needs of the people concerned.

Part II. The Urban Area Plan—to expand industrial-technical education programs in smaller cities to include suburban school districts in contiguous areas. Within appropriate geographic limits determined by the density of the school population, small city school districts can enlarge their programs to serve the needs of the surrounding suburban area. This will require expansion of existing buildings in some instances, and in others building completely new facilities and providing new equipment.

This phase of the coordinated plan will establish 22 metropolitan area programs and serve approximately 31,000 secondary school youth as well as 40,000 out-

[1] The plan is under consideration by the State Legislature.

of-school youth and adults in programs of retraining, occupational upgrading, preemployment training and related instruction for apprentices.

Current data indicated that the available secondary school population would justify establishment of urban area programs in areas in and around Mepham (Nassau), Niagara Falls, Poughkeepsie, Rome, Schenectady, Troy, Utica, Watertown, Albany, Binghamton, Dunkirk, Elmira, Floral Park, Jamestown, Kingston, Olean, Batavia, Lawrence, East Meadow, Levittown, Corning, and Lockport.

Part III. The Rural Cooperative Area Plan—to establish shop centers to provide industrial-technical education for students disadvantaged on the basis of their geographic locations. Geographic centers have been identified which could function effectively as instructional centers to serve approximately 600 day school students each, with core industrial-technical curriculums in 7 to 10 trade or technical subject fields. Each center would serve approximately a 20-mile radius and, as necessary, permit rural youth to attend their own home district schools for portions of their secondary education other than shop or laboratory courses.

Achievement of this phase of the coordinated plan requires constructing and equipping the shop centers and will serve a total of 36,000 secondary school youth and 40,000 adults. There are approximately 26 centers tentatively identified as rural cooperative areas, including Bay Shore, North Syracuse, Erie County District No. 1, Erie County District No. 2, Glens Falls, Hornell, Huntington, Ithaca, Johnstown, Massena-Potsdam, Middletown, Phelps, Oneonta, Bellport, Plattsburgh, Riverhead, Rockland County, Valhalla, Newburgh, Centereach, East Rochester, Spencerport, Auburn, Owego, Peekskill, Roslyn. See map on page 56.

Part IV. Tuition Payments for Rural Youth—to permit youth, not otherwise served, to participate in a suitable program established under one of the preceding plans. A considerable number of students are located in rural areas outside the range of a cooperative area school or an urban industrial-technical program. Equal opportunity to acquire industrial skill training can be achieved for these rural youth in any one of the three plans described previously through the provisions of existing legislation.

Currently, a pupil residing in a district wherein high school courses are offered, but no vocational program is available, may attend any other school within the state in which vocational courses are available, and the tuition charged to the district in which the pupil resides, except however, the cost of transportation need not be paid by such district. This must be for full-time vocational courses, not merely isolated subjects.

This phase of the plan would provide educational opportunities for approximately 6,000 rural youth who would make a greater contribution to the state's short supply of skilled and trained manpower. The total plan should be restudied when area facilities are established. The number of interested students outside the range of area facilities may warrant some type of program of "Educational Grants."

Finance and Administration

The four-part plan for industrial-technical education is capable of completion within a ten-year period. Implementation of all portions of the plan will require approximately $120 million. Funds for the first two years of the plan will be required principally for refurbishment and modernization of equipment in existing buildings, in the amount of approximately $5 million. Thereafter, for the remaining eight years of the plan, $12 to $15 million will be required annually.

Responsibility for administration, staffing, and operation will be vested in local boards of education. Supporting legislation will be required to permit the complete development of the plan.

Summary

The plan when implemented will:

1. Provide opportunities for basic skill development for secondary-school youth in every location in the state in order to prepare for the industrial needs of tomorrow, wherever and whenever they occur.

2. Provide preparatory training opportunities for school dropouts and unemployable high school graduates, consistent with the emerging skill demands of the economy.

3. Offer retraining opportunities to the unemployed in the economically depressed areas for new skill demands of existing employment opportunities.

4. Provide training opportunities which will reduce the number of unemployable in the non-English speaking population, as well as other adults without marketable skills.

5. Provide upgraded and updated training for employed industrial workers to meet the increasing skill demands of industry.

6. Permit older workers whose skills are becoming obsolete to obtain skills necessary to the new industrial requirements.

7. Expand and strengthen the instructional services available to apprentices in the skilled crafts in order to meet existing shortages.

VIII. Vocational and Technical Education in Pennsylvania

By Edwin L. Rumpf[1]

Introduction

This report deals primarily with vocational and technical education in Pennsylvania conducted under the auspices of the State Board for Vocational Education and supported by local, state, and federal funds. Only a brief reference is made to the scope and nature of vocational education programs conducted by agencies other than the public schools.

Some background information is first presented to help the reader understand more clearly the program that exists today.

Certain aspects of vocational and technical education in Pennsylvania's public schools are reviewed. These include the organization of the program and how it is implemented, what services are being rendered, special features that seem worthy of treatment, and vocational needs related to groups that might be affected.

An attempt is made to analyze certain factors that have had an impact on the growth and development of vocational and technical education in Pennsylvania.

Finally, the writer attempts to forecast what the future may hold for vocational and technical education in Pennsylvania.

Background Information

The Commonwealth of Pennsylvania gave early recognition to the importance of industrial education when it passed the General Assembly Act of 1883. Predating the Smith-Hughes Act by 34 years, this legislation authorized the second-class cities to establish and maintain schools for instruction in the "mechanic arts and kindred subjects." Related subjects were taught as early as 1885 in the Philadelphia Manual Training School where, it is reported, "The whole boy is put to school," that "he learns by doing" for "the education of all the faculties."

In 1900 mechanical drawing was taught in 34 public school districts. In 1904 an agricultural instructor was employed by the Board of Education for the public high school in Waterford. The School Code of 1911 directed that an assistant state superintendent of industrial education be appointed, as well as an expert in drawing. Subsidized vocational industrial education began in 1913 with the passage of the Showalter Act. In the same year the first vocational homemaking program was established. Pennsylvania was one of the first states to take advantage of the Smith-Hughes Act, passed in 1917, and the stimulatory effect of this and other federal acts over the years has been remarkable.

The contribution made by vocational and technical education to Pennsylvania over the years has been of no little significance. The usual programs of agricultural education, business education, distributive education, homemaking education, and industrial education have been offered. In addition, special educational services dealing with the rehabilitation of veterans and civilians, war defense and war training programs, veterans' training, public service occupations, practical nursing, and technical education have been given as need for these became manifest.

During the war emergency the vocational educational program, like some sleeping giant, became aroused and made a monumental contribution. It showed what it could do. Over 600,000 men and women in Pennsylvania were trained in war industry occupations, and another 94,000 were given supervisory training. Motivated by the exigencies of the times, all people cooperated and combined their efforts to utilize and exploit the possibilities of vocational education to the fullest. Then, the emergency having passed, vocational education seemed to have lost some of its luster. Like the forgotten war hero of yesteryear, who was honored by the "ticker tape" parade down Broadway, so vocational education came to be viewed in a dimmer light. Few today realize the great contribution that vocational and technical education can make to our youth and adults, to our economy, and to our nation during any period, whether an emergency exists or not.

[1] Director, Bureau of Curriculum Administration, and State Director of Vocational Education.

Vocational and Technical Education in Pennsylvania Today

Today vocational and technical education in the public schools encompasses all of the reimbursable programs conducted under the provisions of the Smith-Hughes, the George-Barden, the Area Redevelopment, and the Manpower Development and Training Acts, at the federal level, together with state laws required to make the administration and operation of these programs legal.

The entire program is operated under the State Board for Vocational Education in accordance with the Pennsylvania State Plan for Vocational Education mutually agreed to by the United States Office of Education and the State Board for Vocational Education. More than 100,000 youth and adults are served each year at a total expenditure of approximately $10 million of local, state, and federal funds.

Organization and Implementation

Under Pennsylvania law, the State Council of Education functions also as the State Board for Vocational Education. It consists of the State Superintendent of Public Instruction, who serves as its executive officer, and nine other members, all appointed by the Governor.

In the organizational structure at the state level, two deputy superintendents of equal rank are directly beneath the Superintendent of Public Instruction and above the State Director of Vocational Education. The Deputy Superintendent for Administration is responsible for budget expenditures and personnel administration. The Deputy Superintendent for Curriculum Services administers and supervises the curriculum services. The State Director of Vocational Education, who also serves as the Director of the Bureau of Curriculum Administration, may work through either deputy superintendent, depending upon the nature of the task to be accomplished. Serving in a dual capacity, the State Director has duties and responsibilities beyond the area of vocational and technical education, but for the purpose of this report, only the latter will be included.

Although the State Director is ultimately responsible for the total state vocational and technical education program, many of his duties are delegated to the head state supervisors of the various services. It is through the state supervisors that contact is made with the school districts and that programs are developed, approved, operated, and reimbursed.

Program approval is based on such items as established need for a particular type of vocational and/or technical education, a properly certificated teacher, provision for adequate supervision, submission of a course of study, adequate facilities, provision for necessary equipment and supplies, and action by the local school board to establish the program and maintain its operation. Approval at the state level, once given, is continuous until the operating school board signifies its intention to discontinue the program or the State Board for Vocational Education indicates, through the State Director, that the program is no longer reimbursable because it fails to meet the standards previously agreed upon. Vocational programs are operated in schools representing the various classes of school districts based on population (first, second, third, and fourth class). In a few cases, the operating agency is the county school board where area technical schools have been established.

Financing the Program

The foundation system of state aid to public schools is used in Pennsylvania. All vocational and technical students are included when the basic or foundation support due any school district is calculated. Since a school district receives this support for its day program regardless of the type of student, this report will be concerned only with those supplementary reimbursements that a school district receives as a result of operating an approved vocational and/or technical education program.

The local support for vocational education comes from the general fund and is derived from taxes levied by the local school board under the powers granted by state law. State support in the form of reimbursements to the local school district is also derived from tax sources and/or federal augmentations.

At the state level, federal augmentations are placed in a federal custodial fund. Transfers from the federal custodial fund to the State Treasury are made only after state and/or local expenditures have been made to support these transfers on a "matching" basis.

Payments to the local school districts operating vocational programs are generally made 1 year in arrears. These payments are based on annual preliminary and final report forms, which certify to the expenditures made by the school district for vocational education in accordance with established laws, regulations, and procedures. Both the regular day and adult programs are reimbursed in this fashion.

Programs for retraining of the unemployed, including practical nurse education and programs operating under the Area Redevelopment Act, are reimbursed 1 month in arrears.

Payments to county boards operating area technical schools are made in advance to cover a six-month period of operation. Advance payments are based on an estimated budget submitted prior to the period that the budget will be in force. The payment for the second six-month period is also estimated, subject to adjustment based on the experience of the first 6 months.

The amount of reimbursement to school districts for operating vocational programs is established by law. In the day program, it is based on an amount payable for each student in average daily membership (ADM). This

varies as follows: home economics, $20; agriculture and trade and industry, $35; and distributive education, $50, per ADM. Approved travel of vocational administrators, supervisors, and teachers at the local level is reimbursed at 80 percent of the amount expended. No reimbursement is given for administrators, supervisors, and teachers on the day program other than that indicated above. No program will be approved for reimbursement if the administrator or supervisor in charge is not properly certificated and qualified.

On the adult level, vocational reimbursement is based on the number of hours of teaching. Prior to July 1962, it was 80 percent of the teacher's hourly rate up to a maximum of $2.50 per hour. The state was paying a reimbursement of $2 per hour even though some districts had to pay more than $2.50 per hour to get qualified teachers. Beginning in July 1962, this reimbursement became 80 percent of a maximum of $4 per hour. Reimbursement for supervision of the adult program up to 20 percent of the total amount expended for teachers' salaries may be claimed.

Reimbursement for area technical schools follows the above pattern except that, in addition, an amount equal to $800 multiplied by *the subsidiary account reimbursement fraction* times *the number of teaching units* is also reimbursed. Transportation costs are reimbursed for area technical schools on the same basis as they are for other schools or districts.

Where agreements or contracts have been made with a school district to provide an educational service, such as retraining the unemployed, practical nurse education, or programs under the Area Redevelopment Act, payments are made in terms of the agreement or contract. Usually the school district will furnish the facilities and some of the equipment and will provide supervision. All other items such as the salaries of teachers and clerks, the cost of supplies, and travel costs are reimbursed in full. Equipment purchased by state and federal funds becomes the property of the state. Products resulting from such training programs are turned over to the state for distribution to tax-supported institutions throughout the Commonwealth at no charge.

Experimental programs are financed in a fashion similar to that of retraining.

Teacher education programs are conducted under continuing agreements with several colleges and universities to provide certain vocational teacher education services. The program of vocational teacher education is supported primarily by grants-in-aid of federal and state money. Guidelines for the operation of the program, criteria for the program itself, qualifications for teacher educators, and information of a similar nature are contained in the state plan. Annual budgets are submitted for approval, and reimbursement is made monthly on actual expenditures.

Also included in the teacher education budgets are funds to support personnel in various fields of research, area coordinators of vocational industrial education, and field instructors in distributive education attached to certain institutions. Special research projects conducted by the teacher education institutions are established and supported under separate grants by agreements or contracts.

Administering the Program

The overall pattern of administration varies from service to service.

Agricultural education has been established primarily in the rural areas. These programs, depending upon size and function, may be headed by one or more teachers serving day students, young farmers, and adults. The teacher's immediate responsibility is to the local school administrator, although he also reports through the Area Supervisor of Agriculture to the Head State Supervisor, who reports to the State Director of Vocational Education.

The distributive education program at the local level is headed by a Coordinator of Distributive Education. This person also reports through the local school administrator to the Head State Supervisor of Distributive Education. In some areas, the field instructors attached to either Temple University or the University of Pittsburgh may give assistance to the program at the local level. In some of the cities, the Coordinator of Distributive Education may report to and work through an intermediate administrator, such as a local Director of Vocational Education.

Homemaking education programs operate in most of the schools in both rural and urban areas. The Area Supervisor, as in the case of agriculture, is the liaison with the Head State Supervisor of Home Economics, who reports to the State Director.

Trade and industrial education programs include practical nursing, retraining the unemployed, area technical training, and programs under the Area Redevelopment Act, in addition to the usual functions that this service performs. At the local level these programs are headed by a Director of Vocational Education or a Supervisor of Industrial Education. The local Director of Vocational Education may also have responsibility for other areas of vocational education. The Area Coordinator of Industrial Education is the liaison between the local school district and the Head State Supervisor of Trade and Industrial Education, who reports directly to the State Director.

Of the field personnel operating for the State Department of Public Instruction, only the agriculture and the home economics supervisors are included as a part of the department administrative staff for budgetary purposes. They come under the supervision of the head state supervisors, and are attached to a number of county offices, depending upon their area of operation. Field instructors in distributive education are attached to universities, but are considered as field staff under the Head State Super-

visor of Distributive Education. The area coordinators of industrial education are also attached to universities, but they are considered the field staff of the Head State Supervisor in this service.

Promising Features of Program

Below are some comments pertaining to special features of great promise for the future of vocational and technical education in Pennsylvania, if they are properly exploited.

Area Technical Schools

During the summer of 1960 a comprehensive study was made of the Commonwealth, dealing with business and industrial needs, school facilities, density of population, and related items, in view of preparing a state plan for area technical schools. As a result, a state plan was subsequently prepared and in March 1961 the State Board for Vocational Education approved it. In essence, the plan established 44 administrative units with an ultimate projection of 79 area technical schools, as shown in the accompanying map.

Each area technical school may serve as a "department" of several cooperating schools, or it may offer a complete educational program with vocational and technical education as the principal objective. The area technical school concept involves the "pooling" of pupils, facilities, and resources. Courses offered may be at the technician, trade, or operative levels. This makes possible a broader curricular offering for both youth and adults than the traditional type of school organization can afford. If the area school operates in conjunction with other secondary schools, the need for auditorium and gymnasium is eliminated. The building structure becomes quite functional, and initial building costs are reduced.

Under the state plan for area technical schools, administrative units, in some instances, cut across county lines, while in other cases only a portion of a county or a single county may be included. The plan states, "County boundaries will be given consideration. However, service to an area will not be sacrificed in order to maintain the county as an administrative unit."

Although only four area technical schools have been established and are functioning under the state law providing for them, others are seeking approval.

Technical courses are also given in other schools. In the year just completed, almost 5,500 students were enrolled in technical courses in 23 high schools, with 19 giving courses in the day school and 14 offering courses in the adult program.

Advisory Committees

It is mandatory under law that each area technical school have an advisory committee, and it is recommended that each vocational program function with an advisory committee. Only a few vocational programs, however, have such a committee. For the past 2 years, trade and industrial education has had an advisory committee at the state level. Efforts to establish committees in the other services and to establish an overall state vocational education advisory committee, have met with little success.

Several reasons may be given for the failure to maintain active advisory committees. Some people oppose the committees, fearing that they may become too powerful and attempt to establish policy, rather than remain advisory. The committees are not kept informed. Meetings are not made meaningful and purposeful. A committee may be too large and unwieldy. A status committee, rather than a working committee, may have been appointed. Frequently, a committee will lose interest because no procedures have been established for renewing its membership or providing new points of view.

The value of good advisory committees to the continued progress of vocational education is no longer a matter of debate. Where these advisory committees have been organized and have functioned, they have contributed much to the success of the program.

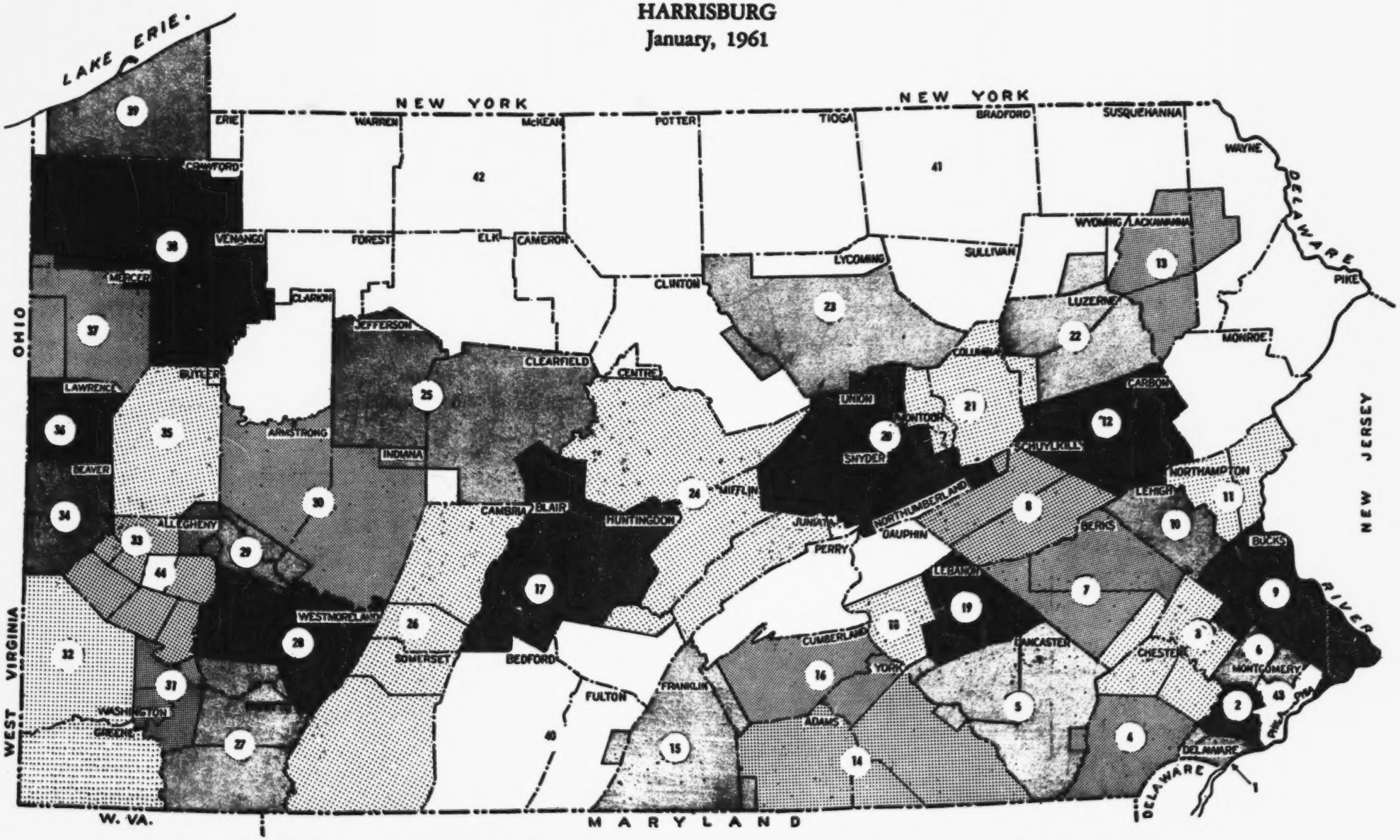
Experimental Programs

Specific research in agricultural education, home economics education, and trade and industrial education has been made possible by having a research specialist in each of these fields at the Pennsylvania State University. An advisory committee in each field meets periodically to assist in developing and carrying out a plan of research in its area. This program is in its infancy, and its financial support represents about 1 percent of the total expended each year for vocational and technical education.

Experimental programs have been undertaken to determine new direction for vocational and technical education in the future. One such program is to compare the relative potential of secondary school students with that of adults in developing proficiency in data processing and computer programming. Another is to compare the relative success in pursuing a course in electronics of a group coming from the usual college preparatory course and another group having had a course in vocational electricity. A third project compares the results of closed-circuit television teaching with that of the teacher in the classroom. A final example is a program in distributive education that is attempting to utilize the background of a vocational graduate in agriculture to develop salesmen for the rural areas.

A study of trade and industrial education and the retraining program was made in 1961 as a result of the recommendation of the Governor's Committee on Education. The committee also recommended studies of the other fields of vocational education.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF PUBLIC INSTRUCTION
Bureau of Curriculum Administration
HARRISBURG
January, 1961



This map shows a proposed administrative organization for the operation of area technical schools throughout the Commonwealth. These schools will provide occupational opportunities so that high school students and adults may become competent members of our working society.

Unshaded areas do not have the necessary population to support a school. These areas will be served by resident schools or other schools in the Commonwealth.

Training the Unemployed

Although the programs for training the unemployed are now authorized under Section 2508.3 of the School Laws of Pennsylvania, 1957, such training has been conducted since 1951. From 1951 through 1961, 127 programs provided training for 14,924 unemployed, including recipients of public assistance. Of these programs, 88 were operated for less than a one-year period, and 40 of these were operated for 3 months or less. The total cost for 10 years of operation was $998,301.66, a cost of $66.82 for each of the 14,924 persons trained.

The objective is to provide brief, intensive vocational training for unemployed and underemployed adults. Training is designed to equip recipients of public assistance and other unemployed with basic skills and technical knowledge required for entrance into a local industry, business, or other type of employment. During the first 7 years the size of the program remained relatively constant with an average annual enrollment of 1,396 and an average cost of $83,000 per year. During the past 3 years the annual enrollment has increased from 1,364 to 3,094, with a corresponding increase in cost from $85,000 to $250,000 per year.

The need for training is determined by the State Employment Service, and programs are initiated cooperatively by representatives of the local school district, the Employment Service, and the Department of Public Instruction. Training is usually conducted in public school facilities, although in-plant training will be approved if it seems more practicable. All programs come under the jurisdiction of vocational educators in the Department of Public Instruction and are under public supervision and control.

Applications for course approval include a proposed budget covering the period of training, a course outline indicating the hours per major unit of instruction, a description of facilities and equipment, and a training schedule. In addition, a letter from the State Employment Service indicating the availability of trainees and employment opportunities and a letter from the County Board of Assistance indicating the availability of trainees must also accompany the training proposal forwarded to the State Department of Public Instruction.

Applications for training are reviewed at the state level by a committee composed of representatives of the State Employment Service, the Department of Labor and Industry, the Department of Commerce, the Bureau of Public Assistance, the Budget Secretary's Office, and the Department of Public Instruction.

When completed and approved, the budget application form constitutes a contract between the local board of school directors and the Department of Public Instruction for the conduct of the program. Courses are limited to a maximum of 6 months' duration for any one trainee, and classes are conducted for a minimum of 30 hours per week. The continued operation of a program is dependent upon placing in jobs at least 60 percent of those completing the course.

Selection of trainees for training and placement on the job after completion of training is the responsibility of the State Employment Service. The conduct of the training is the responsibility of the Department of Public Instruction and its counterpart at the local level.

The program is 100 percent reimbursable from state and federal funds on those items that are reimbursable. In most cases this will cover 90 percent or more of the amount expended by the local school district. About 80 percent of the amount that is paid to the local school districts as reimbursement comes from state funds. Items that are reimbursed include the following: wages and salaries of personnel essential to the conduct of the program, such as supervisors, teachers, clerks, janitors, and repair mechanics; travel expense of personnel on official business; cost of consumable supplies for instruction, office, janitor, and maintenance mechanic; communication charges for postage, telephone, printing, duplicating, and advertising; insurance charges for the protection of plant and equipment, social security, workmen's compensation, and retirement funds; overhead charges of five cents per trainee hour of instruction; and freight charges for the transportation of finished products to the disposal point for distribution to charitable or state institutions.

Sound administrative and educational practices must be followed if the training program is to be successful. Establishment of training needs and the determination of available trainees are the responsibility of the State Employment Service. The organization of a responsible local advisory committee to represent the interests of the community and potential trainees in developing a sound training proposal is most important. The committee advises with officials of the local school district and the employment office. A course outline to provide intensive training for immediate placement on a job will be developed more easily if specific training needs are determined in consultation with personnel directors and responsible plant officials. In retraining programs, educators must think in terms of developing a single skill rather than broad areas of skills. Training programs must be developed on the basis of need rather than on the basis of existing facilities. A realistic budget must be developed, and the entire operation must be justifiable.

Selection of the instructional staff is very important, and since the occupational areas for which training is needed are not usually represented in the school vocational program, it may be necessary to seek instructors from those in the industry or occupation to be served.

There is no substitute for good supervision, and in most instances, supervisors must be developed. Retired local vocational supervisors and directors have been found to serve capably.

Finally, adequate financial and statistical records must be maintained in order to justify programs already completed and to support proposals for future programs.

Area Redevelopment Programs

Since the enactment of the Area Redevelopment Act, area redevelopment projects amounting to over $200,000 have been developed and approved in Pennsylvania — more than in any other state. This may be partly because of the large areas of substantial and persistent labor surplus in Pennsylvania, and partly because of the state's previous experience with retraining under its own program. With 51 of the 67 counties qualifying under this act, the effect of this legislation in the Commonwealth has been tremendous, not only in training but in other respects. Administration and operation of the program under the federal act is somewhat more difficult than that of the state retraining program because more governmental agencies are involved and because all proposals must be forwarded for approval at the federal level. Continued operation of the program will permit a more accurate evaluation.

Significant State Legislation

In 1961 the State Legislature authorized the Department of Public Instruction to establish, operate, and maintain a program of vocational education in any area of the Commonwealth where, in the opinion of the State Superintendent of Public Instruction, the vocational education needs of youth and adults are not being met. Although money was not appropriated to implement this act, the law has great possibilities, if and when money becomes available.

Another act, also passed in 1961, permits boards of second- and/or third-class districts, presently operating approved vocational programs, to join with county school boards for the purpose of establishing area technical schools.

Needs

In this section, some appraisal will be made of the program of vocational education in Pennsylvania and how well it is meeting the needs.

One measure of the efficiency of the total educational program is the dropout rate. A recent report released by the Bureau of Research, Department of Public Instruction, reveals that the dropout rate for grades 7 through 12 during 1960-61 was 3.7 percent in contrast to 5.0 percent 4 years earlier. This is an improvement, but no concentrated statewide effort is being directed to reduce the rate further. Philadelphia has an occupationally oriented, nonreimbursable program enrolling about 900 students each year, which is aimed at the school dropout. Results to date have been very gratifying. Much more, however, needs to be done statewide in this respect.

The following excerpts are appraisals taken from the Educational Research Monograph No. 3, *The Chance to Learn,* published under the direction of the Governor's Committee on Education, October 1960.

"This study reveals that the biggest deficiency in curricular offerings in Pennsylvania is in an area that many educators outside of the immediate field neglect—vocational education, particularly trade and industrial education."

"With the exception of the largest senior high schools, our high schools as a group failed to present a vocational education adequate to the need."

"With an estimated 65 to 70 percent of our secondary school graduates going immediately to work in business and industry (Educational Research Monograph, No. 1) the importance of vocational education is obvious."

"The number of pupils enrolled in all kinds of state-approved vocational courses expressed as the percentage of the total enrollment in grades 10 through 12 (350,000 pupils in 1958-59) is given below. The data were taken from reports to the Federal Government by the Department of Public Instruction:

Agriculture	3 percent
Distributive Education	less than 1 percent
Home Economics	4 percent
Trade and Industrial	7 percent
Business Education	22 percent."

The foregoing excerpts indicate quite accurately the scope of the vocational education program at the high school level today. Vocational training in agriculture and home economics comes closer to filling the need than does training in other areas. Distributive education needs vast expansion, and trade and industrial education needs to serve three times the present number in order to achieve its proper goal.

Young farmer and adult programs in agriculture, adult programs in distributive education, and adult programs in home economics education should be greatly expanded. At the adult level, trade and industrial education should serve from five to seven times the number now enrolled (presently, 21,000) in order to serve those who could profit from such instruction. Lack of funds has prevented an expanded program of training the unemployed needed to meet current demands and to cope with requirements in the immediate future.

If post-high-school training is defined as an educational program that requires high school graduation as a prerequisite, or as a program above the high school level, there is very little of it. But if the term is defined as a program that admits students who have achieved age 18 and can profit by the instruction, then there is much of it, relatively speaking. Under the latter definition, it is estimated that more than 30,000 people are regularly enrolled in post-high-school courses.

During the past year almost 5,500 were enrolled in technical courses offered in the public schools.

Vocational and Technical Education (Other Agencies)

Included here is some indication of the scope of vocational and technical education being conducted by agencies other than the public schools. Primarily, these programs involve adults.

Private Trade Schools

A recent check indicates that 118 private trade schools are approved in Pennsylvania. About 1 year ago, more than 11,000 students were enrolled, and 8,900 graduated during the license year. There were 875 instructors employed. All schools listed, including music, modeling, and dancing schools, have a declared vocational objective in their training programs. The majority of these schools are located in Pittsburgh and Philadelphia. The highest enrollments were in electronics, automotive, drafting, and commercial art courses, in that order.

Pennsylvania State Commonwealth Campus System

This branch campus system provides lower division instruction for students planning to continue their education at the university's main campus, but it also offers full-time, two-year, terminal programs. Most of these terminal programs are technological in content and lead to the associate degree. Approximately 4,000 part-time and evening students attend classes each year at the 13 branch campuses. The full-time student body of a branch campus varies in size from 100 to 1,000, with an average enrollment of 300 to 400. About half of the full-time students are enrolled in two-year, associate-degree curriculums. Currently, more than 1,000 students are enrolled in agriculture, business administration, chemical technology, drafting and design technology, electrical technology, surveying technology, production technology, and food service and housing administration.

Apprenticeships in Industry

It is difficult to ascertain how much training is being done in industry, because reports are incomplete. Many apprentices are never registered, and a great deal of informal training takes place. However, 6 months ago there were almost 7,300 registered apprentices.

An Analysis of the Situation

Certain conditions have prevailed in the Commonwealth that have strongly influenced the progress that has been made in the area of vocational education and training. We will comment upon a few of these conditions.

School District Reorganization

Pennsylvania is in the throes of school district reorganization. Impetus for this action came from legislation recommended by the Governor's Committee on Education. Specifically, the legislation requires that area technical schools must be provided for in county plans submitted as a part of any reorganization.

This new emphasis on the larger administrative unit will probably result in an increased size of many school districts and of some schools. Hence, educational services that were hitherto not practicable because of excessive costs will become possible since the costs can be spread over a greater number of people in the larger unit. Vocational and technical education will be one of the educational services benefited.

Building Costs

A rapidly increasing elementary and secondary school population has made it necessary that school districts build to meet the new demands. This building program has placed a heavy burden on the taxpayer. Hence, those who are kindly inclined toward building for vocational and technical education purposes find it difficult to secure the necessary public support. Only to the extent that this need is generally felt by the public will adequate vocational and technical education facilities be provided. It would appear that a public works program might supply the answer.

Curricular Offerings

The international complex has had its effect on curricular offerings; it has placed a renewed emphasis on such subjects as mathematics, science, and foreign languages. This change in emphasis has not been without its beneficial effects, but an unfortunate byproduct has been the neglect of the vocational program. After almost 5 years of the post-Sputnik era, however, the educational climate is again becoming favorable to vocational and technical education. A better and stronger program will emerge.

Financial Effort and Support

Increased building costs, increased salaries for professional personnel, and the general increase in costs across the board have strained the financial efforts of the majority of school districts. Few districts have been able to make the necessary effort, beyond the support of the usual school operations, to expand sufficiently the vocational offerings. Furthermore, the reimbursement for vocational and technical education has not been increased for almost 20 years. A readjustment in reimbursement is long overdue.

Attitude of School Administrators

Vocational and technical education is inexorably intertwined with the total educational program. This is as it should be. No part of the educational program should be more important than the whole. Yet, there needs to be a greater understanding and appreciation on the part of the general school administrator of the contribution that vocational and technical education

can make to the overall program. Likewise, it is incumbent upon the vocational administrator to understand and appreciate just how vocational and technical education fits into the total educational picture. All too often, the progress and direction of the vocational program is determined by individuals in authority who have no real knowledge of or interest in the program, or, on the other hand, by individuals who know vocational education but do not see its relation to the whole. Greater utilization of advisory committees, which are mandatory for area technical schools in Pennsylvania, should help to insure greater understanding and better balanced programs.

Guidance

Guidance personnel and school counselors have been at a disadvantage because of heavy work loads. Many have felt more secure in guiding college-bound students than the vocationally inclined students. From their own experience and training most counselors know the college world better than they do the vocational world. Furthermore, parents are likely to insist that their children be guided into college. In some cases the student who possesses above-average ability has been "guided out" of the vocational and technical education program, regardless of his interest in a technical field requiring as much ability on his part as a formal college program. Fortunately, guidance personnel are improving in numbers and quality, and better guidance information is becoming available to them.

Segmented Vocational Education

Not all of the ills that have befallen vocational education stem from causes outside of this field. Much of the difficulty is directly attributable to the people who are most closely associated with the program. Traditionally, vocational education has been segmented into the various services. There has been little crossover from one service area to another in meeting the needs of the individual student. Yet, an analysis of the needs of the student may indicate that a combination of two or more services may be required to meet his needs. Much remains to be done in this respect. Vocational and technical education will never attain its greatest potential until the needs of each student are fully analyzed and an educational program is developed for him, based on the possible contributions of all the educational services, vocational and otherwise, that can best help him attain maximum self-realization.

Cooperation of Various State Agencies

Educators must come to the complete realization that they do not and cannot operate in a vacuum. There must be greater cooperation with other agencies at all levels — local, state, and federal — if the greatest good for the greatest number is to be achieved. Experience in the Commonwealth of Pennsylvania under the State Program of Retraining and under the Area Redevelopment Act has shown that such cooperation is not only desirable but possible. Greater strides in this direction will be made under the impact of the Manpower Development and Training Act, which is now being implemented.

What of the Future?

It is most difficult to predict precisely what course the program of vocational and technical education will take in the future because of the many intangibles that are involved. But despite the dangers that are inherent in prognostication, the following statements are made with some feeling of confidence.

Vocational and technical education in Pennsylvania is on the threshold of a period of great growth and progress. There will be greater acceptance of the program by more and more people.

The indications are that there will be increased support of the program at both the local and state level.

Educators in the vocational field will tend to work "across the board" in meeting the needs of the youth and adults to be served.

Business education (office occupations), although not presently reimbursed from either state or federal funds, will assume a position of increasing importance in the field of vocational education. Programs in this area are being subsidized under the State Retraining Plan, and this practice is apt to be extended under the Manpower Development and Training Act.

Technical education will increase at the post-high-school level. Technical education may also be offered in the state colleges of the Commonwealth and be reimbursed from both state and federal sources.

Guidance and counseling services will become more realistic and will result in the enrollment of more students of high quality in vocational education and in better service to those of lesser abilities.

In addition to increased support for vocational and technical education programs, greater incentive to establish and maintain such programs will be created by providing for more reimbursement payments in advance. Advance payments will have a stimulatory effect.

Advisory committees will increase in numbers and in importance. These committees are essential in order to insure that the needs of those to be served will be met.

Finally, more area technical schools will be built. School district reorganization will make financing more feasible. Funds for building purposes may become available from both state and federal sources. This will encourage school districts to redirect some of their resources into technical schools. Pressures will build up to use technical school facilities for retraining the unemployed and underemployed under the new federal retraining acts. All of these will combine to make many area technical schools a reality in the next few years.

IX. Vocational and Related Education in Florida

By G. W. Neubauer[1]

Population Concentration and Distribution of the Labor Force

Florida has 67 counties. The northern half of the counties contains approximately 26 percent of the population, the central one-third contains 40 percent, and the southern one-sixth contains 34 percent.

Most industrial and technical development is concentrated along the two coasts of central and southern Florida and in certain interior counties in the center of the state. However, the eastern and western extremes of the northern section, primarily the Pensacola area and Jacksonville, contain extensive concentrations of industrial and military establishments that require many technical personnel.

As to agriculture, general farming prevails in the northern and western part of the state, citrus production and cattle raising in the central portion, and truck farming and sugar cane growing in the southern portion.

Florida's program of vocational and related education in general reflects its industrial and occupational structure. In 1960 all of the 67 counties supported at least 1 vocational service. Nearly all had agriculture programs; three-fifths had business, distributive, and cooperative education programs; two-thirds had industrial education; and all had home economics education programs.

State Administrative Structure for Vocational and Related Education

The State Board of Education, chaired by the Governor and with the State Superintendent of Public Instruction serving as secretary and executive officer, is also the State Board for Vocational Education. The other members include the Secretary of State, the Attorney General, and the State Treasurer. Through the State Director of Vocational and General Adult Education, the State Board is administratively responsible for the total program of vocational and technical education in the state and for its articulation with other state educational services.

The Division of Vocational and General Adult Education is one of seven divisions in the State Department of Education having the primary purpose of providing consultative services relating to specialized aspects of the educational programs of the respective counties. This division, headed by the State Director, is responsible for administering, coordinating, supervising, and promoting vocational and general adult education in the state, including the preparation of vocational and related education teachers.

The division consists of five sections, each headed by a State Supervisor. These sections include Vocational Agriculture; Vocational Business, Distributive and Cooperative Education; Vocational Home Economics Education; Vocational Industrial Education; and General Adult Education. Of these, Vocational Business Education, Diversified Cooperative Training, and General Adult Education are supported entirely by state and local funds. In addition, a Consultant for Technical Education and a Consultant for Industrial Arts are administratively attached to the Industrial Education section. A Consultant for Business Education, responsible for vocational and general business education, is part of the Business, Distributive, and Cooperative Education section.

Each vocational section has several area supervisors who work under the direction of the section head. These supervisors, through frequent visitations to local centers, supervise program operation, determine adequacy of offerings and facilities, assist in improving instructional effectiveness, and review placement and followup of students and graduates. In addition, they make sure that state and federal funds are spent in conformity with regulations of the State Board and the requirements of the Florida State Plan for Vocational Education; and they recommend schools that meet established standards for reimbursement.

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Local Operational Structure for Vocational and Related Education

The Florida public school system, which includes vocational, general adult, and related education, is a county system. There is no provision for autonomous city organizations or independent school districts. Hence, the responsibility for all educational activities in the respective counties is ultimately lodged in the county superintendent and the county board of public instruction.

The county board consists of five members. One is selected from each of the five county board residence districts into which every county is divided. Although elected from residence districts, the board members are selected by all qualified voters of the county and represent the entire county instead of single districts.

The county superintendent is elected for a four-year term by the qualified voters of the county in 64 of the 67 counties. In the remainder, he is appointed by the county board for a four-year term, which may be renewed indefinitely.

Vocational education and general education are equally important parts of the state's minimum foundation program, passed by the Legislature in 1947 to ensure at least minimum educational opportunities for all Florida children. County educational programs are operated with minimum foundation program units, allocated for different purposes such as instruction, administration, supervision, and student transportation.

The amount of money received by a county from the minimum foundation program is based upon student average daily attendance and the number, rank, and teaching experience of teachers. Rank refers to the professional qualifications of the teacher; for example, the degree he holds, or its equivalent, and the amount of college work completed. The equivalency provision is particularly important to industrial and technical education teachers and to part-time teachers of vocational subjects who frequently have extensive work experience but only a minimum of professional preparation.

Instructional units are granted to the counties on the basis of average daily attendance, which, for vocational courses, is half that required for general education subjects. For example, if the enrollment of a school is large enough to require the maintenance of an average daily attendance of approximately 26 students, a full instructional unit is granted in vocational classes if the instructor maintains a minimum average daily attendance of 13. If enrollment falls below the minimum, the financial value of the unit is prorated. The advantage in favor of vocational courses is allowed in order to compensate for the greater cost in coordinating such courses. It is not intended that county school systems will be supported exclusively from minimum foundation program funds. Each county is expected to contribute substantially more from its own revenues in terms of its resources.

The size of a county's population determines the immediate administrative structure under which the county vocational program operates. The state plan stipulates that counties with a population of 50,000 or more shall appoint a local director of vocational education who will be assisted by appropriate supervisory personnel as program growth requires.

In counties having fewer than 50,000 people but using 8 or more vocational instructional units, a local director may be appointed or a vocational supervisor or coordinator may be designated to act in that capacity. In counties using fewer than eight vocational units of all types, a vocational teacher, supervisor, or coordinator may be assigned to assist the county superintendent in administering the program.

Types of Schools Conducting Vocational and Technical Education Programs

Vocational and technical education in Florida is conducted at a number of instructional levels and in a variety of institutions. The institutions include regular, vocational, vocational-technical, and comprehensive high schools; vocational schools; junior colleges; adult centers; and an area administrative structure.

A comprehensive high school provides preparation for a variety of occupations. For lack of a more explicit definition, a comprehensive high school is one that offers vocational courses in at least three federally reimbursable areas and includes four or more of the following in its curriculum: agriculture, distributive education, cooperative education, home economics, industrial education, and technical education. At present, Florida has 49 comprehensive high schools, but more are under construction or in the planning stage. All but five of the remaining secondary schools are regular high schools that either provide preparation in a number of vocational areas — only one or two of which are federally reimbursable — or make no provision for vocational education.

Four of the remaining five are vocational high schools, and the fifth is a vocational-technical high school. The vocational and vocational-technical high schools are located in Jacksonville, Tampa, and Pensacola — the oldest industrial areas of the state. They were established during the 1940's and early 1950's to prepare non-college-bound youth for business, clerical, and industrial-technical occupations. Although the vocational high school concept has given way to emphasis upon comprehensive high schools, the existing vocational facilities are being continued, at least for the present. The college preparatory and general curricula in the vocational schools are more restricted than similar curricula in comprehensive high schools. Greater emphasis is placed upon occupational preparation, and

a more extensive vocational curriculum is provided for youth and adults than is found in all but a few comprehensive high schools. Nevertheless, it is considered more desirable to decentralize vocational education opportunities because students in comprehensive high schools have access to more diversified curricula and activities while learning an occupation.

In addition to regular and comprehensive high schools and vocational and vocational-technical high schools, the state has 17 special vocational schools located in 14 counties. Four of these are single-purpose schools in that they enroll only adults for practical nursing or law enforcement training. A fifth is a publicly supported aviation school offering courses for both high school students and adults. Four of the remaining 12 are adult centers providing preparatory and extension training for out-of-school enrollees only. Vocational courses for high school students in these four counties are included in the curricula of the secondary schools. In the remaining eight, a variety of vocational courses is offered for high school students and adults alike. These eight are located in seven of the more densely populated counties in which industrial education in the high schools is not extensively developed.

All of the schools are under the control of the board of public instruction and the county superintendent of the county in which they are located. One, the Mary Karl Vocational School, is an administrative division of the Daytona Beach Junior College, but it is operated with county funds apart from the junior college budget.

Two of the schools were in operation before the Second World War; they evolved from the "opportunity schools" designed to train people for office occupations. Both are a part of the public school system and are operated with state and local funds. Another was established and developed as the result of a private grant for stimulating vocational education in a single county. Most of the remainder were outgrowths of the War Production Training Program of World War II. Since the war, program development has been stimulated by federal grants-in-aid for promoting vocational education, including the establishment of practical nurse training facilities. Training for technicians has, of course, been greatly facilitated by Title VIII provisions of the National Defense Education Act.

The Junior College

The junior college structure of Florida also reflects the county unit system of educational organization. The junior colleges, presently numbering 25, are administratively responsible to the State Board of Education through the State Superintendent of Public Instruction. Locally, however, they are controlled, through the county superintendent, by the county boards of public instruction of the respective counties in which they are located.

The number of counties served by a junior college depends upon potential student population and local readiness to support it. Some colleges serve a single county, while others enroll students from two, three, or more counties. It is believed that a county or group of counties must have a minimum potential junior college enrollment of 400 students. When a junior college is established through joint effort of two or more counties, the county in which the school is located becomes the county of control, and the others are known as cooperating counties.

Within the State Department of Education is a Division of Community Junior Colleges. This division helps the junior colleges develop programs that meet the needs of the counties they serve, and it helps them carry out the duties and responsibilities with which they have been charged by law or State Board directive.

The State Junior College Advisory Board, a seven-member lay committee appointed by the Governor, makes recommendations to the State Board of Education relating to personnel, curricula, finance, and the articulation and coordination of junior colleges with other educational agencies. It also reviews capital outlay requests and recommends the establishment of new junior college areas.

Other state agencies with which liaison is maintained are the State Board of Control, which supervises the operation of the state's university system, the Florida Educational Television Commission, and the Professional Committee for Relating Public Secondary and Higher Education.

Because of the additional responsibility that junior colleges place upon county boards, Florida law requires that a local advisory committee consisting of representatives of the county or counties served shall be appointed. This committee has a local function similar to that of the State Junior College Advisory Board. It assists the junior college and makes recommendations to the county board in matters relating to finance, curriculum, and general policies. In addition, the committee and the county superintendent must concur in the nomination of a president, who is confirmed by the county board and appointed by the State Board of Education. Members are nominated by the county board according to a formula established by State Board regulations and appointed by the State Board of Education.

Usually a junior college begins operations in a temporary facility for which the local school board assumes the cost of lease or rental. A permanent site, however, must be agreed upon by the counties to be served and must be approved by the State Board of Education with respect to size, accessibility, topography, and related requirements. Permanent sites must be provided by local school boards. Up to the present time, however, most of the sites have been obtained as

gifts from interested individuals, groups, or governmental agencies.

The state bears the initial cost of the construction of permanent facilities and equipment as specified to meet minimum educational requirements. The size of the legislative appropriation for this purpose is determined by the full-time equivalent student enrollment in the school during the fall term of the year preceding the request. The formula used is modified periodically to reflect growing enrollments and rising costs.

The minimum foundation program includes $400 per instructional unit for capital outlay to replace obsolete buildings and to accommodate limited enrollment growth. These funds, or any part thereof, may be accumulated by the county board to be used for building or pledged for the repayment of bonds issued by the State Department of Education for that purpose. Basic current operating costs are met through the minimum foundation program, which is financed jointly by the state and the cooperating counties. This basic support program is supplemented by minimum student fees and by additional contributions from local tax sources.

The State Legislature appropriates the state's share of current operating costs and allocates construction funds; the State Department of Education provides consultative assistance and establishes the general regulative framework within which the colleges operate; and the State Junior College Advisory Board reflects public attitude regarding the total program. Nevertheless, most decisions governing specific programs and policies are made locally since it is believed that local control makes junior colleges more responsive to local needs.

As a result, there is closer articulation between the programs of the college and other educational agencies in the county or cooperating counties. For example, duplication of effort in providing vocational, technical, and general adult education is minimized; and facilities are used more effectively. The college is more sensitive to the need for providing a variety of community services and to the importance of offering training programs in technical and other occupations as needs are identified by local surveys. Industry, civic and fraternal groups, and the community generally have a closer feeling of identification with the college and are more interested in ensuring that it carries out its responsibilities effectively. In addition, costs may be more easily adjusted to the economic status of cooperating counties, and the minimum program assured by state funds may be extended through greater local effort.

Junior colleges in Florida serve several different purposes, all quite distinct. They reduce enrollment pressures on the universities by permitting high school graduates to take their early college work at two-year institutions, which are frequently within commuting distance of their homes. In addition, they provide educational and cultural services for adults in the communities in which they are located and for the counties which they serve. To a more limited degree, they offer preparatory and extension training in a variety of trades, technologies, and occupations, so that the vocational needs of adults are more adequately met.

To accomplish these purposes, three types of curricula are provided in accordance with regulations of the Florida State Board of Education. One is the college parallel curriculum consisting of academic transferable courses. Another includes general cultural and service courses and activities for adults in the counties served. The third, also for adults, consists of terminal vocational and technical courses which reflect local and state employment needs.

All of the junior colleges have relatively extensive college-parallel curricula. Many also have technical education programs. Most offer general and cultural courses and services. Terminal vocational training, however, particularly in agricultural, distributive, and industrial occupations, is not quite so common.

A number of factors help to account for this lack. Not the least of these is the cost of equipping appropriate training facilities. Probably equally important, however, are two further deficiencies. One is lack of understanding of employment requirements on the part of many college faculties. The other is lack of experience with vocational programs on the part of many administrators.

This makes the selection of the president of a junior college a highly critical matter, for if his institution is to carry out satisfactorily the various responsibilities assigned to it in the state's educational structure, he must understand and appreciate the significance of the vocational areas of education as well as the academic.

Use of State and Local Advisory Committees

State and local advisory committees contribute greatly to the effectiveness of vocational education. Most of them meet periodically, and they help to keep vocational educators abreast of changing occupational requirements and of technological changes affecting training for specific vocations.

According to provisions of the Florida State Plan for Vocational Education, state advisory committees for agriculture, distributive education, home economics, industrial education, and technical education shall consist of outstanding people in the respective fields. They are nominated by the appropriate state supervisors, recommended by the State Director, and appointed for one- to three-year terms by the State Superintendent. A state committee for industrial arts has also been established. Nonvocational home economics and general business education, however, use the vocational homemaking, business, and distributive and cooperative education advisory committees.

Slightly under half of the vocational agriculture departments had local advisory committees during the past school year. The principal of the school involved, in consultation with the agriculture teacher, nominates persons for membership who are interested in agricultural education, and they are appointed by the county school board, usually for a two-year term.

A separate local advisory committee is not always organized for each cooperative program. Sometimes a single committee serves all such programs in a given high school or county. It is recommended that the committee be composed of representatives of business, the press, the school, industry, and civic organizations interested in youth. Members are nominated by the teacher-coordinator in consultation with the school principal and are appointed by the county superintendent for terms which may vary in length from county to county. In several communities, advisory committees also work with adult vocational business and distributive programs.

Considerable attention has been devoted to stimulating the use of local advisory committees in industrial education during the past 2 years, with gratifying results. A majority of counties with industrial education programs have countywide general advisory committees to assist in county program planning. The county superintendent appoints the members for one- or two-year terms from nominations presented by the local director. It is recommended that, insofar as possible, nominations reflect organizations directly concerned with industrial training, including representation from both employer and employee groups. Joint apprenticeship committees are, of course, the advisory committees for apprenticeship-related classes such as masonry, plumbing, carpentry, electricity, and sheet metal work.

Training programs in which occupation or craft advisory committees are widely used are those preparing practical nurses, automotive mechanics, cosmetologists, aircraft mechanics, and dental assistants. The members of these committees are also appointed by the county superintendent for 1 or 2 years upon the recommendation of the local director in consultation with the principal or coordinator of the program concerned. The committees consist of representatives of the craft or occupation in which training is being given, and should include membership from both management and employee groups.

Nearly all technician training programs have local advisory committees. Because much technical education is provided within the junior college structure, personnel of the institutions offering the programs are involved in selecting the committee members. For programs outside of junior colleges, recommendations for membership are made by the local director or the day and evening coordinators to the county superintendent, who appoints the members. In junior college programs, recommendations from the dean of technical education go to the junior college president, who makes the appointments. To eliminate dual committees, it is recommended that the local director's office and junior college personnel concur in the nominations made to the county superintendent for appointment.

Considerable program strength is provided by local advisory committees, selected and approved by local school authorities, who are familiar with training needs and opportunities in the communities in which they live.

Guidance and Vocational Education

Another important key to a successful vocational education program is adequate student guidance. Requirements for certification as a guidance counselor in Florida schools have been established by the State Department of Education. The requirements include a combination of teaching experience and professional course work. Beginning in 1964, however, a master's degree in guidance will also be required.

At present a minimum of 2 years of classroom experience is mandatory. Approximately 15 semester hours of graduate work must be distributed among the following technical areas: principles of guidance; individual analysis, including the administration and interpretation of tests, rating scales, and personal records; counseling procedures; occupational information; and administration of guidance services. Another 15 semester hours must be taken in the areas of psychology, education, and economics and sociology, with a minimum of 3 semester hours in each area.

As with many other educational services, the developmental level of student guidance programs depends upon the interest of individual school personnel and the economic status of the respective counties. Some schools have extensive guidance programs, including educational and psychological testing and interpretation, counseling, and placement services. These are available to elementary and high school students and to adults. In other schools, guidance is primarily the responsibility of the classroom teacher.

The State Department of Education stimulates continuing interest in guidance through periodic state conferences and county workshops. Guidance releases, which are distributed at quarterly intervals, include discussions of problems confronting guidance personnel and lists of publications and materials of interest to them. It is recognized that there is a pressing need in most counties for guidance services for adults. In a few high schools, counselors remain after school hours to work with adults, but most communities do not provide this service.

Dade County, however, is an exception. An extensive adult guidance program, with a staff of certified adult counselors and closely articulated with the high school program, has been developed. Among the services provided are:

1. Reviewing the personal, educational, and occupational histories of individuals as an aid in developing self-understanding.

2. Administering and interpreting psychological and educational tests.

3. Counseling with individual adults on the basis of test results, and interpreting the implications of the results for educational, occupational, and personal adjustment.

4. Helping adults to plan a general or occupational education program, if they so desire.

5. Helping adults to find jobs when they are ready for employment.

Among the tests and records used to determine educational achievement and aptitude for training in specialized occupations are General Achievement Tests, Otis Tests of Mental Ability, General Educational Development Tests, Kuder Preference Record, School and College Abilities Test, and the California Tests of Reading and Arithmetic. Experimentation is carried on to determine the prognostic value of various instruments. Results are analyzed and provide assistance in revising admission requirements to training for numerous specialized vocations.

Selected Program Developments

Employment needs, the financial condition of the county, and the demand for training are the most important factors determining the vocational services represented and the number and kinds of courses offered. Some institutions have facilities for offering all vocational services, including preparatory and extension training in a dozen or more industrial and technical occupations. In others, offerings are extremely limited and may be confined to a single service.

The programs and institutions described below are not typical. Indeed, they are discussed precisely for that reason. However, each represents the response of a single county or group of counties to particular training needs and problems. Space does not permit a report on all operational patterns in use, but none are flawless. However, they demonstrate that considerable program flexibility can be achieved.

Chipola Area Education Project

An innovation of considerable promise for assisting in the further development of seven counties in northwest Florida is the Chipola Area Education Project. All the counties involved have common problems and cultural characteristics. Their economies are primarily agricultural. All are relatively sparsely populated, many family incomes are comparatively low, and the educational level of adults is somewhat under that of much of the remainder of the state.

Four of the seven counties have lost in population since 1940. The area experienced a net decline of approximately a thousand people during the past two decades. In 1940, about 5 percent of the state's population lived in the seven counties. By 1960, however, the proportion had dropped to slightly under 2 percent. This reflects not only the population loss in the seven-county area, but the relatively faster growth rate of other parts of the state.

The median incomes of families in six of the seven counties ranged from almost $2,600 to $1,450 below the state median. In the seventh, however, it was $135 above the state median. In four of the seven counties, over half the families had incomes below $3,000. In one, the proportion was 2 in 3, and the lowest ratio was 3 in 10. In all the counties, the median educational level of the people who were 25 years of age and over ranged from 1.5 to almost 3 years below the state median of 10.9 school years completed.

The age distribution of the population has also altered materially. In 1940 well over half (54.6 percent) were in the "under 25" age group. By 1960 the proportion had dropped to 48 percent. During the same period the "25 to 44" age category declined from 26.0 percent to 21.8 percent, while the ratio of those "45 and over" jumped from 19.3 percent to approximately 29.3 percent. These data demonstrate the extent to which the younger, more productive age groups have left the region to find employment. And this, in turn, gets to the very heart of the problem.

The purpose of the Area Education Project is to increase educational opportunities and services available to youth in small rural high schools. Potential training areas were determined through occupational interest inventories in which junior and senior high school students identified specific occupations that appealed to them. Although training plans are geared primarily to the needs of West Florida counties, the training also prepares youth for employment in occupations of their interest outside of these counties.

With funds provided by the National Defense Education Act, a guidance and testing program was established with headquarters at a junior college located in one of the seven counties participating in the project. Because the funds available to any single county would have been inadequate to provide the services desired, the cooperative multicounty project was developed.

To aid in establishing guidance and training services that would meet the needs of the greatest number of students, an advisory board consisting of the seven county superintendents and the project coordinator was organized. The coordinator of the project is also project director. He works with coordinating committees of school personnel in each county. However, the advisory board must approve all actions taken in connection with the program.

Most of the high schools in the seven counties are comparatively small, making it difficult and costly to add further vocational courses in the individual schools. Most of them offer vocational agriculture and home

economics, and some have business and cooperative education, but finding an adequate number of suitable training agencies for the latter program is a serious problem.

Considerable attention was devoted to surveying and testing high school students to determine their interests, aptitudes, IQ's, and achievement levels. From these data and the results of a survey on the need for technicians in Florida industries, conducted by the State Department of Education, a number of additional training areas, particularly in industrial-technical education, were identified. Among these were electronic technology, drafting and design technology, and automotive mechanics. Electronic technology is now being taught within the junior college structure, and drafting and design technology will soon be offered, but automotive mechanics has been delayed because funds are lacking for building and equipping an instructional area. It is planned, also, to offer additional vocational courses such as business education and cosmetology as demand and finances permit.

Post-high-school students are transported for these courses at the junior college at the expense of the counties in which the students live.

The problem of extending such vocational education opportunities to boys and girls who will not attend the junior college and who need the training before graduating from high school still remains to be solved, for the services of the junior college have not been extended to them. They can enroll only in vocational education courses offered in the high schools that they attend.

There are several approaches to this problem. Industrial arts, consisting largely of woodworking, is offered in some high schools. One possibility is to establish additional industrial arts programs emphasizing instruction in areas having immediate industrial application. Another is to introduce one or more vocational industrial courses such as automotive mechanics and drafting in a single high school center to serve the students of more than one school. Still another is to provide more comprehensive curricula in the high schools of the respective counties. But lack of funds has severely restricted moves in any of these directions, however desirable they may be. The dual use of facilities by vocational agriculture and industrial arts remains still another possibility.

School officials in the area are aware of the additional training opportunities which could be made available for adults if facilities in secondary centers were expanded. Ultimately, it is planned to use junior college facilities for technical extension and other adult courses in areas such as radio and TV repair and servicing.

Neither the coordinator of the project nor the only coordinator of vocational and technical education in the area is a member of the junior college staff. Both are on the payroll of a single county but work with school officials in the seven counties in developing ways of meeting the training and guidance needs of high school students and adults in the area.

Among the benefits deriving from the project are (1) the provision of extensive guidance and testing services, which none of the counties could individually afford, (2) the establishment of some post-high-school industrial and technical training, and (3) a growing awareness on the part of many academic teachers of the range of student interests and aptitudes not related to college work.

The greatest single problem, in spite of federal expenditures, is a lack of funds, which severely limits the provision of needed training facilities. Closely related, however, is the need to make the best possible use of existing funds. This may involve the establishment of one or more high school centers to provide additional vocational education for youth in the seven-county area. Further demonstration of such need may be required, together with closer administrative coordination, but a workable pattern has been established.

Dade County Vocational-Technical Program

In 1960 Dade County and metropolitan Miami contained approximately 1 in 5 of the state's population and 1 in 6 of the school children in grades 1-12. To this total has been added a growing number of Cuban refugees — both children and adults — who are fleeing the Castro dictatorship.

Literacy education for Cuban refugees. One of the big problems confronting Dade County is assimilating these newcomers into the community, and a major difficulty is that most of them do not speak English. Before they can find jobs or benefit from vocational instruction, they must acquire a minimum command of English. Therefore, much attention is being given in the regular day schools and in adult general education courses to literacy education or intensive English.

It has been estimated that between 11,000 and 12,000 Cuban refugee youngsters are enrolled in grades 1-12. In addition, an average of 9,000 adults are constantly being taught by a staff ranging variously from 135 to 200 full-time and part-time teachers who serve approximately 20,000 adults annually. Certified teachers who have some command of Spanish and who volunteer their services are used. Retired teachers and others who had left the profession have been recruited. College graduates desiring to be of help in the emergency have been granted temporary certificates to teach adult classes. Even so, it has frequently been necessary to conduct classes through interpreters. A six-hour orientation workshop is held for personnel participating in the program, and a full-time person is employed to coordinate instructional activities.

Intensive English courses for adults are given in evening and adult high school centers in full-time and part-time programs. Some classes operate during the regular

school day, but most are held during late afternoon and evening hours.

Instruction is provided on three levels. A student must achieve a minimum score, equivalent to eighth-grade reading competence, on a standardized reading achievement test before enrolling in a vocational course. If mathematics is important in the occupation for which training is desired, a student must also demonstrate satisfactory competence on a standardized mathematics achievement test.

It has been found that most refugee youngsters in high school classes are not yet sufficiently proficient in English to profit from vocational instruction. Adults demonstrate most interest and ability in vocational business subjects and hotel and restaurant training. Relatively few have entered industrial or technical education courses.

Preindustrial and pretechnical courses. The vocational and related education program incorporates several innovations which help to meet student needs. Among these are the preindustrial and pretechnical courses offered in a number of high schools having appropriate instructional facilities. The courses are neither industrial arts nor vocational education. They are intended primarily for 10th-graders who are not yet eligible for industrial, technical, or cooperative education. Included are prevocational courses in cabinet and millwork, cooking and baking, dry cleaning and laundry, electronics, machine shop, printing, radio and TV repair, tailoring, and trowel trades. The purpose of these courses is to develop basic concepts and skills in the vocational areas to which they provide an introduction. In addition, they help to determine the competence of youngsters in the areas selected for study and to equip them with a fund of understandings permitting faster progress in later vocational work.

However, the "pre" courses are not required of 10th-graders, nor are they prerequisites for enrollment in vocational courses. They are one of three elective sequences provided for 10th-grade students interested in industrial-technical education. The other two are industrial arts and technical education.

Technical education. Technical education in Florida is given at three instructional levels and in several types of schools. At the secondary level, technical preparatory courses are taught in comprehensive and vocational-technical high schools. Most technical preparatory training, however, is done in junior colleges. Extension classes, on the other hand, use the facilities of comprehensive high schools, junior colleges, and adult centers. At present, one high school in Dade County has courses in construction and in electronic and mechanical technology. The rest of the preparatory work is located on the Dade County Junior College Campus.

Eleven preparatory training curricula for technicians are offered by the junior college. These include technological courses in aeronautics, air conditioning and refrigeration, civil engineering, construction, data processing, electronics, graphic arts, instruments, machine drafting and design, and mechanics; and courses in industrial management and supervision. These offerings are not considered technician training courses. Because of the difficulties so frequently encountered in attempting to define a technician, the courses are simply intended to prepare for employment in technical occupations. Credits are earned for these courses, but no particular attention is given to their transfer value. If a course is needed, it is provided. It is notable, however, that credits in many of the above programs are accepted by four-year institutions.

In addition, the college offers technical extension courses in a number of areas. One of the most popular is industrial management and supervision, which is limited only by the availability of qualified instructors. Among the groups and agencies served are the Dade County Metropolitan Government, the fire and police chiefs of the county, hotel managers, postal employees, and a number of aviation companies.

Electronic data processing. Electronic equipment for processing educational data is in use in a number of more densely populated counties, including Dade County. Computers are being used to improve record keeping and to expedite course registration procedures. Although only limited applications to problem solving exist at present, it is believed that interest in such utilization will grow. In a recent survey conducted in the county, teachers in a variety of instructional areas, including industrial arts and vocational education, expressed considerable interest in learning more about programmed instruction.

As noted above, a two-year curriculum leading to an associate degree in data processing is offered by the junior college. In addition, numerous short courses and extension courses are given, and certain of the preparatory offerings are elected by prebusiness, premathematics, and preengineering students.

Testing, guidance, and student selection. Students are admitted in two ways to high school vocational courses or to technical classes in the one high school offering them. They may perform satisfactorily in a 10th-grade industrial arts or prevocational course related to the vocation they desire to study, or they may meet minimum requirements on standardized tests of mental ability, reading, and arithmetic skills. Minimum and probationary percentile requirements are higher for technician trainees than for other vocational students. Approximately half of the admissions to high school industrial and technical courses are probationary.

Contrary to common practice, high school students may enter the industrial or technical education program when they are in the 12th grade. Those electing a technical specialization can complete their second year

ot training in the junior college. Those who are industrial education trainees may enroll in an adult program or take a closely related junior college course for their second year of training. This flexibility stems from the close articulation of secondary vocational and technical programs with post-high-school and adult education permitted by local control of the county's educational facilities.

All technician trainees enrolled in junior college preparatory courses take technical aptitude and achievement tests administered by the Florida Industrial Commission. In addition, the college is cooperating in the United States Office of Education technician testing program involving four instructional areas: aeronautical, electronic, mechanical, and machine design technology.

In the adult vocational education program, minimum standards have been established for admission to training for every trade taught. Test batteries, varying by trades, have been designed to determine an applicant's aptness for specific training and his probable success in the occupation.[2] To ensure that training meets current occupational demands, every instructor has a course outline which has been approved by the curriculum committee.

About 85 percent of all adults are processed through the adult guidance program before enrolling for a course. Most of the remainder are home economics students who are taking courses for self-improvement, but some evening trade extension enrollees are also exempt. The latter, however, must present a letter or other evidence indicating that they are or have been employed in the occupation for which training is being given or in one which is closely allied.

Nearly all adults take the Gray-Votaw-Rogers reading and mathematical achievement test battery. An applicant failing to achieve the minimum required scores may retake the tests after additional study. If he passes, he is further screened by members of the appropriate craft committee and by instructional and guidance personnel who provide additional counsel based upon his test performance.

If problems develop after the student is admitted to training, his case is reviewed. Upon the outcome of further counseling, he is retained or dropped from the course. If it is deemed desirable that he discontinue training, he is encouraged to establish new vocational goals, and may take a general aptitude test battery to aid in determining such goals.

Placement and followup of students and graduates are an integral part of the adult guidance service. The current and potential labor market is constantly studied to determine present demands and changing job requirements. The student's counselor works with the placement officer and instructor in contacting prospective employers so that the student is placed to his own and the employer's best advantage.

The trade instructor assumes major responsibility for placing his students because he is most familiar with their qualifications and employer needs. The placement office, on the other hand, handles most placements for business education graduates and for students seeking part-time jobs. Monthly placement reports are compiled, and a complete record for all programs is developed periodically. Close liaison with the Florida Employment Service is also maintained.

Program supervisors and coordinators cooperate with the Guidance Department in planning and conducting followup studies of each past year's graduates to determine the jobs they hold and their assessment of training effectiveness. In addition, employers are contacted to evaluate trainee performance as related to the course studied.

Provision for low achievers. It is recognized that a certain proportion of youth lack the inherent capacity to succeed in a typical high school program. Yet, they will become job seekers and need the opportunity to become as self-reliant as possible. To keep these youth in school and to provide them a level of education commensurate with their abilities, a diversified mechanics course is taught in three high schools by specially qualified teachers. The course is intended for 10th-, 11th-, and 12th-graders having IQ ratings of 85 or less; it consists primarily of metal fabrication or production work; it continues for 2 or 3 periods daily. During the remainder of the school day the students take selected academic courses in which they are able to achieve some measure of success.

Projected program modifications. In the near future, technical education curricula will be evaluated to determine if they are meeting changing employment needs as identified by appropriate advisory committees. It is also anticipated that some technical training in the junior college will be organized on a cooperative basis. The student will attend school for a part of the time and work part time at a job requiring technical proficiency of the type which he is studying.

Upon the advice of appropriate advisory committees, and due to local employment conditions and the results of program evaluation, a number of courses not meeting established objectives have been discontinued and replaced by new classes conforming more closely to current employment demands. The result has been an increase rather than a decline in enrollment. It is anticipated that other courses, particularly in the extension program, will be examined closely to ensure their continuing sensitivity to changing occupational requirements.

[2]At the time of writing, students training to become food handlers had been tested, and the program had been evaluated. A test battery in the hotel workers' training program was in process of being evaluated to determine its effectiveness as a screening device. In part, the validation process consisted of checking the instructor's estimate of a student's class performance against his scores on a test battery.

Industrial-Technical Education at Daytona Beach Junior College

The Daytona Beach Junior College is one which provides a very diversified curriculum, including 12 different industrial education programs and 2 technology programs. In addition, trade and technical extension courses are given within the administrative structure of the college.

Terminal industrial education is provided in the Mary Karl Vocational Division, an administrative part of the college. The courses include appliance service; automotive mechanics; cabinet making, millwork, and furniture making; cosmetology; drafting; gasoline engine mechanics; industrial electricity; industrial electronics; landscaping and industrial nursery work; photography and photo finishing; practical nursing; printing; and watchmaking. Construction technology and electronics technology, on the other hand, are offered within the transfer division of the college. The trade extension program includes apprenticeship training in sheet metal, plumbing, carpentry, and electricity. A distributive education program is also provided, and the school includes a vocational rehabilitation center. Slightly under one-fourth of the total enrollment is made up of vocational students. These are primarily adults, but upon the recommendation of their principals, a small number of high school students are also taking vocational courses.

The Director of the Mary Karl Vocational Division is administratively responsible to the president of the college and, through him, to the county superintendent of public instruction. The same is true of the Director of the Adult Education Division, the Director of Technical Education, and the directors of the other divisions and services within the college structure.

If a county director of vocational education should be appointed to the county superintendent's staff, it is anticipated that he will work through the Director of the Mary Karl Vocational Division in matters relating to the college vocational program. In the high schools and other adult centers of the county, he will work with appropriate administrative personnel in these centers.

All adult vocational and technical education and all general adult education offered in the two counties served by the junior college are administratively a part of the junior college organization. One advantage is the centralized administrative control over vocational and general adult offerings in the area served by the college; another is the economies effected in providing the services requested. However, if the organization is to function effectively, adequate provision must be made for supervising its many facets, and budgetary responsibilities and controls must be clearly defined.

Pinellas County Technical Education Center

An innovation among Florida institutions providing technical education is the publicly supported two-year technical education center projected for Pinellas County and the Tampa Bay area. This center, the first of its kind in the state, grew out of a need expressed by industrial representatives for an institution that would be adequately equipped to provide technical preparatory, extension, and supervisory courses specifically reflecting immediate industrial requirements in the area.

Technological courses may be provided in mechanical drafting and design, machines, metallurgy, illustration, air conditioning and refrigeration, electronics, and in other fields for which a need is identified by school officials and advisory committees. The program offered will include only technical laboratory work and instruction in closely related areas, such as applied technical mathematics and science, technical report writing, and allied fields identified in cooperation with representatives of industry.

The center will give high school graduates of secondary school technical education programs a chance to continue their technical studies. It will aid people who want concentrated instruction in specific technical fields without having to meet the general educational requirements for an associate degree. When completed, staff and facilities will also be available to employed technicians, engineers, and other industrial personnel for short courses and extension courses and for other instructional and related services.

Conclusions

Each of the vocational programs reviewed above is the response of a county or group of counties to a problem. The Chipola Area Education Project, for example, dramatizes the difficulties encountered by sparsely populated and financially restricted counties.

Some counties have a relatively large number of high schools with small student bodies. In these, it is impossible to provide a reasonably comprehensive program of vocational offerings. In surveys of vocational programs in such counties, it is frequently recommended that a single high school be designated by county school officials to house a comprehensive vocational program, and that students from neighboring high schools in the county be transported to that school to take vocational courses not offered in the schools they attend. In the evenings, the facilities can be made available to adults for preparatory or extension training as employment demands require.

Additional area education projects can be developed by groups of adjoining counties with small high school populations. In the event a junior college is not available for a center, it will be necessary to construct an area center or to designate a centrally located high school to serve in that capacity. It will, of course, be necessary to make arrangements to transport high school students from neighboring counties to the center. However, such a procedure is already followed with junior

college students who are transported by school bus from the counties in which they live to the junior college serving their area.

It is believed that technological developments at Cape Canaveral and the needs of associated industries and services will create a demand for additional centers like that under construction in Pinellas County. Specialized training needs for employed technicians can best be met through short courses and extension courses offered in such centers. The facilities can also be used for intensive preparatory training of qualified people who are seeking immediate employment.

At the present time Florida has 49 comprehensive high schools. Others are under construction, however, and more are being planned. As the number increases, it is believed that a higher proportion of high school students will enroll in vocational courses. In 1960 slightly over 1 in 4 students in grades 9-12 took vocational courses. By far the greatest proportion, however, were enrolled in vocational agriculture and home economics. In view of the growing demand for trained clerical and sales people and for skilled workers and technicians, more emphasis is being given to extending educational opportunities in these areas in the newer high schools.

Potentially disastrous in its implications is the problem of youth who are dropping out of school before graduation. Lack of interest or ability in school subjects, a desire to become economically independent, or the need to assist in family support are among the principal sources of difficulty. Some help would probably result from scheduling industrial arts for greater numbers of youth. Making vocational education available at an earlier age for youth of lesser ability or dwindling school interest and providing more work experience programs might cause these youth to remain in school longer. In any event, they would be equipped with rudimentary skills to make them more employable when they leave school.

Extensive efforts are being made through conferences with junior college presidents and other administrative personnel to explore the role of the junior college in county programs of vocational education. Dade County demonstrates the advantages of close articulation between secondary school industrial and technical education programs and junior college and adult education programs. A similar situation exists with respect to vocational industrial education in a number of the 25 junior colleges, particularly if they share a campus with a secondary school. In such cases training facilities are not duplicated. Instead, they are used at different times by both high school and junior college students and are also available for extension courses. It is believed that this practice has considerable merit and can be extended to situations in which the schools do not have a common campus. A combination of appropriate administrative procedures and a common purpose are needed to accomplish this.

It is anticipated that statewide and local program development will be based increasingly upon the results of research. But this will not be possible until studies having predictive value are undertaken. Electronic data-processing equipment is indispensable in research. It is anticipated that future research designs will take greater advantage of the machine's vast potential so that it will not remain merely a tool for expediting the collection of administrative data and performing routine clerical calculations.

Florida is growing at a phenomenal rate. Advance is compounded upon advance in rocketry and in less spectacular industries and services as well. Farm income and output are rising, but the proportion of farmers is declining. More homes are being established, but more women are employed outside the home. More youth are in school, but many are not finishing. Factors such as these are part of today's social reality. All dramatize the need for more training and retraining, for adequate guidance for youth and adults, for more programs helping youth to determine their interests and capacities. These needs can be met promptly and with vision by a flexible program of vocational and related education.

X. Vocational Education in Kentucky

By E. P. Hilton[1]

According to census reports, Kentucky had a population of 2,944,806 in 1950 as compared to 3,038,156 in 1960. There were in 1960 about one million persons in the labor force, distributed among the professions and occupations approximately as follows:

Occupational Groups	*Percent*
Professional, technical, and kindred workers	6.1
Managers, officials, and proprietors, except farm	6.8
Farmers and farm managers	17.4
Farm laborers and foremen	7.4
Clerical and kindred workers	8.3
Sales workers	5.7
Craftsmen, foremen, and kindred workers	11.5
Operatives and kindred workers	19.9
Service workers, except private household	6.1
Laborers, except farm and mine	5.6
Private household workers	2.5
Not reporting	2.7

During the decade there was much shifting of workers among occupational groups. Some rural counties lost as much as 25 percent of their population. Agriculture is still the state's largest industry, however, and more workers are engaged in farming than in any other occupation. This will be true for many years to come. Even if the present downward trend in the number of farms and farm operators should continue over the next decade, the state will need a minimum of 3,000 new farm operators per year. In this day of modern technology these people must have training. Another important industry in the state is coal mining. The number of workers required in coal mining has also declined markedly due, among other things, to mechanization and automation. Other than in mining and farming, occupational groups have tended to follow the national pattern.

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Vocational Agriculture

In 1961 fewer than 3,000 boys graduated from high school with training in vocational agriculture. Recent followup studies of our students show that about one-third of those having taken vocational agriculture in high school actually farm. This means that only about one-third of the 3,000 new farm operators each year have received training in vocational agriculture in the high school program. Of the remaining 2,000 graduates in vocational agriculture, some enter vocations related to farming or vocations in which agricultural experience and training are very helpful; some enter industry based on the skills learned in farm mechanics classes; and others enroll in post-high-school trade and technical courses as a result of an interest aroused while in these classes.

Departments of vocational agriculture in the rural high schools are providing agricultural training for young men out of school and other adults who have just entered or are already established in farming. During the year 1960-1961, 2,181 young men just entering farming were enrolled in courses of instruction in agriculture. Most of the young farmer courses of study are set up on a four-year basis. This means that there are a few more than 500 completing the young farmer course each year. This is about one-sixth of the number that should be completing such courses.

Classes of instruction for older farm operators are offered each year to help existing farmers adjust to the changing practices in agriculture. A total of 4,757 of the 150,904 farm operators in the state were enrolled in such programs of instruction during the year 1960-1961. The regular high school teacher of vocational agriculture usually teaches one group of young farmers or adult farmers, and within the limits of available funds, additional teachers are employed to teach in the program. There are now in the state 15 teachers devoting full time and 5 teachers devoting part time to the teaching of adult farmers. All teachers employed for

young farmer and adult farmer programs are members of the high school faculty and are entitled to all the rights and privileges of other faculty members.

Vocational Home Economics

The 1960 census indicates that there were 851,867 households in Kentucky. During the school year 1960-1961, 25,854 high school students were enrolled in approved home economics programs in 317 high schools out of a total of 507 high schools in the state, and in addition, 6,065 persons were enrolled in noncredit adult homemaking classes. Instruction for adult homemakers may be given by the regular high school teacher or by special instructors. All persons teaching adults are employees of the local boards of education, and the local boards are reimbursed in full from state and federal funds for their salaries.

Only a small percentage of present or potential homemakers are receiving instruction in home economics to help them meet the everchanging demands and needs of homemaking. The program in the high schools is being limited by inadequate funds and lack of qualified personnel. Since most teachers of home economics have large classes of high school students, little time is left for instruction for adult homemakers, or for organization of adult classes and supervision of the special instructors. Requests are on file for more than 40 additional high school home economics teachers.

Distributive Education

Approximately 57,000 persons in the state are engaged in sales. Through our distributive education program, 763 high school students were being trained for this program during the year 1960-1961. The classes in distributive education are operated as a part of the local high school in cooperation with retail and wholesale stores in the community. Each student enrolled in a distributive education class is employed for 15 hours per week in some business and is following a supervised work program agreed upon by his teacher and his employer. In addition to the high school classes in the cooperative program, 1,927 persons already employed in the sales field received instruction to upgrade them in their work. The need for the training of persons in the sales and distribution field is not being met. Kentucky is a state of many small towns and villages, and in most high schools there is not enough demand to justify the employment of an instructor for distributive education; the present programs are found in our larger cities.

Trade and Technical Education

The training for technicians, craftsmen, foremen, operators, and service workers is carried on through vocational programs in trades and technical education. These combined occupational fields employ about 37.5 percent of the workers in the state. Only 4,637 persons were enrolled in preparatory training programs in these areas in the year 1960-1961. An additional 6,064 already employed received training on a part-time basis to help upgrade them in their work.

The Development of Area Vocational Schools

In Kentucky, all programs of trade and technical education are operated through area vocational schools. Although these schools are primarily postsecondary institutions, the high schools send their students to them for trade and technical training. The few community or junior colleges operating in the state have provided no vocational or technical training up to the present time.

A significant amount of vocational training is provided by private schools and industry. Private trade and technical schools serve a few people in select areas. Private business schools serve a substantial number of people, but for the most part, they are located in metropolitan areas and are not reaching students in the more rural areas.

Industry has been doing a good job training its own employees. But most industry has been located in the metropolitan areas, and its training programs do not reach people in the rural areas. Industry is turning more and more to the area vocational schools for the training of its prospective employees and the upgrading of the skills of its existing employees.

Area school programs may be administered by local boards of education or by the State Board of Education, which, in Kentucky, is the same as the State Board for Vocational Education, but the trend is toward State Board operation. Three schools have been operated by the State Board for some time, and upon authorization of the Legislature, the operation of seven more was transferred to the State Board on July 1, 1962. Only four of the schools are now being operated by local boards.

Operation of the area schools by the State Board has proved to be more satisfactory than operation by local boards. In the latter case, the board of a single school district must assume the full responsibility for operating the area school on behalf of all the districts in the area. The primary concern of a local board is education within its own district, and it is difficult for a board to develop an area vocational program satisfactory to all of the districts in the area. Operation by the State Board assures total area responsibility, prevents jealousies from developing between local districts, and facilitates administration of the schools according to the state pattern for area schools.

The area vocational school system in Kentucky began in 1938 with the establishment of the Mayo Vocational School in Paintsville and the West Kentucky Vocational School for Negroes in Paducah, and it expanded substantially during World War II when the country was faced with the urgent need of skilled manpower. As

shown on the accompanying map, each of the area schools is designed to serve a number of counties.

The schools have rather comprehensive offerings covering most occupations. One school may have course offerings for as many as 20 different occupations, and the course offerings may be expanded as needed.

Building facilities are now being expanded at 9 of the 10 area schools being operated by the State Board of Education. The Northern Kentucky State Vocational School is just completing a million-dollar building program. The Mayo State Vocational School is adding a classroom and science building to cost approximately $400,000. West Kentucky Vocational School is adding a new vocational building at a cost of approximately half a million dollars. New vocational buildings that will provide about 30,000 square feet of floor space each are being constructed at six other area schools, namely, Ashland, Harlan County, Hazard, Jefferson County, Madisonville, and Somerset.

Each of the area vocational schools is administered by a director. The State Board of Education appoints the director for each state-operated school upon the recommendation of the Superintendent of Public Instruction. The director is responsible to the Director of Trade and Industrial Education in the Bureau of Vocational Education, State Department of Education, for the administration of the program in his school.

The director of each area vocational school operated by a local board of education is employed by the local board of education upon recommendation of the local superintendent of schools. He is responsible to the local board through his superintendent for the administration and operation of his school. Although the director of an area vocational school is administratively responsible either to the State Board of Education or to the local board of education, he leans heavily on the local school administration in his area for counsel and advice on all matters pertaining to school organization and administration. An area vocational school would have difficulty in succeeding without the support of the school administrators in its area.

Course Offerings and Organization

Each area vocational school offers, in addition to postsecondary technical-vocational courses, a variety of courses of less than college grade or of noncollege grade but broad enough in scope to provide training for the major occupational fields in which the residents of the area are engaged. The courses provide for preparatory training for entrance into industrial and business occupations as well as for upgrading those already employed. Training is provided for industrial and electronic technicians, licensed practical nurses, beauty culture, food trades, and office practice, as well as for most trades found in the area. The course offerings are limited only by funds for programs and by the demand for them. In fact, the choice of courses offered is heavily influenced by the requests of industry.

Organization of Courses

Courses are organized to meet the training needs of the occupation. They may range from 1 or 2 weeks to 2 years in length. Most basic courses for the skilled trades are organized for 2,640 hours of instruction. These courses may be completed in 22 months of full-time instruction of 6 hours per day on the post-high-school level. High school students may enroll in the area vocational school for 3 hours per day, 5 days per week, during their last 2 years in high school and complete the course by attending 6 hours per day for 1 full year after graduation from high school. All of the area vocational schools, with the exception of Ahrens, serve as vocational departments for all high schools cooperating with them. The high school pupil enrolls in his regular high school and takes at least two nonvocational courses for one-half day, and he spends the other half day of 3 hours in the area school in vocational classes. The area vocational school does not have a program of activities, such as athletics, for high school students; the students are expected to participate in the programs of their home high schools.

The Ahrens Vocational School is a comprehensive vocational school and offers both nonvocational and vocational courses. It offers a four-year program and gives a high school diploma. It also offers instruction for adults on the post-high-school level in much the same manner as do the other area vocational schools.

Courses of instruction in practical nurse education are offered in cooperation with local hospitals. They are 12 months in length, and are open only to post-high-school students.

Course Development

Each course offered by the area vocational school is developed by the instructional staff in the school in consultation with labor and industry. Craft advisory committees are used by each school in developing and keeping up to date all course material and techniques in instruction.

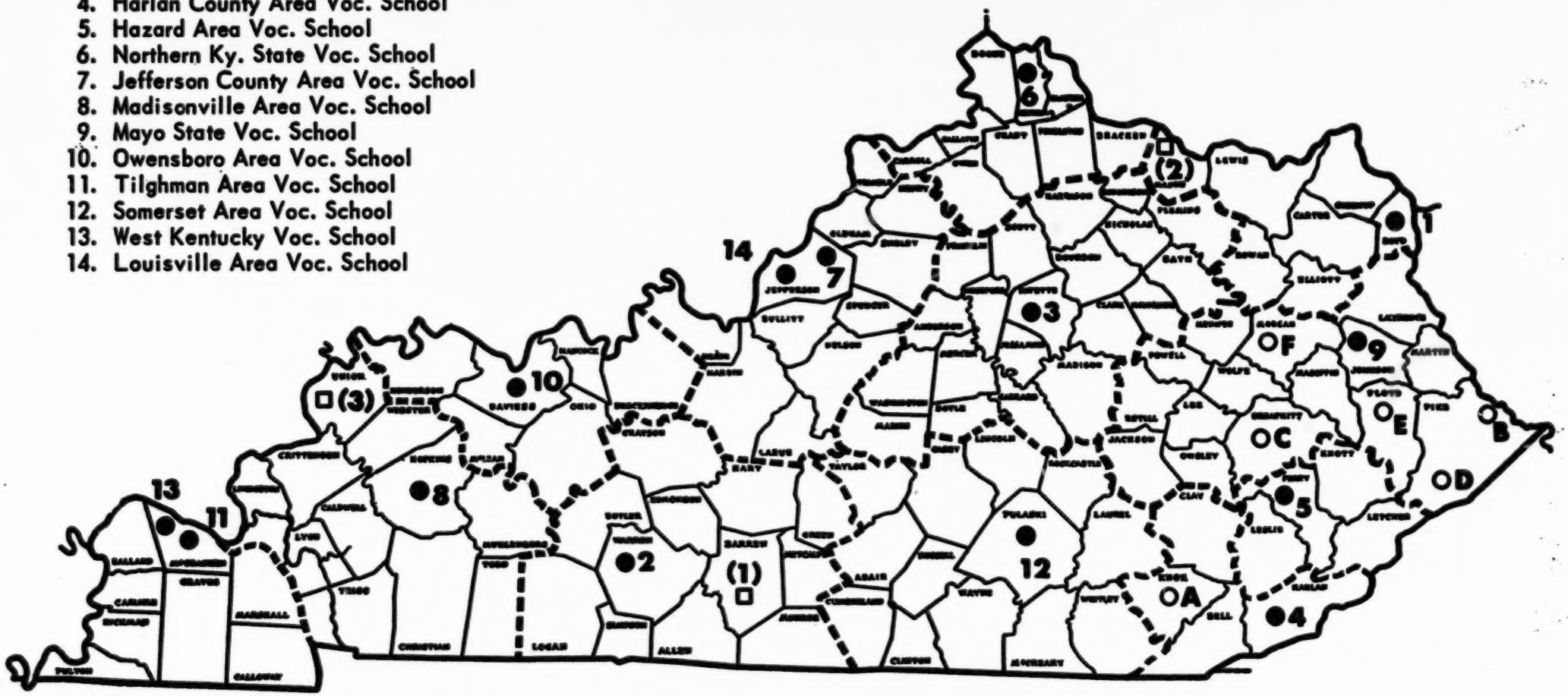
Extension Centers — Area Vocational Schools

Although the 14 area vocational schools are fairly well distributed geographically over the state, they are not within commuting distance of all who need their services. In an effort to serve all the people on a commuting basis, extension centers from the original 14 schools are being developed. The extension centers are not expected to offer postsecondary courses; they are primarily to serve the students in the junior and senior classes of the high schools located within their commuting areas. It is expected that the day school preparatory program in the extension centers will consist

KENTUCKY

● – AREA VOCATIONAL SCHOOLS

1. Ashland Area Vocational School
2. Western Area Voc. School
3. Lafayette Area Voc. School
4. Harlan County Area Voc. School
5. Hazard Area Voc. School
6. Northern Ky. State Voc. School
7. Jefferson County Area Voc. School
8. Madisonville Area Voc. School
9. Mayo State Voc. School
10. Owensboro Area Voc. School
11. Tilghman Area Voc. School
12. Somerset Area Voc. School
13. West Kentucky Voc. School
14. Louisville Area Voc. School



O – EXTENSION CENTERS IN OPERATION

A. Barbourville (Knox Co.)
B. Belfry (Pike Co.)
C. Jackson (Breathitt Co.)
D. Millard (Pike Co.)
E. Prestonsburg (Floyd Co.)
F. West Liberty (Morgan Co.)

□ – EXTENSION CENTERS PLANNED OR UNDER CONSTRUCTION

(1) Glasgow (Barren Co.)
(2) Maysville (Mason Co.)
(3) Morganfield (Union Co.)

almost entirely of high school students, but training for adults will be provided after regular school hours and during the evenings.

A committee of vocational educators and others has developed a plan for locating extension centers, and the following criteria have been approved.

1. Extension centers should be located to serve the people in the community. Centers should be so located that regular school attendants will not have to be transported more than 25 or 30 miles to attend a school, and one area school or a center should not be nearer than 25 miles to another.

2. There should be a minimum of three approved areas of training.

3. There should be a minimum of 1,500 students enrolled in the upper 4 grades of the cooperating schools.

4. The center is to be administered by the area vocational school serving the area at the time the new subarea is established.

5. A minimum of 100 young men enrolled in the 11th and 12th grades of the participating schools who are interested in and could profit from vocational training must have indicated through preenrollment their desire for such training.

6. The center must provide opportunities for the training of out-of-school youth, those 16 years of age or above who have dropped out of public schools. They, of course, must have the abilities and aptitudes to profit by such training.

7. Adults must also be given an opportunity for training.

8. A testing and guidance program approved by the Bureau of Guidance in the Department of Education must be in operation by all participating counties.

9. Buildings in which training is to be done must be furnished by local people. Such buildings must meet the approved standards for the course offerings and must be approved by the Division of Buildings and Grounds in the Department of Education. (Minimum standards should be listed for each shop.)

10. The local boards of education must be financially able to participate in a building program before they can provide any capital outlay for this purpose. Their financial ability is to be determined by the Department of Finance in the Department of Education.

11. The instructional costs are to be paid from the foundation program funds and special state and federal funds.

12. Any instructional costs of high school students will be borne by the allotment of funds under the foundation program.

13. Equipment will be furnished by the area vocational school serving the center. Such equipment will be purchased from state and federal funds.

14. The total cost of education for out-of-school youth and adults will be borne by state and federal funds.

15. Transportation costs for high school students should be borne by the transportation formula in the foundation law.

16. All utilities will be prorated between the high school and adult programs.

Extension centers are operated cooperatively by local boards of education and the area vocational schools. When a local board of education wishes to establish an extension center, it must submit to the Division of Trade and Industrial Education a request for the establishment of an area vocational extension center. This request should be supported by the following information:

1. Facilities or buildings available for vocational purposes, or the plans for the building of such structures

2. The high school enrollment in the participating center and the number of students from the 11th and 12th grades who could profit from and would be interested in the vocational course

3. A survey of the out-of-school youth in the area, including both boys and girls from the ages of 16 through 21 and some indication of the number of these who would desire and could profit from such training

4. A sample survey of adults through the ages of 21 to 25 and some indication of their interest in vocational training

5. A map of the area showing the roads leading to the center, distances of the schools from the center, and some information about the density of population

6. Population trends and other information indicating the prospective growth or decline of the population in the area

At the present time, five extension centers are being operated in cooperation with the Mayo State Vocational School in Paintsville. The Knox County Board of Education is cooperating with the Harlan County Area Vocational School in an extension center at Barbourville. Extension centers at Glasgow, Maysville, and Morganfield are now in the planning or construction stage. These centers are shown on the map presented on an earlier page.

It will require approximately 20 extension centers in addition to the 14 parent area vocational schools to bring trade and technical education within the reach of all the people within the state. This program is being implemented as fast as facilities and operating funds will permit.

The courses offered in the extension centers will be the same in content as those offered in the parent area vocational school, but the extension centers will offer only those courses that are of local interest and that train for the more common occupations. Usually the high school student will enroll in the extension center for 3 hours a day, 5 days a week, during his junior and senior years, and complete the course in the parent area school by attending 1 full year after high school graduation.

Financing the Program

The program of vocational education is financed through local, state, and federal funds.

The secondary phase of vocational education is financed through the state foundation program for education. Under this program, each district is required to make a minimum local effort; and after this effort has been met, the state pays the additional cost of the program up to a minimum level. Kentucky Revised Statutes state:

> Section 157-360 (1) In determining the cost of the foundation program for each district, the Superintendent of Public Instruction shall allot to each district classroom units for elementary and secondary schools, classroom units for vocational education, classroom units for special instructional services for exceptional children, classroom units for superintendents, principals and their certificated assistants and special instructional service personnel, classroom units for supervisors of instruction, and classroom units for directors of pupil personnel; provided, however, that the number of classroom units allotted any district shall not exceed the number of teachers employed by the district.

The basic classroom units are allotted on the average daily attendance of 27 pupils per teacher. Vocational education units are allotted under Kentucky Revised Statutes as follows:

> (4) . . . one classroom unit shall be allotted for each full-time teacher, and a proportionate fraction of a classroom unit shall be allotted for each less than full-time teacher of vocational classes that meet the regulations of the State Plan of Vocational Education as approved by the State Board of Education; a proportionate fraction of a classroom unit shall be allotted for each teacher employed to teach evening, part-time, or short unit classes for less than a school day or a school year that meet the regulations of the State Plan of Vocational Education as approved by the State Board of Education.

All vocational units are allotted to the district sending pupils to the area vocational school. This district contracts with the area vocational school for all pupils under 21 years of age from its schools. The contract rate will depend largely on the funds received from the state's foundation program for classroom units in vocational education. Each classroom unit in vocational education carries with it an allotment of funds for each teacher as follows:

Teachers' salaries	$4,000 to $4,600
Operation costs	$900
Capital outlay	$600

The cost of instruction for students under 21 years of age is financed through the foundation program. These students pay only a fee of $3 per month for instructional supplies. The cost of instruction for students 21 years of age and over is financed through state and federal funds for vocational education and from fees charged each student. At the present time the fee for those 21 years of age and over is $15 per month. No contract between local boards of education and the area vocational school is made for adults. The area vocational school recognizes no district boundaries for those 21 years of age and over.

The financial support for vocational education for the year ending June 30, 1961, was as follows:

Federal funds — all programs	$1,227,254
Foundation funds (state and local)	3,904,146
State funds—vocational appropriation	1,203,071
Fees and incidental receipts	299,867
	$6,634,338

Teacher Training

The training of teachers for vocational subjects is a problem in Kentucky. All the state colleges and some private colleges offer training for teachers of home economics, but the turnover is rapid, and there is always a shortage of home economics teachers. This is particularly true in the more outlying areas where there is little or no employment for the teachers' husbands. It is not so true in Franklin County where husbands may be employees of the state.

The training of teachers for agriculture and for trade and industrial education is centered in the University of Kentucky. The supply of teachers being trained in agriculture about meets the demand under the present financial support for vocational agriculture.

Teachers for the trades programs must come from industry itself. The first requirement for a trades teacher is that he know his job. All teachers of trades subjects are required to have a minimum of 3 years of work experience on a journeyman level. After teachers have been recruited from the trades field, they must be given some preservice training to get them started in the teaching field, and then be upgraded through inservice training.

The preservice work is done at the university. Throughout the year, teacher trainers from the university offer professional courses by extension for teachers in the area schools. Teacher trainers also give individual on-the-job instruction to employed teachers. During the month of August when the vocational schools are closed, all teachers are brought into the university for a two-week inservice training program.

Vocational teachers in all fields have a difficult time in keeping up to date. Changes are taking place so rapidly that a constant inservice training program must

be carried on. The majority of homemakers are also wage earners, and the courses of study in homemaking must be constantly adjusted to meet the implications of the dual job. The mechanization and expansion of the farm as a business unit make it necessary that teachers of agriculture constantly change their course of study and their teaching materials. Workshops for teachers in farm mechanics, farm management, and other phases of farming must be provided to keep the teachers up to date.

Teachers in the trades fields must have not only inservice training through individual instruction and organized group instruction but also the opportunity to know what is going on in the trades field in which they are teaching. Opportunities must be provided for them to visit the factory or the shop and be brought up to date on what is new in their fields.

One of the biggest weaknesses in the training of teachers for the trades occupations is inadequate preservice training. If the quality of these teachers is to be improved, some means must be found to provide a preservice training program that will combine trade experience and professional training.

Research

Another weakness in our vocational education program in Kentucky is the lack of adequate research and followup studies. About 10 years ago, a study was made of what happened to the boys who had vocational agriculture in high school in the decade from 1940 to 1950. Since this was the war-years period, as well as being 20 years ago, the findings are not now applicable. The study needs to be repeated. A research program is being inaugurated in the homemaking field, with all the state colleges participating. Comprehensive research programs in many fields of trade and industrial education are needed, and greater use should be made of the existing research.

Program Projection

The plan for implementing the area vocational school was given increased emphasis by the recent session of the Legislature in placing the operation of 7 more of the 14 area vocational schools under the State Board of Education. When the area vocational program is fully implemented, vocational education in trades and industry will be available within commuting distance of most of the high schools and people in the state.

The programs in agriculture and home economics continue to be an integral part of the programs of the individual secondary schools, and the high school departments in vocational agriculture and home economics continue to provide training for both high school youth and adults. But it is a part of the plan that the area vocational schools will provide programs of instruction in vocational agriculture and in certain areas of homemaking when needed. In sparsely settled areas or in urban areas, where there are too few farm boys and courses in agriculture become too costly for the high schools to offer, programs in vocational agriculture may be established in the area vocational schools for those boys who need and want such training. For this type of program, the boys would be transported from their high schools to the area schools in the same way that students are transported for trade and industrial education programs. It is contemplated, for example, that a program of vocational agriculture will be established in the area vocational school in Jefferson County, which is largely urban, because there are a number of boys enrolled in the different county high schools who want training in agriculture. The only difference between the vocational agriculture in the area vocational school and that in the local high school will be the length of the course and length of class session. In the area school, courses will be 2 years in length, and class sessions 3 hours long; in the local high school, courses will be 4 years in length, with daily 60-minute class sessions. In the local high school, the boy will receive one unit of credit, while in the area vocational school, he will receive two units of credit per year.

It is contemplated that the area vocational schools will provide training for certain occupations related to farming, for example: training of technicians in agriculture, or training of specialists to serve farmers in certain areas such as farm management, pest and weed control, and fertilizer and feed services. This type of training program will require the cooperation of two or more of our present vocational education services.

In like manner, training in certain specialized services related to homemaking, such as household help, dieticians, child-care specialists, and certain other occupations, may be offered best by the area vocational school.

Under the present federal vocational education acts, federal funds are not available for the support of training in certain occupations. In projecting the program of vocational education in Kentucky, it is contemplated that some of these programs may be conducted best in the area vocational schools. For example, training for office occupations is now being done in the area schools.

Vocational education in Kentucky has accepted the responsibility for training for occupations below the professional level, and it is implementing these training programs as fast as funds and facilities will permit. Descriptions of two of the most recent programs follow.

Area Redevelopment Program

Under the Area Redevelopment Act passed by Congress in 1961, 24 training programs with 466 persons enrolled are in operation or have just been completed in the state. These programs range from 2 to 16 weeks in length. They are organized and administered by the

area vocational schools, and the facilities of the area school are used insofar as possible. If the area school facilities are not adequate or available, facilities are rented, or the training is done in the plants where employment is expected. In all instances, the area vocational school director is responsible for the supervision of the instruction and for the administration of the program. Since 84 of Kentucky's 120 counties are eligible for training programs under this act, this program is expected to expand during the next 2 years. Thirteen applications for training were pending approval as of September 15, 1962.

Manpower Development and Training Program

The Manpower Development and Training Program, under legislation passed by Congress in 1962, will be in operation in the state as soon as approval of programs can be obtained. The demand for training under this program will far exceed what the funds available will support. This training program, too, is being operated through the area vocational schools, and many of the departments in the schools will operate for two or three shifts per day. The regular day shift will be kept available for the students enrolled in the regular vocational program, and the balance of the day and evening will be used for the Area Redevelopment and the Manpower Development and Training programs.

These programs, plus any subsequent requests for training, show clearly that vocational programs must be flexible to meet the many and varied training needs of business and industry. The area vocational school approach seems to be the best approach in Kentucky toward meeting these training needs.

XI. The Organization, Function, and Objectives of the Industrial Education Centers of North Carolina

By Ivan E. Valentine[1]

Introduction

North Carolina's system of vocational education envisions the maximum utilization of human and natural resources. The chief institution in the system, aside from the high school, is the Industrial Education Center, which is designed to prepare people for the occupational needs of industry. The Industrial Education Center is not a secondary school; it is primarily a postsecondary school. But it serves the vocational training needs of the state's people and industries at whatever level. Indeed, it is a part of the state's program for industrial expansion.

A primary purpose of the center is to provide post-high-school technical-vocational training for qualified high school graduates. An equally important purpose is to provide needed training, based on occupational surveys, to employed or unemployed adults and out-of-school youth who need to acquire skills or new skills or to upgrade their present skills and knowledge in order to meet the demands of present-day industry. Much of this kind of training is for the unemployed and the underemployed. A third purpose of the center is to offer preemployment training to selected high school seniors enrolled in high schools that do not provide such training. This, of course, is a service of particular value to the smaller high schools. The center, therefore, offers training opportunities in technical and trade skills, agricultural technology, distributive education, health education, and homemaking for both men and women.

The system of Industrial Education Centers in North Carolina is now 3 years old. There are 20 centers in operation, and the number of students served had gone from 18,000 in 1959-60 to 22,000 in 1960-61 to 30,000 in 1961-62. The ultimate intent is to have these centers so strategically located as best to serve the needs of industry on an area basis and, where possible, located within commuting distance of all eligible trainees. With this in mind, extension units have been organized by several centers in the larger areas. The extension units are administered and supervised by the parent centers. There is always the possibility, however, that a unit may develop into a center and come under its own jurisdiction. The whole system of centers is shown in the map on the following page. No post-high-school technical training is done at the extension units; such training is done only at the centers themselves. The units concentrate on training high school seniors and others in preemployment courses and on training unemployed and employed adults and out-of-school youth in skills and new skills. They give particular attention to training for the needs of new industry.

High School Vocational Program

As in other states, the usual reimbursable vocational training programs may be offered by those secondary schools of North Carolina that can qualify. The traditional programs in homemaking and agricultural education are offered in the majority of high schools, large and small. Distributive education and industrial cooperative training programs are offered in a substantial number of high schools on a part-time basis for selected juniors and seniors. A very limited number of trade programs are offered, and then only in the larger high schools. As already noted, the Industrial Education Centers offer the day trade vocational preemployment programs to regular high school seniors, selected on a limited basis. North Carolina offers no technical training to high school students. Some adult education is conducted on a limited basis in the evening programs of the secondary schools, but most of the adult education is taught in the Industrial Education Centers and their units.

Other Institutions Offering Technician Training

There is in operation one technical institute, a division of North Carolina State College, that provides addi-

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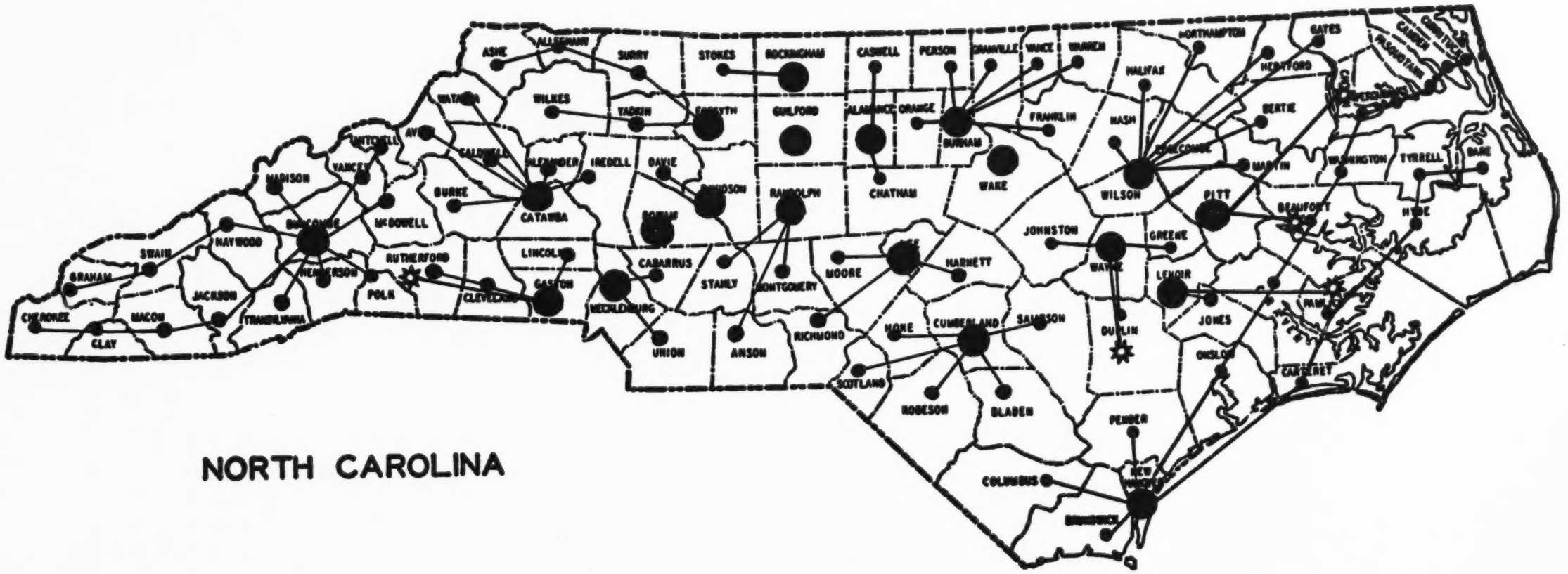
LOCATIONS OF EXISTING INDUSTRIAL EDUCATION CENTERS AND THEIR RESPECTIVE UNITS



NORTH CAROLINA

● Existing Industrial Education Centers

• Areas to be served by these Centers

✵ Units of Industrial Education Centers.

tional technical offerings for the citizens of this state. There are a number of private institutions in the state that offer training opportunities in business education, cosmetology, and medical technology. Private institutions that offer technical education, however, are very limited and by no means meet the training needs of the state. Currently there are 58 institutions of higher learning in North Carolina; of this number, 17 are publicly financed, and 41 are privately financed. The state has 21 junior colleges; 5 of these are publicly financed, and 16 are privately financed. The junior colleges are academically oriented and do not offer technical or vocational education.

Apprenticeship Training

There is very little apprenticeship training carried on in North Carolina at the present time. Of the 3,000 indentured apprentices in the state in 1961, 650 were enrolled in related apprenticeship classes through the Vocational Education Department. However, the rapid growth of industry in the state is expected to increase the demand for such training. Furthermore, it is expected that the presence of the centers, with their facilities, will encourage both labor and management in the smaller industries to promote more apprenticeship training than they have had. By design, apprenticeship-related instruction is conducted by the Industrial Education Centers, rather than by the high schools.

Organization and Administration of the State System

The State Board of Education also acts as the State Board of Vocational Education. It functions in the vocational area through one of its appointed committees, the State Committee for Vocational Education. The general supervision and administration of the free public school system is invested in the State Board of Education, consisting of the Lieutenant Governor, the State Treasurer, the State Superintendent of Public Instruction, and 10 members appointed by the Governor subject to confirmation by the General Assembly in joint session. Of the 10 appointive members, 8 represent their respective educational districts, and 2 are members-at-large. The appointive members serve for a term of 8 years and in four classes, as provided in the Constitution. Appointments to fill vacancies for an unexpired term can be made by the Governor and are not subject to confirmation by the General Assembly.

The Division of Vocational Education is a part of the State Department of Public Instruction, operating under the State Superintendent of Public Instruction. The Superintendent of Public Instruction is the administrative head of the public school system and is secretary of the Board. The State Superintendent is elected by popular vote for a four-year term. The State Committee for Vocational Education is responsible for the planning, promotion, and development of all vocational education, and the State Director of Vocational Education is responsible for its administration and supervision.

Industrial Education Centers

Each Industrial Education Center (and its extension unit or units) is assigned to the district or administrative unit, either city or county, in which the center is located. It is administered by the superintendent of schools and the board of education of the administrative unit. Each Industrial Education Center is under the supervision of a director who is administratively responsible to the superintendent of schools and the board of education of the administrative unit. Where other administrative units are involved, the director must work with them concerning fiscal and other matters. Even though an Industrial Education Center and its extension units serve several school districts (they serve from 1 to 16 counties depending upon the density of the population of the area), the responsibility for administration and supervision of the center is still that of the administrative unit where the center is located.

Facilities

Plant and buildings, including shop, laboratory, library, and classroom space suitable for the special training to be done in the Industrial Education Centers, must be provided by the local administrative units at a location preferably apart from the existing high school facilities and reasonably accessible to all potential students. Instructional equipment is provided entirely by state and federal funds. All facilities must be approved by the State Board of Education and must meet the standards outlined by the Division of School Planning of the Department of Public Instruction. In planning buildings, the center shall place emphasis primarily on classroom, laboratory, and shop space for the specialized equipment as needed for instruction.

The Industrial Education Centers do not provide dormitories or cafeterias because it is intended that centers and extension units should be located within commuting distance of most potential students of the state, and they do not provide facilities for organized extracurricular activities since none are included in the center program.

Financing

The cost of all buildings for a center or an extension unit is the responsibility of the local administrative unit in which the buildings are located. One-half of a center's operating cost is the responsibility of the administrative unit, and one-half is that of the state. In North Carolina, the proportionate cost for vocational education is approximately $5 of state and local funds to every $1 of federal assistance. The state participates in the National Defense Education Act, Title VIII, under

which federal funds are available on a matching basis, and it has received reallotted funds each year for equipment. The federal funds and state funds thus made available have provided the 20 centers and their extension units with the finest equipment for laboratories and shops that can be found anywhere in the nation.

The average operative cost to the local administrative units for their share is $20,000 per year. The counties in which the Industrial Education Centers are located are responsible for providing the required tax receipts to cover this cost, but currently, there is no center with which another county is fully cooperating in providing facilities or one-half of the operating cost.

Student Selection and Flexibility of the Program

All applicants to centers for preemployment and technician training are given the General Aptitude Test Battery by the Employment Security Commission, and they must complete the Employment Security entrance checklist as required by the State Board Cooperative Agreement with the Employment Security Commission. The General Aptitude Test Battery is supplemented by the Differential Aptitude Test and other vocational entrance tests for all individuals seeking entrance into the Industrial Education Center program. All students receive individual counseling and guidance services before they are admitted to the program.

All full-time curriculum students must complete the above-mentioned battery of tests before they can be considered as applicants. Adults, school dropouts, the unemployed, and the underemployed are required to take the General Aptitude Test Battery if they are enrolling in preemployment training. Individuals enrolling in evening extension classes in technical and vocational education are not required to complete the testing program. Counseling services are provided for all students regardless of their classification. The Employment Security Commission administers only the General Aptitude Test Battery, and the state makes use of the Commission's services for placement. The full responsibility for testing, guidance, admission, placement, and follow-up studies rests with the director and his staff.

The Industrial Education Center program offers opportunities for both vocational and technical training; it is geared to meet the needs of out-of-school post-high-school youth and adults for such training. All courses, therefore, are terminal in nature, and they do not lead to a baccalaureate degree. Incidentally, however, some colleges and universities may grant credit for work done in certain areas, based on examination. All the curricula offered stress mathematics, physics, chemistry, technical writing, and other general education courses that are required of students who qualify as candidates for the state examination in a trade or technology, and in which examinations must be passed to qualify students for a State Board of Education diploma. Flexibility built into each curriculum makes it possible for a student to become employable at various levels of training, in the event he should not be able to complete the program. If a certain curriculum does not interest a student, he may, with the help and approval of the guidance counselor, transfer to another curriculum more in keeping with his capabilities and interests.

About 50 percent of the enrollment in centers is made up of adults attending part time. The centers operate from 7 a.m. to 10:30 p.m., 5 days a week, 12 months a year, so that training for adults can be conducted during nonworking hours.

Since the entire system is publicly supported, no tuition is charged, but an instructional fee of $7.50 per month is charged, and students are required to purchase their own texts.

Instructional Staff and Instruction

All teachers in vocational and technical programs must possess competence in the trade or technology that they teach. Basically, each teacher must have had 3 years of experience in industry or 5 years above the apprenticeship level in the field he teaches. Those individuals teaching in the technical program must possess a bachelor's degree and must have had experience in industry within the past 5 years.

Teacher training activities are carried on presently at North Carolina State College. From now on, there will be offered a leadership development conference each summer for 25 teachers selected as potential leaders in the field of industrial and technical education.

A Curriculum Materials Laboratory at the state level develops all of the instructional materials for all areas in order to maintain uniform standards of instruction. The laboratory evaluates and recommends the materials of all types to be used by the individual teacher in each center for all curricula.

Guidance Services

Each Industrial Education Center has a competent guidance counselor, who must have a master's degree in guidance, and who devotes all of his time to guidance and counseling activities. Each person enrolling in technical education in a center must provide a high school transcript or a high school diploma equivalency score. Students are not admitted into technical training unless they can prove their capacity to succeed in technical education.

Advisory and Other Committees

Each administrative unit appoints an advisory committee for its Industrial Education Center. The committee is composed of representative leaders from industry, education, and other public interests. It serves as a consultant group; it has no administrative functions. This general advisory committee appoints craft committees, which work very closely with the director of the

center in planning, developing, and promoting the specific curricula offered at the center.

The use of civic groups and civic organizations has contributed much to the success of the Industrial Education Center program, but more public relations activities are needed. Currently, there are being developed two 15-minute films in color, explaining the objectives and opportunities in vocational and technical education in North Carolina. These films, in addition to one made last year and such printed material as is available, will inform potential students and other interested citizens of the availability of training carried on in the Industrial Education Center program.

Surveys and Manpower Study

The curricula offered in each center are based on the needs of local industry, and they are shaped accordingly. The manpower needs for specific areas of the state are determined by a statewide study. The study is a continuous one, conducted on a statewide basis. In addition, the local directors and consultant committees of the centers may make yearly surveys to supplement the findings of the statewide study in their respective areas. According to a recent manpower study, North Carolina must train over 6,000 technicians and 20,000 skilled craftsmen during the next 3 years. This training will be offered to the individuals who qualify through the Industrial Education Center system.

Success of Centers

The growth of the Industrial Education Centers over the first 3 years has been phenomenal. We have observed the increase in enrollment from 18,000 the first year to 30,000 the third year. Local administrative units have already invested over $13 million in facilities for the centers. During the next biennium, state funds for equipment, instruction, and operating costs will amount to $10.2 million.

Technician training thrives in North Carolina because of the job opportunities available to graduates in the leading electronics and the machine industries of the state. Many of the graduates leave the state and seek employment in other neighboring states, but so do college graduates. The post-high-school vocational-technical program also provides training for mature adults, employed or underemployed, and provides them with the salable skills needed for the industrial growth of the state.

The Industrial Education Centers are a part of public education in North Carolina. They have gained status and dignity during the 3 short years since their inception. Increasingly, industries are looking to the centers for highly skilled technicians and trained craftsmen as well as for updating the skills of their employees.

Strengthening and Projecting the Program

Of course, there are problems to be overcome, due to the newness of the program and the magnitude of the task. The need for training is great and is growing rapidly. There is a constant shortage of qualified teachers, which will be overcome in time through good teacher training programs, perhaps both in residence and on the job.

Immediate plans for the future provide for expanding the data-processing curriculum and the mechanical technology curriculum. The nucleonics technology curriculum will be offered this next year.

There is a committee study under way at the present time to consider modifying the curricula of the Industrial Education Center to include courses in communications, social science, and the more cultural areas, and to turn the center into a public community college. Curricula offered would include college courses in addition to vocational and technical courses.

[Since the above was written, the State Legislature has passed a community college law providing for a statewide system of public community colleges, technical institutes, and industrial education centers to be supervised by a Division of Community Colleges as a part of the State Department of Public Instruction. The immediate plan envisions 14 community colleges, 10 technical institutes, and 10 industrial education centers. All of these institutions are to be comprehensive in character. — Editor]

The Industrial Education Center program has the sincere interest of all professional educators, industrialists, laymen, and citizens of the state. It has been called the workingman's university. A most important factor in the development of the program has been the keen interest and financial support given by the Advisory Budget Commission and the State Legislature. The Governor has participated actively in promoting the development of the program.

The further expansion of the program will have a tremendous impact on the socioeconomic standing of the citizens of this geographical area. Industrialization of the southern region of the United States will depend on the further development of the area school, not only in North Carolina, but also in all the other states in this region.

XII. Vocational Education in California

By Wesley P. Smith[1]

Within 4 years following statehood, California began to plan, to design, and to create opportunities for its youth and adults to obtain essential occupational skill and knowledge. From 1854, when mechanics in San Francisco made plans for self-improvement and education in the industrial occupations then existing, until 1962, when some 565,000 persons were enrolled in occupation-centered curriculums provided by the public schools, progress toward occupational proficiency through systematic patterns of vocational instruction has been steady, widespread, and successful.

The growth and characteristics of vocational education in California have been influenced significantly by the state served and by the organization of the public school system. Adequate understanding of vocational education in California, therefore, necessitates general comprehension of the state and its total school system. The following descriptive statements are intended to provide such a background.

The State of California

One hundred and nine years after admission to the Union, California has become the most populous state. For at least the past 15 years California has been adding to its total population an average of some 500,000 persons each year, and the indications are that this rate of increase will continue. California is a large state geographically. Third in size among the states, it is 1,000 miles long and varies from 150 to 375 miles in width. It comprises 158,693 square miles of area distinguished by great contrasts in topography and climate.

With approximately 17,000,000 people, California has a civilian work force of nearly 7,000,000. Within the past few years the state's economy has changed from an agricultural to an industrial emphasis. Still maintaining its position as the leading state in value of its total farm income, California's industrial complex has assumed a production capacity of vast proportions. Its business activities in transportation, wholesale and retail trade, finance, insurance, real estate, and personal services also have eminence in the world.

Public School System

The public school system in California spans educational levels from kindergarten through the 14th grade and enrolls more than four million persons in the following categories:

Kindergarten through the 8th grade	2,550,000
High school, grades 9-12	775,000
Junior college, grades 13-14	150,000
Classes for adults	550,000

The public school system embraces 1,686 separate school districts, each with its own elected board of trustees:

Elementary school districts (elementary schools only)	1,316	(4,798 schools)
High school districts (high schools only)	221	(589 schools)
Separate junior college districts (junior colleges only)	30	(67 colleges)
Unified (consolidated) school districts (elementary schools, high schools, and junior colleges)	119	

Total Cost

The 1960 operating expenses of the public schools were $1,372,560,902. In addition to these annual operational costs, the state, in six separate elections since 1940, has voted $1,155,000,000 in bonds to assist in the construction of schools in the least financially able districts. In June 1960 the total bonded indebtedness of California's public schools, in addition to the outstanding state bonds for school construction, was $1,835,060,351.

State Financial Support of Schools

California's Constitution has long recognized the state's responsibility for assisting its local, autonomous

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school districts by sharing the costs of instruction. Current provisions in the Constitution provide for a "general school fund" whose size is determined by total school enrollments. Approximately $200 is set aside annually for each full-time student or equivalent — elementary, secondary, junior college, or adult — and each school district is paid at least $125 per student in attendance each year. An equalization provision makes possible higher payments to the poorer school districts. Currently the "state aid" approximates a little less than 50 percent of the total instructional costs, not including capital outlay.

Mandatory School Attendance

California laws require full-time school attendance through high school graduation or until the age of 18. At the age of 16, however, part-time attendance is permitted at the rate of 3 hours per day if the young person is unemployed or 4 hours per week if employed.

Free Tuition

No tuition is charged for any segment of instruction in the public schools. Through high school (kindergarten through the 12th grade), all instructional supplies, including textbooks, are furnished free of charge to all students. In the 13th and 14th grades and in classes for adults, however, books, paper, and similar instructional essentials must be furnished by students. Eligibility for enrollment at any grade level is dependent upon residence within the respective school district boundaries. Through the use of interdistrict attendance agreements, students with special needs may cross district boundary lines in order to participate in specialized, area-type courses or curriculums.

Common Grade-Level Organization

Grade-level organization in the public school system normally is divided as follows:

K - 6	elementary
7 - 9	junior high
10 - 12	senior high
13 - 14	junior college

A small number of school districts are organized under the K-8 and 9-12 levels, but long-term trend has been toward the grade-level breaks indicated above. In some instances there are "intermediate" schools consisting of grades 6-7-8 as a separate school organization.

School Law

The public schools operate under laws passed by the State Legislature. These laws are assembled in an "Education Code" that contains all permissible and all required conduct of local school districts, their boards of trustees, their administrators, their teachers, and their students.

State Board of Education

The determination of the general policies for the government of the public schools, in addition to the statutory policies, is a function of the State Board of Education, a group of 10 citizens appointed for four-year terms by the Governor with the consent of two-thirds of the Senate. There exist no statutory qualifications for State Board members. Traditionally, the Board is composed of lay citizens not connected with schools or colleges.

Rules and Regulations

The rules and regulations established by the State Board of Education are contained as Title V, California Administrative Code. These rules and regulations have the effect of law upon the operation of all aspects of the public school system.

State Superintendent of Public Instruction

Administration of statutory policies and of State Board of Education policies is vested in the Superintendent of Public Instruction, elected on a nonpartisan basis by the people of the state at four-year intervals.

State Department of Education

The State Department of Education has been created by statutes for the purpose of assisting the Superintendent of Public Instruction and the State Board of Education in administering pertinent laws, rules, and regulations. To a large extent, the administrative function of the State Department of Education is performed by means of professional direction and leadership rather than by direct intervention in local school district operations and administration.

The Department of Education is composed of six divisions, each with an assigned area of responsibility:

1. Division of Departmental Administration (the "housekeeping" unit that deals with departmental budgets, personnel, research, etc.)
2. Division of Public School Administration (the unit responsible for disbursement of the School Fund to local school districts, school construction, surplus property distribution, school districting, etc.)
3. Division of Instruction (containing all units responsible for curriculum, quality of instruction, etc.)
4. Division of Higher Education (containing all units responsible for post-high-school activities of the public schools, accreditation, teacher licensure, etc.)
5. Division of Special Schools and Services (the unit responsible for state-operated resident schools for the deaf and blind, vocational rehabilitation, and special education for the physically and mentally handicapped)
6. Division of Libraries (the State Library, attached to the Department of Education)

County Education Offices

In each of California's 58 counties there exists a "county schools" unit headed by a county superin-

tendent of schools. These units and personnel function in an intermediary role between the State Superintendent of Public Instruction and the local school districts. Services provided include curriculum development, specialized subject matter consultation, business affairs, and records. These services are supported mainly by the state, but with some financial assistance by the respective counties.

Mandatory Subject Matter

Statutory requirements at the elementary school level include reading, writing, spelling, and arithmetic beginning in the first grade. Not later than the fourth grade, instruction must begin in English, geography, and history. Beginning not later than grade 6, instruction must be given in civics, a foreign language, natural science, and health. At least 50 percent of the instructional time must be devoted to reading, writing, language study, spelling, arithmetic, and civics.

General requirements for high schools stipulate that there must be included in grades 7 to 12 the following:

1. Five years of English
2. Twenty semester periods of American history
3. Twenty semester periods of world history and world geography
4. Ten semester periods of American government
5. Courses in the Constitution of the United States
6. Courses in fire prevention
7. Courses in physical education
8. Instruction in public safety and accident prevention
9. Instruction in manners and morals
10. Instruction on the nature of alcohol and narcotics
11. Driver education
12. Instruction in the principles and practice of first aid

Higher Education

Not a part of the "public school system," but a significant part of publicly owned and tuition-free educational institutions, is the extensive availability of separate units of the University of California, with 7 major campuses, and the units of the State College System, with 15 campuses.

The University of California, enrolling 60,000 students, is administered and controlled by a Board of Regents, appointed by the Governor.

The State College System, enrolling 75,000 students, is separately administered by a Board of Trustees, appointed by the Governor.

All units of both systems are financed directly through grants by the State Legislature. Tuition is charged only to nonstate residents. The functions of the two types of institutions are differentiated by law, and among such differences is the allocation to the university system of the sole right for graduate work beyond the master's degree level.

Size of Schools

Enrollments in individual schools vary widely, but the current averages approximate the following:

Elementary	300- 450
Junior high	800-1300
Senior high	1300-1800
Junior college	1600-2200

Certification of Teachers

All persons who render professional services within the public schools must be licensed by the state. The licensure system recognizes four general areas of such professional services: instruction, specialized nonteaching services, supervision, and administration.

Collegiate institutions preparing students for these professional services are accredited by the State Board of Education and by the regional accrediting association. The licensure system recognizes the variety of professional services and the variety of preparation essential to render such services. Vocational education services, as all other specialized services, are integrated within the single, total licensure system. With few exceptions, one year beyond the baccalaureate level is required of all regular teachers.

Length of School Year

The public schools in California must be in session a minimum of 175 days each year.

Summer School Sessions

Many elementary schools, the majority of high school districts, and most junior colleges operate a summer school program of approximately 6 weeks. In the summer of 1961, 195 high school districts alone provided programs for 226,546 students, nearly 30 percent of the number of students enrolled in the regular sessions.

At an increasing rate, the summer session programs permit youth to broaden their subject matter experience, in addition to receiving remedial assistance in certain subject-matter areas. In the summer of 1961, for example, there were more than 100,000 enrollments in the applied arts of business, homemaking, and industrial education.

Accreditation

A program of accreditation for high schools and junior colleges exists within the state. The Western Association of Schools and Colleges, a successor to the Western College Association, has overall accreditation responsibilities. Special units within this organization undertake the responsibilities for high school, junior college, and four-year college accreditation. The policy boards for accreditation of high schools and junior colleges contain representation from the State Department of Education. In addition, each "visiting committee" has, by policy, a representative from the State Department of Education.

Accreditation for teacher education purposes, including vocational education, is conducted through the means of a special Committee on Accreditation, created and used by the State Board of Education. This committee contains within its membership the State Director of Vocational Education.

The Program of Vocational Education

In 1960 a Citizens' Advisory Committee, created by the California Legislature to study the public schools, identified the desired goals of public education and included among these goals the following statement:

> The strength of our culture depends upon individuals who are competent to fulfill the essential occupations. It is an important function of the schools to develop the competence necessary to carry on the jobs of society — the jobs of the work world, in the cultural world, in the physical world, in engineering, in merchandising, in medicine, in law, in teaching, and in all the other various areas.

This avowed purpose of the public schools in California has long been accepted and endorsed. The degree of attainment, however, has varied from school to school and from year to year. Although the ultimate accomplishment has not been universal, the achievements have been consistent and significant.

Definition

Vocational education, as a *general term,* is considered in California to be that part of the total program of education that deals specifically and in an organized, systematic manner with the acquisition of skills, understandings, attitudes, and abilities that are necessary for entry upon and successful progress within an occupation. For certain occupations such attainment requires years of collegiate preparation. Other occupations may demand far less formalized training.

Vocational education, as a *descriptive term* in California, applies solely to the preparation for occupations that can be achieved through the high schools, the junior colleges, and the adult classes that are a part of California's public school system.

Aim

Vocational education has as its controlling purpose the preparation of persons for useful employment. It is intended to serve the needs of two distinct groups of people — those who are already employed and those who are preparing for initial employment.

Scope

Vocational education encompasses all the various occupations in the fields of agriculture, homemaking, business, distributive, industry, public service, trade, and technical areas.

Where Offered

Vocational education is provided to young persons who are enrolled full time in regular classes in high schools and junior colleges. It is also provided on a part-time basis to out-of-school youth and adults, employed or unemployed, in adult education or extension classes.

Essential Characteristics

Vocational education is always specific. To be successful, a program of vocational education should have the following characteristics:

1. The program is directly related to employment opportunities.
2. The content of the courses is based upon periodic analyses of the occupations for which the training is being given.
3. The courses for a specific occupation are established and maintained with the advice and cooperation of the various occupational groups concerned.
4. The facilities and equipment used in instruction are comparable to those found in the particular occupation.
5. The conditions under which instruction is given duplicate as nearly as possible desirable conditions in the occupation itself and at the same time provide effective learning situations.
6. The length of the teaching periods and the total hours of instruction are determined by the requirements of the occupation and the needs of the students.
7. Training in a particular occupation or occupational area is carried to the point of developing marketable skills, abilities, understandings, attitudes, work habits, and appreciations sufficient to enable the trainee to obtain and hold a job.
8. Classes are scheduled at hours and during seasons convenient to the enrollees.
9. Instruction is offered only to persons who want, need, and can profit from it occupationally.
10. The teachers are competent in the occupation for which they are giving instruction and possess adequate professional qualifications for teaching.
11. Vocational guidance, including effective followup of all students who finish or drop out of a course, is an integral and continuing part of the program.
12. Continuous research is an integral part of the program.

An Integral Part of the Total Education Program

Vocational education is not considered to be something apart from the total program of education. It does not take the place of general education. Instead, it supplements and enhances general education for students who want training for a chosen occupation. Vocational education is but a part — an important part — of a well-balanced, total school program. It is part of a

well-rounded program of studies aimed at developing competent workers and recognizing that the American worker must also be competent economically, socially, emotionally, physically, intellectually, and civically.

Administration

Vocational education, just as all other phases of the total program of public school education in California, is organized, conducted, and administered by local school districts in conformance with the provisions of the Education Code and the Rules and Regulations of the State Board of Education.

Federal Relationships

The development of certain types of vocational education has long been the concern of the federal government. Beginning in 1917 with the passage of the Smith-Hughes Act, Congress has approved a series of supportive measures for the further development of vocational education. All federal assistance has been based upon two fundamental ideas: (1) that vocational education is in the national interest and is essential to the national welfare, and (2) that federal funds are necessary to stimulate and assist the states in making adequate provisions for such training.

Continuously since 1917, with the acceptance by the California Legislature of federal aid for certain types of vocational education, California public schools have been recipients of both federal and state funds appropriated for certain specific patterns of occupational preparation. Although influenced by federal aid for certain types of vocational education, California's program of vocational education has not been limited to federally aided phases of vocational instruction.

At the Junior High School Level

It should be pointed out that the junior high school becomes the initial opportunity for boys and girls to experience instruction in applied arts subject matter on a departmentalized basis. The characteristic California junior high school requires all boys to enroll in industrial arts for from 1 to 2 years, and all girls to enroll in nonvocational homemaking education for a similar period of time. Metropolitan junior high schools often provide considerable offerings in "general agriculture," and, at an increasing rate, more and more junior high schools are providing for the learning of basic business skills.

No vocational education, as strictly defined, is offered at the junior high school level, except that in school systems where vocational courses in agriculture and home economics are offered in the senior high school to which the students will matriculate, these subjects may be made available in the ninth year.

At the High School Level

California high schools are comprehensive by nature and in composition. Futhermore, long-prevailing policy and philosophy indicate that the public high schools shall enroll and serve the needs of all youth regardless of color, creed, ethnic origin, sex, or occupational goal. There exist, therefore, no specialized "trade" or "vocational" high schools in California. Early attempts to operate and maintain specialized high schools were unsuccessful.

The degree to which California high schools provide for vocational education is determined by the comprehensiveness of each institution. Almost every high school serving a rural area offers vocational instruction in agriculture. Every high school provides for some type of vocational instruction serving the office occupations. Every high school offers some type of industrial education. Every high school provides homemaking education.

The functional vocational nature of these programs varies considerably. One measurement of the vocational nature of such programs is indicated by the number of high schools that offer programs that qualify under the federal vocational acts. The following breakdown for 1961 provides such a measurement:

Vocational Education	Number of High Schools	Enrollment
Agriculture	208	13,924
Homemaking	252	50,000
Distributive	38	829
Trade and industrial	67	5,238

Total effort in the provision of instruction in the applied arts is another measurement of service to occupational preparation. The following enrollment and percentage figures for 1961 classes not federally aided indicate the extent of these efforts:

General Education	Enrollment	Percent of Total High School Enrollment
Agriculture	21,000	2
Industrial arts	271,000	35
Business	250,000	33
Homemaking	155,000	20

It should be noted that the above tabulations represent enrollments in a single semester or a single year. The number of boys and girls who experience such instruction prior to graduation becomes much larger than the above figures indicate. For example, it is estimated that 87 percent of all high school students have enrolled in at least one semester of business education prior to leaving high school.

Any analysis or assessment of vocational instruction at the high school level must consider the following factors:

1. The extensive growth of junior colleges in California has influenced the degree of specificity in preparing high school youth for job entry. The availability of junior colleges has, without question, decreased the emphasis upon vocational education programs other

than in agriculture and homemaking education. As an increasing number and percentage of high school students enter junior colleges, it becomes convenient for them to delay specific preparation for job entry. This tendency is bolstered by the pressures upon the high school curriculum for more and more required courses. The tendency is further supported by the strategic ability of the junior college, serving a larger geographic and population area than the high school, to provide a wider array and a deeper emphasis of occupational curricula. The tendency is also supported by the axiom in vocational education that specific job preparation is best accomplished immediately prior to actual job entry.

2. The increasing subject matter requirements for high school graduation have provided decreasing opportunities for high school youth to enroll in nonrequired courses. Some of these increased requirements are of a legal nature, mandated by the State Legislature, such as driver education, an added year of social sciences, etc. Some other requirements are imposed by local boards of education, or dictated by parental pressures. The net result is always the same — less and less time within the high school period to enroll in nonrequired courses.

3. The increasing specificity of curriculum patterns designed for students intending to qualify for admission to post-high-school institutions has reduced to almost negligible amounts the options students enrolled in such patterns have for nonrequired subject matter.

4. Without question, the "postsputnik" urge for increasing the academic subject matter requirements in the public schools has invaded the thinking of curriculum designers, counselors, administrators, school board members, and parents. The insidious nature of this urge has had a detrimental effect upon the expansion of vocational education programs at the high school level.

5. The reluctance of vocational educators to design more modern curriculums for job entry has resulted in the necessity for nonvocational phases of the applied arts to fulfill the mission of occupational preparation. Traditional dependence upon vocational education standards suggested in the federal vocational education acts has impeded the development of occupational preparation patterns that vary from provisions in the State Plan for Vocational Education.

6. The relatively small size of the typical three-year high school, the lack of specific "invoices" for occupational preparation from employers, and the rising age level of employment are factors that combine to complicate the task of vocational education at the high school level. In short, it becomes a very difficult task to determine the desired nature of vocational education and to establish and conduct economical units of such instruction at the high school level.

7. Any natural inclinations to combine efforts and needs for vocational education on an area basis among groups of high schools are either hindered or thwarted by the presence of a junior college, which, by its very nature, is an "area" institution.

In no sense of the word should the amount of vocational preparation at the high school level be measured by that part which is eligible for federal aid through the State Plan for Vocational Education. In 1961, for example, 41,347 high school students in 565 high schools were enrolled in bookkeeping. Another 36,466 were enrolled in shorthand in 547 high schools. It cannot be ascertained how many of the 150,218 students enrolled in the first year of typing in 1961 were taking such a course for vocational purposes, but it is quite certain that the great majority of the 43,857 students enrolled in the second year of typing in 563 high schools were being vocationally trained. None of these occupationally centered courses were reimbursed from vocational education funds.

A considerable growth of "work experience education" has taken place in California high schools during the last 10 years. Nearly 50,000 are presently enrolled in such school-connected programs, the majority of which are vocationally oriented.

Then, too, in hundreds of California high schools advanced work in the "industrial arts" becomes vocational in nature and purpose. In certain instances, high school programs in vocational education are being conducted in a manner that matches all requirements for federal aid except for time requirements. These programs are designed for job entry in industrial, service, and distributive occupations, but never appear as statistical credits for vocational education under reporting procedures suggested by the United States Office of Education.

All this is not to say that there is sufficient attention being paid to providing vocational education at the high school level. There continues to be a dearth of such offerings in many schools. Neither can it be said, however, that little or no attention is being given to high school vocational education.

At the Junior College Level

The California junior college was created more than 50 years ago for the purpose of placing some missing rungs in the educational ladder. It has proven to be a unique institution, and its popularity is universal. One of the significant reasons for its success and general favor is the function it assumes for vocational-technical education. This is a mission that was assigned to the junior college in California statutes many years ago, and it continues to be a significant purpose in more recently adopted statutes that determine the allocation of functions among all of the publicly supported, post-high-school, educational institutions of the state.

The state statutes prescribe that the "course of study for two-year junior colleges shall be designed to fit the needs of pupils of the thirteenth and fourteenth grades and may include courses of instruction designed to

prepare for admission to the upper division of higher institutions of learning and such other courses of instruction designed to prepare persons for agricultural, commercial, homemaking, industrial, and other vocations. . . . "

Under a statutory "Master Plan for Higher Education" adopted in 1960, the assignment of responsibility to the public junior college includes "instruction through but not beyond the fourteenth grade level including, but not limited to, one or more of the following: (a) standard collegiate courses for transfer to higher institutions, (b) vocational-technical fields leading to employment, and (c) general, or liberal arts courses."

The junior college in California has long been recognized as the repository for a wide array of occupational preparation programs. Many of such programs are eligible for the receipt of federal-state funds for vocational education. Although post-high-school in nature, approved vocational education programs in junior colleges can meet all the requirements of the federal acts since such programs are not designed or conducted for baccalaureate degree purposes.

At least 25 percent of all enrollment, the course offering, the faculty, and the facilities of California junior colleges are devoted to occupation-oriented curriculums leading to immediate job placement or improvement of job performance. These vary from short, concentrated programs to the full two-year programs. They involve both men and women students, they are offered day and evening, and they cover all recognized occupational areas that can be prepared for in 2 or less years of post-high-school training.

All junior colleges are comprehensive in composition and purpose. A few, because of location, become somewhat specialized. Each provides for the acquisition of an Associate of Arts degree that requires the completion of 60 semester hours of course work, the majority of which is in the major area of study. Many occupational preparation areas lend themselves to the Associate of Arts degree program, especially such occupations as are of a technical or semiprofessional nature. Other occupational preparation programs are of such duration or such composition that they have no affinity or relationship to the Associate of Arts degree.

The junior colleges in California, with 67 now in operation and several others authorized, admit high school graduates or non-high-school graduates who can profit from the instruction offered. Tuition-free, the California junior college is intended to be a community institution. Enrollments in extension and/or adult classes exceed those of full-time day students.

The laws, policies, and traditions combine to preclude the development of any California junior college into a four-year institution. No California junior college has ever evolved into a four-year college.

The typical junior college offers a wide variety of business education curriculums, preparing youth and adults for the office, the service, and the distributive occupations. Preparation of technicians is a significant part of the curriculums. Programs in practical nursing, cosmetology, dental assisting, and electronic data processing operate side by side with training programs for machinists, auto mechanics, draftsmen, and police science.

Through a system of interdistrict agreements, some junior colleges specialize in certain occupational preparation programs; other junior colleges concentrate in different offerings. Covering a large geographical or population area at the outset, these interdistrict agreements permit enlarged regional or area training services.

In addition to the development of "area" vocational education programs at the junior college level, another type of "area" service is provided at an increasing rate by junior colleges for *high school* students. Again, through interdistrict and intradistrict arrangements, a junior college may make available its vocational education facilities for the use of 11th- and 12th-grade high school students, who are transported from the high schools to the central junior college facility for laboratory and/or shop experience in vocational education. This dual area usage of the junior college vocational education facilities provides for a wider variety of occupational preparation opportunities, for greater depth of specific training, for more extensive equipment, and for a more specialized staff than would be possible under other arrangements.

At the Adult Level

Classes for adults are maintained in connection with day or evening high schools and day or evening junior colleges, with 80 percent of the state's high school and junior college districts maintaining such programs in year-round operation. Classes for adults, as is the situation for other levels of the public school system, are jointly financed by state and local funds, are locally administered and controlled, and are tuition free. At any one time in the school year nearly 500,000 adults will be attending classes. In any one year more than a million enrollments will have taken place. At least 50 percent of all enrollments and course offerings are based upon occupational needs. Courses are designed to fit the needs of individuals within their own communities. They vary from highly sophisticated, scientific content for employed workers in technical occupations to basic skill development for the unemployed. The range is wide, and the offerings are extensive. Whenever classes for adults qualify under the federal acts for vocational education, excess costs are reimbursed from federal-state funds for vocational education in a manner similar to arrangements for all-day classes.

Use of Federal Vocational Education Funds

California has always made full use of federal funds available for vocational education. State-level appropriations originally matched federal funds on a dollar-for-

dollar basis, but in recent years the increase in federal funds has been matched by a combination of state and local district funds. Currently the ratio in matching all federal allocations is approximately one-third state and two-thirds local.

In addition to the support of the state-level vocational education staff, federal funds are used to assist local school districts with the conduct of operating programs. This assistance is described as follows:

1. Reimbursement to the cooperating local school districts of not more than 50 percent of the excess costs that accrue to the development and operation of qualifying vocational education programs. Excess costs may consist of the following categories of expenditures.
   a. Salaries of teachers
   b. Salaries of coordinators, supervisors, or directors
   c. Travel expenses for above-mentioned staff members and for advisory committee members
2. Reimbursement to the cooperating local school districts of not more than 50 percent of the costs of equipment acquisitions.
3. Partial to full support of research and studies conducted at the local level.
4. Partial to full support of pilot or experimental programs of instruction.

Any school district meeting the minimum requirements included in the state plan for specific vocational education programs is eligible for reimbursement. There are individual formulas for the allocation of each segment of the funds, but local schools are not guaranteed specific sums. Maximums fixed by such formulas are never exceeded, but there are no minimums because of the policy to recognize all applications. When funds are not sufficient to honor the formula-producing allocations, a system of negative proration is used.

The detailed procedures of qualification vary according to the occupational categories, but the essential ingredients are as follows:

1. A written agreement is exchanged between the local school district and appropriate members of the vocational education staff in the State Department of Education.
2. The written agreement describes the extent or character of program to be conducted and includes a statement of acceptance of the provisions of the California Plan for Vocational Education.
3. A final written report is submitted at the conclusion of the program (end of year), giving accomplishments, certain statistical information, and qualifications of instructors.
4. A final certified application for payment is submitted.
5. Approval of the application for payment is made by an appropriate Department of Education staff member.

Allocations to local school districts, made at the conclusion of each school year, are keyed to the "teacher unit," although the factors of "excess cost" are included in each formula. In 1960-61 these formulas produced the following averages for instructional programs:

Full-Time Students

Vocational education in agriculture	$1,000
Distributive education	650
Vocational homemaking education	700
Trade and industrial education	650

Part-Time Adult or Extension Classes

Vocational homemaking education (per class)	$ 20
Trade and industrial education... (per class)	140

The practice of reimbursement on the basis of 50 percent of excess costs is based upon the following theory. The state and the local school district share at approximately a 50-50 ratio the costs of instruction in *all* subject matter areas. It follows, therefore, that a similar ratio should exist in the support of vocational instruction. If the requirements for qualifying vocational instruction entail expenses beyond the normal costs of other class work, it is reasonable to expect that state and/or federal funds should be used to compensate for 50 percent of the additional instructional costs.

Other than for the National Defense Education Act Title VIII program, use of federal and/or state vocational education funds for equipment purchase has been generally discouraged.

Vocational Guidance

The Department of Education contains a unit, identified as the Bureau of Pupil Personnel Services, that provides consultation, leadership, and supervision services for guidance and counseling. This unit was first formed to emphasize vocational guidance and occupational information, and it was financed through the use of vocational education funds. The services of the unit were later broadened, and vocational funds were withdrawn from its support. Today it performs as a department-wide service unit for all grade levels and in all areas of pupil personnel work, including vocational guidance.

Recognizing the extreme difficulty in developing currently authoritative occupational information, an arrangement has been made with the State Department of Employment whereby "occupational briefs" are widely and continually distributed to local school counselors. At present the series of such "occupational briefs" exceeds 300 separate descriptions. These briefs, based sometimes on statewide information, and at other times on regional or area needs, have general and practical usage within the schools.

The matter of adequate vocational guidance, however, continues to be a critical problem. With a current ratio of approximately 1 full-time counselor to 500 students at the high school level, together with the complexity of the task itself, a situation of inadequacy of

occupational information and vocational guidance is quite evident. At present California high schools are reaching for a ratio of 1 counselor to 300 students. Even when this ratio is attained, the complete task of vocational guidance will remain unmet.

Advisory Committees

The use of local representative advisory committees is traditional and almost universal in all areas of vocational education — in agricultural, business and distributive, homemaking, and trade and technical education. Some advisory committees are continuing in nature; others are used for short durations of time. Some are general in nature; others are for specific purposes. Tested experience over many years of operation has demonstrated the value of representative local advisory committees. When properly conceived, organized, and used, they become indispensable to the successful conduct of local programs of vocational education.

Statewide advisory committees are also traditionally a part of normal operations. In most cases, however, such committees are appointed for specialized purposes and for short periods of time. In only a few instances are there any continuing statewide advisory committees. There has never existed, nor does there now, a general, statewide advisory committee for the total program of vocational education.

Cooperation With Other State Agencies

In full recognition that other governmental agencies have interest in and some shared responsibility for education and training, systematic means have been developed to foster communication and cooperation among them. Within the state, the Department of Industrial Relations contains units with legal responsibilities for the supervision of wages and hours in employment, of apprenticeship, and of laws affecting the employment of minors. The State Department of Employment has responsibilities for the recruitment, placement, and orderly deployment of the work force. Two interdepartmental committees, continuing in nature, assist in coordinating the activities of these governmental units. One such committee is identified as the Interdepartmental Committee on Youth Employment, composed of four representatives of each of the Departments of Education, Employment, and Industrial Relations. Another such device for communication and coordination is the Interdepartmental Committee on Skill Development. Each of these committees contains representation of the vocational education staff of the Department of Education.

There is a growing tendency within the program of vocational education to make full use of the specialized services of other governmental units. This "division of labor" seems desirable since the total task of anticipating training needs, recruitment of students, design of training patterns, training itself, placement, and followup becomes increasingly complicated. While locally operated vocational education programs have always assumed responsibility for such matters as determination of needs, recruitment, and placement, more and more dependence is being placed upon these kinds of services available through the State Department of Employment.

Preparation of Vocational Teachers

Insofar as possible, the responsibility for the preparation of teachers for vocational instruction has been allocated to the state university and the state colleges. In fact, all vocational teachers are prepared through participation of such institutions. In order to assist in this activity, and in order to maintain essential standards of quality in vocational teacher preparation, two devices are used:

1. A series of contractual agreements are made with teacher preparation institutions for the maintenance of specialized staff and services for vocational teacher preparation. These contractual agreements involve the use of vocational education funds for the support of excess costs involved.

2. Certain state vocational education staff members are assigned, both by location and by responsibility, to coordinate and assist in the teacher preparation process. Some of this service is performed by staff located at headquarters, and some by staff located on the campuses of the colleges.

Although the state vocational education staff has not abrogated its responsibility for teacher training, this function has been allocated more and more to the teacher education institutions. Through the use of detailed contractual agreements between the cooperating teacher education institutions and the State Board of Education, together with continual attention upon the accreditation process, satisfactory patterns of recruitment, selection, training, and placement have been attained.

In all cases, minimum requirements for vocational teacher competence, as delineated in the State Plan for Vocational Education, are recognized in certification requirements, in subject matter coverage, in practice teaching, and in occupational background. An essential, long-recognized, and uniformly accepted requisite for any vocational education teacher is subject matter competence. In certain areas such subject matter competence can be obtained only through years of occupational experience, as is the case in many of the trades. In other areas, a satisfactory depth of subject matter coverage in a college is acceptable, as in the case of certain phases of agricultural or homemaking education.

The State Vocational Education Staff

The professional staff assigned the state-level leadership and supervision of vocational education comprises an integral unit of the Division of Instruction in the State

Department of Education. It is organized into four units, designated as bureaus, with a bureau chief heading the functions of agricultural education, business education, homemaking education, and industrial education; collectively it is known as the Vocational Education Section. This staff operates under the general leadership of a State Director of Vocational Education, who reports to an Associate Superintendent of Public Instruction.

The vocational education staff is assigned responsibility for all areas of public school curriculums involving the applied arts. These include other than vocational education subject matter areas. For example, all phases of industrial education become the responsibility of the Bureau of Industrial Education, including industrial arts education, industrial technician education, preengineering education, as well as vocational industrial education. The vocational education staff, therefore, is supported by both federal vocational education funds and state funds. A consultant for industrial arts, for example, is supported exclusively by state funds. On the other hand, a supervisor of apprenticeship training is supported by both federal and state vocational education funds. The entire staff is in civil service status. Selection and screening is done by the state agency that performs such services for all state personnel.

The size of the state has influenced the decentralization of the total professional staff of some 60 persons. Branch offices are located in "regions" of the state so that services may be close to the operating programs and maximum travel economies may be obtained. In all cases the branch offices include staff members from the several bureaus.

The general organization of the vocational education staff is illustrated on the opposite page.

Vocational Education in Private Schools

Private schools of many types abound in California. At least 150 separate schools specialize in preparation for a wide array of occupations from commercial art, aircraft, barber, and business to photography, nursing, radio, secretarial, and watchmaking. For the most part, these schools serve post-high-school training needs at less than the baccalaureate level.

All private schools in California that award diplomas or certificates of achievement are subject to review and appraisal by a special unit in the State Department of Education. State licensure is not required. Thousands of persons receive occupational preparation through these private institutions each year.

Vocational Education in Business and Industry

Although it is difficult to measure the number of persons who are prepared for occupations through training programs conducted by business and industrial concerns, the significance of this contribution to vocational education in California requires that such programs be mentioned. During the past 20 years private business and industrial concerns have come to accept more and more responsibility for participating in and contributing to job preparation. In almost every such case, however, the training programs are keyed to and meshed with the programs of vocational education offered through the public schools.

Training and Retraining

Current emphasis upon training and retraining as a partial solution to the problem of unemployment requires a different educational approach. Although California's problem of unemployment is no less than that of most other states, the fact that it is no worse is due, to a large extent, to the long-existing, wide array of vocational education opportunities available to the work force in the state.

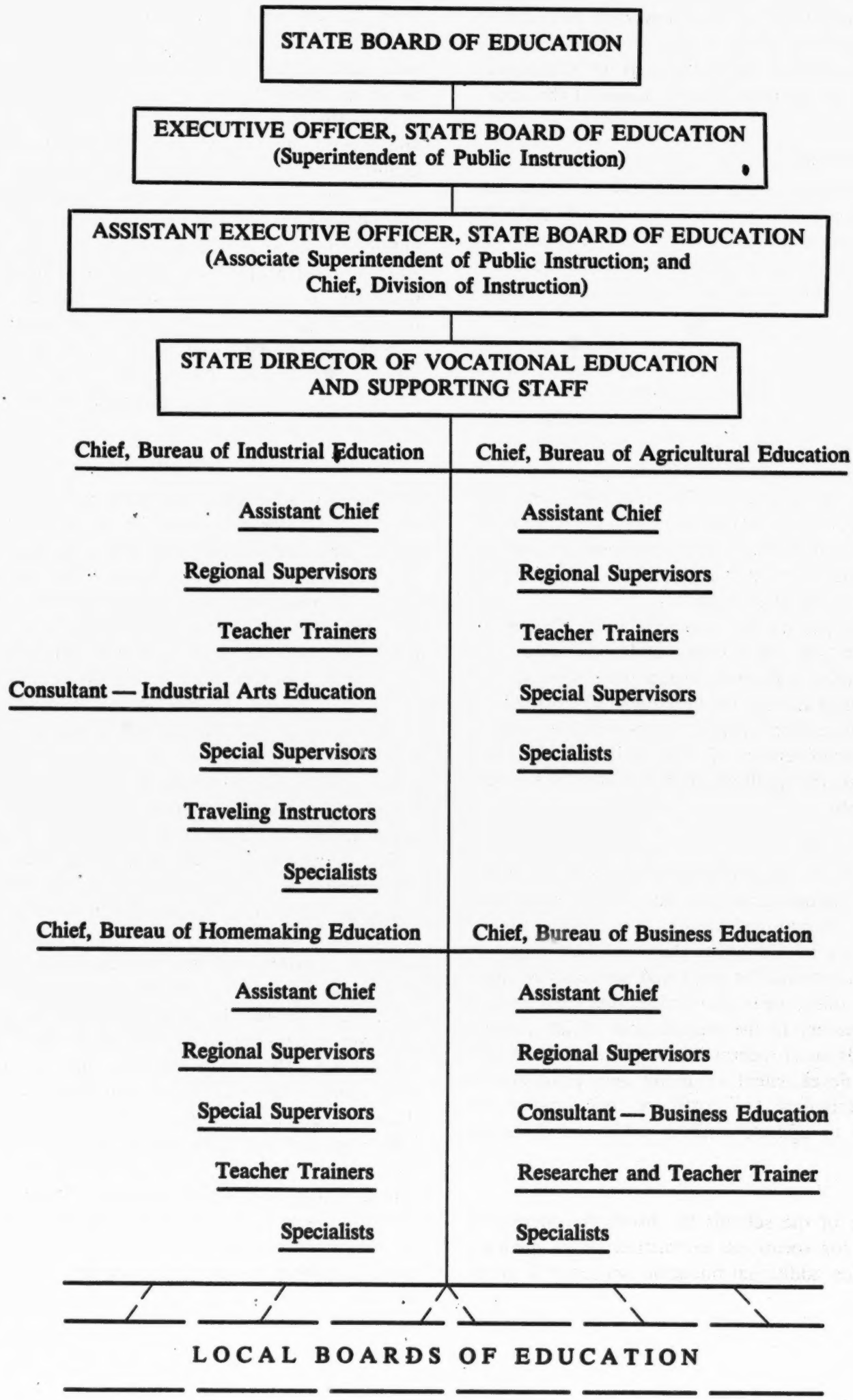
The past 30 years have witnessed a series of abrupt and complex changes that have produced prodigious and invigorating influences upon California's economy. A great depression, a World War, a postwar readjustment period, another war, and a series of bulges and recessions in the economy; an in-migration of population unmatched in the history of the world; the change from an agricultural to an industrial economy; the development of vast enterprises of aircraft production, shipbuilding, electronics, and missiles; ponderous efforts to build roads, hospitals, and schools — all these have happened to California, and more.

It is surprising that, with all of these amazing changes, only minor disruptions have occurred in the orderly deployment of California's work force. There is much evidence that one of the most significant influences in the orderly absorption of this series of shock waves in the economy of the state has been the continual and extensive contribution of the public schools in the area of assisting people to acquire an ever-expanding array of work skills.

Past Experience

During World War II, California public schools enrolled more than a million persons in specific defense-connected occupational training. New workers were prepared by the thousands for shipyard and aircraft production jobs. Other thousands of job holders were retrained for higher priority skills. This one effort accounted for one-seventh of all the persons trained for the war effort by the schools of the entire nation.

Then, following World War II, came the necessity of adjusting the skills of the work force, including thousands of returning veterans, to California's new economy. Again the schools were called upon to make extreme efforts, and in 1947 no less than 674,000 persons were enrolled in adult courses that were organized, for the most part, to serve the readjustment needs of the economy.


STATE BOARD OF EDUCATION
EXECUTIVE OFFICER, STATE BOARD OF EDUCATION
(Superintendent of Public Instruction)
ASSISTANT EXECUTIVE OFFICER, STATE BOARD OF EDUCATION
(Associate Superintendent of Public Instruction; and
Chief, Division of Instruction)
STATE DIRECTOR OF VOCATIONAL EDUCATION
AND SUPPORTING STAFF
Chief, Bureau of Industrial Education
Assistant Chief
Regional Supervisors
Teacher Trainers
Consultant — Industrial Arts Education
Special Supervisors
Traveling Instructors
Specialists
Chief, Bureau of Agricultural Education
Assistant Chief
Regional Supervisors
Teacher Trainers
Special Supervisors
Specialists
Chief, Bureau of Homemaking Education
Assistant Chief
Regional Supervisors
Special Supervisors
Teacher Trainers
Specialists
Chief, Bureau of Business Education
Assistant Chief
Regional Supervisors
Consultant — Business Education
Researcher and Teacher Trainer
Specialists
LOCAL BOARDS OF EDUCATION

These are examples of two powerful, forced-draft efforts, accomplished within a span of 40 years of consistent ceaseless effort upon the part of California's public schools to meet the training needs of the state's manpower.

Recent Experience

With the changing of job requirements at an accelerated speed during the past few years, and with the shifting of the industrial economy to new activities and new enterprises, increased attention has been given to training and retraining of both employed and unemployed workers. In 1961 more than 4,300 separate classes were conducted for employed workers who were either apprentices or journeymen-craftsmen. These classes varied from automotive mechanics to welding. They included more than 3,000 journeymen in the aircraft industry, 4,000 journeymen auto mechanics, 6,500 apprentice carpenters, 4,000 drafting craftsmen, 4,200 electrical apprentices, 3,700 plumbing and pipefitting apprentices, and 30,000 technicians. All of these classes were conducted in the afternoon or evening through the means of classes for adults organized by high schools or junior colleges.

This is only part of the story of recent and current activity in the area of training and retraining. The record in the area of business occupations is just as extensive. Enrolled during 1961 in some 3,600 separate classes were more than 125,000 adults who had as their purpose the improvement of their skills for jobs they already held or the addition of skills essential for new or different jobs.

Current Activity

The pace of the past few years seems to be quickening. Special, unique programs have been established for preparing unemployed persons for gainful employment. These are in addition to the thousands of classes created and maintained for employed workers who must acquire new skills, new knowledge, and new understandings necessary to the maintenance of job competence. The advent of federal aid for these efforts makes possible the development of many new programs of instruction heretofore too costly or too complex for local schools to operate without additional financial assistance.

Policy

The ability of the schools to absorb the increasing requirements for vocational instruction seems obvious, especially when additional financial assistance is available. It will be assumed, therefore, that the policy within the state will be to administer, coordinate, develop, and operate all federally aided programs of vocational education through the existing staff organizations at both the state and local levels. Insofar as possible and appropriate, this will be accomplished through the facilities of the public schools.

This policy is based upon the fact that California is blessed with the most extensive and the most modern public schools to be found any place in the world. Its educational structure both permits and encourages wide flexibility in meeting any known training need. Its time-tested adult education program, its system of junior colleges, its broad-based teacher licensure structure, and its high degree of local autonomy — all combine to make its facilities and programs responsive to the needs of the state.

Summary

California is a big state, and all of its essential services are sizable. For a number of years its program of public school education has enrolled the largest number of pupils among all the other states. The people of this relatively young state have been generous in their support of public education. Innovations in both the program structure and its tax base have not been hindered by tradition or precedent. It follows, then, that its program of vocational education is extensive.

The preceding description of vocational education in California is, no doubt, colored by provincial pride and influenced by its accomplishment and its magnitude. It must be specified that this description, although accurate, has not included an assessment of difficulties, failures, frustrations, deterrents, and other problems that abound in a complex of this nature. An objective, adequate appraisal of the manner in which the program matches the total needs of the state would require treatment more extensive than even this abridged description of its salient features. This descriptive statement, therefore, must include the stipulation that no part of the program and no part of the setting in which it operates are flawless. There exist strengths and weaknesses that vary from school to school and from year to year. There are corrective adjustments that need to be made. There are new practices that need to be implemented. There exist gaps that need to be closed. There are attitudes that need to be changed. There are innovations that need to be attempted. In short, the program of vocational education in California, as in any other state, is neither complete nor perfect.

XIII. Vocational and Technical Education in Illinois

Editor's Note

At the request of the office of Superintendent of Public Instruction of the State of Illinois, a very fine two-year study of Vocational and Technical Education in Illinois has been prepared by four staff members of the University of Illinois and Chief, Emeritus, Bureau of Adult Education, California State Department of Education. Because of the carefulness and completeness of the study, we have requested and obtained permission to reproduce on the following pages the title page to the study, table of contents, and Chapter VIII, Summary of Findings and Recommendations, in its entirety. The reader should understand that this is a study, and that the recommendations embodied in the study have not yet been implemented.

Vocational and Technical Education in Illinois

TOMORROW'S CHALLENGE

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University of Illinois, Urbana, 1960, for the
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Springfield, Illinois

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Summary of Findings and Recommendations

[Reprint of Chapter VIII]

All of the social and economic trends in Illinois point to a tremendous challenge for the education of citizens in the future. Every agency which has a part in this great enterprise will have to re-examine its role to determine how it can contribute more effectively than it has done in the past. Private educational institutions, business and industry, the various voluntary agencies, and the public school system — all must re-examine their contributions in the light of future needs for the welfare of this state and the nation.

To the members conducting this study, the evidence shows that government through the public school system must exercise an increasingly greater responsibility in the education of citizens. This study presents an estimate of the task, with particular reference to vocational and technical education, which this state should set as a goal for the public schools to accomplish by 1970.

This task requires a comprehensive perspective of education from elementary school through the college and university. The special phases limited to this study are the vocational and technical programs at the high school and post-high school levels, respectively.

A review of the outstanding characteristics of the perspective for these two phases of education will provide a background for the specific findings and recommendations which follow.

Vocational education is described in this study as the instruction at the high school level which deals specifically with preparation for occupational work. It is not limited to youth in high school. It includes part-time instruction for adults, for those who want to complete requirements for graduation, and for others who need further education to upgrade themselves on the job or to train for new jobs.

Vocational education is not limited to the courses of study which traditionally have been called "vocational subjects." It includes as well much of what is now called "practical arts" and business subjects. The responsibility of the public school system is to face the challenge presented by a wide variety of occupations for which special occupational preparation is needed at the high school level for youth and adults. This challenge calls for new ways of organizing and financing the total program of education.

Technical education is the phase of education with specialized preparation for occupational work between the high school and the four-year college which prepares students mainly for professional work. Institutions of higher education have concentrated largely on education for so-called professional work. In recent years the occupations have had an increasing need for workers with specialized talent and general knowledge superior to what the high school can give and yet requiring less time and different preparation from that which the senior institutions of higher education afford.

Technical education is in a stage of piecemeal development in Illinois. It consists of a collection of a few special courses of study, operated by local school districts through junior colleges in a few instances and as "special programs" attached to high schools in other cases. The vast range of occupations is hardly touched. What is needed is a well-rounded program of education of two years beyond high school with broad scope and not just a collection of a few special courses. The program of the future must offer individuals a choice among a wide variety of special courses within a context of general education for all persons. Moreover, such a program must be viewed as a part of higher education, requiring a special system for organizing, administering, and financing.

Technical education, therefore, in reality is junior college education. Since nearly half of the curricula in technical education consist of courses designed to provide education of general need for all citizens, a system of junior college education is needed which includes these curricula *and* those which lead students into the professions, requiring transfer to senior institutions of higher education for completion. More than this, technical education must be provided for large numbers of the adult population to upgrade themselves on the job or to prepare for new jobs as a result of technological change.

The specific findings and recommendations for improving vocational education at the high school level

and technical education at the post-high school level are as follows.

High School Level

1. Two basic premises underlie the principles and procedures for improving vocational education in the high school. The first is the assumption that the comprehensive type of high school is the most suitable for the American society. The second one is that the high school should provide some initial vocational study in the eleventh and twelfth grades for substantial numbers of students whose occupational interests lead to immediate employment after graduation or to further occupational preparation at the junior college level.

2. Means to strengthen the public school program from elementary through high school should be continued and stepped up at a faster pace. Plans should be established to complete the reorganization of small districts and the consolidation of small schools within the next decade. The existence of reasonably effective administrative units and attendance centers (schools) is fundamental to the improvement of all phases of the educational program including vocational education.

3. A comprehensive approach is recommended in the planning of the high school program. The degree of specialization at this level is limited, but insofar as possible the high school should provide for the maximum development of students whose occupational goals lead (1) to further education for college graduation, (2) to further education at the junior college level, or (3) to immediate entry into occupational work.

4. A minimum high school population of 2,000 students is necessary to provide organization of the curriculum for efficient and economical instruction to meet the broad range of interests and needs. In view of the fact that only a few of the local school districts are likely to have a high school population of this size, it is recommended that immediate steps be taken to establish cooperative arrangements in small regions whereby several local districts can consolidate certain specialized vocational work in the eleventh and twelfth grades. These regions should be planned as subregions within large ones which would be designed to operate the post-high school programs of technical and semi-technical work.

The following curricula are recommended for initial consolidation on a subregional basis wherever this arrangement can provide a better program than the individual district can offer alone: vocational agriculture, trade and industrial work, business and distributive occupations, and homemaking.

These schools would serve three purposes, providing (1) for part-time attendance (two days per week or equivalent) of students from the regular high schools, (2) for youth who drop out of high school to return for a reorientation of their education, and (3) for part-time attendance of adults.

5. The high school should not be expected, even in the subregional school, to provide a complete vocational training. Students should receive a basic foundation in broad fields of occupational choice upon which they can build specialized technical training at the post-high school level.

6. The special appropriation for vocational education in high school should be transferred to the state distributive fund and this fund should be increased sufficiently to allow for allocations as outlined in items 7 and 8.

7. The financing of vocational education should be broadened to strengthen the programs offered solely by local districts and to accommodate the consolidation of special programs where feasible within areas (subregions) comprising several local districts. Instead of the special vocational aids as they are now known, there should be a general distribution formula with proper weightings to account for the variations in cost of the major components of the educational program. This principle should apply eventually to all phases of the total program and not exclusively to vocational education.

As the first step to move in this direction, it is proposed that the state distributive formula be revised to give local districts a choice of remaining on the old formula (present method of special aid on an "approved" basis) or going on the new one. In this manner the state could simplify its fiscal policy by transferring the special earmarked vocational aid at the high school level to the general distributive fund. The problem at the state level would then become a matter of making a division in the computation between districts which choose the old formula or the new one. This arrangement would avoid jeopardizing the existing programs, yet it would facilitate orderly adjustments in adapting to changing needs.

8. A new financial formula is proposed for allocation of expense for current operation and capital outlay for vocational education as follows:

a. Current Operating Expense

The state funds available to each subregion for consolidated vocational programs at the high school level would be the amount obtained by subtracting item (2) from item (1).

(1) The total approved operating cost of the subregional programs including transportation.

(2) The prorata share of constituent local districts. Each local district's share would be computed as the district's average per pupil operating cost applied to the number of its students attending the regional center in proportion to course load, not to exceed 50 percent of the cost per full-time equivalent student.

For example, a district with an average per pupil cost of $500 sends 50 pupils to a subregional center for specialized work where the

approved cost per full-time equivalent student is $700. (These specialized programs including transportation may be expected to cost about 40 per cent more on the average than the regular ones.) The student's load at the center is about 40 per cent of his total course work. Hence, $200 per student (40 per cent of $500) is contributed by the sending district and $500 per student (the difference between the approved cost of $700 and the local district's share of $200) is obtained from state funds.

This formula would also apply to resident dropout students of each district. Assume that the same district as illustrated has 50 dropout students attending the subregional center on a full-time basis for vocational and other high school level work. The local district's contribution per pupil would be $500 minus the regular state aid allotment per pupil. If the latter were $150, then the district's share would be $350. The state's share would be $350 including the $150 in state aid which would have been paid to the local district had the student remained in the regular high school.

This arrangement would require local districts to maintain a continuing responsibility for the educational rehabilitation of its youth who drop out of high school.

In the case of part-time adult instruction on the high school level, which on the average amounts to one-fifth of a full-time load per enrollee, the local district would contribute an amount per full-time equivalent student equal to the yield of its qualifying tax rate per student in the public schools for regular state aid. For example, assume that the local district has an assessed valuation of $20,160 per regular school pupil. The qualifying rate of 62 cents would yield $125 per regular pupil. The district would contribute $125 per full-time equivalent adult student (about $25 per enrollee) and the balance would be obtained from state funds. This procedure would place responsibility upon the local districts to develop planned programs of part-time vocational education for adults.

This procedure would require that the Superintendent of Public Instruction prepare objective standards to be used in approving operating budgets of subregional vocational programs. In due time experience would yield sufficient empirical data so that the "approval" procedure could be changed to a mathematical cost unit basis and incorporated in the general distribution formula. This would then not mean that the state office should relinquish its general supervision to assure minimum standards.

Federal funds as now provided could be kept separate from the distributive fund and used to stimulate the development of subregional programs. Or if preferred, these funds could be transferred to the general distributive fund and used in the manner described for state funds.

b. Capital Outlay

It is proposed that the state finance outright the cost of sites, buildings, and equipment for high school vocational and adult education programs organized on a subregional basis.

9. An administrative organization will be needed to operate the subregional programs. It might be a lay board consisting of designated representatives of constituent local boards. This body would be assigned appropriate functions of policy making with power to employ the necessary personnel to operate the programs and services.

10. The level of the foundation program in the public schools must be moved upward, with an increasing proportion of the cost to be borne from state taxes. While this study is directing attention to certain phases of education called vocational by definition and custom, the total program must be kept paramount. There is no solution to any part out of context of a total wholesome situation.

Post-High School Level

1. In view of the critical needs for increasing numbers of technically trained persons, the state should establish a forward-looking policy for the development of a program of post-high school technical and semi-technical education at public expense. A few curricula require one year for completion, others three years; but the great majority require two years of full-time study.

2. The state should undertake a ten-year program of development leading toward a goal of educational opportunity which is in keeping with the state's economic and cultural status in the nation.

3. By 1970 the state should have an organized system of instruction in about 50 technical and 35 semi-technical curricula. Specific estimates are prepared for 44 and 32, respectively. Technological advances will require additional curricula as time goes on.

4. The program of development should make provision for instruction of students in full-time and part-time attendance.

5. Reasonable estimates of annual enrollments which public institutions should have to relieve the critical shortages (not the complete demand for additional workers and replacements) in 1965-66 are as follows: (1) 14,429 full-time and 12,420 part-time enrollments in technical curricula, (2) 42,955 full-time and 40,180 part-time enrollments in semi-technical curricula. The grand total is 70,477 full-time equivalent students. To supply half of the full-time enrollments in these two-year curricula would require 23.6 per cent of the 1965 high school graduates. Another 2 per cent would be required to meet half of the estimated enrollments of these curricula in private institutions. In 1958, 1.5 per cent of

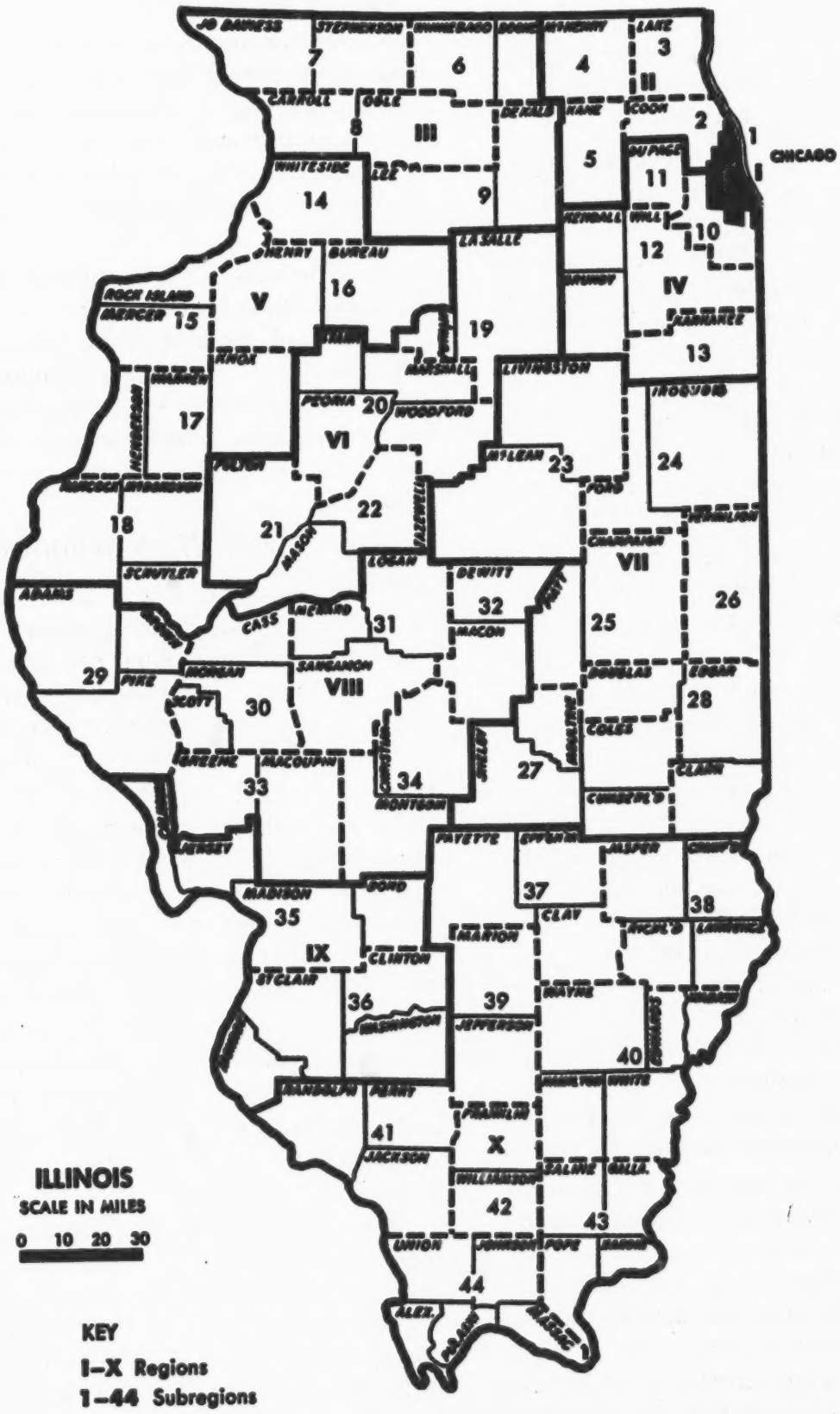

Figure 2: Proposed Regions for Vocational and Technical Education Programs (Public High School and Post–High School Levels)

high school graduates entered some of these curricula in public institutions and 1,8 per cent in private institutions.

In 1958 the first-time enrollees in liberal arts and professional curricula in post-high school institutions in Illinois amounted to 45 per cent of the high school graduates in that year. In 1965 these enrollees are estimated to reach 48.8 per cent of the high school graduates of that year. Thus, if the state could develop programs to accommodate these estimates, a total of approximately 74.4 per cent of the 1965 graduates would enter post-high school educational programs of two years or more. This figure seems to be a reasonable goal within the next decade.

6. To accomplish this task with respect to technical education, the state should organize a statewide system of comprehensive-type junior colleges. This is preferable to a dual system of junior college education with one for technical and semi-technical curricula and another for college transfer curricula because of economy, better guidance of students, more systematic opportunity for student choice, administrative feasibility, and greater institutional prestige to attract competent staff members.

7. A state board of education should be created and assigned general policy making responsibility for the public junior colleges and the public elementary and high schools. The Office of Superintendent of Public Instruction, a constitutional elective office, should be replaced by an appointed state superintendent who would serve as chief executive officer of the board of education.

In the meantime, it is recommended that an interim advisory committee on junior college education be created to advise the State Superintendent of Public Instruction and that the Superintendent be empowered to carry out developments of general policy established by law.

8. As a guide for implementing these goals, this study recommends the establishment of ten regions in the state strategically located with reference to population distribution, means of transportation, and geographic and sociological factors. A region should have an estimated minimum of 500,000 gross population or 30,000 high school enrollment between 1965 and 1970 to provide an appropriate base for a broad program offering reasonable opportunity for individual choice and meeting other criteria.

9. The largest population center of each region[1] should serve as the location of a junior college with technical, semi-technical, and college transfer curricula. All technical curricula for the region should be centralized there. It is estimated that from two to three smaller cities in each region would serve as appropriate extension centers for either semi-technical or college transfer curricula or both. No extension center should be established with an enrollment of less than 500 full-time students.

10. Each operating unit should have a campus that is designed to serve the program to be offered and to be expanded to meet future growth. The central unit should be so arranged as to accommodate a central administrative staff for the region; classrooms, laboratories, and shops for technical, semi-technical, and college transfer curricula; and common space for library, food service, recreation, and parking.

Seven of the proposed regions will have from 500,000 to 600,000 population in 1965. A fully developed program will house potential enrollments of between 2,300 and 3,000 full-time students in the central unit for technical and semi-technical curricula. At least another 1,000 or more would be expected for college transfer work, giving a total enrollment of between 3,000 and 4,000 full-time students. An institution of this size will require a campus of 120 to 150 acres.

About 19 extension centers in these seven regions would be expected to have an enrollment ranging from 500 to 1,500 full-time students in semi-technical and college transfer curricula. In each case about an equal number of part-time students for evening classes may be expected.

11. Each operating unit would have primarily a commuting student body. But planning should take into account that substantial numbers may be expected to prefer living in residence on or near the campus. This is particularly true for the main centers, where all of the technical curricula should be centralized.

12. A unified administrative organization[2] should be established to coordinate the total program of the region in the junior college. A regional lay board is proposed for local policy and advisement within general requirements established by law and rules and regulations of the state office.

In keeping with the status of this institution, the chief executive officer of the region should have the title of president. There should be a central administrative staff for finance, personnel, guidance, and other services for the whole region. Each operating unit should have an administrative dean, supervisory and instructional personnel, and other staff.

13. Costs for the estimated enrollments in technical education which the state will need in 1965-66 are based on 1959-60 prices, assuming an annual increase of 3 per cent (the long-term trend) in living standards but no allowance for increase in cost of living (inflation).

An average annual professional salary of $10,000 will be needed in 1965. The total cost of operation will be $1,000 per full-time student and $625 per full-time

[1]Because of the density of population in the Chicago metropolitan area, the methods of organizing operating units in Regions I, II, and IV would not follow the pattern for the other regions described in items 9, 10, and 11.

[2]Such an organization is already available in Region I (Chicago).

equivalent student on a part-time basis. The total annual operating cost for 70,477 full-time equivalent students is estimated at $65,567,125.

Among the comprehensive-type junior colleges developing throughout the country, there is a trend to establish tuition policies that are comparable to policies for the freshman and sophomore students in the public senior institutions. A similar policy would seem reasonable in Illinois, with a maximum annual charge of $150 for each full-time student. At this rate the net operative cost for the development proposed in this study would be $54,995,575.

14. Costs of capital outlay for a properly designed campus, including site, buildings, and equipment, will cost at least $3,000 per full-time student, or a total amount of $172,000,000. This includes space for administrative and special service personnel, library, regular classrooms, laboratories and shops, food service, and recreation (not interscholastic athletics). This does not include facilities for residence.

15. Estimates of enrollments and costs for students in academic (college transfer) curricula in junior colleges are not included as a part of this study. It is generally known that the junior college will carry a significant share of the task of educating these students. Analysis of expenditures in a number of junior colleges reveals, however, that the average cost per academic student for operation and for capital outlay will be somewhere between 80 and 90 per cent of the cost per student in technical and semi-technical curricula.

16. Two methods of financing junior college education are proposed for consideration.

The first one is outright state support based on budget approval by a state board of education (by the state superintendent until such a board is created). The board (or the state superintendent) would have at its disposal technical assistance to prepare objective criteria for making such approvals.

The three major tax bases have been projected to 1965, and the respective rates required for each one of them alone to yield the estimated net cost of $54,995,575 for technical and semi-technical curricula are as follows: (1) retail sales, 0.32 per cent; (2) net personal income, 0.16 per cent and (3) property, 14 cents per $100 of assessed valuation.

The second method is a combination of state and regional taxes. In principle this is the same as the present method of financing the public elementary and secondary schools. This procedure has serious disadvantages with the fairly heavy burdens already carried by property and general sales taxes. To earmark a regional tax leeway from either one of these bases would hardly seem to be judicious when each form is already near the point of requiring relief by shifting some burden to other tax forms. This is especially true of the property tax. However, the establishment of a state income tax, which all informed persons realize will have to be done eventually, would make it possible either to earmark a regional income tax base or to use this form as a state tax to relieve one of the other forms which could be earmarked for this purpose.

The first method seems preferable to the second. This program of education possesses such a high degree of complexity that citizens probably can express a more effective voice for its support through state government. However, if the state-regional procedure is viewed as an essential means to stimulate vital interest and participation of citizens, it should be adopted.

17. Four general steps for implementing these proposals are recommended as follows:

a. Create a state system of junior college education.
b. Empower the State Superintendent of Public Instruction to employ the necessary technical staff to plan and supervise the development of the program.
c. Create an advisory committee to the Superintendent of Public Instruction on junior college education, pending the establishment of a state board of education.
d. Set a ten-year goal for full development of junior college education.

XIV. Vocational Education in Michigan

By Leon J. Alger[1]

Introduction

Philosophy and Objectives[2]

The program of vocational and technical education in Michigan is geared to an area of service related to the nature of the state's economy — one heavily oriented to the production of the nation's most widely used consumer goods. The trend toward use of greater technical skills in agriculture, business, industry, and home economics occupations places added responsibility upon the educational program to provide these worker skills. It should be emphasized that the program of vocational and technical education is not a separate adjunct of public education: it is an essential part of the total program of education in a single, comprehensive effort to meet the greatest number of needs of the largest possible number of Michigan children, youth, and adults.

The goal of programs of vocational education should be to contribute in a unique and specific manner to the development of individuals who will possess the necessary competence for chosen occupations. A concomitant goal should be the economic improvement of society.

A broad concept. Vocational education means education that is needed to engage in socially useful work. It is conceived of as that portion of education which goes further than general education by dealing in a more specialized manner with the development of occupational competence. The concept as such is not restricted to those programs that are reimbursable through the federal vocational education acts, but this paper will deal primarily with those programs that are.

Vocational education involves a variety of student experiences or learning activities. Included among such experiences should be supervised work experience in and relating to the occupational field to which the individual aspires or in which he is already engaged. There should also be instruction designed to provide information, to develop understandings, to illustrate the application of principles, and to motivate and develop socially desirable attitudes for the person preparing for entry or advancement in an occupation. Such organized instruction should be given by a person or persons who possess competence and experience in the occupational field involved. Student activities contribute to vocational education when based upon students' interests in the occupation and when related to the occupation. Student-teacher-employer-parent planning of such activities and experiences contributes to the appropriateness and effectiveness of these.

Effective programs of vocational education may be organized (1) to prepare individuals for entry into employment; (2) to upgrade, prepare for advancement, or retrain for another occupation those already engaged in an occupation; and (3) to provide basic preparation for additional specialized vocational or professional education.

Comprehensive education needed. Preparation for work has always been an important part of education. Success at work is essential for survival and for the development of useful citizens. To provide one's share of the goods and services needed by mankind is a recognized attribute of citizenship. Vocational education increasingly has been included as a part of a total educational program in the public schools. One educational goal toward which the public schools have worked is the development of systems that are comprehensive in character. Present and prospective workers for all walks of life need to attend comprehensive schools where they may learn both to live and to make a living. Although it is recognized that not all vocational education needed by people can be given in community schools, the curricula of such schools should reflect as far as possible the needs of the students for specialized education and for occupational competence.

Vocational guidance essential. Vocational education is most effective when it is preceded, accompanied, and followed by vocational guidance. When youth are pro-

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[2]The material in this section has been adapted from the *Michigan Vocational Education Evaluation Project — Report of the Task Force on Philosophy and Objectives*, 1962.

vided with continuous, adequate guidance services, they are better able to know their occupational interests, abilities, and aptitudes and to formulate occupational plans. Programs in vocational education offered in a school should reflect the vocational interests, the employment opportunities, and the training needs of youth and adults. Specialized courses for development of specific occupational competence should be available to those persons who want, need, and can profit from them.

A good program of vocational education, like any other program in a comprehensive school system, will, of necessity, involve individuals of varying general and special aptitudes and aspirations. Vocational education has a place in the total school program; it helps youth to make and substantiate vocational choices and to relate educational plans to these choices. It also should provide motivation for other school work, and indeed it could be used as a focal point toward which many of the total educational experiences or activities may be directed.

Brief Historical Sketch

The schools of Michigan have offered vocational education classes for more than half a century, beginning with the teaching of handtool trades and continuing onward to teaching the use of today's complicated machines in the factory, on the farm, in business establishments, and in the home. The level of excellence of vocational education has improved steadily, and there is every reason to believe that it will continue to do so.

With the advent of power machinery, the cost of equipping school shops was greatly increased. The coming of power equipment into the home increased the cost of the school's homemaking program. New developments in the field of business machines markedly increased the cost of preparing high school youth for jobs in offices and retail establishments.

Legislation. Recognizing the burden that was placed upon many secondary schools as they sought to keep abreast of the times in preparing youth for jobs in agriculture, business, industry, and the home, Congress came to their aid. In 1917 the Smith-Hughes Vocational Education Act was passed for the purpose of providing continuing grants-in-aid to schools desiring to offer programs of vocational agriculture, trade and industrial, and homemaking education. The George-Reed and the George-Ellzey Acts were passed in 1929 and 1934, respectively, for the further development of vocational education. In 1936 Congress granted further aid to the program of vocational education through passage of the George-Deen Act, which provided additional aid for the programs mentioned above and, in addition, funds for distributive education. In 1946 the George-Barden Act supplanted the George-Deen Act. This Act increased funds for vocational education and authorized the states to use a portion of the appropriated funds for the development and improvement of local guidance programs. Although vocational education funds have been used in a number of states since 1938 to maintain guidance services, the practice was made possible by an administrative interpretation of the Smith-Hughes and George-Deen Acts rather than by specific inclusion as in the case of the George-Barden Act. In 1958 the National Defense Education Act was passed. Its Title VIII amended the George-Barden Act to include funds for the training of highly skilled technicians in fields essential to national defense. Finally in 1961 and 1962, two acts were passed providing for the retraining of unemployed workers. These were the Area Redevelopment Act and the Manpower Development and Training Act.

Financial support. The readiness of Michigan schools for an expanded program of vocational education is indicated by the fact that the Legislature began regularly appropriating state funds to match federal vocational education funds after passage of the Smith-Hughes Act in 1917. Financial support of vocational education by the Legislature through special appropriations has been continuous for over 40 years. The number of school districts taking advantage of federal and state funds for the development and improvement of vocational education for youth and adults has grown steadily from year to year since 1917.

Growth of programs. Although some start had been made in the direction of preparing youth through vocational education to become productive citizens, the advent of state and federal grants-in-aid encouraged Michigan to set herself earnestly to the task of meeting the educational needs of youth not planning to enter college for further formal education. The program of vocational education in local schools has grown from one serving a few hundred boys and girls prior to the 1920's to one now serving more than one out of every five enrolled in the secondary schools of Michigan. It is significant that while enrollments in grades 9 to 12 have increased 40 percent since 1940, enrollments in vocational classes have increased 99 percent. In the same period the number of adults enrolled in vocational education classes increased by 75 percent.

Over 78,000 out-of-school Michigan youth and adults were enrolled in reimbursed vocational education classes last year. Employed workers in agriculture, distributive businesses, and industry, as well as homemakers, enrolled in these classes for the purpose of improving their occupational competence.

Operation of Programs

Administrative Organization

Two state boards. Michigan has two state boards for the administration of educational programs. One, the State Board of Education, is composed of four elected members and the Superintendent of Public Instruction who also serves as secretary to this Board. The State Board of Education has general supervision of the Michigan Rehabilitation Institute and the four former state

teachers colleges, namely: Central Michigan University, Eastern Michigan University, Northern Michigan University, and Western Michigan University.

The Superintendent of Public Instruction is vested with power of supervision over all public instruction within the state, except that the public colleges and universities, other than the four mentioned above, have separate administrative boards which are responsible for the supervision of their respective institutions.

The second state board is the State Board of Control for Vocational Education. This is the policy-making body for reimbursed vocational education programs in public schools and institutions. This Board is composed of seven members as prescribed by the Legislature: the presidents of Michigan State University and The University of Michigan, the Superintendent of Public Instruction, the chairman of the State Board of Education, and three members appointed by the Governor representing employers, employees, and agricultural interests. The Superintendent of Public Instruction is executive officer of the State Board of Control for Vocational Education.

The Division of Vocational Education, within the Department of Public Instruction, is composed of the Assistant Superintendent for Vocational Education (State Director), five service chiefs, a finance accountant, a research consultant, and a number of additional consultants in the various services.

Advisory groups. One of the unique features of the administrative organization is the Michigan Council for Vocational Education Administration. This advisory group is made up of 18 local school superintendents, 1 from each of the Michigan Education Association regions. Each is elected for a period of 2 years by superintendents in his geographical region who operate one or more reimbursed vocational education programs. The Council serves in an advisory capacity to the Division of Vocational Education.

Because the Council is selected on a geographical basis, the membership tends to represent those vocational education programs that are present in smaller school systems, the majority of which have only agriculture and/or homemaking programs. Local directors of vocational education are also frequently consulted regarding the administration of vocational education programs. These local directors are generally found in the larger school systems, which tend to have more comprehensive programs.

Two other state-level advisory groups serving the Division of Vocational Education should be mentioned. One, the Advisory Committee on Title VIII of the National Defense Education Act, was appointed to assist the Division of Vocational Education in establishing principles and policies in connection with the provisions of the Act. The other is the Michigan Curriculum Program.

The Michigan Curriculum Program is a cooperative arrangement through which state curriculum committees, interested individuals, and other voluntary and official agencies work to improve Michigan's schools. This program has been in operation for almost 25 years and has been rather unique and highly successful in involving people in the improvement of education on a statewide basis. The curriculum committees that make up this program are advisory in nature. Several of these committees deal with specific curricular areas in vocational education. Included are committees on agricultural education, business education, guidance, home and family living, industrial arts, trade and technical education, and school holding power.

The Junior High School

Mention is made of the junior high school only to show its relationship to vocational education. No reimbursed vocational classes are operated at the junior high school level with the exception of a few ninth grade home economics courses; however, several programs do make a vocational contribution in terms of exploratory values. Most junior high school curriculums offer some practical arts courses in the area of industrial arts and home economics. In a few cases, the vocational home economics teacher also teaches a junior high class when the grade structure is such that the ninth grade is found in the junior high school.

These classes can play a significant role in helping the boy or girl explore a number of occupational fields. Many students are beginning to think constructively about their life's work at this time, even though a firm vocational choice may not be made for a number of years.

The Senior High School

Public school statistics indicate that from two-thirds to three-fourths of all Michigan students entering the ninth grade terminate their formal education at or before high school graduation. Current statistics reveal that approximately 28 percent of those entering the ninth grade fail to graduate from high school.

Significant trends. Many trends in our society today emphasize the need for schools to prepare students for the world of work. Never before has the need for our schools to assume this responsibility been more essential and urgent. Unskilled and semiskilled jobs are rapidly disappearing. According to the Michigan Employment Security Commission, the city of Detroit alone loses over 2,000 entry jobs annually. Most of these are in the unskilled or semiskilled categories.

Technician and highly skilled occupations are increasing at a tremendous rate. The ratio of occupations requiring specialized training to occupations requiring little or no training is increasing. More jobs are becoming more interesting, but these jobs are also requiring more education, more imagination, and more technical capability.

Perhaps one of the most significant facts facing Michigan educators is the number of persons reaching 18 each year, ready to enter the labor force or go on to college. The Michigan Employment Security Commission reports that this number will increase in Michigan from 115,600 in 1960 to 173,200 in 1970. Even more startling is the 27 percent increase in 18-year-olds between 1964 and 1965 — from 121,000 to 165,700 in 1 year! To provide adequate schooling and educational facilities for these people is a major concern. Indeed it is likely one of the most pressing problems to be faced by Michigan's economy during the sixties.

At the present time, reimbursed vocational education programs in Michigan are providing training for approximately 68,000 high school youth. When this figure is compared with the more than 347,000 high school youth enrolled in Michigan high schools, we must recognize that our efforts to date have not been adequate. Only about one-fourth of our young people who must acquire a salable skill before they leave high school are enrolled in reimbursed vocational education programs.

Reimbursed versus nonreimbursed programs. Vocational education programs, because they are reimbursed with state and federal funds, must meet certain standards. The teachers in such programs must have completed minimum educational and occupational experience qualifications. There are also certain requirements in regard to length of classes, selection of students, and facilities. Consultants are available from the Division of Vocational Education to advise in regard to curriculum development. Curriculum development is a local responsibility with assistance from the state level.

Nonreimbursed programs do not have to meet these minimum requirements. Nevertheless, many nonreimbursed vocational education classes are operated with high standards and do a good job of preparing students for entry into an occupation. Confusion and misunderstanding arise when courses such as industrial arts, general agriculture, and general business are referred to as vocational courses. These courses usually have general education objectives and are not designed to prepare for occupational competence.

Vocational education at the high school level is in the form of *preparatory* classes for entry into an occupation. In Michigan such classes are offered in the broad occupational fields of agriculture, business, homemaking, and industry.

Agricultural education. Vocational agriculture is offered in 43 percent of Michigan's high school districts. Agricultural education at the high school level has two rather broad objectives: (1) to develop abilities, attitudes, skills, and understandings that enable a student to make a beginning in the occupation of farming; and (2) to develop those agricultural abilities, attitudes, skills, and understandings needed by students who plan to enter those nonfarm occupations in which agricultural competence is required in addition to other occupational competence. Much controversy and confusion has arisen in recent years regarding this second objective. As many of the operations in the business of farming have moved off the farm and are now being performed by someone other than the farmer, the question has been raised regarding the kind of training needed by persons in these "farm-service occupations." It should be evident that they need knowledge and skill in both agriculture and business and even some industrial skills rather than any single skill.

This is but one example of an overall problem in vocational education today. Provision must be made for the kind of occupational training that requires skills and abilities from several of our traditional vocational education fields. Vocational educators must recognize that we live in a society in which the occupational structure is rapidly changing. As the scope of many occupations expands and as that of others becomes more specific, entirely new types of educational programs must be developed. In many cases, new "packages" encompassing parts of our traditional programs in agricultural, business, and industrial education must be developed. The emergence of entirely new occupations and the changing importance of existing ones must also be considered in the planning of comprehensive educational programs.

Home economics. The preparation of young people for establishing and maintaining a desirable family life is another responsibility that the public school has accepted. Here again many changes in our society have greatly increased the importance and the complexity of the job of the homemaker. The marked increase in the percent of wives and mothers working, the pressures of a complex society, the problems of child care, and a host of other related problems cannot be ignored by educators if they are truly to provide an education for young people that adequately prepares them for life. Vocational home economics programs are offered in 63 percent of Michigan's high school districts.

Business education. High school preparatory classes in business education are an integral part of most high school programs in Michigan; however, the degree to which high schools provide a well-rounded preparation for entry into the business world varies considerably. It would be difficult to find a Michigan high school that does not offer such classes as typing, shorthand, and bookkeeping. These courses usually serve a dual purpose — to provide general education for many students and to provide basic vocational skills for others. These basic courses are an essential part of preparation for office occupations. Beyond these courses considerable variation is found, but little attention is given to courses preparing for the distributive occupations.

Cooperative education. Reimbursed cooperative work-study programs are offered by less than one-fifth of Michigan high schools. Such programs may provide training for office, distributive, or industrial occupations.

Work-study programs utilize business and industrial establishments in the community for on-the-job training together with the necessary in-school related instruction. When properly conducted, these cooperative arrangements can enable the school to provide occupational preparation opportunities that would be impossible if the school had to provide the work situation. Many more Michigan school districts could come closer to providing comprehensive educational programs if they would make greater use of the work-study concept.

Trade and industrial education. In trade and industrial education two distinct programs are offered for high school youth: (1) trade preparatory classes, and (2) cooperative education programs. Trade preparatory classes are offered for such skilled occupations as printing, welding, automotive mechanics, foundry work, and machine shop. Cooperative work-study programs operate similarly for both industrial and business occupations.

Reimbursed trade and industrial education programs are offered in only approximately 100 Michigan high schools. This is less than one-fifth of all high schools. There are several reasons for this. Such programs are relatively expensive to develop and maintain. The required three-clock-hour periods for preemployment day trade classes may also be a factor, and some high school administrators say that such long class periods make it impossible for the student to meet other requirements. This relates to the disproportionate emphasis on college preparatory courses in the high school program. If schools are to meet the educational needs of each individual student, however, an individualized curriculum must be developed for each student based on his specific aptitudes and interests. Although there are a number of schools offering nonreimbursed industrial education classes, it is evident that many high school students do not have an opportunity to acquire sufficient industrial skills to compete successfully in today's job market.

Most Michigan high school programs include courses in industrial arts. Although these courses do not have vocational objectives, they do contribute to the industrial education programs of the schools. These courses serve to acquaint the student with industrial processes and provide exploratory experiences.

A few high schools, located principally in industrial areas, are offering classes for the preparation of highly skilled technicians; however, most of the technician training programs are operated at the community college level. Many people consider it difficult to develop the rigorous type of training required of the technician at the high school level. Area programs or schools could provide such educational opportunities.

Youth groups. Three youth organizations are operated in conjunction with high school vocational education programs in Michigan: the Cooperative Education Club of Michigan — as a part of cooperative programs in the fields of business and industrial education; the Future Homemakers of America — as part of home economics; and the Future Farmers of America — as part of vocational agriculture programs. These three organizations provide youth with an opportunity to develop leadership and other human relations skills as an integral part of their education for an occupation. In many cases they also serve as a vehicle for the teaching of subject matter. The Future Farmers of America is a good illustration of this. Many local chapters of the FFA conduct group projects and operate land laboratories, thereby providing the teacher of vocational agriculture with unique teaching opportunities.

Vocational guidance. There is little evidence of adequate vocational guidance in Michigan high schools today. This is surprising in that guidance services started out in this country to be vocational in character. Frank Parsons, in his book, *Choosing a Vocation* (1908), introduced the concept of vocational guidance. He described it as a process designed to "aid young people in choosing an occupation, preparing themselves for it, finding an opening in it, and building a career of efficiency and success." The present-day concept of vocational guidance is little changed from this early one.

As guidance services developed in the educational process in this country, counselors were increasingly selected from the ranks of those educators in the so-called academic fields. This came about following World War I with the development of group tests designed to measure capacity for mental achievement. Consequently, counseling moved into the college preparatory phase of modern-day guidance services. The guidance services pendulum had swung from being exclusively concerned with vocational guidance to the other extreme, and to a large degree the guidance program in our high schools has never recovered from this overemphasis on college preparatory guidance to the relative exclusion of vocational guidance.

A recent study indicates that counselors spend more time on college preparatory counseling and consider it to be more important and more enjoyable than counseling regarding vocational problems.[3]

With the background that most counselors have, it is not surprising that many feel more secure in counseling the academically inclined student. We can also see why many counselors guide the superior student toward college and tend to reserve vocational courses for the less able — hence the criticism by vocational teachers that their courses become "dumping grounds" for the poor student.

This paradox is not without hope. All too often, communication between counselors and vocational teachers has not been all that might be desired. In too many cases, neither has understood what the other was trying to do for boys and girls. At least one Michigan school

[3]Michigan Department of Public Instruction, Division of Vocational Education, *The Work of the Counselor in Michigan Secondary Schools* (Lansing: The Division, 1957).

system has employed a counselor whose only responsibility is that of vocational guidance. This person has been instrumental in acquainting other counselors in the system with the needs of business and industry. Highly successful counselor visits to various industries and businesses have been arranged. This vocational counselor has become deeply involved in assisting students from both the high school and the community college in job placement. He has also served to improve communications between the vocational teachers and the counselors within the various schools of the system.

Worth of the individual. If all educators, including counselors, believed that each student should be provided with the opportunity to develop his abilities and interests to the maximum and if they practiced this belief, the problem regarding which courses certain students should take would be greatly reduced. Vocational teachers must recognize that each student should undertake as rigorous an educational program as his ability may warrant. Counselors, on the other hand, must recognize that many students who are above average in academic ability should be enrolled in vocational courses in order to gain a foundation for advanced work on the post-high-school level. Highly skilled technicians in agriculture, business, home economics, and industry must come from the ranks of the so-called academically talented.

It is hoped that in the near future educational programs can be developed that will meet the needs of the less able students much better than do the kinds of programs now available. Very few high schools offer programs that will motivate the less able students to develop fully the talents that they possess. At the present time, vocational courses offer the best and usually the only place in the curriculum where the low-ability students can satisfy their educational needs to any significant degree.

The Community College

At the present time, there are 16 community colleges operating in Michigan. Provision is made in Michigan for four types of legal control. A community college may be established (1) by any school district having a population of more than 10,000 and operating grades K-12; (2) by 2 or more school districts by means of mutually agreeable policies and administrative procedures with the approval of the Superintendent of Public Instruction, or by the voters if the combined population is less than 10,000; (3) by the formation of a separate community college district comprised of one or more contiguous counties subsequent to approval by the State Board of Education and with a favorable vote by the electors in the county or counties; or (4) by the formation of a separate community college district comprised of two or more K-12 grade school districts with the approval of the Superintendent of Public Instruction and the voters in each of the constituent districts.

Eleven of these two-year colleges are offering programs for the training of highly skilled technicians through the provisions of the National Defense Education Act of 1958. Technician training is available in such occupational areas as civil engineering technology, electronics, industrial chemistry, hydraulics, industrial technology, tool and die design and manufacture, drafting and layout technology, aspects of supervision and management, and metallurgy. In addition, all of these institutions offer programs in the business and secretarial fields. The extent and quality of these vocational education programs vary considerably among the several institutions. In fact, only four offer what might be termed a comprehensive program for students desiring to enter a vocation immediately after graduation from the community college.

Purposes. According to their catalogue statements, Michigan community colleges accept the five usual community or junior college responsibilities in a general way. These responsibilities are (1) providing a general education for all students, (2) offering courses parallel to the first 2 years of regular college or university programs, (3) providing programs for persons interested in employment immediately after attending the community college, (4) offering adult and community service programs, and (5) providing a full program of student personnel services. An analysis of their course offerings reveals, however, that they are still placing major emphasis on the preprofessional and regular lower division college offerings. They need to strive for a better balance between programs designed for students wishing to transfer to four-year institutions and programs designed for those who will seek employment immediately after leaving the community college.

Technical education. The dire need for expanding the technical occupational curricula in Michigan's community colleges is evidenced by the fact that a high percentage of students in the present technical education programs are accepting positions in their fields of training even before the completion of the training program. This would seem to indicate that employers feel that because of their acute needs for technicians they cannot afford to wait for these students to complete their training, but would rather hire the "unfinished products" with the hope that they will complete their training while on the job. Many students in this situation will, no doubt, return for further training in the future, perhaps at their employers' expense.

It should be noted that even though Michigan community colleges are not adequately providing for organized occupational programs, they are one of the chief sources of supply for technicians and semiprofessional personnel in the state. Martorana points this out in his study of *The Community College in Michigan.* He found that, when compared with the state colleges or the private institutions of higher education, community

colleges have more students enrolled in and graduate more students from semiprofessional and technical programs than either of the others.[4]

In the past a contributing factor to the failure of community colleges to develop adequate occupational curricula has been the lack of adequate physical facilities and equipment. At the present time, however, seven institutions have embarked upon long-term building programs with facilities and sites distinctly separated from elementary and secondary schools. These new facilities include provision for vocational-technical programs.

Beginning in 1956, the Legislature has annually appropriated an amount for building purposes to the Superintendent of Public Instruction for distribution to districts operating community colleges. These appropriations have totaled $6,400,000 since 1956. During that time, the local districts will have spent an additional amount from local sources of almost $18 million.

In view of their stated objectives and recent efforts, we can confidently look forward to the time when our community colleges will meet their responsibility for providing high-quality programs that will enable students to acquire occupational competence in the technical and semiprofessional fields.

Four-Year Colleges and Universities

All of Michigan's public four-year colleges and universities offer specialized programs of a vocational character that do not carry college credit leading to a degree. In some institutions these courses are offered through the adult or continuing education division of the college or university; in others they are offered by one of the regular academic divisions.

Ferris State College is a unique institution in Michigan higher education. This state college places primary, though not exclusive, emphasis upon practical vocational and technical education. It provides also professional-degree programs in pharmacy, commerce, and teacher education. It has the further purpose of offering and maintaining general educational programs for mature adults.

Ferris State College has, without question, one of the most outstanding trade and technical programs in the country. This institution provides post-high-school training in a number of industrial areas which require less than 4 years of college. Since 1946 these trade programs have flourished and presently total 16 separate curriculum offerings.

Since 1894 Michigan State University has provided several short courses in the College of Agriculture for the persons who, for various reasons, do not choose to enroll in the regular four-year program. These courses vary in length from 2 weeks to 2 years and provide intensive and highly practical training for the young farmer and for those students wishing to prepare for or to acquire additional training in one of several agricultural industries. Several of these short courses utilize the cooperative work-study concept of education. Students alternate quarters in college with work on the job. Such off-campus placement training is under the supervision and guidance of the University. These programs include commercial floriculture, elevator and farm supply, farm equipment service and sales, and nursery and landscape management.

Northern Michigan University is presently operating a retraining program for unemployed workers under the provisions of the Area Redevelopment Act. Classes are being offered in several office and secretarial occupations, welding, and machine operation. It is possible that this program could develop into a high-quality training center for a large number of technical occupations in Michigan's Upper Peninsula.

The Michigan College of Mining and Technology provides opportunities to study and earn degrees in many areas of technology — 10 fields of engineering, 7 fields of science, forestry, engineering administration, and business administration. In addition to these degree programs, this institution also offers a program of less-than-degree level for the training of technicians in metal processing. Michigan Tech is one of the larger colleges of engineering and science in America.

Western Michigan University offers cooperative work-study programs in the fields of food distribution (supermarket management) and petroleum distribution.

Other examples of similar programs would include sales and management workshops for small business personnel by Northern Michigan University; supervisory and management training programs by The University of Michigan and Wayne State University; school bus-driver training courses at Central, Eastern, and Western Michigan Universities; and a custodial training program at Michigan State University.

Out-of-School Adult Programs

Apprenticeship training. Apprenticeship training is conducted in Michigan through a cooperative relationship between the Division of Vocational Education and the Bureau of Apprenticeship and Training of the United States Department of Labor. Related instruction for the various trades is offered throughout the state in a number of public schools.

Related instruction for apprentices in the building trades is taught by nine itinerant teachers who are employed by the state but work under the direction of local schools. These teachers travel throughout the state. The basic trades in which training is being given through this itinerant program are plumbing and steamfitting, carpentry, industrial electronics, bricklaying, and ironwork. This program is rather unique and involves

[4]S. V. Martorana, *The Community College in Michigan,* Staff Study No. 1 of The Survey of Higher Education in Michigan (Lansing: The Michigan Legislative Study Committee on Higher Education, 1956), p. 4.

only a portion of the total apprenticeship program in Michigan.

There are approximately 7,500 registered apprentices currently receiving training in Michigan, which compares with about 112,000 in the United States. Michigan ranks third, behind California and New York, in the number of apprentices in training. Apprenticeship training, however, has declined from its peak in 1957. Many people feel that greater use could be made of the apprenticeship method of training skilled workers. The present program involves only a token number of those who could profit from such training.

There is a trend in Michigan toward offering more of the related instruction for apprentices through the community college programs. The reaction to this gradual transfer of responsibility seems to be very favorable, and it is anticipated that this trend will continue.

A comprehensive two-year evaluation study of apprenticeship training in Michigan is now under way. This project involves the Bureau of Apprenticeship Training of the United States Department of Labor, the State Division of Vocational Education, management, and labor.

Training for the unemployed. One of Michigan's most pressing economic problems has been its relatively high rate of unemployment. The phenomenon of unemployment can no longer be considered as temporary — the plight of the unemployed worker is indeed a serious one.

The skills of many persons have been rendered obsolete by dislocations in the economy arising from automation or other technological development, foreign competition, relocation of industry, shifts in market demands, and other changes in the structure of the economy. Some writers predict that a sizable percent of our labor force will be in the position of having to prepare for three, four, or five different occupations during their working lives.

Until recently we have depended upon the regular adult vocational education classes for the retraining needed. Such classes, however, do not truly meet the needs of the unemployed. Persons who are unemployed need relatively short-term, intensive kinds of instructional programs that are directly related to employment opportunities.

The development of retraining programs for the unemployed has received considerable emphasis in recent months. The Division of Vocational Education and the Michigan Employment Security Commission have cooperatively developed a number of programs for the training of unemployed workers. The Area Redevelopment Act and the Manpower Development and Training Act are manifestations on the part of Congress of the seriousness of unemployment in many sections of the country. Training programs are now being developed and conducted through the provisions of these acts.

One of the most significant outgrowths of these two acts has been the establishment of new working relationships between the Department of Public Instruction and the Michigan Employment Security Commission. Responsibility for the determination of occupations in which workers are needed and the selection of trainees rests with the Employment Security Commission. The Division of Vocational Education, through the public schools, is responsible for the training of those selected, and finally the Employment Security Commission is responsible for the placement of those completing these programs. It is anticipated that this new relationship will enable both agencies to be more effective in dealing with the problems inherent in the retraining of the unemployed.

Training of practical nurses. Another significant part of Michigan's adult vocational education is the training offered for practical nurses. This program is designed for out-of-school youth and adults and includes students of various ages. The trend, however, has been toward a younger age of those entering the program, many entering immediately after leaving high school. Most of these programs are offered through the community colleges. There is still a serious shortage of trained practical nurses, and these programs need to be expanded and extended to a number of additional Michigan communities.

Practical nurse programs are sponsored by local boards of education in cooperation with the State Board of Control for Vocational Education, the Michigan Board of Nursing, and the participating hospitals. At the present time, there are also five private or parochial schools of practical nursing. (Federal-state funds are not used for these private schools.) The Michigan Board of Nursing has the responsibility for approving local programs and establishing minimum standards pertaining to curriculum, facilities, and teaching personnel. State and federal funds for the support of these programs are administered by the State Board of Control for Vocational Education.

Adult education for the major occupational fields. Adult programs in agriculture are offered to both the young farmer and the well-established farmer who desires to improve his efficiency and productivity.

Classes for adults employed in sales and service occupations are offered throughout the state by many local schools. These classes are designed to improve techniques and technical know-how of management and sales personnel in fields such as retailing, wholesaling, insurance, real estate, and other distributive endeavors. Upgrading employed personnel for the job ahead is a major purpose in these classes. Successful business executives from the various areas of distribution serve as instructors of these classes, many of which are held in smaller communities.

Adult classes in homemaking education cover a wide

range of subjects related to home and family living. It is interesting to note that a sizable number of men enroll in these courses. Homemaking and family life education has changed from teaching only foods and clothing to providing both in-school youth and adults with a broad range of educational experiences related to maintaining a home and family.

In addition to the apprenticeship program mentioned above, adult trade and industrial classes are offered in most of the major industrial centers of the state. Through these classes, employed workers are able to improve their occupational efficiency in almost any of the recognized trades. One of the fastest growing adult trade and industrial programs is that of foreman and supervisor training. A program for training service workers offers training for a variety of workers, including fire fighters, school custodians and busdrivers, and workers in other public service occupations.

Financing of Programs

Elementary and Secondary Schools

About 57 percent of the budget of Michigan school districts comes from local funds and about 39 percent from state funds. The remaining 4 percent comes from federal funds and miscellaneous sources. In Michigan, local tax funds for the support of public education come entirely from local property taxation. State funds are obtained from statewide taxes — primarily the sales tax. Other tax sources for education include corporation franchise taxes, taxes on cigarettes and distilled spirits, taxes on telegraph and telephone services, and the tax on insurance companies doing business in Michigan.

State support for public elementary and secondary education in Michigan is obtained from two sources, the Primary School Interest Fund, and state aid. The Primary School Interest Fund is obtained from interest on money received in the past from the sale of public land. Certain of the taxes listed above are also earmarked for this fund. The amount of state aid that a district receives is based upon a rather complicated formula. Briefly, the State Aid Act specifies a gross allowance per pupil, or membership allowance, which shall be financed on a partnership basis by the local school district and the state. (It was $205 per pupil in 1961-62 and is $224 for 1962-63.) To this membership allowance is added the financial need for tuition aid, transportation aid, special education, and aid for financially distressed or hardship districts. The difference between this total and the amount the district receives from local taxes and from the Primary Interest Fund is the amount of state aid it receives, provided that it meets certain requirements regarding local tax effort.

State school funds in Michigan may not be used for elementary or secondary school building construction or for debt service purposes. Money for these purposes must be voted by the electors of the local district.

Vocational Education

Funds for the support of vocational education come from local, state, and federal sources. As previously mentioned, federal funds are derived from the various national vocational education acts, the National Defense Education Act, the Area Redevelopment Act, and the Manpower Development and Training Act. State funds are granted by the Legislature through annual special appropriation. Local funds are obtained through taxes assessed within local taxing units.

Over $9 million is being spent in Michigan each year for vocational education. This figure represents the money spent for administration, teachers' salaries and travel expenses, and teacher training. This figure does not include the cost of such items as buildings, equipment, and supplies. The cost of these latter items, were the amount known, would add significantly to the above figure.

Relative support. It is interesting to note that in the past 10 years, while the local share of the cost of vocational education has risen by 86 percent and the federal share by 134 percent, the state contribution has increased by only 29 percent.

On the statewide basis, combined federal-state vocational education funds make up less than one-half of 1 percent of the local school district budget. State appropriations for vocational education slightly exceed $1.5 million, while the total state appropriation for elementary and secondary schools is more than $292 million. In making such a comparison, it should be noted that most of this money is spent in Michigan (and in every other state) on providing a general education program for youth. This happens in spite of the fact that the comprehensive school has two main roles, both of which are of equal importance. The comprehensive high school should provide a broad general education for all youth, and for each youth that form of specialized education which will best serve his vocational interests and needs. For those going on to college, a college preparatory curriculum best serves the second purpose; but for those who will seek employment immediately after high school graduation or before, some other form of vocational preparation must be provided. The truth is that we are doing very little to meet the needs of this latter group.

With the rapid changes taking place in our society today, we must seriously face the question of whether we are adequately financing *all* phases of education.

Vocational education funds, state and federal, are distributed to local schools through the Division of Vocational Education of the Department of Public Instruction. Table 1 shows the total state and federal vocational education funds distributed in 1961-62.

Table 1

Distribution of Vocational Education Funds in Michigan (Federal and State)

For Year Ending June 30, 1961

Occupational Group	*Amount*	*Percent of Total*
Agriculture	$ 571,877.95	19
Homemaking	534,399.34	18
Distributive and office	290,355.74	10
Teacher education and research	229,668.83	8
Trade and industrial (including practical nurse)	1,346,471.57	45
Total	$2,972,753.43	100

Basis for reimbursement. Due to an increasing number of programs, reimbursement rates to local schools have gradually declined over the years to the point where they now average roughly 30 percent of the teacher's salary and 45 percent of his travel expenses. In order to receive reimbursement, schools must meet certain general criteria in addition to those that pertain to the specific type of occupational training.
These general criteria are:

1. That such education will be under public supervision or control
2. That the controlling purpose of such education will be to prepare individuals for useful employment
3. That such education (other than teacher education) will be less than that which leads to the bachelor's degree
4. That costs of instruction supplementary to the vocational instruction necessary for a well-rounded course of training will not be paid from federal or matching funds
5. That space and equipment for vocational instruction will be adequate
6. That courses of study will be adequate
7. That methods of instruction will be appropriate for vocational subjects

The State Board of Control for Vocational Education, through the State Director and his staff, is responsible for the development of a system of reporting and analyzing programs, as well as for periodic surveys through visitation, to make sure that the program of vocational education meets the conditions as required by the federal vocational education acts.

Teacher Education

Institutions

There are ten institutions of higher education in Michigan, eight public and two private, that are currently approved to offer vocational teacher education programs. Over the years, the policy of the State Board of Control for Vocational Education has varied regarding the designation of teacher training institutions. Currently several institutions are approved to offer programs for the same field of study.

The following publicly supported colleges and universities are designated as vocational teacher education institutions by the State Board:

Type of Education	*Institution*
Agricultural	Michigan State University
Distributive	Michigan State University The University of Michigan Wayne State University Western Michigan University
Office	Michigan State University The University of Michigan Wayne State University
Homemaking	Central Michigan University Eastern Michigan University Michigan State University Northern Michigan University Wayne State University Western Michigan University
Trade and Industrial	Ferris State College Michigan State University Northern Michigan University The University of Michigan Wayne State University Western Michigan University
Counselor	Central Michigan University Eastern Michigan University Michigan State University Northern Michigan University The University of Michigan Wayne State University Western Michigan University

In addition to these eight publicly supported colleges and universities, two private institutions, Mercy College and Albion College, are approved to train vocational homemaking teachers. These two institutions, however, do not receive federal or state vocational teacher education funds.

Financing

A total of $225,000 was paid to institutions of higher education for vocational teacher training in 1961-62. Table 2 shows the percentage of teacher education funds expended for each service.

Table 2

Distribution of Vocational Teacher Education Funds in Michigan

For Year Ending June 30, 1961

Service	*Amount*	*Percent*
Administration	$ 4,587.17	2.0
Agriculture	29,693.27	12.9
Distributive	15,915.10	6.9
Guidance	41,577.27	18.1
Homemaking	37,032.64	16.1
Office	12,416.44	5.4
Statewide evaluation project	25,000.00	11.0
Trade and industry	63,446.94	27.6
Total	$229,668.83	100.0

During the past 3 years, $25,000 of teacher training funds has been used each year to finance a statewide evaluation study of vocational education. One of the responsibilities assigned to the Vocational Education Evaluation Project by the State Board of Control was to study the use of vocational education funds in Michigan. As a part of this study, a recommendation may be made to the Board that reimbursement for on-campus teacher education courses be gradually withdrawn. These funds could then be used for such things as research, in-service education, preparation of instructional materials, and other special projects that the institutions would not ordinarily undertake without extra financial assistance. These recommendations are based upon a study in which the institutions were asked to indicate which teacher education responsibilities they would assume depending upon reimbursement practices.

If these recommendations are adopted and put into effect, they could have a profound influence on the future of vocational teacher education in Michigan. It seems likely that a great deal could be accomplished that heretofore was impossible due to lack of financial support for special activities and research.

Certification of Teachers

In addition to the regular Michigan teaching certificate, teachers of reimbursed vocational courses must hold valid vocational certificates covering their specific teaching fields in order that local boards of education may receive reimbursement on teachers' salaries from vocational education funds. Qualifications for vocational teachers include both educational and work experience requirements. Until recently teachers in both secondary school and community college programs were required to be certified. However, a recent opinion rendered by the State Attorney General states that teachers in community college programs no longer need to hold teaching certificates in Michigan.

As far as vocational education is concerned, this changed policy will have little effect on the quality of instruction. Vocational teachers in the community colleges will still have to meet the minimum qualifications in their respective teaching fields for initial employment. However, additional professional course work, which is required under the certification procedure, is no longer required of community college teachers.

Types of certificates. In the case of secondary teachers, it is the responsibility of the individual teacher and the local board of education to maintain the validity of vocational teaching certificates. Three types of certificates are issued by the State Board of Education for vocational teachers: the vocational secondary provisional, the vocational secondary permanent, and the vocational special. The vocational secondary provisional is issued to qualified individuals upon graduation from college and entitles the holder to teach in the public schools. Upon completion of three successful years of teaching, within 5 years after issuance of the vocational provisional certificate, and after having taken additional professional course work, a teacher is eligible for the vocational secondary permanent certificate. The permanent certificate is valid as long as the holder teaches successfully 100 days out of every 5 years. Vocational special certificates are issued to vocational teachers who do not fully qualify for the provisional or permanent certificates provided that they meet certain minimum qualifications. The vocational special certificates are designed to provide for emergency conditions or for teachers of adult classes who are skilled in their occupational fields, but lack the professional teacher education courses.

Individuals obtain certification from the State Board of Education through the institution with which they wish to affiliate. The institutions advise their students regarding certification requirements. Individuals who come to Michigan after having received their training in another state are assisted in securing any additional course work needed.

Research

Division of Vocational Education

The Division of Vocational Education has a small research section headed by a research consultant. The position of research consultant for vocational education is not unique with Michigan, but few states have such a position.

The primary purpose of the Division's research activities is to stimulate and to help coordinate vocational education research throughout the state. The activities may assume a number of forms. Technical consultative assistance for vocational education research is made available to local public schools upon request. A limited amount of basic research is conducted in the field of vocational education by the research consultant, and the consultant staff may and often does conduct studies of its own. These studies are not only valuable in themselves, but they may help to stimulate and encourage

the universities and colleges of the state to conduct needed research in vocational education.

Perhaps the most outstanding example of vocational education research in which the State Department of Public Instruction is performing a major role is the study known as the Michigan Vocational Education Evaluation Project going on at the present time. This project was undertaken at the request of the State Board of Control for Vocational Education. The purpose is to make a complete evaluation of vocational education being taught in the Michigan public schools today. Major responsibility for the project was assigned to Michigan State University, but almost all of the major universities of the state have been assigned significant responsibilities for various phases of it. Over 200 vocational educators, administrators, and general educators have been involved in it. Indeed, involvement of such a large number of people is viewed as one of the major values of the project.

The cooperative relationships generated by this project have been heartening. The executive committee for the project has been able to mobilize resources from many sources and to view the critical problems facing vocational education from a perspective that utilizes the best in vocational education leadership that the state has to offer. It would be unfortunate to lose the "head of steam" which this project has developed. Probably it can be safely said that at no prior time has vocational education in Michigan had a more favorable climate for progress through research.

If, as was previously mentioned, a portion of teacher education funds could be continually used for research, then it would seem that some type of advisory group would be needed to suggest priorities.

Colleges and Universities

Research has always been one of the major functions and strengths of our colleges and universities; Michigan is blessed with some of the outstanding educational researchers in the country. Most of the research in vocational education in Michigan, as in other states, is conducted by our colleges and universities. The staffs of these institutions do considerable research and, in addition, they advise graduate students in their research activities.

Because of their resources and research experience, the colleges and universities are often able to secure funds for research that are not readily available to other educational institutions. An example of this is a recent grant of $25,000 from Cooperative Research Program funds through the United States Office of Education to The University of Michigan for a study to determine the way in which various groups, such as labor, management, agricultural, and other lay persons perceive vocational education. Incidentally, this study is a direct outgrowth of the statewide Evaluation Project. Another study, also financed from Cooperative Research Program funds, a study of technicians in industry, was recently completed by Michigan State University.

Local Schools

It has been the policy in Michigan to search continually for new knowledge and new applications of existing knowledge in the operation of vocational education programs. In keeping with this philosophy, the Division of Vocational Education encourages and assists schools in developing pilot or experimental programs. Currently, three such programs are being operated. One is an experimental study comparing the accomplishment of students in a two-hour machine shop class with those in a three-hour class. Another project is attempting to develop a work-study program for students with less than average mental ability. The third is a work-study experimental program for students desiring to enter those farm-service occupations in which knowledge, skills, and understandings from business, agriculture, and trade and industry education are needed.

The Future

We must never be satisfied with our present educational program. We should maintain a healthy attitude of discontent, but with the secure feeling that our attempts to meet constantly changing vocational needs will be successful.

There are vast areas of unmet training needs. Relatively few programs have been directed to the unemployed, to women workers in occupations other than sales or clerical, to early school leavers, to workers in many of the service occupations, and to retarded or slow learners. As was previously observed, our school programs have been directed primarily to the college-bound boy or girl. There is a growing awareness on the part of educators that we must also meet the needs of employment-bound youth.

Unemployed Workers

Training programs now being developed through the Area Redevelopment Act and the Manpower Development and Training Act should be considered as mere beginnings in providing for the retraining needs of the unemployed. Ideally, we should not be in the position of having to wait for a worker to become unemployed before he is retrained for another occupation. We must develop techniques and procedures to determine in advance the future employment needs arising from automation and technological progress. The nature of the Michigan economy is such that unemployment will be prevalent in the state for some time to come. We must develop a long-term retraining program that will reach the majority of those needing it.

Retraining classes developed under the ARA and MDTA programs will reach relatively few of the unemployed. It has been estimated that, in Michigan, about 1 out of every 40 unemployed workers will be enrolled

in such classes. In order to reach the others, considerably more effort will have to be expended. We will also have to gain a much better understanding of the psychological and sociological problems of the unemployed worker. For some, we no doubt must think in terms of providing basic educational skills prior to training them for occupational competence.

Technicians

Highly skilled technicians are found in all fields — agriculture, home economics, and business, as well as industry. The National Defense Education Act of 1958 stimulated the development of programs for the training of technicians in industry and, to some extent, technicians in business occupations. Relatively little, however, has been done to develop training programs for technicians in the other fields. The great need for the preparation of large numbers of technicians is evident. Michigan must meet this challenge of our changing society.

Some kind of cooperative planning is needed in regard to the development of technical training programs in Michigan. High quality technical occupational curricula are extremely expensive to develop and maintain. A coordinated plan should be developed in which the community colleges and other state-supported institutions of higher learning would agree on the need for the various technical curricula and on the institution or institutions in which such curricula should be developed.

Those institutions that are now or will be providing training opportunities for technicians need to examine critically the existing curricula, to determine needs, and to develop cooperatively the programs that will not leave Michigan "shortchanged" in its pool of highly skilled manpower.

Vocational Guidance and Counseling

All evidence seems to indicate that the status of vocational counseling in Michigan high schools is at an all-time low. Many counselors come from academic backgrounds. They have had relatively little work experience outside of the school program. As a result, they do a good job in that aspect of their task with which they are most familiar — guidance for college-bound students; they do a poor job in that aspect with which they are least familiar — guidance for employment-bound students. In view of our shortage of technicians and skilled manpower, it would appear that somehow we must remedy this situation.

Existing training programs for counselors in our institutions of higher education do not reflect much concern for guidance responsibilities in terms of employment-bound youth. This is tragic when we consider that roughly three-fourths of all Michigan students entering the ninth grade complete their formal educational preparation at or before high school graduation. High school and post-high-school counselors should be familiar with the many opportunities available to students through vocational education.

We should provide guidance, counseling, and placement services to young persons at least through the age of 21. Most counselors do a pretty good job of helping those who go to college secure admittance to the institution of their choice. Rare indeed, however, is the counselor who does a thorough job of helping employment-bound youth secure placement in the occupations of their choice.

Every school should have accurate up-to-date information on former students. Schools must improve their followup techniques. Effective followup studies are a must for a sound guidance and counseling program.

A high school diploma is not an automatic ticket to a job. It is often easier to gain admission to college than it is to secure a job. Young people are in need of assistance in deciding on a vocation, in preparing for it, and finally in securing satisfactory placement.

Research

Michigan vocational education research efforts have increased markedly in recent years. The Michigan Vocational Education Evaluation Project has resulted in a mobilizing of research effort never before attained. Plans must be made to continue the cooperative effort which this project has generated.

It is hoped that certain funds will be available for use by teacher education institutions for special projects including research. Criteria will have to be developed for the selection and funding of projects. Some type of committee should be developed to represent the teacher education institutions and to act in an advisory capacity concerning priorities for the use of funds. Such a group might also perform a coordinating function in determining needed research and in sharing the results of research.

It is anticipated that vocational education research efforts will be considered by the recently formed Michigan Educational Research Council, which will help coordinate all educational research efforts in the state.

Women Workers

By 1970 nearly one-half of all women aged 35 to 64 in the United States will be in the labor force, with the largest increase coming in the 45 to 54 age group. One out of every three workers will be a woman. Mothers now number almost half of all employed women. According to the Michigan Employment Security Commission, it is expected that about 30 percent of Michigan's work force will be women. The average working woman enters the labor force in her late teens or early twenties; she works about 4 years and then retires temporarily following marriage and the birth of children; at about age 35 she will return to the labor market. This situation produces an increasing need for retraining and upgrading programs. Working women also need assistance with home management problems as they fill their dual role of worker and homemaker. Much more emphasis

is needed upon adult training, particularly in office, sales, and service occupations, if we are to meet the needs of our women workers.

Early School Leavers

With the increased emphasis upon acquiring a college education in recent years, the persons who have not received much consideration are the boys and girls who are not going to college. A large number of young people must be provided with some type of specific and useful occupational training before high school graduation. Present high school programs are not adequately meeting the needs of a substantial proportion of youth. Vocational educators and general educators must work together to determine the kind of educational program that will meet the needs of those boys and girls who are not being motivated by present programs because the answer is not entirely more or a different kind of vocational education.

Contacts With Industry and Business

One of the characteristics of outstanding vocational education programs is the involvement of agriculture, industry, and business in the development and operation of such programs. In fact, leaders in vocational education implore local communities to make extensive use of advisory committees made up of employers and workers.

The use of advisory groups from industry and business is just as important on the state level as on the local level. The use of industry-wide advisory committees or joint vocational education-industry groups can result in improved and more meaningful state-level assistance to local schools. Such groups can be instrumental in preparing instructional materials, helping to sponsor in-service teacher education programs, assisting in the determination of training needs, and setting an example for local schools to follow in working closely with business and industry. Even though Michigan has made use of such industry-wide groups in the past, considerable additional use of them is needed at the present time.

Multiservice Programs

Many occupations have grown or changed in such a way that they now require knowledge, skills, and understandings in not only one but several of the traditional vocational education fields. As was pointed out earlier, agriculture and business are two fields that have a contribution to make to many of the same occupations. In addition, new occupations that do not fit readily into one of the established traditional vocational fields are constantly appearing, and vocational education will have to develop new programs based upon the educational requirements of these new and changed occupations.

Area Programs

It has been implied throughout this paper that our present vocational education programs fall far short of meeting present-day occupational training needs. The vast majority of Michigan school districts do not offer truly comprehensive educational programs. Most districts do not have sufficient financial resources or students to afford comprehensive programs.

At the present time there are 537 high school districts in Michigan. If we consider the offering of reimbursed vocational education classes as one criterion of comprehensiveness, then it should be noted that only 12 school districts offer programs in all 4 fields of agriculture, homemaking, business, and trade and industry.

If school districts are to provide students with the opportunity to become competent in the occupation of their choice, a way of combining district resources will have to be found. Consolidation of high school districts may be a possible answer; but it is doubtful whether most Michigan school districts will ever attain sufficient size to be able to meet the educational needs of all their students. This is particularly true if districts continue to operate vocational education programs individually.

The concept of area vocational education has been present in the United States since the passage of the Smith-Hughes Act in 1917. It is based upon the philosophy that all qualified persons should have an equal opportunity to participate in vocational education programs of their choice regardless of the geographical location in which they reside, and regardless of their economic status or that of the region in which they live.

Michigan has a number of area vocational education programs being operated on a post-high-school level through community colleges and other institutions of higher education. Perhaps our secondary schools should consider the advisability of establishing area vocational education programs of their own.

Use of Funds

Michigan is seriously studying the current use of vocational education funds. The statewide Evaluation Project has addressed itself to this problem, and vocational educators have been giving serious thought to the manner in which the very limited funds available can be used to maximum advantage.

The use of vocational teacher education funds is receiving careful consideration. Is there any reason why we should reimburse those regular teacher education courses that the institutions would continue regardless of reimbursement? Could these funds be better used for those teacher education functions that the institutions would not perform without extra financial assistance? Rather than reimbursing regular courses, these funds could possibly be used to reimburse more adequately vocational teacher educators in providing consultative services through visits to local programs, developing and distributing instructional materials, conducting special workshops and conferences for teachers, and conducting research and special studies. Procedures for the use of teacher education funds for these purposes must be

developed, and priorities must be determined. The institutions themselves should help determine these procedures and priorities.

The federal vocational education acts were originally designed to stimulate the development of vocational education programs. This original purpose has been lost in the practice of maintaining programs within a fixed pattern. Some vocational educators are asking whether we should place more emphasis on stimulation and development.

Many crucial questions are being asked concerning high school vocational education programs. Should not vocational education courses be as basic as college preparatory courses in our high school curriculums? Should vocational courses be limited to the 11th and 12th grades? Can subjects below this level be justified as anything except general or basic education? Should we continue to reimburse established programs? Should we use funds only for the development of new programs? Should we use funds for the purchase of equipment? We will have to find satisfactory answers to these and many related questions.

Post-High-School Programs

Vocational education at the post-high-school level is at a critical point. There is no question of need. We must develop the skilled and technical manpower so desperately needed in modern society. Our community colleges are the most promising type of institution to meet most of the increased need for post-high-school vocational education. If our community colleges are to fulfill their role, they must become large-scale units and function as parts of a statewide coordinated system. These institutions must assume, on a broad basis, their responsibility for technical education.

We cannot place the burden of developing high-level technical programs on already financially strapped local school districts. Since the state and, in many fields, the nation, make up the "community" for which such programs are provided, the local community cannot be expected to bear the major share of the financial burden for providing them. We need greatly increased state support for vocational education programs at all levels, and the development of high-quality programs in particular must not depend upon the wealth of individual school districts.

XV. An Analysis of Vocational-Technical Training in Minnesota

By William C. Knaak[1]

Objectives

A summary statement of the objectives of vocational education in Minnesota might be: to provide opportunities in all phases of vocational-technical education for persons who are of sufficient age and maturity to profit from specific occupational training.

This means to provide training for boys and girls 16 years of age or older and to make it available to them for the rest of their working lives.

It means to provide training for individuals ranging from those who are barely above institutional care to those who could rank high in regular college courses if their interests and orientation had so directed them.

Training must be provided for all trade, technical, distributive, office, agricultural, and homemaking occupations. The level of training must range from simple operator skills for those with limited abilities to highly technical subject matter for those capable of making broad application of basic knowledge.

All vocational-technical training must be occupation oriented. Training that is not so oriented will lose its objective and not be worthy of the name. Some technical training is now provided that has employment in "clusters" of occupations as its objective. When this is the case, care must be taken to determine that the basic "core" of training given will, in fact, qualify the trainee for employment.

Training must meet the needs and requirements of both existing industry and new industry. In Minnesota, not a large market area, industrial expansion is occurring largely in the "brain industries," such as electronics. Training must anticipate this trend.

Employed adults must have the opportunity to take training in order to advance in their occupations and keep abreast of the times. A special effort needs to be made to encourage the unskilled worker to take training because his position is precarious. It has been said that today the unskilled worker who carries his lunch is an optimist.

Training must be provided for the unemployed whose skills have become outmoded or who live in chronically "depressed" areas and must qualify for employment elsewhere.

Welfare cases should be trained to become self-supporting whenever possible. At a recent state welfare conference in Minnesota, the Governor challenged the group to abandon its caretaker role and concentrate on rehabilitation. At the same conference the Commissioner of Welfare cited the need for helping the "vocationally handicapped" — persons with physical, mental, or emotional handicaps who cannot get jobs.

Women make up a substantial part of the labor force today, and all indications are that they will continue to do so. Women are to be found in large numbers in light metals and fiberglass fabricating plants as well as in office, distributive, and service occupations. Women tend to work a few years, drop out to raise a family, and then reenter the work force again. This may require refresher training. The new dual role of homemaker and wage earner presents some difficult problems for women to face, and it presents the vocational home economics educator with a real challenge to help the homemaker-wage-earner understand her dual role and function properly in it.

Education System

Minnesota's public school system is under the jurisdiction of three separate governing boards. The State Board of Education is appointed by the Governor with confirmation by the State Senate. The State College Board is appointed by the Governor with confirmation by the Legislature, and the University Board of Regents is elected by the Legislature from specified areas in the state. Each board chooses its own executive officer, and each board functions independently of the others. Although it has never been a publicized problem, the three boards are, in effect, in competition with each other for

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funds in the Legislature. The Legislature recognizes this competitive situation; it also recognizes that there is a possibility of duplication of services since all three boards are responsible for some higher education.

Because of the duplication potential, the 1959 Legislature authorized the appointment of the State Liaison Committee on Higher Education, made up of three representatives each of the State Board of Education, the University Regents, and the State College Board. This committee is responsible for resolving such differences and duplications as may tend to develop, with the underlying implication that, if it cannot do so, the Legislature will, through legislation.

The State Department of Education

The State Board of Education, the Commissioner of Education, who is appointed by the Board, and his staff make up the State Department of Education. The present format of the Department had its beginnings shortly after the passage of the Smith-Hughes Act in 1917, when a State Board for Vocational Education was appointed. After the State Board of Education was organized, it became also the State Board for Vocational Education, and the functions of the two boards became merged.

The jurisdiction of the Board ranges from kindergarten through junior colleges and area vocational-technical schools. To make intelligent policy decisions in such a broad spectrum of educational institutions with varied objectives requires considerable depth of experience and much conscientious study.

The Department of Education carries on all business with local school districts through the school superintendents, who are the legal officers of the local boards of education. Each local board has broad powers to provide for the education of the youth in its district. Some local boards are responsible for the education of children from kindergarten through junior college and area school, including thousands of adults in vocational evening extension classes. With such a breadth of educational responsibility, many local boards have to rely quite heavily upon advice from school administrators for decisions concerning vocational education. Local boards are elected by the legal voters of their respective districts, and they reflect the attitudes of the electorate. It is not uncommon, therefore, to have persons on a local board who are indifferent to, if not actually hostile toward, vocational education or certain areas of it.

The Minnesota Legislature adds substantially to the amounts of federal aid available for vocational education under the provisions of the federal education acts. In fact, the legislative allowance for 1961-62 was more than $3 million. The specific distributions of these aids, made by the Board of Education, will be discussed in connection with specific vocational curriculum areas.

The High School and Vocational-Technical Training

A reorganization of school districts into larger districts has been strongly encouraged in Minnesota on the theory that districts should be large enough and have enough resources to provide complete education, including vocational education, for youth from kindergarten through the 14th year. As a result, there has been considerable reduction in the number of ungraded elementary school districts in the state, but actual progress in redistricting secondary schools has not been significant. The number of small secondary schools without sufficient resources or students to support a complete program, particularly a complete vocational education program, remains high. Attempts by the Department of Education to formulate and enforce rules and regulations designed to compel high school districts with small enrollments to join with other districts have been largely nullified through action by the Legislature.

High school classification requirements for state aids provide some "encouragement" for vocational education. Foundation aid is paid to the local school district on the basis of pupil units. It is the difference between what the local district can raise per-pupil unit with 19 mills on its adjusted assessed valuation and the average expenditure per-pupil unit in the state. Pupil units are determined as follows: Kindergarten students, one-half unit; elementary students, one unit; secondary school and area vocational school students, one and one-half units. If a school district has a recognized junior high school program with three "special" departments selected from agriculture, home economics, business, or industrial arts, it may qualify for the one and one-half unit rate for foundation aid. The "encouragement" for vocational education is the payment of aids on the basis of one and one-half units per student in "approved" high schools and in junior high schools with special departments.

The equalization factor in the per-pupil aids has not been substantial enough to bring about significant balancing of the amount of money available to all school districts. Furthermore, no state aid is provided for plant construction and debt service, and this penalizes vocational education because the cost of constructing vocational education facilities per-pupil unit is significantly higher than is the cost of constructing most other school facilities.

Direct reimbursement for vocational salaries, travel and, in some programs, equipment has been more influential than foundation aid in the encouragement of vocational education. The amount of money needed during the biennium for the customary aids for vocational education is estimated by the State Director and submitted to the Commissioner and State Board. After their approval, the estimate becomes a part of the total state aid request. The Minnesota Legislature has con

sistently supplied all of the funds requested for vocational education. In recent years there has not been any arbitrary cut in or even quibbling over the amount to be spent for vocational education.

The net result of the described aid policies is that the amount of vocational education being provided by high schools varies considerably among high schools and among services. The "comprehensive" high schools, in general, have not been able to provide adequately for vocational-technical training in all fields. Their participation in approved reimbursable vocational-technical programs in 1961-62 was as follows: technical, 0 percent; trade and industrial, 4 percent; distributive and other cooperative part-time training programs, 18 percent; agriculture, 58 percent; office, 72 percent; and home economics, 88 percent.

Home economics education. More high schools teach home economics than any other vocational subject. There are several identifiable reasons for this — and perhaps other reasons not so readily recognized. The need for training in homemaking is universally respected. The objectives of the program are easily understood by local boards of education. Furthermore, home economics is required of an approved junior high school, and with a little additional effort, as observed earlier, the school can qualify for senior high school state and federal vocational aids. The one-hour block of time required for classes also fits readily into a standard secondary school class schedule. It is a well-accepted elective for girls planning to go on to college as well as for girls who will enter employment or become homemakers. Vocational aids offered are typically 50 percent of the day instructor's salary and travel and 75 percent of the adult evening instructor's salary and and travel. State money spent for home economics in 1960-61 totaled $751,985, as compared with $168,321 of federal funds. Home economics has had the benefit of strong state leadership over a period of years, and a solid majority of the departments are physically well equipped according to state standards.

A strong Future Homemaker of America program, highlighted by state camp activity, district meetings, and a state meeting, provides excellent opportunities for leadership development. It has also served as a proving ground for future home economics teachers.

Office education. Office training gained an early start in Minnesota high schools. The fact that many high school graduates enter office work, both at home and elsewhere, in "prestige" white-collar occupations is readily understood by school administrators and parents. Administrators are also somewhat familiar with basic office occupations. Many of the courses, such as typewriting and bookkeeping, have considerable general educational value, so that there is little concern about whether a student profits from taking such courses. For the most part, office education classes fit nicely into the academic schedule, and they can accommodate about as many students as can a regular academic class. The last factor helps to keep costs down even though equipment costs are somewhat higher than those for other classes. Availability of office education teachers has never been a problem.

The field of office education, however, has had several handicaps. The lack of federal recognition and federal funds has made it difficult to obtain and keep an adequate state supervisory staff. In fact, at the present time, there is no consultant on the state staff who has office training as a major responsibility. Because of this, attention to curriculum revision and standards has lagged.

High school teachers in office education have never had to meet occupational experience requirements common in other vocational fields, and many of them have not had office experience. As a result, these teachers tend to align themselves with academic teachers, stressing the general education values and minimizing the vocational "bent" of their courses. It also means that the instructor often is not able to supply relevant occupational information to the students. Offerings in small high schools are frequently limited to one or two courses, not enough to qualify graduates for job entry. In general, although office education is the second most prevalent vocational course in Minnesota high schools, there is still much to be desired in terms of meeting the needs, especially since there is an increasing need for trained office workers, as Employment Security research figures indicate.

Agricultural education. Minnesota has probably come closer to meeting the vocational training needs of the state in agricultural education than in any other vocational field. A majority of local school boards in the state are made up of farmers or of townsmen who are responsive to farm voters. It has been fairly easy for them to see the value of agricultural training in their home areas. It has also been to the farmers' advantage to participate in the adult vocational agriculture programs. Usually, only its small size or lack of resources keeps a rural community from developing a vocational agriculture program. Aids provided include 50 percent of day instructors' salaries and travel and 75 percent of adult instructors' salaries and travel. State money spent on agricultural education in 1960-61 amounted to $886,851, supporting $354,394 of federal funds.

The Minnesota Future Farmers of America has had excellent leadership, and it serves several purposes. It provides a club medium through which enriched instruction may be carried on. Through contest, camp, and local activity, it has provided many opportunities for F.F.A. leadership training. Finally, F.F.A. is of tremendous public relations value to vocational agriculture. At local, state, and national levels, the blue-jacketed, well-spoken F.F.A. representatives gather solid support from industry, commerce, and agriculture

for the vocational agriculture program as a builder of men, as well as for instruction in agriculture.

More than 90 percent of the teachers of vocational agriculture in the state are graduates of the University of Minnesota. This commonality of alma mater has provided the basis for a tightly knit state organization of teachers of vocational agriculture that is effective when working on state and national legislation for vocational education.

Agricultural education in Minnesota is faced by one gnawing, persistent problem — the decline of interest in agriculture by some rural youth. In poor or "marginal" agricultural areas, some principals and counselors report difficulty in convincing farm boys that it might be advisable to take agriculture subjects. They and their parents may be reacting to national publicity on the decline of opportunities in agriculture and to their own farm income situation. This difficulty usually appears in vocational agriculture programs that have weak instructors or poor facilities. But in some poor agricultural areas, even good instructors are having difficulty holding a minimum number of students. The small school experiences the most difficulty.

The first step in meeting the situation is usually to combine the various grade levels of agriculture in order to make a suitable-size class, and to assign the instructor to some teaching duties other than agriculture. With a part-day program, pressure then mounts to convert the agricultural shop facilities to industrial arts and other uses. It is not reasonable for a State Department of Education to insist that shop and classroom facilities be held open and available for agriculture when there are not sufficient agriculture students to utilize them.

Agriculture is still a substantial and influential industry in our state, and there are still opportunities in farming. But the indications are that the number of individuals needed in farming will continue to decline. On the other hand, the caliber of individual needed, particularly in management areas, will rise. There is also an expanding need for adult training, so that those presently in the farming business may keep up in the industry.

As for preparatory agricultural programs in high schools, it would seem that fewer programs, generally located in the larger centers, with emphasis on agriculturally related programs, might be a partial answer. This will be discussed further in the section on area vocational-technical schools.

Distributive and other cooperative part-time training programs. The first cooperative part-time training program in Minnesota was organized in 1945. At present, there are 87 such programs, classified as follows: distributive, 32; office, 26; miscellaneous trades, 8; diversified, 21.

Enrollment in high school distributive education programs in Minnesota has grown modestly, but steadily, to a 1960-61 enrollment of 682. Total enrollment of all cooperative part-time training programs was 1,624. All of these programs are under the supervision of the State Distributive Education Supervisor, although the trade and industrial state staff gives some help with miscellaneous trades.

The part-time training program has many educational advantages. It gives students the opportunity of career exploration in a meaningful way. It gives students an opportunity to apply the knowledge and skills learned while in school. It provides earn-while-you-learn advantages for students with parents of very limited means. It may help reduce dropouts. The program may reduce school costs because some of the "laboratory" facilities are provided on the job, and classroom space may be released for other uses. Available evidence seems to show that students who choose distributive education in high school and later elect to continue their formal education do as well in college as other students of comparable ability.

However, distributive education is not always readily accepted as an educational program by school administrators. The academically trained administrator sometimes rebels at the thought of giving school credit for work carried on away from the school. Furthermore, regular academic classes for part-time students must ordinarily be scheduled in the morning, thus curtailing the principal's scheduling freedom. There is also some reluctance to recognize such training as a bona fide program for persons of above-average ability, even though their interests and talents may orient them toward distributive education. Some school administrators believe that this program should be only for the potential dropout or for those who do not have collegiate ability.

The primary restrictive factor for high school part-time training programs in Minnesota has been the limited number of cities large enough to provide on-the-job training stations for this type of program. This has led to approval of "diversified" training, which combines distributive, office, and trades occupations into one program. Such programs meet some of the objectives of cooperative education, such as career exploration, but they can scarcely provide meaningful related training to such a heterogeneous group of students. In the judgment of the state supervisor, if a city is large enough to support a "pure" program, diversified programs should not be approved. Cooperative part-time training programs are ordinarily reimbursed to the extent of 50 percent of the day instructor's salary and travel and 75 percent of the evening distributive salary. Reimbursable part-time training programs in 1960-61 received $232,458 in state and local funds and $26,772 in federal funds.

Using state funds only, Minnesota has reimbursed part-time cooperative office training programs in a similar manner. These programs have proven to be the most "solid" of part-time training programs in terms

of the availability of good training stations (especially in metropolitan areas), the development of meaningful related training in school, and the high percentage of trainees remaining in the occupation after graduation. It is particularly effective in the field of clerical occupations. This is a vocational program that should be expanded in Minnesota and, we believe, is deserving of federal encouragement and support.

The miscellaneous trades part-time training program in Minnesota has never been extensive, and it is not expected to grow substantially. In metropolitan areas, apprentices are not permitted to enter most "organized" trades until they are at least 18 years old. This limits the availability of trade training stations and also the variety of occupations in which training may be given.

The Minnesota part-time training program also has a state club organization known as the Minnesota Diversified Vocations Club, which serves the same function as the F.F.A. and F.H.A. in providing opportunities for leadership training and social growth.

The teacher is a critical factor in the success of all vocational programs, perhaps even more so in cooperative part-time programs. The coordinator teacher must be effective in working with the "downtown faculty" as well as in instructing and counseling students. When coordinator teachers have been well trained, meet all qualifications, and are selected on a competitive basis, they tend to do a better job than persons of limited, minimum qualifications who are "promoted" to the position.

Twenty percent of the persons employed in Minnesota are in distributive occupations. The 7 percent of the state's high schools offering training in distributive occupations are not enough. It has been estimated that there are still at least 20 communities large enough to support distributive education programs which do not presently have them. A concerted effort to alert these cities to the needs of their youth is planned for next year.

A field instructor in distributive education is employed by the State Department of Education to help small communities meet their adult distributive education needs. This instructor travels extensively, organizing and teaching distributive classes throughout the state.

Trade and industrial. Most of the vocational trade and industrial training in Minnesota is offered in the 12 area vocational-technical schools, more specifically discussed later. On the average, these area schools are now offering about half of their programs at the high school level and half at the post-high-school level. More specifically, outside of Minneapolis, more than 60 percent of the trade and industrial enrollment is at the post-high-school level, while Minneapolis, offering a variety of 30 trade and industrial courses, and having the advantage of a large metropolitan labor placement market, has had continued success with high school trade and industrial programs. But it, too, is moving gradually into post-high-school programs in most trade areas. Trade programs in comprehensive high schools, with a few exceptions, have not been very successful. In fact, there were only 12 comprehensive high schools offering such programs in 1960-61.

The identifiable reasons for failure by local boards of education to adopt trade programs are varied, as might be expected. One is undoubtedly the confusion that exists in the minds of many local board members and some educational administrators as to the difference between trade and industrial training and industrial arts. It is not uncommon to talk to local board members who are convinced that they are fulfilling their responsibility for providing vocational trade training by offering a good industrial arts program. This is certainly understandable, particularly since industrial arts teachers are supervised by the state trade and industrial staff, and many of the industrial arts teachers are active members of the state vocational association. Furthermore, to a lay person or a general educator, the instructional equipment looks much the same as that found in a trade shop. The point is that industrial arts does not prepare a student for job entry, as vocational education must.

Once local school officials understand what a trade program is, there are other problems. A three-hour block of time may make scheduling of academic classes difficult. The thought of paying a tradesman without a degree a salary comparable to, or better than, that paid a staff member with a degree is often unpalatable. Instructional equipment and supplies are expensive, and space requirements may seem fantastic to a general educator.

There are educational limitations to high school trade and industrial programs. One of these limitations is the lack of breadth to the program. If school resources are limited to one trade program, should it be auto mechanics, or something else? Does this mean that everyone in the school who wants to learn a trade should be an auto mechanic? The result is that the enrollment in the course consists of boys who want to learn a trade, but not necessarily the one being offered. Decisions as to who will be enrolled in the class are often made by principals or counselors with little knowledge of the criteria for selecting students who can profit most from the course.

Some of the limitations of a single trade program in the comprehensive high school revolve around the instructor. He will often work a six-period day — one period longer than a normal teaching load. If he is paid extra for the extra period, staff resentment may follow. If he is not paid extra, the teacher may resent the extra time required. Working with vocational advisory committees and seeking placement opportunities for the graduates are two very important aspects of his job. Yet the importance of these aspects is usually not fully understood by his superiors or teaching colleagues.

His in-school load will be as large as or larger than that of the academic instructors, and the temptation to pass lightly over advisory committee and placement responsibilities is considerable.

Furthermore, Minnesota is experiencing a rural-to-urban youth movement common in many agricultural states. Many of the jobs for which trade training is needed are found only in urban areas. It thus becomes virtually impossible for a trade teacher to carry a full teaching load and still carry on advisory committee and placement activity away from his local community.

It has become the general conclusion of the state staff that one-teacher trade programs in outstate high schools are not generally effective, and no great effort is being made at this time to promote such programs in additional high school districts. Going programs are provided with supervisory and consultative services, but unless the school district has adequate resources to offer at least three trade programs with a full- or part-time coordinator, the chances for quality trade and industrial courses are not good. There are relatively few high school districts in the state capable of operating three trade programs without obtaining assistance under the area school law.

Successful high school trade programs are conducted in the area vocational-technical schools, which will be discussed a little later. At these schools there are qualified directors and coordinators as well as instructors who carry on the liaison work with industry. The school director, who is usually the immediate supervisor, understands the needs, problems, and responsibilities of the trade teacher; and he is able to provide much instructional assistance.

Trade programs in high schools are usually reimbursed for 50 percent of the day instructor's salary and travel and 75 percent of the evening instructor's salary. In 1960-61, the trade and industrial programs received $766,797 in state funds and $79,713 in federal funds. These amounts are for both high school and post-high-school programs. Federal money for trade and industrial education is very inadequate, and without considerable state aid there would be substantially fewer programs.

A team of 12 trade and industrial field instructors operating under the supervisors in the state trade and industrial vocational unit bring instruction in electrical, fire, and steam boiler safety to many outstate communities.

Guidance in the secondary schools. The National Defense Education Act of 1958 provided a tremendous boost to guidance in the secondary schools.

One of the most significant aspects of the improved counseling program is the increase in the number of certified counselors. Qualifications for a counselor's certificate include a valid teaching certificate based on a bachelor's degree, a master's degree, or its equivalent, with course work in specified course areas; a minimum of one year of work experience outside of education; and at least one year of successful teaching experience.

The results of this rapid increase in the number of counselors are becoming apparent. Although no research has been conducted to determine whether counselors are actually becoming more vocationally oriented, we do know that they now request a great deal more vocational literature, invite vocational directors to their schools more frequently, and refer more students to area vocational schools. The counselors built their April 1962 annual state conference program around non-college-bound youth.

This is not to imply that Minnesota counselors are neglecting the precollegiate students. Nor should it be inferred that there are no longer counselors in the state who put their total effort on academic educational counseling and neglect vocational counseling. It does imply that progress in getting well-trained counselors in Minnesota high schools has been made, and that, based on initial indications, the results will be favorable to youth needing vocational guidance and training.

Summary of vocational training in high schools. In summary, a number of variable factors determine the establishment and success of vocational training in the comprehensive high school. Essentially, these variables are (1) the size and wealth of the school district, (2) the orientation or "enlightenment" of local school boards and school administrators concerning vocational education, (3) the local need for the program, and (4) the ease with which the program can be worked into the regular academic schedule by school administrators.

It does not seem likely that the desired objective of having all school districts become large enough to accommodate kindergarten through the 14th year, including comprehensive programs of vocational training, can be reached soon enough to meet the accelerating job-training needs of youth. Nor does it seem that there is any hope that even a significant minority of high schools will provide trade or technical occupational training. In Minnesota it appears that we will lean even more heavily upon area schools for high school and post-high-school trade and technical training.

The Area Vocational-Technical School

The area vocational-technical school, the newest institution in public education in Minnesota, was authorized by legislative act in 1945. Since then, 12 area schools have been approved by the State Board of Education, two districts have completed surveys preliminary to securing Board approval, and inquiries regarding requirements for area school designation are increasing. Initially the area schools were largely high schools, but increasingly they are becoming post-high-school institutions.

Area vocational-technical schools had their inception in the failure of other institutions to provide the vocational-technical education needed by youth and adults.

Specifically, when the Legislature passed the area school law in 1945, the following conditions prevailed.

1. Only six high school districts outside the three cities of the first class offered preparatory trade programs. Ninety-three percent of the total enrollment in trade and industrial programs was in Minneapolis, St. Paul, and Duluth. Rural and small town youth had no opportunity to obtain trade or technical training unless their parents could finance them at a private trade school in the Twin Cities.

2. War production training had slackened, and regular evening extension trade and industrial training was at low ebb — only 660 such students were enrolled in the state. This was a serious situation because it occurred at a time when Minnesota's economy had swung toward industrial emphasis, and the employment effects of automation were becoming evident. Apprenticeship training was inadequate in many areas. The World War II years had seen a movement of skilled people out of Minnesota to the West Coast, and skilled manpower was in short supply.

3. The postwar market was about to be flooded with a host of new consumer products including automobiles, appliances, and other electrical-mechanical devices, which we were ill equipped to service and repair. Many occupations were demanding more exacting degrees of skill and greater technical knowledge.

4. The holding power of the secondary schools was considered unsatisfactory, with only 63 percent of those enrolled in grade 5 completing grade 12.

Out of the foregoing conditions came the language of the area school law. "It is the purpose of this section to more nearly equalize the educational opportunities in certain phases of vocational-technical education to persons who are of the age and maturity to profitably pursue training for a specific occupation."

In the years since 1945, considerable progress has been made toward fulfilling the objectives of the law.

1. High school and post-high-school preparatory trade and technical enrollment has increased by over 100 percent.

2. By 1961, high school and post-high-school day enrollment in trade and technical classes outside Minneapolis, St. Paul, and Duluth had increased from 7 percent to more than 50 percent of the total enrollment. Adult evening school trade and technical enrollment increased more than 10 times. Area schools are cooperating with joint apprenticeship committees in providing related instruction for apprentices through all areas of the state where area schools are located. In 1960-61 there were 2,522 trade and industrial apprentices enrolled in vocational schools and 12,428 other tradesmen in extension training. Of these, 3,633 were enrolled in technical extension courses. Industrial advisory committees are assisting in keeping courses and equipment up to date so that employed persons can keep up with their occupations.

3. Cooperative part-time distributive programs have been made available to area students. Two area schools, Thief River Falls and Winona, are staffing post-high-school distributive programs to start in the fall of 1962.

4. Nine of the area schools have developed vocational agriculture programs. They employ a full-time vocational agriculture coordinator who works on an area basis, preparing farm management analyses and instructional materials based on these analyses. One area school has developed a one-year post-high-school training program for boys going into farming that includes a plan for financial assistance in getting started in farming.

5. Six area schools offer one-year post-high-school business training courses designed to enable the office trainees to become vocationally competent. These courses fill a particular need created by the inadequate business education departments of the small high schools.

6. All area schools have extensive evening programs in home economics. They offer a broad range of courses attended by homemakers from as far as 50 miles away.

7. Technical training under the National Defense Education Act of 1958 has been authorized in area vocational-technical schools and more recently in junior colleges. At present there are NDEA Title VIII programs in only the area schools, but two junior colleges have programs under consideration.

Primary efforts in the development of technical education have been exerted in the area schools where sympathetic administration and established liaison with industry already exist. Nearly all of these programs are on the post-high-school level. Two area schools, however, allow high school seniors to start in electronics with the expectation that the students will continue at the post-high-school level.[2]

8. New courses are developed and added where there is occupational demand. This has occurred most recently in industrial electronics and tool design. Other occupational fields currently under analysis in which

[2]It has been the opinion of the writer that high school graduation and a solid mathematics background should be prerequisite.

My recent observations have been that it may actually be easier for a large high school to carry on technical training than trade and industrial training. Space requirements are not significantly greater than those for a chemistry or physics laboratory. Equipment is expensive, but reimbursements under Titles III and VIII of the NDEA have lightened that burden. Technical education has academic respectability, and block scheduling is not mandatory for successful instruction. A large high school may have a sufficient number of qualified students. The nature of the work in electronics is such that a bright student may move at a tremendous pace and not be hindered by the speed of a machine or by the limitations of other classmates.

In brief, a high school that graduates more than 200 students annually probably could, with careful screening, produce 15 bright non-college-bound technicians each year. But the typical high school could not do so. Furthermore, the typical high school is not likely to have personnel qualified to teach industrially oriented courses, to have available the necessary industrial advisory committees, or to be able to provide placement services.

courses are expected to be organized include chemical laboratory technology, instrumentation, reproduction technology, medical laboratory assisting, dental assisting, and data processing.

The previous statements reflect the progress and growth of area vocational-technical schools in Minnesota, but there is a need for more area schools for a number of reasons.

1. Technical, trade, and industrial training is still lacking in comprehensive high schools. In 1960-61 only 4 percent of senior secondary school districts other than area schools offered day preparatory technical or trade training. No junior colleges offered technical or trade training that met the standards of the Minnesota State Plan for reimbursed programs.

2. An increasing number of young people will be graduating or leaving our high schools and seeking employment. In 1962, 38,000 graduated; in 1964, the number will be 43,000; and in 1965, 48,000. And against this outpouring of high school graduates, all indications point to a decreasing demand for the untrained and the unskilled.

3. Reliable sources indicate that most future industrial development in Minnesota is likely to be in the "brain industries" such as electronics, tool design, and data processing. At present the area schools are the only institutions staffed and equipped to train young people for nonprofessional technical jobs.

Area school accomplishments have been achieved with maximum local district participation in survey of needs, planning, financing, and construction of facilities. All construction cost must be borne by the local district, that is, the regular school district. None of the 12 area schools enlarged its district immediately before or after receiving area designation. All equipment costs, except for practical nursing and NDEA technical, are paid by the local community. However, area school districts are assured costs for serving nonresident post-high-school students, which costs include a proportionate share of the cost of debt service on buildings and equipment. We believe that this system has considerable merit, since it relieves the local district of responsibility for educating trainees from other districts, and it also makes it financially expedient for area schools to recruit nonresidents. In 1960-61, $225,000 in differential aid was paid to the area schools; the amount for 1961-62 exceeded $315,000. Since the foundation aid given varies according to the wealth of the district and is based on both high school and post-high-school students, it is not possible to state categorically how much state aid is being given per pupil in all of the area schools. Foundation aid for post-high-school students in 1960-61 was $99,000. Of all vocational aid to area schools, the portion that is federal money varies from 18 to 35 percent.

Since nonresident high school age students may attend an area school only if their local districts give consent and pay their tuition, based on costs, the local district may then collect the foundation aids just as if the students were in local attendance. Most small high school boards will not give this consent since they are anxious to keep their enrollments up. This does not concern the area schools greatly because in most cases they prefer to enroll high school graduates with their added maturity and better scholastic background.

A more serious problem is the high school dropout. If a student drops out in the 10th grade and later seeks to enroll in the area school at the age of 19, for instance, he is still not a high school graduate and must solicit the consent and financing of his local board. This is usually not forthcoming, and the student cannot attend unless he is willing and able to pay his own tuition as an adult. Adults (those over 21) pay tuition based on area school costs, ranging from $30 to $55 per month.

Area schools exercise admittance prerogatives based on the applicant's past school and work record, aptitude and ability tests, and personal interview. Area schools need not accept students who cannot be expected to profit from training in the occupation of their choice. Such students are usually counseled regarding possibilities in other occupations, or they may be enrolled on a probationary basis.

Area schools have been experiencing a decided trend toward post-high-school attendance. In fact, the increase in post-high-school attendance has been at the rate of more than 20 percent a year. The reasons for the increase include the mounting demands of occupations, students' desires to graduate from their "home" high schools, and the fact that the area school law favors nonresident post-high-school attendance. Although high school trade graduates have been placed in trade work regularly by area school directors, especially in certain occupational areas, employers, when given a choice, will nearly always choose the more mature post-high-school trade and industrial graduate. Hence, when high school and post-high-school students are in competition for training stations in the school, as is increasingly the case, the high school student may lose out. When the area schools were primarily high schools, the general education subjects such as social studies were handled by regular secondary school staff. This procedure is still followed for area high school students. But for the most part, general education subjects are not available to post-high-school students. Area schools therefore have been criticized by some educators for being too technical, offering only skill courses, technical courses, related mathematics, related science, and in some cases, related communications, but no humanities.

Area school directors and others have replied that post-high-school students have had 12 years of social studies, history, English, and other humanities — that they should expect to continue such studies formally and informally throughout their entire lives. The area school point of view is that an individual should expect to devote 1 to 2 years of his life to learning the rudi-

ments of an occupation. It is this occupational training that the area schools take as their bailiwick. They contend that the members of the vocational school staff are expert only in occupational training. Convinced that a great deal in the way of desirable attitudes and human relations is absorbed through occupational training, most area school personnel believe that the limitations of time necessitate the elimination of purely academic subjects from the post-high-school curriculum.

All area school administrative, supervisory, and instructional staff members in all of the vocational fields are required to have at least 3 years of noneducational work experience beyond the learner level. For a time, this created a problem in obtaining instructors with degrees, especially in the trade and technical fields. When it came to a choice between adequate experience and a degree, experience was considered the more significant. In the past 2 years, however, we have noted an increasing availability of instructors who have both the degree and the occupational experience. This has come about partly because of an increased awareness of the area vocational programs and also because an increasing number of area school graduates seem to be getting industrial experience, acquiring degrees, and coming back into vocational teaching. We are now in the process of working out a sustained teacher recruitment program to be directed at past area school graduates now in industry.

The Minnesota State Plan provides for the reimbursement of the cost of area vocational counselors. At present only 3 of the 12 schools are utilizing the plan. Most of the other schools depend on the director or coordinator for counseling, or utilize the secondary school counseling services. Area vocational counselor requirements are stringent. They require a regular state counselor's certificate plus credits in the philosophy of vocational education and 2 years of noneducational work experience.

A pilot project is now under way to measure the validity of entry tests being given to electronics and auto mechanics students. If this project appears meaningful, it may lead to an IBM system whereby every student entering an area school will have his test and interview data recorded on an IBM card for later comparison with first-year grades, second-year grades, and followup data. Over a period of time, these data could shed much light on the validity of aptitude and ability testing in the state.

Course content in area schools has been typically worked out by the local instructor in consultation with a local advisory committee. Increasingly, however, we see less justification for curriculum differences between schools, since all recruit from a common student market and place graduates in comparable jobs throughout the state. In technical areas, such as electronics and tool design, curriculum content is determined by a state advisory committee whose members have available course material from other states, in addition to their practical knowledge, as a basis for making content decisions. Perhaps this practice should be followed in many other fields.

Certification requirements for directors include 5 years of experience as a teacher, supervisor, or coordinator in a vocational program with at least 1 year of supervisory experience, 3 years of work experience outside of the educational field, and a bachelor's degree. Most directors have master's degrees. Area school directors have become skilled in the art of public relations and occupy a part of their time in career days, calls on schools, news media contacts, developing brochures, and other promotional activities.

At the state level, the Assistant State Director of Vocational Education is specifically charged with spending 50 percent of his time in the administration, supervision, and promotion of the area vocational-technical schools. His area school activities include:

1. Conducting area directors' conferences, at which policy and philosophy of area schools, in addition to administrative matters, are frequently the discussion topics.
2. Reviewing the area school requests for foundation and differential aids and making recommendations to the State Director therefor.
3. Coordinating the efforts of the other supervisory staff in providing consultative services to the area schools.
4. Providing consultative services to area school directors and superintendents on matters of new programs, advisory committees, finances, legal matters, and promotional efforts.
5. Providing consultative service to communities seeking designation as area vocational-technical schools.
6. Serving as area school consultant to various state advisory committees on youth.
7. Speaking for the area schools at state level meetings, such as the state welfare conference, superintendents' meetings, and counselors' gatherings.
8. Providing leadership for the continuing improvement of selection procedures, instruction, teacher recruitment, and job placement.
9. Keeping local directors continually informed about new developments and opportunities for vocational education at the state and national level.
10. Making recommendations to the State Director regarding requests to the State Legislature.

Regular supervisors in the various vocational fields also supervise courses in their service unit in the area schools. In fact, a large majority of the trade and industrial programs in the state are in area schools. The same is true of adult home economics programs.

Area schools are well qualified to handle the kinds of specialized training required under the Manpower Development and Training Act. They have well-established lines of communication with industry and are experienced in working with industry. Area schools also

have experience in giving occupational training to youth and adults of all ages with widely varying educational and experience backgrounds.

Some Problems

Discussion of the area schools would not be complete without including something about their shortcomings. In about 5 years, the area schools, which were primarily high schools, have become mainly post-high-school institutions. This rapid transition has created some problems in dealing with post-high-school students. Some of these problems are:

Housing. It was originally thought that most students would be commuting students, and that the area schools would not be involved with student housing. However, many students come from considerable distance and must find housing in the area school city. These students are being housed in private homes — a situation which most communities involved have found desirable because of the economic benefits to local home owners. Availability of rooms has not been a problem and, to date, no serious supervisory problems have arisen. The necessary prechecking of student residences, making house rules and regulations, and checking the rent to be charged are all questions presently being resolved more or less individually by the schools involved. Differences among the schools in the amount of responsibility accepted for supervision of student living quarters has been a subject of some concern to parents and counselors. Area school directors who advocate minimum supervision point out that most of these post-high-school students would be living away from home on their own in any case if not at the area school. The housing topic is discussed frequently at area school directors' meetings. and it is likely that more uniform policies will be forthcoming in the next few years.

Student social life. During the past several years, the courses offered in area schools have become more technical, and the schools' reputation for quality training is becoming widespread. The result has been the attraction to the schools of high-ability students who appreciate and desire social experiences in school in addition to training activities. Area school directors have sensed the need and have been adding such activities as school dances, athletic teams, and student councils. However, these efforts would be regarded as somewhat amateur by collegiate institutions that have been carrying on such activities for many years. Furthermore, the director does not have unlimited time, and it is difficult for him to delegate social assignments to teachers whose ability and willingness to handle student social affairs were not considered when they were employed.

Limited concept of vocational education. The vocational leadership function in area schools is just as important as are similar functions in other educational institutions. The fact that an area director is a qualified vocational educator does not always assure a broad concept of vocational education. Some of the area school programs have been limited too much to traditional trade courses. It is not easy to be critical of such programs, particularly when a superior job of training is being done, but efforts are being made through state leadership to broaden the area school program.

Lack of trained guidance personnel. Only 4 of the 12 area schools employ specialists in counseling. In the other schools, selection and counseling are carried on by the directors or coordinators. Time commitments often do not permit the area directors to spend adequate time in counseling. In most cases they have not had a great deal of professional course work in counseling. However, experience with the needs of industry and with students has given them considerable insight into screening students for the various courses.

The lack of counseling personnel in outstate schools has been partially compensated for by extensive cooperation with local offices of the Department of Employment Security. In five of the area schools all entering students are tested by Employment Security and are registered with it for placement upon completion of training. However, the schools do not abdicate their placement responsibility; the Employment Security help is regarded only as an added service. In most instances, Employment Security has been of considerable help to the area schools, providing perhaps the equivalent of a half-time counselor. Some difficulties have developed, however, in that the *state* office of Employment Security objects to the local offices' practice of giving the student test scores to the area schools. Where local offices test and interview, but do not give out test scores, the school directors are likely to abstain gradually from making referrals.

In summary, the area schools of Minnesota are providing high school and post-high-school vocational training needed by students, industry, and government. Although all existing facilities and operational procedures are not perfect and some areas of the state are still too distant from area schools, substantial improvement in facility expansion, curriculum progress, and operational procedures is currently being made.

These schools are meeting a training need that was not being fulfilled at the time the area school law was passed and that no other educational institution in the state is now prepared to meet. There is no evidence that area school graduates are less competent citizens because their school training has stressed occupational learning.

The Junior College

The general aims of Minnesota junior colleges, as stated in "The Junior College in Minnesota," are preparation for advanced study, vocational education, general education, and community service.

Recent evidence indicates that the junior colleges of Minnesota are doing a satisfactory job of providing transfer courses for four-year degree programs. Students completing the transfer courses tend to do as well as or

better than those who take all of their collegiate work in the degree-granting institution. But the junior colleges have not been significantly involved in post-high-school vocational-technical training. Some of the reasons are historic.

The junior college movement in Minnesota was started in 1914. But state building money has never been provided, and it was not until 1957 that any state support for maintenance of junior college students was voted by the Legislature.

Typical picture. Junior colleges have been limited to the larger, wealthier school districts, or to districts obtaining a large portion of their income from nonresidential properties, as is the case on the Iron Range. State law provides that school districts may combine to form a larger junior college district. But in no instance have communities or districts made any serious attempt to take advantage of the law and form a large junior college district. One important reason for this is that there is an economic advantage to the community in having the college located in its midst. Because of this advantage, the adjoining communities have been unwilling to tax themselves for the support of the college.

Junior colleges have typically started by "finding" space in an existing high school or elementary building "pending" the time when building funds would be available. Of the 11 junior colleges in existence in Minnesota, not one has been built on a campus separate from the high school and with collegiate-type facilities. The space "available" did not ordinarily include trade and industrial facilities.

Just as the physical facilities have been limited, so also the staff has been limited. Usually the first dean has been selected from the high school academic teaching staff, and initially has taught college subjects while serving as part-time dean. The dean often has had little training in general school administration and no training in vocational education or its concepts. His responsibilities have been similar to those of the high school principal, and have not included broad financial, construction, and program planning for the junior college. Although most of the junior colleges now have full-time deans, local boards often have not provided them with the administrative and counseling assistance required to keep pace with the growth in the pretransfer enrollments. This has made it difficult for the deans to devote the time needed for the development of new vocational-technical programs.

A lack of understanding by the deans of the needs of vocational education, especially in the trade and technical fields, has been a handicap to the vocational programs. Where attempts have been made to establish trade or technical programs, the programs have often been based on the availability of facilities, staff, and existing courses, rather than on the needs of the occupation. The occasional contacts with industry have been cursory rather than analytical in nature.

Objectives of the nontransfer courses have usually centered around providing "something for the transfer dropout" rather than around the needs of the occupation for which the training is proposed. In one technical aid program, the transfer dropouts who started the vocational courses generally dropped out of the entire program. Only a few ever completed the program. Some of the factors involved were: (1) No selectivity was exercised other than that this was a program for those who failed in preengineering. (2) Students who had engineering capability but who preferred the technical aid course were "pushed" to transfer into the preengineering program. (3) At the beginning of the program several unrelated industries were consulted, and the decision was made to train a general technician. The student, therefore, was given courses in surveying, electricity, forging, welding, woodworking, machine shop, and sheet metal, as well as courses in mathematics and liberal arts. The net result was that the student did not get enough training to be qualified in any one area, and he was not readily employable on the basis of his training. (4) Little effort was expended on placement, and no placement records were kept.

At present, none of the junior colleges offer trade and industrial or technical programs that meet the standards of the State Plan for Vocational Education. They do offer, however, some quasi-vocational programs for which they receive the state junior college student aids. These aids consist of $300 per pupil annually. This puts the State Department of Education in the curious position of providing funds for the support of substandard vocational programs which cannot be supported with regular vocational aids because they do not meet state vocational standards.

If a junior college is to qualify for student aids for a "vocational" program, its teachers must meet the academic requirements of the transfer program, including at least a master's degree. It is very difficult for the junior college to secure instructors who have trade and technical competence in addition to the degree.

Successful programs. The vocational training areas in which junior colleges have achieved some degree of success are office and distributive training. The office training programs lend themselves nicely to the junior college pattern of operation. Single-period classes are acceptable; degreed teachers are available. Office education trains for white-collar employment, which provides status for the students. Many students in the office program adapt very well to taking regular transfer courses as the general education part of their training.

On the other hand, a considerable number of students do not adapt well to the transfer classes, and some who could perform quite capably in office skills drop out because they are unwilling or unable to complete all of the collegiate requirements. An analysis of the office curriculum shows that the amount of actual practical skill and related training given in 2 years in the junior

college is comparable to the amount of practical work given in 1 year in the area of vocational-technical school or in the private business school. Furthermore, in some of the junior colleges, a majority of the two-year office-training students leave to seek employment after the first year, having acquired only one-half of the skill and related training that a typical area school or private business school student would have had.

Office-training equipment in the junior colleges has generally been as good as that found in the larger comprehensive high schools. In two of the junior colleges a regular cooperative part-time office training program is being carried on successfully. For other than the cooperative program, placement data are not available; but placement is quite good, since the demand for office workers is high at nearly all advanced levels of training.

Distributive education programs in 2 of the 11 junior colleges have also been successful in terms of the success of graduates and the general reputation of the programs. In both instances the programs were organized and carried on by competent, well-trained vocational distributive coordinators.

Fairly extensive vocational evening trade extension programs are conducted in three junior college districts. Each of these districts has a qualified vocational coordinator. In two of the districts the coordinator reports directly to the superintendent with no responsibility to the dean of the junior college; in the other, the vocational coordinator reports to the dean.

Progress. There is in Minnesota a strong junior college "movement," comprised largely of educators, but with some lay support. It is the contention of this group that junior colleges should provide the bulk of the 13th and 14th years of education in Minnesota in the general categories listed previously as junior college aims.

The supporters of the movement have not looked with favor on the development of area vocational-technical schools in the state. It has been their contention that the scope of the area school training is too narrow since it limits the student to occupational training and does not make it possible for him to switch readily to the college transfer program without loss of credit or time. Furthermore, it is contended that adequate general education is not available in the area school. They believe that most of the area schools should be merged into the junior college pattern, thus making the area schools more comprehensive institutions. At the same time, they maintain that existing junior colleges should become more vocational, and thus more comprehensive, by offering more occupational training courses. Local junior colleges and area schools have been under some pressure for a number of years to work toward the implementation of this objective of increased comprehensiveness. No attempt will be made here to analyze the wisdom of this objective. If it is assumed for the moment that comprehensiveness is a desirable objective, the following actions represent "progress" toward that objective.

1. In July 1962, the administrative regulations of the State Department of Education were amended to provide for a vocational coordinator in junior colleges offering three or more vocational programs. The philosophy behind the amendment is that experience has demonstrated rather clearly that vocational programs can be successful only if they are under the direct supervision of a qualified vocational educator.

2. In Austin, the only school district in the state presently having both a junior college and an area school, the junior college started an engineering assistant training program in the fall of 1961 which utilizes the area school electronics and machine shop facilities during late afternoons. This training program, however, does not meet the standards of the state plan, and the curriculum structure is not highly regarded by the Vocational Section of the Department of Education. But it does represent an effort on the part of a junior college to add comprehensiveness to its program.

3. The Hibbing Junior College has initiated plans for offering industrial and other vocational programs. It has hired a qualified man in an instructional capacity with the idea of using him later as a coordinator. The dean has been consulting frequently with the State Vocational Section and the Department of Employment Security regarding "demand" occupations. He has set up several meetings with industry and other groups to determine course content with intent to plan courses based on occupational needs. The dean's previous experience as a mathematics teacher in a vocational-technical school is helpful in enabling him to understand the needs of a vocational program.

The Hibbing School Board is concurrently considering the establishment of an area school instead of placing the vocational programs in the junior college structure; hence, it is not yet fully determined that the Hibbing vocational program will "enhance" the junior college movement.

4. The first modern community college in Minnesota has just been organized at Willmar. The superintendent of schools has exerted major leadership in the development of the college and will serve as its president. He was formerly a high school principal and is presently completing doctoral work at Columbia University. Since Minnesota does not have a community college law, the Willmar Community College is being organized as an area vocational-technical school and a junior college. To the general public and attending students, however, it will be known as a community college. The college is located on a campus site 3 miles outside of the city of Willmar (population 10,400), which site was formerly an Air Force Radar Base. Air Force buildings were adapted for five vocational areas, and classes started with a full enrollment in the fall of 1961. College transfer courses will be added shortly.

Application and registration procedures will be the same for both vocational and transfer students. Both will

be on a quarter basis. Transfer students will pay tuition and fees based on junior college law. Vocational students will pay fees based only on area school law. Both groups will participate jointly in athletic and other college activities. Vocational students must take all of their prescribed course work in the classes designed for their occupational training. However, it is planned that they may take additional college work on a late afternoon basis if they so desire. Transfer students may make some late afternoon utilization of vocational facilities if scheduling can be worked out.

The academic dean and the vocational director will report to the president of the college. It is anticipated that at some time in the future, growth of the college will require a full-time president.

Although the experiment might be more meaningful if better buildings were available, the Willmar Community College is the first full-fledged attempt in Minnesota to combine an academic transfer program with a vocational-technical program, and it will be watched with great interest.

The four illustrations just given represent "progress" toward the assumed desirable objective of making junior colleges more comprehensive by adding vocational-technical courses and by gradually merging area vocational programs into collegiate-type institutions. Considering that this has been an objective of the junior college movement for the past 30 years, the progress seems quite minute. If junior college or community college vocational-technical programs are ever to be a significant factor in Minnesota education, several axioms, in the opinion of the writer, must be recognized.

1. The vocational-technical programs must be organized and supervised by a person who has had vocational-technical education training and experience. We have no record of any vocational-technical program being successful without that ingredient. If the supervisor is qualified and competent, matters of instructional staff, instructional equipment, curriculum, facilities, and other standards fall into place somewhat more readily.

2. The head college administrator must be broadly trained in general educational administration and have an understanding of vocational education gained from experience or course work. This is necessary so that he will understand and support vocational program budget, staff, and curriculum requests. One of the understandings that must come to college administrators is that the flexibility of vocational-technical programs has limitations. The last-quarter dentistry student cannot expect to transfer all of his credits toward a physician's degree. By the same token it is impossible for the technical electronics student to expect to transfer all of his course work to electrical engineering. Vocational-technical courses must continue to be based on occupational needs.

3. Although individual students may profit from extra courses on an extended day basis, there cannot be any wholesale mixing of vocational and transfer students in the same classes intended to serve objectives of both groups. Such classes soon lose their purpose.

4. Vocational-technical courses in a college must stand on occupational training and cannot exist for the primary purpose of accommodating the transfer dropout. Such dropouts must qualify through regular selection procedures, or the program will rapidly become a reputed "dumping ground" with a corresponding drop in enrollment, in the quality of enrollment, and in employment demand.

5. Full-time state direction within the State Department of Education is needed. This has been requested from the Legislature several times. The request will be repeated, and probably eventually will be granted. If the junior college "movement" wishes to continue to place emphasis on comprehensiveness through broadening of vocational programs, the specifications for this job will be important. If the state junior college director should be an academician, he is likely to place emphasis on the development of academic excellence with continued curtailment of vocational-technical programs. On the other hand, if he should be a person with broad administrative training and experience and with vocational understanding, he might energize the vocational-technical program in the junior colleges.

6. Provision of state or federal money for building and equipment would be one specific step toward which the junior college state director would work. Unless such money is forthcoming, it is unlikely that many of the present junior college districts will provide significantly for formal or other vocational education courses; it is unlikely that they will go deeply into debt to provide vocational junior college facilities for "area" students. We have noted that towns have been reluctant to tax themselves to build a junior college in a neighboring town, often a commercial competitor. Federal aid or new state tax sources, such as a sales tax, would seem necessary.

7. If it is desirable that area vocational schools and junior college programs be merged, it could more readily be accomplished under a new name such as "area community college." As it relates to vocational-technical training, the name "junior college" has acquired an unfavorable connotation with some educators and others in the state. The record of area schools has found favor with many lay persons, joint apprenticeship committees, labor groups, and legislators, and it is unlikely that area vocational-technical schools could ever be forced to yield their name, with its reputation for quality training, to the junior colleges. The union, if it is to occur, would have to come under a new institutional title.

The State Colleges

The five state colleges started as state normal schools — teacher-preparing institutions. Subsequently, they became four-year, degree-granting institutions and now offer a master's degree program in subject areas and

guidance. They serve as junior colleges for their areas, offering preprofessional and liberal arts courses that may be transferred to the University of Minnesota without loss of credit. State college participation in some phases of vocational education now appears imminent. Each of the colleges has the capacity to supply all of the replacement needs of the state for industrial arts teachers. This situation has caused state college presidents and industrial arts department heads to give thought to other outlets for their graduates. Some are planning four-year industrial technology programs leading to a B.S. degree. Others are considering two-year technical programs. Such an expansion would result in an unfortunate duplication of programs in those cities where there are both state colleges and area schools. The potential duplication of programs is of great concern to the Vocational Education Section of the Department of Education, but it does not have the jurisdictional authority or the advisory capacity to do anything about it.

The University of Minnesota

The University of Minnesota has branches at Duluth and Morris. The University is involved in vocational education through its Schools of Agriculture and through its General Extension Evening Class Program. The Schools of Agriculture are remnants of a need identified many years ago for agricultural training at the secondary level on a less-than-full-year basis. The schools were established for farm boys who attended 6 months during the winter — leaving them free for summer work — to learn the "basics" of agriculture. Since that time 300 approved vocational agriculture departments have been established in public school systems throughout the state. Most rural youth now prefer to attend regular high schools on a full-year basis. Credits in the Schools of Agriculture have somewhat limited acceptance since they do not represent a full school year of attendance. The attendance at these schools has been diminishing, and it appears that this program will be phased out. Utilization of these facilities by the University is still undetermined.

Through its General Extension Evening Program, the University offers nondegree certificate courses in a variety of fields such as interior design, public administration, secretarial services, industrial relations, business administration, accounting, engineering science, and all kinds of engineering. Although these courses are "college-level," and the vocational evening school courses in Minneapolis and St. Paul are not recognized as such, many of the same faculty are utilized, often teaching much the same content in both institutions. The vocational schools have the advantage of greater flexibility, closer contact with industry through advisory committees, frequently better instructional equipment, and lower fees. The University has the advantages of prestige, college credit, and a certification program. Furthermore, the credits are acceptable if the individual later decides to try for a degree.

Retraining the Unemployed

Minnesota had some experience in retraining unemployed workers prior to the enactment of the Manpower Act. Although the Area Redevelopment Act was passed in May of 1961, funds were not provided until early in 1962. In order to start training earlier, the Minnesota "Governor's Plan for Retraining" was conceived. Under this plan the unemployed received 16 weeks of free training with tuition paid by the Iron Range Resources Commission. Those who were drawing unemployment compensation were allowed to continue to do so as long as they were not called back to work. The principal stumbling blocks were: (1) many workers had exhausted their unemployment compensation and could not afford to be in training; and (2) there was no area vocational-technical school or other good training facility in the Iron Range area, Minnesota's "distressed area." Consequently, training was conducted in area schools away from the "Range," and trainees had to move for training. As a result, only 22 persons were actually enrolled in electronics, baking, machine operation, and auto tuneup. A followup revealed that the sixteen-week period was not adequate for most persons in the occupations for which training was offered. Decisions regarding the areas in which training was given were made by the State Employment Security Research Department.

Following this state program, training under the Area Redevelopment Act began in February of 1962 at Duluth, Eveleth, and Virginia on the Iron Range. Based on earlier experience involving the moving of trainees, a new center was established at Eveleth, and an existing program at Virginia was upgraded. About 100 persons are presently training in electronics, welding, diesel mechanics, and cooking. They were selected from about 400 who requested the training, so that their quality has been high. Many have had some experience in the occupation for which they are being trained. The welding trainees, the only group far enough along for placement, have experienced no difficulty in getting jobs.

Rules and regulations for training under the Manpower Act are presently being written. It is anticipated that most training will be conducted under the auspices of existing or newly organized area vocational-technical schools. A primary objective in Minnesota will be to spend the Manpower Act money on facilities that will be available for training and retraining under regular vocational administrative structures after federal reimbursement has ended.

Teacher Training

Teacher-training institutions in all of the vocational fields must receive the approval of the Vocational Section of the State Department of Education. Home economics,

office, and guidance services have given approval to several teacher-training institutions; but agriculture, distributive, and trade and industrial services limit teacher training to the University of Minnesota.

Except for trade and industry, nearly all of the teacher training takes place on campus. It is the considered opinion of trade and industry supervisors that the off-campus instruction is the most effective means for upgrading trade instructors and giving new instructors preservice training, and reimbursement policies are established accordingly.

Private Vocational Schools

Dunwoody Industrial Institute in Minneapolis, a nonprofit, endowed institution which enjoys an international reputation as a high-quality training center for men, is the most significant private vocational school in the state. Annual enrollment at Dunwoody is usually about 1,600 day students, with an additional 2,400 in evening classes. Instruction at Dunwoody is considered free: the $34 charged per four-week period is for nonteaching expenses; the actual instructional costs are covered by endowment income. Dunwoody directors and personnel have been active in the state vocational organization and have supported public vocational education. The present director of Dunwoody is a member of the State Board of Education.

Minnesota has a substantial number of private trade schools, especially in the Twin City area. The state has a private trade school law of somewhat limited effectiveness. These schools advertise heavily out of state, and most draw a majority of their students from out of state.

State Vocational Association

The Minnesota Vocational Association has been a mainstay for the vocational teachers in the state in providing meaningful state conventions, a good professional publication, and opportunities to carry on necessary public relations and legislative efforts for vocational education.

Conclusions

Some appraisals of institutions and of specific programs of vocational education have already been included in the general content of this report. A brief review of the total program is difficult because standards of measurement for a total state program are not firmly established. However, an attempt will be made to evaluate the total program on the basis of (1) meeting the training needs of the people of the state; (2) meeting the training needs of agriculture, commerce, and industry in the state; and (3) efficiency of operation.

Meeting the Needs of the People

Through the high school, area vocational, junior college, and university programs described, vocational training is available to most young people in the state, especially the age group 16-21. There are some geographic limitations, which additional schools would partially rectify. However, we are being forced to the conclusion that it is not economically feasible to have a comprehensive vocational program within commuting distance of every potential student in the state. Because of the high cost of facilities and instructional equipment, at some point it becomes more economical to pay the board and room of students at established institutions than to construct and operate a school.

We have two principal shortcomings. First, we have not been entirely successful in getting adequate information to the students about occupations and available training. Second, our offerings at the extremities of vocational education are lacking in breadth. It is the opinion of this writer that we need a greater variety of course offerings at the technical level. This opinion is supported by the Employment Security Research Department. We are lacking also in variety of course offerings for low-ability students. As vocational-technical programs have become more technical and more post-high-school, we have been shutting out more and more of the lower ability students — those who are becoming a state and national problem. Vocational education has not really begun to tackle this situation in Minnesota.

There has been available a considerable variety of adult vocational training programs at low cost to the participants. But keeping the adult public aware of vocational training opportunities has been one of the weakest facets of the programs. Another need is the organization of some of the individual courses into more meaningful, sequential certificate courses.

Meeting the Needs of Agriculture, Commerce, and Industry

As previously indicated, agricultural education, through the University, high schools, and area schools, has been extensively provided. The prominence of our state as a top producer of meat and crops and its reputation as a leader in farm management instruction give some evidence of the success of the program.

Although we have adequate numbers of office training departments, lack of state leadership has hindered their quality and contributed to their failure to be used to capacity. We have a continuing shortage of trained office workers in our state. One program that was offered in an area vocational school for training women over 45 in office skills has been successful, and we may consider other such adult programs. Distributive training is far from realizing its potential in the state, but recent meetings with trade associations, such as furniture dealers and wholesale furniture salesmen, indicate an increasing understanding and appreciation of the potential of distributive education.

Minnesota's industry is heavily oriented to the technical and highly skilled (i.e., Univac, Honeywell, Minnesota Mining), but there is no critical shortage of workers

for these industries. In fact, we are constantly subject to recruitment from the West Coast and other industrial centers for our technically trained people. This is a credit to the day and evening technical and trade programs. The principal weakness is the failure to offer training in certain important skills for which the demand is small.

Efficiency of Operation

As indicated in this report, the University Regents, the State College Board, and the State Board of Education all administer some phases of vocational education. Within the Board of Education and within the Department of Education there are differences of opinion as to whether vocational education can be developed in the junior colleges or whether it should continue to be offered primarily in the area schools. There is continuing pressure for the junior colleges to offer more vocational training, although, for the most part, they do not have the facilities, equipment, or staff to carry on the program.

Under these circumstances, it is virtually impossible for vocational education to be organizationally efficient. To what extent it is financially efficient is exceedingly difficult to determine, but it seems reasonable to expect that it could be more efficient if there were an overall guiding agency for vocational education in the state.

XVI. Report on the System of Vocational Education in Ohio

By Byrl R. Shoemaker[1]

Basic Principles Underlying the Program

In discussing the vocational education program in Ohio, we are concerned with the total program of vocational education involving agriculture, home economics, distributive education, business education, and trade and industrial education. Vocational education leadership believes in developing the best possible program within each of these areas of vocational education rather than trying to develop one general vocational education program for all areas as though they were one.

Each area of vocational education contributes to the basic or general values of education. Each area, however, has a unique contribution to make in the preparation of people for the world of work and/or worthy home membership. Leadership in vocational education is interested in discovering ways in which the various services can cooperate to provide better services to young people, without minimizing the unique contribution that each of the areas can make to the total educational program.

Those of us in public vocational education are aware of the various groups that are working in the field. Industry, private schools, business, parochial schools, and other groups all make a great contribution to the total vocational education effort. We believe, however, that the public education agencies have a continuing responsibility in the vocational education field. Industries and businesses cannot own people. They will be hesitant, therefore, to invest large amounts of money in the training of youth and adults for basic vocational education, particularly as competition increases within the various areas of our industrial economy. As companies become involved in greater competition, they tend to ask public education agencies to accept a greater responsibility for the basic vocational training of youth and adults.

Technical education, designed to prepare persons as assistants to professionals, is offered only on the post-high-school level. The leadership in vocational education believes that all other vocational courses should be offered at both the high school and the post-high-school level. It believes that such programs should be strengthened and improved, and that additional services should be extended to many young people not now being served.

Local educational leadership has supported a strong state leadership in the area of vocational education with close coordination of the various service areas under the State Director of Vocational Education. It is our belief that all functions of supervision, teacher education, and special services within the various areas of vocational education must be coordinated by the state supervisor of each service. Policies of the Division of Vocational Education encourage persons involved in the above-listed services to view themselves as a part of the team, regardless of the location of their place of employment.

The location of personnel of the various vocational services is decentralized through contracts with university centers. All teacher education personnel, as well as most of the specialized service personnel (such as coordinators in Fire Service Training and Industrial Leadership Training), are located in such centers. In a few cases, supervisory personnel serving areas of the state also are attached to university centers for purposes of providing better services to such sections of the state. The contracts with the universities state clearly the responsibilities to be assigned to each individual, the amount of reimbursement that will be made to the university center, and the fact that all work of the individuals will be under the general direction of the state supervisor of the special service, in accordance with the provisions of the Ohio State Plan for Vocational Education.

To date, there has been no conflict of interest between the universities in which personnel have been located and the leadership in the State Department of Education. The relationship between the State Department of Education and the universities has been such as to strengthen the efforts of both groups, to the benefit of the vocational education program.

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The various vocational education services have prepared written manuals of operation at the state level in order to provide uniformity throughout the state and to enable local programs to have available the written rules and regulations that must be followed in order to establish sound programs at the local level.

Our experience has indicated that state personnel must be selected on the basis of capabilities and experience obtained from leadership of successful programs in the local communities, rather than on the basis of providing state personnel experience that will enable them to return to local community jobs as soon as they have gained acceptance and recognition.

Each of the programs of vocational education in Ohio is so organized that graduates from vocational programs are eligible to enter state universities, since they graduate from high school with first-grade diplomas. The vocational programs, however, are planned to prepare persons for entrance into certain areas of work upon graduation, and students enrolled in such programs will miss some subjects that are normally part of a college preparatory program.

As new areas of vocational education services have been encouraged by the state and federal governments through legislation and finance, such services have been assigned to the established vocational service groups rather than to new vocational groups created for them. This practice has been followed for such areas as the Practical Nurse Education Act, establishing George-Barden Title II funds; the National Defense Education Act, establishing the George-Barden Title III funds; the Ohio Worker Training Act, providing funds for retraining programs; and the national Manpower Development and Training Act of 1962.

Each vocational service at the state level is encouraged to make good use of *advisory committees* for its total vocational program and for special services within the program. As an illustration, the Trade and Industrial Education Service has the following active advisory committees: Fire Service Training; Rural Electrification Lineman Training; Law Enforcement Training; Custodial Training; and Practical Nurse Training. The local communities also are encouraged to use advisory committees to assist them with program organization and operation.

Financing

Prior to the establishment of the present state foundation program to provide state financial aid to local communities, the Division of Vocational Education reimbursed a percentage of the cost of the instructors' salaries for approved vocational programs. Because of the growth of vocational programs and the increase in salaries, the percentage of reimbursement for instructional salaries declined under this system to about 25 percent. The present state foundation program, established in 1957, makes provision for assistance for vocational programs in addition to the amount the school district would receive if it did not offer any vocational education. This is accomplished as follows. The foundation units allowed under the state foundation program for the vocational classes are in addition to the units allowed the school on the basis of student enrollment, administrators, and special service personnel. Each of the vocational services has criteria for approving the additional vocational units requested by the local communities. The amount of state funds allotted to a local community on the basis of the additional vocational unit will vary between $2,150 and about $6,000 depending upon the wealth of the district per pupil served. Federal vocational funds are used at the high school level to assist only the several school districts in the state that cannot qualify for assistance from the additional vocational unit allowed under the state foundation program.

The state foundation program provides for expansion of vocational education in accordance with the needs of students and communities without the limiting factor of a set amount of money voted for vocational education. A total of $325,000 of state money still is appropriated to the Division of Vocational Education to match, in part, federal funds used to assist with the costs of teacher education, state supervision, and service to out-of-school youth and adults. An additional $200,000 of state money is appropriated as matching money for the federal George-Barden Title III funds, which funds are used for the development of the post-high-school technical education programs.

Federal vocational education funds are used to reimburse schools for supervision of instructional programs at both the high school and adult levels. Adult extension classes in the various vocational areas are reimbursed on an hourly rate, which varies from area to area. In vocational agriculture the total cost of instruction for adults is covered through the vocational education funds. In trade and industrial education, the reimbursement is made at the rate of $2 to $2.50 per hour, with the local community or individuals absorbing the additional cost. No assistance is provided from the state or vocational education funds for such items as equipment, supplies, rent, and janitorial services for programs conducted within the local communities, except for practical nurse training. Practical nurse training programs for adults receive assistance from federal funds voted for practical nursing to help with the cost of instruction, equipment, and coordination.

Post-high-school technical education classes receive assistance from federal vocational education funds made available through Title VIII of the National Defense Education Act (Title III of the George-Barden Act) and matching state funds. Financial assistance is provided to two-year post-high-school technical programs on the basis of two-thirds of the cost of instruction, two-thirds of the cost of supervision, and half to two-thirds of the cost of equipment for such programs.

General Organization of Programs in Local Communities

Ohio has a large number of small school districts within the state, a condition that has handicapped the development of adequate programs of vocational education. There is not an adequate program of vocational education to serve all the youth of Ohio who desire and need vocational instruction. On the basis of the national average for the 1960-61 school year, Ohio should have 20.3 percent of its high school students enrolled in vocational programs. Only 8.9 percent of the high school students in Ohio are so enrolled.

A series of 59 community surveys, conducted by the Division of Vocational Education in cooperation with local communities, included as a part of the survey the administration of a "Vocational Planning Questionnaire" to students. This questionnaire was administered to 31,638 students in 113 schools. The results indicated that 20,985, or 66.3 percent of the students, were interested in enrolling in vocational education programs.

More definitive information on student interest can be gained from the surveys conducted during this school year 1961-62. Sixteen surveys were conducted, involving 69 schools and 18,179 students. The results indicated the following:

46.1 percent were interested in preparation for a vocation and *did not* have plans to go to college;

22.6 percent planned to go to college but also wanted some vocational preparation while in high school;

22.1 percent planned to go to college and did not want any vocational education in high school; and

8.6 percent were undecided about their future vocations or educational plans.

Students are interested in preparing for a vocation while in high school. Administrators seem to be in favor of the expansion of vocational education services to high school youth. The school district organization in Ohio seems to be the biggest drawback to the expansion of vocational education.

Trade and industrial education, business education, and cooperative office practice programs are available generally in the large cities, with adequate programs of trade and industrial education available only in the largest cities. Training in agriculture is found generally in the rural areas of the state, but it is denied to many rural youth who may live only 10 miles from an adequate program. Few city youth have any opportunity to enroll in vocational agriculture. Home economics (vocational or general) is available in all schools. Many general home economics programs, however, do not provide for the breadth of offerings desirable for an adequate home and family living program, as encouraged by vocational home economics leadership.

Experiments made several years ago with a cooperative-type program, enrolling students for trade and industrial, distributive, and business occupations within the same class under the same teacher, proved that the coordinators tended to place students in the business or sales occupations rather than in trade and industrial occupations, since jobs in the latter were the most difficult to obtain. In this same type of program, emphasis tended to be placed upon the business or distributive education phases, depending upon the orientation of the coordinator. Following these experiments, the programs were separated, and no program is approved which mixes the three goals in terms of student employment. Diversified cooperative programs for trade and industrial education placement alone have continued to grow.

Seven years ago the leadership in the Division of Vocational Education recognized that the ever-increasing number of students enrolling in the high schools would require an expanded building program. It was anticipated that the building program would cause local boards of education to ask for help in determining the areas of vocational education, if any, which should be provided for in building programs. To meet such requests, the Trade and Industrial Education Service devised a procedure for conducting a survey in local communities to determine the need for trade and industrial programs or a revision or expansion of existing programs. The survey procedure involved a study of student interest by means of a vocational planning questionnaire developed and administered under the direction of the Guidance Testing Services within the State Department, a gathering of statistical data from selected employers relating to the limited number of occupational areas included in the survey, and the gathering of opinions and reactions from the representatives of these businesses and industries regarding the areas of vocational education needed at both the high school and the adult level.

About 8 to 10 surveys per year have been conducted, and in the past several years, these surveys have been extended to include all areas of vocational education as well as trade and industrial education. Five countywide surveys were scheduled in the spring of 1962 involving all of the areas of vocational education. Briefly, the steps involved in a survey are as follows:

1. Orientation and planning meeting between the representatives of the Division of Vocational Education and the administrators of the school or schools involved in the survey.

2. Orientation of the students in those grades selected for the administration of the vocational planning questionnaire.

3. Selection of representatives of business and industry to be included in the survey.

4. Administration of the vocational planning questionnaire.

5. Letters to the persons selected inviting them to participate in a survey dinner. A form is included in the letter asking for statistical information on employment.

6. Survey dinner meeting with the following activities:

a. A report is made to the total group concerning results of the vocational planning questionnaire.

b. The total group is divided into groups of special interests (agriculture, home economics, business, distributive, and trade and industrial education).

c. In each of the group meetings, the purpose and organization of the vocational program are described, and opinions and recommendations of the representatives are requested.

7. A written report to school administrators, including recommendations, prepared by the survey personnel from the Division of Vocational Education, State Department of Education.

It has become obvious to the leadership in vocational education that the only possible means of providing the youth who live outside the large city areas with an adequate program of vocational education is through the establishment of area vocational schools. Four years ago we were able to assist Pike County in establishing the first countywide area vocational school center. The task was accomplished through the cooperative efforts of the many persons responsible for the operation of educational programs within the county.

At the time the Pike County Area school was organized, there was no provision for state assistance for the development of area schools. One school district, however, was able to provide the building and equipment. Others agreed to participate on a service charge basis, since the students remained members of their local school districts. Formerly, there had been no trade and industrial programs in the county, and only a part of the students had had access to vocational agriculture. Now all students in the county have an opportunity to enroll in vocational agriculture and/or in one of three trade areas: machine trade, electrical trade, or cosmetology. This program, including the transportation of students to the vocational center, has operated successfully. Trade and industrial education students remain at the vocational center all day and take their required academic courses at the center. Agriculture students attend the vocational school for two periods each day and return to their home high schools for their academic courses. Students go to their local schools in the morning on the regular bus routes and are then transported to the vocational center. They participate in athletics and other curricular activities at the home high school, and graduate from the home high school. A program similar to this will be initiated in Licking County next fall to serve the entire county, with the exception of the one sizable city within that county.

The obvious success of this very limited effort towards area vocational schools brought about the revision of the state law, House Bill 620, which makes it possible for two or more districts within a county to join together to establish a joint vocational school, to be administered by the county board of education. Five countywide surveys of the type mentioned earlier are scheduled in order to provide the counties with information that will help them determine what areas of vocational education should be offered if and when they organize vocational education programs under the provisions of the act. We believe that this act provides a great opportunity for the extension of services of qualified programs of vocational education to youth and adults in rural and suburban areas of our state.

Prior to the passage of the NDEA Act of 1958, those of us in vocational education in Ohio, with the assistance of the Trade and Industrial Division in the United States Office of Education, had been studying the possibilities for establishing technical education programs. The term "technical education," as used here, is limited to the type of post-high-school program that trains assistants to professional personnel in occupations dealing with design, development, and testing. Standards developed and approved by the State Board of Education require that 15 percent of the instructional time be spent on basic manipulative skills, 50 percent on special laboratory instruction and technical subjects such as mathematics and science, and 20 percent on communications instruction; the remaining 15 percent of the time may be spent in any way seen fit. Programs are required to run for 2 years with a minimum of 25 hours of class and laboratory attendance per week for 36 weeks per year. These programs operate in cooperation with the public schools under regulations which permit vocational education to be organized and operated as post-high-school preemployment training programs.

The first Ohio program of this type was initiated in Barberton 3 years ago. The first graduating class (1961) was placed without difficulty in positions at the assistant-to-the-professional level. Programs were started two years ago at Salem, Cleveland, and Lorain; in the fall of 1961, at Canton and Mansfield; and in the fall of 1962, at Springfield, Willoughby-Eastlake, Ashtabula, and Hamilton. Each of these technical education centers offers two to three technical programs, except that Willoughby-Eastlake started with four. All of the technical education centers offer mechanical technology, and all but one offer electrical technology. Chemical technology is offered in three schools, and business data processing has been included in two programs started in the fall of 1962.

These technical programs are made possible largely by National Defense Education funds and the matching $200,000 of state funds provided by Ohio.

The state and federal funds are used to assist local communities with the cost of instruction, supervision, and equipment. The local school system sponsoring the program must supply the building and much of the equipment. The students pay a fee ranging from $70 to $100 per quarter. The school districts sponsoring the

programs agree to enroll students within a radius of 20 to 25 miles, and they may accept students from any place in the state.

Organization and Development Within Services

The following is a brief overview of the organization and operation of the types of vocational education programs offered in the vocational high schools, comprehensive high schools, and area vocational schools in the state. The school organization in which the vocational education program is offered will vary depending on local city or community conditions. The minimum state standards for the programs, however, are met in each type of school organization.

Vocational Agriculture

Most of the vocational agriculture programs in Ohio are organized on the basis of two periods per day being assigned to the vocational agriculture instruction in grades 9-12. Provisions have been made, however, for a program providing for 1 hour per day of instruction. Students may take 2 or 3 years of vocational agriculture and then during the last years in high school also enroll in another vocational program such as trade and industrial education, distributive education, or business education.

The vocational agriculture program in Ohio is experimenting with the addition of specialized agriculture programs in such areas as landscaping, greenhouse operation, and nursery operation. There is a movement to develop land laboratories in cooperation with the high school program for purposes of demonstration projects and for use in cooperation with other science programs in the high school. Recognizing the interest in certain areas of agriculture, even in the large cities, a program in specialized areas such as landscaping and gardening has been established in Cleveland in order to enable its youth to get instruction in such areas of work. This program is approved as an additional vocational unit under the foundation program.

When a joint vocational school district is organized, vocational agriculture programs may be offered at the joint vocational school for those local school districts that do not have such programs or are operating programs with too few students. Specialized areas of vocational agriculture such as landscaping or greenhouse operation may be offered at the joint vocational school to serve all school districts in the county. It is anticipated that local districts that have strong vocational agriculture programs will retain these programs when the districts become a part of a joint vocational school district.

Distributive Education

The high school program in distributive education, for which an additional vocational unit is allotted, is limited to a cooperative-type program at the senior level, in which the students spend half a day in school and half a day on the job. During the half day in school, one hour and a half is spent on instruction related to the field of distribution, and the other hour and a half on regular academic requirements. There are a growing number of distributive education programs being organized throughout the state at the high school level to serve youth interested in entering the field of distribution, but perhaps the greatest emphasis in the field of distributive education is at the adult level. Many cities throughout the state organize courses locally for their employed sales personnel. Any community in the state can request assistance in the organization and financing of such courses.

The distributive education service also employs specialized field personnel to assist communities in organizing courses in such areas as management training, waitress training, and insurance training. The specialized personnel go into a community and conduct courses for personnel in business and industry in these areas of instruction. The distributive education service also provides institutes at the university for specialized training of sales and distribution personnel in such areas as hardware store management.

The distributive education center at Ohio State was selected as a place for the development of a two-year cooperative technical program in wholesaling. Technical education can be defined rather easily in the field of trade and industrial education, but experimentation was needed to identify the technician level in the field of distribution. This program is now in its second year, and it has the full support of a broad advisory committee in the field of wholesaling. It is anticipated that this pilot program will continue on an expanded basis, and that additional programs of this type will be added to the technical centers developing throughout the state as funds are made available.

Business Education

The state leadership for business education programs is included in the Division of Vocational Education, but at present it is limited to one professional person. Additional vocational foundation units have been made available for business education in the foundation program. Business education programs that receive foundation program assistance are limited to the cooperative type programs at the senior level, similar to those for distributive education.

The cooperative program in business education is dependent upon a sound business education program operated in the 9th and 10th grades. This basic instruction is necessary to provide the students with the basic business skills by the time they are enrolled in a cooperative program at the 12th year. Trends would point, however, to the need for adjustment in the business education programs since there is a growing need

for the introduction of elementary business-data-processing procedures at the high school level. Such instruction may require in-school vocational instruction in the 11th year, prior to the cooperative program at the 12th year. Instructions in such items as card punch and accounting machine operations would be included in the program.

Leadership sees clearly the place of business education in the joint vocational school program. There it will be possible to provide certain instruction at the 11th-year level that cannot be made available within each of the local schools because of the limited number of interested students and the high cost of equipment for adequately organized programs. In many cases the cooperative program can best operate at the joint vocational school center.

As indicated previously, two programs in the area of business data processing or computer programming were initiated on a post-high-school basis in the fall of 1962, one in Springfield, and the other in Willoughby-Eastlake. These programs are organized to prepare computer programmers and technicians for business and industry. They come under the leadership of the business education supervisor and are eligible for assistance under the National Defense Education Act.

Vocational Home Economics

The state leadership in the field of vocational home economics has provided for a very flexible home economics program in regard to the number of years the students are enrolled and the number of periods per day of instruction required. For example, girls are encouraged to consider enrolling in 2 or 3 years of home economics and also in other vocational areas in order to gain skills for earning a living.

All of the areas of vocational education recognize the importance of home economics in preparation of students for home and family living. In planning for joint vocational school districts, it is anticipated that basic home economics will be retained in each of the local schools for the benefit of all girls, and that only specialized areas of home economics instruction will be offered in the joint vocational schools for a selected number of students.

A very extensive program of adult classes for homemakers is being maintained in cooperation with the public schools of the state. Financial assistance is provided from vocational education funds for approved classes offered for homemakers within any community. One very forward-looking adult program is the Family Life Program provided in several large cities, such as Toledo. One or more full-time persons are employed in each of these cities for the organization and operation of a family life program that trains leaders in skills and technical knowledge required for working with people in their natural groupings throughout the city.

Trade and Industrial Education

The trade and industrial education programs at the high school level are limited to the 11th and 12th years. Sixty-one different trade areas are offered in the day trade programs in the public schools, and an additional 29 trade areas are offered in the diversified cooperative training program. Toledo has the broadest trade and industrial education program in the state, offering 21 trade areas for boys and girls.

In both the rural and the suburban areas, trade and industrial education is almost nonexistent. This is because many of these schools are too small to support in-school trade and industrial education programs and there are not enough industries and businesses sufficiently close to the school to offer job opportunities in the cooperative education area.

Experience in Ohio indicates that the need for adequate programs of trade and industrial education at the high school level is growing rather than diminishing. In view of the high dropout rate from school and the large number of young people walking the streets after graduating from a general high school program, we see no justification for denying trade and industrial education to high school youth.

As an example, only 62 students graduated from high school this spring for every 100 who entered the first grade 12 years ago. Of the 62 students graduating, about one-third will start to college, and only 12 will graduate.

Our experience, therefore, points toward the need for area vocational education schools. The joint vocational school district law (House Bill 620) provides a real means of expanding the services of trade and industrial education to more youth in the small cities and the rural and suburban areas. Perhaps the trade and industrial education program is the one most affected by the small size of schools and the lack of adequate physical facilities. The professional personnel in trade and industrial education are working diligently to gain acceptance for the joint vocational school district principle.

In general, the physical facilities for trade and industrial education in Ohio have been improving. The new schools now providing trade and industrial education programs have very adequate facilities for the programs. It is obvious, however, that continued improvement of instruction must take place if graduates of trade and industrial education programs are to be accepted into modern industries as the industries and trade areas become more technical in nature.

In order to point toward a program of improved instruction, trade achievement tests are being developed at the rate of one trade a year. Such tests will enable us to evaluate the achievements of the students in the trade areas in which they are enrolled at the completion of both the 11th and 12th years. To date, testing programs have been developed for machine trade, auto mechanics

trade, basic electricity, basic electronics, and drafting. The testing program involves the use of an intelligence test for both verbal and nonverbal abilities and a basic mathematics test, and a trade achievement test. The achievement test itself is based on the skills, technical knowledge, and principles of mathematics and science related to the trade area which the student is studying.

This testing program is conducted in the spring of each year. The tests are graded at our Instructional Materials Laboratory, Ohio State University, through the use of IBM equipment. Norms are established for the entire state, and reports are sent back to local schools indicating the scores of each student on each section of the test. On the basis of this information, the individual schools can chart the school norms in comparison with the state norms, and the achievement of each student can be compared with the school and state norms.

Experience with these tests over the past 4 or 5 years shows that they can indicate clearly to a local school the weaknesses in its instructional program. Also, they have stimulated the local centers to improve not only their instruction but also their curricula and facilities.

Another fact brought out by the tests is that certain school systems were enrolling in vocational education courses a preponderance of students with less-than-average ability, and that such students, as a general rule, were not able to achieve in accordance with the norms of students in the state as a whole. Such studies have led to the enrollment of better students in trade programs, students who can qualify for employment upon completion of the two-year program of instruction.

We find a trend in Ohio towards increased employment in the service trades and the very highly skilled trades as the number of persons employed in the field of manufacturing decreases. As examples, we find an increased need for instructional programs for girls in health areas and in such service areas as cosmetology; and for boys, in such trade areas as electricity, electronics, drafting, and auto mechanics. There is also a movement to develop instruction in other occupations, such as pressing and dry cleaning.

Throughout the skilled trade areas, increased emphasis is being placed on quality instruction in mathematics and science as related to the trade being taught. It is our experience that many students who cannot achieve in college preparatory mathematics and science still can master the functions of mathematics and science as applied to their trade areas.

Research on the results of the machine trade achievement test indicates that students who are enrolled in 3 hours of manipulative instruction plus two periods of related instruction do better in the achievement tests than do those who are enrolled in 3 hours of manipulative instruction plus only one period of related instruction. A study of the information gained from the achievement testing program indicates that it is desirable to assign to students periods of related technical instruction separate from and in addition to the periods for shop instruction. The related technical instruction must include a study of the principles of mathematics and science related to the trade. More research, however, is needed on methods of instructing students in technical information related to their trade.

Teacher education for the trade and industrial education field provides a particular problem. It is often necessary to employ a teacher without a college background in order to secure one with the necessary skills and technical knowledge in a particular trade area. Although about 60 percent of our teachers possess baccalaureate degrees, a large majority have attained the degrees while teaching.

A strong in-service teacher education program makes this possible. A teacher employed without a college degree attends a one-week preservice instructional program and is visited every other week during the first 4 years he is on the job by a teacher educator from one of our teacher education centers for trade and industrial education. In addition to the in-service program, teacher education courses are offered in the evenings and during the summers at the university centers. The cooperating university centers in which teacher education personnel are located are Ohio State University, Kent State University, the University of Toledo, and the University of Cincinnati. Each center serves an assigned area of the state. A total of nine persons are employed on a full-time basis for teacher training in trade and industrial education.

The teacher educators are employed by the university, but a portion or all of their salaries are paid from trade and industrial education funds, and they are members of the trade and industrial education staff of the state. These teacher educators meet with the total trade and industrial education staff several times each year, and some of them are on the service policy and planning committee. Instructional materials for the individualized teacher education in-service program are provided through our Instructional Materials Laboratory.

Further information concerning the teacher education program can be gained from the Ohio Manual of Operation for Trade and Industrial Education.

The only shrinkage that has occurred in the trade and industrial education adult area is in the apprenticeship-related instruction programs. This shrinkage may be caused by the slowdown in industrial activity, by changes in the employment patterns due to technological developments, or by changes in labor-management attitudes toward the apprenticeship system. The apprenticeship program is controlled by labor and management, and the future of the program is in their hands. We anticipate, however, that the related instruction for apprentices will increase as business activity regains its proper momentum.

Adult trade extension classes are growing in number. To a large extent, we attribute the success of this pro-

gram to the fine leadership personnel assigned at the local and state levels. Communities that have employed local supervisors of trade and industrial education have enjoyed a growth of services to both employed and unemployed adults. Communities that employ only teachers for selected areas of trade and industrial education do not generally develop adequate adult extension programs.

We find growth also in those areas of instruction for which we have employed specialists at the state level. Specialized personnel have been employed as follows: five persons in fire service training, including emergency rescue squad training; four persons in industrial leadership training; two persons for rural electrical lineman training; one person for a new custodial training program; and two persons for a law enforcement training program. These persons are employed as a part of the trade and industrial education staff within the state, but they are employed through university centers in order to serve better the various sections of the state. Again, these persons are employed by the university centers on contracts with the State Department of Education. The State Department of Education indicates the type of service to be performed, and the universities have cooperated to the fullest extent. The full salaries of most of the specialists are paid from trade and industrial education funds to the university centers. Travel costs are paid directly from the State Department of Education to the individual.

In the field of adult preemployment training, we have conducted for a number of years continuing practical nurse training programs. At the present time this program is provided in 14 centers throughout Ohio. In the last several years an effort has been made to provide retraining programs for unemployed persons with assistance from federal funds made available through Title I of the George-Barden Act and from certain state funds available to the Trade and Industrial Education Service, with some success. The training programs are carried out in cooperation with such agencies as the State Welfare Department, the Ohio State Employment Service, management organizations, union organizations, and others. It has been demonstrated that jobs must be available in order to plan a sound training program for unemployed adults and to place them in jobs upon completion of training. During the year 1961-62, 572 adults, selected from the unemployment rolls of the state, were enrolled in training programs.

In its 1961 session, the Legislature passed the Ohio Worker Training law requiring the establishment of a worker training committee at the state level and a worker training committee in any local community desiring to participate in funds made available through the state worker training committee for the retraining of unemployed adults. Although the total retraining program under this act is directed by the state committee, the organization and supervision of adult training programs are assigned to the Division of Vocational Education in the State Department of Education; and the funds made available under the act are assigned to the Department of Education for administration.

The Ohio Worker Training Committee has established procedures and policies for the operation of the training programs they will assist. The committee has established rates of a maximum of $5 per hour for instruction; $3 per hour for heat, light, building, and maintenance; and $2 per hour for instructional supplies. It is not intended that these funds cover the full cost of instruction, but rather that they should help a local community to meet its own obligations in retraining the unemployed. The act also provides that the vocational education services within the state will assist in bearing the cost of instruction for such retraining programs to the extent that their budgets permit.

Projects for retraining unemployed persons have been approved under the National Area Redevelopment Act for instruction in electronics at Cambridge and in machine operation at Martins Ferry. Other requests for training programs have been submitted through the Department of Labor Area Redevelopment Act regulations.

Another area of assistance provided by the Trade and Industrial Education Service of the State Department has been the Instructional Materials Laboratory, developed and maintained at Ohio State University. The purpose of the laboratory is to develop new instructional materials in vocational areas at both the high school and the adult levels. An annual budget of $20,000, plus the salaries of several professional personnel, is invested in the laboratory. In addition, sales of instructional materials from the laboratory help to maintain the reissue of the materials and to publish them in an attractive and usable form. The yearly expenditures of the laboratory for the production and publication of new materials and the rerun of existing materials total about $60,000.

The Instructional Materials Laboratory has had the full support of our local supervisors of trade and industrial education throughout the state. A number of years ago, when funds were restricted, the people throughout the state voted that we should use the limited funds for the expansion of the laboratory rather than for increasing reimbursements to the local communities.

University Branches and Community Colleges

There are no publicly supported community colleges in Ohio at the present time. The various universities have established branches in several cities, utilizing the facilities of the public schools. Such branches are operated directly by the universities, and they provide instruction in the first 2 years of basic college work. The branches do not offer any technical education programs as defined in this paper.

The last session of the Legislature passed a community college bill and a technical institute bill. The community college bill established a board, separate from the State Board of Education, to administer the program, and it made the county commissioners the legal entity for establishing community colleges. Under the provisions of the bill, the public schools have no part in the program. The Legislature provided no funds to assist in the establishment of community colleges.

The technical institute bill merely made it legal for any group of county commissioners to organize a technical program. The bill, however, did not provide for any state leadership or financial assistance.

Appraisal of the Vocational Education Program in Ohio

I would judge the following to be outstanding features of the program.

1. Strong leadership at the State Department level, both within the services and at the head of the division, and community acceptance of state leadership as an aid to program development and improvement rather than simply for inspection.

2. A close staff relationship within the various vocational services at the state and local levels and a clear division of responsibilities among the various services and personnel at the state level.

3. The development of manuals of operation to provide adequate information for local communities concerning sound program standards within the various service areas.

4. The services provided by the Vocational Education Division of the State Department to help local communities evaluate existing programs and to establish new programs.

5. The employment of specialized field service personnel to give leadership to special areas of education throughout the state and the utilization of such personnel to train a corps of part-time instructors in local communities or industries to meet local needs quickly, effectively, and economically.

6. State services in the area of instructional materials development and testing.

7. Emphasis upon the employment of leadership personnel within the local community for the development of programs, particularly in the trade and industrial education area.

8. Trends toward increased programs for high school youth through the support of public school administrators and the passage of House Bill 620.

9. An increase in the number of short courses for employed adults and homemakers.

10. The growth of post-high-school technical education programs.

11. The growth of retraining programs.

The weak features appear to be:

1. The need to extend vocational education to a larger number of youth and adults in the state.

2. The need to improve the quality of instruction in keeping with the changing needs of the industrial economy.

3. The need for the enrollment of more students who are capable of achieving a level of skill and technical knowledge that will enable them to be accepted into the highly skilled trade areas with quality companies.

4. The need of funds to make the joint vocational school district organization a reality.

5. The need to develop organized vocational programs along with other appropriate programs to serve the students who fall roughly into the 70 to 90 I.Q. range.

6. The need to improve salary schedules at the state level so that the strongest leadership in the local programs can be attracted into the State Department.

Appendix to Part I

Example of a Basic Classroom Unit Foundation Formula for Determining State Support of Elementary and Secondary Education in a Hypothetical State

By Stanley E. Hecker[1]

Basic Classroom Units (BCRU)

Brown School District educates 2,000 pupils (K-12) and contains considerable land area. It has one central high school (9-12), three consolidated elementary schools (K-6), one isolated one-teacher school (K-6), and one nonisolated one-teacher school (K-6). (State law and/or State School Board regulation defines "isolation" and "division factor.") The total basic classroom units are calculated as follows:

Type of School	*Membership*	*Divisor*	*BCRU*
One teacher (nonisolated)	15	30	.5
One teacher (isolated)	12	—	1.0
Elementary	180	22	8.2
Elementary	500	30	16.7
Elementary	720	30	24.0
Secondary	573	30	19.1
	2,000		69.5

Vocational Classroom Units

Brown School District is partially rural and partially urban. It has (1) sufficient pupils, (2) adequate facilities, (3) an approved program, and (4) certificated teachers in vocational agriculture, vocational home economics, and trade and industrial education. (State law and/or State School Board regulation defines 1, 2, 3, and 4 above.) State approval is granted for the following additional classroom units for vocational education:

Service	*Classroom Units*
Vocational agriculture	1.0
Vocational home economics	1.0
Trade and industrial education	1.0
	3.0

Special Education Classroom Units

Brown School District has (1) sufficient pupils, (2) adequate facilities, (3) an approved program, and (4) certificated teachers to provide special programs for the physically and mentally handicapped. (State law and/or State School Board regulation defines 1, 2, 3, and 4 above.) State approval is granted for the following additional classroom units for these special services:

Service	*Classroom Units*
Physically handicapped	2.0
Mentally handicapped	1.0
	3.0

Subtotal of Classroom Units

The sum of "classroom units" to this point is:

Basic classroom units	69.5
Vocational classroom units	3.0
Special education classroom units	3.0
	75.5

Administrative and Special Instructional Services (ASIS)

State law permits additional CRU credit for "Administrative and Special Instructional Service (ASIS)" personnel at the rate of one additional unit for each six units in the subtotal. Brown School District's entitlement is 12.6 units (75.5 divided by 6). Brown School District employs properly certificated personnel for the following approved positions:

Service	*Classroom Units*
Superintendent	1.0
Assistant superintendent	1.0
High school principal	1.0
Assistant high school principal	.5
Elementary principal	2.0
High school librarian	1.0
High school physical education	2.0
Music (instrumental and vocal)	2.0
Industrial arts	1.0
Art	1.0
Elementary librarian	1.0
	13.5

[1]Assistant Professor, College of Education, Michigan State University.

Since the number employed exceeds the number permitted under law, credit will be *given for only 12.6* classroom units. (Had Brown employed fewer than 12.6 *qualified* personnel for these positions, they would not have received 12.6 CRU credits.)

Supervisory Classroom Units

State law provides that a district may receive credit for a supervisory CRU for each 100 or major fraction thereof of CRU's in the subtotal. Brown's subtotal is 75.5, and therefore it receives credit for one (1.0) additional CRU. The additional CRU is for a person qualified as a general program supervisor.

Summary of Educational Need

Basic classroom units	69.5
Vocational classroom units	3.0
Special education classroom units	3.0
Subtotal	75.5
ASIS classroom units	12.6
Supervisory classroom unit	1.0
Total	89.1

This completes the calculation of "educational need" as defined by State law and/or State School Board regulation. The next step is to translate this "educational need" into "financial need." (Financial need for "transportation" is dealt with separately.)

Instructional Salaries

The Foundation Program law sets up categories or "ranks" for instructional personnel based upon level of education. Each "rank" is assigned a monetary value — an allotment schedule, *not* a salary schedule. (In most cases it has been necessary to tie a statewide minimum salary for teachers to the allotment schedule.)

Table 1 shows how the 90 instructional personnel employed in Brown School District are "ranked" and how these ranks are converted to "financial need." The nine-month salary allotment totals $469,420. Additional funds are calculated for those persons and positions approved for employment beyond the nine-month school term. (Superintendent, 3 months; Assistant Superintendent, 3 months; Principal, 1 month, etc.). Total "Instructional Salary Allotment" totals $474,534. *This amount or more must be expended for the 89.1 approved classroom units.*

Other Current Expenses

State law allots $1,500 per classroom unit for "other current expenses." This amount is *not earmarked* and may be used for whatever purpose the local district may choose, such as to supplement teachers' salaries, to hire additional personnel, or to expand bus system.

Brown School District's allotment for this section of the law is 89.1 times $1,500 or $133,650.

Capital Outlay

State law allocates $500 per classroom unit for capital outlay. *These funds are earmarked and must be used:* (1) to retire existing indebtedness, (2) to retire new indebtedness, (3) for annual capital improvements, (4) for capital improvements at a future date.

Brown School District's allotment for this section of the law is 89.1 times $500 or $44,550.

Transportation

Financial need for transportation is the only section of the Foundation Program that is not directly related to "classroom units." It is developed under a separate formula not dealt with here. Brown School District, however, has a financial need for transportation of $40,000.

Summary of Financial Need

Instructional salaries	$474,534
Other current expenses	133,650
Capital outlay	44,550
Transportation	40,000
Total financial need	$692,734

Sharing the Cost

The State in which Brown School District is located uses the State Equalized Valuation (SEV) of property and a required local tax effort (deductible millage) to determine the local share. *The SEV of Brown District is $40,000,000 ($20,000 per pupil), and the deductible millage is 10 mills.* Brown School District's share, therefore, is $40,000,000 times 10 mills or $400,000. The state's share is the balance, calculated as follows:

Total financial need	$692,734
District's share	400,000
State's share	$292,734

Table 1

Calculation of Instructional Salary Allotment

Rank	Education Level	Allotment Schedule	Number of Personnel	9-Month Salary Allotment	Extra Months Employment	Allotment Per Month	Extra Month Allotment	Total Allotment
I	MA+30	$6,000	9	$ 54,000	6	$667	$4,002	
II	MA	5,500	30	165,000	0	611	——	
III	BA	5,000	50	250,000	2	556	1,112	
IV	—BA	4,200	0.1	420	0	467	——	
			89.1	$469,420			$5,114	$474,534

Note: In most cases it has been necessary to tie the statewide minimum salary for teachers to the allotment schedule.

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709 South Westnedge Avenue, Kalamazoo, Michigan

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☐ *Prerequisites for a Guaranteed Annual Wage.* Henry C. Thole and Charles C. Gibbons. June, 1956. 12 pp.

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MECHANICAL COMPETENCIES NEEDED FOR EMPLOYMENT IN FARM MACHINERY SALES AND SERVICE AND FARM SUPPLIES AND EQUIPMENT BUSINESSES

by

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FOREWORD

In this study, the author was concerned essentially with a problem facing teachers of vocational agriculture, particularly those in one-teacher departments, who are attempting to introduce preparation for off-farm agricultural occupations into their programs and at the same time continue instruction in production agriculture. Must students preparing for employment in farm machinery sales and service, and farm supplies and equipment businesses be taught mechanical skills that are greatly different from those taught students preparing for work in production agriculture? Are the mechanical skills required of these groups the same, and if not, are they sufficiently alike to permit teaching all students in a single mechanics class?

The sample studied was in five counties in Maryland. However, the businesses involved are probably similar in character to other farm machinery sales and service, and farm supplies and equipment businesses throughout much of the rest of the country. It is not unlikely, then, that the findings of this will be applicable for the same problem in other areas of the United States.

The table in this publication will not likely be of interest to the casual reader. However, teachers who are interested in solving the problem faced in this study for themselves should find the data in this table useful.

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MECHANICAL COMPETENCIES NEEDED FOR EMPLOYMENT IN FARM MACHINERY SALES AND SERVICE AND FARM SUPPLIES AND EQUIPMENT BUSINESSES

Gene A. Gentry*

Prior to the passage of Public Law 88-210 in 1963, teachers of vocational agriculture were limited by law to training students to make a beginning and advance in farming. Public Law 88-210 changed this to permit training for gainful employment in agricultural occupations other than farming.

It became apparent that if instruction was to extend effectively into new occupational areas, it was necessary to determine what changes needed to be made in course offerings. Many states conducted studies to determine employment opportunities while others investigated such broad areas as leadership, crops, and livestock. This study was conducted to determine the mechanical competencies (skills) needed by employees in two off-farm agricultural occupations, with a view toward providing a basis for modifying some of the mechanical training offered in agricultural departments in some high schools.

Objectives. The objectives of the study were:

1. To determine the mechanical competencies and understandings needed for employment in farm machinery sales and service, and farm supplies and equipment businesses.

2. To determine differences between competencies needed by successful farmers and competencies needed by employees in farm machinery sales and service occupations, and farm supplies and equipment occupations.

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3. To compare the mechanical competencies needed by employees in farm machinery sales and service with the mechanical competencies needed by employees in farm supplies and equipment businesses.

4. To determine the importance of the mechanical competencies required by each skill level -- sales, skilled, and semi-skilled -- in farm machinery sales and service and farm supplies and equipment occupations.

5. To determine the differences between competencies needed by sales, skilled, and semi-skilled levels of employment in farm machinery sales and service, and farm supplies and equipment businesses.

Procedure. Selected employers in two off-farm agricultural occupational groups were interviewed. The two groups were farm machinery sales and service, and farm supplies and equipment. Farm machinery sales and service businesses were those businesses which sold farm machinery and tractors and which did approximately one-half or more of their business with farmers. Farm supplies and equipment businesses conducted one-half or more of their business with farmers and sold such materials as feed, seed, fertilizer, dairy equipment, hardware, and other farm supplies.

Sample. Businesses in the two agricultural groups were identified from the yellow pages of the telephone directory covering five counties in Maryland: Prince Georges, Montgomery, Anne Arundel, Howard, and Baltimore. There were 99 farm supplies and equipment businesses and 66 farm sales and service businesses. The five counties, located in the Piedmont Plateau and Southern regions of Maryland, were selected because they contained considerable production agriculture yet were being influenced by the population expansion which is turning farm land to other uses and preventing many youths from returning to the farm. Many of these students, if they remain in agriculture, will of necessity have to enter some of the businesses under consideration.

Random samples of 25 businesses were selected from each of the two agricultural occupational groups. A total of 54 employers was interviewed, four of which were eliminated because of the nature of the business.

Instrument for Collecting Data. The survey instrument was derived from one by Tugend.[1] Tugend's instrument was selected to provide the base because it had been used on a Maryland farm population and contained mechanical competencies used by Maryland farmers. Since the study was intended to determine in what respects changes should be made in the existing vocational agriculture program in order to provide mechanical training for those preparing for non-farm agricultural occupations, a base consisting of offerings for those preparing for farming seemed to be appropriate. Competencies were deleted which appeared to be of little use in off-farm agricultural occupations in Maryland and other competencies added which appeared useful.

The instrument was pre-tested on six employers in the two occupational groups. These employers were not included in the samples. After each pre-test interview the instrument was further refined. Early in the collection of data three additional competencies were added because several employers mentioned employee need of these competencies. The findings of Tugend's study were assumed to be a basis of validation for mechanical competencies needed by farmers.

Quantification of Ratings. Employers were asked to evaluate the need of 104 mechanical competencies by sales, skilled, and semi-skilled employees. The classifications of need were: very desirable, helpful, and of little use.

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[1]David M. Tugend, "Comparative Study of Selected Farm Mechanical Skills Performed by Successful Maryland Farm Operators and Farm Mechanical Skills Taught in Vocational Agriculture in Certain Maryland High Schools" (unpublished Master's thesis, University of Maryland, College Park, 1964).

A value of two was assigned to a rating of very desirable, one to a rating of helpful, and zero to a rating of little use. Using the assigned values, mean scores were calculated for each competency. Competencies which received mean scores of 1.5 or above were considered very desirable, 0.50 to 1.49 as helpful, and 0.00 to 0.49 as of little use. Only competencies receiving mean scores above 0.50 were considered as needed by employees in off-farm agricultural occupations.

Competencies were ranked according to the mean score received. The highest mean score for each business or level of employment received a ranking of 1.00. Other competencies received subsequent ranks with equal mean scores receiving rankings of equal value.

Findings and Conclusions

Seventy-two of the 104 competencies used in this study were needed by employees in farm machinery sales and service. Need was defined as a rating of very desirable or helpful. Thirty-four of these competencies were in farm power and machinery and 30 were in farm shop work.

Farm power and machinery competencies needed by employees in farm sales and service occupations were:

- flush cooling system with a commercial radiator cleaner
- adjust tractor carburetors
- service the fuel injection system
- adjust engine timing
- adjust clutch pedal clearance
- clean oil pump screen
- adjust a carburetor on a small internal combustion engine
- basic hydraulics
- repair tires on farm machinery
- service air cleaner
- clean and regap spark plugs
- replace points
- service the diesel fuel injection filter
- adjust valve tappets
- adjust tractor brakes
- replace head gasket
- lubricate tractor
- overhaul a small engine
- trouble shoot
- service transmission and final drive
- order parts by use of manual code number

- replace bearings
- repair and sharpen a field mower knife
- hitch plows for vertical and horizontal correctness
- adjust combine for harvesting losses
- adjust baler for proper operation
- care of machinery
- paint machinery with a power sprayer
- register the knife of a field mower
- calibrate a grain drill
- calibrate a field sprayer
- adjust combine for proper running speed
- assemble machinery

Farm shop skills needed by employees in farm machinery sales and service occupations were:

- sharpen a twist bit
- operate a power grinder
- dress grinder wheels
- select grinder wheels for the job
- cut threads on steel rod
- rivet sheet metal
- tin soldering iron
- sharpen forage cutter knives on harvesting machines
- prepare metals for electrical arc welding
- cut metal with the arc welder
- use the carbon arc torch for welding
- braze cast irons with oxyacetylene welder
- hard surface with oxyacetylene welder
- weld with a heli-arc welder
- cut glass to a desired shape
- fit handles in hand tools
- wear protective glasses while grinding
- use a portable electric drill for drilling holes in steel
- cut metal with a hacksaw
- sweat a patch with solder
- shape and bend hot metal
- temper a chisel
- operate a lathe
- select proper rods for the type of metal to be welded
- make a lap, butt or corner weld on iron or steel
- operate an oxyacetylene cutting torch
- build up worn parts
- weld pipe
- thread galvanized iron pipe
- assemble pipe

Other competencies needed by employees in farm machinery sales and service were:

- care of tools
- operate hammer mill and mix feeds
- design and maintain an efficient tool storage

- repair a damaged appliance cord
- determine purpose and select wire size
- replace and putty a window pane
- make a common electrical splice
- make a connection to a lighting fixture

Twelve of the 104 competencies were needed by employees in farm supplies and equipment occupations. Each of the twelve competencies was rated helpful. They were:

- care of tools
- care of machinery
- apply paint after using a primer
- repair a damaged appliance cord
- lubricate tractor
- make a common electrical splice
- assemble pipe
- operate a hammer mill and mix feeds
- replace and putty a window pane
- use wood preservatives on outdoor buildings
- cut glass to a desired shape
- repair tires on farm machinery

The table on the following pages shows relative rankings of competencies for each level of employment in both farm machinery sales and service, and farm supplies and equipment businesses and for successful farmers. Rankings for successful farmers were taken from Tugend's study.[2]

Competencies with a rank between 1 and 29 in column (2), between 1 and 84 in column (3), and between 1 and 65 in column (4) received a mean rating of helpful or very desirable. In column (5) helpful or very desirable ratings received a rank between 1 and 4, in column (6) between 1 and 73, and in column (7) between 1 and 16. Rankings below those indicated for each level were "of little use".

Recommendations. Recommendations based on the conclusions of this study are:

1. That a pupil who intends to enter farm machinery sales and service businesses be given extensive training in farm power and machinery and farm

[2] Op. cit., pp. 67-71.

shop work, especially in the areas of welding and metal work.

2. That, insofar as possible, farm shop programs be tailored to include competencies needed by pupils who are contemplating employment in a given agricultural occupational group.

3. That a farm shop program for training pupils to enter off-farm agricultural occupations be designed to train for an occupational group rather than a level of employment.

4. That emphasis be given to care of tools and care of machinery in the farm mechanics instructional program.

5. That pupils planning to enter farming and those planning to enter farm machinery sales and service businesses receive mechanical training in the same classes.

For additional information about this study, the full report may be obtained through inter-library loan from the University of Maryland library:

Gentry, Gene A. "Mechanical Competencies Needed for Employment in Farm Machinery Sales and Service and Farm Supplies and Equipment Businesses in Five Maryland Counties," M.S. Thesis, University of Maryland, 1966.

RANK OF AGRICULTURAL MECHANICAL SKILLS AND COMPETENCIES NEEDED BY SALES, SKILLED, AND SEMI-SKILLED WORKERS IN FARM MACHINERY SALES AND SERVICE OCCUPATIONS AND IN FARM SUPPLIES AND EQUIPMENT BUSINESSES IN FIVE MARYLAND COUNTIES, 1965, COMPARED WITH RANK OF NEED BY SUCCESSFUL FARMERS IN MARYLAND, 1963

Skill or competency	Ranking by successful farmers* (1)	Employee need, as ranked by farm machinery sales and service employers**			Employee need, as ranked by farm supplies and equipment business employers***		
		Sales (2)	Skilled (3)	Semi-skilled (4)	Sales (5)	Skilled (6)	Semi-skilled (7)
1. Fit handles in hand tools	1.00	81.50	63.50	28.50	42.50	19.00	16.00
2. Repair a damaged appliance cord	2.50	50.50	68.00	65.00	9.00	3.00	16.00
3. Cut metal using a hacksaw	2.50	40.00	53.50	18.50	53.00	32.00	10.00
4. Replace and putty a window pane	4.00	50.50	72.50	47.00	16.50	5.00	2.50
5. Operate a power circular hand saw	5.00	56.50	81.00	68.00	23.00	19.00	26.50
6. Service the air cleaner	6.50	6.50	22.50	10.00	90.50	10.50	26.50
7. Use a portable drill for drilling holes in steel	6.50	25.50	38.00	10.00	53.00	19.00	10.00
8. Hang farm gates	8.50	-----	-----	-----	-----	-----	-----
9. Repair a field mower knife	8.50	40.00	43.00	7.00	90.50	85.00	60.50
10. Adjust tractor brakes	10.50	18.00	8.00	12.50	70.50	32.00	60.50
11. Operate a power grinder	10.50	66.50	34.00	16.00	42.50	19.00	16.00
12. Lubricate front wheel bearings	12.00	9.50	22.50	3.00	12.00	8.50	21.50
13. Order parts by use of manual code number	13.50	3.50	34.00	24.50	9.00	54.50	88.50
14. Hitch plows for vertical and horizontal correctness	13.50	5.00	22.50	31.00	42.50	91.00	80.50
15. Repair metal roofing	15.50	90.00	100.00	91.00	42.50	54.50	39.00
16. Thread galvanized iron pipe	15.50	61.00	65.50	36.00	23.00	54.50	5.00
17. Apply paint after using a primer	17.50	45.50	83.00	70.50	4.00	6.50	5.00
18. Adjust carburetor on a small internal combustion engine	17.50	18.00	8.00	21.00	90.50	63.50	80.50
19. Make a connection to a lighting fixture	19.00	50.50	76.00	70.50	42.50	54.50	32.00
20. Hook up an electrical fence	20.00	-----	-----	-----	-----	-----	-----
21. Construct a piece of equipment according to own design	22.00	-----	-----	-----	-----	-----	-----
22. Clean and regap spark plugs	22.00	28.00	17.50	8.00	90.50	32.00	26.50
23. Splice woven fire fence	22.00	-----	-----	-----	-----	-----	-----
24. Finish or trowel concrete	24.00	99.00	103.00	100.50	90.50	73.00	32.00
25. Build concrete forms	26.00	99.00	103.00	100.50	30.00	43.50	21.50
26. Adjust the carburetor of tractor	26.00	14.50	22.50	21.00	90.50	32.00	53.00
27. Repair tires on farm machinery	26.00	56.50	58.50	4.50	12.00	43.50	10.00
28. Make a common electrical splice	28.50	50.50	68.00	65.00	16.50	6.50	21.50
29. Register the knife of a field mower	28.50	11.50	27.50	16.00	70.50	91.00	60.50
30. Make an estimated bill of materials for small construction	30.00	66.50	103.00	104.00	12.00	85.00	80.50
31. Adjust clutch pedal clearance	31.00	21.50	8.00	16.00	70.50	32.00	60.50
32. Replace bearings	32.50	50.50	17.50	32.50	70.50	43.50	72.50
33. Sharpen a wood twist bit	32.50	82.50	49.50	36.00	42.50	43.50	39.00

TABLE (continued)

Skill or competency	Ranking by successful farmers* (1)	Employee need, as ranked by farm machinery sales and service employers**			Employee need, as ranked by farm supplies and equipment business employers***		
		Sales (2)	Skilled (3)	Semi-skilled (4)	Sales (5)	Skilled (6)	Semi-skilled (7)
34. Cut threads on steel rod	34.00	34.00	48.00	12.50	53.00	43.50	21.50
35. Estimate the quantity of concrete needed for a job	35.50	-----	-----	-----	-----	-----	-----
36. Use wood preservatives on outdoor buildings	35.50	56.50	88.00	86.00	4.00	8.50	16.00
37. Measure and cut plastic pipe	37.00	-----	-----	-----	-----	-----	-----
38. Clean oil pump screen	38.50	50.50	27.50	21.00	100.50	63.50	65.50
39. Lay out foundation lines	38.50	-----	-----	-----	-----	-----	-----
40. Replace distributor points	40.50	25.50	8.00	14.00	90.50	32.00	60.50
41. Mix concrete	40.50	-----	-----	-----	-----	-----	-----
42. Calibrate a field sprayer	42.00	3.50	34.00	28.50	1.50	80.50	53.00
43. Sharpen forage harvester cutter knives	43.00	74.00	46.50	24.50	90.50	80.50	53.00
44. Wire a two-way switch	44.50	-----	-----	-----	-----	-----	-----
45. Lay masonry blocks or bricks	44.50	-----	-----	-----	-----	-----	-----
46. Tin a soldering iron	47.00	82.50	49.50	51.00	70.50	32.00	10.00
47. Cut glass to a desired shape	47.00	61.00	72.50	51.00	16.50	10.50	10.00
48. Select grinder wheels for the job	47.00	74.00	43.00	28.50	42.50	43.50	39.00
49. Repair building foundations	49.00	-----	-----	-----	-----	-----	-----
50. Select equipment according to the U. L. approved label	50.00	21.50	81.00	84.00	53.00	73.00	72.50
51. Make a short rope splice	51.00	-----	-----	-----	-----	-----	-----
52. Replace engine head gasket	52.50	40.00	8.00	32.50	100.50	73.00	72.50
53. Install insulating materials	52.50	90.00	100.00	91.00	53.00	73.00	39.00
54. Draw a map of the farm and plan a suitable cropping system	56.00	30.50	90.50	91.00	16.50	98.00	102.50
55. Reverse the direction of turn in an electrical motor	56.00	74.00	72.50	76.50	30.00	54.50	65.50
56. Design and maintain an efficient tool storage system	56.00	34.00	55.00	28.50	70.50	54.50	21.50
57. Water-proof concrete or block walls	56.00	99.00	100.00	95.50	30.00	63.50	32.00
58. Sweat a patch with solder	56.00	82.50	51.50	47.00	70.50	32.00	21.50
59. Adjust the combine for proper running speed	59.00	11.50	8.00	44.00	42.50	91.00	88.50
60. Clean and set a hand saw	60.50	74.00	79.00	68.00	70.50	54.50	26.50
61. Flush the cooling system with a commercial radiator cleaner	60.50	25.50	8.00	18.50	70.50	43.50	32.00
62. Wear protective glasses while grinding	62.00	13.00	43.00	10.00	23.00	19.00	16.00
63. Adjust engine valve tappets	63.00	34.00	8.00	40.50	70.50	32.00	88.50
64. Select an electrical motor according to working conditions	64.00	18.00	81.00	86.00	30.00	63.50	72.50
65. Change a motor from 110 to 220 volts by changing the wiring hookup	65.00	66.50	68.00	79.50	53.00	54.50	72.50
66. Rivet sheet metal	66.00	82.50	61.50	36.00	42.50	32.00	10.00
67. Calibrate a grain drill	67.00	2.00	34.00	26.00	1.50	80.50	72.50
68. Prepare metals for electrical arc welding	69.00	99.00	30.50	56.50	70.50	19.00	45.50
69. Adjust engine ignition timing	69.00	40.00	8.00	40.50	70.50	63.50	88.50

TABLE (continued)

Skill or competency	Ranking by successful farmers* (1)	Employee need, as ranked by farm machinery sales and service employers**			Employee need, as ranked by farm supplies and equipment business employers***		
		Sales (2)	Skilled (3)	Semi-skilled (4)	Sales (5)	Skilled (6)	Semi-skilled (7)
70. Establish a farm shop	69.00	-----	-----	-----	-----	-----	-----
71. Dress grinder wheels	72.00	82.50	38.00	23.00	70.50	43.50	39.00
72. Select the proper rods for electrical arc welding	72.00	90.00	27.50	56.50	70.50	19.00	39.00
73. Cut a piece of metal with the arc welder	72.00	90.00	34.00	56.50	70.50	19.00	39.00
74. Determine purpose and select wire sizes according to code	74.50	34.00	77.00	73.00	42.50	43.50	60.50
75. Make a lap, butt or corner weld on iron or steel	74.50	99.00	38.00	61.50	70.50	19.00	45.50
76. Measure fields to determine acreage	76.50	30.50	86.50	61.00	16.50	98.00	97.50
77. Adjust tractor governor	76.50	45.50	8.00	40.50	100.50	63.50	80.50
78. Clean and service a used electrical motor	79.00	74.00	72.50	73.00	53.00	43.50	65.50
79. Paint machinery with a power sprayer	79.00	56.50	53.50	6.00	100.50	80.50	32.00
80. Measure combine harvesting losses	79.00	8.00	8.00	47.00	42.50	91.00	88.50
81. Construct a portable building according to a blueprint	81.00	66.50	90.50	100.50	3C.00	54.50	53.00
82. Construct a simple terrace	82.00	40.00	93.50	100.50	70.50	98.00	80.50
83. Install a bulk fertilizer handling system	84.00	66.50	86.50	100.50	9.00	73.00	45.50
84. Correct defects in a drainage system	84.00	74.00	97.50	100.50	30.00	98.00	97.50
85. Use a carbon arc torch for welding	84.00	90.00	43.00	56.50	70.50	19.00	53.00
86. Estimate the cost of an irrigation system	86.00	40.00	90.50	91.00	70.50	104.00	102.50
87. Plan a building fire control program	87.00	66.50	97.50	95.50	70.50	91.00	88.50
88. Construct an outlet for field tile	89.50	-----	-----	-----	-----	-----	-----
89. Service the diesel-fuel-injection filters	89.50	25.50	8.00	36.00	100.50	63.50	97.50
90. Operate an oxyacetylene cutting torch	89.50	82.50	27.50	53.50	70.50	19.00	32.00
91. Hard surface with oxyacetylene welder using the proper rod	89.50	99.00	56.00	65.00	70.50	63.50	53.00
92. Correct defects in an irrigation system	93.00	40.00	85.00	81.00	42.50	102.50	97.50
93. Use wood glue for outside construction	93.00	90.00	95.50	88.00	30.00	91.00	72.50
94. Braze cast irons with the oxyacetylene welder	93.00	90.00	30.50	61.50	70.50	19.00	60.50
95. Install overload protective devices	95.00	61.00	75.00	76.50	23.00	43.50	45.50
96. Construct a farm pond	96.50	56.50	93.50	95.50	70.50	102.50	97.50
97. Install a feed or grain auger system	96.50	34.00	78.00	76.50	4.00	19.00	72.50
98. Estimate the cost of a drainage system	98.00	56.50	90.50	91.00	70.50	101.00	102.50
99. Determine proper size of field tile	99.50	74.00	95.50	95.50	30.00	98.00	102.50
100. Plan a farm wiring system	99.50	-----	-----	-----	-----	-----	-----
101. Care of machinery	-----	1.00	8.00	4.50	6.50	4.00	10.00
102. Care of tools	-----	9.50	17.50	2.00	6.50	2.00	1.00
103. Service fuel injection system	-----	29.00	40.00	83.00	100.50	68.00	93.50
104. Overhaul a small engine	-----	45.50	22.50	40.50	100.50	73.00	88.50
105. Trouble shoot	-----	18.00	17.50	36.00	42.50	19.00	80.50

TABLE (continued)

Skill or competency	Ranking by successful farmers* (1)	Employee need, as ranked by farm machinery sales and service employers**			Employee need, as ranked by farm supplies and equipment business employers***		
		Sales (2)	Skilled (3)	Semi-skilled (4)	Sales (5)	Skilled (6)	Semi-skilled (7)
106. Service transmission and final drive	-----	66.50	22.50	53.50	100.50	73.00	97.50
107. Basic hydraulics	-----	23.00	8.00	43.00	30.00	78.00	84.00
108. Adjust baler for proper operation	-----	6.50	8.00	47.00	42.50	91.00	88.50
109. Assemble machinery	-----	18.00	46.50	1.00	30.00	73.00	32.00
110. Shape and bend hot metal	-----	82.50	57.00	47.00	90.50	73.00	53.00
111. Temper a chisel	-----	90.00	63.50	68.00	90.50	85.00	45.50
112. Anneal metal	-----	99.00	65.50	76.50	90.50	85.00	45.50
113. Lathe operation	-----	90.00	60.00	73.00	90.50	85.00	65.50
114. Build up worn parts	-----	99.00	43.00	59.00	70.50	43.50	53.00
115. Weld pipe	-----	99.00	51.50	61.50	70.50	19.00	53.00
116. Weld with a heli-arc welder	-----	104.00	58.50	79.50	70.50	54.50	72.50
117. Assemble pipe	-----	66.50	70.00	51.00	23.00	32.00	5.00
118. Operate hammer mill and mix feeds	-----	14.50	61.50	61.50	16.50	1.00	2.50
119. Install and operate dairy equipment	-----	45.50	84.00	82.00	20.00	95.00	93.50

*David M. Tugend, "Comparative Study of Selected Farm Mechanical Skills Performed by Successful Maryland Farm Operators and Farm Mechanical Skills Taught in Vocational Agriculture in Certain Maryland High Schools" (unpublished Master's thesis, University of Maryland, College Park, 1964), pp. 67-71.

**Competencies with a rank higher than 29.00 in sales (2), 84.00 in skilled (3), and 65.00 in semi-skilled (4) levels of employment have a rating of helpful or very desirable.

***Competencies with a rank higher than 4.00 in sales (5), 73.00 in skilled (6), and 16.00 in semi-skilled (7) levels of employment have a rating of helpful.

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HEALTH OCCUPATIONS EDUCATION CENTERS "FACILITIES AND BUILDINGS"

By Norman P. Mitby, Director
Madison Vocational, Technical and Adult Schools

I am sure you were impressed with the attractive invitation you received to attend this Seminar titled "Health Occupations Centers."

In outlining the need for the Seminar, on the first page it states and I quote "Health services in the United States face a tremendous challenge today. This most affluent country in the world does not have enough health technicians to meet present demands and to provide services which will be inaugurated under our recent social and health legislation."

In addition to the need for more health technicians is the rising cost of medical care. The total health care bill of the United States in 1965 came to $37 billion. Next to defense and education, health care has become the most expensive service the American public buys. Today everyone expects to receive the standard of health care which a while back only the well to do could afford.

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Today's health service workers compose our second largest occupational group, topped only by teachers.

Therefore, it seems most necessary that if the schools are going to be successful in meeting health needs of society and the training needs of this large occupational group we should have adequate building facilities and modern, functional equipment. Additional pre-requisites are a competent, professionally qualified faculty and adequate community clinical facilities to augment classroom learning.

An adequate building facility, in my opinion, is one of the best recruitment devices for both good students and faculty. These are the basic ingredients that make for a successful program.

Judicious planning is the pre-requisite for excellent facilities and buildings for a Health Occupations Education Center.

Construction to expand an existing school or to establish a brand new school as a center will be costly. Such decisions will have long-range effects. It is important that planning incorporate a high degree of flexibility which will permit future growth or change at a reasonable cost. The program will consist of two parts, the functional program and the building program.

The functional program to be developed by the director of the school will be used by the architect for the building program. Functional programming describes the educational requirement of the courses of instruction in such a way that the architect can determine the teaching, faculty, administrative, and supporting spaces required as well as the equipment and supplies needed to carry out the purposes of the center.

Functional programming will include the setting and control of the program and the relationships of proposed facilities to other usable areas such as libraries. The number of persons to be accommodated in administrative and faculty space must be determined. Teaching space requirements will be based on the number of students to be taught, the teaching methods to be used, and the projection of class schedules.

Programming for teaching space will be based on the size of the group that can be accommodated for different teaching methods. For example, the size of the group for such methods as lecture or lecture with demonstration and student participation will indicate the number of sections of a course that will need to be scheduled. A projection of the class schedule for the maximum enrollment is necessary to determine the type and number of classrooms needed. The architect should be

advised of the teaching methods and educational media to be used so that the design and equipment recommended will reflect the schools' special needs.

Teaching methods commonly used that affect architectural planning include demonstrations of patient care, and the projection and/or monitoring of demonstrations by television. The architect should be informed of the planned projection for films, slides, tape recordings and other audio visual aids.

The teaching space to be planned will include lecture, class, multipurpose, and conference rooms, library and laboratories.

Lecture-Demonstration Room

This room should have fixed seating to accommodate at least 100 students.

Televised demonstrations of patient care will require monitoring sets in strategic locations.

This room should also be designed for film and slide projection.

Air conditioning, room darkening equipment (for example special curtains or aluminum cloth shades). Water, gas, electrical outlets, etc. are needed for facilitation of demonstration.

Classrooms with storage areas off the classroom area to accommodate special equipment and apparatus. Include sinks with hot and cold water, multiple electrical outlets in each classroom for use of special equipment. Chairs should be movable in order that the seating arrangement can be improvised or changed for different size groups. Provide for lots of blackboard and bulletin board space.

Conference Room

Conference space will be needed for small group conferences, advisory committee meetings, faculty or staff meetings, work groups, student placement interviews, etc.

Dressing Rooms and Lockers

This facility should be provided if students are to change from street clothes to uniforms and vice versa.

Let's consider some of the specialized laboratories.

Dental Area

Allow for 2 operatories or 1 large room with 2 dental units and x-ray equipment.

If a clinic facility is planned for, it will be necessary to have a waiting room for patients.

Dark Room adjacent to the operatories for use in developing x-rays. Allow for sinks, developing tanks, counter space, and special "safe lights" in this area.

Dental Laboratory - provide for compressed air, gas, electricity at each station or lab bench. Two sinks strategically located with model grinders mounted on the sinks are necessary.

There needs to be plenty of cupboard space in the dental lab to facilitate storage of alginate, stone, plaster, investment compound and the dental bench engines when the latter are not in use.

Medical Assisting Laboratory

(Note: Medical Laboratory Assistants share this facility with the Medical Assisting students.)

Allow for cupboards for storage of glassware, chemicals and solutions. A refirgerator for storage of specimens is called for. The sink in this lab has a pipette suction device connected to it in order to facilitate the cleaning of the pipettes.

A dressing room and a bathroom (lavoratory and toilet) should be located in close proximity to the laboratory. The toilet facility is needed for disposal of specimens.

Students need a bed and bedside stand, if they are going to practice the taking of electrocardiograms on each other. Plan for space in this lab for these items.

Medical assisting students and laboratory assistant students use microscopes. This means that there will need to be storage space provided to house the microscopes.

Needed also are laboratory tables with stain-resistant counter tops, inserts for electricity and gas at each lab station and adjustable stools for seating the students. Allowance should be made for adequate counter space for such items as autoclaves,

centrifuge, serofuge, test tube racks, prothrombin machine, analytical balance, and distilled water still.

Other areas such as business education and general education are used by the students in the health occupations courses. Students should have ready access to these areas and some consideration should be given factors such as distance to travel to get to these areas.

Library and Reading Rooms

References and periodicals can be added to the general library of the school or college. Library stacks and study space must be available to accommodate the anticipated enrollment in the health occupation curriculums.

The new sixth floor, 84'8" by 171'10", that was dedicated in February 1964 as the education center for our health occupations consisting of practical nursing, medical assisting, dental assisting, medical secretarial, and medical laboratory assisting, cost $529,345.98. Other proposed programs such as

dental hygienist, surgical assisting, and a two year technical nursing program granting an associate degree, requiring additional space, is now being planned. We have estimated that equipment for a dental hygienist program would cost $55,000 for a 12-unit installation. I would like to show you some slides depicting the building and facilities.

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Occupational Needs For Vocational and Technical Education

for NEW MEXICO — SUMMARY

Publication Nº 8

BUREAU OF EDUCATIONAL RESEARCH
COLLEGE of TEACHER EDUCATION
NEW MEXICO STATE UNIVERSITY
UNIVERSITY PARK, NEW MEXICO

March, 1966

JAMES D. McCOMAS
DARRELL S. WILLEY
CO-DIRECTORS

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Conducted by New Mexico State University, University Park, New Mexico, in cooperation with the Division of Vocational Education, State Department of Education, Santa Fe, New Mexico

FOREWORD

The statewide occupational study presented in summary form in this report represents needs indicated by more than 11,000 New Mexico firms and businesses which were contaced through personal interviews. Detailed reports for each of the 32 population centers were compiled and distributed separately by State Director of Vocational Education, Dr. M.G. Hunt.

It may be seen that present and projected vocational needs exceed 68,000 persons. The results of the study present a vital need for expanded vocational programs in New Mexico.

The co-directors wish to thank Mr. John E. Uxer, Mr. William Barnes and Mr. Loyd R. Hughes; graduate assistants who assisted in finalizing certain aspects of the study. A special note of appreciation is expressed to Dr. M.G. Hunt, State Director of Vocational Education for his cooperation, and to Mrs. Wanda Champion who served as secretary and typist for the duration of the project.

D.S. Willey and J.D. McComas
Co-Directors
Statewide Occupational Study

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BACKGROUND FOR THE STUDY

The Panel of Consultants on Vocational Education, organized at the request of the President in 1961 to review legislation regarding vocational education and to make recommendations for improving and redirecting the program, reported several general observations concerning research in vocational education:[1]

1. Much of the research has been applied research.
2. Little attention has been paid to research in the basic sciences and disciplines that underlie vocational education, such as the psychology of learning specific manipulative and technical skills, human relations in occupational settings, and the like.
3. There has been little experimental research under controlled conditions.
4. A considerable amount of the research has been somewhat superificial, with little depth or penetration. The gathering and classification of the data have absorbed so much energy that little was left for reflective thinking with respect to the meaning of the data collected.
5. Although most of the research has been local in scope, with relatively little value outside the local area, a number of large-scale cooperative projects have been undertaken involving more than one State. Leadership for some of these studies has come from the U.S. Office of Education.
6. Vocational education has utilized but little the resources available under the broad cooperative research program of the Office of Education.
7. The reports of many studies have had limited circulation, perhaps through lack of a suitable medium for publishing the research findings and because of limited editions of published studies.

In their criticism of vocational educators for their failure to produce research of an evaluative type, the Panel emphasized the need for comprehensive research programs in vocational education at the local, statewide, regional, or nationwide levels. These studies should cover all the fields of vocational education and deal with critical aspects within the various types of programs in these fields.

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[1] Education for a Changing World of Work, Report of the Panel of Consultants on Vocational Education, U.S. Government Printing Office, Washington: 1963, p. 197.

The need for research in vocational education has long been recognized. The Smith-Hughes Act of 1917 and subsequent acts have continued the availability of Federal funds for purposes of research in vocational education. In the current revision of the rules and regulations for the administration of vocational education, reference is made to research, as follows:[2]

> 102.29 Research, studies, investigations, and experimentations.--(a) Expenditures may be made under the State plan for research that will function directly in the furtherance of any or all of the federally aided fields of vocational education, when such research is conducted as a part of a State program of administration, supervision, or teacher training.

The three principal Federal offices now supporting research in vocational education are the Office of Manpower, Automation and Training of the Department of Labor (OMAT), the Bureau of Educational Research and Development, and the Division of Vocational and Technical Education of the U.S. Office of Education. The third office has a specific responsibility for research on vocational education.

In the Vocational Education Act of 1963, Congress has stipulated that a specificied portion of allotted funds for educational programs be used for new research and pilot programs.

Community surveys. In a guest editorial written for an industrial education periodical, Francis Keppel, U.S. Commissioner of Education, stressed the need for school administrators to develop a closer relationship with the out-of-school world in determining manpower needs and job opportunities. Commissioner Keppel advocated educators involving themselves closely with local business and industrial

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[2]Office of Education, Administration of Vocational Education, Bulletin No. 1, Revised 1958, Washington: U.S. Department of Health, Education, and Welfare, 1958, p.8.

and labor organizations to plan vocational programs geared to the needs of the community.

He further stated:[3]

> The Vocational Education Act of 1963 comes at a time of great challenge to vocational education--a field which unfortunately has often had second-class status. It can be given that status no longer, for vocational education must play a primary role in dealing with problems arising from the major shift of population from rural to urban areas, from the tremendous growth of our labor force, from the demand for equality of economic and social opportunity for all our citizens, and from changing patterns in the labor market itself. Never has the need been more urgent for vocational education to be in tune with the times.
>
> Educators are confronted by a number of vital questions: What kinds of programs are needed for effective training to meet industry's changing needs? What qualifications should we seek in vocational teachers? How effective are the teaching aids we now employ? How can we develop curriculums better suited to the individual? How shall we train today for tomorrow's employment?
>
> These challenges and questions should bring forth the best we have to offer in updating our vocational-education system. Local and state personnel will have to be more flexible and more determined to take advantage of the opportunity offered by Public Law 88-210. We must re-examine our traditional ways of thinking and adapt to the demands of the times. There must be a willingness to scrap old ideas that can't fit current needs.
>
> This Act breaks away from the rigid categories of past legislation and gives educators greater flexibility than ever before in providing opportunity for effective vocational education and training.

Byrl R. Shoemaker, Director of Vocational Education, State Department of Education, Columbus, Ohio, presented a timely review of procedures for involving the community in needs studies and program development in an article written for the National Association of Secondary-School Principals Bulletin this year. In order to involve community groups and to gather facts recommended as a basis for decisions,

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[3]Francis Keppel, 'New Perspectives", School Shop, April, 1964, No. 8, p.2.

the Ohio state department devised a survey procedure based upon:[4]

1. Involvement of one or more staff members of each of the vocational services represented in our State Division of Vocational Education, and local committees for each of the vocational services.
2. Concentration of effort over a six to eight week period of time.
3. Major involvement of the administrators of the local schools in the organization and conduct of the survey.
4. Involvement of the students.
5. Involvement of the leaders from business, industry, agriculture and the homes.
6. Involvement of the Boards of Education in analysis of survey results.

Thirty surveys of this type have been conducted in Ohio. The results are serving as the basis for the organization of area vocational education programs and for the expansion of existing vocational programs. The survey provides information about the vocational programs that should be offered and also informs school administrators, school boards, industry, business agriculture, students and some parents about the purpose, organization, and operation of vocational programs and procedures for establishing or expanding a program.

In 1959, the New Mexico State Employment Service in cooperation with the Vocational Study Committee of the Albuquerque Public Schools and the Greater Albuquerque Chamber of Commerce, completed a skill and training survey for greater Albuquerque. The major purpose of the study was to develop statistical information regarding current and future occupational demands to provide an objective basis for recommendations regarding vocational training. The report was released in February, 1960, and reflected the industrial composition and non-agricultural salaried employment for that area.

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[4]Byrl R. Shoemaker, "Involving the Community in Needs Studies and Program Development", The Bulletin of the National Association of Secondary School Principals, No. 301, May, 1965, pp. 113-123.

In Suffolk County, Long Island, New York, an area with extremely rapid population growth, all public-school districts, with the aid of the state education department, financed and conducted a county-wide study of vocational needs during the 1961-62 school year. The study report, published in January, 1962, revealed that high-school students' desires for occupational training, together with employers' needs for skilled personnel, warranted a program for training a minimum of 4,000 students in more than 20 occupational fields.

Another significant item of information revealed by the Suffolk County survey was that a great number of parents of high-school students indicated that they, too, were in need of further occupational training. The new Lewis A. Wilson area center of technology and education opened in September, 1963, as a result of a long-range plan for providing quality programs in vocational education.[5]

Statewide surveys. The most recent statewide surveys of vocational education needs have been in Ohio, Connecticut, Oregon, Illinois, California, Florida, North Caroline and Utah. Numerous other states plan to conduct surveys as part of justification requirements for area-vocational schools under the Vocational Education Act of 1963.

Nationwide surveys. There have been no recent nationwide studies of vocational education; however, a study of vocational-technical training for industrial occupations reported in 1944 is still considered a reference source.[6]

Dr. William Mortimer, Utah State University, Logan, Utah, visited thirty

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[5]Gordon Law, "Area School: Getting the Most for the Educational Dollar", School Shop, loc. cit., p. 57.

[6]Vocational-Technical Training for Industrial Occupations. Washington: U.S. Government Printing Office, 1944.

states during 1964 making observations within state vocational departments for a report on current vocational-technical programs to be published this year.

A handbook of suggested techniques for conducting community occupational surveys and follow-up studies was issued by Mississippi State College in 1953 and has received wide circulation.

Vocational Counseling. Guidance and counseling, especially vocational, was given new emphasis by the National Defense Education Act of 1958 (and extended for three years by the Vocational Education Act of 1963) which grants Federal assistance for establishing, maintaining, and improving guidance, counseling, and testing programs in public secondary schools. In 1962, the U.S. Office of Education estimated there were 16,000 full-time, 10,000 half-time, and 10,000 less than half-time secondary school counselors, plus 500 elementary school counselors.[7] In stressing that the total falls far short of meeting the needs of the nation's public school children, Olson expressed a strong plea for systematic vocational programs to be organized for optimal utilization of manpower.[8]

To reduce the dropout rate, Chicago instituted seven vocational and guidance centers, enrolling 1,477 elementary school pupils fifteen years old and over. All were afforded extensive vocational guidance. In October, 1963, Simeon stated that 75 per cent of those potential dropouts moved into high school.[9]

In a similar situation in New York City, it was concluded that the experimental

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[7]Occupational Outlook Handbook, Bulletin No. 1375, Bureau of Labor Statistics, 1963-64.

[8]R. F. Olson, "Employment Persuasion: Vocational Counseling Meets Manpower Needs", Phi Delta Kappan, No. 8, April, 1965, pp. 388-390.

[9]Neal F. Simeon, "Chicago's Vocational Guidance and Educational Centers", Chicago Schools Journal, Vol. 45, October, 1963, pp. 15-21.

group exhibited a greater realism and maturity in job planning than did a controlled group.

In an address before the American Personnel and Guidance Association convention this year, Smith posed three questions with regard to counselor responsibility in vocation education:[10]

1. Do counselors recognize the needs of students regarding plans?
2. Do counselors function in such a way that they will be identified as qualified personnel to give assistance in vocational planning?
3. Are counselor training institutions adequately emphasizing the function of the counselor and his relationship to the field of vocational education?

In the discussion following his address, Smith expressed his concern for the tendency of counselors to either spread themselves thin attempting to cover several areas of responsibility or to identify themselves with one function and ignore the others. Also, Smith attempted to identify some of the problems that the counselor faces in creating a correct perception of his role.

Martinson and Winborn identified the major problems as: (1) the assumption of any task to gain acceptance in school; (2) striving to please--a popularity contest; and (3) experiencing conflicts and roles stemming from past experience as a teacher.[11]

The problem therefore seems to be one of not whether guidance services and vocational education are in agreement but whether counseling and counselors

[10]Richard M. Smith, an address at the APGA convention in Minneapolis, Minnesota, April 13, 1965.

[11]W.D. Martinson and B.B. Winborn, "Are We Our Own Worst Enemies?", School Counselor, No. 12, pp. 85-88.

in particular have a responsibility in this area of vocational education.

In an article directed to secondary principals, Hoyt stated that far too many counselors are still largely ignorant of the multitude of educational and training opportunities that vocational education students should be considering.[12] Vocational education students graduating from high school in 1965 must be prepared to think about a decision to continue their education in:

1. an area vocational school
2. a Manpower Development Training Act program
3. one of the several programs operated as part of the Economic Opportunity Act
4. a private trade, technical, or business school
5. an on-the-job or apprenticeship program
6. an armed forces training program.

In pointing out to secondary principals and counselors that a majority of students completing high school vocational education programs must consider some specific skill training beyond the high school before seeking to enter today's labor market, Hoyt presented four challenges to the high school counselor: (1) the challenge of commitment to vocational education; (2) the challenge to maintain the unity of guidance and not establish a dual system of guidance for "vocational" and "academic" programs; (3) the challenge to increase counselor knowledge; and (4) the challenge to help students beyond the high school.[13]

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[12]Kenneth B. Hoyt, "New Challenges for Guidance in Vocational Education" The Bulletin, loc. cit., P. 139.

[13]Ibid, p. 134.

Area school construction. Michael Russo, Residential Schools Specialist, U.S. Office of Education outlined the basic steps to planning an area vocational school under the provisions of the Vocational Education Act of 1963 whereby Federal matching funds are available to the States to assist in construction. These funds may be used to support the cost of construction of classrooms and related school facilities, for initial equipment, and building sites. Such construction may include new buildings and the expansion, remodeling, or alteration of existing structures, as well as site grading and improvement.[14]

The various State boards have the responsibility for approving the projects of the local educational agency. The need for the project will depend on the size and nature of the geographic area to be served, the number of high school students in that area, and the number and types of training agencies already available to those students.

The area vocational school is designed to provide vocational education to persons who have completed or left high school and who are available for full-time study in preparation for entering the labor market. Vocational education should be provided for in no less than five different occupational fields. Each state agency has the responsibility to establish priorities for the use of funds.

Manpower training. The Manpower Development and Training Act, enacted in 1962, provides not only a nationwide training program for unemployed or under-

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[14]Michael Russo, "Area School Construction Under the Vocational Education Act", American Vocational Journal, January, 1965, pp. 14-16.

employed workers, but also provides a broad and extensive manpower research program. The nation was spending more than $300 million on this program in the fiscal year, 1964-1965. By January of 1965, the total number of individuals approved for the MDTA training program was 374,000.[15]

There are three component parts to the program: (1) the Institutional Program--to equip unemployed workers with specific skills for available jobs; (2) On-the-Job Training--direct in-plant training to meet immediate skill development objectives; and (3) the Experimental and Demonstration phase--to assist poorly educated, unmotivated, and handicapped workers to learn something about their liabilities. Some 57,000 unemployed workers had received various forms of assistance through the E and D phase as of the beginning of the year 1965.

The Neighborhood Youth Corps, administered by the U.S. Department of Labor, is providing youth with job opportunities to earn money to remain in school and to begin preparation for a steady job. The Area Redevelopment Act of 1961 has its own specific provisions for the training and retraining of workers in "depressed areas". To date, over 40,000 people have been approved for such training.

Apprenticeship. Too often there is little relationship between the vocational education program of the schools and the apprenticeship programs operated by management and controlled by organized labor.

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[15]John C. Donovan, "Implications of Manpower Training for American Education", Phi Delta Kappan, loc. cit., pp. 366-369.

The cost of training apprentices is high, and often unionism is associated with nepotism. Kohler summarizes the problem in these words:[16]

> Apprentice training can begin at eighteen, but in practice most apprentices start much later, the average age is twenty-four, and the nepotism that prevails in unions precludes any significant number of youth from getting their training through apprenticeship. Here again most youthful workers excluded.

Research. The startling facts and figures in Venn's study foster a critical reexamination of the American educational system. For example, 35 per cent of our students leave school during their high school days; 45 per cent never enroll in education beyond the high school; and 40 per cent leave after entrance to college. One-fifth of youth under 21 are unemployed; one million who left school are out of work, including 30 per cent of the dropouts and 15 per cent of high school graduates.[17]

In calling attention to the need for research in the vocational field, the Panel of Consultants has stimulated a renewed interest in basic research, and in its path, rapidly-accumulating literature.

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[16]Mary Conway Kohler, Excluded Youth: Idle or Trained? Washington, D.C.: Center for Metropolitan Studies, June, 1962, p.3.

[17]Grant Venn, Man, Education and Work. Washington, D.C.: The American Council on Education, 1964.

Method for the Study

The statewide occupational study was authorized by Dr. M.G. Hunt, State Director of Vocational Education and The State Board of Education in November, 1964. The need for the study was strongly supported by the New Mexico Department of Employment Security. The study was contracted to the New Mexico State University with Drs. D.S. Willey and J.D. McComas serving as Co-Directors.

The scope of the study included 31 population centers which were selected to provide geographical, representative sizes in population, and businesses and industrial diversification. The statewide study was preceded by an occupational study of Las Cruces conducted by Dowell H. Williams. The Las Cruces study was conducted and financed jointly by New Mexico State University and the Mesilla Valley Chamber of Commerce.

The 31 towns surveyed included: Farmington, Taos, Los Alamos, Raton, Clayton, Springer, Las Vegas, Santa Fe, Espanola, Gallup, Grants, Santa Rosa, Tucumcari, Clovis, Portales, Lovington, Hobbs, Carlsbad, Artesia, Roswell, Albuquerque, Ruidoso, Cloudcroft, Alamogordo, Silver City, Deming, Lordsburg, Truth or Consequences, Socorro, Belen and Los Lunas.

A statewide meeting of Chambers of Commerce and school administrators was held at New Mexico Institute of Mining and Technology, Socorro, New Mexico in December, 1964. The purpose of the meeting was to orient these key personnel as to the need for and anticipated procedures in implementing the statewide study. Twenty-eight of the 31 towns included in the study were represented at the Socorro meeting.

The study was accomplished through the use of personal interviews. Interviewers were trained under the direction of the two full-time project leaders, Mr. Bosko Krivokapich and Mr. Edward J. Downing. Mr. Krivokapich had some 14 years of previous experience as a vocational teacher in New Mexico and Arizona. Mr. Downing previously served in the U.S. Army as a Lieutenant Colonel and had completed graduate work in guidance and counseling at New Mexico State University.

Interviewers in the respective towns were secured from various civic and service organizations such as; Parent-Teachers Associations, professional fraternities and sororities, church sponsored organizations, and non-affiliated, interested citizens. Interviewing technique training sessions were conducted in all towns by the project leaders. A sponsoring organization was identified for each town and honorariums paid to the organization for interviewing services performed.

Project leaders visited each town in preparation for the interviewing of business, professional and industrial concerns. Excellent cooperation was realized from the Chamber of Commerce, school administrators, radio, television and press in publicizing the need and importance of the study. In general, cooperation from firms and businesses interviewed was excellent. Cover letters introducing project leaders were provided by Governor Jack M. Campbell. Local letters of introduction were issued by the respective chambers of commerce.

Data for the study were classified as to the respective vocational divisions in order to be useful to state supervisors of vocational education and local school personnel in planning for immediate and projected needs.

The Burroughs 220 Computer at the Physical Science Laboratory of New Mexico State University was used to process all data for the study. Mr. David C. Hall supervised the programming and processing of the data and served as a consultant.

The process of the statewide study presented an enormous challenge. Efforts were made to survey all businesses and firms within the limits of each town or city. A complete listing of businesses was not available from a central source. A total listing and location of firms were realized through city and telephone directories, and information provided by chambers of commerce and school administrators.

Additionally, new groups of interviewing personnel had to be secured for each city. Larger cities presented problems in communication and publicity. Independent studies concurrently conducted by federal and state agencies posed problems and in some instances caused confusion as to sponsoring agencies.

The magnitude of the study is reflected in the number of firms contacted, for example, approximately 600 firms were interviewed in Roswell with almost 3,000 different firms contacted in the city of Albuquerque. A total of 10,096 interviews were conducted in the combined 32 towns and cities of the statewide study.

Vocational classifications presented in the study may exhibit some inconsistancy as state supervisors were unable (prior to the study) to identify all possible types of positions within their division. Furthermore, the area of Office and Business Occupations was in a developmental stage, being newly created from its former parent group of Distributive Education. Recent federal legislation

concerning changes in occupational education in Home Economics and Agriculture added to the complexity of classifying positions according to appropriate vocational specialities.

CHAPTER III
Composite Data by Towns and Geographical Areas

TABLE 1
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR FARMINGTON

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	11	184	268	463
Office Education	3	187	230	420
Trade and Industry	59	400	1664	2123
Agricultural Education	0	28	10	38
Home Economics Education	0	33	154	187
Total	73	832	2326	3231

TABLE 2
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR TAOS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	1	81	38	120
Office Education	1	58	34	93
Trade and Industry	12	99	54	165
Agricultural Education	0	6	2	8
Home Economics Education	4	52	36	92
Total	18	296	164	478

TABLE 3
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR LOS ALAMOS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	8	88	91	187
Office Education	27	184	136	347
Trade and Industry	78	351	281	710
Agricultural Education	4	4	3	11
Home Economics Education	0	16	47	63
Total	117	643	558	1318

TABLE 4
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR RATON

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	5	66	37	108
Office Education	4	113	78	195
Trade and Industry	29	191	216	436
Agricultural Education	0	2	9	11
Home Economics Education	6	58	66	130
Total	44	430	406	880

TABLE 5
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR CLAYTON

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	0	4	3	7
Office Education	0	8	2	10
Trade and Industry	5	19	2	26
Agricultural Education	0	0	0	0
Home Economics Education	3	13	0	16
Total	8	44	7	59

TABLE 6
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR SPRINGER

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	0	16	22	38
Office Education	5	22	24	51
Trade and Industry	52	42	9	103
Agricultural Education	0	7	6	13
Home Economics Education	2	11	26	39
Total	59	98	87	244

TABLE 7
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR LAS VEGAS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	2	67	105	174
Office Education	15	94	88	197
Trade and Industry	56	187	270	513
Agricultural Education	0	3	5	8
Home Economics Education	14	58	78	150
Total	87	409	546	1042

TABLE 8
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR SANTA FE

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	27	214	295	536
Office Education	153	117	149	419
Trade and Industry	90	331	279	700
Agricultural Education	25	3	24	52
Home Economics Education	10	61	227	298
Total	305	726	974	2005

TABLE 9
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR ESPANOLA

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	7	37	166	210
Office Education	3	51	31	85
Trade and Industry	15	81	116	212
Agricultural Education	0	0	12	12
Home Economics Education	0	33	94	127
Total	25	202	419	646

TABLE 10
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR GALLUP

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	13	272	334	619
Office Education	28	214	216	458
Trade and Industry	92	637	621	1350
Agricultural Education	1	30	9	40
Home Economics Education	16	106	135	257
Total	150	1259	1315	2724

TABLE 11
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR GRANTS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	10	114	522	646
Office Education	4	77	178	259
Trade and Industry	15	286	677	978
Agricultural Education	0	0	36	36
Home Economics Education	1	125	159	285
Total	30	602	1572	2204

TABLE 12
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR SANTA ROSA

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	-*	-*	-*	-*
Office Education	-	-	-	-
Trade and Industry	-	-	-	-
Agricultural Education	-	-	-	-
Home Economics Education	-	-	-	-
Total	-	-	-	-

*These questions were not asked.

TABLE 13
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR TUCUMCARI

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	7	28	34	69
Office Education	5	12	49	66
Trade and Industry	7	48	244	299
Agricultural Education	2	8	16	26
Home Economics Education	2	10	64	76
Total	23	106	407	536

TABLE 14
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR CLOVIS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	36	286	430	752
Office Education	21	188	189	398
Trade and Industry	36	523	1211	1770
Agricultural Education	10	138	123	271
Home Economics Education	7	150	310	467
Total	110	1285	2263	3658

TABLE 15
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR HOBBS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	22	314	331	667
Office Education	2	147	139	288
Trade and Industry	31	348	485	864
Agricultural Education	0	15	10	25
Home Economics Education	1	90	38	129
Total	56	914	1003	1973

TABLE 16
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR CARLSBAD

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	12	203	352	567
Office Education	22	173	236	431
Trade and Industry	41	487	780	1308
Agricultural Education	0	18	29	47
Home Economics Education	4	76	265	345
Total	79	957	1662	2698

TABLE 17
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR PORTALES

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	3	48	114	165
Office Education	3	63	102	168
Trade and Industry	4	84	240	328
Agricultural Education	0	25	18	43
Home Economics Education	1	32	47	80
Total	11	252	521	784

TABLE 18
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR LOVINGTON

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	3	63	134	200
Office Education	1	73	83	157
Trade and Industry	18	181	343	542
Agricultural Education	0	11	23	34
Home Economics Education	12	38	43	93
Total	34	366	626	1026

TABLE 19
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR ARTESIA

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	5	82	60	147
Office Education	5	58	69	132
Trade and Industry	3	113	194	310
Agricultural Education	0	6	5	11
Home Economics Education	1	36	23	60
Total	14	295	351	660

TABLE 20
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR ROSWELL

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	45	438	527	1010
Office Education	21	251	212	484
Trade and Industry	45	1128	863	2036
Agricultural Education	52	93	57	202
Home Economics Education	24	551	285	860
Total	187	2461	1944	4592

TABLE 21
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR ALBUQUERQUE

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	106	1803	1472	3381
Office Education	91	5048	2376	7515
Trade and Industry	311	7604	4532	12447
Agricultural Education	13	124	148	285
Home Economics Education	68	907	801	1776
Total	589	15486	9329	25404

TABLE 22
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR RUIDOSO

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	0	80	53	133
Office Education	4	8	15	27
Trade and Industry	2	16	26	44
Agricultural Education	0	0	0	0
Home Economics Education	0	3	23	26
Total	6	107	117	230

TABLE 23
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR CLOUDCROFT

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	1	4	4	9
Office Education	0	3	3	6
Trade and Industry	1	36	39	76
Agricultural Education	0	1	15	16
Home Economics Education	1	1	1	3
Total	3	45	62	110

TABLE 24
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR ALAMOGORDO

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	18	173	320	511
Office Education	2	121	89	212
Trade and Industry	12	219	428	659
Agricultural Education	0	26	16	42
Home Economics Education	1	45	261	307
Total	33	584	1114	1731

TABLE 25
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR SILVER CITY

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	3	83	69	155
Office Education	1	121	224	346
Trade and Industry	99	438	737	1274
Agricultural Education	0	22	13	35
Home Economics Education	0	22	12	34
Total	103	686	1055	1844

TABLE 26
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR DEMING

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	3	19	27	49
Office Education	2	40	25	67
Trade and Industry	2	79	40	121
Agricultural Education	0	11	8	19
Home Economics Education	0	9	27	36
Total	7	158	127	292

TABLE 27

A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR LORDSBURG

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	7	36	94	137
Office Education	2	23	36	61
Trade and Industry	5	65	179	249
Agricultural Education	0	2	1	3
Home Economics Education	1	22	154	177
Total	15	148	464	627

TABLE 28

A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS FOR TRUTH OR CONSEQUENCES

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	3	14	65	82
Office Education	1	30	50	81
Trade and Industry	9	137	120	266
Agricultural Education	0	2	0	2
Home Economics Education	0	34	64	98
Total	13	217	299	529

TABLE 29
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR SOCORRO

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	2	46	73	121
Office Education	3	42	86	131
Trade and Industry	13	171	180	364
Agricultural Education	1	6	12	19
Home Economics Education	1	24	59	84
Total	20	289	410	719

TABLE 30
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR BELEN

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	6	35	36	77
Office Education	1	45	33	79
Trade and Industry	35	129	77	241
Agricultural Education	0	1	2	3
Home Economics Education	1	38	21	60
Total	43	248	169	460

TABLE 31
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR LOS LUNAS

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	0	21	13	34
Office Education	0	82	14	96
Trade and Industry	13	246	43	302
Agricultural Education	0	15	3	18
Home Economics Education	7	304	72	383
Total	20	668	145	833

TABLE 32
A SUMMARY OF PRESENT AND PROJECTED OCCUPATIONAL NEEDS
FOR LAS CRUCES

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	52	506	344	902
Office Education	36	832	370	1238
Trade and Industry	89	1512	740	2341
Agricultural Education	2	70	52	124
Home Economics Education	16	218	353	587
Total	195	3138	1859	5192

TABLE 33
TOTAL OCCUPATIONAL NEEDS - STATEWIDE STUDY

Summary of 32 Towns in New Mexico

Occupational Division	Vacancies	Needed in Next 5 Years	Turn-Over	Total Needs
Distributive Education	418	5425	6433	12276
Office Education	466	8484	5566	14517
Trade and Industry	1279	16188	15690	33157
Agricultural Education*	110	677	667	1454
Home Economics Education	204	3176	3945	7325
Total	2477	33951	32301	68729

*Includes only those agricultural businesses within the city limits.

TABLE 34
Eleven Vocational Positions in Distributive Education
in Gallup, Grants, and Farmington
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	3	67	57	127
Sales Managers	0	5	8	13
Service Station Managers	2	34	113	149
Salesmen	8	57	136	201
Insurance Salesmen	1	7	5	13
Sales Clerks	14	205	331	550
Routemen	0	30	59	89
Filling Station Attendants	1	53	168	222
Stock Boys	1	70	187	258
Hotel and Restaurant Managers	0	9	23	32
Motel Managers	0	18	18	36
Totals	30	555	1105	1690

TABLE 35

Nineteen Vocational Positions in Office Education
in Gallup, Grants, and Farmington
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Office Managers	4	20	25	49
Bank Cashiers	0	14	12	26
Bookkeepers and Cashiers	5	72	129	206
Posting Clerks	0	5	5	10
General Office Clerks	9	65	94	168
Tellers	0	59	27	86
File Clerks	0	3	5	8
Receptionists and Information Clerks	1	10	26	37
Mail Clerks	0	3	8	11
Office Machine Operators	0	11	16	27
Secretaries	4	83	91	178
Stenographers and Typists	8	22	43	73
Stock Clerks	1	10	16	27
Telephone Operators	0	4	9	13
Financial Institution Managers	0	13	14	27
Checkers	0	15	36	51
Desk Clerks	1	9	8	18
Accounting Clerks	0	12	13	25
File Clerks	0	3	4	7
Totals	33	453	581	1047

TABLE 36
Thirty-Four Vocational Positions in Trade and Industry Education
in Gallup, Grants, and Farmington
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Instructional Aides	30	100	100	230
Draftsmen	0	10	17	27
Beauticians	3	12	17	32
Medical Laboratory Technicians	2	17	12	31
Silversmiths	2	15	4	21
Branch Managers	1	7	6	14
Boiler Operators	4	20	12	36
Service Managers	2	4	14	20
Warehouse Laborers	6	24	35	65
General Foremen	4	3	10	17
Linemen	2	10	21	33
Messengers and Delivery Boys	1	2	21	24
Locker Room Attendants	1	180	72	253
Mail Carriers	0	9	12	21
Barbers	4	5	22	31
Bartenders	7	22	28	57
Waiters and Waitresses	5	32	279	316
Nurses' Aides and Orderlies	1	25	87	113
Janitors	6	74	114	194
Welders	1	51	30	82

TABLE 36
(continued)

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Petroleum Production Occupations	0	10	10	20
Construction Machinery Operators	0	1	26	27
Asbestos Workers	0	23	8	31
Drivers: Bus, Taxi, Truck	25	46	152	223
Riggers	0	0	18	18
Shooters	0	23	12	35
Drillers	0	36	366	402
General Automobile Mechanics	6	69	110	185
Household Appliance Repairmen	2	21	9	32
Maintenance Mechanics	6	56	56	118
Mineral Extraction Foremen	2	21	516	539
Tractor Operators	0	0	15	15
General Laborers	8	66	259	333
Construction Laborers	0	0	17	17
Totals	131	994	2487	3612

TABLE 37

Four Vocational Positions in Agricultural Education
in Gallup, Grants, and Farmington
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Maintenance Mechanics	0	12	2	14
Butchers and Meat Cutters	1	12	7	20
Warehouse Laborers	0	0	16	16
General Foremen	0	11	0	11
Totals	1	35	25	61

TABLE 38

Six Vocational Positions in Home Economics Education
in Gallup, Grants, and Farmington
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Maids and Housemen	0	66	80	146
Cooks	10	90	155	255
Cafeteria Waiters	0	0	14	14
Kitchen Workers	5	93	162	260
Laundry and Cleaning Workers	1	1	11	13
Housekeepers, Stewards and Hostesses	1	10	18	29
Totals	17	260	440	717

TABLE 39
Four Vocational Positions in Distributive Education
in Raton, Clayton, and Springer
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	0	9	3	12
Sales Clerks	3	43	22	68
Stock Boys	0	5	7	12
Filling Station Attendants	1	11	13	25
Totals	4	68	45	117

TABLE 40
Six Vocational Positions in Office Education
in Raton, Springer, and Clayton
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	4	80	44	128
Checkers	0	4	9	13
General Office Clerks	0	7	14	21
Tellers	0	8	3	11
Secretaries	4	14	15	33
Stenographers and Typists	1	10	10	21
Totals	9	123	95	227

TABLE 41

Twelve Vocational Positions in Trade and Industry Education in Raton, Springer, and Clayton Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Waiters and Waitresses	9	43	91	143
Practical Nurses	0	10	6	16
Nurses' Aides and Orderlies	4	13	21	38
Ushers	0	5	6	11
Janitors	1	4	4	9
Welders	0	7	3	10
Painters	1	7	2	10
Drivers: Bus, Taxi, Truck	3	14	24	41
General Automobile Mechanics	10	14	15	39
General Laborers	2	21	20	43
Group Workers	21	6	20	47
Plumbers and Steamfitters	7	19	26	52
Totals	58	163	238	459

TABLE 42

Three Vocational Positions in Agricultural Education
in Raton, Springer, and Clayton
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Grain, Flour, and Feed Millers	0	5	4	9
Drivers: Bus, Taxi, Truck	0	1	3	4
Grain and Feed Mill Laborers	0	0	5	5
Totals	0	6	12	18

TABLE 43

Four Vocational Positions in Home Economics Education in Raton, Springer, and Clayton Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Maids and Housemen	2	18	9	29
Cooks	7	22	29	58
Kitchen Workers	1	23	30	54
Special Diet Workers	0	10	15	25
Totals	10	73	83	166

TABLE 44
Six Vocational Positions in Distributive Education
in Alamogordo, Cloudcroft, and Ruidoso
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	10	9	13	32
Salesmen	3	24	26	53
Sales Clerks	3	44	50	97
Filling Station Attendants	2	26	250	278
Stock Boys	0	68	28	96
Sales Managers	0	53	3	56
Totals	18	224	370	612

TABLE 45
Seven Vocational Positions in Office Education
in Alamogordo, Cloudcroft, and Ruidoso
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	0	50	18	68
Secretaries	0	16	30	46
Financial Institution Managers	0	19	17	36
Checkers	3	10	3	16
Tellers	0	6	5	11
General Office Clerks	0	4	8	12
Stock Clerks	3	5	2	10
Totals	6	110	83	199

TABLE 46

Nineteen Vocational Positions in Trade and Industry Education in Alamogordo, Cloudcroft, and Ruidoso Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Radio Announcers	0	6	4	10
Service Managers	0	4	6	10
Parts Managers	0	4	8	12
Contractors	0	0	21	21
Messengers and Delivery Boys	0	1	9	10
Waiters and Waitresses	2	38	73	113
Barbers	2	1	8	11
Practical Nurses	2	12	3	17
Pin Boys	0	3	32	35
Nurses' Aides and Orderlies	0	25	12	37
Janitors	0	14	10	24
Sheetmetal Workers	0	0	24	24
Brick and Stone Masons and Tile Setters	0	0	75	75
Drivers: Bus, Taxi, Truck	0	14	32	46
General Automobile Mechanics	7	18	34	59
Television Repairmen	0	11	5	16
Warehouse Laborers	0	10	17	27
Clean-Up Men	0	0	15	15
General Laborers	0	4	10	14
Totals	13	165	398	576

TABLE 47
Two Vocational Positions in Agricultural Education
in Alamogordo, Cloudcroft, and Ruidoso
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Animal Caretakers	0	11	7	18
Trades and Services Laborers	0	0	15	15
Totals	0	11	22	33

TABLE 48

Three Vocational Positions in Home Economics Education in Alamogordo, Cloudcroft, and Ruidoso Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Cooks	0	19	219	238
Kitchen Workers	0	12	35	47
Maids and Housemen	1	9	15	25
Totals	1	40	269	310

TABLE 49

Fourteen Vocational Positions in Distributive Education in Albuquerque, Los Lunas, Belen, and Socorro Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Hotel and Restaurant Managers	0	24	13	37
Retail Managers	6	144	104	254
Buyers and Department Heads	2	23	13	38
Sales Managers	4	36	37	77
Service Station Managers	2	28	33	63
Insurance Salesmen	4	35	15	54
Real Estate Salesmen	12	24	25	61
Securities Salesmen	2	82	1	85
Sales Clerks	23	538	473	1034
Motel Managers	0	5	51	56
Routemen	2	118	75	195
Filling Station Attendants	9	135	284	428
Stock Boys	0	33	73	106
Salesmen	45	650	364	1059
Totals	111	1875	1561	3547

TABLE 50
Twenty-Six Vocational Positions in Office Education
in Albuquerque, Los Lunas, Belen, and Socorro
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Accounting Clerks	1	24	12	37
Credit Men	1	14	13	28
Administrative Secretaries	1	17	3	21
Office Managers	1	73	7	81
Financial Institution Managers	2	17	50	69
Bookkeeping Machine Operators	0	13	11	24
Checkers	2	21	38	61
General Office Clerks	12	725	390	1127
Tellers	0	70	37	107
New-Account Clerks	0	22	4	26
File Clerks	2	52	22	76
Receptionists and Information Clerks	1	66	86	153
Service Clerks	0	16	4	20
Office Machine Operators	2	43	19	64
Key-Punch-Duplicator Operators	0	24	14	38
Paymasters, Payroll Clerks and Timekeepers	0	26	7	33
Post Office Clerks	20	98	45	163
Secretaries	14	1090	355	1459
Shipping and Receiving Clerks	1	40	10	51
Statistical Clerks	0	200	111	311
Stenographers and Typists	11	729	346	1086
Clerk-Typists	8	1215	459	1682
Stock Clerks	8	119	62	189
Telephone Operators	3	95	37	135
General Clerks	0	10	19	29
Bookkeepers and Cashiers	4	242	234	480
Totals	94	5061	2395	7550

TABLE 51

Fifty-Six Vocational Positions in Trade and Industry Education in Albuquerque, Los Lunas, Belen, and Socorro Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Personnel Managers	2	17	8	27
Airplane Pilots	3	8	4	15
Dancers	1	9	8	18
Draftsmen	5	47	21	73
Aeronautical Draftsmen	0	100	20	120
Electrical Draftsmen	0	30	0	30
Mechanical Draftsmen	0	45	32	77
Photographers	0	25	14	39
Electronic Equipment Operators	0	206	36	242
Service Managers	0	26	7	33
Production Managers	0	46	17	63
General Foremen	0	41	18	59
Messengers and Delivery Boys	2	397	40	439
Laboratory Assistants	0	71	55	126
Mail Carriers	0	90	24	114
Medical Laboratory Technicians	6	113	34	153
Physicians' and Dentists' Assistants and Attendants	0	24	23	47
X-Ray Technicians	2	50	22	74
Waiters and Waitresses	15	324	352	691
Agents and Appraisers	6	47	6	59

TABLE 51
(continued)

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bus Boys	6	31	18	55
Barbers	6	23	53	82
Beauticians	24	93	62	179
Practical Nurses	8	188	50	246
Nurses' Aides and Orderlies	8	755	336	1099
Guards and Watchmen	2	54	20	76
Policemen	24	149	56	229
Janitors	7	396	153	556
Porters	12	111	4	127
Printers	2	14	98	114
Pressmen	4	25	10	39
Jewelers and Watchmakers	2	8	19	29
Machinists	9	54	17	80
Machine Shop Operators	0	35	8	43
Welders	1	70	33	104
Electricians	12	71	39	122
Construction Machinery Operators	1	45	42	88
Brick and Stone Masons and Tile Setters	2	29	14	45
Carpenters	2	34	60	96
Painters	5	68	51	124

TABLE 51
(continued)

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Plumbers and Steamfitters	2	91	76	169
Drivers: Bus, Taxi, Truck	7	316	102	425
Linemen and Servicemen, T&T	0	750	203	953
Miscellaneous Equipment Operators	0	82	194	276
Millwrights	0	43	10	53
General Automobile Mechanics	15	174	216	405
Household Appliance Repairmen	13	103	31	147
Building Maintenance Men	35	145	74	254
Warehouse Laborers	0	78	94	172
Construction Foremen	0	24	25	49
Transportation, Communication, and Utilities Foremen	0	46	9	55
Parking Lot Attendants	0	60	12	72
Packers, Wrappers, and Craters	3	34	9	46
Electrician Apprentices	0	54	35	89
General Laborers	48	535	569	1152
Construction Laborers	5	40	145	190
Totals	307	6544	3688	10539

TABLE 52
Seven Vocational Positions in Agricultural Education
in Albuquerque, Los Lunas, Belen, and Socorro
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Agricultural Products Inspectors	8	0	0	8
Yardmen	0	15	19	34
Butchers and Meat Cutters	0	7	16	23
Dairy Farm Hands	2	7	26	35
General Farm Hands	0	15	65	80
Grounds Keepers	1	55	2	58
Packers, Wrappers, and Craters	0	15	15	30
Totals	11	114	143	268

TABLE 53

Thirteen Vocational Positions in Home Economics Education in Albuquerque, Los Lunas, Belen, and Socorro Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Nursemaids	0	1	14	15
Maids and Housemen	12	123	180	315
Housekeepers, Stewards, and Hostesses	1	49	47	97
Cooks	26	216	185	427
Cafeteria Waiters	7	66	25	98
Kitchen Workers	2	195	227	424
Special Diet Workers	0	15	7	22
Bakers	0	65	11	76
Dressmakers and Seamstresses	0	16	19	35
Laundry and Cleaning Workers	13	148	100	261
Baker's Helpers	0	56	23	79
Sewing Machine Operators	10	56	33	99
Matrons	0	209	54	263
Totals	71	1215	925	2211

TABLE 54
Nine Vocational Positions in Distributive Education
in Artesia, Carlsbad, and Roswell
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	4	52	81	137
Sales Managers	0	10	11	21
Salesmen	13	105	200	318
Sales Clerks	14	183	255	452
Routemen	0	13	35	48
Filling Station Attendants	20	69	162	251
Hotel and Restaurant Managers	0	4	10	14
Service Station Managers	6	14	40	60
Stock Boys	1	209	110	320
Totals	58	659	904	1621

TABLE 55
Nine Vocational Positions in Office Education
in Artesia, Carlsbad, and Roswell
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	7	98	111	216
Checkers	11	69	54	134
General Office Clerks	1	74	92	167
Receptionists and Information Clerks	3	7	23	33
Secretaries	6	53	88	147
Stenographers and Typists	4	44	27	75
Telephone Operators	1	24	24	49
Office Machine Operators	7	5	3	15
Desk Clerks	0	3	8	11
Totals	40	377	430	847

TABLE 56
Twenty-One Vocational Positions in Trade and Industry Education
in Artesia, Carlsbad, and Roswell
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Messengers and Delivery Boys	0	16	94	110
Bartenders	3	26	49	78
Waiters and Waitresses	22	689	510	1221
Policemen	0	25	5	30
Janitors	2	177	103	282
Printers	1	32	5	38
Welders	2	28	14	44
Miners and Mining Machine Operators	1	30	49	80
Drivers: Bus, Taxi, Truck	5	81	63	149
Linemen and Servicemen, T&T	1	10	19	30
General Automobile Mechanics	5	77	33	115
Maintenance Mechanics	6	44	19	69
Retail and Wholesale Trade Foremen	0	17	7	24
General Laborers	2	44	73	119
Draftsmen	5	6	10	21
Nurses' Aides and Orderlies	1	3	60	64
Electricians	0	23	14	37
Carpenters	3	10	52	65
Warehouse Laborers	0	20	24	44
Plumbers and Steamfitters	0	5	6	11
Beauticians	3	13	25	41
Totals	62	1376	1234	2672

TABLE 57
Four Vocational Positions in Agricultural Education
in Artesia, Carlsbad, and Roswell
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Grounds Keepers	17	9	5	31
General Laborers	5	42	16	63
Butchers and Meat Cutters	0	17	16	33
Farm Mechanics	0	10	3	13
Totals	22	78	40	140

TABLE 58
Seven Vocational Positions in Home Economics Education
in Artesia, Carlsbad, and Roswell
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Sales Clerks	1	5	35	41
Maids and Housemen	8	29	59	96
Housekeepers, Stewards and Hostesses	1	9	20	30
Cooks	1	174	111	286
Kitchen Workers	5	328	269	602
Laundry Workers	7	84	57	148
Nurse Maids	1	13	11	25
Totals	24	642	562	1228

TABLE 59

Seven Vocational Positions in Distributive Education in Lordsburg, Silver City, Deming, and Truth or Consequences Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	0	14	8	22
Wholesale Managers	0	2	10	12
Sales Clerks	1	16	45	62
Filling Station Attendants	8	43	89	140
Service Station Managers	1	10	14	25
Stock Boys	1	17	13	31
Hotel and Restaurant Managers	0	0	15	15
Totals	11	102	194	307

TABLE 60

Nine Vocational Positions in Office Education
in Lordsburg, Silver City, Deming, and Truth or Consequences
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	1	32	51	84
Checkers	1	6	37	44
General Office Clerks	0	14	46	60
Tellers	0	30	21	51
Secretaries	13	41	37	91
Desk Clerks	0	10	42	52
Insurance Clerks	0	10	11	21
Receptionists and Information Clerks	0	35	26	61
Stenographers and Typists	0	8	17	25
Totals	15	186	288	489

TABLE 61
Fourteen Vocational Positions in Trade and Industry Education
in Lordsburg, Silver City, Deming, and Truth or Consequences
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Medical Laboratory Technicians	0	22	16	38
Practical Nurses	4	56	30	90
Nurses' Aides and Orderlies	0	208	128	336
Policemen	1	27	8	36
Machinists	60	11	15	86
Electricians	1	14	19	34
Miners and Mining Machine Operators	30	40	61	131
Construction Machinery Operators	1	6	21	28
Drivers: Bus, Taxi, Truck	0	9	40	49
General Automobile Mechanics	1	15	12	28
Maintenance Mechanics	1	11	28	40
General Laborers	3	26	64	93
Construction	0	16	1	17
Waiters and Waitresses	1	15	172	188
Totals	103	476	615	1194

TABLE 62
Two Vocational Positions in Agricultural Education
in Lordsburg, Silver City, Deming, and Truth or Consequences
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Grounds Keepers	0	12	4	16
General Laborers	0	3	3	6
Totals	0	15	7	22

TABLE 63

Four Vocational Positions in Home Economics Education in Lordsburg, Silver City, Deming, and Truth or Consequences Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Cooks	0	33	72	105
Maids and Housemen	1	16	71	88
Kitchen Workers	0	14	95	109
Laundry and Cleaning Workers	0	7	16	23
Totals	1	70	254	325

TABLE 64
Ten Vocational Positions in Distributive Education
in Lovington and Hobbs
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	0	45	21	66
Salesmen	4	27	52	83
Insurance Salesmen	5	5	0	10
Sales Clerks	2	91	70	163
Filling Station Attendants	1	41	105	147
Stock Boys	0	141	154	295
Hotel and Restaurant Managers	0	0	26	26
Insurance Salesmen	3	10	2	15
Sales Managers	0	1	10	11
Service Station Managers	0	2	13	15
Totals	15	363	453	831

TABLE 65
Eight Vocational Positions in Office Education
in Lovington and Hobbs
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Office Managers	0	9	4	13
Bookkeepers and Cashiers	0	37	47	84
Checkers	0	14	30	44
General Office Clerks	0	53	29	82
Bills and Account Collectors	0	17	5	22
Secretaries	2	31	47	80
Stenographers and Typists	0	8	14	22
Stock Clerks	0	14	6	20
Totals	2	183	182	367

TABLE 66

Twenty-Four Vocational Positions in Trade and Industry Education in Lovington and Hobbs Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Branch Managers	2	9	8	19
Service Managers	0	10	3	13
Production Managers	0	9	7	16
Messengers and Delivery Boys	0	17	7	24
Waiters and Waitresses	3	7	149	159
Janitors	0	25	30	55
Practical Nurses	0	10	4	14
Nurses' Aides and Orderlies	0	10	15	25
Sheet Metal Workers	0	2	25	27
Welders	2	19	80	101
Construction Machinery Operators	0	17	6	23
Carpenters	6	26	18	50
Drivers: Bus, Taxi, Truck	5	29	39	73
Miscellaneous Equipment Operators	0	16	2	18
Rotary Drillers	0	7	6	13
General Automobile Mechanics	5	36	26	67
Electrical Automotive Equipment Repairmen	2	14	4	20
Building Maintenance Men	1	12	13	26
Construction Foremen	0	12	8	20
Household Appliance Servicemen	0	16	2	18
Warehouse Laborers	0	17	10	27
Rotary Driller Helpers	0	18	18	36
General Laborers	0	19	215	234
Construction Laborers	4	23	14	41
Totals	30	380	709	1119

TABLE 67
Three Vocational Positions in Agricultural Education
in Lovington and Hobbs
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Butchers and Meat Cutters	0	17	9	26
Butchers and Meat Cutters' Helpers	0	2	7	9
Department Foremen	0	4	3	7
Totals	0	23	19	42

TABLE 68

Seven Vocational Positions in Home Economics Education
in Lovington and Hobbs
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Branch Managers	0	10	2	12
Cooks	0	9	21	30
Maids and Housemen	0	48	16	64
Bus Boys	0	0	10	10
Packers, Wrappers, and Craters	0	10	3	13
Laundry and Cleaning Workers	0	3	15	18
Sewing Machine Operators	8	7	0	15
Totals	8	87	67	162

TABLE 69
Twelve Vocational Positions in Distributive Education
in Clovis, Portales, Tucumcari, and Santa Rosa
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	2	25	25	52
Sales Managers	0	3	17	20
Service Station Managers	1	3	38	42
Insurance Agents	6	39	14	59
Salesmen	6	38	20	64
Insurance Salesmen	1	10	3	14
Real Estate Salesmen	6	19	4	29
Sales Clerks	9	127	209	345
Filling Station Attendants	15	29	138	182
Stock Boys	0	44	83	127
Buyers and Department Heads, Stores	0	10	3	13
Routemen	0	11	11	22
Totals	46	358	565	969

TABLE 70

Eight Vocational Positions in Office Education
in Clovis, Portales, Tucumcari, and Santa Rosa
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	22	60	99	181
Checkers	0	12	36	48
General Office Clerks	2	47	47	96
Tellers	0	19	2	21
Loan-Approval Agents	0	6	5	11
Receptionists and Information Clerks	0	5	50	55
Secretaries	5	71	58	134
Stenographers and Typists	1	10	5	16
Totals	30	230	302	562

TABLE 71

Twenty-Eight Vocational Positions in Trade and Industry Education in Clovis, Portales, Tucumcari, and Santa Rosa Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
County and City Officials	0	14	0	14
Radio Announcers	1	1	15	17
Messengers and Delivery Boys	0	5	29	34
Agents and Appraisers	0	4	23	27
Bartenders	0	4	36	40
Bellmen	0	2	27	29
Waiters and Waitresses	6	227	756	989
Bus Boys	0	0	32	32
Beauticians	3	6	17	26
Fire Marshals	2	0	18	20
Janitors	1	50	71	122
Elevator Operators	0	0	15	15
Shoe Repairmen	0	5	5	10
Electricians	1	20	55	76
Construction Machinery Operators	1	33	32	66
Drivers: Bus, Taxi, Truck	1	23	77	101
Miscellaneous Equipment Operators	4	15	8	27
General Automobile Mechanics	5	28	33	66
Household Appliance Repairmen	1	10	6	17
Warehouse Laborers	0	9	88	97
General Laborers	2	14	46	62
Automobile Body, Fender, and Radiator Mechanics	2	8	6	16
Construction Laborers	1	2	51	54
Social and Welfare Workers	0	0	25	25
Contractors	0	10	20	30
Nurses' Aides and Orderlies	0	0	16	16
Painters	0	15	2	17
Carpenters' Apprentices	0	6	6	12
Totals	31	511	1515	2057

TABLE 72

Eleven Vocational Positions in Agricultural Education in Clovis, Portales, Tucumcari, and Santa Rosa Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
General Foremen	2	11	7	20
Salesmen	1	15	3	19
Elevator Operators	0	7	2	9
General Farm Hands	3	8	28	39
Grounds Keepers	0	14	11	25
Grain, Flour and Feed Millers	0	11	13	24
Butchers and Meat Cutters	0	45	31	76
Tractor Mechanics	1	6	4	11
Maintenance Mechanics	0	10	2	12
Grain and Feed Mill Laborers	0	0	11	11
Slaughtering and Meat Packing Laborers	0	15	9	24
Totals	7	142	121	270

TABLE 73
Seven Vocational Positions in Home Economics Education
in Clovis, Portales, Tucumcari, and Santa Rosa
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Maids and Housemen	1	10	110	121
Cooks	4	99	94	197
Kitchen Workers	1	41	159	201
Laundry and Cleaning Workers	0	24	30	54
Housekeepers, Stewards and Hostesses	1	3	10	14
House Mothers	0	5	5	10
Upholsterers	1	4	3	8
Totals	8	186	411	605

TABLE 74

Eleven Vocational Positions in Distributive Education in Santa Fe, Taos, Espanola, Los Alamos, and Las Vegas Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Retail Managers	8	25	37	70
Buyers and Department Heads, Stores	0	11	8	19
Salesmen	5	54	30	89
Real Estate Salesmen	2	4	4	10
Sales Clerks	19	192	207	418
Filling Station Attendants	2	24	246	272
Hotel and Restaurant Managers	2	5	9	16
Routemen	0	25	23	48
Stock Boys	2	30	96	128
Service Station Managers	0	1	12	13
Motel Managers	0	1	6	7
Totals	40	372	678	1090

TABLE 75

Twelve Vocational Positions in Office Education
in Santa Fe, Taos, Espanola, Los Alamos, and Las Vegas
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Bookkeepers and Cashiers	1	98	108	207
Property-Repair-Authorization Clerks	5	20	5	30
Accounting Clerks	38	0	1	39
Cryptographers	2	10	4	16
Checkers	2	46	34	82
General Office Clerks	53	77	94	224
Tellers	1	35	30	66
Secretaries	12	94	80	186
Stenographers and Typists	47	21	21	89
Stock Clerks	1	6	10	17
Telephone Operators	4	11	8	23
Desk Clerks	1	25	7	33
Totals	167	443	402	1012

TABLE 76

Thirty-Five Vocational Positions in Trade and Industry Education in Santa Fe, Taos, Los Alamos, and Las Vegas Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Floral Designers	0	8	30	38
Reporters	10	10	1	21
Security Officers	0	51	12	63
Civil Engineers	4	0	9	13
Library Assistants and Attendants	1	9	16	26
Draftsmen	6	36	16	58
Beauticians	7	13	25	45
Messengers and Delivery Boys	2	2	8	12
Data Analysts	3	6	4	13
Radio Operators	0	8	15	23
Bartenders	1	21	16	38
Practical Nurses	7	20	7	34
Waiters and Waitresses	6	101	251	358
Ward Attendants	32	0	0	32
Bus Boys	0	2	15	17
Construction Machinery Operators	0	13	35	48
Barbers	0	6	18	24
Painters	0	1	18	19
Ushers	0	6	2	8
Linemen	4	19	0	23
Janitors	20	57	44	121
Firemen	1	27	8	36
Printers	0	4	13	17
Machinists	5	5	25	35
Machine Shop Operators	0	20	5	25

TABLE 76
(continued)

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Carpenters	0	9	6	15
Plumbers and Steamfitters	0	16	6	22
Drivers: Bus, Taxi, Truck	1	29	14	44
General Automobile Mechanics	19	80	35	134
Household Appliance Repairmen	6	22	12	40
Building Maintenance Men	3	58	8	69
Machinists' Apprentices	5	30	9	44
General Laborers	36	70	93	199
Recreational Leaders	0	15	15	30
Physicists (Technicians)	35	40	42	117
Totals	214	814	817	1845

TABLE 77
Four Vocational Positions in Agricultural Education
in Santa Fe, Taos, Espanola, Los Alamos, and Las Vegas
Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Grounds Keepers	4	4	9	17
Butchers and Meat Cutters	0	4	0	4
Yardmen	0	1	12	13
Dairy Farm Hands	0	0	15	15
Totals	4	9	36	49

TABLE 78

Nine Vocational Positions in Home Economics Education in Santa Fe, Taos, Espanola, Los Alamos, and Las Vegas Showing Greatest Present and/or Projected Occupational Personnel Needs

Job Title	Vacancies	Projected Needs	Turn-Over	Total
Maids and Housemen	11	30	27	68
Cooks	20	45	27	92
Bakers	2	10	5	17
Laundry and Cleaning Workers	30	26	8	64
Kitchen Workers	1	54	156	211
Dressmakers and Seamstresses	4	7	1	12
Retail Managers	0	0	12	12
Cafeteria Workers	8	3	1	12
Sales Clerks	0	0	20	20
Totals	76	175	257	508

CHAPTER IV
Summary, Conclusions, and Recommendations

It should be emphasized that the vast scope of the statewide study of occupations has made it possible to present only a summary of the study in this report. For example, the Albuquerque portion of the study alone represents more than 200 pages in tabular data.

Data have been presented in separate reports for each of the New Mexico population centers studied. These data include a projection for all occupations, wage scales currently paid, educational level desired for each occupation, additional training needed, the number of positions demanding vocational graduates, and the number and kind of positions which employers would accept on the job trainees participating in vocational programs. Persons interested in detailed information concerning specific population centers should consult the reports for each center which were previously distributed.

The total present and projected needs by cities and cumulatively, show that the current programs in vocational education must be expanded to meet the state's growing needs. This consideration is especially true when the following facets are reviewed:

1. Although every effort was made to locate each firm or business in each population center, all firms could not be identified, some presented only partial information, thus voiding this source, and some refusals were experienced.

2. Data were conservative, especially for the small businessman who typically does not project long-range plans. Many of the 11,000 firms and businesses were of this nature.

3. Projections in terms of needs by firms and businesses probably were not made on the basis of expanding population and the possible influx in the future by small industry. This latter potential for the state could have much impact upon future needs.

4. Projected needs in home economics is likely to be quite conservative as categories for this division were not clearly defined at the time of the study. The broader need for all students for food and nutritional studies , clothing and sewing, child care and home management, and other dimensions of home economics were not considered in the study.

5. The data for agricultural education are incomplete. An analysis of data after their collection revealed that interviewers in most cases neglected to contact agricultural businesses and firms outside the city limits. (Most often such businesses are located on the outskirts of towns and cities). It should be further considered that interviews did not encompass the present and projected needs of New Mexico's second largest producing industry. The state's 14,600 farms and ranches which gross annually more than 265 million dollars in products marketed and have 1.3 billion dollars in assets.

Expansion in New Dimensions Suggested

It readily can be concluded through a review of data concerning the respective population centers that administrators and vocational educators should:

1. Plan appropriate programs to up grade persons in occupations which employers have indicated that such training would increase workers' earning power.

2. Develop both short and long range adult vocational education programs to meet unique needs. For example, the data indicate a vast number of personnel needed in service type positions such as maids, cooks, service station attendants, and similar types of positions. Such positions likely lend themselves to short intensive vocational programs. Other more skilled and technical programs obviously would demand highly specialized training and for greater periods of time.

The data concerning occupational needs in highest demand were realized by combining selected population centers designated by Dr. M.G. Hunt, State Director of Vocational Education. No attempt was made by Dr. Hunt or the writers to support

or refute these centers as future area vocational schools. They were used simply as what seemed to be logical centers for comparison and exploration as area schools. Before the State Board of Education makes a final decision and designates selected area schools, it would likely want to systematically analyze the following:

1. The geographical areas' financial and population bases.

2. The availability of a variety of adequate training centers in business and industry. (These data have been presented in individual reports for the population centers).

3. The willingness, or lack of it, upon school districts to unite in a post high school area vocational school, and in some cases, transporting high school pupils to vocational centers for an effective use of more and better vocational offerings.

4. The commuting distances feasible for the areas' participants.

5. Anticipated population and industrial growth by geographical areas.

6. The total per cent of high school graduates by areas not earning college degrees. (Approximately 80 per cent of the state's high school graduates <u>are not</u> earning a college degree).

7. Needed programs in vocational education for geographical areas experiencing high drop out rates.

It is most apparent that legislative action must be taken to permit needed further development of area vocational schools in New Mexico. Current statutes are far too restrictive and allow little latitude for future development of such schools.

Efforts should be made by the State Board of Education to explore the possibility of cooperatively planning and conducting future occupational studies with the Employment Security Commission with shared financial responsibilities. Such studies

should provide an identification (as this study has attempted) of occupational needs classified according to the respective vocational divisions. Further, five year intervals are probably maximum periods between such studies as occupational needs change rapidly.

A Final Word of Caution

Data presented in this summary and individual reports previously distributed should be used with discretion. Educators and others planning vocational programs should remember that 20 per cent of the population (nationally) move every five years to a state other than that of their birth. Good vocational programs and well trained vocational graduates provide opportunity for excellent mobility within and outside the state. For this reason, vocational programs should not be geared totally to local or area needs.

Finally, since data alone rarely tell a complete story or suggest all considerations, vocational programs should be developed through careful study and planning by the most qualified personnel available. For this reason, local and area populations interested in the development of new or expanded vocational programs should make every available use of Dr. M. G. Hunt and members of his vocational staff. Where problems are of a unique nature and scope, Dr. Hunt can also secure qualified professionals through the U.S. Office of Education.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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REPORT

on the WORKSHOP

for
TEACHERS OF
VOCATIONAL NURSING

Fresno, April 8-11, 1963
Hotel Californian

Dedicated to

THE PURSUIT OF EXCELLENCE
IN PATIENT CARE

California State Department of Education
Bureau of Industrial Education

in cooperation with
THE CALIFORNIA STATE BOARD OF
VOCATIONAL NURSE EXAMINERS

INTRODUCTION

The services provided by the vocational nurse, as with any relatively new operation, have been subject to several significant changes. Adjustments have been made in the work assignments which necessitated changes in the training program.

The members and staff of the State Board of Vocational Nurse Examiners and the State Department of Education agreed that the best way to clarify and implement the training program to meet the needs of the current role of the vocational nurse would be through a workshop for the teachers of vocational nursing. This report is firm evidence of the success of the workshop.

Each of the many persons participating in the program is to be commended for her realistic contribution to the Pursuit of Excellence in Patient Care. The leadership and inspiration provided by Helen K. Powers, R.N., Chief of the Practical Nurse Education Section, Division of Vocational Education, U. S. Office of Education, permeated all sessions, both formal and informal.

The State Department of Education is even further in debt to the vocational nursing consultant, Maryellen Wood, R.N., Executive Secretary, State Board of Vocational Nurse Examiners, for her assistance in developing the program in content and personnel.

The organization and arrangements for the workshop were the responsibility of Van B. Lawrence, Regional Supervisor of Trade and Technical Education, working under the general supervision of Ernest G. Kramer, Chief of the Bureau of Industrial Education.

Richard M. Clowes
Chief, Division of
Instruction

Wesley P. Smith
Director of
Vocational Education

Ernest G. Kramer
Chief, Bureau of
Industrial Education

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GENERAL SESSION, Thursday morning, April 11, 1963

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Helen K. Powers 85

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Abbott, Ellen	1658 Berenda Place El Cajon	Grossmont Adult School
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AGENDA

MONDAY AFTERNOON, APRIL 8, 1963

1:00-2:00 p.m.	REGISTRATION	Mezzanine
2:00-5:00 p.m.	GENERAL SESSION	Vintage Room

CHAIRMAN: Van B. Lawrence, Regional Supervisor, Bureau of Industrial Education State Department of Education

GREETINGS: Clifton H. Linville, President-Elect California Hospital Association Administrator, Fresno Community Hospital

Maryellen Wood, Executive Secretary State Board of Vocational Nurse Examiners

KEYNOTE ADDRESSES:

Wesley P. Smith, Director of Vocational Education, California State Department of Education

Helen K. Powers, Chief, Practical Nurse Education Section, Division of Vocational-Technical Education U. S. Office of Education

TUESDAY MORNING, APRIL 9, 1963

9:00-10:15 a.m.	GENERAL SESSION	Vintage Room

TOPIC: SELECTION OF STUDENTS

PANEL MEMBERS:

Lena Visintainer, Sacramento City College, Chairman
Belva Olsen, Galileo Adult School
Alice Greenough, Compton College
Lillian Auiler, Cerritos College

10:30 a.m.-12:00 noon - SECTION MEETINGS

CHAIRMEN:

Section 1	Lena Visintainer	Plantation Room
Section 2	Belva Olsen	Plaza Room
Section 3	Alice Greenough	Mardi Gras Room
Section 4	Lillian Auiler	Garden Room

RECORDERS:

(To be selected by the group in each section)

TUESDAY AFTERNOON, APRIL 9, 1963

1:30-2:45 p.m. GENERAL SESSION Vintage Room

TOPIC: TEACHING TECHNIQUES

PANEL MEMBERS:

Helen Schee, Glendale College, Chairman
Ida Meier, Santa Barbara City College
Joan Morrison, Fullerton Junior College
Ann I. Piele, Oroville Union High School

3:00-4:30 p.m. - SECTION MEETINGS

CHAIRMEN:

Section 5	Helen Schee	Plantation Room
Section 6	Joan Morrison	Vintage Room
Section 7	Ann I. Piele	Mardi Gras Room
Section 8	Ida Meier	Garden Room

RECORDERS:

(To be selected by the group in each section)

WEDNESDAY MORNING, APRIL 10, 1963

9:00-10:15 a.m. GENERAL SESSION Vintage Room

TOPIC: PROGRAM EVALUATION

CHAIRMAN: Verna C. Berens, Member, State Board of Vocational Nurse Examiners

PANEL MEMBERS:

Dr. Mitchell P. Briggs, Executive Secretary, Accrediting Commission for Senior Colleges, Western Association of Schools and Colleges

Wilma Hiatt, Bureau of Junior College Education, Consultant, California Associate in Arts Nursing Program

Sister Mary Anita, Member, State Board of Vocational Nurse Examiners, Director, St. Mary's Hospital School of Vocational Nursing, San Francisco

WEDNESDAY MORNING (continued)

10:30 a.m.-12:00 noon - SECTION MEETINGS

CHAIRMEN:

Section 9	Juanita Speaker, Shasta College	Plantation Room
Section 10	Winifred Wilson, Orange Coast College	Vintage Room
Section 11	Marion Saunders, Antelope Valley College	Mardi Gras Room
Section 12	Frances Hoogstad, Long Beach City College	Garden Room

RECORDERS:

(To be selected by the group in each section)

WEDNESDAY AFTERNOON, APRIL 10, 1963

1:30-2:45 p.m. GENERAL SESSION Vintage Room

TOPIC: IMPLEMENTING THE CURRICULUM

CHAIRMAN: Maryellen Wood, Executive Secretary, State Board of Vocational Nurse Examiners

PANEL MEMBERS:

Leonie Soubirou, Biola School of Missionary Medicine
Laura Looper, College of Marin
Evelyn Chamberlin, Mt. San Antonio College
Grace Mitts, Sacramento City College

3:00-4:30 p.m. - SECTION MEETINGS

CHAIRMEN:

Section 13	Leonie Soubirou	Plantation Room
Section 14	Laura Looper	Vintage Room
Section 15	Evelyn Chamberlin	Mardi Gras Room
Section 16	Grace Mitts	Garden Room

RECORDERS:

(To be selected by the group in each section)

WEDNESDAY EVENING, APRIL 10, 1963

6:30-7:30 p.m.	BUFFET DINNER	Vintage Room
7:30-10:00 p.m.	INFORMAL PROGRAM	

TOPIC: COMMENTS AND QUESTIONS FROM PARTICIPANTS

CHAIRMAN: Ellen Abbott, Grossmont Adult School

RESOURCE PERSONS:

Helen K. Powers
Maryellen Wood
Van B. Lawrence

THURSDAY MORNING, APRIL 11, 1963

9:00 a.m.-12:00 noon	GENERAL SESSION	Vintage Room

CHAIRMAN: Van B. Lawrence, Regional Supervisor, Bureau of Industrial Education

TOPIC: IMPLICATIONS FOR THE FUTURE - Helen K. Powers

GENERAL SESSION

Monday Afternoon - April 8, 1963

CHAIRMAN:

Van B. Lawrence
Regional Supervisor
Bureau of Industrial Education
Sacramento

GREETINGS

Clifton H. Linville, President-Elect
California Hospital Association
Administrator, Fresno Community Hospital

I bring you greetings from the California Hospital Association to encourage you, to let you know that the hospitals of California are most appreciative of the fact that there are schools creating licensed vocational nurses to assist the hospitals in carrying out their responsibility of taking care of the sick. You might think that is a rather trite comment and rather cliche but it is a very real problem in getting adequate personnel. Did you know that there are many hospitals in California that aren't open to their fullest because there are not enough personnel - registered nurses, licensed vocational nurses to give them adequate care? I can speak with considerable authority because at Fresno Community Hospital we opened a bright new 70-bed wing last June to bring our total bed count up to 299, and to this date we have only been able to open 35 of those beds. We have been unable to recruit any registered nurses whatsoever, even to be the top level of personnel. We finally are resorting to importing registered nurses from London and Liverpool, and Ireland, and so on, where (I hate to use the word "import", it sounds like some other kind of business that I would rather not be associated with, but essentially that is what it is - recruit is the word) we are recruiting 35 of them in order to provide us with a sufficient number of personnel to finally bring the complement of our hospital up to a point where we can open the final 35 beds of this 70-bed wing.

This is but part of the total problem of lack of attention on the part of hospitals and educational groups over the past 15 or 20 years as to this problem that was gradually presenting itself to us and is now in full force. I am reminded of a speech that I made not long ago to the medical staff of Fresno Community Hospital in which was recounted to them some of the changes that have taken place in the past ten years as far as staffing patterns are concerned. We are faced with the population explosion. What has happened in the past ten years has been a change in the simple ratio of number of doctors to people. The number of doctors has been gradually declining and what this gradual decline means is that they are being forced to work more

and more through other people. As they work more and more through other people, they are asking the registered nurse to do more and more and more. Some of the things at which the doctor would have thrown up his hands in horror ten or fifteen years ago, as well as the director of nursing service, the nurse does now as a matter of routine. For example, at Fresno Community Hospital all registered nurses must be able to give I.V.'s as a part of their employment - that is routine for all registered nurses now, whereas ten or fifteen years ago it was not usual for registered nurses to give I.V.'s. What this means further is that more and more of the registered nurses' duties are being delegated down to the licensed vocational nurse, which gives us an increasing responsibility of being sure that the licensed vocational nurse is being trained up to a point where she can be a real helpmate and of real assistance to the registered nurse. And that, as far as hospitals are concerned, is one of the major problems that is facing us, to be sure that we have enough people properly trained so that they can competently carry out the responsibility as measured by the doctor and the registered nurse. We believe that this is going to be a continuing increase in responsibility in hospitals. There is going to be a continuing increase in the standards expected of the licensed vocational nurse, and this question of being licensed is going to be more and more important, as I commented a few moments ago. There was a decision handed down last year called the "Magit Case" which you may or may not have come across but those of us in hospitals are quite aware of the Magit Case. It was a Supreme Court decision that clearly set forth what can and cannot be done by people who are licensed and are not licensed. It was a general type of Supreme Court decision and it is going to very nearly exclude unlicensed people permission to do things that they have been doing rather freely in the past. It means that unless you are licensed to do something, and this has been included in your curriculum in the course of getting your license, you are not going to be able to do it. I am pretty sure that this Magit Case is something that should be more than a passing concern for those of you who are setting up the curriculum for future licensed vocational nurses.

GENERAL SESSION

Monday Afternoon - April 8, 1963

KEYNOTE ADDRESSES

Wesley P. Smith
Director of Vocational Education
California State Department of Education

Ladies, and our visitor from Washington, D.C., Maryellen, and Mr. Linville - I am not going to talk today about practical nursing, vocational nursing, or anything to do with the health occupations. I would want to indicate to you, however, that my interest in this area of occupational preparation goes back a long time because I can recall sitting on committees when I was assistant to the State Director of Vocational Education, going back 15, 17, or 18 years ago, committees composed of hospital administrators, the medical association, nurses association, trying to get ready for, and trying to remove some of the deterrents to licensure of practical nurses in California. I can recall so vividly that process, how long it took, and the difficulties involved. I know what licensure has meant to California, I know what it has meant to the hospitals, I know what it has meant to the health team, and I know what it is going to mean in the future.

I bring you greetings from the Superintendent of Public Instruction, Dr. Max Rafferty, who, although not in office too long, has proved to be a real supporter of vocational education. He is a proponent of what we stand for. I am asked wherever I go, "How are you getting along with Max, how is Max doing for vocational education?" Like Van, I don't follow the script always and I am taking advantage of this opportunity to indicate to you that our State Superintendent of Public Instruction, Dr. Max Rafferty, is, in fact, one of the strong proponents for what you people stand for, and what I stand for.

I am bringing you greetings from the entire Department of Education, and I also bring you commendations from all of us who sit to one side and watch you work. The California State Board for Nurse Examiners and the State Department of Education have made a fine team, a fine partnership, over the years. Many people have suggested that we have a special supervisor for practical nurse or vocational nurse training on our staff. We have not seen fit to add such a staff person because we have such fine help from the staff of the Board of Examiners. To have anyone on our staff would be to merely duplicate what these competent people are doing, and there is no need for us to compete in that way because we are going down the road together. We chose to do that a long time ago and we are continuing to do it. Besides, as already indicated, the price is right. Perhaps some of our money can be better put to this kind of an undertaking - some other things that the State Board can't do, and that is what makes it such a fine team relationship.

There is a necessity for division of labor in many aspects of our operations these days, and I think that the many complications in this field of nursing preparation demand a division of labor, too. It seems to me that the design or the development of a prescription for what is necessary as a licensed vocational nurse in California is a responsibility of the State Board of Examiners of Vocational Nurses and is not a role or a responsibility of the State Department of Education. And I think, too, that the preparation for that image, that legal image, is the role or responsibility for the schools. I do feel that the development of the prescription of the job to be trained for is in the right hands, and I think, too, from what has been happening in California, the filling of that prescription has been pretty well done, too.

I just came from a meeting at the Hacienda, near here, where the California Business Education Association is meeting. They have as their theme for their conference, "Partners in Progress." I say to you as I speak these few minutes today, for the first time in my quite a few years of experience as State Director of Vocational Education I don't know of a better example of partners in progress than the kind of partnership represented around these tables today.

I am going to share with you for just a few minutes some personal thoughts and some notions keyed to your theme, as I understand it, the "Pursuit to Excellence in Patient Care." Some of these things I am going to say are trite, some of them you have heard in your education courses. I will give a little different twist to them and at least the words might be a little different, maybe the emphasis too. I want to identify, because I think it has pertinence to your conference, a few factors that I feel must be present if excellence is to be approached - excellence in your field, of course, because this is what you are talking about, but these factors will apply in the preparation of any occupation. When I say "approach" excellence I will just note that in my own book I have an idea that excellence is perfection, and I don't think we ever actually reach perfection because the closer we get - the further it moves away. I want to suggest to you some factors that promote progress toward illusive perfection. I want to say at the beginning - and I will say the same thing at the end of my remarks that my feeling is that every one of these factors must be present if we are to come close to this excellence we seek. It is my feeling that the absence of any one of these factors that I am going to list destroys any chance of achieving this nearness to excellence that we seek. Furthermore, I would make the observation now that each one of these factors bolsters the other. To the degree that one lags or sags is the degree to which other factors must be strengthened to compensate for those sagging or lagging factors. There is no special order to these, they are just as they occurred to me although there may be some logic to the order which I selected.

I have already indicated in some of my general comments at least the roots of my first factor. Now it stands to reason - it just seems to me so logical - that if we are to fashion something we must have something to go by, a prototype of some kind, an image of some kind, a target, if you will. And I will say, furthermore, that the target must be distinctly seen and must not be fuzzy around the edges because to the degree that it is fuzzy is to the

degree we might well miss our mark. I indicated a few minutes ago that the determination of what needs to be done - this thing that is going to be fashioned, and in this instance we are talking about a licensed vocational nurse, one that will bring excellence to patient care, this prototype, this object to be made, to be fashioned by us in education, is a task the Board, assisted by the Hospital Association, the Medical Association, and all others must accept. To the degree that such a pattern is absent, is the degree that we will fail in achieving excellence.

My second factor has to do with the selection of students. Here, again, I feel that there is the need to identify the initial characteristics of the future licensed vocational nurses realistically. Now this is just as important as knowing what we are training for, because we must know the materials we need - we must know the materials and their strengths as we start - we must determine what the specifications of these materials are if we are going to fashion them into this prototype or this object which has been identified for us. And, I say again, to the degree that we are inaccurate in the specifications for these young people who are going to be selected as trainees, to the degree we are inaccurate in the specifications required of those people, and to the degree that we depart from those specifications as we make our choices, is the degree to which we will miss the target of perfection we seek.

Another factor is what I am calling the design of the curriculum. I have a strong notion that the curriculum in this field, as is the case for the curriculum in any occupational preparation field, must be tailor-made to meet the needs of the occupation. The target, the end product we have identified for us, depends upon the material we had to begin with and the curriculum that joins the two, because the curriculum is that device that takes this person and puts him up here. To the degree that we leave to chance, to the degree that we are not deliberate, to the degree that we are not honest, to the degree that we succumb to the temptation of using a "cafeteria" approach to the design of curriculum and selecting subject matter, again, is the degree to which we will miss this mark of perfection we have set for us in the design of a curriculum.

I have another factor which I have identified as the competency of the teacher. As I talk about competency of the teacher in this instance, I am talking about the competency of the teacher as measured by his or her proficiency in the subject-matter involved. One of the precepts in vocational education that becomes stronger and stronger in my mind every year, every day, if possible, is that above all things the person who is going to teach a craft, a skill, an occupation, and especially an occupation such as you represent, must be as proficient in that occupation as you expect the person being trained to be proficient. And to the degree that the person who teaches is less than proficient is the degree again that we will miss the target and it is to the degree that this person will be less than proficient.

My next factor is method of instruction. Regardless of what some of my colleagues may think, whether they are Admirals, or whether they be PhDs, whatever they may be, I feel that subject matter mastery alone is not sufficient as teachers attempt to prepare for occupations. I have a strong notion

that, in addition to the mastery of the subject matter, the teacher must be a master of the technique for imparting that subject matter, and I don't think that either one is dispensable. Each is necessary and I can't place a priority on either one - if we are going to teach, we must have both.

May I indicate quickly another factor, and that factor has to do with a sufficient time to accomplish the task. Some of us happen to be operating right now in a series of crash programs in California and across this country under the federal Manpower Training and Development Act. Mr. Van B. Lawrence is involved in this area and he knows whereof I speak, that we are being asked now to repair people whose occupations have failed, or something has happened to the occupational intelligence, their skills have run out, or they never had a skill, or for some other reason they need repairing. We are asked to prepare licensed vocational nurses, typists, clerks, auto mechanics, machinists, electronics technicians, data processors, key punch operators, fry cooks, tractor drivers, and so on. Thank goodness that in the area of the health occupations, represented around this table, at least, we already have a prescription that indicates the length of training period in hours that is necessary to do this job. Thank goodness in some other areas we have the same thing, but pity us as pressures are placed upon us and upon these people to do some of the "quickie" preparation that some think can be done - where there is no legal minimum, where there is no licensure, where this kind of thing is in sombody's judgment. I don't know what this "sufficient time" is to get the job done, and it may be varied as it has been in your program in the past. There is nothing magic about a certain number of hours, I know, and it may go up and it may go down but we still need sufficient time to accomplish the task. This will vary among the occupations and to the degree that there is insufficient time to do the job realistically and honestly is the degree again to which we miss the target of perfection we seek.

My final factor in this series has to do with the measurement of results or "follow-up" - you probably would rather call it "evaluation", and that is alright with me, too. This is where, continually, I hope, just as in the formation of any other product that is used by the public, and especially one that is so vital to the interest of the public as this, that we run a test from time to time to see how well we are doing, and to see how far we are from this thing we are calling excellence - whether we are 8000 miles away from it or whether we are 2000 miles away from it, or whether we are on target. This can't be left to chance, can't be left to emotions, it must be done scientifically, and there must be feedback. And, I say again as I have said in every one of these points - to the degree that we get this far along in our program and forget this one essential ingredient is the degree to which each of the other factors will be adversely affected and the total job will be adversely affected, and it is the degree to which we will miss our target.

Ladies, progress toward that always illusive goal of excellence is never achieved on a massive front across the board, all at once. Instead, it is achieved in little pieces here and there, in one factor here, in another factor there, and so on. And, it is the net addition of all of these little forward bulges that in the end gives us the net gain in progress. I am sure that you would recognize, as I do, again regardless of the occupation, there isn't one

of these factors that cannot be influenced by any person in this audience, and the degree to which you influence these factors during these few days you are together, and the rest of the days, is the degree to which you will move forward the entire front in achieving the excellence your agenda indicates is your theme. You will do this, I know. It is inescapable because you have done it before and you are going to continue to do it. I indicate, as I sit down, that those of us on this side of the partnership, in education, have enjoyed so much our partnership with the Hospital Association, the licensing organization, the Medical Association, and all the other individuals who make this "partners in progress" possible. And, I have appreciated the honor you have bestowed upon me in asking me to come to this meeting. Thank you.

Helen K. Powers, R.N., Chief
Practical Nurse Education Section
Division of Vocational and Technical Education
U. S. Office of Education

Having been introduced as an expert, I am reminded of the definition I heard recently - that an expert is a person who knows more and more about less and less. Let me reassure you about a few facts that Mr. Lawrence did not tell you. I am a Registered Nurse and have been one for more years than I will admit in front of these two gentlemen! I have had the privilege of serving not only as a bedside nurse and a hospital unit head nurse, but in nursing service administration, in teaching professional nursing students, and in administration of schools of nursing. In all these working experiences in the field of nursing, there has been no greater satisfaction than in the work which I am now doing in Practical Nurse Education. My interest in Practical Nursing Education was stimulated in the early 1950's, when we worked with vocational education in the District of Columbia to establish an approved program. I had the pleasure of helping to establish that program and assisting it to develop into one of our better training facilities.

In the years that I have worked within the U. S. Office of Education, I have seen a program develop that excels in the speed with which it has grown, the quality of program that has been developed, and the tremendous need that that program has filled over these years. It has taken many forces to bring this about. We have now in the Office of Education two professional nurses who are working in the development of this program. Mrs. Orianna Syphax, who is known to some of you and formerly was the State Supervisor for Practical Nurse Education in the District of Columbia, joined our staff as a Program Specialist.

In his excellent presentation, your Director of Vocational Education discussed the factors that contribute to the success of any training program. In the Practical Nurse Education program, let us look at some of the factors discussed. All of you are aware of the fact that nursing for many years has been unable to provide the number of trained workers needed to do the job. Some figures released by Mr. George Bugbee, Director of Health Information Foundation, show that one in every thirty persons employed today is working in the health field. Registered nurses, licensed vocational nurses, and nurses aides comprise the major proportion of health workers and number well over a million workers. Each of us care, look at our program in vocational nurse education and honestly say that we are doing a good job. We are placing almost everyone trained. Our graduates make an important contribution. We need to increase the number being graduated. But, what is the number of graduates, Licensed Vocational Nurses, that we should be preparing today? The work of the Consultant Group on Nursing was released quite recently. This thirty-five member group, appointed by the Surgeon General of the U. S. Public Health Service, met for approximately two years under the chairmanship of Dr. Alvin Urich of the Ford Foundation. Their objective was to study the total situation in nursing and formulate recommendations on the role of federal government in resolving the critical shortage of prepared nurses. The preliminary

report of the findings of this group is published under title, "Toward Quality in Nursing Needs and Goals." The report of the consultant group will have a tremendous influence upon what we do in nursing in the years to come.

A ratio of 38 Registered Nurses to 30 Licensed Vocational Nurses with 32 auxiliary workers was suggested by the consultant group. What does this mean in terms of people that you will be preparing in the next few years. In order to increase the total supply of Licensed Vocational Nurses to the numbers suggested, we will need to more than double what we are doing at present in order to achieve that ratio by 1970. This means an increase in your staffs, increase in enrollments and graduations in order to reach the goal.

We have seen rapid growth of Vocational Nurse Education. You recall that, in 1940, we had some ten programs in the country; by 1950 we were graduating about 3000 practical nurses a year in the nation; in 1962 we had 735 state approved programs in the United States and were admitting about 25,000 students to programs that year. Graduates in 1962 totalled nearly 17,000. Programs have grown fast, and exhibit both good and undesirable characteristics. Vocational Nursing programs show the influence of public vocational education in their development. Home economics education gave its leadership to early programs and left some of its philosophy with our programs. Many curriculums for practical nurse education still include, for example, instruction in care of the home and in family living that is not related specifically to learning to nurse. We see evidences of the philisophy not only of home economics, but of trade and industrial education in this program. Trade and industrial education programs are characterized by the fact that trainees in such programs are trained for employment in an existing occupation. In vocational nurse education people are prepared for an occupation and for a specific job in that occupation. These characteristics from trade and industrial education have been advantageous to the program.

Today, the vocational nurse is recognized as a nurse. In the states she is recognized and licensed as a nurse. In the employment situation we would like to see an improvement in this - we would like to see her utilized at the level at which she is prepared, not below it and not beyond it, but at the level and we have much that has been left to be accomplished in this area. I would like to call your attention to some milestones that have occurred in this past year. The nursing profession has clarified the role of the licensed vocational nurse and her relationship to the registered professional nurse. The American Nurses Association in its statement on training auxiliary workers for nursing service and particularly their statement on training under the Manpower Development and Training Act of 1962, recognizes two levels of practitioners who are prepared to nurse and both are licensed to practice nursing. You are familiar with the statement of functions developed by and approved by the Boards of the National Federation for Licensed Practical Nurse and the American Nurses Association and issued in 1956. This statement of functions, which had been a guide to employers and to schools of practical nursing for many years, sets forth a definition of her as a person who assists the professional nurse in giving nursing. Revision of the statement is underway in the Allied Nursing Personnel Committee of the AVA. A suggested change

in this statement is under consideration that the licensed practical nurse "participates" in nursing patients rather than "assists". Recognition of the vocational nurse as a "nurse" and the revision of the statement of functions both represent milestones in our progress toward the acceptance of the licensed vocational nurse.

Vocational nurse training has developed in all types of settings. In California, programs are operated in junior and community colleges, in vocational schools, and in hospitals. As we travel around the nation, we see programs operated in comprehensive high schools, in industrial education centers or in area vocational schools, and in universities. How have the philosophies of different administrations affected the program? We have received the criticism that programs are growing pretty much like Topsy because we do not limit the settings in which they are developed. Should programs be operated for students in high school or only for post-secondary students? If programs can be operated at either level, how can you justify the requirement that a student have completed a high school education before being admitted to a program? These and similar questions will require more than an armchair opinion.

In the development of the curriculum for practical nursing, tremendous progress has been made in identifying what it is we are trying to do in the preparation of the vocational nurse. The vocational nurse is prepared to be a generalist who functions in the direct care of people who need nursing. At no time do we consider that she is prepared to function as a specialist in any of the clinical areas, nor do we feel that her training can serve as a basis for preparing her to be that specialist. We recognize that she is prepared to function in any setting where patients may be nursed. However, while we are cognizant of the fact that our vocational nurse will be giving direct nursing care to all types of patients, regardless of age or diagnosis, or setting, that level of care remains within fairly well-defined limits. Situations selected from various clinical areas comprise the basis on which curriculum content is developed. Regardless of the clinical area from which content is selected the objective of the program is preparation to give general nursing care within the two roles of the practical nurse as defined in the "Guides". Unless we focus on the patient and his needs, the instructional program begins to develop into a strange collection of learnings. The teaching of medications will illustrate my point. When we started to teach the giving of medication the students were first taught to pass trays of medication to 10 to 50 patients. In other words, they were taught the hospital routine. Unfortunately we still have many programs that do fail to focus on learning to nurse the patient, but, instead, focus on learning to carry out the work routines of the health agency where students receive clinical instruction.

Some programs continue to fill the curriculum with more and more information about the agencies in which they are assigned and with more of the theory that professional nurses are taught in order to prepare for nursing in clinical areas. Learning experiences are needed, instead, to enable students to assess the daily needs of patients and select measures to meet them.

We recognize that the graduate of this program has a limited scientific foundation for nursing practice and, therefore, she is limited by the very fact in extending her skills beyond the level of the vocational or practical nurse. Unless we can broaden and deepen the foundation in her basic curriculum we cannot expect her to extend her knowledge and skills very far. Yet there are those who propose the development of post-graduate training in various clinical areas to prepare the vocational nurse for a higher level in nursing. The graduate vocational nurse might become more technically competent but would be definitely limited for the reasons just discussed.

Let's take a brief look at some of the trends in the program today.

- The practical nursing curriculum is being developed around one central theme - learning to nurse patients of all ages, in all types of settings, and with a wide range of health deviations.

- Instructors recognize the need for and are seeking for their students' practice, those nursing situations where good nursing is being practiced.

- Students are being taught the patients' role and place in the nursing care team.

- Home care programs are being used as a valuable learning experience for students.

- Minimum and maximum care units are being utilized for appropriate clinical instruction.

- Integration of mental health concepts and selected principles from Psychiatric Nursing is progressing in many programs.

- Preparation both in general and psychiatric care settings is producing a practical nurse who can function more effectively in mental health institutions. (See Kilander's study, the Psychiatric Practical Nurse, and Bowen's study, We Organize ....

Problems that concern most practical nursing educators today include:

- Inadequate preparation of professional nurses to effectively supervise the licensed vocational nurse.

- Better preparation of those who will teach in practical nursing. The statement of standards, functions and qualifications of the American Nurses Association sets the standard for preparation at the master's level.

- The number of practical nursing instructors who applied for and received long-term traineeships under Public Law 911, Title II, during 1960-1962 was 51 (out of 5,178 grants awarded). Instructors should be participating far more actively than this.

- Accreditation of practical nursing programs presents a problem due to the involvement of several agencies including the National League for Nursing which has a committee under its Department of Practical Nursing Programs working on the development of standards for the national accreditation of practical nurse education. In addition public vocational schools are very much concerned about the growing pressures from groups who wish to accredit curriculums. Trade and industrial education alone is involved in over 100 occupational groups who might, today, or tomorrow, decide that it is their prerogative to accredit those individual curriculums. In order to forestall the confusion that would result from this, vocational educators are working through their American Vocational Association towards the solution of this problem and exploring the possibilities of setting up a group at the national level who would coordinate, guide and direct this type of activity.

- More flexible standards in our states are needed in order that schools can work toward the goal of preparing a vocational nurse to function in any setting. In the study, Education for Practical Nursing, 1960, conducted by the National League for Nursing in cooperation with the Office of Education and Public Health Service, reports about your programs reflected largely that which was reported to State Boards of Nursing. Schools did not report changes in their curriculum so they sent us the usual breakdown of 16 weeks of theory and 32 weeks of work experience. Schools of practical nursing are working together with their state boards for nursing to develop the kinds of standards under which quality programs can grow and flourish. These standards should make it clear that the practical nurse is not being prepared to do medical nursing or surgical nursing but to function as a generalist in direct care of patients in all settings.

- Care of the geriatric patient in other settings. There is very little difference between the geriatric patient who is having major surgery, and the adult patient who is having major surgery. The care of the geriatric patients in homes for the aging, psychiatric hospitals, and in their own homes presents different problems for students. Vocational nursing educators need to change their attitudes toward teaching care of people in places

other than general hospitals. First, find out the facts. What do the agencies provide to enrich the experiences of our students.

- Instructional material is too much disease-oriented. We need to prepare material for our students that will focus on nursing the patient. Dorothea Orem and Neva Stevenson are preparing a series of four textbooks based on the Guides. McGraw-Hill will be the publisher. Vivian Culver is revising her textbook with the emphasis on learning to nurse.

Vocational nursing education has in the last twenty years passed through several stages - it began to emerge in the 40's, it went through rapid organization and expansion in the 50's, and in the 60's we might say it is approaching maturity. We have had many characterizations of what the 60's are going to be. They can be the soaring 60's, or the sad 60's, for vocational nurse education. It depends on the ability of vocational nurse educators to broaden their outlook, to develop the type of program that will produce a worker needed in community health services. It certainly must be the type of program that will continue to strive for excellence in all aspects of vocational nurse education.

GENERAL SESSION

Tuesday Morning - April 9, 1963

TOPIC: SELECTION OF STUDENTS

PANEL MEMBERS:

Lena Visintainer, Sacramento City College, Chairman
Belva Olsen, Galileo Adult School
Alice Greenough, Compton College
Lillian Auiler, Cerritos College

Belva Olsen, R.N., Coordinator
Vocational Nurse Education
Galileo Adult School

After yesterday's meeting I began thinking about our commitment as a panel. There seem to be two questions: first, who is the person who is going to do vocational nursing; and second, what is vocational nursing? When I looked at the attractive cover for our workshop program with the dedication, "The Pursuit of Excellence in Patient Care," a long-forgotten line from Shakespeare slipped into my mind. The quotation is, "So tender over his occasions." I think that the dedication, "the pursuit of excellence in patient care," and the quotation are related. Life is a series of occasions; and how true it is that a nurse is needed who can be "so tender over these occasions."

Yesterday, when Mr. Smith was setting down the factors that would insure the excellence of patient care--and he said that all of these factors had to be present or we would not have excellence--it occurred to me, too, that some times we deduce that the person who can conceptualize is also a warm and compassionate person. This is not always true.

Yesterday, too, Miss Powers emphasized that the most-raised question today is, "What Is Nursing?" I remember that one time when I was a student-nurse, I was looking through a book of writings by Florence Nightingale. One of the chapters was entitled, "What a Nurse Is to Do." The first paragraph of that chapter was a single sentence, unadorned and unsupported. The sentence was, "A nurse is first to nurse." Maybe we are still trying to find out what nursing is. Maybe we can't define it too clearly.

Today, in our modern hospitals, we find that even with all the education and all the communication between people, there are areas in which there are misunderstandings and sometimes even dilemma. But in spite of all these odds, I have known not only registered nurses but also vocational nurses who have been able to give creative nursing care.

Our society, as we all know, is becoming very complex and very dependent upon technology. We are setting our standards high, and are looking for test

scores, grades, and reading ability to predict success. I recall an article written by Dr. Fred Willhelms, who said, "We seem to be conducting a national campaign for exclusiveness, but will this get us enough highly trained people? There is a core of indeterminacy in people because we know that we can't measure and come up with answers about people as we do about things, and as freely, so there is a large unexplored, sort of no-man's land, in trying to assess human nature."

In the selection of students, with which our panel is charged, we attempt to study the individual in three areas. First, in the assessment of skills; second, in the description of behavior or personality (or however we want to term this area); and in the third, experience, home life, health, etc. We know, too, that there are many factors that make for success--such as ability, previous achievement, and a very tantalizing thing called motivation. If we ever arrive at what motivation is, we probably would have the answer to a lot of questions. As yet, we have no yardstick for the measurement of motivation. I am sure that all of us have experience being with students of high ability who haven't succeeded, and having been with students of lower ability who have succeeded.

I represent Galileo Adult School, San Francisco. Perhaps it might be well to tell briefly about our program. We were established in 1948. We have graduated about 1100 people from the program. Our student population is a very cosmopolitan one. Our first class entered in 1948, and was composed of 19 women. The youngest was around 50 years of age, and the oldest was about 63. In 1953, when we did a follow-up study of our graduates, we found that the average age at that time was 41.6 years. About 4 years ago, we discovered that our students were getting younger; the average at that time was 31 years. I have just looked over the ages of the students now enrolled, and in one class the average age is 25, in another class 29, and still another class 29.4 years. So, our students are getting younger. We enroll both women students and men students. The numbers of men that we have in the program are few, so they represent a minority. I suppose our students are much like students in other programs.

Our age for admission is from 18 to 50, so we say, but should we meet a person over 50, who seems to be a very desirable applicant, we do admit her, or him. We require many of the requirements that all the schools ask for. High school graduation is required; but we do admit people who score well on our entrance test. We also try to assess a very elusive quality: Why do people want to become nurses? At one time we did a follow-up study trying to determine why people enter vocational nursing, and the results compared very closely with the follow-up study that was done on graduate registered nurses, in that vocational nurses want to take care of people, that they are interested in people. We had thought, prior to that study, that our students were vocationally oriented, but we found out differently.

Our selection of students for vocational nurse education at Galileo Adult School is an ongoing process, a continuous process, a process that has its roots firmly embedded in the recruitment program. I say this because we have a very vigorous recruitment program. We enjoy a very high degree of

co-operation and assistance from radio, television, and the press. We always try to keep these doors wide open so that we are able in a general way to let the public know what the requirements are for vocational nursing. Judging from the number of telephone calls, I would say that there is a tremendous amount of interest in vocational nursing. Our office staff is aware of the requirements for vocational nursing so that they are able to answer questions intelligently on the phone. We do very little by mail. We have a few letters, but many of our contacts are face-to-face contacts. One of the ways in which we try to recruit students is through our student group. Our teachers are charged with this commitment. We try to keep the students informed about the program and the needs of the program, so they come up every now and then with the question, "Is it time now for us to get some more people interested?" We find that this is a magical way to bring new students into the program.

Getting back to the mechanics of the selection of students--we use several devices: testing, the written application, the high school transcript, interviewing, physical examination. The test that we use is the California Achievement Test. Since we are in public education, we feel that all people who are interested may be tested. However, we do try to point out that certain qualifications are essential in order to be enrolled in the program. This, as I mentioned before, is done through our recruitment program. Testing is done by our counselors. Applicants who make the highest scores on the test are interviewed and make written application. Our testing program is an almost continuous one, because we do admit two classes a year, and we have found that in order to admit a class of 50, we have to test from 300 to 500 people. After the test scores have been obtained, we have a pool of potential students with high scores. We make contact with them and have them come in and make written application. Our application is a 3-page application, rather lengthy, but we feel that it serves a purpose. On one of the pages, we request that the student answer a number of open-ended questions, and in this way we get a bit of information about her philosophy and about why she wants to come into nursing, and it gives a clue once in a while to her personality. On the written application is a page that requires the student to write an entire page and here again, we feel that it serves a purpose in that a prospective student must be literate and able to handle language skillfully. She must have the potential to learn the new language that nursing will present to her. I am not too sure about the validity of this page of writing, but we do feel that it gives us an idea as to whether or not the student is able to put down on paper some ideas and to express them in an acceptable manner.

The high school transcript is evaluated by our counselors. We require at least average grades.

The interview--the next step--if done properly, can give us a lot of information. The interview must be a purposeful one and must have goals, and it must be such that it gives the applicant time to talk so that we get some impression about her own philosophy--her own personality. During the interview, there are a lot of things we can check--for example, height and weight, mannerisms, the mechanics of the applicant. During the interview, we give a lot of information about the program that is pertinent to the prospective student and her needs. We can get a lot of information from her.

Another aspect of the selection program is the physical examination. The student is responsible for her own examination, performed by her own physician, the report of the examination being forwarded to us.

Even with our recruitment and with our program of selection, there are still many problems to be resolved. We feel that counseling the young recruit in high school would be helpful in the adjustment to nursing. If we could spend more time in orientation for the prospective student, the attrition rate for the program would be lower, because the student would have a better understanding of what nursing is, what is expected of her, what she wants from nursing. If we could have closer communication with the hospital, we would know more concretely what the employment situation holds for this nurse.

Alice Greenough, Director
Vocational Nursing Program
Compton College

When taking a course in public speaking, I learned from the professor that all good speakers entertain their audiences for a few minutes before starting the main topic. Although I do not claim to be a good speaker, I hope to at least entertain you for a few moments with a story appropriate for the occasion.

A priest, a rabbi, and a minister were out fishing in a rowboat, the day was warm and the fish lazy - time dragged. Eventually the rabbi ran out of bait so he said, "I think I will go to the shore and get some more bait." To the priest's amazement he stepped out onto the water and walked calmly ashore, returning in a short while with the bait by the same route. In about half an hour the minister decided to go for a walk and casually stepped out of the boat and crossed the water to the shore and back without mishap. The priest looked at them thoughtfully, "I have as much faith as they have," he mused, "but I have never walked on the water - I believe I'll try." Bravely he stepped out onto the water and immediately sank to the bottom. The minister and the rabbi quickly pulled him back into the boat and dried him off. A second time the priest attempted to walk across the water and a second time sank to the bottom. Again the minister and rabbi pulled him into the boat, coughing and choking. When the rabbi and minister saw the priest preparing for a third try, the rabbi said to the minister, "shall we tell him where the stones are?"

I come from Compton College, where the Vocational Nursing Program was started in September, 1952, and it has progressed in approximately the same manner as the one described by Mrs. Olsen.

The average age of the vocational nurse students is getting progressively lower. In 1955 the average age at Compton was 38 years; in 1961, when last checked, it was 31.5; and this year there are many more students in the below twenty group.

The Compton College Program has been quite successful - 90% of the graduates are successfully employed in various types of nursing positions. There

has been less than 5% failures on the State Board Examinations during the complete time of the existence of the program.

In considering the selection of students, the nursing faculty at Compton College felt that the first consideration should be a realistic image identification of a successful vocational nurse graduate. The results of various surveys which have been completed in the Compton area have been used to picture the type of person who is successful in vocational nursing. She should, of necessity, have good physical and mental health and practice good personal hygiene. The applicant must have enthusiasm and energy - nothing is more annoying than an applicant who rests on the desk while being interviewed. Also, she must have maturity, manual dexterity, communicative skills, discretion, and the ability to apply the concept of the transfer of learning. These attributes are considered of prime importance but are not necessarily listed in order of importance.

Although much progress has been made, continued work is necessary to improve the selection procedures. The program at Compton College, as in other programs, needs improvement in the job of selection, otherwise the attrition rate would be below the existing 30% rate.

The following are devices which have proved to be more successful in our selection program:

1. Each student must have a complete physical examination and report must be sent to the school nurse before the end of the first week of school. This examination is done by the applicant's personal physician - we have found this to be adequate in most cases.

2. Each applicant must take the Otis Quick Scoring Ability Test and the Illinois Reading Test. These tests are scored and the results are made available to the nursing faculty by the counseling department before the applicant's personal interview.

3. Immediately following the tests, one of the nursing faculty meets with the group of applicants and has an informative discussion with them regarding this particular program. Points of discussion are: the length of the course, the daily schedule, the cost of uniforms, textbooks, equipment, student body fee; in addition they are told the number and length of vacations and holidays, the grade point average which must be maintained, and the scheduling of personal interviews.
   Each student has a personal interview with the director of the program at midterm and end of the first semester, and midterm in the second semester. At these times the student is complimented or constructively critized concerning her progress, and if necessary counselled into some other field. Each student has the privilege of making

an appointment with the director or any instructor when she feels that she needs assistance.

4. Each applicant is interviewed by a nurse faculty member who uses a specific form for the interview. This insures a degree of uniformity in the information which is compiled on each applicant.

The interviewing nurse must keep the following in mind:

a. She should be familiar with the information submitted by the applicant when applying.

b. In the interest of expediency, she should have the admission test score recorded on the applicant's interview sheet in advance.

c. Most important of all is extreme privacy for the interview. All unnecessary interruptions are discouraged. The applicant is more at ease and the interviewer does a better job if each applicant has her undivided attention.

d. The interviewer should attempt to establish rapport with the applicant early in the interview. A point of departure may be discussion of children or grandchildren; with younger students, the activities of the high school.

e. The interviewer should evidence genuine interest in each applicant. The interviewer should allow time for the exchange of all pertinent information and the interview should be graciously terminated before it becomes repetitious.

5. The interviewer uses a check list so the information collected is uniform and complete. The following points are considered:

a. Observation of the Applicant:

(1) Appearance in general - neatness as to hair, nails, and make-up, cleanliness and appropriateness of dress and shoes, poise and composure.

(2) General appearance of health - clear skin, bright eyes, normal weight, and good posture.

(3) Communication skills - good enunciation and sentence structure, understanding and following of instructions, attention to and interest in discussion.

(4) Courtesy - Concept of ethics and understanding of common courtesies.

(5) Incentive - Reason for choice of program, and interest in service. Two types of applicants are prevalent: first, those who are interested in people and need to achieve in an area where employment is assured because of personal responsibilities or family need, and; second, those who say they have no thought of self and will only be happy giving to others are usually not honest but are giving lip service to what they think the interviewer wants to hear - this shows insincerity which has no place in nursing.

(6) The applicant's concept of vocational nursing - Understanding of the patient-centered role of the vocational nurse. Knowledge that her role is one of service to the sick and not self-promotion and self-interest.

(7) An applicant's emotional stability - Knowledge of personal conflicts should be of vital concern to the interviewer. Personal distractions such as imminent divorce or marriage should be resolved before she considers entering this new field.

On the other hand those from happy homes who have accepted responsibilities and are planning for a better way of life should be encouraged.

Unmarried girls, looking for husbands, should be counseled into engineering or animal husbandry, as the vocational nursing program is not a matrimonial bureau.

b. Financial Responsibilities

Economic security for the year is essential. Because of the density and brevity of the course, working students do not achieve well. It is preferable to work a year and save the necessary funds before making application.

c. Recommendations

Three recommendations are required - one from each of the following: an employer, a minister, a teacher, or some other responsible person. The recommendations are primarily concerned with stability of work habits, emotional stability, responsibility, and good moral

character. For the most part, people give a fair evaluation of anyone whom they recommend.

d. Achievement in High School - or Tenth Grade Equivalency

Applicants must have transcripts of their high school grades on file before applications are processed. Applicants must have a tenth grade education or take the Tenth Grade Equivalency Test which is administered by the college about three weeks before registration for each semester.

The selection program at Compton College is started in April for the September class. The Admission Test dates are scheduled at two-week intervals for eight to ten sessions. Approximately one hundred and fifty applicants are tested and interviewed for a class of forty-five students. All application forms, test results and high school records are used to determine the best applicants for the program. These people are notified in writing about two weeks before registration. This notification includes all registration information. Rejected applicants with potential are advised to take courses in remedial reading, English, arithmetic, or psychology before re-applying for the program. This may be necessary where an applicant has been out of school for a number of years. In most cases the applicant is very willing and appreciative of the interest shown.

In conclusion, the necessity of a standard screening process must be of constant concern so that each applicant feels that she has had equal opportunity. There should be no question of personal feeling or discrimination. Each person should go through the same procedure and receive her answer in the same manner. A letter of acceptance or rejection (accompanied by suggestions of other fields where she might be better qualified) from the counseling office, should acquaint her of her status.

Every effort to correct the erroneous conception that vocational nursing is a melting pot should be made. Nursing at any level has the attributes of a profession and evidence of the prevalence of these qualities should be apparent before counseling to that field is undertaken.

Lillian Auiler
Director of Nursing Education
Cerritos College

I represent Cerritos College and our program started in 1959. We were most fortunate in many ways in that we didn't have to do as so many of you have had to do, to revise and change your program. We were fortunate (perhaps we should put that in quotes) in starting out without anything to work with. I am sure most of you know there were many, many mistakes to be made - and I don't think we missed many, but from mistakes you learn, and we have had the patient-centered approach at Cerritos and feel it is working very fine.

Miss Greenough brought you a story - I didn't. I was talking the other night to an adult class and when the discussion was opened it seemed that those of us who have the title of nurse also have the job of listening - allowing people to relieve themselves of certain frustrations. Everyone told of when she was a patient and of this and that happening (this was a class of medical office receptionists) and of the things that shouldn't have been done. One lady got up and said that when she was a patient, "Why, do you know that the nurse told an obscene story." I said, "She was entirely out of line - she should have let you tell it." I probably didn't relieve her of much of her hostility but I got rid of a little of mine.

Regarding the selection of students, our counselors at Cerritos do the test scoring of the Otis test and they tell us whether the student has the ability to do ordinary reading and writing. (One of the test questions is, "Which is a firmer substance, ice or rubber?" This makes the student think a little bit.)

What is the criteria which, I am sure, most of us want to use in selecting students? One of the things we would like to know is, "What made this student choose vocational nursing?" As Miss Greenough said, and I heartily agree, if it is someone who wants to pat a fevered brow or give her "all" to nursing, I say it is a lot of nonsense because she would soon burn herself out. Maybe these are her goals, or maybe she thinks they are, but every one of you sitting here knows there is a lot more to being a nurse than tender, loving care. I think you are fooling yourself, and perhaps the patient too, if you don't know when tender, loving care needs to be stopped and the patient returned to his independence. If you make every patient you have dependent upon you, because you are so nice, before long you are going to leave your job because you are completely exhausted. You can't give nursing care, good nursing care, to all your patients if you are going to wait on them hand and foot and not recognize the difference between good nursing care and tender, loving care. There is a need for both, and there is a need to know when to stop, and when to use each one. I think as we look at the prospective students and listen to them talk, these are the things we need to be thinking. I think every nurse, if she is going to be a real nurse, needs a backbone of steel because I don't think nursing is easy. I think it is the most wonderful job in the world and the rewards are great, but I think you have to have nerve and I think you need just plain fortitude in order to take care of patients the way they should be taken care of. If they have to turn, they need to be turned - you know this. The patients with lung surgery certainly need to take deep breaths - it hurts, and it hurts like the dickens. You need to appreciate this, but you still need to get across to the patient that this is most important. When you look at the prospective student you should be thinking - is this the kind of person, whether she be 18 or whether she be 60, who can do a proper job in nursing? Think along these lines - what made her want to become a vocational nurse? As Miss Greenough said, if it is to provide an education, independence for them in the future, I think this is a very worthwhile goal. For the young student, if this is a means for going on to more education, certainly this is good. If they are trying to improve themselves they will also be helping the patient - this I feel very sincere about.

We do not use references - I think the person who would ask for a reference from someone who would not give a good reference is either naive, or certainly doesn't have much foresight, as references are biased. So, what good are references?

Of the problems that we encounter at Cerritos, I think the biggest problem is selecting the students on a "first come" basis. To date, anyway, we have the feeling that the policy of Cerritos is to take the people as their names go down on the list and as their test scores are reported. We had a longer list of students whom we could not take sometimes although there was great possibility of their being much more successful. The sad part is that we keep a "lesser" person three-fourths of a term when some one else could have used it all to better advantage.

About the young students of today - another problem is the social promotion. I don't know whether any of you have felt this or not but I have youngsters in high school and am rather close to it. Because the students pass chronologically from year to year, I do not feel it is right to pass them and give them a diploma. Certainly they are getting older and need to get out of high school, this is true, but somehow there needs to be learning geared to their interests. They come to us with a diploma - here they are, high school graduates, they managed to read and write but real teaching didn't rub off very much. This, I feel, is the difficult person to judge - usually she has a very good appearance and has all the right answers. This kind of a student who has gotten by for four years can certainly get by an interview, has "pat" answers, reasonable desires, has interest glowing in her face, and after two months you are hit full force with the fact it is shallow, there isn't anything there and this, I feel, is a very big problem. Some of the students, the younger ones, have, all their lives, perhaps, played with dolls and have wanted to be a nurse. I would like to know what they think a nurse is - what is nursing. By the end of the year we will pretty much influence them, we hope, with what we think nursing is. But, I would like to know what they really think, and what they want from nursing. The person who wants something from nursing other than improving herself, or bettering herself, I, too, think should go into another program.

I would like to congratulate every one of you for being here because I believe we have the opportunity to better mankind more than any other group of people because our students do real bedside nursing, and I am sure you know that this is a far cry from a bed bath and procedures. Skills can be taught - a bed bath can be taught within a month. We put our students on the floor, giving complete baths the second week, in fact they are on the floor the second day of the course doing a few odd jobs - getting adjusted. My ultimate goal in teaching is to teach the student to impart trust, faith, and security. If the student didn't even touch the patient - didn't give him a pill - didn't even give him a drink of water, but could still make the patient feel he had the best of care because someone cared, someone was looking after him - if the student can impart this kind of faith, then I think we are doing a real good job in teaching.

Lena Visintainer, R.N.
Director, Vocational Nurse Education
Sacramento City College

We certainly have a very fine panel - I don't know that I have very much to add. I may tell you a little bit about the program at Sacramento City College.

We started our program in 1953 and as far as the techniques used in selection, usually a phone call or a letter of inquiry is the beginning, then a personal interview with the Director, the Associate Director, or any member of the faculty. Actually, they all assist and can do this. We feel the interview is very, very important so we can explain the total program to the prospective student. Of course when she comes to us she is rather nervous. It is always interesting that many ask, "Do I have to take chemistry?" When we say "No," it seems they have it made. They relax and will tell us anything we want to know.

It is important for the students to know the length of the program, the hours they will be away from home - this should include their travel time, when they will have their vacation, the cost of the program, how classes are set up, the classes in theory and clinical practice, and finances. It is very important to know whether or not the student plans to work while she is in the program. We have found that this presents many problems and we really don't encourage the student to work. Still, we encourage or discourage on an individual basis because we have found that certain things happen if the student is trying to do too much. We know that she has a heavy schedule. Her necessity for study usually has two pitfalls: her grades fall or her health is involved. In addition, students should know that they must be citizens. When they complete the program they will be able to take their State Board examination and be licensed. Further, students are always interested in employment after graduation. We inform our new students that they will be with other students of various backgrounds and ages. As you have heard the other panel members mention, and as you all know, our students range from 17 to 50 years and their different ages, educational backgrounds, and experiences mean that the only common factor here is that most of them are women.

I think it is important that the student know what her goal is, what she wants to do. If she is interested in being a registered nurse, we have the two-year program at the college. Many of the applicants want to be registered nurses, but maybe she will register in this program first. This possibly is good. However, we feel if she wants to be a registered nurse, she should take some general education. If she needs her chemistry to go to junior college, she can get her chemistry in one semester and then become a registered nurse. We also have a baccalaureate degree program in Sacramento at the State College, and many students may want to teach. They are able to go into this program, and we encourage them. If we encourage them to go into your program instead, chances are you would lose them anyway. So, I think it is important to talk to the student and find out what her goals are. If the candidate is 25 or under, at City College she is required to have a high school diploma - however, if she is 25 or over, tenth grade qualifies her by law.

We were very fortunate in having Dr. George Kimber, formerly the Dean of Liberal Arts at City College, on our staff. He wrote two volumes and did his doctorate on junior colleges. He established a grading key for us that has been very reliable. It was actually set up on the equivalency basis to help the student who didn't complete tenth grade to take an examination and qualify by equivalency. We have found that if the candidate scores within the range set by Dr. Kimber, especially in reading, she has a good chance for success in theory. This California Achievement Test tests reading, arithmetic, and language. It is rather interesting that one of the points he has established concerns how long the student has been out of school, and he has the key set up for five years, ten years, fifteen years, and twenty years. The longer the student has been out of school, the fewer questions she has to answer - so experience plays a part here. Transcripts, of course, are received on all students. Applications are sent out approximately six weeks before the starting date to applicants with the classification of 1 to 3+. We have what we call a green sheet and on this we get necessary family information from the student. We agree that if the husband is against it, it is better for her to wait until she wins him over and let him think he was all for this. It just doesn't work out if she finds that he doesn't want her to do this. Her children may need care. If she has a sister or a mother, this works out. If she has to depend on babysitters, many times this doesn't. We ask her about other responsibilities that she might have and the classification is then put down 1 to 3 minus and 1 is the highest - it might be 1 minus, 2 plus, 2 etc. Number 1 is the highest, and then we go downward.

We do get three references from the student and we find that we get an insight into the student and that the persons that send in the references are pretty much sincere in giving a picture of the individual. They will state that this happened or that happened, or sometimes you can read between the lines.

We have a health analysis, and this includes an X-ray. The health analysis and physical is done by the student's own personal physician. We have a form which they fill out giving personal information similar to what we take down on the green sheet. We also add what the Board of Vocational Examiners expect on the form that is filled in when they file for the State Board examination, such as, "Have you ever been arrested for any crime other than traffic violations?" and about being committed to a mental institution. We find that this prevents the student coming into the program and then finding out when she files that there might be a possibility of not being able to take the State Board examination. We had this happen one time and this is why we have added this - so far this has helped in not having this happen again. Individuals sometimes are so eager that they aren't always truthful. We ask for two passport type photos - one is kept for the files and the other is attached when we file for the student to take the State Board examination.

Immunizations for the student are done after she is enrolled in the program and this is done by the Public Health Department. In Sacramento they do this as a free service to each student.

We have a panel that interviews each student. In Sacramento we have students in three hospitals, Mercy Community, Sutter Community, and Sacramento County Hospitals. Representatives from these three hospitals are on the panel which consists of four members, or at least three. Each student appears before the members of the panel and is introduced to the members. A card is given to the panel with the information pertaining to the student - it has her name, address, number of children she has, marital status, and also our classification. It also has on it, "recommend," "hesitate to recommend," "do not recommend." If the panel does not recommend a student, they state why they are not recommending her. While the student is being interviewed we have a group of candidates and one faculty member touring the campus. They are shown where the parking area is, where the cafeteria is, some of the classrooms, and also they are able to purchase their books. They have a list of books and the book store is open. This saves them from standing in line with about 3000 others the day we begin. Also on this day measurements for uniforms are taken. The interviewing takes a full afternoon - usually the people come in from the hospitals and we start about 1:00 o'clock. They give the student a great deal of time - they are there many times up until 6:00 o'clock. If we have a large number of students, we have two panels so that they won't have to stay too late.

We have enrolled approximately 632 students since 1953; we have graduated approximately 439. We have had a dropout on an average of 31 per cent. In our last two classes, we had a class of 28, and 26 finished; in the present class we had 45, and we still have 41. We find that of the total of 439 students we actually graduated, about 97 per cent are in nursing. Ten per cent are in other states or other cities, and 89 per cent are in the local community, working in local hospitals.

In order to summarize, I think we should ask ourselves, and we did, what instruments are needed in selecting vocational nursing candidates? How can we measure what we want to find in a potential, successful candidate? How can we be sure what we are measuring is going to be a successful candidate? Are the tests that are given, and the interviews that are given the best ways of finding potential candidates? I think we found, from our discussion this morning, that a physical examination can eliminate a student, and personality problems can be an eliminating factor even if the academic standards are adequate. Students can be accepted if there is a doubt and evaluated later - actually during the first few weeks. In our particular school the percentage we dropped were dropped within the first six weeks of the program. However, adequate selection alone cannot guarantee that a student can and will gain the necessary information and skills necessary to be successful in her chosen field of vocational nursing.

Most people enjoy doing what they can do well, because it gives them a personal sense of accomplishment. An educational program must not only select the right people - it may select the right people but it must provide the experiences and conditions that will encourage each person to do his very best.

No one has an answer that can apply to the solution of all problems faced by all programs. Each program differs as to the community needs and resources. Personal attention may involve more time and effort but it pays off in satis-

fied human relations. It actually pays off in good morale, in continued interest, and enthusiasm. I believe if we believe in the worth of the individual, we are close to the answer. A tentative guidepost in selection, I believe, in summary, would be that maturity of the individual does play a very important part in the success of a student in vocational nursing - motivation plays even a bigger role. Faculty, administration, and the community should work together to create an educational program in which the student is helped to learn what she needs to know in order to succeed in her chosen field of work as a vocational nurse. This certainly is no small task. I think we can finish by saying that getting together is a beginning - staying together is progress - and, working together is success.

SECTION MEETINGS

Tuesday Morning - April 9, 1963

SECTION I. - LENA VISINTAINER, Chairman

A. Selection of students

Points considered:

1. Mental illness questioned in application that students answer so that the school would know about it. Each student who has had mental illness should have individual evaluation. It was felt by the group that such a student should not use vocational nursing for therapy.
2. Physically handicapped
3. Certain illnesses - i.e. diabetes, epilepsy (Again, individual evaluation)

B. Are we too subjective in our selection?

1. Scientific means of selection

   a. Testing - Many types discussed: California Achievement, California Mental Achievement, Hunts, Otis, Illinois, and N.L.N. (Objection of N.L.N. was due to cost)

C. Student performance

1. Discussion on the merit of allowing applicants to have less questions to answer according to the length of time they have been out of school. Longer out of school, less questions. Compensation to the older applicant whose time out of school would be considered experience.
2. General consensus proved that the older student does better academically all year, and in State Boards.

D. Miss Visintainer announced to the group an article in the Practical Nursing Magazine, February, 1960, titled "What is your Selection Quotient" by Phyllis Delano. A pertinent subject presented in the article is "Testing is only one tool."

E. Discussion of other tools for selection

1. Interview

   a. Faculty
   b. Panel of hospital personnel interviewing each student and referring back to faculty
   c. Director from one of affiliating hospitals interviewing many of the applicants and reporting back to faculty as a group

F. Scholarships available to students

1. Alumni
2. American Legion
3. Women's Auxiliary

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SECTION II. - BELVA OLSEN, Chairman

A. Method of Recruitment (How to get people interested? Sufficient applicants for good selection.)

More problems, new schools or local - people transient (Navy wives, etc.)

Ways:

1. Careers Committee in area (panel 4 levels of programs - student representative)
2. Visit high schools
3. Nurses have booth, local fairs, or float in parade (example - 4th of July)
4. Public Relations Department College - use radio, TV, spot announcements, etc.
5. Hospitals - good rapport with nursing service, so that refer calls for jobs, etc. to vocational school.
6. Communications - Newspapers
   a. Junior college paper
   b. Shopping News (good for older age group interest)

Point 1 - High Schools - young age group no problem generally for interest methods above.
Point 2 - Older age group - more difficult
(a) Open house - college - parents along with daughter become interested.
(b) Volunteer groups (from hospital)
(c) Information to night schools, usually older people.
School - Have reporter (paper) visit hospital - better story
Problems: Administrator, Hospital permission and School Administrator's permission.
Results: Good for recruitment.

B. Panel - Final Interview of Student

Example: Set day - screened applicants meet with
1. Faculty
2. Representative from each of the affiliating hospitals
3. Students evaluated by these representatives
4. This final panel screening - students meeting with hospital representative does only on faculty and admissions' committee applicants who have already been interviewed - tested - passed physical.
5. Primary purpose of Final Panel - Interpersonal Relationships with affiliating hospital (usually all students acceptable)

Negative aspects of such a panel
1. Student reaction to this: nervous, tense, etc.
2. Individual prejudice of hospital representative (not objective)

Another School - Gives name of the Director, Nursing Service where they will be assigned and student arranges interview and hospital tour if desired.

C. Instruments of Selection

1. Value of high school transcript - skill of committee to interpret transcript - how important grades.
   Conclusion: Difference of opinion - but just one other tool along with testing, etc. - to evaluate student - insure better selection.
2. Personality tests
   a. One school counselor works closely with school - did survey in program to pick 10 best students, 10 least adaptive
   b. One school counselor does all initial interviewing, accepting or rejecting student - no R.N. - (knows what school desires in candidate.)

D. Miscellaneous (brief points)

1. No schools using League Pre-entrance Test (None in present group of 24 - two had stopped using because of expense rather than worth.)
2. One school study between: The results from League test and Army general classification.
   Results: last, better correlation - less expensive.
3. Accepting students with high IQ and abilities above those expected of vocational student.
   (?) Student satisfaction - no conclusion.

Main Topics:
1. Method of recruitment
2. Interview - final panel screening student and hospital representative
3. Instruments of selection
   Point further here - some schools are using MDTA - difference of opinion on helpfulness of Employment Department screening - some good, some unfavorable.

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SECTION III - ALICE GREENOUGH, Chairman

A. Testing

1. Needed
2. Required
3. Standardizing of test
4. Types of test recommended
   a. Pace
   b. Gatbe
   c. Scat
5. Administering and interpreting of test

B. Health

1. Needed
2. Required
3. Standardizing of examinations
   a. To be done by approved M.D.
   b. Lab work to be done

C. Interviewing

1. Debatable if necessary for selecting
   a. Points for
   b. Points against

2. Standardizing of questionnaires
3. Standardizing of interviews

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SECTION IV - LILLIAN AUILER, Chairman

A. Objectives: Further discussion on "Selection of Students." Pool best points of each program.

Criteria for selection of students (individual contribution). Intuition - frequently overlooked. Should there be a second interview? Does the school use a panel for selection?

1. Interview - Who interviews the prospective student?
   Faculty?
   Panel (how does the student feel about appearing before a panel?)
   Combination interview and panel.
   How much opportunity has the student to speak?

Panel - who is on it?
Faculty members
Hospital director of nurses
Interviewing techniques
Interviewer detection of underlying problems not, initially, openly discussed by student: (Intuition?)

Meaning of "Selection of Students"
Are students accepted as probationary or are they selected as potentially strong students?

Drop-outs
Causes - are they due to poor interviewing or academic, financial, or family problems?

Conclusion
Re Interviewing: After academic testing interviewing itself is not sufficient for selection.

2. Recruitment - Recruitment is important.

Community education is essential. What is the V.N. program? Who attends programs?

Faculty members speak to high school students (contact and educate high school counselors first.)

Differentiate between R.N. and V.N. programs.

IDEA: Have local League units (careers committee) form panels, including students, to explain each nursing program (1, 2, 3, and 4 year nursing programs.)

Take advantage of high school - college "Career Day."

How can vocational nursing attract more male students? What will it offer him? (Can't use them only for "lifting".)
Salary.
Education - nursing is not only for women.

3. Written Application

Must know how to communicate
Prospects with language barriers may be detected. (Detected through tests, also.)

NOTE: Must not allow emotions to sway decisions.

Suggested topics for written application:
Autobiography (brief) with decisions made
Open-ended question ("I like nursing because...")
How student became interested in nursing.

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GENERAL SESSION

Tuesday Afternoon - April 9, 1963

TOPIC: TEACHING TECHNIQUES

PANEL MEMBERS:

Helen Schee, Glendale College, Chairman
Joan Morrison, Fullerton Junior College
Ann I. Piele, Oroville Union High School
Ida Meier, Santa Barbara City College

Helen Schee
Vocational Nursing Director
Glendale College

We are here today seeking ways and means of leadership toward achieving excellence, which is our theme, for our students as nurses and for ourselves as teachers. Mr. Smith reminded us yesterday that we can approach this goal in logical order, which includes careful selection and using competent instructors. This morning in the General Session and in the discussion groups we learned of the selection philosophies, procedures, and problems of some of the schools. Later it was demonstrated that the type of school, whether adult education, junior college, or other, and the social character of the community, will greatly influence the selection procedures. I am quite convinced that when the program itself is discussed later, it will be found that these factors influence the program, as well as its implementation. Teaching methods must deal not only with the content of the curriculum but with the selected student, and adjust for her social situation as well as the expectations and attitudes which she will find in the clinical area into which she must be fitted and where she will probably later seek employment.

To discuss their methods with us, we have recruited three teachers with varied backgrounds - they are Ida Meier, Joan Morrison, and Ann Piele.

Joan S. Morrison
Director, Vocational Nursing
Fullerton Junior College

As I look out at this very magnificent, imposing group today, I feel very humble, indeed, for I know you are all masters of teaching - you have a wealth of experience in nursing - you have rich educational backgrounds, and to think that I could add much more to your resources would certainly be presumptuous on my part. However, I am very happy to share with you some of my experiences in nursing and in teaching which might in some small way contribute to our ultimate goal of educating the vocational nurse.

Our subject this afternoon, as you know, is devoted to the all-important topic of "Teaching Techniques." I would like to begin by saying that a technique is as good as the one who implements it - the one who puts it into action. Who is this all-important person? It is you - it is you, the teacher. If you were to ask me today what I consider to be the most vital ingredient for teaching, I would say, "It is the teacher." You set the pace - you set the tone. In a certain sense what you do, your students will do; what you say, your students will say; what you are, your students will be. For like the sculptor that chisels the stone to his image of beauty, so the teacher molds her student to her image and likeness. We as teachers are a perpetual example - the students' eyes are focused upon us more than we realize - how we act, how we perform has a great influence on their learning. We have said the teacher is the one who implements the technique - the student is the recipent of this implementation. So, for a moment, let us consider the student. You have all heard the saying, "Crawl into your patient's skin and walk around in it for a while if you really want to know how he feels." I think we could apply this same thought to the student - the student is frightened - she is scared. This is a big responsibility - taking care of the sick. We hear so much today about the patient-centered approach to nursing, and certainly we all agree that this is where the focus of nursing education should be. But, you know, at the very beginning of the school year I like to think of the approach as "student-centered." Why? Because I try to crawl into the skins of these students and I try to think how they feel, and I think back to the day when I was a student - I was a green student, I was a "proby", I was so frightened that I know months of learning were obscured by dark clouds of anxiety and fear - I was too frightened to learn. So in the beginning of the school year I like to think of the student as a little embryo that matures rather quickly, is soon viable and is ready to assume the role of the nursing student. And, incidentally, this process of growth does not take very long. A basic fundamental which so often we use in nursing - we say, "The informed patient is the relaxed patient." Is it not true that the informed student is the relaxed student, and would you not agree that the relaxed student is more receptive to learning? Once the student can rid herself of these basic fears, she can tune in to what is going on around her.

We have talked briefly about the role of the teacher and the student - now let us put them together, the student-teacher, the teacher-student, and let us for a moment consider their relationship. You know, I thought and thought, and pondered how to express this to you today and finally I realized it was really very simple. It is this, at least I think it is this - the teacher must love her student and if she loves her student it is amazing what comes back.

I am sure many of you here today are familiar with the book, "Love or Perish." This was written by Dr. Blanton and I believe it was published in 1956. Dr. Blanton is a noted psychiatrist. Dr. Blanton states in his book, and I quote, "Love is the vital force, the essential ingredient that binds us together - without love in every form the collapse of life begins. Love is present in the laborer's devotion to his work, in the teacher's solicitude for her pupils, in the physician's dedication to his art. All that heals, cultivates, protects, inspires, all of this is a part of love." So I repeat, if you as a teacher love your student, you will want to give to this student the very best that is possible for you to give, and I really think the student will want to give her very best back to you.

You may think that I have drifted away from the subject a little bit but I don't think so because techniques of teaching mean very little unless a communion of spirit exists between instructor and student. You probably think I have overlooked the patient - no, for the patient is our reason for being. This is where we, together, devote our full strength and energy.

Now, I would like to go into the clinical area for just a moment, and since our time is limited, I will skip over the initial preparation of the student for the day which would include such things as the assignment, the nursing care plan, the conferencing. Assuming that this student has all the information, she is ready to go to her patient. She goes to the bedside of the patient and to my way of thinking, this is where the student is going to learn nursing. Because at this point nursing becomes a reality, it is no longer something out of a book - it is no longer something the instructor said - it is no longer something from the classroom - it is the real patient, it is the real thing. This is the heart, the soul, the core of nursing. The student is highly motivated in this situation - she wants to learn all that she can learn about nursing, and this imposes a grave responsibility upon the part of the clinical instructor. This is where your big job begins. How do we help our students to learn nursing? It is in this area of teaching that I use the technique which I will term, "the huddle conference." I simply, by the huddle conference, take the student from the room at a convenient moment and when they have not identified a problem, they are not able to solve this problem, we get into a little huddle - maybe there will be one student, maybe there will be three or four. We try to resolve these problems, to solve them.

We read so much today in current nursing literature about the nursing care plan, about identifying the problem, about solving the problem - what do they mean. Do you think that the student, when she goes to the patient, can identify her problem, that she can solve her problem; I don't think so. I think the instructor in this particular area just merely guides and assists the student in recognizing and solving her own problem. When I take students in for a "huddle conference" I try to get them to recognize their own problems, because once the student recognizes the problem and identifies the problem, she is not going to forget. I would like to use a very simple example. The other morning I went into a patient's room, a nice gentleman, I took one look at him, he was in a terrible position, the pillows were not where they should be, he was in a corkscrew position in bed - he was eating his breakfast, his elbow was almost in his cereal. I looked at the patient and I thought, he needs to be straightened out, and the little student (she is a good student) was standing at the bedside, she was smiling, she was very solicitous, she wanted to render all the care he possibly needed, but do you know what was going through her mind - she was thinking, I have got to take care of his dentures, I have to check his blood pressure, and then check with the doctor - you see her head was full and she missed the very obvious problem. I didn't want to tell this student about her problem, I wanted her to recognize it herself. So, this is where we go out for our little conference. In begging and pleading I couldn't get the answer from the student, so I said to her, "you go back into your patient's room and on the chair is a blanket, would you please put the blanket into the cupboard and then would you please look objectively at the patient and just pretend he is not your patient at all. She came back with a big smile and she said,

"I know what you mean, Mrs. Morrison, he didn't look very comfortable." I said, "No, he doesn't - we talk about respiration, importance of breathing, digestion, circulation, body alignment, and here it is, right here," and it was very obvious but so many times the students are trying so very hard that it is very difficult for them - sometimes they don't recognize the most obvious problem. I could go on because I use this type of thing fifty times a day but my time is limited and I have one little last tidbit that I would like to give you. I really beg your forgiveness because I am afraid you will think I am bragging, but I don't intend for it to be. It was the end of January, I had assigned two students to two very sick patients. I knew this would be a challenge, also I knew it would be quite a responsibility. The first two days these students were with these patients they did a beautiful job - they established a relationship with their patients, just beautiful, and time went on, and one morning I was walking down the corridor of the hospital when one of these patients came out from her room and she took hold of my hand and said, "I am looking for your students, you know I am going home this morning and I want to say goodby to them because they were perfectly wonderful." I said, "Thank you very much, because I think they are pretty wonderful too." She said, "It is not only that, they were by far the most efficient nurses we had in our room." I am very well aware of the fact a patient is not in a position to really evaluate nursing care but it was a reflection that these students had really met many of the needs of these patients. This is the reason I am telling you this - these little embryos that I told you about matured rather quickly, they were only five months old - if they could do this in five months, think of what they can do in twelve months. So, I take my hat off to the people who set up our curriculum in such a realistic way that we are able to accomplish this with our students.

Ann I. Piele
Director, Vocational Nursing
Oroville Union High School

"Prepare to be startled but don't let it show" is the advice I would give anyone who is making a career of instructing student vocational nurses. It amazes me - I have many grandmothers in my class, they have had their children and their grandchildren and when we start studying the reproductive system they will say, "Oh! Is that what happened?" Anyhow, the rewards far exceed the moments of surprise and dismay that we encounter now and then.

When the students are selected, as we mentioned yesterday, they should be highly motivated - that is one of the reasons we choose them as students. I feel after they reach us in the classroom we should help them become even more highly motivated. Again, I think the teacher has a lot to do with this. If she is interested and enthusiastic, the students will be too. On the other hand if she acts like this is just another day's work, again the students will soon reflect this attitude. So, one of the first things I begin doing in the classroom is establishing a rapport with my students, and also help the students feel comfortable with one another. We are going to have to spend twelve months time together, we are going to have to stick together and I think this is one of the first steps that each student should realize. Now, I don't say that they can

always love one another; perhaps they can't get this close, intimate feeling, but they can have an understanding of one another and an appreciation of each other's fears and accomplishments, and they should share. Of all things, we can't be selfish. I feel that the students are people and we teach them that patients are people too.

I have a little thing which I call "controlled permissiveness" - it sounds sort of odd, doesn't it? If the students are comfortable enough to ask questions, I think they will progress much more rapidly. I am quite sure some of you have had students say to you, "This is a stupid question." No, it is not a stupid question if they don't know the answer, and how can you expect them to. Occasionally I have heard RN's that can't quite understand why the student doesn't know this or that. "Haven't you taught them this, haven't you taught them that?" So, I say to the RN, "Were you born knowing everything?" It has been so long ago that they have forgotten that they didn't always know. They sort of remark about that one little statement that I say so often, "You must remember that you had to learn too. Be patient with these women." I think that too often we think that some of our students who are our age, or older, should know simple nursing procedures - but they don't. I am quite sure if they should send me out to the garage and tell me to repair the motor in the car, old as I am, I would be quite lost.

One of the techniques I use which I have found the students enjoy, in fact they have told me so, is that I ask my students at the end of their school year to write a typewritten, unsigned evaluation of my teaching - and it has been most helpful. They have told me they have enjoyed this one thing I do immensely.

As soon as the students are out on the clinical area they have one patient to begin with. They can't do the dressings, give the medications, all the very first week - they couldn't possibly, but I ask them to take the patient's chart, read the history (some of the terminology is certainly out of their comprehension) but they do come to class with all this information, the treatments, the medications, the way the patient feels (the way they think the patient feels) and then we discuss it. Supposing it is a cardiac patient who is receiving digitalis - Well, digitalis is a new word to us, so we talk about digitalis and why it is given - what are the signs of intoxication, how does it affect certain parts of the body system. They all agree that this is most helpful. Each student is prepared to give a resume of the patient she took care of that morning and understandably they can't all give this report every day - they know this, so they are called on at random. Each student is prepared each day, she will be called on shortly, within the week, but we all benefit. In our hospital we have many geriatric patients and perhaps one student has taken care of one of these patients for a week and then one of her classmates is assigned to the patient - she is having some difficulty in carrying out certain procedures, or something. We discuss this in the classroom and the student who took care of the patient the week before will say, "Have you tried this or that?" and so they help one another. We talk about constructive criticism and this is the way it works - I let the students help me teach. We stress over and over in the classroom, how the patients feel - they are deprived of many privileges, their clothes are taken away from them and they have many restrictions placed on them. The student, we hope, is able to make them more com-

fortable - that is what we strive to do. I ask them to do their own evaluations as far as patient care - to stand back and look at the patient, look at the unit, are they satisfied? Is that what they would like if they were the patient? Then, when I come along there is not much left for me to evaluate - they have already done it. We keep stressing over and over that a patient's hospital experience should be as pleasant as it can possibly be, even though we do know there is pain connected with it. Incidentally, I ask my students never to walk into a patient's room, especially a child (say they were to give the patient a hypodermic) and say, "This won't hurt." I can't imagine why, but I have heard our RN's say, "This is not going to hurt," when they know darn well it is. So, they have accomplished nothing. The students say, "I realize this is going to be uncomfortable, it won't take but just a little while - will you help me?" Get the patient's cooperation. How does the patient feel - he has a right to some of his ideas being recognized too.

I have already mentioned that we do use discussions in the classroom to solve one another's problems. I find that the majority of my classes are very good doing this. I think that some classes, and I think all you folks know this too, have personalities. No two classes are ever the same, but I find the majority are wonderful people to work with, and to tell the truth, we have fun. When I went to school everything was so strict and stern, and the first month I taught I was going to be strict and stern too. It about killed me, so I asked the high school superintendent, "Do you mind if I am not quite so firm?" He said, "no" so from then on we just had a real good time. I really enjoy teaching more than anything else I can possibly do.

Well, back to our evaluation, if I do find that the students have to be criticized I feel they should be criticized in private, and praised in public. Lots more praise than criticism - we all like it, so why not recognize the things they have done well and praise them for it, and occasionally criticize, again using constructive criticism.

I would like to leave you with a little thought that James Stevenson, a poet, recently said, "I have learned that the head does not hear anything until the heart has listened, and what the heart knows today, the head will know tomorrow."

Ida M. Meier
Director, Vocational Nursing
Santa Barbara City College

I would like to say that I think I would be much more at ease in a demonstration room, actually teaching students, than trying to tell you how to do this or how to do that. Some of these things come more or less naturally and when you try to pick out the way in which you do them and try to explain them to people it becomes rather difficult.

I am the Director of the nursing program at Santa Barbara City College. This program was established in 1957. Miss Oster and I came to California the year before to retire and this is how we have accomplished this. Before I took the job at Santa Barbara City College, I had a short spell on the Board of Nurse

Examiners, where I learned considerable about what was going on in nursing in California. That kept me away from home too much so I sent in my resignation and before the ink on the letter was dry I had a call to take the position at Santa Barbara City College. Because it was a program that dealt with teaching students at the patient's bedside, I was very anxious to take it because fundamentals of nursing, bedside care of patients, is really my strong suit - I love it and I am happy when I am at the bedside with the student, teaching her from my experience how to take care of the patient in as good a way as I know how to teach her. Speaking of experience, I think I can claim almost as long a service in the nursing field as any of you here, perhaps longer - it is over 40 years since I began teaching students. True, I did begin as a senior nurse, assisting the practical nursing instructor and the science instructor, as they were then called, and I have gone on in that capacity. I was nursing arts instructor for 17 years and then went on to positions as nursing service administrator, and principal of a school of nursing for another 17 or 18 years, always with the interest of nursing education. Here in Santa Barbara, when I arrived, it was September and the program was ready to begin, or get the approval of the State Board of Nurse Examiners. Mrs. Cynthia Barnes, whom some of you know, had done much of the ground work preparing the program for approval so all I did was come in and take the directorship and together we worked out our program. Fortunately on the basis of the proposed curriculum changes we did not go into the old routine of so many hours of this and so many hours of that - we integrated the program, inter-related the things we were teaching the students about the patients in view of the final adoption of the proposed curriculum. Mrs. Barnes and I worked together for three years and then she decided to take a leave of absence so that she could come back and take the directorship of the program to give me a chance to retire. Instead, she got another position in which she was more interested, down in El Camino. Miss Oster, who had given up her position, volunteered to take over the position that Mrs. Barnes had left for the one year, then she was stuck with it for that year and ever since. Miss Oster has excellent preparation - she has a BS degree from Goucher, a MN degree from Yale, and a MA degree from Teachers College. She has had public health nursing, she has worked with Dr. Gesell in the Child Clinic in New Haven - she has a good background.

I think the enthusiasm that our instructors have shown has been absorbed by the students in such a way that they are our best advertisement for the program so that we have had a much better enrollment in the past few years since the program got underway. This last year, because of our increased enrollment, we had the addition of a third instructor - Miss Henriella Stiles. She is a graduate of the Maine General Hospital in Portland; she has a BS degree from San Francisco State, and a MS degree from the University of California at San Francisco. In addition to this she has had very excellent experience in medical and surgical nursing. Her enthusiasm is great - it is a joy to watch her teaching the students at the bedside and to hear her comments about their adaptations, and so on. I feel that we have a good program at Santa Barbara City College.

When our new students come in we use a technique which perhaps many of you also use. We try to put them at ease as much as possible. They feel strange, they come in as individuals, they are joining a new group, each one of them an important part of the whole group. We try to make them realize

this and impress upon them that their actions from now on will reflect on the whole group, and we try to inspire them with keeping this in mind as much as we can. At this time we ask them to give a little resume of their past experiences so they will feel comfortable in the group.

At this time we introduce the philosophy of our program and our plan for carrying this out. We consider individuals as "wholes" made up of many individual parts - all closely related - none of which can function without affecting the other. So long as they all function normally we have a state of "ease". If one or more parts do not work in complete balance we have a state of "dis-ease." From this point we study the various systems of the body showing how they are inter-related chiefly through the central nervous system. As the systems are studied we correlate simple pathology with each and then discuss nursing procedures necessary in each area.

As we begin to take care of patients who are ill we discuss the basic underlying principles that are related to the various procedures which the student has to learn. For example, when we teach irrigations to the student (usually the first one is the irrigation of the lower intestinal tract, or the famous enema) we teach the physical principle that the height of the container increases the pressure of fluid and that fluid exerts pressure in all directions equally in a closed cavity. I try to demonstrate this with a little makeshift procedure, using a rubber balloon. It is amazing how this impresses the student, especially when the container is held up high as in the old-fashioned high enema. As they observe the balloon expand quickly they have a realization of what kind of pressure this would make on the surrounding organs and how difficult it would be for the patient to retain that fluid if it were introduced into the intestines too rapidly. I have also put a gallon jug of water on top of the balloon and let the water run in slowly to show them how the water raises the jug full of water off of the balloon because of the pressure it exerts in all directions. This kind of demonstration usually impresses the student most emphatically. Then we include discussion of other principles, psychological, anatomical, etc.

In relation to aseptic technique, we teach surgical aseptic technique first and then we correlate it very closely with the principles of medical aseptic technique showing the difference between the two. In one instance we try to keep the infection away from the patient and in the other instance we try to keep the infected material which the patient is giving off from one body cavity or another away from the nurse or other patients and individuals in the hospital and in the community. Then we discuss the instances when both of these techniques are used on the same patient - one who is in need of surgical aseptic technique as well as medical aseptic technique. After we have demonstrated and discussed these in the classroom, we take the students to the geriatric department of the general hospital and under the very close supervision of our instructors the students give beginning nursing care to the patients. Each of us takes one ten-bed ward and we take the responsibility of giving total care to all of these patients. We have the students observe symptoms and report them, learn the procedures for making the patients comfortable, etc. At this time they also observe the work that is being done by the physical therapist and the occupational therapist in rehabilitating these patients.

During our second semester's work the students spend more time in the clinical area. They begin taking care of the mother and the newborn baby - the well baby, then they go to the sick child and from there to the sick adult, either with medical conditions or surgical conditions, or a combination of both. We cannot separate these and we give the students an opportunity to observe many types of conditions among these patients. Miss Stiles, in the surgical area, sees that each of the students has an opportunity to go to the operating room with a patient. First the student prepares the patient for operation then she accompanies the patient to the operating room where she observes the operation. From here the student accompanies the patient to the recovery room and works with the recovery room supervisor while the patient is coming out of anaesthesia. When the patient returns to the floor the student is assigned to care for him for the next three, four, or five days. She watches him progress from a critically ill patient to one who is almost completely recovered. The students enjoy this very much and get a great deal out of it. All of this time we expect the students to keep an account of the kind of patients they care for, and particularly the learning experiences they have had in relation to the care of these patients. They hand these reports in once a week. They are assigned to outside readings in relation to the diseased conditions of patients for which they are caring. Interpersonal relations and attitudes that they should employ in the care of their patients are also stressed at this time.

During the summer session, or the third semester, the students begin to work more directly with other groups of workers in the hospitals - the so-called team nursing. They take on responsibilities under the supervision of the team leader to a certain degree and in this way they care for more critically ill persons and they have more experience in observing the conditions of the patients, recording the observations, etc.

In the classroom we discuss the patients and their conditions very thoroughly as the students come back with their daily reports of the patients. At this time, also, we discuss professional adjustments, the legal aspects of nursing, the particular place of the L.V.N. in the hospital and what she may and may not do in particular situations. Then we discuss job descriptions, job responsibilities, etc., in preparation for completion of her program, when she will be going out into the field as a graduate licensed vocational nurse.

The students are a part of all school activities. At commencement time in June they are given their caps. Graduation exercises for the vocational nurses are held at the end of their program, in September. Throughout the whole program we try to guide and counsel the students to become kind, thoughtful, intelligent, competent nurses so that they may give the best possible nursing care to their patients.

SECTION MEETINGS

Tuesday Afternoon - April 9, 1963

SECTION V. - HELEN SCHEE, Chairman

Teaching Techniques

Questions discussed:

I. How do you like the student's unsigned, typewritten evaluation?

There seemed to be general agreement that this was valuable

II. How prevalent is permissiveness on the part of the teacher?

1. Methods of permitting the student to participate

   a. Pre-nursing and post-nursing care conference
   b. Helping the student to judge her readiness for a difficult assignment

2. How do you establish a degree of permissiveness compatible with vocational level of nursing?

   a. How do you control discussion in the classroom? Both the teacher and students set limits
   b. Vocational Nursing classes are composed of self-directing adults who have some limits from the teacher

3. How does the student make transition to worker when she has learned in a permissive atmosphere?

   a. There is need for the student to learn her place in the nursing service structure
   b. Do we use more advanced students to orient the less experienced?
   c. When in the curriculum is the transition to worker begun?
      Most schools begin very early (first few weeks of clinical experience)

III. Use of evaluation in clinical area as a teaching tool.

What methods are used in clinical evaluation?

a. Checklists with rating scales
b. Use of self-evaluation - verbal and with forms
c. Student-teacher conferences
d. Anecdotal records
e. Laboratory exams
f. Use of ward personnel (head nurses and team leaders) as aides to evaluation

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SECTION VI. - JOAN S. MORRISON, Chairman

I. What contributions do any have for or against some teaching techniques?

1. How do we get students to think, read, follow directions?

   a. Early in course, read, write it.
      Short written test with set directions - with penalties gradewise about the directions. Students learn by sad experience, but not fatal.
   b. Many have been a long time away from school and need to reinforce their study habits. Assist, practice, stimulate, prepare their study habits and then share.
   c. Build up from the simple form or technique to complex - have a goal and habit pattern established.
   d. Try not to go too fast or be over their heads.
   e. Pre-conference - Post-conference
      Most important - use team leader

2. How much teaching in classroom and clinical area - relating and tying in.

   a. Some start 3rd or 4th day on clinic - some 2nd or 3rd week - Some ?
   b. Direct teaching of bed bath, injections, positioning, by principle knowledge without return demonstration take them out to patient and with close supervision direct, teach, assist the "procedure" before and after, over and with the patient - do and evaluate.
   c. Teach,aid, correct spelling.

3. Evaluation - Law - How?

   a. Should it be at midterm - final - monthly - weekly - short, surprise quizzes?

4. Textbook

   a. De Lee's - Shaeffer - Zabriske - Price - Rapier
   b. Outside reading - Definitely, care, plans

5. Audio Visual

   a. Teach according to systems - yes and no - but correlation and inter-relating - all parts of body are the total care.

6. Patient care - 12 months program
   1 for 1st semester
   2 for 2nd semester
   3 & 4 last 2 months, maybe

   18 months program
   2 patients only
   Work during summer for experience
   Tie in on last semester

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SECTION VII. - ANN I. PIELE, Chairman

I. Teaching Aims

1. To make students employable
2. To provide students happiness in their employment
3. To prepare students for State Board Examinations
4. To provide graduates to meet the needs of the community

II. Job Possibilities

1. Doctors' offices
2. Private duty nursing
   a. Home
   b. Hospital
3. Visiting Nurses' Association
4. Hospitals, general duty
5. Convalescent homes
6. Veteran and Military Hospitals
7. Peace Corps
8. Clinics
9. Colleges and Senior Citizen Infirmary
10. Public Health Nursing
11. Industrial Nursing
12. Retarded Children

III. Preparing the student for a work situation in the hospital

1. Organization of work load

   a. Progesssive responsibilities
   b. Daily identification of nursing objectives which are handed in on written cards. These cards are then graded by instructor.
   c. Instructors gain objectivity in student evaluation on the clinical area by carrying 3 x 5 cards. On-the-spot comments are recorded by instructor for future reference and counseling.

IV. Teach by principles rather than by procedures

1. Teach by positive aspects, not by "precautions"
2. There is always more than one method in which to perform a nursing skill. Students must learn the principles and adapt to the situation.

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SECTION VIII. - IDA MEIER, Chairman

I. What is the definition of a LVN?

1. Found in ANA Practice Act, statement of functions. Difficult to define except as defined in Practice Act.

   Area of responsibility constantly shifts among nurses.

2. Only guides available to schools are the "Law and Regulations"

   Curriculums are individual for each school. It must come from the school.
   Over-all plans for program must be on file in office.

3. Easy to become too technically involved. Where does a teacher stop?

   Students questions deserve an answer
   The students' textbook furnishes a good guide but may be supplemented.
   A nurse must be "people oriented" no matter what level involved.
   Some students' level of learning is much higher than others and this is aided by problem solving technique. It is impossible to define the depth of the V.N.

4. Textbooks

   The Board is unable to recommend any specific texts.
   They are allowed to give an opinion if requested.

II. Try to adapt extra curricular articles and information to current situations.

   Ways of choosing learning experiences for the week.

   Discuss and teach a specific disease when a patient with that disease is in the hospital, and enable students to observe that patient's care.
   General routine patient care is most important for the student's training.
   Good personal hygiene, good elimination, good interpersonal relationship is most basic nursing care. V.N.'s are taught this general care and any specialties should be taught by the employer.
   Transfer of learning is most important in teaching.

III. Role playing - a method of teaching - problem solving later - useful in learning skills and adapting knowledge

Students take roles of both patient and nurse - some roles planned and some spontaneous.

How many use psychiatric experience?
One school replied that they go to the state mental hospital after the third week for two months. Medical surgical care related to psychiatric care during this time.

Does anyone use public health facilities?
Well-baby clinic available to students as follow-up of care.
Some LVN's work in homes - varies in areas
Possible to have single student accompany school nurse for a day.
Visiting Nurses Association will aid in training.

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GENERAL SESSION

Wednesday Morning - April 10, 1963

TOPIC: PROGRAM EVALUATION

PANEL MEMBERS:

Verna C. Berens, State Board of Vocational Nurse Examiners, Chairman
Dr. Mitchell P. Briggs, Accrediting Commission for Senior Colleges
Wilma Hiatt, Bureau of Junior College Education
Sister Mary Anita, State Board of Vocational Nurse Examiners

Verna C. Berens
Member, State Board of
Vocational Nurse Examiners
Bakersfield

I would like to say as a member of the State Board of Vocational Nurse Examiners, I am most happy to have been invited to participate in the workshop and have the privilege of meeting so many of you instructors. As you will notice from your program, the panel discussion topic this morning is to be "Program Evaluation." Our first speaker on the panel is the Executive Secretary, Accrediting Commission for Senior Colleges. He received his Bachelor of Arts degree from Morningside College, his Masters degree from the University of Washington, and his PhD at Stanford. He began his career in education as a high school teacher in Iowa, then came to Fresno where he served as a teacher in the high school and junior college, and was later appointed Professor of History at the Fresno State College. In 1948 he was appointed Dean of Instruction for Fresno State College, in which position he remained until his retirement. Upon his retirement he became Executive Secretary of the Accrediting Commission and now holds that position. I understand he is also the author of several books. It gives me great pleasure at this time to introduce Dr. Mitchell P. Briggs.

Dr. Mitchell P. Briggs
Executive Secretary, Accrediting
Commission for Senior Colleges,
Western Association of Schools and Colleges

Frankly I didn't know just what was ahead of me this morning so I am going to talk informally about accreditation - some of this will not affect your work directly but I think will give part of the background of the whole evaluation program.

Accreditation of collegiate and secondary schools is distinctly an American invention, for better or for worse. It is one of our several American phenomena. People in other countries really don't know much about it, and for a very good reason because practically only in the United States is education as independent as it is here - the fifty states doing what they please. I don't know how many

thousand local school boards are also doing more or less as they please insofar as the state regulations permit. Consequently there is a tremendous variety of standards and lack of uniformity in our whole educational program, and, of course, in one sense there is no American system of education. You know that in European countries, generally, there is a Ministry of Education, and the Ministry of Education controls education through the whole program. Institutions offering degrees are controlled by the Ministry of Education. I remember a few years ago when I was in Vancouver visiting with some people at the University of British Columbia, one of the Deans said to me, "We don't know what you mean by accreditation." They said, "We use your lists, of course, but we don't see much excuse for it." Why should they - in the whole Province of British Columbia there is only one institution that has authority to grant degrees. I was curious then so I looked up an American state with approximately the same population, and it happened to be Kansas. Kansas at that time had 18 accredited colleges and heaven only knows how many unaccredited places that call themselves colleges. In the United States because of the autonomy of our educational units, local, religious, statewide, and what not, there is no uniformity, with the result a great many years ago various units of professional bodies and collegiate groups thought there was a need for establishing some standards, with the result that our accreditation program has grown, and grown, and grown, and most people think it has grown altogether too big. Thus we have in the United States six regional accrediting associations, and by mutual agreement the fifty states and territories have been allocated to one or another of them. They are: the New England Association covering the New England states; the Middle States Association, with jurisdiction over New York, Pennsylvania, and that central Atlantic area; the Southern Association, with its obvious area of authority; the North Central Association with its headquarters in Chicago and covering all the nineteen states from West Virginia to Arizona; the Northwest Association, with jurisdiction in the several states in that area, including Alaska; and the Western Association, including only California, Hawaii, and Guam. In addition to these six regional associations, which are general accrediting agencies, there are some twenty-three professional, or specialized, agencies that have been approved by the National Commission on Accrediting, and which are concerned only with the disparate segments of the colleges and universities they evaluate. I must say a word about the National Commission.

Professions and disciplines such as law and medicine, and chemistry, and engineering, have been in the accrediting business for a long time and it was only natural that every other discipline and every other profession, or semi-profession, would want to get into the act and come into colleges and universities and examine one segment of the college program. So, some dozen years ago, a group of university presidents banded themselves together into an organization, or created a new organization, called the National Commission on Accrediting for the purpose primarily of reducing the number of specialized professional agencies, and if that couldn't be done very successfully, at least keep out a lot of others that wanted to get into the act. Because, in a big complex university there is hardly a day passes but what there is an evaluation team on the campus working at some segment of the university program and attempting to dictate to the university exactly how the university should be organized in order to obtain accreditation by this particular group.

The National Commission, let us be frank, has not succeeded in doing the total job that the organizing university presidents thought it might be able to do. Many accrediting agencies were too firmly entrenched. However, the National Commission has refused its approval, has denied its approval, to many other groups that have been trying to get into the accrediting program. However there are 23 now approved by the National Commission and the six regional associations work in close conjunction with these approved specialized agencies. Normally when we visit a college or university we visit it in conjunction with such specialized programs as the university is concerned with. None of these specialized agencies will come into a college or university until it has regional accreditation and then only upon the request of the President of the institution. I am saying then that accreditation in the first place is purely an American institution deriving directly from the autonomy of our whole educational process and deriving from the lack of uniformity and the lack of any national program or standard for education. Now, to what extent does an accrediting agency do the things that it claims to be doing? Ideally we think that an accrediting agency should at least contribute in three ways. In the first place it sets a floor below which it won't go - if an institution wants to be on the accredited list it must meet certain standards. On this point, however, I must emphasize that increasingly it becomes true that all accrediting agencies are less concerned with specifics, with objectives, definable, accountable standards than was formerly true. For instance the American Chemical Society formerly was very specific, and it is still pretty specific, may we say facetiously, counting test tubes, square feet, and that sort of thing. And, the general accrediting agencies were much more objective than they are now; the number of books in the library, the number of PhDs on the faculty, the salary schedule, specific equipment in the laboratories, etc.

Now, we are not minimizing the importance of items that can be counted and measured. We know that a college library must have books, but we are much less concerned with the number of books in the library now than we used to be. We are much more concerned with what those books are - whether they are suitable to the college program, and finally whether they are being used. While all accrediting agencies and associations have standards, the tendency is to make them less and less objective, more and more subjective, but a subjectivity based upon a body of data and a subjectivity employed by people that, we hope, are somewhat knowledgeable in the area that is being evaluated. This is the sort of thing that is easy to get a conception of but difficult to describe in very specific terms and, frankly, there is some criticism of it. There is some criticism of it in this state for instance. There are those people who say that an accrediting agency should identify specifically that these are the things it is looking at, it will ask for a checklist - are these things there, and if they are there the school is accredited and if they are not there, it is not accredited. In my opinion, fortunately, these people are in a minority because we believe there is a whole lot more to a college or any kind of an educational institution than bricks and mortar, and numbers of books and numbers of test tubes, there is an esprit that we are all familiar with and which we all think is important. I am saying then that one of the services of any accrediting agency is to establish standards below which it will not go in the acceptance of an institution. But, I modified that by saying that these standards are becoming less and less objective.

So, then, having standards and having evaluated and looked at institutions on the basis of those standards, a list is prepared. These institutions are accredited and institutions not on this list are not accredited. In the second place an accrediting agency serves this function, we think it compels an institution to take a close look at itself. Now you wouldn't think educators would need any outside stimulus to induce them to take a closer look at themselves but educators are like everybody else, they often need an outside stimulus to do what they should. In any case, when an institution is applying for an accreditation visit, it must prepare a very elaborate application - an application based upon a self-study - a self-study which, in turn, is based upon a set of schedules that the accrediting agency has presented. Many of you people are from junior colleges that we have visited and you know what I am talking about, and you know how much work is involved in the preparation of one of these applications. Some of you may have groaned and grunted and complained about having to do all this work, but the plain fact is it was the accrediting agency that made you do it, and after it was done, you and your associates and the administration, and others in your institution, knew a lot more about that institution than they knew before. I remember, particularly, talking to a Dean of one of our very finest liberal arts colleges in this state and the question came up whether or not we should extend our period of accreditation (our maximum period now is five years) to ten years. He is the Dean of what everyone would agree, I am sure, is one of the finest liberal arts colleges in the state. He said, "I know it is a lot of work but I wouldn't know what is going on in this institution if we didn't have to do this every five years and I think we should continue to do it."

At any rate, one of the services that accreditation renders is this compulsory self-evaluation which institutions are compelled to go through about every so often. As a result of that self-evaluation discoveries are made, we hope, for improvement - at least for change. As I heard the other day one of the arguments in favor of change is at least it is a change, whether it is an improvement or not.

A third service, I think, that accreditation renders is the service to the general public in giving the general public, parents, students, employers, everyone, some assurance that an institution on an accredited list meets certain standards. Unless you were involved as closely as I have been in this I am pretty sure you wouldn't believe how many institutions that are functioning under the names of colleges and universities are not colleges or universities at all - they are pure and simple diploma mills. We have been working on this for years and years but we don't seem to be able to get legislation that will crowd them out. I can tell you where you can get a PhD for $300.00 if you happen to need one - it won't do you any good, but you will have it at any rate. I have seen some letters - I remember two letters in particular from a widow who had been induced to send money to get a degree from an institution in San Diego that was operating out of a massage parlor. She had been assured that if she got this degree she would be able to teach and inasmuch as she had two or three children to educate she sold her home to pay for her so-called education and found it was of no value at all. She wrote these pitiful letters asking for a refund of her money. There are institutions that are not that bad but still aren't very good. So, I say, accreditation gives the general public some assurance that an institution on an accredited list is an honest institution at least. It may not be as good as some others but if a student goes

there and applies himself, there is reasonable assurance that the education he will receive will be recognized as an education.

I want to say one other thing - let no one think that we in the accrediting business believe for a minute that all institutions on an accredited basis are equally good. Of course that is not true. We have on our accredited list in California some 78 senior colleges and universities and you know there are not 78 senior colleges and universities in California all uniformly good. And, sometimes you hear representatives of the so-called better institutions say institutions should be graded, that this list would be of more value to the general public if the institutions could be graded from 1 to 78, or at least in three or four or five different categories. Well, when that comes I don't want to be around - I don't want to have the job of grading them. But, there is a demand for that sort of thing and I get many letters asking me, for instance, "You have four big universities in the state, please grade these 1, 2, 3, 4 - I want to go to the best one." That isn't the job of the accrediting agency - consequently I put you on your guard against thinking all institutions whether they are high schools, junior colleges, senior colleges, or universities, simply because they are on the accredited list, are of uniform quality. What we say when we put an institution on the list is only this, "We think this institution is an honest institution, it is attempting to do a good job, and it has at least minimal facilities to do the one thing or the several things that it says it is doing." We attempt to look at an institution in the light of its own stated objectives. Simply because the institution is on the accredited list doesn't mean one can get a major in chemistry or astrophysics. If you read the catalogue you will find what the institution says about itself and if you find it on our accredited list you at least know that we think it is doing a respectable job for the things it is designed to do, and the things it says it is doing.

Verna C. Berens
Board of Vocational Nurse Examiners

The next speaker is the Consultant for Nurse Associates in Arts Nursing Project, Bureau of Junior College Education. She received her formal nursing education in Huntington Memorial Hospital in Pasadena, her Bachelor of Science at the University of Colorado, and Masters degree at the University of Washington. She has served as Head Nurse and Consultant in Nursing on the faculty of Pasadena City College during the development of the pilot program for Associate in Arts RN program - served one year as Educational Consultant for the California State Board of Nurse Examiners, and is presently employed by the California State Department of Education as State Consultant in Nursing Education for our 5-year project, funded by the Kellogg Fund - this is concerning the 2-year RN program. I am very pleased to present Miss Wilma Hiatt.

Wilma Hiatt
Bureau of Junior College Education
Consultant, California Associate
in Arts Nursing Program

I was very pleased to be asked to meet with you. Many of you I know from either working with the League or working with the junior colleges or working in nursing, and those of you whom I don't know I still feel a comradeship with because we are all in nursing education and this is the field in which we all share our great challenges - and sometimes problems.

It was interesting at this conference that the two keynote speakers both spoke about vocational and technical education in the junior colleges as the field that is becoming increasingly nationally recognized as one of the major, if not the major, aspect of the junior colleges' contribution to education. Not meaning to imply that the liberal arts and transfer curricula and the very fine lower division college offerings are not important - they are, but other colleges give this also, and our particular emphasis on vocational-technical education is a job that no one else is doing and it is terribly important. So, I think you can expect to find that your teaching contribution is going to be more and more recognized and, of course, your responsibilities will increase along with that recognition. I think of all the curriculums in the junior colleges probably the curriculum in the health field, and that includes nursing, is the curriculum that is going to receive increasing emphasis and again is going to demand more and more of you in your contribution to the needs of the community.

Now that I have talked about the last two days, I will get down to this morning. As I understand it, our objective here this morning is to explore together some aspects of program evaluatior and to try to provoke some thoughts and some discussions which will take place later in your discussion session. I would like to begin by sharing with you some of the connotations and meanings that I see in the phrase, Program Evaluation. When we talk about the vocational nursing program we talk about a composite. It is a constellation of the total forces and resources and circumstances which eventually have the educational effect of changing a newly admitted student into a competent beginning practitioner. Of course there are many objective and subjective aspects to this, and many subtle things which are a little difficult sometimes to keep in mind when really trying to evaluate your program. In my thinking the term "program" would include all your physical facilities, your classrooms, your offices (even your files if they are inadequate and you can't find something when you need it) that affects your total operation. The term "program" also includes laboratories, your clinical practice areas, such teaching resources as your textbooks, your library holdings, your audio-visual aids - it includes your services to the students, their admissions and registrations and counseling services, health services, and employment services, if these exist. It includes your course content and your teaching methods, the learning experiences that you provide for the students and select for them. And, of course, an essential part of your program is the selection of faculty, the standards that are required of them when they begin employment and as they continue employment. It includes the retention standards for students, what they have to do to stay in the program and progress through to graduation. And, derived from all this, and a

part of it too is the climate in which these students learn and in which you teach. This morale or spirit which Dr. Briggs also mentioned is something important in the college. All of this is supported by administration, by the budget, by the administrative policies, by the relationships to the total college, and to the community. The vocational nursing program has some rather unique aspects to it which have to be recognized and which may get a little bit special compared to evaluation of other programs perhaps in the college.

Some of the rather particular aspects are the fact that you use as a laboratory an area which is not usually an educational institution - in other words, you are a part of a college but a great deal of your teaching takes place in what we might call an extended campus - the hospital, and therefore you are subject to two different educational settings. Another is that your faculty group is usually small - I don't know what the average is but I would imagine two or three teachers per program would be not too unlike the actual figure. Another is that you teach a rather closely knit curriculum - most of the subjects have a direct relationship to the student's major, and to the field of nursing. One other thing that I might mention is the number of hours that you spend in teaching - this is worked out according to formulas at the college and is appropriate to your assignment but it does make a difference in the amount of committee work time you have, the time you have to contact other college faculty, and the hours that are available for an evaluation program.

We have talked about "program" and I would like to talk a little bit about "evaluation" as a word. Again, if I were to ask all of you to define the word "evaluation" I imagine one of the common synonym phrases would be "to judge." This is a common meaning of the word "evaluation" to most people. Another might be "to measure against a standard" or "to assign a value." I think all of these meanings are inherent in the word "evaluation." You may have some meanings of your own which are a little different. In any case, it is a course of action that results in a decision about quality. As Paul Dressel puts it in his book on Evaluation in Higher Education, "evaluation involves judging the worth of an experience, idea, or process." And, this judgment presupposes standards or criteria. Dr. Dressel goes on to point out the validity of the evaluation process depends on three major aspects, (1) the accuracy and appropriateness of the data that is gathered (what are you looking at when you evaluate); (2) the soundness of our standards or criteria (if you are baking a cake and decide it should be dark brown when it gets done, and you let it become dark brown you are going to have a burned cake on your hands - so your criteria wasn't sound, was it?); (3) the wisdom of the persons who measure the data against the standards (it takes quite a bit of insight and judgment sometimes to decide whether this is coming out to what is reasonable and desirable.) Of course, it is quite possible to go through the whole process and come to the wrong conclusion. You may decide you have a wonderful program when actually there are many, many things wrong with it, either you haven't caught the right information or your standards aren't what they should be. Or, you may decide you have a terrible program, when actually you are doing a fine job for the opportunities which you have and the resources that you are working with. So, program evaluation means measuring the total educational process against the standard of work and determining how the scales balance. We can always expect to fall a little bit short of our perfect standard. Every time we draw nearer to what we thought was our perfect standard our horizons widen and we see more things that we could do, that we could do better. This is the fascination of teaching and professional service in any field.

I notice that your workshop program, on the cover, says "The Pursuit of Excellence" and I think this is a key word because as soon as we think we have achieved excellence it means that our growth has stopped and the rigidity of deterioration has set in. On the other hand, unrealistic criticism for not having achieved excellence is harmful too. We have a right to be proud of ourselves in what we are doing. Viewed as a whole, this process of program evaluation can be so overwhelming that we wouldn't even attempt it except that we have to - we have no choice. As we have pointed out, we have this forced on us by society in one sense, and also it is a natural part of living. Every day in our teaching and our living we make many, many decisions - what shall I teach next, what shall I say, shall I use this method of instruction or that method, am I failing or suceeding with the student, is this patient responding to the care as he should be, under the circumstances? The overwhelming part of it comes when we try to do too much in too much detail and in too many aspects. Actually the process of program evaluation is a mosiac made up of small bits of evidence which eventually are put into the total picture. Even before we get the total picture together some parts have changed and so we start in with another jigsaw puzzle. But it makes it a little bit more approachable, I think, if we do think of it as a mosaic and realize that we can't do it all at once, and we shouldn't attempt it.

Within education in the public schools there are three types of evaluating processes, (1) the accreditation which is required by state law under the legislative charge to our Board of Vocational Nurse Examiners, (2) we have the "voluntary" so-called, although actually most schools consider it a "must" in their educational life, evaluation of the total school which Dr. Briggs just told you about, (3) the unofficial everyday evaluation, or periodic, or yearly evaluation, or whatever patterns we chose. It is this third type of evaluation that I think reveals "symptoms before they become illnesses - deficiencies before they become malnutritions - limitations before they become handicaps." They help alert us ahead of time and we hope the problem doesn't get out of hand before it is a real problem. This everyday, informal self-evaluation process has the added value of making us alert and helping us develop the accepting attitude toward criticism. This makes it possible to accept the findings of an official evaluation which may point out where we may need to improve. We should welcome this as we would welcome a doctor's evaluation of our state of health as an aid to us, not as a personal insult.

I mentioned the fact the evaluation process may be an overwhelming thing if we look at it as a complicated academic exercise which we go through unwillingly and to impress someone else. This attitude of looking on it as something too difficult reminds me of the worker who developed a gastric ulcer because of all the rapid decisions he had to make in grading potatoes. This sort of thing is a sign that we haven't kept the process under control and we haven't realized that we are trying to help ourselves instead of impressing others. If we miss something, or make the wrong decision, this is our privilege too (another lesson that nurses need to learn) that failure is a normal part of living, not something that just "isn't done."

The evaluation process was said by Dr. Dressel to presuppose standards for criteria. These are usually initially developed when the program first starts and is stated as the philosophy and objectives of the educational program. I notice Dr. Briggs said they evaluate the college in the light of their objec-

tives, and we know the National League of Nursing Accreditation does this too. But, somewhere along the line, someone has to have the wisdom to make some good objectives - you couldn't accredit someone for doing something that was meeting his objectives if his objectives were wrong. I hear they uncovered a school for safe-crackers down in Southern California the other day, and I hear this was quite a successful curriculum but I don't think we would accredit the program. So, someone has to have some judgment and restraint. The philosophy represents the faculty's beliefs about the ideal program, the ideal student product, and the ideal results. The objectives spell out the changes they hope to help cause - they don't really do it, but they help it happen through education. Eventually these result in measurable changes in student behavior - going from the beginning student to the beginning competent practitioner. The philosophy and objectives are like a compass and all the faculty understand the position of the program and its destination and agree on this. They cannot steer a varied course or there will be a lack of unity in teaching. Now, this doesn't mean that everybody agrees in detail on everything, but they certainly should have agreement on what is a good program, what is good teaching, what would be a good graduate, and what are the needs of society that this graduate serves. Even though this philosophy and these objectives are shared, they will also change with experience and social developments. I am sure your concepts about what a good program is today are very different than what they were five years ago, and they will be different in another five years.

The evaluating process involves comparing our standards to our achievements and measuring to find strengths and weaknesses. It also involves keeping our standards revised and up-to-date, and appropriate - improved with our widened vision and made more valid by experience and trial. Sometimes we set our standards too high - we expect something that is unrealistic of ourselves or our students. Sometimes we set them in too narrow a pattern or in too restricted a pattern.

Who is involved in the process of identifying an ideal and using it to judge our accomplishments? The faculty is the group most involved. They are the group that know what the field is, and they know by daily practice what teaching in it means. But it is hard to see ourselves realistically - we need help. The smaller the group is and the more specialized the curriculum, the more narrow we tend to be. So, in a small group we need to seek resource persons who can help us look at ourselves in a way which will suit the needs of society and not just the needs of ourselves or of nursing. You may find that your college administration can help you, or your deans, your curriculum experts, if you have them, counselors, advisors, registration personnel - you may find that the college has psychometrists or service such as this to help in evaluating students - persons who are experts in course content construction - how you organize and develop a curriculum. Your advisory committee may be of help to you, the hospital personnel in some cases may be of help. You will find, I think, that you will need help and that these people will be most valuable in preventing a narrow point of view. Some examples of the assistance you might obtain were covered in your 1959 study which, of course, I think is an outstanding example of study and work, which I hope will be continued. The

Admissions Office and the Counseling Office might be able to help you gather and develop statistics on who you admit, what type of persons they are, their biographical information, age, etc., and scholastic ability. When you have a problem student, someone who is failing, or someone who is under-achieving, or not sufficiently challenged, you will have some records to go back to and review, and to use as a basis of deciding in the future where you can prevent these problems from developing. A college psychometrist could be a great help if this person is on the staff. There is just as much danger, I think, in admitting students who need a different program than yours as there is to admitting a student who has not the ability to handle the program - both of these people can be problems and we need more studies in admissions.

If the college has a follow-up study on graduates you can get valuable information from them if you alert them to what you need and help them develop questionnaires to send out to graduates - where are they working, are they satisfied, how does the employer feel about them? All sorts of information such as this is often available through colleges if you use it. They may be able to give you some idea of how well you are doing in recruitment, and in supplying the needs of the community. The college will know how many students are going to "feed in", and the local areas, hospitals or the State Department of Employment often know what the needs in employment are. If you are, over the years, producing less and less of a supply of vocational nurses, then in relation to the number of openings in the community you know there is something wrong with recruitment, or perhaps the program needs to be expanded, or perhaps vocational nurses are being misused, over-used, or under-used. It gives you clues as to what you might look for. Other sources of data, for instance the Licensing Board, can sometimes tell you about how the preparation of your faculty compares with that of the average program in the state or what the range is. This can guide you in faculty in-service, the development of faculty skills, and can also give you some judgment perhaps in relation to the problem of shortage versus standards. I think sometimes we hear so much about the shortage that we get to thinking we are doing the school a favor by taking a job there. This attitude is really not very healthy in improving our teaching - no matter how great the shortage is, you wouldn't want an incompetent doctor taking out your appendix; and no matter how great the shortage is, an incompetent teacher, or an indifferent teacher, or an arrogant teacher is not really going to be of any help to the program. Your dean, or your coordinator, or your curriculum advisor can help you evaluate the teaching methods used by faculty and help in providing the instruction in-service that they need. You will be proud, I think, to know that I heard that the teachers in the junior college programs, leading to employment, seem to be the group of faculty in the college who are most open to in-service education, most willing to accept help, most alert to their own needs, and mature enough to accept help and not be so defensive about it. You might ask yourself how many different methods of teaching have I used this year that I didn't use last year? Have I ever surprised my students when they came to class by an entirely different approach? Do the students look forward to coming to class or do they know it is going to be the same old lecture with maybe a little quiz thrown in?

Workshops, conferences, and literature offer us opportunities to compare our curriculum and course content to that of others. Of course, your course content curriculum must have the integrity of your own philosophy and objectives. Just because someone else offers such and such an experience, if it doesn't fit your philosophy there is no excuse for putting it in. But, it is helpful to see

what other people do; and again, the '59 report gives some ideas about course content. I have been impressed by the section on what was included and what wasn't included and what people thought about this. Some questions you might ask yourselves would be in this area - how much content do I teach because I have a personal need to include it so I can sleep at night, compared to whether the student really needs this as a basic part of the curriculum. If I include it and it really shouldn't be in there, then what do I do to this student's sense of role in his concept of himself as a worker? Our Associate Degree Programs in Nursing have had this problem as you have probably heard - what do you do when you change a curriculum from one pattern to another? What do you leave out, and what do you add in case you might add something? You might ask whether too many of your graduates are a source of distress to you later when you see them in employment, rather than being a source of pride - or how many of them are exceptionally fine, and what reports do you get on them? If they are fine, who says so? Are they fine because they are doing work that they should be doing or are they fine because they are being so under-used that almost anybody could really shine in this situation? All of these things have to be evaluated. You might ask yourself what you do to give your graduates pride in themselves and a satisfying and sound sense of role.

Another helpful source of information about instruction is the student survey (done without any danger of reprisals, of course.) Now, you wouldn't ask a student at midterm what she thinks of you as a teacher unless you wanted to have a flattering response (which of course might be nice.) Perhaps at the end, or at some point where it could be done without too much danger, with a carefully worked out plan, ask them what they think of you as a teacher - you probably have all done this. You may say that students are not adequate to judge - I would question that. I do think that students aren't adequate to judge on a long-range point of view. Many times the short-range, popular teacher is not the one that, ten years after they graduate, they remember with respect and gratitude. They remember, usually, the ones who seemed rather firm in their requirements of the students at the time they were in the program. Students are quite wise, fortunately, and I think they learn some things in spite of us rather than because of us, and this is a saving grace for all education.

State Board scores have suggestions. If they are consistently too low, maybe your student screening isn't adequate, or maybe your teaching isn't effective, or maybe your clinical resources aren't adequate for the learning needed or any combination of this. If they are too high maybe you are misdirecting some students by enrolling them in your program when perhaps they should have gone to a baccalaureate program, or some other program. Sometimes State Board scores that are too high are almost as much of a disgrace as State Board scores that are too low because we need to give the average person an opportunity and we must not just concentrate on the "top". Hospital attitudes are a good source of information but they should be taken with several grains of salt because these people are not educators but look forward to the time when student are workers. If they are unhappy with the curriculum, if they don't understand it, if they tend to misuse the students, if they don't provide you with the teaching resources that you need, if they are impatient with the program or if they don't approve of the student performance then there is something wrong with our interpretation. Whether there is wrong also with the program is something to find out.

I have mentioned only a few sources of data. None of them you would want to use all at once. Many wouldn't take too much time really if you set up the machinery for feeding information in to you. I haven't mentioned your own subjective evaluation of your program. As a teacher you receive many evidences every day of the success or difficulties of your program. Your own ideas or hunches are very important in the matter of evaluation - again moving away from so much of the objective and toward the subjective. But our own ideas are subject to our own lack of insight and our own individual prejudices and limitations, so we need this factual data added. Even with limited time the faculty could take two hours a month to look at some organized information about the program and these sources that I have mentioned. I think it would help a great deal not only in improvement but in faculty morale in unity.

When you find evidence of need for improvement and change sometimes it helps to use the Force Field Analysis approach of looking at what is causing a weakness or fault, and what forces could help you correct it. Then at least you could identify what you are going to do battle with, or maybe whether you should do battle. Maybe what you think you should change, isn't practical to change and you are going to have to learn to live with it and do the best you can. You can't always have the ideal situation.

I think our nursing education programs in junior colleges, both the associate degree and the vocational nursing program have a great deal in common - we both have had to prove ourselves, to move apart from tradition, and be willing to pioneer. One day in the future we will have to be careful that we, in turn, do not block the progress of other programs and prevent the development of new things that are needed by society. We also have to resist the temptation and tendency of all programs once they become established of becoming so entrenched and protective of themselves that they become rigid and full of artificial difficulties.

So, if we are successful, our program evaluation process should reveal that our achievement is the provision of a fine career opportunity for students, the preparation of needed and appropriately prepared personnel for patient care, and a contribution to the development of graduates as individuals who are a credit to us and to the community.

Sister Mary Anita
State Board of Vocational Nurse Examiners
Director, St. Mary's Hospital School
of Vocational Nursing, San Francisco

After listening to Dr. Briggs and Wilma Hiatt, I think we are pretty well convinced that program evaluation and accreditation are very good things and this makes me approach this rostrum much more comfortably since I have been asked to approach it as a Board Member - I know how much you welcome the Board representative who takes up your valuable time during the annual visit. Then there is a vague feeling that a Board's mission in life is to put restrictions on schools and make us generally uncomfortable. So after our two speakers I feel safer in approaching the microphone as a Board Member.

As a Board Member, I can tell you quite simply the purpose of the survey visit prior to receiving your accreditation - the Board is obliged to see that the laws and regulations relating to vocational nursing are met. Therefore, the purpose of the survey visit is to determine if the school is offering the course in vocational nursing which meets the requirements of the law and the regulations. It is that simple. The second purpose is to assist the school with problems which may arise in meeting these requirements. As an aside here, and I think you may know this, the accreditation can be granted, suspended, or revoked only by the Board of Vocational Nurse Examiners. The Board usually delegates the pleasure of the survey visit to the nursing education consultants or to the Executive Secretary simply because most of us have a few little odd jobs to do besides being on the Board. The visitor then presents a written report to the Board, it is only then that the action of this body takes place and you receive your very nice form to say that you are accredited for another year.

Now, I am going to turn the table on Van and ask you to permit me to take off this badge which says I am a Board Member and speak to you as a vocational educator. I would like to speak to you as colleagues in this great challenge which I feel is ours in vocational education. As a Director of a vocational program, I like to look at the survey visit a little bit differently. The laws and regulations which we have, give us minimums to meet but I am not interested in minimums, and I don't think any of you are either, particularly after meeting with you, listening to you, talking with you the last few days. We all know that unless we keep our sights high we are not even going to keep the present standards which we have.

Vocational nursing, like all other nursing is not standing still, it is moving on. If we are complacently satisfied with our programs as they are, we will be left behind, as it were, in a cloud of dust, or smog, as the programs of vocational nursing move on and imbed themselves more deeply into their rightful place in nursing education in our profession.

Prior to your accreditation visit, the Board representative makes a careful study of the application for accreditation, or if this is an ongoing program, an existing school, of your annual report. She looks at the latest report of any special visit, or annual visit, or any correspondence with the school - the

facilities, the personnel problems, the rank of the school, and the failures in the last licensure examination, the attrition rate, and last but not least, the philosophy and objectives of the program. These are all carefully reviewed by the visitor. In other words, what she does is familiarize herself with the program. My question is this, as a Director of a program, would there be any purpose in our doing the same thing prior to a visit, that is having our faculty review these same areas? What about our facilities? Are they adequate? Are we having any conflict with facilities with other nursing programs in the area? And, believe me, this is becoming more of a problem as our schools of nursing increase. Is the vocational nursing program relegated to the second place, to second choice of facilities? Are the members of the cooperating agency, our hospitals, happy to have our students, and anxious to hire all our graduates? If they are not, what have we done as a faculty to find out why? How does our school rank among the other schools of the state in the examination? Is our rank moving higher each year, or lower? And, again that question, why? What story does our attrition rate tell us? I think that most of us will agree that there is pretty much of a direct relationship between selection of students and the attrition rate, and we have gone into selection of students and have received some very good ideas during these past few days. So, why not review our process of selection - is it the best kind? I think we are all going to go home with some other ideas - everybody was jotting things down during the discussions.

Another thing that the Board representative looks to is the philosophy and objectives of the program. I think this is so important because either our philosophy is a page of high-sounding words, beautifully and correctly laid out, proper English and everything else, but empty; or it is a living, vital code which motivates everything we do, and I mean <u>everything we do</u>; right from what we are doing here this week, learning from each other, to our teaching and our student contact. Many a philosophy is set up in the form "we believe" - we believe this or we believe that. "Believe" is a good word. I feel any instructor or director who does not believe, really believe, that she is engaged in a vital nursing education program, critically needed for patient care, and that she can stand proudly beside any other nurse educator, should get out of the field. If you are not convinced, you will never convince anyone else, and I think we all know there are many people today who need to be convinced of the role of the L.V.N.

There are other areas the Board representative will attempt to cover on the survey which I can see to be a decided advantage to a faculty. First, she will confer with the chief administrative officer of the school or someone he delegates. Remember that the president of the college, the principal of the school, or the administrator of the hospital, whatever the type case might be, is responsible for operating a good school. We know that this responsibility is delegated, but ultimately it is his responsibility, and therefore he has a right to express his views and also to have knowledge of the survey. If there are no problems and the school is good and is making progress each year, developing new ideas, a little pat on the back never hurt anyone. I think probably somebody in a high administrative position needs this - those of you who are directors, I am sure, will agree. By the same token, if an objective survey shows that there are deficiencies it may be that the Board representative is only echoing what you as a director or an instructor have been trying to put over to your superior for some time. It is possible, and sometimes

happens, that a recommendation coming from an objective person carries more weight than the same recommendation coming from a person who is directly involved. So, I see this conference with these officials as a decided advantage to the director or faculty of a program.

Since a school curriculum is approved as it is sent, with a certain number of hours, and theory, and clinical teaching, whether we like this approach or not, and with a designated faculty, it is necessary for the visitor to know if these hours are adhered to and if the faculty is the same as approved.

Has your school come up with some idea to improve the curriculum, or the faculty-student ratio? There is probably more feeling about student-faculty ratio than one would imagine. All who have strong feelings that it should be changed base these feelings on the principle that a 1 to 15 ratio is unrealistic, but the interesting thing is the school administrator feels that it should be higher and the instructor feels it should be lower. But, if your faculty feel either way, if you have any feeling in the matter, and I see you do, we all do, what have you done to present logical facts, not feelings, facts, to substantiate your belief. What study have you done to show what it should be, 1 to 50, 1 to 1, 1 to anything? What have you done except to say, I feel it should be this, that, and the other way. Maybe you have, and if you have, share them with me. What I am really saying in essence is this, while the Board of Vocational Nurse Examiners is carrying out a responsibility placed on them, to see that high quality vocational education is being conducted, and we all want this, those of us who are vocational nurse educators can take advantage of this, their responsibility, to pause and make a study of our school and see where we have been, where we are now, and what is most important, where do we plan to go, what are we going to do. We all have busy days, and self-evaluation is something that I think we all keep putting off because of more immediate pressing duties that we have. But this visit prior to receiving your annual accreditation can be, if you want it to be, an incentive to make you pause and reflect, and really examine your program.

Some of you know Robert Frost's poems. There is one poem I like very much and find the last three lines particularly applicable to you and me. You may not be familiar with the first part but you will be with the last three lines - it goes like this, "The woods are lonely, dark, and deep, But, I have promises to keep, And miles to go before I sleep." Thanks to those of you who have been pioneers in vocational nursing education, the woods are not so lonely, dark, and deep, as they use to be. But, for those of us who have chosen vocational nursing education more recently, we have promises to keep, to the patient who needs well-educated LVN's and to our nursing profession, who, while they don't all realize it, yet, can't do without us. So, while we have come a long way in vocational nursing education, we have miles to go before we sleep. I like Robert Frost's words and we might take his words as a challenge to those of us who are in vocational nursing education - "I have promises to keep and miles to go before I sleep."

SECTION MEETINGS

Wednesday Morning - April 10, 1964

SECTION IX - JUANITA SPEAKER, Chairman

Evaluation of Curriculum

I. Methods of evaluation

1. Folders on individual students
2. Quiz and test
3. Conferences
   a. Student-instructor
   b. Change in attitude
   c. Adjustment
   d. Verbalize of change - "thinking"
4. Self-evaluation
5. Speed of performance - growth
6. Information on graduate students

II. Everchanging - new ideas

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SECTION X - WINIFRED WILSON

I. Student evaluation - various schools

1. Fullerton
   a. Anecdotal records, later used to compile permanent record Numerical values for each category
   b. Numerical grades are transferred to letter grades for college use. Comments to grades given are made as necessary
   c. Comments from team leaders are taken into consideration
   d. Student has area on evaluation for comment and signature
   e. Self-evaluation by students twice a year

2. Santa Barbara
   a. Students have opportunity to evaluate instructors
   b. Head nurses also evaluate students (in writing) in addition to the three faculty members. (If head nurses are to be used, they, themselves, must be evaluated re: methods of evaluation
   c. Students are permitted to see all evaluations

3. Modesto
   a. Follow-up study

4. Bakersfield

   a. Clinical student evaluation is similar to what Fullerton seems to have. However, in first semester college faculty members (special VN courses in foods, psychology and life science), nurse faculty members and nursing student counselor meet to discuss each student. Meet at least twice a semester

II. New curriculum evaluation

1. Individual course evaluation - Objectives

   a. To have students pass State Board Examination
   b. To be able to have students be proficient. Must alter course to fit needs

2. NLN Achievement

   a. League tests to evaluate student progress. Using this information to determine if results are due to teaching methods, admission procedures, etc. Test given at end of second semester (at C.O.S.) or 2/3 way along.
   b. Students must be oriented to the particular type of test (how to take the test). Perhaps use of transfer answer sheet at some time during course would help student

3. State Board Examination

   a. Results are used to evaluate the program, hence the instructors' concern with results.
   b. Must be aware of the State Board members and discuss with them the evaluation of the test periodically.
   c. Could we request State Board to give a better analysis of test results - example, break them into areas to detect possible weak areas

SUMMARY - All interested in State Board Examination results. Need for evaluation of testing methods

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SECTION XI - MARION SAUNDERS

Program Evaluation

I. Open discussion

1. Question posed to group: How do you evaluate your program in the terms of your graduate students' success?

   a. Follow-up study - value - showed administrative need for more help (1) provided more teachers (2) night course set-up for graduate students (3 hrs. per week for 18 weeks)
   b. "Thank-you party" at which it is learned students' needs for further learning. Questionnaire sent with invitation to party. Also followed a post-graduate course 7-10 one night per week. Rehabilitation class for graduate LVN's. Questionnaire mailed to employer - one area must show
   c six months of successful employment before she receives her certificate of completion.
   Question - would this be a mark against the student if she were not employed and so never received a completion certificate?
   Consensus of opinion - no stigma - this method "insures" employment following graduation.

2. Contact - visiting hospitals and talking with employers following graduation.
   Students found to (1) not allowed to use learning due to oppression by the RN's and jealousy of aides. Other stated that her students were doing (or being asked to do) more than their course offered.
   Suggests for meeting this problem:

   a. Invite these staff RN's to Board meetings
   b. One program removed from hospital for one year. Hospital asked them back so they could improve their personnel and receive accreditation.
   c. "Pilot Study" - How better to use the LVN set-up in the nursing office - so far it is a continuing study.
   d. Suggestion that in-service classes could be used to present the valuable uses of LVN. How to get there - invite self, or through Nursing Service.
   e. Instructors should attend supervisors', staff's and doctors' meetings.

3. Evaluation of theory

   a. Achievement test (N.L.N.) used various times mid-way (correlation high) and a month before end.
   b (Achievement tests include nutrition, maternity, and child care. basic nursing, and body structure.
   (1) Slow student - what is done for her?
   (a) Discussion with student
   c. School bears the cost of these tests.

d. Care studies
(1) Written and oral reports

SUMMARY: Discussion of employer-student relationship
Talk about evaluation of program when student is still in program

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SECTION XII - FRANCES HOOGSTAD

Program Evaluation

Idea: The integration of the nursing accreditation with the over-all school accreditation so that there would not be duplication of efforts

Discussion: The consultants could visit and help nursing programs with programs, ideas, and problems
Nursing programs are having to learn to function within framework of the school system
This might help the administration better understand the nursing programs

Idea: The dealing with the "pressure" by the administration regarding program evaluation

Discussion: State Board results are of interest
Programs might benefit by some idea of the focus of the State Board test
The instructors have varying ideas of what is expected of the vocational nurse
Miss Wood: Blueprint of licensure examination has been sent to each school.
The achievement tests used late in the course are helpful in meeting the State Board

Miss Wood outlined just how the State Board Examinations are compiled for use
Instructors may see and read the old examination by appointment with Miss Wood at her office in Sacramento

Students, on the whole, have problems in the area of reading on tests

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GENERAL SESSION

Wednesday Afternoon - April 10, 1963

TOPIC: IMPLEMENTING THE CURRICULUM

PANEL MEMBERS:

Grace Mitts, Sacramento City College
Laura Looper, College of Marin
Evelyn Chamberlin, Mt. San Antonio College
Leonie Soubirou, Biola School of Missionary Medicine

CHAIRMAN:

Maryellen Wood
Executive Secretary
State Board of Vocational Nurse Examiners

As you have noticed on your program, we are discussing this afternoon "Implementing the Curriculum." When you were sent your questionnaires previous to the scheduling of this conference, you were asked what subjects you would like to discuss, and this was one of the subjects that was highest on the list, and this is the reason for its inclusion on the program.

We chose our panel members to represent different sizes of schools because we feel that implementing the curriculum presents different problems in different kinds of schools. We have four very distinguished members of your group with us and I would like to introduce you to them now rather than before each makes her presentation. We have Mrs. Grace Mitts who is Associate Director of the Vocational Nursing Program at Sacramento City College. Mrs. Mitts represents a program which is probably one of the larger types of programs in the state. Next is Mrs. Laura Looper who is Chairman of the Department of Vocational Nursing at the College of Marin. Mrs. Looper represents a small program in vocational nursing - not necessarily in numbers of students but in number of faculty, she and half a person are carrying on the program. Next is Mrs. Evelyn Chamberlin who is Chairman of the Department of Vocational Nursing at Mt. San Antonio College, which we consider a medium sized program; and next is Miss Leonie Soubirou who is Dean of the Biola School of Missionary Medicine, who represents neither a small nor large program, but a private school, whose viewpoint might be a little different from the public schools.

Each panel member is going to speak for about five minutes to discuss the situation in her particular school, then Mrs. Mitts is going to speak on Implementation, the legality of it; Mrs. Chamberlin on the philosophy of it; Miss Soubirou on the academics of it; and Mrs. Looper on the administration associates in it (in other words, the hospitals).

Grace Mitts
Vocational Nursing Instructor
Sacramento City College

Sacramento City College began their vocational nursing school in 1953 - we average a student body of about 70 students - the staff includes the Director, six full-time instructors, and one part-time instructor. We have two classes a year. The students have clinical experience in five hospitals in the Sacramento area. We go to the hospital for our first clinical experience early in the fourth week of our pre-clinical eight weeks - they go in for two days of the fourth week, etc. At the end of the eighth week we go into the hospital area where we have classrooms also.

Since we started in 1953, we were familiar with the old curriculum so when the new curriculum was to be inaugurated we found that we were able to change fairly easily but with some trepidation and doubts, but we think we solved many of our problems by conferences and discussions and staff meetings in which the faculty discussed curriculum. Miss Eleazarian was kind enough to come out to speak to us, also to interpret the new curriculum, and we feel that with the time given us for these staff meetings and conferences we were able to do some planning, changing, and to implement the new curriculum. I think most of the schools which were changing from the old to the new, met some of the same problems which we faced and I imagine they had some of the same frustrations. This panel today will tell how we implemented the new curriculum, but it was felt there must be a beginning - a common beginning from which we would start, and we all know that in the beginning there was the law.

Why are we concerned with the law? When you have a law it must be either accepted or rejected, and we all know that if we do not accept a law we will be without its privileges and protection. So upon this law, with which I am sure you are all familiar, we thought we would begin our discussion by reviewing it, so that we would all remember the points involved in this new curriculum so we would all have a common beginning point.

The curriculum is subject to the approval of the Board and it is concerned with the development of competent and inter-personal, technical and manual nursing services to the patient. I was very pleased to see inter-personal first because, although I am going to try to be very objective in presenting just an outline of the law, I feel that you can have technical and manual competence but without good inter-personal relations the nurse has lost her usefulness. The conditions under which the vocational nurse can function, according to law, are circumstances where the professional nurses' services are not required. She is also supposed to develop the ability to participate with the registered nurse and the doctor. She is to be prepared to care for obstetrical, medical, and surgical patients of all ages. The course is limited to either 12 months on a full-time basis, or 20 months on a part-time basis. The school week is not to exceed 40 hours, nor 8 hours per day - this would include both clinical and lecture. Evaluation of the student must be done periodically and not merely by written means. In our area the instructors find the use of anecdotal records very valuable. The basic curriculum which includes, but is not limited to, fundamentals, understanding the principles of mental and physical health, and how it is maintained, and understanding of disease and its treatment. I think we should not forget that the words are included, or the phrase, "it

includes but is not limited to." Also knowledge of health services and resources, and the role of the nurse in these services. Your curriculum must include medical and surgical nursing, and the ability to perform nursing functions required by most patients. Your medical and surgical nursing must include, but again is not limited to, learning experience in the care of children, adults, and the aged, with a medical and surgical condition involving each of the body systems. Incidentally, I am interested in how this is implemented in some areas. The curriculum must contain obstetrical nursing and care of the newborn infant, which shall include, but not be limited to, understanding the care in relation to the health and family life, which is, I believe, family-centered maternity care. Also the anatomy, physiology, and understanding of all phases of maternal and infant care. Understanding, by the student, of the nursing principles involved and also the development of competency in performing her nursing functions in the area of obstetrical nursing and infant care. The hours are very definitely outlined in the law, but they are a minimum. We know that for fundamentals there should be 54 hours of lecture and 14 to 16 hours of clinical; for medical-surgical, 324 to 360 hours of lecture and 756 to 864 of clinical; obstetrical nursing and care of the newborn, 36 to 72 hours of lecture with 108 to 216 clinical. This will give us a minimum requirement of 450 total hours of lecture and 1080 hours of clinical.

The law also states that night or evening clinical experience cannot total more than 80 hours, and there must be a qualified instructor giving adequate supervision.

I think we are all familiar with holidays and vacations. If you are in a one-year school you may have all the holidays that the public junior colleges have, plus a limit of one week in the summer during summer session. If you are on a longer basis, the 20 months or 18 months course, then you would legally be allowed to have all the vacation and holidays that are given to the public junior colleges.

Clinical experience, which must be approved by the Board, should provide adequate facilities as to number, type, and variety of patients, and you must have the necessary clinical facilities in order to qualify under this new curriculum. The supervision, again I repeat, should consist of a minimum of one clinical instructor for 15 vocational students.

This is a very brief outline of the existing law concerning our curricula - it is the basis for our talk today on "Implementation." I think you will find that the law provides the flexibility in interpretation. I have not tried to interpret it - we have a very fine interpreter and I do not feel that anything more than an outline could be given at this time. It does seem flexible enough though that with this existing law, it is possible for the development and implementation of the curriculum to satisfy the needs of various schools - the different kinds and sizes, and it will be interesting to see how the different schools have implemented this curriculum.

Laura J. Looper
Vocational Nursing Director
College of Marin

Basically we started a new program in 1961 at the College of Marin which is a public school, junior college district, in a residential area of a high basic income. This gives you some idea of the kind of student body we draw. It also happens to be a very heavily academic-oriented population where vocational programs, by and large, have not been the accepted means of education by anyone's long stretch of imagination.

We started out in this program under the new curriculum. We did not have any of the growing pains - we were given a copy of the new law as it was proposed, we thought it sounded wonderful - we implemented it, apparently without too much difficulty, we found out as we consulted the Board, only because we didn't know any better. They gave the regulations to us and said this is the way we want it done, and we did it. We took in our first 15 students and graduated this group before we started another group - we are on a three semester program. We start the next class whenever the first one graduates. We started our first program in September, 1961, we graduated them in January of this year, and we started our new class in February of this year, so we are only in our second class and we really don't feel that we can tell you people who have been fighting these problems for a long time how these things are done. Obviously there have been many problems which we have not recognized because they haven't affected us directly. That gives you an idea of what we have.

This year I wanted to expand the program, feeling a definite need, and I was able to get across to administration that there was an additional need for vocational nurses in our area, but I wasn't able to completely convince them, so consequently they finally decided that I could up the number of students we took in and they would hire another person to help in the clinical areas only - so therefore this is the half teacher. She works four hours a day in the clinical areas with the students - I do all of the classroom work. A little different from Mrs. Mitts' program, I start my students quite early in the clinical situation - I put them on approximately the fourth day that they are in school and by the beginning of the second week they are on for at least a two-hour period daily and this is increased as the student learns more things about patient care.

Actually as far as implementing, I have listened to many of you discuss the problems you have had with the hospitals - the hospitals will let you do some things and won't let you do some things; and why is this? I feel that we have a very common starting place with all the people in hospital administration - we have one common goal - we are all interested in patient-care. Why can't we work together? Sure we have different methods of reaching this goal, but I think if we look at each other with a little better understanding we will be able to meet these goals. We are not really as far apart as most people think education and service are. All of us at one time or another have been in nursing service. Now we are on the other side of the fence it is really not so broad a river. Therefore, we can start with this as one of our goals - meeting the needs of the patient.

We have to remember, too, that we started in programs of vocational nursing that were demanded - we didn't go out and beat the community over the head and say, "You want a nursing program." They said they wanted nursing programs, they said they wanted vocational nursing programs. We have an obligation to give them what they want within the realm, again, of all the other factors. We have already got acceptance so therefore we must utilize the acceptance we already have. Now we already have our two basic starting points - there are many others. From this you move into other areas. I choose to call it "selling" you may choose to call it inter-personal relations, but I feel we have to sell our programs even though there is a demand and a need. We all feel the need - the community has expressed the demand. In order to be able to sell, you must believe, you must believe in your curriculum, you must believe in your program, you must believe that your methods are the right methods - it may not be the only way but for you it is the only way, and to your way of thinking this is the only way you can present it - you are so firmly convinced that all of these other factors are right, you become one of the best salesmen.

This is first, if you don't believe, you are not going to accomplish. There is no way of stressing this enough - if you can't really go out and say, "I believe in everything I have in the curriculum, I have designed this for a purpose, I believe this is the way to accomplish our goals," then sell it to the hospital service.

Look at the mandate for your program. We have the law behind us - we can say, if nothing else, this is the way we are supposed to do it - this is the law. You already have there a starting point. We have our philosophies - we have already looked at what kind of a nurse we expect to mold - this you have written down, this you have looked at, so therefore you are again selling your program. Look at your curriculum - are you going to accomplish your objectives by what you have proposed in this curriculum. I guess because I am new in vocational education I am naive enough to believe that I can get assistance if I need interpretation of this curriculum, or if I feel this curriculum isn't meeting the objectives as I see the law. I have no hesitation in calling the Executive Secretary of the Board on the phone, or of going to see her to see if I can't change this law. We don't have to accept this law as inevitable, that no one can change it. We have a goal, we know what our goals are and if our laws meet these goals or curriculum as prescribed in the law, that is fine. If the law will not meet the goals as we see them then we have an obligation to tell the people on the Board this is not what we think our goals are and we should work to get the law changed rather than sitting back and complaining loudly about the fact that it can't work. Then, lastly, in the line of this selling, you have to sell this program to everyone. You don't just start with the hospital administrator to convince him you have a good program, and then fail to go on; but you start every place and work all the way down the line. Start out with the hospital administrator - this is the way you have to initially sell, then convince nursing service of your program and objectives - work clear down to the nursing aide. The aide in the hospital is the person who may or may not be threatened and could throw many, many monkey wrenches at you. Sell your program all the time - sell it to the other people you are indirectly involved with. It doesn't hurt to go to the housekeeping department and talk to the Director of Housekeeping - it doesn't hurt to talk to physiotherapist about what you are going to accomplish. It doesn't hurt to talk to the dietitian about how you feel diets fit into your program - this again is

your area. How do you do this? Meetings, meetings, meetings, and more meetings. Meet, talk, listen, discuss - when you have done it once, do it over again. As I say, start these meetings out with your administrative level, your head nurse and supervisor. These are the people you have first got to convince. Then, if you are not allowed to go on and discuss the program with other nursing service personnel, move on to the informal meetings. Every time you have a coffee break, in a lunch room, corner somebody and again explain what vocational nursing is, what your program is, what your desires are, and how you see implementing this program. Never lose one opportunity to corner one more soul and convert him. Sounds pretty forceful doesn't it, but I really mean it - you really need to be able to convince all these people. If you really believe in your program then you can convince them in order to get them to go along with your ideas. Above all, listen, too, to what they are saying. Take a very positive approach to your program and then be rather arbitrary.

I take as an example to this positive approach to such a meeting our laws and regulations stating that students must give medicines. Now, this isn't the exact content of the law, it being the intent that the students should learn to give medicines. This is an area where I have heard lots of comments about people having difficulties. Start out, meet with the nursing service people - what are you hoping to accomplish from this meeting. Ask them what their present procedure is, let them look at it, is it a good procedure, is it a safe procedure? This is going to help both the nursing service personnel and you. You are going to accomplish two things when you do this; first you are learning what they think, you are learning from them; also you are then being accepted as a research person or maybe as an educator, as they may see fit to use you. You can actually use this as a means to get at other things. Educate them, even if it is educating and changing them to your way of believing - think positive.

After they have come up with what they feel is a good procedure, let them decide how this procedure has to be changed for the student - or does it have to be changed to meet the students' needs? If this has been written as a sound principle, does it really have to be changed? This may take some doing but you can usually make them come around to even this concept if you try. Then, of course, any procedure that they do write, or that you are willing to accept, look at it, is it realistic, is it realistic for the nursing service, is it realistic for the student, is it realistic for me, the instructor - can I accept this, can I teach this. And, of course, last but not least is it realistic to the patient. I say last but not least because of all the many feelings of which you are all very aware in the line of giving medicine. This is an area where many nurses hold a prestige image of the medicine nurse rather than what the medicines accomplish. So, the patient isn't the one they are really concerned with. When you meet with these people they throw out little platitudes, "well it wouldn't be safe for the patient, etc." but this isn't really what they mean if you listen to what they are saying.

When you are finished with all of these meetings and you haven't come up with what you really wanted to accomplish, start all over again - you will get them, as someone once said, brainwashed to your way of thinking - it can be done. Solicit nursing service for your assistance. I don't mean assistance in giving formal teaching but solicit them to help you in a good working

relationship. Let them get the idea that you are really trying to make the student somebody who works on their team. You are all working for one common goal - the patient and improving patient care. By selling them on your ideas they will really turn out to be very good assistants. I have found that it is marvelous how much they will assist you, even if it is just writing antedotal records - they really are quite good at this. They are good about giving students praise. They weren't as helpful with my first class as we were both testing each other, but they are getting to the point where they will come to me and say, "The student you put in that room this morning did a real good job of patient care." That makes me feel good. It is only because we have let them believe that they, too, are responsible, that we are both working for the same over-all goal. After you have finished all of these things - after you think you have got it sold just the way you want it, then start follow-up meetings - don't quit while you are on top. Let these people again express their feelings - meet with them - let them give you suggestions - let them give you their evaluations - what can they offer to improve the program as they see it. Then, again look at ourselves as individuals, and at our program as objectively as possible, and make changes - then start selling again.

Evelyn Chamberlin
Director, Vocational Nursing
Mt. San Antonio College

Mt. San Antonio College is a community junior college located in Walnut, which is approximately thirty miles east of Los Angeles. As to the size of our program, we have about 50 students per year and we have five full-time teachers. We are associated with two accredited hospitals in the community. I like to think of it as a community college, as the philosophy of the college colors everything that is done in this school. We are there to serve the community, which is an upper middle class type community. Vocational nursing in addition to other types of vocational education is very well accepted in the community.

My portion of the discussion is the philosophy of implementation of the vocational nursing program. First, I would like to say that when I say "philosophy" I mean what Sister Mary Anita said this morning. I do not mean something that is written down on a piece of paper, I mean something that colors and influences the things that you do as you write the curriculum, as you teach the students, as you decide on teaching methods; something that would influence everything that you do concerning your program. I think one of the first things I had to know was, why in the world did the Board decide to change the law, and as you know, sometimes it is difficult for me to get an idea through my head.

I must say, they spent quite some time explaining it to me, but finally I had a very satisfactory answer, and that is that nursing has changed, that vocational nursing was changing; the thing that the vocational nurse did was different than it was at the time of the first writing of the law. Then I found something in Guides for Developing Curricula for Education of Practical Nurses, which finally crystallized all of my thinking, and that is that nurses are prepared to assist persons in self-care within a range of types of health situations, and this simply means that we are going to prepare nurses to give

direct care to patients; not to assist the doctor, not to go in to the diet kitchen, not to wrap up packages, but someone who was going to give direct assistance to the patient. Now, the philosophy that all of us have when we talk about preparing the vocational nurse would be very similar. We are trying to teach our students the principles of nursing care, principles of how to take care of people, because we know that when she goes into the field in any community, and ours in particular, this girl may work in a hospital where she is not even permitted to take blood pressures or she may work in another hospital where she is responsible for total patient care, including giving the medications and performing the treatments for which she is qualified. However, a second part of the philosophy in developing a curriculum, or developing any program, is the philosophy of the institution in which it is housed. I, for one, think that this is very fine - I do not believe that every nursing program has to be in a junior college or in adult education, or any other specific institution. Whatever the housing institution, it will give us another philosophy, another set of objectives, and I believe that this will enrich the life of the student. The type of institution the student enters, of course, will also have to do with her objectives. Perhaps she must finish school quickly, or perhaps she is interested in the college experience.

I would like to summarize the philosophy of our program, emphasizing that we are part of a community junior college. Our philosophy at Mt. San Antonio College is to provide an educational base which prepares the student for employment as a vocational nurse in our community. The curriculum is designed to meet an Associate in Arts degree with a major in Vocational Nursing. Upon the satisfactory completion of the first three of the recommended four semesters, the student is qualified to take the California State Board examination for licensure. In addition to giving service to the ill, she will be prepared also to improve and maintain her own physical and mental health. To further clarify what we mean by preparing the vocational nurse, I hope that you noticed that we state that at the end of three semesters she will be prepared for licensure; this meets the basic needs of our community. For those students who do not wish to meet the general education requirements, we have a graduation at the end of three semesters, and those who wish then leave the school, take positions, and take their State Board examinations. For the younger or more broadly-motivated students who wish to remain another semester, the balance of the curriculum qualifies them to receive their AA degree with the other students in the college.

What we mean by preparing a vocational nurse is that we are preparing a nurse to give direct assistance to a patient as required. The principles of nursing will be learned in the hospitals but could be applied in the homes, clinics, doctors' offices, etc. The indirect specialties connected with nursing, such as assisting the doctor in surgery, etc., would necessarily be learned after graduation in an in-service program. The vocational nurse is prepared to meet the needs, physical and emotional, of all age groups within her role as a vocational nurse.

The vocational nurse is prepared to nurse patients in a fairly stable health condition with a minimal degree of on-the-spot supervision by the physician or RN. She is also prepared to participate with the RN in the care of patients who require complex intensive nursing care. The vocational nurse is educated to work as a member of the health team; she is well versed in the

special ethics required of workers in the medical field. This is our philosophy, or objectives, or concepts, whatever you choose to call it, in our particular program. To achieve our objectives, as stated in our philosophy, we believe that the curriculum and teaching methods should be both patient-centered and student-centered. By this we mean that the learning experiences for the student will necessarily always have as their goal, good patient care. The teacher also has this same goal, but she must be aware of the learning needs of the individual student.

We believe that it is impossible to make a list of rules or methods that will cover every situation which will arise in any teaching program. We have worked together, we hope, to reach a common philosophy of what we are doing, so that it will be a constant thing. We would like for the philosophy in our program, as I am sure you would in yours, to be something that remains constant, yet flexible, in the face of continuous changes. One of these changes will be new teachers. With a new teacher, let us say, we must brainwash them (it is nicer to call it "orient"), but this is something we must do because I do not believe that there is a teacher-teaching institution that teaches teachers to teach in this way; it is something that must be developed. We must be able to remain constant in our philosophy, in the face of new hospital personnel, new hospital policies and new student groups each year. We also have another nursing program in our school and the things that happen in this program will necessarily influence the things that happen in our program. We, of course, want to allow everyone else to develop to their potential, the hospital, other nursing programs, etc., yet we must remain constant in our philosophy and protect its implementation. I thoroughly believe that once you understand and once you are in agreement with the faculty on what the philosophy is, you can teach patient-centered nursing any place, in any type of hospital, in any type of institution. And, I would hope when our graduates are finished that they could go off to the jungle, boil a syringe in a tin can and give a good hypodermic no matter what position or condition the patient was in; or they could go into the most advanced and best equipped hospital, walk into a patient's room with a fancy disposable hypodermic set on a tray, and give an injection in such a fashion that the patient would be completely satisfied with her competence, her grace and poise.

Leonie V. Soubirou
Director, Vocational Nursing
Biola School of Missionary Medicine

Biola is neither small nor large, new nor old, it is a private school, and in that manner we are different from the other schools about which we have been hearing. We were chosen because of our peculiarity.

When we were working out this program of good missionary medical training, we looked back at the history of our school and found that it was over 50 years ago (when our school first started training missionaries) that it was felt to be imperative that they have practical, medical knowledge.

In 1945, the new President of our Incorporation felt that it would be good if we had a school that was essentially for that purpose, but associated with the entire group, and so he called me to come and see what I could do about it. At the time I was somewhat hesitant because I felt that something that might be

a hodgepodge of practical training might not necessarily be worthwhile and acceptable, especially from a professional point of view. We were struggling along when we discovered that in our wonderful State of California plans were being made to establish criteria and to incorporate curricula along these very lines of vocational nursing. After considering the proposition from every angle, we began to develop within our school this accredited program in vocational nursing since, I believe, about the very onset of the entire program. Our school was accredited in 1953 to be retroactive to include the class of 1952. Since that time we have been training young men and young women who have learned vocational nursing, and who have not only acquired the knowledge and understanding, but also have developed skills. Then, they have gone out into the far reaches of the world using that knowledge and skill. Thus, our school is a peculiar school but we are so thankful that with all our peculiarities we are acceptable in this wonderful organization.

Now, building on the law, which our dear friend has so graciously presented, and building on the philosophy which I feel our sisters as well as all of the rest of us could most willingly accept, we went on to develop the academics of this proposition. As I suggested, our school might have been described as a school in the wilderness, even though we are in the heart of downtown Los Angeles. Thus, we felt that we needed to do some tall thinking if this program, which we had worked so hard to develop, had all of a sudden to be totally changed. If I had to persuade my President, who is pretty hard to persuade at times, and if we needed to augment our faculty and do other things, we needed to think hard about this. But building on the law and on our philosophy, which may be slightly different in some ways but essentially the same, as Mrs. Chamberlin so graciously presented, we developed within the framework of our academics and our abilities a program that would comply. However, we wanted not only to comply with the legal requirements, but also to meet the challenge of the philosophy, not only in the midst of our own growth and development, but look ahead to what our students might do in the future. Now, all of this has been done and, just putting it simply, we developed from the known to what was essentially the unknown. We proceeded from what we had to what we needed. We built on the obvious toward that which was less obvious, or to a greater objective. In other words, we were going from one vanishing point to another; or, as one of the speakers of the morning suggested, after we had reached one point of vision, our vision was enlarged, lest we become satisfied and stagnant. Well, we aren't completely satisfied, but we are happy to say, honestly, that we accepted the law, we developed our philosophy, and we implemented the academics. This is how we did it - I put a few things on the bulletin board and I am going to share with you from a few notebooks.

We had the law - the law said we want competence to provide interpersonal, technical, and manual nursing service. We are absolutely in accord with this; this is our objective in nursing. This is also essentially our objective in vocational nursing. We thought - now, we had this before, what's it all about - and proceeded to find out what it was all about. We wanted an inter-personal relationship which would establish as well as develop progressively an ability of understanding and workmanship with our medical doctors, or Registered Nurses, or doctors of dental science, in some instances, as well as our patients with whom we have this wonderful opportunity and responsibility. Our patients in our peculiar situation are both adult and children - the adults in all age brackets and the children in all age development - in medical-surgical situations, in orthopedic situations, in situations of birth anomalies

birth problems, because of our affiliation with the Shriners Hospital for Crippled Children, Los Angeles Division. Because our opportunities developed in the outreach when students graduated into areas of obstetrical practice, we felt it was important that we work with our doctors and nurses in a special way in the obstetrical area in the study and understanding of the newborn as well as of the mother. So, in implementing the curriculum we went on to the technical and manual aspect as well. We wanted to prepare the trainee to care for the patients of all ages. We attempted very carefully to see that this was done - not only all ages in medical-surgical situations, but in all conditions, and we no longer made it a disease-centered situation, which is the way all textbooks formerly were printed, but we made the total patient our objective.

In our school, and I think in the Catholic schools as well--in our religious schools, shall we say--we really consider the total patient. That patient is not only a physical person, he is not only an intellectual person, not only social in all its ramifications, but also a spiritual person in a very deep sense. We find often, when one is ill, one begins to think in the old primitive manner of thinking, "Is it because of sin that this awful calamity has come upon me?" So, we prepare our students to have a broad concept in their understanding and approach the total patient care in all conditions. We have found wonderful new textbooks that approach all the systems of the body (we can't say a person is a cardio-vascular, or a muscular-skeletal.)

Then we went on in our implementation. It is sometimes very difficult when one gets enthusiastic about something - and we really become enthusiastic in our school. First, some of the instructors were against this whole thing - the change - and I said, "You are nothing but a bunch of old maids." Now, my name is Miss Soubirou, but I really defy anyone to label me like that. Anyway, we went on and we really felt that we had to change this somewhat. Essentially, this was the outline of change--now, factually, how did we do it. We settled down to developing textbooks, to improving methods, to re-outlining - we really worked - it took us approximately four months of planning to feel satisfied that we had something that would be honorable, honest, challenging, building on the law and on our philosophy as a school. We wanted not only to bring young men and women into a program to learn, but we also wanted them to be able to go out to teach, because I believe that is what vocational nurses do - they are going on and on in that sort of program. We knew how to do it then, and we came to know that in developing it, it had to be factual. So, we took care of the exact hours, we took care of the exact facts, and we began our development.

We worked first with textbooks. We wanted textbooks that would enable us to do this kind of task on the law, on our philosophies, on a challenging level, and yet that would be simplified and meaningful, and in the end would give to us a rounded picture of vocational nursing with which we would be satisfied. I thank our State Board people for their consulting and for their help in this area. We did take basic nursing (the fundamentals of nursing) and developed it. We didn't give profound courses in hygiene, but we have what we call a 3-semester program that is developmental. In the beginning we had personal

hygiene, mental and physical, and then we went on from that into community hygiene, as we in our problem in our essential situation would meet it in the remote areas of the world. I didn't know a lot about that remoteness until I recently made a trip around the world - saw my graduates in 24 countries - saw them using missionary medicine, as we call it in our school - saw them essentially practicing as vocational nurses. And in India, American citizens have been given visas to enter that country because they have a license from the State of California in Vocational Nursing - so we like vocational nursing. In each person there was essentially something that was more predominant. In a very wonderful way we were able to develop this as we were told and as the law read. We would have a doctor give a lecture to our men and women who, in many cases, are older than some of your students in that they are college or Bible school graduates in most cases. A doctor would give a lecture on some aspect of the system, and a nursing instructor would then give a practical demonstration of some equipment that might be used in caring for a patient in that condition. Then we would go into the wards with case-study assignments, patient-centered assignments, etc. This is the technical and manual situation.

We kept within the law regarding the school week, but that was difficult when you have students who want to learn. We were studying in our different sections these past few days something about what do you do. What do we do - some of our students go so far ahead of our instructors that the instructors come to me and say, "What will I do--this man graduated Phi Beta Kappa or magna cum laude from the university?" When one of my nurses said, "What will I do?" I said, "Go back to school." Funny thing, she did go back to school, and she is here today.

We need to evaluate; and you know if you are in a college, junior college, or whatever the school might be, you need to fit into the climate of your circumstance. If that circumstance is a school situation, you want midterms and finals; you want report cards, and you want grades but, most of all, you want an essential professional evaluation scale; you want a criteria that will fit; you want something that will be honest and effective, something the student will understand, something that will enable you to build upon the foundation where that student is. So, we met the law. But, in developing textbooks, we developed the simplified and yet with a reference to the more involved. For instance, in "Introduction to Medical-Surgical Nursing" we have a simple textbook; we are using SIMPLIFIED NURSING as a basic textbook, and yet some of our students found delight in using Gray's Anatomy and many of the other reference books that are in our library.

In implementing the program in obstetrical nursing, we didn't want to limit what our doctors might give; we have three men who teach by lecture and a nurse who follows through by exact nursing principle and practice. Then we have a marvelous opportunity in the Hollywood Presbyterian Hospital in practice and in our learning situations, and in case study - not only of the mother, but also of the newborn infant. So, the implementation academically was an implementation of the law transferred into classroom scheduling and planning. We require that each teacher write out a full lesson plan for every day for every class that is taught in the classroom. We require this in order that we might see the whole year at once. It was a wonderful way for us to do it, although it was terribly hard at the beginning. We could then see, at a glance, the

entire program. We could see how each would correlate, would build upon that which had gone before. This lesson plan not only had lesson title and instructor's reading, but also student reading assignments, laboratory assignments and lesson objectives. For instance, we'll take something simple in Basic Nursing. The lesson title was "The Patient's Hospital Environment." This was Lecture No. 2 at the very beginning of the school year. We wanted the student to know the patient's environment, and so the student had to read from manuals and textbooks, and the lesson plan went along to introduce medical terms to define it, to describe environmental factors, to explain circumstances and situations that the student might observe. The essential objective was to develop an understanding of friendliness. You say, surely they understood that already. They were to learn environmental factors relating to health, not just their own personal health, but they were to transfer it to other circumstances and develop an awareness for safety for patient and self. It was a tremendous objective, but this was in one simple lesson. So, as we implemented the academic program we did it as a year-round plan, and with the exact small preparation for every day within the plan, and for every area. This necessitated reporting. This necessitated a great deal of play-back, so to speak, not only on the part of the instructor, but on the part of the hospital, instructors, on the part of students - so students and staff would be making reports. To follow along to implement the law further, the periodic reporting became more exact--a daily reporting, a weekly reporting, a monthly reporting, a mid-semester reporting, a semester reporting, and all of this evaluated in its proper area.

We feel the implementing academically can be done if you will see the law built on your philosophy and develop your curriculum within the law and do it on the over-all total picture, being willing to be flexible enough to adjust and change as you go along. From time to time, as we used special films of instruction, or as we would go into the classroom to observe what was going on we would note that occasionally there was deviation. I would always encourage an instructor that it is all right to deviate, but write it out so we will know what we did and what was accomplished by it, and how we might even develop the future program with a little alteration in order to compensate or adjust to the deviation. So, the academics are possible if we build on the law and accept a philosophy on which we can build.

SECTION MEETINGS

Wednesday Afternoon - April 10, 1963

SECTION XIII - LEONIE SOUBIROU

Implementing the Curriculum

1. Need approval of Law (All members from approved schools)
2. Don't discuss philosophy here today
3. Inter-personal relations of utmost importance
4. A dental affiliation discussed
   a. Grossmont - Dentistry, implement with EENT course in last part of term
   b. Biola - Dentistry needed for jungle medicine
5. Are M.D.'s needed to implement curriculum?
   It was decided, No. The nurse is the teacher. M.D. needed for inspiration, etc. (Use M.D. only if he has outlined idea of facts needed.) M.D. should also be on Advisory Board. Good inter-personal relationships with M.D. essential
6. Good for student to feel part of team by knowing M.D.
7. M.D. should know what LVN program consists of
8. Change over, i.e. students on ward quickly - results:
   a. Less tension and fear
   b. More interest with practical application
   c. Too much abstract
   d. Class more meaningful with experience
   e. Fewer drops
9. Cut classroom time
   a. Incorporate diseases into body systems
   b. Fundamentals - Grossmont - in orientation
   c. Hygiene
      1. Begin with student to make meaningful
      2. Begin with well person then sick person
   d. With students - halitosis, bathing, nails, posture, exercise, and apply nursing principles to all these
   e. Good elimination and nutrition
   f. Teacher must do what she teaches - make students do what they will do
   g. Nutrition - student makes plan for own meals - one time early and one time late in year
10. Prevention of accident
    Medical-Surgical
11. Asepsis - All irrigation - hand washing - heat and cold application
12. Observation - Ask student about his own appearance - begin with position - let student get into bed - observe behavior, conversation
13. Utilize patient contact - communication, i.e. difference Clark Gable's death vs. anyone dying

14. Method of arranging weekly program discussed.
    Biola presented their set-up for fundamentals
    a. All body systems with diseases
    b. Reviewed all age groups
    c. Very early procedures - first month
15. Irrigations - all done
    a. One time - more effective
16. Return demonstrations discussed - found to be ideal - not enough time or staff
17. Associating nutrition with enemas in teaching
18. Give teacher system which she likes
19. Living-in of students discussed
20. Discuss psychiatric technician problems in conference - students quiz one another
21. New program works better - the fact of putting students on ward within three weeks
22. 1-15 ratio discussed - initial weeks most difficult - need more supervision
23. Tea, coffee breaks implemented
24. Films, screening of such discussed
    a. LVN's need own film library - especially screening and recommending good films
25. Biola uses 8 hour work day first weeks
26. How 8-hour day spent in hospital
    a. All students in each section - med., surg., peds., ob., ortho.
    b. Initial weeks spent in observation
    c. Languages considered when assigning patients
27. College programs - have trouble working clinical with classes (Riverside)
    Santa Barbara - more flexible classes according to VN staff
    a. Registrar's duty to get specified hours (college affiliation)
28. Facilities discussed - desk, class, locker space
29. Change in medical-surgical implementation
    a. From disease system
    b. New texts going this trend
30. Nursing care plan - case study discussed (Biola)
31. What texts used?
    To own - Simplified - Nursing - Medical-Surgical - Shafer
    Essentials of Pediatrics)
    Nutrition)
    Nursing Elderly)
    Human Relations) (Reference Books)
    Tabers (GOOD))
    OB Delivery)
    Harmer and Henderson)
32. Challenge student to broader view
33. Recommend workshop for teaching aids in near future
34. Various good films discussed - drug co. and resource co.
35. Need to consolidate with film company, publishers and with all schools in state to get appropriate materials
36. Ciba slide used

SECTION XIV - LAURA LOOPER

Implementing the curriculum

Time for students to study at the clinic
1. Students arrange own time during period
2. Arrange specific study time 1-2 hours during the week

Time for teacher and students to study-prepare

Talk about AA degree in Vocational Nursing - Good
Need administrative assistance and backing
Students may get an AA in same junior college in Liberal Arts, but not stated as V.N. AA

Giving of medications - discussing pro and con
Agreed if V.N. is going to work and give medicines, should be taught to do all (narcotics, etc.) The new law appears to cover this and perhaps we need to quote and educate administrators of hospitals regarding this.

Teaching theory - all the way through all areas, all class, making them part of the campus.

R.N. program students are going into the State Board Exam. and taking the LVN examination at their 2nd year to enable them to work as LVN. How come? Why? Where?
Doesn't this change the cut-off point of the test?

Semester Program

What about male students - How can we motivate more to the program - how can we use them.

What about the difference between the levels, 1 year, 2 year, 4 year. Are we increasing the "demand education" too high, too deep, that each one becomes closer to the next program rather than completeness general of good bedside total patient care. Where, who, and how can we put a "lid" on this?

The feeling of the group was that as vocational nurse educators we should explore and put a lid on by forcing hospital administrators and college administrators to come to an understanding and knowledge of this problem.

****

SECTION XV - EVELYN CHAMBERLIN

Methods of Implementation of Curriculum

1. Implementation is an on-going continuous process

2. Where can new teachers or directors seek help
   a. Board Consultant
   b. Other programs
   c. Interpretation of the new curriculum

3. How many students finish AA degree? No percentages available.

4. Necessary to work within the framework which exists - this takes rapport with administrators and an understanding of the law.

5. Methods of implementing the program is done through extensive program planning and relating the instruction with total patient care.

6. Home care implementation was discussed in relation to the needs of the community.

7. Graduates are reported to function well in the visiting nurse situations.

8. Some programs utilize Red Cross Home Nursing for some experience.

9. How the total patient care, including medications, is accomplished.

10. Importance of related areas such as emergency room, recovery room, diet kitchen, etc.

CONCLUSION: The experience depends on the learning situation.

****

SECTION XVI - GRACE MITTS

Implementing the curriculum

1-15 ratio impossible with new curriculum
Schools do not understand clinical area
Principals to observe conditions and scattering of students - do not understand our point of view
L.V.N. needs more supervision than R.N.
Want Board to change writing of the Law

Slip passed here - convention to have this law re-written
We see need for more teachers but public schcols feel too expensive

Patient-care and increase in R.N. duties - less ability of anyone to help

We are judges in supervision of our student in relation to R.N. student who has one instructor per five students
Pacific Union College has four students per one patient (R.N. program) also done elsewhere

A LVN program uses this method with five to one patient
1 - tmt., 1 - research, 1 bath, 1 - ?

Suggest home care nursing to supplement so many at bedside

How to meet transfer from another school when systems taught in different order?
Board's permission to transfer
Use own discretion as to amount of credit you give
Use types of testing
Some schools do not accept at all
Have start at time of new class or new schedule
Inform student at beginning of schooling
Individual arrangement with accepting school
Student one who suffers - should know when start
National League may be able to help with inter-state
N.L.N. achievement test 1 and 2
Send for - must return
Good to use

Obstetrical experience

1. Place this service last to make allowances for dropouts
2. Divide class into three groups
   12 or less students in each
   1 block obs. & nursery)
   1 block in medical) rotate blocks all at once
   1 block in surgery)
3. Leave students in area until feel they know
   Rotate for second time later
   3 semesters advantage
      Gives a few extra weeks time
      Summers off
      Hospital will employ as aid

Home care
    P.H.N. cannot supervise unless qualified with Vocational A Credential

Affiliate with several hospitals
    1 teacher at each hospital
    When one class has obstetrics all students in every hospital go to obstetrics at that time

M.D.T.A.
    Separate staff for this program
    Same rules as L.V.N.
    Department of Employment
        Selects student group
        G.A.T.B. test
    Students 19-21 $20.00 per week - 42 per week widow with child unemployed with husband - uniforms, etc., paid
    Economical qualifications

    Must take student sent by Welfare
        cannot choose nor refuse
    May drop - depends upon local unemployment bureau - they decide if able to drop
    Detailed reports to welfare may allow dropouts

State Board recommends

    Law - Acquaint Unemployment office with this
    Must have 10th grade to pass State Board - 8th grade not enough
    No mental problems or dope addicts
    Screening should be better

Give State Board Achievement test and grade
    Report to Department of Employment
    Good if cooperative

Falsification of application more serious than in jail if tell State Board.

Poor quality in this program
    Difficult to prove as may be good in testing and morals low
School has final say so.
    Must successfully complete course
    Principal may be A.D.A. minded
Use safety angle for dropout

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GENERAL SESSION

Thursday Morning - April 11, 1963

SUMMARY

TOPIC - IMPLICATIONS FOR THE FUTURE

Helen K. Powers, R.N., Chief
Practical Nurse Education Section
Division of Vocational and Technical Education
U. S. Office of Education

I was asked to do a summarization of the workshop and then to look into the crystal ball and make a few remarks about where we might be heading. I believe that we have really had our minds stretched a little, if you will allow me to use that phrase, and that we will be unable to return home with our minds in exactly the same situation that they were when we left home. Many things are going to look a little different to us when we return to the desk, the classroom, the clinical area where we are teaching and quite possibly some of us will subconsciously put into effect some of the ideas that we have gathered here this week. Others will be mulling over and working with these ideas for quite some time to come, but I believe that we will be seeing some changes.

On the opening day of our conference we were given a broad spectrum through which to look at vocational education by Mr. Wesley P. Smith, who made one of the most pertinent presentations with which one could open a workshop. We were asked to look directly at those factors which we must consider in every aspect of program development and which we needed to look at in each of the sessions that followed - the seven factors which are characteristic of good vocational education.

We wonder about the future in this age of "rocketry, radiation, and rehabilitation," of "alcoholism, aging, air pollution, and accidents." Regardless of these cliches, I believe that we are in an age when there truly is a race on, a race between education and catastrophe. We have almost seen that catastrophe in nursing where we have felt ourselves on the brink of it for many years. Each of us is dedicated to trying, through education, to make it impossible for that catastrophe to occur. The catastrophe I am talking about is the disappearance of the art of nursing - one of the arts which is essential to the health and welfare of mankind. We are directing our efforts toward preparation of one kind of nurse needed. You know, my faith is really renewed after a few days in a workshop such as this. With the dedicated purpose which has been shown here in these several days, I believe that nothing terrible could happen to nursing. As long as we keep working at it, honestly and with integrity, I see less possibility that nursing as we know it could disappear.

Some very interesting observations were made on the concern of hospital administrators and other employers of nurses regarding the quality of education for the vocational nurse, and on the need for her services in our present

society. It makes us feel good to hear that people endorse our program, but, while we like praise and we accept praise, we will continue to look critically at our program. That is exactly what we did, to some degree, in these sessions. A review of the development of vocational nursing leaves us with the impression that vocational nurse education is at a very tender age. Some of the major problems in this field of training today include accreditation; the need for training in care of the mentally ill; the importance of improving relationships between professional nurses and vocational licensed nurses; the need for improving the skills of professional nurses who are to supervise and direct the graduates from our programs; and our dilemma in teacher preparation, both pre-service and in-service. Then we leveled a broadside at the state boards for nursing and the need for more flexible standards! And the state board for nursing came back very nicely in its reply, showing us what they are doing in helping us to see their standards as being flexible enough for us to work under them. We were speaking of the need nationally to recognize that this program is under the auspices of education agencies, and that these education agencies have a commitment and a responsibility. They cannot permit another agency, however fine or excellent the purposes or intentions of that other agency might be, to establish the philosophy and objectives for the schools. The school must be free to develop it's own programs. The only way that education can serve a free society is for education to remain free.

Student selection techniques have been improved considerably but continue to present problems. We were talking about student selection and we discussed philosophy and our program objectives, and their relationship to the type of student we select; we spoke about some of the needs of students, other than those in the vocational nurse education program. In the discussion groups we brought out many of the various techniques used in recruiting and selecting students. The group activity, I am sure, was as valuable as the panel presentation. We learned that evaluating our techniques for student selection, and improving them, is a job that is never done. Regardless of the number of types of selection devices used, the skill needed in using these devices to a large degree will determine their effectiveness.

In discussing teaching techniques, emphasis was placed on the need to help our students develop skills in observation. Students must have the ability to observe and to know what they are observing. The need for students to be able to assess nursing needs, and their need to know how to nurse, requires teaching techniques that will develop in the student these skills. The need for students to develop problem-solving ability was emphasized. Some of us may still question whether these students are capable of problem-solving and what should be their level of ability in problem-solving. Many of you will try in the months ahead to explore this and determine just what kind of abilities in this area the students will have to have.

Dr. Briggs gave us an excellent thumbnail sketch on accreditation, its development in this country, and the role of the National Commission on Accreditation. This Commission was established when federal funds were being made available for veteran training during the last World War. To facilitate the allocation of federal training funds, national standards for various curriculums were needed. It became obvious that we needed not only accrediting agencies but also an agency to accredit the accrediting agencies! This is the major function of the National Commission on Accreditation. Many of you

know, but it may be worthwhile to repeat, that among the agencies approved by the National Commission on Accreditation, one organization has been approved for accrediting nursing education programs. That organization, of course, is the National League for Nursing. It was approved because it meets all the criteria set up by the National Commission on Accreditation. To find out what those criteria are, write to the National Commission on Accreditation, Washington 25, D. C., and request their pamphlet which lists the criteria for the approval of an accrediting agency. The NLN has been designated as the accrediting agency in nursing by the American Nurses Association (the official membership agency for R.N.'s) and the National Federation for Licensed Practical Nurses (the official membership agency for LVN's). Through Board action both organizations designated the NLN as the accrediting agency to be recognized in nursing education.

We were given a most interesting, educational, and informative discussion on evaluation. Our speaker emphasized the importance of program objectives. She told us that philosophy and objectives in our programs are like a compass. If the compass is working properly, the ship can find its way across the ocean, the plane can find its way through the air, the rocket can find its way through outer space. We who are working in schools of vocational nursing need a "compass" in our programs at all times. If our philosophy and objectives are sound, they will point the direction provided we use them.

Sister Mary Anita described the role of the State Board for Nursing in relation to accreditation. The State Board for Nursing establishes minimum standards for all schools of vocational nursing. This Board's provisions do not prevent a school from setting standards above the minimum. She also quoted one of my favorite poets, Robert Frost. He had something to say on education that may interest you too. "Education," Robert Frost said, "is the ability to listen to almost anything without losing your temper or your self-confidence." Education frees the mind - "f r e e s", not "freeze." Some people appear to have a mind that is frozen, but education should have the opposite effect.

Some of you have expressed grave concern over content in the curriculum and about the need for ways to determine the essential learning experiences for students. May I offer a few words of caution--in our efforts to prepare a worker who can do everything the employer wants the worker to do, we are developing a disease in our training program known as "obesity of the curriculum." You all know what obesity is. We must find some way to get the curriculum on a sensible health producing diet. Unnecessary learnings in the curriculum are like the excess calories that some of us find difficulty in omitting. Furthermore, unnecessary learnings tend to lengthen the curriculum, overwork the teachers, and confuse the students. It is difficult to pinpoint the objectives of the curriculum when we crowd it with all types of learnings that we would like to have in it, which we think are good for the student. They may be, but let's get back to the vocational philosophy on which our educational programs are built - we are preparing a worker to enter upon an occupation. It is not our job to provide every skill that this individual will be called upon to use. Notwithstanding the attacks that are made upon vocational education for not being more general than vocational, we can be proud of the work we have done in vocational education. We are producing a person who can do and can fill an important job. Our students cannot be expected to write a master's level thesis on a subject; perhaps they have great difficulty

in composing a letter; or they may have difficulty in other ways; but if they can do well the job they are trained to do, then we have fulfilled our function as educators in this program. The worker has a lifetime in which to be educated and there are many sources of continuing education in communities--sources that are not even known to many of our students and all too seldom used by our adult population. What happens when we continue to fill the curriculum with those things which we think would be nice for the individual to have? We usually have to lengthen the program and, when you lengthen a program, you decrease the productivity of your program. Vocational nursing needs many, many thousands of well-trained workers. If we reach the goal that was set by the Surgeon General's Consultant Group on Nursing, we will need to more than double our present program. If you will look at our progress since 1956, graduations have increased from about 9,000 a year up to a little over 17,000. To more than double what we are doing now will take every resource that we can bring to bear on this program. Can we afford to lengthen it? On the other hand, should we lengthen it? To arbitrarily make such a decision would be unwise, to say the least.

A study of vocational nurse education will probably be done in the near future. The Surgeon General's Consultant Group recommended that a study of all basic nursing education programs be made to determine what the best method, or methods, would be for preparing nurses. Vocational nurse educators have an important role to play in any such study. There will need to be participation by all groups in nursing.

The question period last evening showed us that there was much for us to learn from our State Boards for Nursing. The staff of the State Board can give us inestimable help in designing or revising our curriculum, in developing objectives for the various course units, as well as for the total program, and in identifying weaknesses in our instructional program. As the discussion moved on, new problems were identified and questions were raised. Considerable interest was expressed in the Manpower Development and Training Act of 1962. With the passage of the Manpower Act, an opportunity was created for all of vocational education, and for vocational nurse education, to have additional funds to develop programs in communities where other funds were in short supply. Several preparatory programs for practical nursing have been approved.

While the Manpower program may appear to have a great many problems that are inherent in this type of program, this is your legislators' way of giving you additional assistance in developing vocational education. This bill, as all others, is a mandate to career employees in the federal government to find ways to make this bill serve the needs of the people. We have a very difficult time, sometimes, in getting a program started because we tend to look at the unfavorable events or the failures in a program before we begin to focus on the advantages that the program might hold. I can remember back in 1956 when the program under Title II was launched. People had great misgivings about federal financing of practical nurse education, and we had some very difficult times before the program really got started. The same thing is true about the Act that I am talking about, the Manpower Development and Training Act. The professional associations in nursing have expressed not only concern, but have given considerable help to state associations in guiding them in ways they might assist in doing two things (1) help those to whom funds are allocated to make use of them in a sound way, and (2) make certain that the standards for education in the nursing field are maintained. Sometimes those two objectives seem difficult to achieve but that is what is expected. Some of us are involved

in programs using Manpower Development and Training funds, and we are going to be more involved in them in the future because the program has only started; it has had less than a year of operation and has made only a very small beginning. We will have a great many more programs. Those of you who are not at the moment particularly interested or concerned may find yourselves next year greatly involved in programs using funds under this Act. As it was pointed out, it is a way of financing, it changes nothing whatsoever, except the paper work. It changes nothing in the standards in your program or in the way in which you develop a program. You develop them exactly the way you have been doing, or by incorporating any improvements that are necessary. It is not a short-cut to program development; it is a means of financing additional quality programs.

Now if I were to do some crystal ball gazing, I might find it difficult and dangerous. I do not have a crystal ball. I am unlike Cassandra, the daughter of Priam in Troy, who was Apollo's girl friend. He gave her the gift of prophesy and she could foretell everything that was going to happen. Having gotten the gift, like many women, she began to tease Apollo. Apollo didn't like this. He said to himself, "I can't take her gift away from her, but I can give her another that she won't like - I won't allow anybody to believe her." So, here was Cassandra with a wonderful gift that was useless to her. You remember what happened--Cassandra told her father about the plan of attack on Troy, about the Trojan Horse that would be given to them as a gift, but nobody believed her, and thus Troy was destroyed. I am somewhat in the same position as Cassandra; if I prophesy, I wonder who will believe it? No one could have attended this workshop and go home unchanged, so I am safe in prophesying that there will be change, that each of you will find new ways, when you go home, to attack some of the problems that you left there when you came to Fresno.

The implications of discussions in this workshop for programs of vocational nurse education are many. You will go home and do a better job of selecting students. I think you will look at your philosophy and objectives again and attempt to define them--attempt to bring them on course, so to speak. You will re-examine the qualifications of your faculty, individually, and while we have in this room probably one of the best qualified groups in vocational nurse education, none of us in vocational education is satisfied with the status quo. When we do not plan for our continuing education, we stagnate. No one stands still; either we progress or we slip backwards. I heard some recommendations last night being made with regard to another workshop with certain objectives to be achieved in it, and some specific problems to be resolved, which would help in improving the program. We will carry home some new ideas about evaluating our programs, the necessity for it, the fact that it is a continuing process. We will develop some new techniques that involve new standards for the education of the vocational nurse. We will take a new look at our roles as vocational educators in our community. As a vocational educator, you are many things. You are women, you are nurses, and you are professional nurses; you are vocational educators, and you are important citizens in your community. You are not people who should sit back and wait for someone to tell you in what direction you should go - you are the people who know and use the resources, who will bring together groups to help you determine the direction. At the same time, you are leaders in your community, and have a responsibility for promoting programs to meet training needs and, particularly, the needs for training for the health services. If you do not do it, if you do not participate in it, I wonder how sound it will be; and if you are not a part of it, I

am concerned for your growth in the community, and I am concerned for the place your program will have in the community.

I am fascinated by the role that our vocational nurse educators are assuming in many areas. Professional nurses in vocational education are being more and more called upon to advise, to give assistance in the development of all types of training programs, not only for people in nursing, but for people in all types of health services. I am concerned that we may become so involved in our individual problems in our vocational nursing programs that we may overlook the larger problem that is facing our nation and that affects every community.

We use such terms as population explosion, unemployment, and "schizophrenia" of our communities. (Community schizophrenia is a term coined by one of our large-city school administrators, who said that the teacher was lucky in his school if he found, at the end of the first month, the same students in his room that started at the beginning of the year.) The population movement within a city is so great that a teacher out of school for a month may not know a single student in her classroom when she returns. So, community schizophrenia is something that concerns our educators and which also affects you in your program.

Unemployment figures range from four to nearly seven per cent of the working population; the health occupations represent a very large segment of this working population. One in every thirty people is working in the health services. We have a pretty big job facing us since nursing represents the largest percentage of those in the health field. If we as vocational educators are going to limit ourselves to the small world of vocational nursing, we are certainly not going to rise to the full responsibility that we have as professional women, as educators, and as citizens.

In some few communities we are seeing some very interesting developments spearheaded by vocational nurse educators. We find training centers developed in which there is a constellation of occupational training offered - not merely vocational nursing. For example, in Springfield, Massachusetts, the trade school has a center for health service occupations training. At first, vocational nurse training was the only offering in the center, and then training was added for dental assistants, and then for medical assistants to work in doctors' offices, and, lastly, a program to train operating room assistants. Later, a teacher to assist in the training of hospital aides was added. The school is now exploring the possibility of adding training programs for several other types of assistants for the health field. We found the same type of center developing in one of the area schools in Georgia where men and women who are interested in health service occupations can have a choice among several training programs. Placement of these applicants in such a center can come closer to 100 per cent. Centers such as these will develop under the leadership of vocational nurse educators. Planning will be on a community-wide basis, bringing in many groups who have not been concerned before with vocational education. It could provide a continuing supply of many types of workers that just can't be found today. It might achieve the goal of getting together the untrained person and the job that is unfilled through such training centers.

As a vocational educator it is sometimes a little difficult to identify your two roles - that of nurse and of educator. Evidence of confusion in your role is seen when, sometimes, you nurse your students instead of teaching them. Sometimes you, the teacher, go to the clinical area and nurse the patients instead of teaching the students how to nurse. Even in the curriculum, your role of nurse is often reflected rather than your teaching role. As vocational educators we must keep our various roles clearly in mind, and for very important reasons; for example, when you are formulating agreements with health agencies, wear your vocational education "hat," not your nurses'"hat." Very often the practices that are established reflect that it was the nurse who was talking rather than the vocational educator! Keep in mind, clearly, that the health agencies' role is to provide care to patients. Your role is to train the best nurse you can produce in the program. We need to understand both roles thoroughly and use both properly.

The role of the vocational nurse educator is a demanding one, and a very satisfying one if we accept it and live it fully.

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POST HIGH SCHOOL DISTRIBUTIVE EDUCATION IN BUCKS COUNTY, PENNSYLVANIA

Educational Service Bureau
College of Education
Temple University

VT000421

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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POST HIGH SCHOOL DISTRIBUTIVE EDUCATION IN BUCKS COUNTY, PENNSYLVANIA

A Feasibility Study

Prepared for

The Bucks County Technical School

and

The Department of Public Instruction
Harrisburg, Pennsylvania

by the

Educational Service Bureau
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CHAPTER I

INTRODUCTION TO THE STUDY

Distributive Education (D. E.) is that branch of Vocational Education which is charged with preparing people for employment in the distributive occupations. Distributive occupations are:

> .....those followed by workers directly engaged in merchandizing activities, or in direct contact with buyers and sellers when: (a) distributing to consumers, retailers, jobbers, wholesalers, and other products of farm and industry. (b) Managing, operating, or conducting a commercial service or personal service business, or selling the service of such a business. (1)

The challenge to meet the needs brought about by change in our culture and our society was never so great as it is now. Many of the needs which must be met now and in the future relate to changes in the products manufactured, and the services considered essential in our complex technological society. More and more of the services once performed by human hands are now performed by machines. Machines and products have become more sophisticated, and require services of like nature themselves.

Our economy is a "consumer economy, " and our businesses and industries are, therefore, vitally concerned with the distribution of the goods and services they produce. Distribution as used here requires more than just delivery of a product or performance of a service.

It has been estimated that some 26 million young workers will enter the nation's labor market during the sixties. (2) Similarly, estimates indicate that the number of employment opportunities in distributive and service occupations will increase more than 50 percent by 1970 over 1960 levels. (3) In Pennsylvania alone the labor force of young workers is expected to increase some

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(1) Vocational Bulletin No. 1 Washington: U. S. Office of Education pp. 66-67.

(2) U. S. President, 1961-1963. Education for A Changing World of Work. A Summary Report of the Panel of Consultants on Vocational Education Requested by the President of the United States, 1962.

(3) Syhlman, William D. "Distributive Education in Vocational-Technical Schools and Community Colleges, " American Vocational Journal, XXXVIII (September, 1963), 17-18.

fourteen percent by 1970. For the most part, these young people will not have had the benefit of any realistic programs in orientation or training for vocational opportunities. (4) It should also be made clear that the figures cited above do not include the vast numbers of young people who are: (5) employed and who will be seeking to complete their high school education; (6) discontent with their present low salaried positions and will, therefore, be seeking opportunities to qualify for advancement or more stable employment; and (7) in need of retraining because the number of jobs for which they could qualify is limited or reduced due to dynamic changes in several vocations.

Employment opportunities for young workers have increased at a phenomenal rate during the past decade. Indeed, the requirements of our changing society auger well for a continuance of this trend. (8) Distributive education programs in the nation's high schools have also increased in number but nowhere in a stated relationship to the increase in the vocational opportunities which they seek to serve. In short, distributive education programs to prepare youth either during the terminal high school years or shortly thereafter are woefully underdeveloped in both scope and number to serve the need. (9) The general belief that cooperative training programs, such as those in distributive education, can do much to meet many of the needs of young adults and business alike is held by most responsible agencies and organizations conversant with current employment problems. (6-10)

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(4) Pennsylvania State Education Association, Education In Pennsylvania: Today and Tomorrow. A Report of the Committee of Fifteen. Harrisburg: The Association, December, 1958.

(5) American Educational Research Association. Review of Educational Research: Vocational, Technical and Practical Arts. XXXII (October, 1962).

(6) Beaumont, John A. The Emerging Program Of Distributive Education. A discussion paper presented at the National Clinic on Distributive Education, October, 1963, United States Office of Education, Washington, D. C., 1963.

(7) Educational Service Bureau. Effective DE Practices. Philadelphia: The Bureau, Temple University, 1960.

(8) National Committee for Children and Youth. Report of Follow-Up Activities Conference on Unemployed, Out-of-School Youth in Urban Areas. Washington, D. C.: The Committee, Suite 411, 1145 19th Street, N. W. (Undated).

(9) U. S. President, 1961-1963. Education for A Changing World of Work. A Summary Report of the Panel of Consultants on Vocational Education Requested by the President of the United States, 1962.

(10) Wenrich, Ralph C. "Vocational Education," Encyclopedia of Educational Research, 1960 edition, p. 1555-1563. N. Y.: The Macmillan Company.

New Programs and an expansion of proven programs are needed to help cope with the needs of youthful jobseekers at the local level. Post-high school cooperative programs offer a systematic means for supervised occupational experiences for a segment of our youth that are virtually neglected. (11) Their practical arrangements for training youth in real occupational situations make possible the identification of responsibilities and the development of attitudes required on jobs that exist in the field. Where tried, such programs have demonstrated their ability to sustain a high degree of student motivation and interest to the satisfaction of schoolmen and cooperating employers alike. (12-13)

Post-high school cooperative programs are feasible. They require broad comprehensive studies of curriculum and instructional opportunities based on clear perceptions of the needs of local area businesses. For the most part such programs as now exist lack the educational planning and the application of support from the business community because no provision was made by which both education and business could assess and act on the basic problems of employment needs, vocational preparation, and potential cooperative endeavors to remedy the disparity existing between them. (12) This study attempted to frame a rationale for examing distributive employment needs in a selected community which seeks to develop a post-high school program to help meet them.

Previous Research

Excepting for the survey of "Post-High School Cooperative Programs (OE-82001)" by the United States Office of Education, research on such programs is virtually non-existant. Numerous articles in vocational and educational journals are available as are courses of study and reports of cooperative program activities from selected school districts; for the most part, these are descriptive of the programs rather than reports of research conducted regarding them. The October, 1962 issue of the "Review of Educational Research" cites some 300 studies in the field of vocational education. (12) Again, the studies are mainly descriptive and none offer evaluations, based on a research methodology, of the advantages of one type of cooperative program as opposed to another. In the research literature the need for basic research as a basis for developing and

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(11) U. S. Office of Education. Post-High School Cooperative Programs. Washington, D. C.: United States Department of Health, Education, and Welfare, Publication OE-82001.

(12) American Educational Research Association. Review of Educational Research: Vocational, Technical and Practical Arts. XXXII (October, 1962).

(13) Educational Service Bureau. Effective DE Practices. Philadelphia: The Bureau, Temple University, 1960.

maintaining successful programs in distributive education is virtually unanimous. (14)

Evidence regarding successful cooperative program format, content, implementation, and supervision is available through several established works. (15, 16, 17, 18, 14) School system reports dealing with post-high school and distributive education opportunities in Philadelphia, Pittsburgh, Los Angeles, Chicago, Cleveland, Boston and New York, as well as in other metropolitan areas, are available. "Guides to Practical Research" (U. S. O. E. - 82011) and "Patterns of Research in D. E. " (U. S. O. E. 82009) as well as research and technique references in education, the social sciences and fields of business and industry are in abundance. All of these are well known to the team of specialists to be committed to the present proposal.

Objectives of the Study

This project was designed to be a pilot study of a feasibility and desirability project for program development in distributive education for the Bucks County, Pennsylvania Technical School. It was supported by a grant from the Bureau of Technical and Continuing Education of the Pennsylvania Department of Public Instruction.

The Study of feasibility aids decision-making in a complex situation by supplying data for analysis, and providing expert judgment concerning the implications of the data for the problem area. The study does not make decisions but provides the basis for decisions by the body possessing the power to do so.

The objectives as stated in the project design and which provided the direction for the study were as follows:

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(14) Wenrich, Ralph C. "Vocational Education, " Encyclopedia of Educational Research, 1960 edition, p. 1555-1563. New York: The Macmillan Company.

(15) American Educational Research Association. Review of Educational Research: Vocational, Technical and Practical Arts. XXXII (October, 1962).

(16) Educational Service Bureau. Effective DE Practices. Philadelphia: The Bureau, Temple University, 1960.

(17) Nassau County (N. Y.) Vocational Education and Extension Board, Post-High School Educational Opportunities in Distribution and Retailing. A report prepared by Patrick A. Carlo. Nassau County, The Board, 1960.

(18) Syhlman, William D. "Distributive Education in Vocational-Technical Schools and Community Colleges, " American Vocational Journal, XXXVIII (September, 1963), 17-18.

A. Proximate:

1. To identify existing and emerging occupations in the distributive trades in the Commonwealth of Pennsylvania, and especially in the Bucks County region for which post-high school training in distributive education would be useful.

2. To estimate the annual turnover and entry opportunities for these jobs.

3. To determine the skills and competencies needed for entry and advancement on these jobs.

4. To determine the extent to which these skills and compentencies can be taught in post-high school programs developed by the subject school.

5. To determine from among patterns of cooperative assistance such program employers, in the region, who would be able and willing to extend to the school.

6. To select one or more programs from among the foregoing patterns of cooperative programs and prepare a plan for its content, implementation, operation, and evaluation.

B. Ultimate: To provide a descriptive base for the development of a program of post-high school opportunities in distributive education for the educational authorities of the subject school system.

Limitations of the Study

The study was limited to the geographical area encompassed by the subject school system. For purposes of recruitment of students and of employers to the program the area was confined to the boundaries of the seven constituent school districts furnishing full-time students to the subject school. For purposes of placement and vocational counseling as to employment opportunities the geographical area consisted of adjacent counties reported in the standard metropolitan statistical reports of the 1960 census.

Procedure Used In The Study

The study consisted of six phases relating to the:

1. Identification of (1) a potential student population desirous of participating in post-high school cooperative programs, and (2) employers and jobs engaged in distributive fields as well as the number of employment opportunities afforded by them.

2. Selection of one or more groups of employers in distributive fields which appear most likely to be interested in and capable of assisting in the development of a post-high school cooperative program to meet their personnel needs and improve the quality of their service.

3. Identification of the several job opportunities within the selected distributive fields and, then analyzing the peculiar skills and competency requirements of each.

4. Developing a suggested program for post-high school cooperative training and assessing its requirements for implementation.

5. Assessing the interest and willingness of both educational and business establishments to support such a program.

6. Preparing a set of recommendations for school authorities concerning the desirability and feasibility of providing a post-high school cooperative program in selected fields of distributive education.

Basic data for the study were procured by use of survey instruments, interviews with selected government officials, educators, heads of agencies and interest groups as well as with owners, managers, superintendents, personnel managers or other persons in companies, businesses deemed best qualified to provide the desired information needed for the purposes of the study. Prior to conducting these activities lists were drawn of businesses, companies, agencies and services that are engaged in distributive occupations cited in the "1963 List of Distributive Occupations" of the United States Office of Education. Sources for such data are prevalent and include: lists of

employers paying federal unemployment insurance, lists available through the bureau of employment security, bureaus of licenses, various trade and business associations, chambers of commerce, bureau of labor and industry, and local and county municipal officers and bureaus, all within the Commonwealth.

Advisory and screening committees consisting of selected persons recruited from governmental, educational, business and industrial organizations were formed to consult with the research team on matters involving judgments relating to the selecting of the distributive fields investigated in depth and to assess the validity of the several job descriptions developed by the research staff as a result of their field studies.

Considerable assistance from various persons in governmental and educational organizations interested in the development of cooperative programs was received by the research team thereby making this study possible.

CHAPTER II

PRESENT DISTRIBUTIVE EDUCATION PROGRAMS IN BUCKS COUNTY

In deciding on the feasibility of providing post-high school programs in distributive education in Bucks County, it seems appropriate to examine the provisions for D. E. already existing.

The modern comprehensive high school or the technical high school usually includes distributive education (D. E.) in the curriculum. The program provides for classroom instruction in knowledge and skills considered essential in the distributive occupations, and supervised on-the-job work experience. The typical program may be organized with a half day devoted to the classroom and a half day on the job. The student receives pay for the time on the job.

Obviously such a program requires the cooperation of local businessmen who must be willing to place these youth in their businesses and work closely with the D. E. coordinator in providing a laboratory for the practice of the classroom instruction. A benefit accrues to the employer in that he has the opportunity to recruit the trainee for full-time employment after graduation if he so desires. The present D. E. program in the Bucks County Technical School is described in this chapter.

Besides the program for high school youth there are courses offered in the Bucks County Community College which fall within the definition of distributive education. These programs of studies are also presented in this chapter.

Present D. E. Program in the Bucks County Technical School

In Bucks County at the present time the general purpose high schools send their students to the Bucks County Technical School. The present arrangement provides that students alternate two weeks at the Bucks County Technical School and then two weeks at their home high school where they take general education courses. The description of the curriculum in distributive education in the Bucks County Technical School which follows, is taken directly from an undated mimeographed course outline provided by the school.

BUCKS COUNTY TECHNICAL SCHOOL[1]

COURSE OUTLINE IN DISTRIBUTIVE EDUCATION

FORWARD

The course of study for distributive education is designed to show how this program is conducted - the philosophy behind it, its objectives, methods, standards, curriculum and assignments.

The purpose of such a course is to provide instruction in the field of distribution, which includes those occupations followed by proprietors, managers, or employees engaged in marketing or merchandising goods or services. Such occupations may be found in various business establishments, for the most part comprising, but not limited to retailing, wholesaling, manufacturing, storing, transporting, financing and risk bearing. The distributive field does not include trade, industrial, or office occupations.

Distributive education ia a two-year program starting in the junior year. The first year program is devoted to teaching principles of distribution with practical work conducted in the classroom. These students also receive some work experience by being employed part-time during the holiday seasons. Their experiences and problems in these jobs are discussed at certain times each week. In the senior year, students work full-time in jobs approved by the coordinator. Seniors also attend the Technical School each Monday for three hours of their scheduled work block. At this time job problems may be discussed, or additional work may be given in important subject areas.

This course is intended to act as a basis upon which the student may build when he gains full-time employment in his chosen field. The program is essentially a practical one; the job ahead is kept constantly in mind. Yet it is both a terminal and a preparatory course, since some students may continue their studies in college.

Upon completion of the course, the student should be able to secure a job in the distributive field, confident that his training and experience have prepared him for the future.

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[1]This section of Chapter II is reproduced verbatim from a course outline currently in use at the Bucks County Technical School.

STATEMENT OF PHILOSOPHY

This course is based on the belief that education is the process of developing the capacities of the learner to his fullest potentiality. It is to be accomplished through active participation of the student in the learning process by investigation and solving of problems.

This course is also based on the concept that for a person to become well-adjusted to himself and to society, he must learn how to think intelligently, to analyze, to criticize and accept criticism and to make judgments wisely. In accomplishing this, however, the student must first master certain basic principles.

Equality of opportunity is fundamental to this course. Each student, regardless of intelligence, background, financial or social status, race or creed, should be able to receive an education that will enable him to find and succeed in work best suited to his capabilities. Through this course, it is hoped that any student who might be deprived of advanced education will become a useful citizen and a happier, better adjusted individual.

GENERAL OBJECTIVES

1. To give practical, vocational training so that the student will be able to succeed in a distributive occupation.

2. To perform a guidance function in directing students into the field of retailing in which they are both most interested and best qualified.

3. To develop the students' power of observation, imagination and good taste.

4. To develop the students' ability to form opinions wisely and quickly.

5. To develop the students' ability to speak effectively in conversation, in selling to customers, in front of a group and on the telephone.

6. To develop in students an inquiring mind--the desire for increasing knowledge not only about their own chosen vocation, but also about the world around them.

SPECIFIC OBJECTIVES

1. To enable the student to learn the procedures and principles of the various phases of retail businesses.

2. To give the student a working knowledge of various kinds of merchandise--construction, care and selling points.

3. To develop a correct business attitude on the part of each student, i. e., the importance of work well done and the proper treatment of customers and fellow workers.

4. To enable the student to learn the problems involved in owning and operating ones' own business through both the classroom school store and a term project.

5. To develop better workers in the distribution field, consequently aiding the business community and the consumer public.

METHODS OF TEACHING

While many methods of teaching are used in merchandising, most are designed to help the student learn while he participates in the activity. Individual student projects are included in which the student must compile material from various sources and either write up or design his findings. Demonstrations are often given by the student subsequent to teacher demonstration. Role playing is used to act out situations in business and to help the student learn to solve problems. Debates, panel discussions and conferences are also held in connection with many phases of retailing. Solving case studies through group thinking is also done.

By actually working with textile swatches and non-textile merchandise, by setting up displays, by designing effective bulletin boards or by assisting in the school store the student learns to do by doing.

Students are assigned reports from textbook and collateral reading, from current general business and retailing periodicals and from trips, or visits to merchandising concerns. Workbooks are also used to supplement textbook material.

The formal lecture method is used infrequently. Instead, theory is presented through bringing out new material from the standpoint of the student's experiences.

Co-operative work experience provides the students with the necessary laboratory exercises. The students can apply basic knowledge received in the classroom to a job situation while getting experience in a distributive occupation.

INSTRUCTIONAL AIDS

A. Audio-Visual Aids

1. Books
   a. Textbook and related workbooks
   b. Reference books
   c. Dictionaries
2. Materials used in business
3. Films
   a. Motion
   b. Slide
   c. Filmstrips
4. Mounted pictures
5. Tape recorder
6. Newspapers
7. Magazines
8. Opague projector
9. Overhead projector
10. Flannel board

B. Field Trips

C. Speakers

D. Literature from Manufacturers and Publishers

E. Newspaper and Magazine Articles

F. Textile Kits

PROVIDING FOR INDIVIDUAL DIFFERENCES

In the 1st year program, an attempt is made to determine in which areas students are the most and least proficient, for some students may be excellent in one field and poor in another. This determination is accomplished by pre-testing, by observation of the student's work in class, by checking assignments and by weekly test results.

Those students who are particularly outstanding in a subject are treated in a number of ways:

1. They are given more advanced work to do so they may progress at their own rate.
2. They serve as helpers for slower students.
3. They may be asked to work in the school store and placed there with a slower student.
4. They may be given more complex topics for reports or projects in order to challenge their ability.
5. They may serve as teacher's assistants in checking papers and filing them.

Provisions are made for the slow pupils in the following ways:

1. They are given extra help in class.
2. They are assigned projects which will challenge them, but not overtax their ability.
3. They are seated next to more rapid learners who will help them in their work.
4. They are given class responsibilities which will make them feel they are important members of the class.

In the senior year, students are placed on jobs depending to a large extent on the abilities shown in the previous year. As experience throughout the year is gained, the student may be relocated in other jobs. Individual assignments may be given to students who are either weak or outstanding in certain areas.

BOOKS

A. Textbooks:

1. Richert, G. Henry. Retailing Principles and Practices. New York: McGraw-Hill Book Co., 1954.

2. Richert, G. Henry. Retailing Problems and Projects. New York: McGraw-Hill Book Co., 1954.

3. Wingate, Isabel B., Gillespie, Karen R., and Allison, Betty. Know Your Merchandise. New York: McGraw-Hill Book Co., 1953.

B. Reference Books:

1. Cheyney, William. Using Our Credit Intelligently. Washington, D. C.: National Foundation for Consumer Credit, 1956.

2. Egmore, Fredric. Mathematics of Merchandising. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1956.

3. Goodman, Kennard and Morse, William. Today's Economics. Boston: Ginn and Co., 1957.

4. Neptrom, Paul. Color and Design. Englewood Cliffs, N. J.: Prentice-Hall, Inc.,1951.

5. Polishook, William, Beighey, Clyde and Wheland, Howard. Elements of General Business. Boston: Ginn and Co., 1955.

6. Robinson, O. Preston and Haas, Kenneth. How to Establish and Operate a Retail Store. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1952.

7. Robinson, O. Preston, Blackler, William and Logan, William. Store Salesmanship. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1959.

8. Rosenberg, Robert. Business Mathematics. New York: McGraw-Hill Book Co., 1954.

9. Rowse, Edward and Nolan, Carroll. Fundamentals of Advertising. Cincinnati: South-Western Publishing Co., 1957.

10. Shurter, Robert. Written Communications in Business. New York: McGraw-Hill Book Co., 1957.

11. Weaver, Andrew, Borchers, Gladys and Smith, Donald. Speaking and Listening. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1956.

12. Wingate, John. Buying for Retail Stores. New York: Prentice-Hall, Inc., 1953.

13. Wingate, John and Weinger, Dana. Retail Merchandising. Ohio: South-Western Publishing Co., 1957.

TIME AVAILABLE

Approximately 180 days, six hours a day over a two year period is spent by the distributive education student at Bucks County Technical School. The balance of educational instruction, equal to the time spent at the Technical School, is taken up by work in the home high school. Schedules are arranged on the basis of alternating two week periods at each school.

In the first year of the program, four or five different subjects are presented each day. From one to three hours per day is devoted to practical work. This might include sales demonstrations, project work, setting up displays, working in the school store, etc.

Seniors attend the Technical School full-time for the first two weeks of the school year. During the rest of the year, they attend the school for three hours each Monday of each two-week block. The rest of their available time is spent in work experience.

This program is not entirely different from the standard distributive education program in which seniors attend school for three hours each morning and work three hours each afternoon, since the length of instructional time is the same. The program at the Technical School is spread over a two-year period on a part-time basis, as compared to one year full-time in the conventional program.

In a two-year program more can be done through specialization, thus further aiding the students toward their career objectives. With the student receiving English, social studies, etc. at his home school, concentration can be placed on distributive subjects for six hours a day, as compared to one or two hours a day in the conventional program.

CLASS ORGANIZATION

11th year

A. The teacher's management includes:

1. Maintaining order and control.
2. Assigning classwork.
3. Administering corrective punishment.
4. Granting of permission to leave the room or to work on other assignments.
5. Approving student work.
6. Approving checks given for purchases at school store.
7. Ordering of merchandise for school store.
8. Checking of deposit slips and money received at school store.
9. Appointing certain committees.

B. Pupil personnel organization

1. Committees (change weekly or semi-weekly on rotating basis)

   a. Clean up
   b. Large display window
   c. Small display window

1. Committees (cont'd)

   d. Bulletin Board
   e. Shadow Boxes
   f. School Store
   g. Room displays

2. Individual duties (change weekly on rotating basis)

   a. Supply room attendant
   b. Display supply room attendant
   c. Clean-up foreman
   d. Assistant

3. Committees elected by students

   a. Fire marshalls
   b. Safety committee
   c. Class treasurer
   d. Student council representative and alternate
   e. Librarian

12th year

Senior work station organization, regulations, and equipment are governed by those of the cooperating business employing the student.

SHOP REGULATIONS

1. Only one person is permitted to sign out at any time.

2. Students are to be dismissed only by the teacher.

3. The school store hours are from 11:00 a. m. to 11:30 a. m. and from 12:30 p. m. to 1:00 p. m. Purchases are permitted only at this time.

4. Students operating the school store are responsible for care of the cash register. The cash register will not be operated by unauthorized personnel.

5. No students, except those assigned to display windows, may work outside of the classroom.

6. Materials from the supply room are to be checked out. Books taken home (other than regular textbooks) are to be signed out through the librarian.

7. Do not lean against glass show cases.

8. Use stepladder when necessary in constructing displays - do not stand on chairs.

9. When conducting burning tests for textile fibers, use metal plates. Be careful with matches.

10. Always replace top to ammonia bottle immediately (this is used for cleaning glass shelves and cases).

EQUIPMENT

1. 1 National cash register
2. 2 display cases
3. 8 show cases
4. 30 student's chairs
5. 1 teacher's desk
6. 13 student's chairs
7. 2 teacher's chairs
8. 1 file cabinet
9. 2 bookcases
10. 1 magazine rack
11. 1 three-way mirror

STANDARDS OF ATTAINMENT

Students should, on completion of the course, be able to:

1. Compute basic and retailing mathematics accurately and quickly.

2. Price and stock merchandise properly.

3. Determine with a good degree of accuracy the amount of merchandise that should be purchased for a given situation.

4. Sell merchandise effectively.

5. Write reports and letters that are interesting, organized and constructed properly with the correct spelling and grammar.

6. Identify fabrics correctly either by sight, touch or by testing.

7. Operate the cash register correctly and clear it properly.

8. Speak effectively before a group.

9. Make change correctly and quickly.

10. Design displays properly and attractively.

11. Lay out ads that will sell.

12. Understand the principles and procedures of retail management.

13. Lay out floor plans correctly.

PROJECTS OR PROCEDURES

1. Construct merchandise manual.
2. Write manual on "Owning and Operating Your Own Business."
3. Construct interior decoration scrapbook.
4. Construct advertising scrapbook.
5. Complete tests and analysis of textiles.
6. Give sales talks.
7. Give oral reports.
8. Complete shopping reports.
9. Interior and exterior displays:

    a. Construct displays in cases outside of classroom.
    b. Rate displays in stores.
    c. Construct sample displays.
    d. Sketch or make displays on paper.

10. Prepare color wheel.
11. Solve case problems in retailing principles.
12. Prepare interviews.
13. Make room plans to scale and coordinate furnishings.
14. Complete a six-months Sales Promotion Calendar and do layout and copy for six ads.

REQUIRED RECORDS AND FORMS

11th year

1. Personal information sheets
2. Procedure sheets for school store
3. Duty sheet for clean-up, assignments, projects, etc.
4. Sales talk rating sheets
5. Oral report rating sheets
6. Project rating sheets

12th year

1. Distributive education application form
2. Cooperative training agreement
3. Introduction card
4. Rating or evaluation sheet
5. Weekly report form
6. Individual student work record
7. Individual conference questionnaire
8. Work block assignment card

EVALUATION

11th year

The main part of evaluation is done by the teacher. However, the class rates students on presentation of oral reports and sales talks on special rating forms. This is done by students for project work and displays.

Separate records are kept for each subject as classified in the course outline. This is done to show outstanding abilities and weak spots in the students' learning. A final grade for each division is given at the end of each marking period. Grades are given for homework assignments, class participation, project work, and tests. Projects are graded on separate rating sheets on a basis of 5 through 0. Oral reports and sales talks are also rated on special forms.

At the completion of an assigned display, each student on the committee is given a grade for his participation in the project. Notations are also made on work habits. This is also done at the end of the assigned time of working in the school store.

Notations are taken periodically on elements of citizenship. These in turn are placed on rating sheets based on the report card form and are scored at the end of the marking period.

12th year

Senior evaluation is done through periodic (every 6 weeks) rating by the employer and coordinator. The rating sheet covers such factors as appearance, mental alertness, attitudes, job performance, attendance, and an over-all rating with comments.

The rating sheet appraisals are scored on a basis of 5 through 0:

Excellent	- 5
Very good	- 4
Good	- 3
Fair	- 2
Unsatisfactory	- 0

GRADING

In both years, the final grade for each marking period is determined by averaging the grades obtained for citizenship, related instruction, and shop practice.

Grading for all work done is based on the 5 through 0 basis used throughout the school for report card grades.

In the 11th year, the final grade is determined by computing the average of all report card marks, which has a 75% weight value. The final examination accounts for the remaining 25% of the term grade.

Since 12th year students do not take a final examination, the average of the marking period grades comprises the final yearly grade.

FIELDS OF EMPLOYMENT

Graduates can seek employment in many phases of distributive education work. This list of jobs would include positions in the following departments or areas of employment:

1. Fashion
2. Sales
3. Buying
4. Stock control
5. Price comparison
6. Display
7. Interior decoration
8. Design
9. Lay out
10. Copy writing
11. Promotion
12. Advertising
13. Training
14. Employment
15. Cashier
16. Adjustment
17. Traffic control
18. Store operation
19. Floor supervision
20. Credit
21. Audit
22. Payroll
23. Correspondence
24. Expense control
25. Management
26. Maintenance

COURSE OUTLINE

11th year

I. Business Mathematics — 90 Hours

A. Addition
B. Subtraction
C. Multiplication
D. Division

E. Aliquot Parts
F. Percentages and Discounts
G. Payroll Computation
H. Mark-up
I. Mark-down
J. Cost Codes
K. Stock Turn-over
L. Sales Planning
M. Stock and Purchase Planning
N. Inventory Valuation
O. Calculating Profits

II. Principles of Distribution 125 Hours

A. Careers
B. History
C. Channels of Distribution
D. Business Organization
E. Management, Operation and Good Will

1. Merchandising Division

a. Organization
b. Duties of personnel
c. Policies
d. Buying

2. Personnel Division

a. Organization
b. Duties
c. Policies
d. Hiring
e. Training

3. Store Operation

a. Organization
b. Duties
c. Marking and pricing
d. Customer service operation

4. Sales Promotion

a. Organization
b. Duties
c. Divisions

5. Finance and Control

a. Organization
b. Duties
c. Divisions
d. Operation of credit and collection department

F. Economics of Business
G. Employer-employee Relations
H. U. S. Government (organization, taxes, etc.)
I. World Trade
J. Owning and Operating Your Own Business (term project-spring)
K. Current Trends in Retailing

III. Salesmanship 60 Hours

IV. Display 40 Hours

A. Exterior
B. Interior
C. Store
D. Modern Trends
E. Creating Displays

V. Advertising 45 Hours

A. History
B. Importance
C. Orientation
D. Purposes
E. Determining Customer Demand
F. Appeals
G. Principles
H. Elements
I. Layout
J. Mediums
K. Sales Promotion Calendar

VI. Textiles 35 Hours

A. Introduction
B. Fibers
C. Fabric Construction
D. Individual Fiber Development

VII. Merchandise Information, Preparation of a Manual 20 Hours

VIII.	Business English	30 Hours
	A. Value of Business English B. Oral English C. English Review D. Written Communication E. Pertinent Reading	
IX.	Job Problems	15 Hours
	A. Personnel B. Selling Situation Problems	
X.	Non-Textiles (individual projects)	25 Hours
	A. Leather B. Fur C. Jewelry D. Cosmetics E. Foods F. Housewares G. Furniture H. Paper I. Rubber J. Plastics	
XI.	Color, Line and Design	20 Hours
XII.	Fashion	20 Hours
XIII.	Personality Development	15 Hours
XIV.	Co-operative work experience	540 Hours (approx.)

12th Year

I.	Co-operative work experience	540 Hours
II.	Orientation (to prepare student for interview and job)	15 Hours
	A. Personal Appearance B. Personal Hygiene C. Application for a Job D. Preparation for the Interview	

E. Practice Interviews
F. Legal Requirements
G. How to Accept the Job
H. Store Rules, Regulations and policies
I. Responsibilities of the Student

1. The stores investment in you
2. Your investment in the store
3. School regulations which apply on the job
4. Relation of student to:

a. School
b. Coordinator
c. Store

5. Honesty

III. Job Problems 18 Hours

A. Personal Problems
B. Selling Situation Problems
C. Salespersons Responsibilities to Management

IV. Advertising and Sales Promotion 18 Hours

A. Methods
B. Mediums
C. Layout
D. Copy Writing

V. Effective Speaking 18 Hours

A. Preparation of Material
B. Presentation (Oral)

VI. Personality Development 15 Hours

A. Factors that should be considered in appearance
B. Personal Hygiene
C. Voice

1. Tone
2. Inflection
3. Enunciation and Pronunciation

D. Emotions

1. Fundamental Emotions
2. How Emotions affect our personality

E. Social Adaptation
F. Anti-Social Traits
G. Traits of Leadership

VII. Current Trends 14 Hours

A. Customer Service and Comfort
B. Location
C. Fashion and Style
D. Competition
E. Changing Markets
F. Consumer Buying Habits

VIII. Creative Thinking 10 Hours

IX. Individual Work Block Assignments
(Homework)

PLACEMENT OF RECENT GRADUATES

It was considered valuable to discover the placement record of recent graduates of the Bucks County Technical School who had taken the D. E. program. This information is presented in the following table.

	GRADUATES						JOB PLACEMENT IN FIELD					WAGES PER WEEK	
	Total	Male	Female	* Entered Armed Services	Full Time Post High School Education	** Married	Trained	Allied To Training	Not Related To Training	Unemployed	Unknown	*** Low Average	**** High Average
1960	21	11	10			4	12		2		3	4	10
1961	22	6	16	2		5	11				4	5	6
1962	21	9	12	1		2	15		1		2	9	7
1963	16	10	6	1	2	1	11				1	6	5
1964	26	8	18	2	1	1	20	1			1	14	7
1965	20	10	10	2	1	1	16					13	3
TOTAL	126	54	72	8	4	14	85	1	3	0	11	51	42

* Former students who served in the Armed Forces who are now civilians are included in the placement columns as it applies

** Female graduates who are married but employed are included in the placement columns

*** $50.00 to $80.00 per week

**** $80.00 to $166.00 per week

PLACEMENT AND WAGE RECORD OF THE D.E. PROGRAM GRADUATES
OF BUCKS COUNTY TECHNICAL SCHOOL FOR THE YEARS 1960-1965

PRESENT PROGRAMS RELATED TO D. E. IN THE BUCKS COUNTY COMMUNITY COLLEGE

The Bucks County Community College located at Newtown, Pennsylvania is a comparatively new institution. Yet it already has a curriculum to provide for the varied needs and aspirations of its students. Its students are graduates of high schools, in most cases, and therefore, the programs are by definition post-high school programs.

The following Table shows the number of entering freshman in the fall of 1965 who enrolled to take a particular curriculum.

BUCKS COUNTY COMMUNITY COLLEGE

FRESHMAN STUDENTS
AUTUMN SEMESTER, 1965

NUMBER OF STUDENTS BY CURRICULUM

Name of Curriculum	Full-Time Day	Part-Time Day	Evening Division
Applied Fine Arts	11		1
Humanities/ Liberal Arts	116	5	31
Biological Science	20		1
Physical Science	16		3
Mathematics	14		1
Elementary Education	43	2	12
Secondary Education	49	3	9
*Business Management	51	2	22
*Executive Secretarial	28		4
*Accounting	20		10
*Marketing/Retailing	9		5
Computer Technology	14		4
Electronic Technology	14		5
Unclassified		4	202
Totals	405	16	310

TOTAL STUDENTS - 731

*Curricula which are related directly to Distributive Education.

Source: Bucks County Community College, Office of the Academic Dean.

Certain of the curricula found in the Bucks County Community College could be considered training for distributive occupations. Those considered to be such are the curricula in Marketing/Retailing, Executive Secretary, and Business Management. The curriculum for accounting has elements which could be considered closely related to distributive occupations.

These curricula are presented in the pages following.

MARKETING/RETAILING

RECOMMENDED
Program of Studies

First Semester

Course	Credit Hours
English Composition	3
History of Western Civilization	3
Introductory Accounting I	4
Salesmanship	3
Business Organization and Management	3
Physical Education	1
	17

Second Semester

Course	Credit Hours
English Composition	3
History of Western Civilization	3
Marketing and Retailing Principles	3
Psychology	3
Speech	3
Physical Education	1
	16

Third Semester

Literature	3
Economics I	3
Advertising	3
Business Law	3
Basic Data Processing Concepts and Application	3
Health Education	2
	17

Fourth Semester

Political Science	3
Economics II	3
Elementary Statistics	3
Mathematics of Finance	3
Merchandising Problems	3
Physical Education	1
	16

EXECUTIVE SECRETARY

RECOMMENDED
Program of Studies

First Semester Course	Credit Hours	Second Semester Course	Credit Hours
English Composition	3	English Composition	3
History of Western Civilization	3	History of Western Civilization	3
Elementary Typing	2	Intermediate Typing	2
Elementary Shorthand	3	Intermediate Shorthand	3
Introductory Accounting I	4	Introduction to Speech	3
Physical Education	1	Business Organization and Management	3
	16	Physical Education	1
			18

Third Semester		Fourth Semester	
Advanced Typing	2	Secretarial Practice	4
Advanced Shorthand	4	Psychology	3
Bus. Machine & Secretarial Procedures	3	Electives *	8
Health Education	2	Physical Education	1
Electives *	6		16
	17		

*NOTE: Specialization in Medical Secretarial will require electives in the areas of Science, Medical Practice Accounting, Medical Terminology and Medical Dictation.

Specialization in Legal Secretarial will require electives in the areas of Legal Practice Accounting, Legal Terminology, Business Law, and Legal Dictation.

BUSINESS MANAGEMENT

RECOMMENDED
Program of Studies

First Semester Course	Credit Hours	Second Semester Course	Credit Hours
English Composition	3	English Composition	3
History of Western Civilization	3	History of Western Civilization	3
Introductory Accounting I	4	Introductory Accounting II	4
Mathematics of Finance	3	Psychology	3
Business Organization & Management	3	Marketing & Retailing Principles	3
Physical Education	1	Physical Education	1
	17		17

Third Semester		Fourth Semester	
Literature	3	Political Science	3
Economics I	3	Economics II	3
Basic Data Processing Concepts & Application	3	Elementary Statistics	3
		Managerial Accounting	3
Management Elective (Personal Mgt., Office Mgt., Industrial Mgt.)	3	Management Problems Seminar	3
Business Law	3	Physical Education	1
Health Education	2		16
	17		

ACCOUNTING

RECOMMENDED
Program of Studies

First Semester

Course	Credit Hours
English Composition	3
History of Western Civilization	3
Introductory Accounting I	4
Mathematics of Finance I	3
Business Organization and Management	3
Physical Education	1
	17

Second Semester

Course	Credit Hours
English Composition	3
History of Western Civilization	3
Introductory Accounting II	4
Mathematics of Finance II	3
Psychology	3
Physical Education	1
	17

Third Semester

Economics	3
Intermediate Accounting III	3
Cost Accounting I	3
Basic Data Processing Concepts and Application	3
Elementary Statistics	3
Health Education	2
	17

Fourth Semester

Literature	3
Economics	3
Intermediate Accounting IV	3
Cost Accounting II	3
Business Law	3
Physical Education	1
	16

CHAPTER III

A SURVEY OF POST-HIGH DISTRIBUTIVE EDUCATION IN PENNSYLVANIA AND IN THE UNITED STATES

In the previous chapter a description was given of the present programs in distributive education in Bucks County. The high school level courses are found in the Bucks County Technical School, and adult mid-management level courses are found in the Bucks County Community College. The latter are the only programs which are post-high school in nature.

This chapter will explore briefly certain post-high school programs found in Pennsylvania, and then present the results of a survey made of the characteristics of post-high school distributive education programs found in the United States.

OTHER PENNSYLVANIA POST-HIGH SCHOOL PROGRAMS

A state-wide program of adult distributive education in Pennsylvania was initiated in 1947, with one instructor at the University of Pittsburgh, and another instructor at Temple University in Philadelphia. Thus the eastern and western parts of the Commonwealth of Pennsylvania have been serviced by itinerant instructors for eighteen years. In 1956, two additional instructors were added, one to each university. These four field instructors have been offering as many adult distributive education programs as possible. The instructors also utilize the services of any qualified local person certified to teach adult distributive education, in order to offer a wide variety of classes in adult distributive education. A list of classes, workshops, seminars and other related activities by years follows:

ADULT CLASSES IN DISTRIBUTIVE EDUCATION IN PENNSYLVANIA 1947 - 1948

Advertising
Balanced Selling
Business Letter Writing
Buyer Retraining
Department Management
Display
Effective Speech
Food Distributors Conference
Foods Merchandising
Hostess Training
How to Hold a Department Meeting
Insurance Selling
Introduction to Store Work
Job Instruction Training
Job Methods Training
Job Relations Training
Meat Cutting
Merchandise Control Methods
Merchandise Information
Merchandising
Paint Power
Personality Training

1947 - 1948

Personnel Relations
Practical Home Decorations
Pre-Christmas Training
Pre-Easter Training
Principles in Retailing
Real Estate Selling
Record Keeping for Small Businesses
Retail Operation and Management
Retail Selling
Retailers' Mathematics
Sales Manager
Salesmanship
Selling Review
Specialized Chain Store Selling
Training for New Store Workers
Visual Aids in Selling
Waitress Training

1948 - 1949

Advertising
Balanced Selling
Business English
Buyer Retailing
Color Line and Design
Cosmetics
Customer Relations
Economics of Retailing
Food Distribution Clinic
Fountain Operation
Fountain Service and Selling
Fresh Fruit & Vegetable Mdse.
Hostess Training
Job Instruction Training
Job Problems
Job Relations Training
Meat Cutting
Merchandise Information
Merchandising
Merchandising Problems
New Store Workers Training
Paint Power
Personality Training
Personnel Relations
Photography Selling
Practical Home Decoration
Pre-Christmas Training
Pre-Easter Training
Real Estate & Conveyancing
Related Math
Related Speech
Retail Salesmanship
Retail Store Management
Retailing Principles
Show Card Writing
Small Business Clinic
Speciality Selling
Supervisory Training
Tobacco Selling
Waitress Training

1949 - 1950

Advertising
Color Line and Design
Conference Meeting
Cosmetics
Economics of Retailing
Effective Speech
Food Distributors Conference
Fountain Training
Fresh Fruits and Vegetable Mdse.
Merchandise Information
Merchandise Mathematics
Paint Power
Pre-Christmas Training
Retail Operation and Management
Retail Selling
Salesmanship
Show Card Writing
Textiles

Job Instruction Training
Job Methods Training
Job Problems
Job Relations Training
Merchandising
Tobacco Selling
Training for New Store Workers
Visual Aids
Waitress Training
Window Display

1951 - 1952

Advanced Job Instruction Training Techniques
Advanced Retail Merchandising Problems
Advertising & Sales Promotion
Advanced Salesmanship Conference
Beginning Retail Mdsg. Problems
Business Conference Leading
Developing Your Speaking Personality in Selling
Job Instruction Training
Job Relations Training
Modern Supervisory Techniques for Retailers
Pre-employment Training for Retail Selling
Retail Credit Fundamentals
Salesmanship
Show Card Writing
Successful Retail Salesmanship
Window and Interior Display
Woolfacts Sales Program for Men's Clothing Salesmen

1950 - 1951

Advertising
Ass't Managers Training
Buying Procedures
Color in Home Furnishings
Cosmetics Selling
Effective Speech
Food Distributors Conference
Fountain Selling
Insurance
Job Instruction Training
Job Methods Training
Job Relations Training
Letter Writing
Marketing Processes
Merchandise Information
Merchandise Mathematics
Paint Power
Personality Training
Pre-employment Training
Public Speaking
Real Estate Selling
Shoe Repair Merchandise
Show Card Writing (Elementary)
Show Card Writing (Advanced)
Small Business Clinic
Store Organization and Sales
Telephone Selling
Waitress Training
Window Display

1952 - 1953

Advertising
Credit and Collections
Effective Speech
Human Relations Training
Interior Decorating
Job Instruction Training
Job Methods Training
Retail Salesmanship
Salesmanship
Waitress Training

1953 - 1954

Electrical Appliance Salesmanship
Insurance
Paint Power Real Estate Selling
Selling Bakery Products
Shoe Repair Merchandise
Textiles
Waitress Training

1954 - 1955

Fabrics Information
Human Relations Training
Job Relations Training
Retail Credit Fundamentals
Retail Salesmanship
Salesmanship
Salesmanship for Dairy Salesmen
Salesmanship for Hardware Salesmen
Service Station Management
Service Station Salesmanship
Textile Information
Waitress Training

1955 - 1956

Executive Leadership
Management Program for Heating & Air Conditioning Dealers
Salesmanship
Salesmanship for Dairy Salesmen
Salesmanship for Hardware Salesmen
Salesmanship for Lumber Salesmen
Service Station Management
Service Station Salesmanship
Textile Information
Workshop in Counter Display

1956 - 1957

Buyer-Seller Relations
Creative Retailing
Dairy Salesmanship
Grocery Management
Human Relations
Retail Salesmanship
Salesmanship
Selling Practices in Shopping Centers
Textiles I
Textiles II
Waiter-Waitress Training

1957 - 1958

Brainstorming
Creative Problem Solving in Retailing
Creative Retailing
Customer Relations
Human Relations
Merchandise Mathematics
Salesmanship
Speech for Salespeople
Supervisory Techniques
Waiter-Waitress Training

1958 - 1959

Advertising
Careers in Retailing Conferences
Competitor Relations
Department Store Buyers Clinic
Educational Workshop in Creative Thinking
Effective Speech
Interior Decorating
Newspaper Advertising Clinic
Restaurant Operators' Training Seminar
Training Program for Securities Salespeople
Wallpaper and Paint Dealings

1959 - 1960

Advertising
Creative Retailing
Dairy Salesmanship
Human Relations
Effective Leadership
Photographic Dealers Sales Course
Pre-Holiday Sales
Public Relations for Retailers
Retail Salesmanship
Salesmanship
Speech for Salespeople
Supervisory Training for Hotel Personnel
Techniques of Retail Supervision
Tourist Host Conference
Waiter-Waitress Training

1962 - 1963

API Program
API Study Group I, II, and III
Bank Salesmanship
Creative Retailing
Dairy Salesmanship
Foreign Trade
Fueloil Sales I
Human Relations
LP Gas Course I, II, and III
Public Relations for Retailers
Public Speaking
Small Business Seminar
Salesmanship
Speech for Salespeople
Supervisory Techniques
Tourist Host Conference
Waiter-Waitress Training
10 Hour Orientation

1963 - 1964

AHEI Seminar
Adult Distributive Training
Bank Salesmanship
Conference on Distribution in the U. S.
Creative Retailing
Customer Relations
Dairy Salesmanship
Driver Safety Education
Effective Retail Techniques
Fueloil Sales I, and II
Fueloil Sales Mgmt. Program Workshop
Food and Beverage Controls
Human Relations Seminar
LP Gas Course I, II, III, IV, and V
Merchandising Seminar
Public Relations for Retailers
Sales, DE and LPGA
Salesmanship
Selling Meat Provisions
SBA-DE Administrative Management
SBA-DE Management Seminar
Speech for Salespeople
Supermarket Salesmanship
Waiter-Waitress Training
Retail Sales II

1964 - 1965

Administrative Management
Agri-DE Conference
Food and Beverage Controls
Foreign Trade
Front Office Procedure
Instructional Techniques for Hotel-Motel & Hospital Supervisory Personnel
LP Gas Course VI
Maintenance & Engineering
Sales Training
Salesmanship for Florist
Supervisory Housekeeping
Waitress Training
10 Hour Orientation

Many distributive enterprises, especially the percipient managers of the chain stores, recognize adult distributive education classes as a prime source of good applicants. Post-high school distributive education classes at the adult level not only train distributive workers, but also give them opportunities for distributive employment, and conversely give the employers a pool of well-qualified employees from which to select congenial co-workers. To attract good applicants it is essential for a distributive enterprise to have a reputation in the community as a "good place to work." Distributive Education on the adult level has offered many classes in employee relations and public relations to store owners, managers and personnel directors. The emphasis has always been that employees are a "public" too.

Management and supervision in distribution have always had a dual function with regard to personnel - to oversee and to train. Adult distributive education has taught managerial and supervisory groups how to teach effectively. How do employees learn effective distributive techniques? One of the ways is to have many opportunities to observe skilled associates at work; another way is to have individuals in top managerial and supervisory positions teach knowledge, skills and right attitudes. These persons should have been trained in effective teaching techniques, including audio-visual aids, role-playing, team teaching, use of teaching machines, programmed learning, conference leading and other discussion methods. Managers and personnel directors are urged to utilize the ubiquitous sources of help - the telephone company, for example, has excellent, up-to-the-minute films and charts which may be used to train distributors in the use of proper telephone selling techniques. Attention to this area is of financial importance; it is easy to practice suggestion selling over the telephone. However, to be effective, selling personnel must be taught to do this with grace and skill.

CHARACTERISTICS OF POST-HIGH DISTRIBUTIVE EDUCATION PROGRAMS IN THE UNITED STATES

Objectives:

In October, 1963 a "National Clinic on Distributive Education" was held in Washington, D. C. One section of this meeting dealt with the occupational goals of distributive education:

1. To offer instruction in distribution, marketing, and management.

2. To aid in improvement of the techniques of distribution.

3. To develop a broader understanding of the social and economic responsibilities of those engaged in distribution in a free, competitive economy.

This report also gave particular attention to post-high school distributive education:

> "The post-high school program would operate about the same as the high school program in selection of occupational goals by students, if the particular program is for students who have not completed a high school Distributive Program. It is expected that the number of students going on to post-high school programs from the high school program will increase substantially in the future. This indicates the possibility of highly specific occupational goals for students in such advanced programs. The combination of a more mature student plus basic knowledge of marketing, has considerable implication for post-high school programs, and the occupational goals of students have a common occupational goal in such areas as: mid-management, exporting, importing, finance, wholesale management, food store management, are already being operated or developed. It is possible we may develop programs for specialized areas of Industrial Sales such as: 502-Drugs, Chemicals; 507-Hardware; 53-General Merchandise, or some industrial products such as: paper, tools, shoes, etc. The future is limited only by our vision and drive. "

A bulletin produced by Ohio State University gives the objectives of post-high school distributive education in the wholesaling industry. These objectives could be generalized by substituting "distributive" for "wholesaling".

"The various agencies cooperating in the development of the program agreed that the program's two major objectives should be:

1. To prepare and equip the student to enter an occupation which is related to his interests and abilities and to help him develop the necessary skills for success in the wholesaling industry.

2. To help the wholesale industry find, train, and retain qualified employees with a potential for promotion into supervisory positions. "

This bulletin also states the reasons for the establishment of a program: "There are two elements necessary in any geographical area where a wholesale management development program is to be successfully established. The first is the sincere interest of the wholesaler and the second is the availability of the student enrollment. "

The Los Angeles City School District in its state report describes distributive education as "that phase of business education designed to prepare individuals to enter the retail, wholesale, and service trades known as the distributive occupations, and to provide those employed in such occupations instruction they need to advance in their respective fields. The major subject matter areas are: real estate, merchandising, management, and finance. "

The Central Connecticut State College describes its two-year post-high school program: "It is education for those seeking careers in various business establishments, including without being limited to, retailing, wholesaling, specialty selling and the service occupations. Distributive occupations are those followed by proprietors, managers, or employees engaged in the marketing and merchandising of goods and services. "

A bulletin issued by the Wisconsin State Board of Vocational and Adult Education describes the reasoning behind the establishment of a post-high school marketing curriculum: "Both business people and educators were of the opinion that the curriculum should be flexible and provide students with the necessary knowledge and skills for entrance employment in a variety of marketing areas. It was felt, especially by educators, that the broad marketing curriculum would assure a minimum enrollment, and that as numbers increased, special tracks within the marketing curriculum could be offered. Thus the approved and evaluated marketing program might serve as an umbrella for special tracks which will be detailed later. "

The Post-High School Schedule

Ohio State University:

"On the time schedule of the pilot program students attend school at the Ohio State University two months and then work two months at their respective training schedule..... It is the consensus of those in charge that the rotation plan should coincide with the time schedule of the cooperating institution (in the case of the OWMDP it would be the quarter system--in another institution it might be the semester plan). Instructors could be secured more readily and probably the longer period on the job and in the classroom would have provided more depth in study as well as at work."

Wisconsin State Board of Vocational and Adult Education:

"Certain basic facts definitely point out the need for both short term and two-year post-high school programs. The second half of the twentieth century is often referred to as the 'age of distribution'.... Graduates of the two-year marketing programs are finding good to excellent placement opportunities.

In developing the marketing curriculum those distributive educators who had had previous experiences in cooperative programs, strongly urged that post-high school students not be required to be employed while attending school. Their reasoning on the subject was (1) too much time is spent by the coordinator in supervising students on the job, (2) objections to training station responsibility while attending school, and (3) the availability of suitable jobs. As a result of this thinking, requiring students to be employed while attending school is not a requirement of the marketing program. However, most of the schools do encourage employment of students, especially in a distributive occupation, primarily to make their education more meaningful. Several schools have expressed an interest in internship, either during the school year or during summer months. Business people have shown an interest in such an arrangement. As changes in the curriculum are needed, there will be some necessary adjustments in program standards."

Seattle, Washington:

The program is a regular daytime program, week-in and week-out and in addition, some of the courses listed are offered in the evening program as well.

Richmond, Virginia:

The majority of our programs are short unit classes on employee, supervisory, and management level. We do operate one cooperative class in our regular night school program. These adults work full-time and attend a related training class one night a week.

Central Connecticut State College:

The distributive education program is a combination of classroom work and practical business experience. During two months of the third semester the student will be gainfully employed full-time in a distributive occupation.

Lake Region Junior College, Devils Lake, North Dakota:

All students enrolled in the program are required to work in an acceptable distributive occupation at least 15 hours a week.

Los Angeles City School District:

We have a very large Distributive Education program on the post-high school level. . . . Our classes are almost all held during the evening hours. An exception is our Retail Cashiering program where we conduct classes in the morning as well as in the evening. Most students in our D. E. classes are employed, and are utilizing this as upgrade training to obtain better jobs or are training for work in another field.

Philadelphia, Pennsylvania:

There is one day-time post-high school program. It is a one-year course developed in cooperation with food chain stores in foods merchandising. Students attend school for the full session Monday, Tuesday, and Wednesday and work Thursday, Friday, and Saturday.

Curriculum

A survey of 22 institutions (including four-year colleges, junior colleges, technical institutes, and vocational schools) produced the results shown in Table 1.

A combination of academic subjects and specialized D. E. courses was found in almost every institution studied. The most common academic subjects are English (including communications), psychology, and economics. Among the most popular of the specialty courses are advertising, business mathematics, marketing, salesmanship, business law, and marketing management.

Table 2 summarizes the kinds of work experiences provided for D. E. students in 26 institutions. Fourteen schools provide for some kind of cooperative arrangement, in which students alternate periods of study and work. In eleven of the schools surveyed there was no such alternation. Students in these institutions either received no work experience or received it through part-time jobs or an internship. One school had both a cooperative and a non-cooperative program.

TABLE 1 D. E. CURRICULA IN SELECTED INSTITUTIONS

First Year	Fergus Falls Jr. Col. Fergus Falls, Minne.	Lake Region Jr. Col. Devils Lake, N. Dak.	Ohio State Univ.	Central Conn. State Col. New Britain, Conn.	Oshkosh Tech. Inst. Oshkosh, Wis.	Wausau Tech. Inst. Wausau, Wis.	Kenosha Tech. Inst. Kenosha, Wis.	Fond Du Lac Tech. School Fond Du Lac, Wis.	Coleman Voc. School La Crosse, Wis.	Univ. of N. Dakota Williston Center	Ellsworth College Iowa Falls, Iowa	Big Bend Com. College Moses Lake, Wash.	Racine Tech. Inst. Racine, Wis.	Somerset Co. Tech. Inst. Raritan, N. J.	Yakima Valley Col. Yakima, Wash.	Phoenix College Phoenix, Ariz.	Centralia College Centralia, Wash.	West Allis Tech. Sch. West Allis, Wis.	Eau Claire Tech. School Eau Claire, Wis.	Richmond Prof. Inst. Richmond, Va.	Madison Voc. School Madison, Wis.	Northern Montana College Havre, Montana
Accounting	X	X		X		X		X	X	X		X	X	X	X	X		X	X		X	X
Advertising		X			X		X			X				X				X		X		
Art																						
American History				X																		
American Institutions					X		X						X						X			
Business Correspondence	X																					
Business Law				X																		
Business Mathematics			X		X	X		X		X	X			X	X	X	X	X	X			
Credit Procedures					X		X														X	
Economics	X		X	X	X		X		X	X					X			X				X
English	X	X	X	X													X			X		
Communications					X	X	X	X														

(Continued Next Page)

TABLE 1 (Cont'd)

First Year

Speech		x		x						x	x				x		x			x		
Health	x											x										
Introduction to Business			x								x	x			x		x					
Layout and Lettering						x	x	x														
Marketing		x		x	x	x	x	x	x	x	x		x			x	x	x	x		x	
Retailing				x	x					x	x			x						x		x
Salesmanship	x	x	x		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
Merchandise Display						x	x	x											x		x	
Merchandise Management	x													x			x					x
Mid-Management												x										
Office Machines	x																x					
Physical Education	x			x						x		x			x	x	x					x
Science																x						
Psychology		x		x	x	x	x	x	x				x		x	x	x	x	x		x	
Sociology											x											
Supervised Occ. Exp.		x								x	x	x		x								x
Typing	x			x																		

(Continued Next Page)

TABLE 1 (Cont'd)

Second Year

Accounting	x	x	x		x					x	x						x					
Advertising				x		x		x	x				x		x	x			x		x	x
American Government		x				x																
American Institutions								x	x												x	x
Biology				x																		
Business Machines										x												
Business Law			x		x	x		x	x		x	x	x		x				x		x	x
Case Studies (Work Exp.)			x						x	x												
Communications			x				x									x						
Credit Procedures						x		x	x				x						x			x
Economics		x		x		x		x		x	x	x				x			x		x	
English											x									x		
Insurance							x															
Speech																x						x
Layout & Lettering					x					x												
Marketing Management	x	x	x							x	x	x	x		x	x			x			x

(Continued Next Page)

TABLE 1 (Cont'd)

Second Year																						
Buying					x								x									
Marketing Internship	x	x		x																		
Marketing Research	x					x													x			
Mathematics				x	x		x												x	x	x	x
Algebra		x																				
Merchandising				x									x		x					x		
Mid-Management (Sem. & Lab)												x					x					
Merchandise Display					x		x		x	x												
Psychology											x		x							x		x
Retail Management	x							x			x											x
Sales Management					x	x	x	x	x		x								x		x	
Salesmanship				x											x					x		
Sociology		x																				
Occupational Research					x	x	x	x					x						x		x	x
Wholesaling								x					x									

TABLE 2 TYPE OF WORK EXPERIENCE

	Co-operative							Non-Coop.		
	Semester-in " out	Quarter-in " out	Month-in " out	Week-in " out	Day-in " out	Combination	Half-Day in " out	No Work	Internship	Part-time Work
School of Voc. & Adult Education Green Bay, Wisconsin								x		
Clover Park Vocational School Lakewood Center, Washington							x			
State Department of Education Florida	x									x
Racine Vocational Technical School Racine, Wisconsin										x
Oshkosh Technical Institute Oshkosh, Wisconsin								x		
Yakima Valley College Yakima, Washington							x			
Columbia Basin College Pasco, Washington							x			
Phoenix College Phoenix, Arizona						x				
Centralia College Centralia, Washington							x			
West Allis Vocational School West Allis, Wisconsin										x
Eau Claire Technical School Eau Calire, Wisconsin								x		
School of Distribution Richmond, Virginia							x			
Madison Vocational School Madison, Wisconsin										x
Northern Montana College Havre, Montana		x								
University of North Dakota Williston, North Dakota							x			
Ellsworth Community College Iowa Falls, Iowa		x								
Big Bend Community College Moses Lake, Washington							x			
Ohio State University Columbus, Ohio		x								
Fergus Falls Junior College Fergus Falls, Minnesota									x	

TABLE 2 (Cont'd)

Lake Region Junior College Devils Lake, North Dakota							x			
Essex County Agricultural School Hathorne, Mass.	x						x			
Central Conn. State College New Britain, Conn.						x				
Wausau Technical Institute Wausau, Wisconsin								x		
Fond du Sac Vocational School Fond du Sac, Wisconsin								x		
Kenosha Technical Institute Kenosha, Wisconsin								x		
Coleman Vocational School La Crosse, Wisconsin								x		

Conclusions:

The above items bring out the following facts:

1. Many programs classified as post-high school are in fact adult evening programs.

2. There is difference of opinion as to whether cooperative work experience is desirable.

3. School and work schedules vary greatly.

4. There is a question as to whether the student's schedule shall be geared to the convenience of the school or the needs of the business.

5. Most programs combine a study of academic subjects and more specialized D. E. courses, with emphasis on the latter.

In reflecting on the problem of the kind of school-work schedule to set up for the various types of business listed, and accepting the implication that a cooperative program is desirable and would be supported by business, one conclusion is that a full-time, all-day work period is preferred over a part-day period. This might be a three-day period as in Philadelphia, or a recommended semester-period as in Ohio, or anything in between. Any particular or special arrangement, as in Philadelphia, would have to have sufficient numbers in one business to make it feasible to operate a class for the peculiar needs of that business.

It is, therefore, impossible to determine the kind of schedule which should be set up for the types of business indicated. In each case it would depend on the requirements of the business, their willingness to cooperate, and the availability of students. The assumption is, of course, that the program of the school would be so flexible as to accommodate various schedules.

CHAPTER IV

PROJECTION OF EMPLOYMENT IN SELECTED DISTRIBUTIVE TRADES, SELECTED AREAS, 1970

The accompanying projections of employment in the selected distributive trades were prepared for the following areas: Bucks County[1], Montgomery and Philadelphia Counties, Pennsylvania; and Burlington and Mercer Counties, New Jersey.

Two sets of projections were developed:

1. Based on place of residence enumerations. These were done for Bucks County as a whole and for that portion known as Lower Bucks County.

   The residence concept implies that the employment data were derived from tabulations of answers to questions asked of persons interviewed at their place of residence or supplying questionnaires from their residences. The Census of Population uses this method, asking labor force status and employment questions of such residents. The results are a unique, unduplicated count of persons living in an area who may not however work in that area, commuting to their jobs in other areas. One may interpret the data derived in this manner as a measure of the number of persons available for work out of the area's population. The Bureau of the Census uses a unique classification system for the residence enumeration.

2. Based on place of establishment enumerations. These were done for Bucks, Montgomery and Philadelphia Counties, Pennsylvania; and Burlington and Mercer Counties, New Jersey.

   The establishment concept implies that the employment data are derived: (1) from surveys of establishments (Census of Manufactures, Census of Business, Bureau of Labor Statistics - Bureau of Employment Security Surveys of establishments); (2) as a by-product of the operations of the Unemployment Compensation program - quarterly contribution reports on covered workers; and (3) resulting from the program of the Old Age and Survivors Benefits program reported every two or three years in County Business Patterns.

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(1) Bensalem Township, Bristol Township, Falls Township, Hulmeville Borough, Langhorne Borough, Langhorne Manor Borough. Lower Makefield Township, Lower Southampton Township, Middletown Township, Morrisville Borough, Penndel Borough, Tulleytown Borough, Yardley Borough.

For a number of reasons these projections were based on the historical trends and the proportions of recent history. No elements of judgment have been used to modify the historical trends which were carried forward to 1970. For this reason and because of the methods employed in developing the projections of details, they should be regarded as extremely tentative.

As a matter of fact, the expectation that they would be regarded with extreme caution in using them as guidelines for curriculum building is the only justification for presenting these projections in the detail shown.

1. Projections of Employment by Place of Residence

These projections were made for Bucks County and for portions of Lower Bucks County only, which is the area of residence of potential trainees in the Distributive Trades. The numbers projected in the various industries can be regarded as the number of persons residing in Bucks County who might be interested in becoming employed in selected distributive trades.

The basic data and methods used to make these estimates are consistent with the concept of residence employment. Bucks County's population by age and sex was first projected (a most probable selection was made). The next step was to project the trend of the labor force participation rates, by age and sex. The 1970 labor force by age and sex was then obtained by multiplying the labor force participation rates by the population in each age group. The average of the 1950 and 1960 total employment rates was then applied to the total labor force in 1970 to obtain the estimated level of employment at that point.

Employment by industry for 1970 was then obtained by projecting the trend of the percentage distributions of 1940, 1950, and 1960 (based on census of population data) to 1970 and multiplying the resulting factors by the projected 1970 total employment. The resulting employment data were prepared for broad industry groupings, largely on the 2-digit level.

The three and four digit residence concept employment estimates were derived by applying the 1960 proportions obtained from the 1960 census of population for Bucks County to the 1970 residence based projections for Bucks County for the following industries: wholesale trade, retail trade, finance, insurance and real estate, and selected services. The four occupational categories (shipping and receiving clerks, stock clerks and storekeepers, sales workers, truck drivers and deliverymen) were distributed among the projected 1970 employment in the indicated manufacturing industries according to proportions derived from the 1960 table of employment of occupations by industry for the Philadelphia Standard Metropolitan Statistical Area, 1960 Census of Population.

The 1970 estimates for the lower Bucks County subject area were derived from the 1960 proportions, applied to the projections for broad groups described in the previous paragraph.

These projections are regarded as tentative inasmuch as the estimating procedures have not been evaluated; in fact, some of them cannot be evaluated. It is, therefore, difficult to state the margin of error in the 1970 figures. If the margins of error are large enough, their effect can be greatly exaggerated for estimates containing small numbers - eliminating some estimates where there were possible overstatements and doubling or tripling others where there exist understatements.

At this stage, the figures have not been examined by persons familiar with local conditions whose judgment might alter the final projections.

Attention might be called to the fact that the method of projecting employment by major industry categories, starting as it does with a population projection, is essentially that also followed in the Penn-Jersey Transportation Study. There are also differences between the two procedures: (1) as to the method of population forecasting; (2) the use of census of population employment data contrasted with Bureau of Employment Security data; (3) different years as benchmarks; and (4) degree of detail. This list does not necessarily exhaust the differences between the two methods.

2. Projections of Employment by Location of Establishment

This set of projections was developed for the area which provides the employment opportunities or jobs for persons presumably interested in the Distributive Trades. Projections were made separately for Bucks, Montgomery and Philadelphia Counties, Pennsylvania; and for Burlington and Mercer Counties, New Jersey. Data limitations and methodological considerations prescribed that projections were made initially for the broad industry groupings: trade, finance, insurance and real estate, and services.

The industry employment data were obtained from published and unpublished materials furnished by the Bureau of Employment Security, generally for the March quarter each year, 1950-1963. The data, for counties, largely 'covered worker' data were adjusted for classification changes and raised to approximate the total wage and salary worker employment concept. The projected employment figures were then adjusted upward by the 1958 proportion of active proprietors of unincorporated enterprises as reported in the Census of Business, 1958.

The trends of the major industries were first examined for Pennsylvania as a whole so as to make a determination as to which of a number of mathematical curves would describe the trends most closely (straight line, logistics, etc.). Having selected the trend on this basis for each industry, the appropriate formula was applied to each county's employment in the respective major industries, after the annual data were plotted on graph paper to make sure that the state derived curves would actually fit the county data.

The detailed projections for wholesale trade and its components, with trade and its components, finance, insurance and real estate and its components and selected services, were derived as follows, For each of the selected industries, data on employment by place of establishment were obtained from the 1958 Census of Business Patterns (wholesale and retail trade and selected services), and from the County Business Patterns for 1959 and 1962. Comparable data were not available to permit an analysis of trends. The 1959 and 1962 data were averaged to minimize the influence of the business cycle and other random changes. Any data which were not reported in either 1959 or in 1962 were estimated from the 1959, 1962 or 1958 data before the averaging was done. The average employment of paid employees for 1959/62 was then raised by the proportion of active proprietors of unincorporated enterprises obtained from the 1958 Census of Business (except for finance, insurance and real estate for which no data could be found).

The average employment in 1959/62 constituted the weights which were used to distribute the total projected employment in trade, in finance, insurance and real estate and in services. There was no attempt made to force subtotals to agree with totals (disagreement may result from rounding), since interest centered on selected industries. (2)

These projections must also be treated quite cautiously because of the lack of data to develop trends for minor groups and because verification by means of comparing them with other data is impossible. The elements of judgment did not enter into the projective process at this stage and therefore the results are purely historical trends. It was not possible to determine the degree of error, nor to determine the extent to which the 1959/62 proportions should have been changed for a more accurate representation of the 1970 situation. As indicated above quite small changes can make significant alterations in the magnitudes of many of the estimates.

Projection 1 and Projection 2 should be viewed separately: the first as relating to residents and the second as relating to job opportunities afforded to those residents. The differences in any category are to be ascribed to:

1. Differences in concept.
2. Differences in data sources.
3. Differences in classification.
4. Differences in historical time periods used as benchmarks.
5. Differences in commutation, multiply jobholding and random factors.
6. Differences in the dates of enumeration.

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(2) Some distortion due to seasonal factors may exist because the data used in the projections of the major industries and the data from County Business Patterns relate to March and the data derived from the Census of Business relate to November.

BROAD CHANGES IN EMPLOYMENT IN THE DISTRIBUTIVE TRADES, 1960-1970

Projection: 1 Changes in Population, Labor Force and Employment by Industry, Bucks County, 1960-1970

The number of residents of Bucks County and of the lower Bucks County subject area employed in the detailed Distributive Trades in 1960 provided the weights for distributing the 1970 employment in the broad groups: wholesale trade, retail trade, finance, insurance and real estate, and selected services. It is, therefore, of some interest to note and compare the changes in the employment of these broad groups with one another, and with changes in the population and the labor force (see the accompanying table).

Overall, impressive changes in population and labor force are expected in Bucks County for 1970. (3) The changes in total employment are consistent with those changes. For the lower Bucks County subject area, substantial increases in population, labor force and employment are expected, rates of increase which are as high as for Bucks County as a whole. This result is due to the constraints imposed by the estimating procedures. For Bucks County as a whole, the rates of change of employment in the broad groups of the Distributive Trades were in all cases higher than in employment as a whole. The most impressive changes occurred in wholesale trade and in finance, insurance and real estate. While not as high, the changes in retail trade and in the services are also very substantial.

Generally, the high rates of growth are computed on rather small bases. The same amount of growth in total employment will produce a higher rate of growth in one of the subcategories than for employment as a whole. It is for this reason that caution should be exercised in accepting these projections as absolutely precise statements.

The changes shown for manufacturing industries are for total employment for all manufacturing in Bucks County and for the combinations of two-digit industries shown. The percentage changes for each industry and those implicit in the 1970 projections of employment in the distributive occupations in the listed manufacturing industries. It will be noted that high rates of increase of employment are projected from the historical records for all manufacturing except for the textile and apparel groups. Note again that these changes are computed on relatively small bases and reflect the growing opportunities in the whole metropolitan area where Bucks County residents will find employment.

Relatively smaller growth rates are projected for the nine-county area by the Penn-Jersey Transportation Study. But these rates are computed from larger bases, where lower rates of growth are consistent with larger absolute amounts of

(3) The projected changes in the population figures are about 8 percent higher than those published by the Bell Telephone Company and fall between the low and medium projections of the Penn-Jersey Transportation Study.

PROJECTION: 1

CHANGES IN RESIDENT POPULATION, LABOR FORCE AND EMPLOMENT IN DISTRIBUTIVE TRADES, BUCKS COUNTY, PENNSYLVANIA, 1960-1970

Population Labor Force Employment	Bucks County			Subject Area*		
	1960	1970	Percent Change	1960	1970	Percent Change
Population	308,567	473,700	53.5	107,187	164,500	53.5
Labor Force	116,800	195,100	67.0	59,960	100,200	67.0
Total Employment	112,500	188,500	67.6	56,910	95,400	67.8
Employment in Selected Distributive Trades	27,797	50,566		14,651	25,357	
Wholesale Trade	2,757	5,477	98.7	1,515	2,862	88.9
Retail Trade	15,334	27,102	76.7	8,222	13,819	68.1
Finance, Ins., R.E.	3,705	7,471	101.6	1,978	3,793	91.8
Bus. & Repair Services	2,577	4,465	73.3	1,466	2,415	64.7
Personal Services	2,982	5,308	78.0	1,253	2,121	69.3
Enter. & Rec. Services	442	743	68.1	217	347	59.9
Distributive Employment in Mfg. Industries						
Total Manufacturing	46,026	79,151	72.0			
Furniture, Lumber & Wood Prod.	804	1,459	81.5			
Primary ferrous, non-ferrous, Fabr.	12,115	25,712	112.2			
Machinery, exc. Elec. & Elec. Mach.	8,620	15,573	80.7			
Motor Vehicles	1,227	2,716	121.4			
Aircraft & Other Trans. Equip.	977	1,436	47.0			
Food & Kindred Prod.	2,560	4,759	85.9			
Textile Mill Prod.	1,863	299	-84.0			
Apparel & Other Fabr. Textile Prod.	3,246	1,614	-50.3			
Printing, Publish. & Allied Prod.	1,977	3,998	102.2			
Chemicals & Allied Prod.	3,689	6,255	69.6			
Other Durables, Rubber, Plastics, Non-Durables	8,948	15,330	71.3			

Source: U. S. Census of Population.
Temple University, Bureau of Economic and Business Research.

* Subject area includes: Bensalem Township, Bristol Township, Falls Township, Hulmeville Borough, Langhorne Borough, Langhorne Manor Borough, Lower Makefield Township, Lower Southampton Township, Middletown Township, Morrisville Borough, Penndel Borough, Tulleytown Borough, Yardley Borough

employment in the various industries. The absolute growth in the nine-county area has the capacity to absorb Bucks County's growth in resident employment, granted that growth in the other areas is consistent with such growth. This is a major assumption of this report. A comparison of growth in the area as a whole with those for Bucks County would seem to indicate that this assumption is probably warranted, except for the growth rates in manufacturing, which may be too high, and this despite the fact that the growth rates shown were derived from the historical record.

Projection: 2 Changes in Employment in the Establishments of the Distributive Trades for Bucks, Montgomery, Philadelphia Counties, Pennsylvania; and for Burlington and Mercer Counties, New Jersey, 1960-1970

The accompanying table presents the changes in the broad industry groups implicit in the projections of employment, by location of establishment, for trade, finance, insurance and real estate, and services. The fact that wholesale and retail trade were projected as a figure for trade as a whole accounts for the identity of their rates of change.

Substantial changes are to be noted in every county for all categories except for trade in Philadelphia County. The decline of employment in wholesale trade in Philadelphia County was not offset by its growth in the other counties, despite high rates of growth.

The generally large increases and high growth rates are consistent with the growth in population, greater in surrounding counties, than for Philadelphia. These population growth rates may be thought of as accounting for the growth of industry. Complex interactions between the central city and the suburbs, of course, account for the observed differential growth rates. This is not to say that changes in the employment of certain industries do not influence the movement of populations.

The unknown margins of error in these growth rates should produce caution in their interpretation. Heavy dependence should not be placed on the assumption of precise accuracy of the projected figures.

PROJECTION: 1

PROJECTED EMPLOYMENT FOR DISTRIBUTIVE EDUCATION, BUCKS COUNTY AND SUBJECT AREA, SELECTED INDUSTRIES BY PLACE OF RESIDENCE, 1970
(Cont'd)

Industry#	D. E. SI C Code#	Weight	BUCKS COUNTY Employment of Shipping and Receiving Clerks	Employment of Stock Clerks and Storekeepers	Employment of Sales Workers	Employment of Truck Drivers and Deliverymen
Manufacturing Industries						
Furniture, lumber & wood prod.	25	1	33	4	78	56
Primary & fabricated metals	33	1	313	178	481	344
Machinery incl. elec.	35	1	164	163	291	94
Motor vehicles	371	1	27	45	42	28
Aircraft & other trans. equip.	372	1	2	16	6	11
Food & kindred products	20	1	69	19	317	729
Textile mill products	22	1	5	1	5	2
Apparel & kindred	23	1	25	4	26	3
Printing & publishing	27	1	49	9	524	85
Chemicals & allied prod.	28	1	106	39	311	91
Other durables & non-durables			231	95	503	324

Source: U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population 1960.

U. S. Office of Education, U. S. Department of Health, Education and Welfare, Office of Education, Standard Industrial Classification For Use in Distributive Education.

Temple University, School of Business Administration, Bureau of Economic and Business Research.

* Subject area includes: Bensalem Township, Bristol Township, Fallingston Township, Lower Makefield Township, Morrisville Boro, Tulleytown Boro, Yardley Boro.

The Standard Industrial Classification categories have been associated with the Census of Population categories according to the suggestions of the Bureau of the Census.

PROJECTION: 1

PROJECTED EMPLOYMENT FOR DISTRIBUTIVE EDUCATION, BUCKS COUNTY AND SUBJECT AREA, * SELECTED INDUSTRIES BY PLACE OF RESIDENCE, 1970

Industry#	D E. SI C Code#	Weight	Employment Bucks County 1960	Employment Bucks County 1970	Employment Subject Area* 1960	Employment Subject Area* 1970
Wholesale and Retail Trade						
Wholesale Trade			2,757	5,477	1,515	2,862
Motor vehicles & equipment	501	1	200	397		
Drugs, chemicals & allied prod.	502	1	117	232		
Dry goods,& apparel	503	1-2	36	72		
Food & related products	504	1	423	840		
Farm prod.- raw materials	505	-	81	161		
Electrical goods, hardware & plumbing equipment	506,507	1-2	285	566		
Machinery, equip., & supplies	508	-	457	908		
Petroleum products	5092	-	190	377		
Misc. wholesale trade	5091,5093-5099	1	851	1,691		
Not spec. wholesale trade			117	233		
Retail Trade			15,334	27,102	8,222	13,819
Food & dairy products	54	4	2,842	5,024	1,580	2,415
Eating & drinking places	58	3	2,712	4,793	1,338	2,290
General mdse. retailing	53 exc. 533	4	2,225	3,933		
Ltd. price variety stores	533	4	630	1,113		
Apparel & accessories stores	56 exc. 566	4	696	1,230		
Shoe stores	566	2	171	302		
Furn. & household furnishings	571	4	404	714		
Household appliances & access.	572,573	2	326	576		
Motor vehicles & accessories	55 exc.554	2	1,654	2,923		
Gasoline service stations	554	2	804	1,421		
Drug stores	591	4	549	970		
Hardware & farm equipment	525	3	284	502		
Lumber & building materials	521-524	1	518	916		
Liquor stores	592	-	72	127		
Retail florists	5992	4	98	173		
Jewelry stores	597	2	113	200		
Fuel & ice dealers	598	3	337	596		
Misc. retail stores	593-596, 599 exc. 5992	2	647	1,144		
Not spec. retail trade			252	445		
Other retail			9,780	17,285	5,304	9,104

(Continued)

PROJECTION: 1 (Cont'd)

Industry#	D E. SI C Code#	Weight	Employment Bucks County 1960	Employment Bucks County 1970	Employment Subject Area* 1960	Employment Subject Area* 1970
Finance, Insurance & Real Estate			3,705	7,471	1,978	3,793
Banking & credit agencies	60, 61	2-1	1,256	2,533		
Security & commodity brokerage	62, 67	-	90	181		
Insurance	63, 64	1	1,675	3,378		
Real Estate	65, 66	1	684	1,379		
Business & Repair Services			2,577	4,465	1,466	2,415
Advertising	731	1	236	409		
Misc. business services	732-736,739	1	1,028	1,781		
Automobile repair services	75	1-2	729	1,263		
Misc. repair services	76	2-1	584	1,012		
Personal Services			2,982	5,308	1,253	2,121
Private households	88		1,347	2,398	470	649
Hotels & lodging places	70	2	365	650		
Laundering, cleaning & dyeing	721-727	1	509	906		
Dressmaking shops	729	-	28	50		
Shoe repair shops	725	-	46	82		
Barber & beauty shops	723, 724	-	557	991		
Misc. personal services	722,726,729		130	231		
Entertainment & Recreation Services			442	743	217	347
Theaters & motion pictures	78, 792	-	119	200		
Bowling, billiard & pool	793	-	80	135		
Misc. entertain. & rec. services	791, 794	2	243	408		
Selected Services (total)			6,001	10,516	2,936	4,938

The detailed projections for wholesale trade and its components, with trade and its components, finance, insurance and real estate and its components and selected services, were derived as follows, For each of the selected industries, data on employment by place of establishment were obtained from the 1958 Census of Business Patterns (wholesale and retail trade and selected services), and from the County Business Patterns for 1959 and 1962. Comparable data were not available to permit an analysis of trends. The 1959 and 1962 data were averaged to minimize the influence of the business cycle and other random changes. Any data which were not reported in either 1959 or in 1962 were estimated from the 1959, 1962 or 1958 data before the averaging was done. The average employment of paid employees for 1959/62 was then raised by the proportion of active proprietors of unincorporated enterprises obtained from the 1958 Census of Business (except for finance, insurance and real estate for which no data could be found).

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These projections must also be treated quite cautiously because of the lack of data to develop trends for minor groups and because verification by means of comparing them with other data is impossible. The elements of judgment did not enter into the projective process at this stage and therefore the results are purely historical trends. It was not possible to determine the degree of error, nor to determine the extent to which the 1959/62 proportions should have been changed for a more accurate representation of the 1970 situation. As indicated above quite small changes can make significant alterations in the magnitudes of many of the estimates.

Projection 1 and Projection 2 should be viewed separately: the first as relating to residents and the second as relating to job opportunities afforded to those residents. The differences in any category are to be ascribed to:

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Chemicals & Allied Prod.	3,689	6,255	69.6			
Other Durables, Rubber, Plastics, Non-Durables	8,948	15,330	71.3			

Source: U. S. Census of Population.
Temple University, Bureau of Economic and Business Research.

* Subject area includes: Bensalem Township, Bristol Township, Falls Township, Hulmeville Borough, Langhorne Borough, Langhorne Manor Borough, Lower Makefield Township, Lower Southampton Township, Middletown Township, Morrisville Borough, Penndel Borough, Tulleytown Borough, Yardley Borough

PROJECTION: 2

PROJECTED EMPLOYMENT FOR DISTRIBUTIVE EDUCATION, 5 COUNTY AREA, 1970
BY LOCATION OF ESTABLISHMENT

Industry	D. E. SIC Code	Weight	Employment: Bucks County Average 1959-62	Bucks County 1970	Montgomery County Average 1959-62	Montgomery County 1970	Philadelphia County Average 1959-62	Philadelphia County 1970	Burlington County Average 1959-62	Burlington County 1970	Mercer County, N.J. Average 1959-62	Mercer County, N.J. 1970
Wholesale & Retail Trade												
Wholesale Trade												
Motor vehicles & equip.	501*		141	208	746	1,038	4,058	3,581	120	184	287	314
Automotive equip.	5013	1	68	100	319	444	2,601	2,295	40	61	165	180
Tires & tubes	5014	1					538	475			32	35
Drugs, chemicals & allied prod.	502*		136	201	1,374	1,912	3,897	3,439			185	202
Drugs, sundries	5022	1			105	146	1,756	1,550				
Paints, varnishes	5028	1			207	288	337	297				
Dry goods, apparel	503*				89	124	3,041	2,684			56	61
Dry & piece goods, notions	5032	1					900	794				
Apparel & access.	5035	1			57	79	1,666	1,470			15	16
Footwear	5039	2					445	393				
Groceries & related prod.	504*		424	626	1,162	1,617	9,777	8,628	45	69	732	801
Groceries, gen. line	5042	1					1,058	934				
Dairy prod.	5043	1			135	189	1,145	1,010			32	35
Confectionery	5045	1					332	293			58	63
Meat, Meat Prod.	5047	1			37	51	2,050	1,809			150	164
Fresh fruits & veg.	5048	1					1,575	1,390			93	102
Electrical goods	506*		121	179	564	785	7,273	6,418	33	51	268	293
General elec. mdse.	5062	1					263	232				
Elec. appl., T.V., radio	5064	1					2,178	1,922				
Electronic parts, equip	5065	2			227	316	1,163	1,026			32	35

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PROJECTION: 2 (Cont'd)

Hardware, plumbing heating equip.	507*		161	238	297	413	2,762	2,437	80	123	164	179
Hardware	5072	1			79	110	860	759				
Plumb., heating equip.	5074	2			192	267	1,232	1,087			97	106
Air-cond., refrig. equip.	5077	2					637	562				
Miscellaneous wholesale	509*		579	854	4,331	6,026	26,547	23,427	687	1,052	1,817	1,988
Metals, minerals	5091	1	18	27	481	669	3,843	3,391			74	81
Furniture, home furn.	5097	1	32	47	58	81	2,028	1,790			206	225
Total Wholesale Trade	*		1,700	2,508	9,215	12,821	71,518	63,114	1,095	1,677	4,273	4,674
Retail Trade												
Lumber, Bldg., Hdw., farm equip.	52*		733	1,082	1,335	1,857	2,782	2,455	417	638	616	674
Lumber yards	5211	1	282	416	416	579	751	663	216	331	219	240
Bldg. materials dlrs.	5212	1	57	84	270	376	354	312			89	97
Heating, plumbing equip. dealers	522	1					290	256				
Paint, glass, wallpaper stores	523	3	85	125	123	171	426	376	40	61	97	106
Electrical supply stores	524	1					63	56				
Hardware stores	5251	3	119	176	339	472	794	701	63	96	133	145

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PROJECTION: 2 (Cont'd)

General Merchandise	53*		1,445	2,133	5,260	7,318	30,733	27,122	755	1,156	2,566	2,806
Department stores	531	4	604	891	3,613	5,026	17,366	15,325			1,453	1,589
Ltd. price variety stores	533	4	502	741	876	1,219	3,194	2,819	379	580	475	519
Dry goods, gen. mdse. stores	5392	3	104	153	353	491	1,470	1,297			326	357
General stores	5393	3	82	121	62	86	112	99				
Food	54*		2,425	3,579	4,732	6,583	27,134	23,945	1,479	2,264	2,956	3,233
Supermkts., groc. & del. stores	541*	4	1,751	2,584	3,593	4,999	18,474	16,303	1,118	1,711	1,846	2,019
Meat markets	5422	2	217	320	219	305	2,033	1,794			209	229
Fish markets	5423	2					272	240			27	30
Fruit stores, veg. markets	543	2	82	121	82	114	575	507			64	70
Candy, nut, confec. stores	544	2	53	78	140	195	2,568	2,266	22	34	112	122
Dairy products stores	545	2	20	30			250	221			64	70
Retail bakeries - manufacturing	5462	3					196	173			204	223
Retail bakeries - nonmanufacturing	5463	1					802	708			38	42
Auto. Delrs. & Gas. Serv. Stns.	55*		2,256	3,330	3,704	5,153	8,849	7,809	1,440	2,204	1,918	2,098
Pass. car dealers, franchised	551	2	1,231	1,817	1,808	2,515	4,191	3,699	733	1,122	799	874
Pass. car dealers, nonfranchised	552	1	118	174	165	230	462	408			59	65

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PROJECTION: 2 (Cont'd)

Tire, battery, access. dealers	553	1	224	331	180	250	1,132	999	62	95	124	136
Gas. Serv. Stations	554	2	995	1,469	2,102	2,924	4,422	3,902	768	1,176	885	968
Apparel & Accessories	56*		635	937	2,723	3,788	12,164	10,735	323	494	1,554	1,700
Men's, boy's clothing stores	561	4	97	143	337	469	2,569	2,267	65	100	252	276
Women's, ready-to-wear stores	562	4	173	255	761	1,059	4,079	3,600	71	109	489	535
Millinery stores	5631	2			44	61	408	360			76	83
Lingerie stores	5632	2					440	388			8	9
Hosiery stores	5633	2					68	60				
Other spec. stores (women's)	5634	2			119	166	349	308			47	51
Child.'s, infants' wear stores	564	3	103	152	79	110	697	615			97	106
Family clothing stores	565	2	55	81	626	871	409	361	67	103	317	347
Men's shoe stores	5662	2					238	210			13	14
Women's shoe stores	5663	2			80	111	573	506			68	74
Child. 's shoe stores	5664	2					75	66				
Family shoe stores	5665	4	148	218	209	291	863	762	46	70	95	104
Custom tailors	567	1	13	19	43	60	435	384			26	28
Furriers, fur shops	568	1					287	253			41	45
Misc. apparel	569	1					43	38				
Furn., Home furnishings & Equipment	57*		492	726	1,320	1,836	5,231	4,616	335	513	928	1,015
Furn., & household furnishings	571*		269	397	813	1,131	3,265	2,821	196	300	560	612
Furn. stores	5712	4	167	246	539	750	1,960	1,730	164	251	365	399
Floor cov. stores	5713	3	97	143	159	221	584	515			95	104
Drapery, curtain, uphls. stores	5714	3			47	65	324	286			56	61
China, glass., metal stores	5715	2					68	60				

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PROJECTION: 2 (Cont'd)

Misc. home furn. stores	5719	2			35	49	252	222				
Household appl. stores	572	2	151	223	239	333	1,051	927	104	159	204	223
Radio, T.V. & music stores	573*		72	106	266	370	922	814	32	49	166	182
Radio & T.V. stores	5732	3	64	94	200	278	392	346			40	44
Record, musc. instru. stores	5733	2			66	92	531	469			124	136
Eating & Drinking Places	58*		2,859	4,220	5,981	8,321	33,255	29,347	1,727	2,644	3,397	3,715
Restaurants, cafeterias, etc.	5812	3	2,315	3,417	4,772	6,639	24,914	21,986	1,214	1,858	2,464	2,695
Other Retail Stores	59*		2,009	2,965	4,020	5,593	14,519	12,813	1,139	1,744	2,135	2,335
Drugstores	591	4	492	726	1,133	1,576	4,630	4,086	306	468	491	537
Book & stat. stores	594*		40	59	440	612	733	647	42	64	62	68
Book stores	5942	1			367	511	228	201			16	17
Stationery stores	5943	2			73	102	462	408			46	50
Sporting goods & bicycle stores	595*				98	136	224	198	39	60	68	74
Sporting goods strs.	5952	2			84	117	201	177				
Farm & garden supply stores	596*		142	210	176	245	175	154	108	165	275	301
Other farm & grdn. supply stores	5969	2					86	76			24	26
Jewelry stores	597	2	46	68	147	205	1,164	1,027	45	69	107	117
Fuel & ice dlrs.	598*		453	669	479	666	1,892	1,670	183	280	389	425
Fuel oil dealers	5983	3	373	551	383	533	1,068	942	143	219	276	302
Retail stores n.e.c.	599*		369	545	1,330	1,850	4,374	3,860	202	309	442	483
Florists	5992	4	71	105	201	280	794	701	61	93	112	122
Camera, photo. supply stores	5996	2			64	89	224	198			29	32

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Gift, novelty, souvenir shops	5997	2	69	102	180	250	468	413	33	51	71	78
Misc. retail stores, n. e. c.	5999	1	96	142	248	345	1,455	1,284			161	176
Nonstore Retailers	53*		382	564	7,724	10,746	33,376	29,454	755	1,156	3,192	3,491
Mdse. vending mch. operators	534	1			144	200	599	529			141	154
Direct selling org.	535	1	343	506	302	420	2,734	2,413			304	332
Total Retail Trade	*		12,898	19,036	29,643	41,240	157,034	138,581	7,833	11,991	16,086	17,593
Finance, Insurance & Real Estate												
Banking	60	2	437	509	1,229	1,856	11,711	13,896	423	685	1,125	1,518
Credit Agencies Other Than Banks	61*		191	222	583	880	4,446	5,276	101	164	371	501
Finc. inst. other than banks	611	1	1									
Savings & loan ass.	612	1	117	136	278	420	1,563	1,855	64	104	77	104
Personal credit inst.	614	1	64	75	196	296	1,838	2,181			249	336
Bus. credit inst.	615	1					775	920				
Sec. & Commodity Brokers & Services	62						3,769	4,472				
Insurance Carriers	63*		185	215	1,391	2,101	20,269	24,051	129	209	1,581	2,133
Life insurance	631	1	144	168	513	775	9,692	11,501			490	661
Accident & hlth. ins.	632	1					1,074	1,274				
Ins. Ag., Brokers & Service	64		152	177	250	378	3,469	4,116	55	89	227	306
Real Estate	65*		389	453	1,190	1,797	8,625	10,235	286	463	442	596
Real est. operators & lessors	651	1	131	153	744	1,124	6,130	7,274	64	104	263	355
Total Fin., Ins., & Real Estate	*		1,460	1,700	5,165	7,800	55,115	65,400	1,050	1,700	4,076	5,500

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Services												
Hotel & Other Lodging Places	70*											
Hotels-year round	7011	2	95	245	301	620	5,679	8,079	317	864	741	1,048
Motels & tourist courts	7013	2	104	268	222	457	4,542	6,462	62	169	648	917
Personal Services	72*		1,025	2,639	3,288	6,771	487	693	231	630	71	100
Power laundries	7211	1			306	630	22,252	31,658	1,027	2,799	2,335	3,304
Laundries, exc. power & self-serv.	7212	1					4,250	6,047	157	428	647	915
Indus. launderers, linen supply	7213	1					406	578				
Self-serv. launds.	7215	1					1,748	2,487				
Clng., dyeing plants	7216	1	373	960	74	152	176	250				
Clng., press., shops repair	7271	1	88	227	782	1,524	3,034	4,317	154	420	337	477
Business Services	73*		525	1,352	1,902	3,917	197	280	91	248	77	109
Advertising agencies	7311	1			98	202	19,182	27,291	936	2,551	3,044	4,307
Credit reporting & collection	732						2,329	3,314				
Auto. Services, Repair Garage	75*		448	1,154	1,800	3,707	993	1,412				
Auto. truck rentals wo/drivers	7511	1					6,162	8,767	240	654	655	927
Top, body rep. shps.	7531	2	89	229	183	377	625	889	34	93	167	236
Battery, igntn. & service shops	7532	1			38	78	52	74				
Radiator rep. shops	7533	1			36	74	89	127				
Tire repair shops	7534	1			35	72	86	122				
Paint shops	7535	2			74	152	142	202				
Glass replacement, repair shops	7536	1			29	60	104	148				

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PROJECTION: 2 (Cont'd)

Gen. auto. repair	7538	2	231	595	675	1,390	1,999	2,844	163	444	116	164
Auto. rep. shops n. e. c.	7539	1					207	295				
Auto. services except repair	754						776	1,104			172	243
Misc. Repair Services	76*		379	976	604	1,243	4,516	6,425			524	741
Elec. rep. shops	762	2	137	353	162	334	1,341	1,908			189	267
Reupholstery & furniture repair	764	1	45	116	97	200	580	825			101	143
Amusement & Recreation Services	79*		407	1,048	1,983	4,084	4,086	5,813	191	521	489	692
Sports promoters & amus., n. e. c.	7949	2	62	160	91	187	756	1,076			67	95
Total Services (Selected) *			2,885	7,429	9,788	20,156	61,869	88,022	3,183	8,676	8,201	11,603

*Details may not add up to totals because some details have not been estimated. Much dependence should not be placed on the precision of these estimates, particularly those less than 100. The figures should be viewed in terms of order of magnitude rather than precise absolute values.

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PROJECTION: 2

CHANGES IN POPULATION AND EMPLOYMENT IN THE ESTABLISHMENT OF THE DISTRIBUTIVE TRADES IN A 5-COUNTY PHILADELPHIA AREA, 1959/62 - 1970

Broad Distributive Trades	EMPLOYMENT IN ESTABLISHMENTS											
	TOTAL 5 COUNTIES		BUCKS COUNTY		MONTGOMERY COUNTY		PHILADELPHIA COUNTY		BURLINGTON COUNTY		MERCER COUNTY, N.J.	
	Average 1959-62	1970	Average 1959-62	1970	Average 1959-62	1970	Average 1959-62	1970	Average 1959-62	1970	Average 1959-62	1970
Wholesale Trade	87,801	84,794	1,700	2,508	9,215	12,821	71,518	63,114	1,095	1,677	4,273	4,674
Percent Change		- 3.4		47.5		39.1		-11.8		53.2		9.4
Retail Trade	223,494	228,441	12,898	19,036	29,643	41,240	157,034	138,581	7,833	11,991	16,086	17,593
Percent Change		2.2		47.6		39.1		-11.8		53.1		9.4
Finance, Insur. & R. E.	66,866	82,100	1,460	1,700	5,165	7,800	55,115	65,400	1,050	1,700	4,076	5,500
Percent Change		22.8		16.4		51.0		18.7		61.9		34.9
Services	85,926	135,866	2,885	7,429	9,788	20,156	61,869	88,022	3,183	8,676	8,201	11,603
Percent Change		58.1		157.5		105.9		42.3		172.6		41.5
	1960	1970	1960	1970	1960	1970	1960	1970	1960	1970	1960	1970
Population	3,319,279	3,730,242	308,567	473,700	516,682	652,966	2,002,509	2,008,676	225,129	292,900	266,392	302,000
Percent Change		12.4		53.5		26.4		0.3		30.1		13.4

Source: Temple University, Bureau of Economic and Business Research, and data obtained from the Penn-Jersey Transportation Study.

CHAPTER V

VOCATIONAL INTERESTS AND OPPORTUNITIES IN THE BUCKS COUNTY AREA

Statement of Mission

The aspects of the total undertaking relegated to the psychologists involved a four stage proposition. Part One involved a survey of the attitudes, interests, and availability of the student population (present and graduated) relative to their participation in a post-high school distributive education (henceforth DE) program.

Part Two involved the identification of potential employers (in the lower Bucks County area) and a determiniation of their willingness to participate in such a program. Also, from these people we attempted to get information on the potential number of job openings, job requirements, etc.

The third phase of the program was to write detailed job descriptions specifying the nature of the job and the skills and requirements necessary to do the job.

Finally, the first three stages will be brought together in a series of recommendations for the kinds of courses to be offered, as well as specifying the nature of the content deemed necessary in light of the reflected needs of the community.

Procedures - Step I

The procedures initiating Step I were set in motion by a meeting involving the guidance counselors in the school districts represented by the geographic boundaries After the general aims of the study were discussed and their cooperation enlisted, an exact count of the size of each graduating class was determined (including dropouts). From the total of the seven districts a systematic sample of approximately 300 was drawn. The same procedure was used for the 1963 graduating class, and the names and addresses were sent to the Educational Service Bureau (N = 516).

A pair of questionnaires was designed (with the aid and criticism of the school counselors) and one of these was completed by the graduating class sample (graduating in June, 1965). The other was mailed out to the 1963 graduates. The questionnaires are included as Exhibits A and B; the covering letter is Exhibit C.

When the questionnaires were returned, the data were tabulated. Of the 288 questionnaires filled out by the class of 1965, only 279 were useable. The calss of 1963 returned 114 useable questionnaires out of 516 questionnaires mailed out

for a 22% return.[1] This return involved two mailings of questionnaires; the first to the total sample, and the second to those who hadn't returned their questionnaires within one month. For the purposes of the survey, the return is deemed adequate by the Research Staff.

Step II

Upon identification of the population of employers (merchants and businessmen in the prescribed geographic area) a systematic sample of 25 employers was drawn.[2] Each of these employers was visited by an interviewer. The interviewer attempted to determine the nature of the positions within the organization and the specific requirements of each position. Other information, such as openings available, etc., was also collected. Also investigated was the employer's willingness to participate in a training program (i.e., hire the trainees on a part-time basis while enrolled in the program, etc.). The questionnaire used for this purpose is included as Exhibit D.

With the information gained from the interviews, a questionnaire (Exhibit E) was devised and mailed with a covering letter (Exhibit F) to the rest of the population. Nine hundred seventy-two questionnaires were mailed out; 165 were returned (17% return). The returned questionnaires were tabulated.

Step III

In Step III, primarily from the information collected in Step II, job descriptions were written specifying the nature of the job and the kinds of skills and abilities necessary for minimum competency. Research of the literature was conducted into the empirical nature of these characteristics wherever feasible. These descriptions are included in Chapter VI.

[1]Both classes were sampled from class lists for incoming freshmen to insure a sample of the dropout population. However, it was later decided that since our primary concern was a sample of the attitudes of both employed (Class of 1963) and employment seeking young people (Class of 1965), the dropouts (N = 10) should be included with Class of 1963 results.

[2]This population was gleaned from the following sources: Listing of commercial subscribers of Lower Bucks County - Bell Telephone Company, 1964; Directory of Small and Large Businesses of Lower Bucks County; Directory of the Planning Commission of Bucks County; Directory of Manufacturing of Bucks County (Selected Information); Bureau of Employment Security, Commonwealth of Pennsylvania, 1954.

Step IV

From the collection of data in Stages I to III, recommendations were made, keeping in mind both the desires of employers and potential employees, with regard to the nature of courses to be offered by the program.

Results: Step I

A. Class of 1963

Of the 114 people responding to the questionnaire, 88% report daytime employment and 12% evening employment. Of the daytime employees 84% are full time, and of the evening employees, 4% are full time (Table 1). Concerning employment tenure, 35% have held their present job six months or less; 16% have held their present job for 7 - 12 months; 14% have been at their present job 13 - 18 months; 24% from 19 - 24 months; and 11% for 25 months or longer (Table 2).

The kinds of positions held by the respondents as well as the percentage of respondents occupying such positions is presented in Table 3.

Of the responding sample, 32% report having continued their formal education in some way, while out of this group, only 2% didn't graduate with their class (dropouts); 66% finished high school and have had no other formal training (Table 4).

When asked about their interest in an opportunity for further education, 76% indicated they would like the opportunity; 18% were undecided and 4% showed no interest (Table 5). Of the respondents, 52% indicated that they were prepared very well educationally for their present position, 44% felt adequately prepared and only 4% poorly prepared (Table 6). The replies also indicated that the majority of the respondents (62%) felt that the rewards of the job were unrelated to their educational achievement, while 19% felt that the rewards of their job were related to inadequate education. Some of the respondents (19%) either didn't know the nature of the relationship for them between their educational achievement and the rewards of the job or wouldn't say (Table 7).

TABLE 1

Class of 1963

Employment at Present

When Employed	Percentage of Sample
Day	88
Evening	12
Day - Full time	84
Day - Part time	4
Evening - Full time	4
Evening - Part time	8

TABLE 2

Class of 1963

Length of Time in Present Position

Length of Time in Months	Percentage of Sample
0 - 6	35
7 - 12	16
13 - 18	14
19 - 24	24
25 or more	11

TABLE 3

Class of 1963

Types of Present Employment

Type of Work	Percentage of Sample
Factory Work (General)	28
Clerical (Other than secretaries)	17
Secretaries	11
Service-Sales	5
Operating Service Facilities	5
Key Punch Operators	5
Retail Sales	4
Food Handling	4
Armed Forces	4
News Composition	3
Transportation	3
Management (Dept.)	3
Other (Wholesale sales, warehousing, recreation mgmt., credit, advertising, drafting, police work, etc.)	8

TABLE 4

Class of 1963

Years of Formal Education At Present

Number of Years	Percentage of Sample
9-10	2
11-12	66
More than 12	32

TABLE 5

Class of 1963

Interest in an Opportunity for Further Education

Response	Percentage of Sample
Yes	76
No	6
Undecided	18

TABLE 6

Class of 1963

How Well Prepared for Present Position

Response	Percentage of Sample
Very Well	52
Adequately	44
Poorly	4

TABLE 7

Class of 1963

Rewards Based on Achievement for Which Not Prepared

Response	Percentage of Sample
Yes	19
No	62
Don't Know	15
Didn't Answer	4

To ascertain an indication of the degree of interest in a possible training program, a question was included about the amount of time the respondent would be willing to invest in such a program. Twenty percent of the respondents indicated that they would go full time, while 18% indicated a one-night-per-week preference; 39% would like to go two nights per week, 13% stated that they would go more than two nights per week, and 10% indicated either no interest or some other arrangement (Table 8).

Concerning their interest in pursuing their present careers, as opposed to changing to another field, 34% of the respondents showed an interest in being further trained in their present job, while 51% had no interest in further training and 15% couldn't decide. When questioned about seeking a new field, 55% indicated some positive interest, 23% showed none, and 22% were undecided (Table 9). However, 86% felt that they were aware of the job requirements of at least their present, if not their prospective, employer, while only 10% indicated that they had no familiarity with such requirements and 4% didn't respond (Table 10).

The questionnaire was structured in such a way as to give each respondent an opportunity to select from a number of broad occupational categories and rank his selection of categories from 1 to 4 (with 1 being the most preferred). The results are shown in Table 11.

Summary - Class of 1963

A review of the pertinent data shows 88% of the respondents employed on a full-time basis, with a large majority on the job less than six months. The predominant employment for these people is in the area of clerical and secretarial work or in general factory work. Almost all of the respondents finished high school and 76% of them would like to continue their education. They indicate a predominant interest in evening school with at least two nights a week of participation the highest preference. It also seems likely that a large number of individuals will train for a new kind of job with 55% indicating an interest to do so. The strongest areas of interest occupationally seem to be in the areas of recreation management, purchasing, advertising, service businesses, display and transportation. (Note: Age and sex distributions have been included in Tables 12 and 13 to round out the picture of the Class of 1963).

TABLE 8

Willingness to Train - Class of 1963

Type of Program	Percentage of Sample
One night per week	18
Two nights per week	39
More than two nights per week	13
Full time	20
Other	10

TABLE 9

Desire for Further Training

Response	Percentage of Sample
Present Job	
a. Yes	34
b. No	51
c. Undecided	15
New Field	
a. Yes	55
b. No	23
c. Undecided	22

TABLE 10

Knowledge of Skills and Requirements of Employers

Response	Percentage of Sample
Yes	86
No	10
No Response	4

TABLE 11

Class of 1963

Interest in Training

Job Title	Percentage of Sample Rank Order of Selection			
	1st	2nd	3rd	4th
Recreation Management	11	11	16	5
Purchasing Agent	10	9	6	11
Advertising	11	6	13	10
Operating a Service Facility	12	4	6	3
Display (Interior and exterior)	6	10	8	6
Transportation	8	6	6	11
Retail Selling	6	6	2	4
Service Sales	4	6	5	3
Insurance	5	4	2	2
Credit (agency)	5	2	4	3
Real Estate	3	5	4	8
Food Handling	4	3	0	2
Wholesale Selling	3	4	5	3
News Composition	2	6	5	4
Credit (company)	1	6	3	2
Warehousing	1	3	3	5
News Circulation	1	1	1	2

TABLE 12

Distribution of Ages of Class of 1963

Age	Percentage of Sample
18 years or less	1
19 years	37
20 years	47
21 years	11
22 years or more	4

TABLE 13

Sex Distribution of Class of 1963

Sex	Percentage of Sample
Male	53
Female	47

B. Class of 1965

Of the 279 useable questionnaires returned to the Educational Service Bureau by the guidance counselors of the cooperating schools, 40% of the students indicated that they were presently engaged in some part-time employment, 59% were not employed, and 2% didn't respond (Table 14). Of the 40% employed, 15% had held their position less than six months, 15% were employed at their present job from 7 - 12 months, 1% from 13 - 18 months, 3% from 19 - 24 months, and 5% of the students report working at their present position for over two years (Table 15). The kinds of jobs held and frequency of occurrence in the sample is shown in Table 16. Of the students presently unemployed 43% indicated a desire for part-time work, 10% indicated no interest in working part-time and 7% couldn't decide, (Table 17).

When asked what kinds of jobs they would like to do on a part-time basis, 56% responded and 44% did not respond. The results are presented in Table 18.

The Class of 1965 seemed to be aware of the need for further education with 73% indicating a positive interest in furthering their knowledge for a particular job. Only 6% indicated no interest in further training and 20% were undecided (Table 19). Table 20 was included to indicate present educational level.

When seeking response to the motivational index, the researchers found that the respondents preferred a full-time program with 42% responding in favor of it. Only 3% preferred to attend classes one night per week, while 22% preferred two nights per week and 19% more than two nights per week. Fourteen percent preferred some other program or none at all (Table 21).

Of the 1965 graduating class, 34% had no particular job in mind to pursue upon graduation (Table 22). Of the 66% of the seniors who knew what kind of job they wished to pursue (Table 23), 42% felt they knew what skills were required for the job and believed that they possessed such skills. Sixteen percent felt they knew what the prospective employers required and felt somewhat deficient in the necessary skills. Only 8% knew what they wanted to do, but had no firm knowledge of employers' requirements and felt that they did not possess the skills (Table 24).

The respondents were asked to select from a list of general occupational titles four that they would like to pursue and be trained in and to rank these from one to four (where 1 would be the most preferred). The results appear in Table 25. (Note: The respondents also made additional comments about occupational choice which are presented in Table 26).

TABLE 14

Class of 1965

Present Part-time Employment

Response	Percentage of Sample
Yes	40
No	59
Afternoon	6
Evening	7
Weekends	7
Afternoon and Evening	1
Evening and Weekends	7
Afternoon and Weekends	5
Afternoon - Evening - Weekends	5
Unspecified	2

TABLE 15

Class of 1965

Length of Time at Present Position

Time in Months	Percentage of Sample
0 - 6	15
7 - 12	15
13 - 18	1
19 - 24	3
25 and more	5
Unanswered	61

TABLE 16

Class of 1965

Type of Present Part-time Employment

Job Title	Percentage of Sample
Retail Selling	7
Operating a Service Facility	7
Food Handling	7
General Office Work	5
Construction - Factory Work	4
Warehousing	3
Service Sales	2
Secretarial	2
Other (Recreation mgmt., advertising, news circulation, transportation, purchasing, etc.)	6
No Response	58

TABLE 17

Class of 1965

Interest in a Part-time Job

Response	Percentage of Sample
Yes	43
No	10
Undecided	7
No Response*	40
	N = 278

*Note: The 40% No Response is the same percentage as those students reporting present employment (see Table 14).

TABLE 18

Class of 1965

Expressed Interest for Part-time Work

Response	Percentage of Sample
General Office Work	14
Retail Selling	8
Secretarial	5
Construction	3
Service Sales	2
Operating Service Facility	2
Warehousing	2
Other Unspecified Sales	2
"Any kind of Job"	9
Other (transportation, food handling, business, clerical, nursing, etc.)	7
Not answered	44

TABLE 19

Class of 1965

Interest in an Opportunity for Further Education

Response	Percentage of Sample
Yes	73
No	6
Undecided	20

TABLE 20

Class of 1965

Distribution of Formal Education

Years	Percentage of Sample
10	.3
11	12
12	88

NOTE: Class was sampled as incoming freshmen and above reflects those who have been held back.

TABLE 21

Class of 1965

Willingness to Train

Type of Program	Percentage of Sample
One night per week	3
Two nights per week	22
More than two nights per week	19
Full time Day Program	42
Other	14

TABLE 22

Class of 1965

Interest in a Particular Job

Response	Percentage of Sample
Yes	66
No	34

TABLE 23

Class of 1965

Knowledge of Skills and Requirements of the Job

Response	Percentage of Sample
Yes	58
No	8

TABLE 24

Class of 1965

Possession of Necessary Skills

Response	Percentage of Sample
Yes	42
No	24

TABLE 25

Class of 1965

Interest in Training

Job Title	Percentage of Sample			
	Rank Order of Selection			
	1st	2nd	3rd	4th
Recreation Management	14	10	9	8
Retail Sales	10	9	4	3
Advertising	6	10	8	6
Operating Service Facility	9	4	3	4
Insurance	7	7	4	6
Transportation	6	7	5	6
Purchasing Agent	7	4	8	11
Service Sales	5	6	6	1
Display (interior and exterior)	4	8	7	7
Credit (finance company)	5	3	6	5
Real Estate	3	6	6	4
Wholesale Selling	4	3	2	3
News Composition	3	2	4	6
Food Handling	2	2	4	7
Warehousing	1	3	3	3
Credit (within company)	1	3	4	2
News Circulation	1	1	3	2
No Response	9	12	14	16

TABLE 26

Class of 1965

Occupations of Particular Interest

Job Title	Percentage of Sample
General Office Work	18
Secretary	14
Service Sales	10
Contractor (General)	8
Armed Forces	5
Teacher	5
Operating Service Facility	3
Accounting	3
Drafting	3
Artist	3
Other (retail sales, recreation mgmt., insurance sales, food handling, construction work, etc.)	16
Miscellaneous (advertising, transportation, writer, photographer, etc.)	8

NOTE: N = 81 respondents making 108 occupational choices.

SUMMARY - Class of 1965

A review of the pertinent data indicates that 40% of the Class of 1965 is employed on a part-time basis with the majority holding their jobs less than one year. Most of the jobs held are in retail selling, food handling, or some sort of service. Of the 60% unemployed, 43% indicate an interest in part-time work, mostly in the area of general office work, selling, or secretarial work. The Class of 1965 is headed in the direction of further education and training with 73% of the sample expressing an interest. The most appealing course of action is the day program with 42% interested. Forty-one percent are interested in at least two nights per week (some of the undecided respondents expressed a preference for this program). The respondents indicate also that 66% of them have some job in mind for after graduation while only 42% feel that they possess the necessary skills. The most popular choices of jobs seemed to be recreation management, retail sales, advertising, service operations, insurance, transportation, office and secretarial work and service sales. (Note: Age and sex distributions of the Class of 1965 are presented in Tables 27 and 28 to round out the picture).

Results: Step II

Of the 972 questionnaires mailed out to employers in the Lower Bucks County area 165 were useable of those returned. Of the questionnaires returned 37% came from retail firms, 43% from service organizations, and 2% from firms who did both wholesale and retail business. The remainder of the returned questionnaires came from retail-service facilities (16%) and firms with wholesale-retail-service business (4%) (Table 29). The kinds of jobs existing within the organizations and their frequency of occurence are presented in Table 30.

Of the 160 firms which report having employees, 2219 employees have full-time jobs and 699 employees have part-time jobs. One hundred thirty responding firms have part time workers (79%) and thirty firms (18%) have only full-time employees. Seventy-one percent of the respondents hire both full and part-time employees and 8% have part-time workers only. (An estimate of company size can be gotten from Table 31). Since the time of day a worker works on a part-time job was of some interest in planning an educational program, the question was asked of the employers when their part-time employees worked. The data is presented in Table 32. It can be noted that the highest frequencies occur in the evening and on weekends.

The firms responding to the survey were queried about the difficulty in finding qualified personnel and 133 firms responded. The data is presented in Table 33. Also of interest is the fact that 115 firms responded to the question of job turnover with 143 high turnover job titles. This data is presented in Table 34.

TABLE 27

Class of 1965

Age Distribution

Ages	Percentage of Sample
16 years	1
17 years	47
18 years	43
19 years	5
20 years	1
No Response	3

TABLE 28

Class of 1965

Sex Distribution

Sex	Percentage of Sample
Male	55
Female	43
No Response	2

TABLE 29

Type of Business

Type	Percentage of Sample
Wholesale Only	0
Retail Only	37
Service Only	43
Wholesale-Retail	2
Retail-Service	16
Wholesale-Service	0
Wholesale-Retail-Service	4
No Response	2

TABLE 30

Types of Jobs Which Exist Within Organization

Percentage of Employers Having Specified Number of Employees in Each Job

Number of Employees:	1-3	4-10	11-25	26-50	50+
Job Title					
Driver Salesman	4.4%	.6%	.6%	1.3%	.6%
Salesmen (Outside)	16.4%	7.5%	.6%	.6%	.6%
Waiter-Waitress-Bartender	5.0%	7.5%	5.0%	.6%	.6%
Mechanic	20.6%	8.8%	5.0%	0.0%	0.0%
Cashiers	17.0%	3.8%	.6%	0.0%	0.0%
Salesmen (Inside)	25.6%	9.3%	3.1%	1.3%	.6%
Deliverymen	17.6%	3.1%	.6%	.6%	0.0%
Dispatchers	3.1%	.6%	0.0%	0.0%	0.0%
Cooks	10.0%	3.1%	1.3%	0.0%	0.0%
Tellers	.6%	3.1%	1.3%	.6%	0.0%
Shippers	2.5%	0.0%	0.0%	0.0%	.6%
Clerks (stock)	13.2%	1.3%	1.3%	0.0%	0.0%
Buyers	7.5%	1.3%	.6%	0.0%	0.0%
Material Handlers	7.5%	2.0%	0.0%	0.0%	0.0%
Secretaries	37.5%	3.1%	.6%	0.0%	0.0%
Managers (Department)	27.9%	7.5%	0.0%	.6%	0.0%
Clerical Help	3.8%	3.1%	.6%	0.0%	0.0%
Designers	.6%	.6%	0.0%	0.0%	0.0%
Laborers	6.4%	2.0%	.6%	0.0%	0.0%
Professional (Pharmacists)	2.0%	0.0%	0.0%	0.0%	0.0%

TABLE 31

Number of Employees

Number of Employees	Number of Companies
Full time	
0 - 10	103
11 - 20	18
21 - 40	13
41 - 60	6
61 -300	6
Part time	
0 - 5	98
6 - 15	20
16 - 30	5
31 - 60	1
60 -110	2

TABLE 32

When Part-time Employees Work

Time of Day	Percentage of Sample
Evenings and Weekends	24
Evenings only	13
Morning only	8
Weekends only	8
Mornings and Afternoons	5
Afternoons and Evenings	5
Other Combinations	19
No Response	18

TABLE 33

Positions Most Difficult to Fill

Position	Percentage of Sample
Mechanic	21
Salesman (Inside)	16
Salesman (Outside)	14
Waiter-Waitress-Bartender	12
Department Managers	12
Secretaries	7
Miscellaneous* (driver salesmen, cashiers, truck drivers, cooks, tellers, clerks, clerical help, etc.)	32
No Response	20

*NOTE: This category constitutes all groups making up less than 4% of the sample.

TABLE 34

High Turnover Positions

Position	Percentage of Sample
Salesmen (Outside)	13
Waiter, Waitress, Bartender	13
Mechanic	10
Salesmen (Inside)	10
Deliverymen - Truck Drivers	6
Laborers	6
Clerks (stock)	5
Secretaries	5
Miscellaneous* (driver salesmen, cashiers, cooks, tellers, department managers, clerical help, etc.)	21
No Response	30

*NOTE: This category combines all those positions with less than 4% of the sample.

An anticipated need for new employees seems indicated with 56% of the companies expecting to add or replace personnel, 15% not anticipating the need for personnel and 24% uncertain (Table 35). Most of the companies prefer that their employees have previous experience (70%); some don't deem it important (6%), and 22% report that it doesn't matter (Table 36). It is also interesting to note that 58% of the respondents report no training program, while 36% do on-the-job training, and only 1% use the classroom alone (Table 37). The starting positions in the companies are presented in Table 38 with the percentages of firms starting new employees at such positions.

Slightly over half of the respondents (57%) replied favorably to the idea of a local school system program to train prospective employees, while 12% were not in favor and 24% were undecided (Table 39). However, 62% answered affirmatively to the question of giving these trainees experience in their firms while in training. Those not interested in participation constituted 10% of the responses, with 24% undecided (Table 40). Also of interest is the fact that 45% of the respondents would be interested in a training program for present employees, while 27% were undecided and 22% were not at all interested (Table 41). Since an interest was expressed in a work-experience participation program, the respondents were asked when they could use these trainees and the responses are presented in Table 42.

SUMMARY - Employers

Reviewing the pertinent data indicates that the retail and service companies made up the largest share of the sample (37% and 43% respectively). The most common jobs that existed in these organizations were secretaries, department managers, deliverymen, sales personnel, mechanics, and cashiers. Most of the organizations were small with the majority having less than ten employees full time and less than five part-time. Most of the part time employees work evenings and weekends. The most difficult positions for the employers to fill were those for mechanics, salesmen, department managers, and waiters - waitresses. These positions also had the highest turnover.

The majority (56%) of the respondents expect to hire new people and a large number (70%) prefer previous experience while only 40% report a training program. The starting positions most commonly reported are the same as those with the highest turnover. The employers (57%) indicated an interest in a local training program and, more important, 62% indicated a willingness to participate. They indicate that most of the trainees could be used on a part-time basis a few full days a week, evenings and weekends. They also indicate that they may send their present employees back to school with 45% interested in a program for present employees.

TABLE 35

Anticipation of Need to Hire

Response	Percentage of Sample
Yes	56
No	15
Undecided	24
No Answer	3

TABLE 36

Preference for Experience

Response	Percentage of Sample
Experience	70
No Experience	6
No Preference	22
No Response	2

TABLE 37

Existence of a Training Program in Company

Kind of Program	Percentage of Sample
On the job	36
Classroom	1
Both	3
Neither	58
Unanswered	2

TABLE 38

Starting Position in Company

Position	Percentage of Sample
Salesmen (Inside)	14
Mechanics	12
Salesmen (Outside)	12
Driver Salesmen	6
Waiter - Waitress - Bartender	6
Clerical Workers	5
Miscellaneous (Cashiers, truck drivers, tellers, secretaries, department managers, tailors, etc.)	22
No Response	38

TABLE 39

Interest in Local School Training Program

Response	Percentage of Sample
Yes	57
No	12
Uncertain	24
Unanswered	7

TABLE 40

Willingness to Participate

Response	Percentage of Sample
Yes	62
No	10
Uncertain	24
No Response	4

TABLE 41

Interest in Local Program to Train Present Employees

Response	Percentage of Sample
Yes	45
No	22
Uncertain	27
No Response	6

TABLE 42

Utilization of Part-time Trainees

Time of Day	Percentage of Sample
A Few Full Days Per Week	13
Evenings Only	10
Evenings - Weekends	10
Mornings Only	8
Afternoons Only	6
Weekends Only	5
Other Combinations	24
No Response	26

Interpretation of Results

With the Classes of 1963 and 1965 indicating a strong interest in training (76% and 73% respectively), it appears that a training program is called for and will be well attended. Also important is the indication by businessmen that they would welcome such a program (57%) and are willing to participate (62%). The areas of occupational interest to business are most strong in areas of department management, sales, mechanics, and waiters - waitresses - bartenders. The student and graduate interests run toward clerical - secretarial, sales, service facilities operation, recreation management, advertising, purchasing, display and transportation.

It is apparent from the data that a sales curriculum is definitely warranted as well as a curriculum in management. Also, since skilled mechanics are in demand by employers, this curriculum may be fruitful. The data reflects a strong interest in the clerical - secretarial group of jobs, and since this group of jobs reflects the largest number of jobs existing at present in the employers sampled, it appears profitable to pursue this line of training. The interest in advertising, purchasing, display and transportation appear strong enough to support a curriculum, but the data from employers does not reflect the ability to absorb these people locally. It would appear from the data that the most promising programs should be for sales, management, mechanics, and secretarial-clerical with the others questionable.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

This was a pilot study of the feasibility and desirability of developing post-high school programs in distributive education for the area served by the Bucks County, Pennsylvania Technical School. Because this was a pilot study to provide a descriptive base for the development of a program of post-high school opportunities in distributive education no claim is made that the results constitute a definitive prescription for a program.

Description of the Study

The background, purposes and design of the study were reported in the first chapter. Chapter II contained a description of the present high school level programs in distributive education, found in the Bucks County Technical School, as well as the present post-high school courses found in the Bucks County Community College which are related to distributive occupations. Chapter III presented certain characteristics of programs in post-high school distributive education. These were secured by means of a survey conducted in the fifty states of programs of study in post-high school distributive education.

- Information was asked of state directors of vocational education and institutions having programs dealing with distribution in the economy.
- The information obtained was summarized in charts showing programs of study at the various institutions and course content of these programs.
- Catalogs, programs of instruction, and courses of study received were analyzed and filed in the office of the Educational Service Bureau for future use by program developers.

Chapter IV contains population and employment projections made by the Bureau of Economic Research, Temple University for Bucks, Montgomery, and Philadelphia Counties in Pennsylvania and Burlington and Mercer Counties in New Jersey.

- Employment needs in the various distributive industries and occupations were projected for the area served by the school districts which support the Bucks County Technical School.

Chapter V reported the results of a survey of attitudes, interests and availability of potential participants in post-high school D. E. programs, the identification of potential employers, and the determiniation of their willingness to cooperate in such a program. Questionnaires for high school seniors and the Class of 1963 were designed by the research team with the aid of the counselors of the school districts sending students to Bucks County Technical School.

Every eighth member of the Class of 1965 (including drop-outs) was given a questionnaire. Every fourth member of the Class of 1963 (including drop-outs) was mailed a questionnaire, together with a self-addressed, stamped envelope.

The results of the vocational interest questionnaires were tabulated and analyzed by the research team.

A series of twenty-five interviews with employers in the lower Bucks County area was conducted for the purpose of designing a questionnaire to be used with all employers in the area.

The questionnaire was subsequently designed and mailed to all employers in the area. The results of this questionnaire on vocational opportunities were tabulated and analyzed by the research team.

Job descriptions were written for those occupations which employers identified as needing new entrants.

Programs of study in post-high school distributive education were also identified as a result of student and employer interest and need.

Major Findings

The following major findings are presented subject to the limitations inherent in the techniques used, some of which were listed in their description.

1. Impressive changes in population, labor force, and employment are expected in Bucks County by 1970. (The population in the subject area, Lower Bucks, is expected to increase 53. 5 percent between 1960 and 1970, while the labor force is expected to increase 67. 0 percent. See Projection:1 Chapter IV.)

2. The rates of change of employment in the broad groups of the Distributive Trades were in all cases higher than in employment as a whole. The most impressive changes are expected to occur in wholesale trade; and in finance, insurance and real estate. Although not as high, the changes in retail trades and in the services are also quite substantial. (See Projection:1 Chapter IV.)

3. Substantial changes in the broad industry groups, trade, finance, insurance, and real estate, and services; are to be expected in each of the five counties for all categories except for trade in Philadelphia County. (See Projection: 2 Chapter IV.)

4. Eighty-eight percent of the respondents from the Class of 1963 were employed full-time. Of these respondents 76 percent indicated that they would like to continue their education and seemed to prefer evening classes.

Fifty-five percent indicated they would be interested in training for a new job. The largest interest was in the areas of recreation management, purchasing, advertising, service businesses, display and transportation. (See Chapter V.)

5. Only 40 percent of the Class of 1965 was employed and this, understandably, on a part-time basis. Most of the jobs held were in retail selling, food handling, and services. Seventy-three percent expressed interest in further education and training. Forty-two percent was interested in a day program, while 41 percent seemed to prefer at least two nights a week. The most popular jobs seemed to be recreation management, retail sales, advertising, service operations, insurance, transportation, office and secretarial work, and service sales. (See Chapter V).

6. Of the respondent employers most were from retail sales, and service companies. The most common jobs found in these organizations were secretaries, department managers, deliverymen, sales personnel, mechanics and cashiers. Most organizations represented had less than ten employees full-time and less than five part-time. (See Chapter V.)

7. The most difficult positions for the employers to fill were those of mechanics, salesmen, department managers, and waiters and waitresses. The positions also had the highest rate of turnover. (See Chapter V.)

8. A majority of the employer respondents, 56 percent, expect to hire new people, and 70 percent prefer previous experience.

9. Only 40 percent of the employers reported that they had a training program for their employees, but 57 percent expressed interest in having a local training program. More important, 62 percent indicated a willingness to participate in a training program by accepting trainees, while 45 percent expressed interest in a program for present employees.

CONCLUSIONS

1. There will be a continuing and expanding need for persons in the Distributive Trades in the area studied.

2. There is a corresponding interest among potential employees for positions in the distributive trades in the area studied.

3. Potential employers in the Distributive Trades indicate a need and desire for training programs for potential employees as well as for present employees in Bucks County and the four surrounding counties.

4. There is a significant need for selected post-high school programs in distributive education in Bucks County.

5. On the basis of this pilot study it is both feasible and desirable to establish selected post-high school programs in distributive education in Bucks County.

6. The objectives of the study, both proximate and ultimate, have been achieved.

RECOMMENDATIONS

The following recommendations are made by the Study Staff in expectation that the limitations and cautions noted in the report will be considered in the deliberations leading to their possible implementation.

It is recommended that

1. The proper authorities develop a policy statement which will authorize the establishment of post-high school programs in the area served by the Bucks County Technical School and the Bucks County Community College.

2. The organizational structure for policy-making and administration provide for coordination and communication between these two public institutions serving this area. The purpose is to prevent needless duplication of courses and to ensure the maximum utilization of personnel and facilities.

3. A D. E. Curriculum Development Committee be appointed for Bucks County. The committee should contain appropriate representatives from the Bucks County Technical School faculty and administration, the Bucks County Community College faculty and administration, the Department of Public Instruction, employers and employees in the distributive occupations, state employment service, interested citizens, and Consultants should be provided to the Committee as needed.

4. The policy-making group charge the D. E. Curriculum Development Committee with careful study of this report - its findings, conclusions and recommendations; that this committee meet regularly to implement the recommendations, evaluate the programs established, and in light of the evaluations make recommendations to the administrators and policy-making body for the modifications, additions, or adaptations deemed necessary.

5. That the design of the study, and its procedures be replicated in other sections of the state where data is lacking upon which to make meaningful decisions concerning D. E. programs, or any other programs.

6. A sales curriculum be established as well as one in management, mechanics for service businesses, and secretarial-clerical for distributive trades.

7. Programs training persons for entry into positions in finance, insurance, and real estate should be provided.

8. Programs of varying scope, depth and length depending on the job requirements be established.

9. Consideration be given to the time of day programs are given so that both pre-training and in-service needs may be met.

10. That the sample job requirements now presented and the curriculum thought appropriate be examined in light of Recommendation #4.

JOB TITLE: Sheet Metal Worker

A. Job Description: The forming and joining of various types of sheet metal in the manufacture of products such as truck bodies, heating ducts, etc. The layout and design of patterns using various measuring devices. The use of hand and machine tools.

B. Skills and Knowledge Required:

1. Selection and use of sheet metal hand tools including wrenches, hammers, drills and cutting tools necessary to do the job.

2. Use of various types of metal fasteners including bolts, rivets, clips, etc.

3. Cutting, forming and fastening of metal sheet including fitting, grinding and polishing.

4. Use welding, soldering and brazing techniques used in metal fastening.

5. Use portable power tools such as grinders, shears, drills, punches, polishers and threaders.

6. Work to exacting tolerances and be able to use measuring tools accurately including depth gauges, calipers, micrometers, scales, etc.

7. Read blueprints, sketches, drawings and charts and estimate materials needed for job and be able to lay it out.

8. Be able to bend and form sheet metal by both hand techniques as well as use large sheet and tube benders.

9. Disassemble and assemble finished product.

10. Finish metal by painting or polishing.

C. Worker Characteristics:

1. Intelligence (IQ 95-115)
2. Spatial aptitude
3. Manual dexterity
4. Finger dexterity
5. Mechanical aptitude
6. Mechanical interest
7. Emotionally stable - not easily frustrated
8. No physical handicaps.

JOB TITLE: Welder

A. Job Description: Fuses (welds) metal parts together using electric-arc or oxyacetylene welding equipment to melt metal edges and be joined by welding rod.

B. Skills and Knowledge Required:

1. Basic knowledge of ferrous and non-ferrous metals and their uses.
2. Selection and use of basic hand tools such as shears, hammers, wrenches, etc.
3. Use of hand power tools such as shears, saws, grinders, polishers, drills, etc.
4. Knowledge of use of proper joining technique for each metal including selection of welding rod, solder, brazing rod, fluxes and catalytic or cleansing agents.
5. Maintenance of welding equipment such as basic cleaning procedures for welding tools, etc.
6. Burns and cuts metal plate.
7. Keeps distortion due to heating to a minimum.
8. Reads blueprints and sketches and lays out own work.
9. Joins metals (welds) in any position whether flat, overhead, or vertical.
10. Normalizes and tempers welds.
11. Grinds and finishes completed joints.
12. Exercises maximum safety precautions against injury by burning or electrocution.
13. Basic knowledge of measurement and geometry.

C. Worker Characteristics:

1. Intelligence (IQ 95-115)
2. Finger Dexterity
3. Spatial Aptitude
4. Manual dexterity.

5. Good vision (20-20 corrected)
6. Mechanical aptitude
7. No physical handicaps
8. Mechanical interest

JOB TITLE: Machinist

A. Job Description: Fabricates, repairs, and modifies metallic and non-metallic parts utilizing machine tools. Selects materials, lays out job from specifications, determines best procedure and finishes job.

B. Skills and Knowledge Required:

1. Use, select and maintain hand tools such as hammers, wrenches, etc.

2. Use measuring devices such as calipers, micrometers, rulers, depth gauges, etc.

3. Read blueprints and sketches, layout and set up own work and interpret job orders.

4. Know appropriate material for part.

5. Use machine tools such as lathes, shapers, milling machines, looming mills, grinders, saws, drills and their accessories.

6. Plan appropriate methods for completion of job.

7. Visually inspect and measure work in progress.

8. Know standard machine-shop practice such as proper machine settings, tool grinding, correct set-up, etc.

9. Knows capabilities and limitations of equipment.

10. Know basic shop mathematics and geometry as well as use of charts and tables and basic physics.

11. Maintains own equipment (oils, cleans, etc.).

12. Knows and uses safety precautions.

C. Worker Characteristics:

1. Intelligence (IQ 100-120)
2. Manual Dexterity
3. Finger Dexterity
4. Spatial Aptitude
5. Vision (corrected 20-20)
6. Mechanical aptitude
7. Not easily frustrated (patience)
8. Mechanical interest

JOB TITLE: Stenographer

A. Job Description: Takes and transcribes dictation, handles telephone conversations, records meeting and conference notes, keeps office files current and performs related clerical duties.

B. Skills and Knowledge Required:

1. Must know how to use and care for mechanical transcriber, typewriter, and other office machines.

2. Must know how to prepare stencils and run mimeograph machine.

3. Must be able to file, type and take dictation.

4. Must know basic principles of English grammar and composition and basic arithmetic.

5. Must know organization structure and appropriate communication channels.

6. Must use proper telephone etiquette.

7. Must be able to plan and organize own time.

C. Worker Characteristics:

1. Intelligence (IQ 95-115)
2. Clerical aptitude
3. Manual dexterity
4. Arithmetic Reasoning
5. Poised
6. Enjoy public contact

JOB TITLE: Clerk-Typist

A. Job Description: Performs typing and related duties. Organizes and types correspondence, bills and reports. Files correspondence, distributes communications and keeps records.

B. Skills and Knowledge Required:

1. Be able to type and take dictation.

2. Be familiar with filing and reference systems.

3. Operate office machines such as dictating machines, mimeographs, adding machines, etc.

4. Run special machines such as billing machines, comptometers, etc., when necessary.

5. Have a good knowledge of basic English composition and grammar and be able to proof-read.

6. Know the proper forms for various types of correspondence.

7. Have basic numerical skills.

C. Worker Characteristics:

1. Intelligence (IQ 95-115)
2. Clerical aptitude
3. Manual dexterity
4. Arithmetic aptitude
5. Interested in office procedures

JOB TITLE: Secretary

A. Job Description: Performs general office work in relieving executives and other officials of minor executive duties and clerical duties. Takes dictation, handles correspondence, interviews people coming into the office. Handles telephone, makes appointments, supervises clerical workers, and other duties. May handle confidential materials.

B. Skills and Knowledge Required:

1. Be able to type and take dictation.

2. Know basic office management.

3. Be able to screen mail and handle routine correspondence.

4. Know proper telephone etiquette.

5. Be able to interview and converse with people from outside company.

6. Know filing and indexing systems.

7. Basic knowledge of proper English grammar and composition.

8. Have good numerical skills.

9. Know how to use all types of basic office equipment.

10. Know basic supervision principles and practices.

11. Be able to plan and organize own work and work of others - long and short range.

12. Able to assume responsibility.

C. Worker Characteristics:

1. Intelligence (IQ 100-125)
2. Clerical aptitude
3. Manual dexterity
4. Arithmetic aptitude
5. Enjoy public contact
6. Work well under pressure
7. Enjoy and seek responsibility

JOB TITLE: Manager

A. Job Description: Responsible to supervisor for operation of his department. Administers policy, directs his employees, plans and organizes the work for his department. Responsible for the training, promotion and performance of his employees. Hires, keeps performance and payroll records, purchases equipment, accounts for expenditures, inventory and other managerial duties.

B. Skills and Knowledge Required:

1. Knows company policy and interprets it for employees.

2. Can plan and organize on short and long term basis.

3. Uses sound human relations techniques to motivate his employees.

4. Accepts responsibility to see that every one of his employees is thoroughly trained.

5. Knows how to evaluate performance objectively.

6. Handles grievances skillfully.

7. Keeps accurate and current records associated with his department.

8. Establishes good communication with his supervisor and with employees.

9. Keeps abreast of trends in industry which affect his department.

10. Makes best use of employees' talent.

11. Can delegate responsibility to others.

12. Leads rather than pushes.

C. Worker Characteristics:

1. Intelligence (IQ 105-130)
2. Verbal ability
3. Enjoys taking responsibility and making decisions
4. Emotionally mature
5. Cooperative
6. Self-insightful

JOB TITLE: Appliance Repairman

A. Job Description: Tests, adjusts, services and repairs various appliances. Tests circuits and tubes using various meters and devices. Tests mechanical gears and other parts for breakage and wear. Isolates defects and repairs or replaces.

B. Skills and Knowledge Required:

1. Use of basic hand tools such as wrenches, screw drivers, pliers, etc.

2. Use of meters and gauges such as oscilloscope, volt meter, etc.

3. Use of measuring instruments such as micrometers, dial indicators, depth gauges, calipers, etc.

4. Use of welding and soldering tools.

5. Must have thorough knowledge of electrical circuitry.

6. Be familiar with basic principles of gears and levers.

7. Be able to read and interpret blueprints and service manuals.

8. Diagnose trouble from symptoms accurately.

9. Use safety precautions to prevent injury.

C. Worker Characteristics:

1. Intelligence (IQ 100-115)
2. Manual dexterity
3. Finger dexterity
4. Mechanical aptitude
5. Mechanical interest
6. Spatial aptitude
7. Patience
8. Good vision

JOB TITLE: Automobile and Diesel Mechanic

A. Job Description: Repairs, assembles, adjusts and replaces broken and defective parts in automotive and diesel products. May operate machine tools, power driven hand tools, air compressors, jacks, etc.

B. Skills and Knowledge Required:

1. Use of hand tools such as wrenches, screw drivers, hammers, etc.

2. Use of hand power tools such as impact wrenches, chisels, saws, grinders, etc.

3. Use of machine tools such as hydraulic presses, lathes, grinders, hoists, drill presses, etc.

4. Use of measuring devices such as micrometers, calipers, depth gauges, etc.

5. Have a thorough knowledge of principles of carburetors and fuel injection systems.

6. Have a basic knowledge of electrical circuits as well as familiarity with ignition systems, generators, starter motors, etc.

7. Be familiar with transmissions and differentials including clutches, servo pumps, valves, gears, etc.

8. Working knowledge of front end and chassis adjustments including steering geometry, brakes, etc.

9. Ability to read shop manuals and technical information.

10. Ability to keep records and compute charges.

C. Worker Characteristics:

1. Intelligence (IQ 95-120)
2. Manual dexterity
3. Finger dexterity
4. Mechanical aptitude
5. Mechanical interest
6. Arithmetic aptitude

JOB TITLE: Regrigeration - Small Engine Mechanics

A. Job Description: Repairs, assembles, adjusts, and replaces broken or defective parts in refrigeration equipment. Operates machine tools, welds, and uses ammonia or freon gas. Rebuilds small engines and compressors as well as seals leaks in refrigeration equipment and recharges unit.

B. Skills and Knowledge Required:

1. Ability to disassemble and assemble small auxiliary power supplies for refrigeration units (same skills as auto mechanic).

2. Use hand tools such as wrenches, pliers, screw drivers, etc.

3. Use machine tools such as presses, lathes, etc.

4. Use measuring devices such as micrometers, caliper, etc.

5. Ability to braze, solder or weld cooling coils.

6. Knowledge of electrical circuitry and electric motors.

7. Knowledge of refrigeration principles for both home and commercial units.

8. Ability to apply safety precautions against injury due to freon or ammonia.

C. Worker Characteristics:

1. Intelligence (IQ 95-120)
2. Manual dexterity
3. Finger dexterity
4. Mechanical aptitude
5. Mechanical interest
6. Good vision (20-20 corrected)

JOB TITLE: Salesman

A. Job Description: Call on prospective buyers and solicit orders. Quote prices and credit terms. Provide technical and service information where necessary. Maintain good will. Makes and forwards periodically orders and reports. Attends sales meetings. Operates within a limited territory. May arrange displays.

B. Skills and Knowledge Required:

1. Knows thoroughly his own product and competitors (uses, limitations, prices, etc.).

2. Plans carefully and schedules calls.

3. Knowledge of persuasive techniques (not canned sales pitch).

4. Relates product to customer's needs.

5. Ability to gain customer's confidence (makes sure he can meet commitments, etc.).

6. Knows how and when to close sale.

7. Manages own time well - can plan and carry out decisions without supervision.

8. Good verbal ability.

C. Worker Characteristics:

1. Intelligence (IQ 95-130)
2. Mechanical aptitude (where necessary for product knowledge).
3. Interest in personal contact.
4. Aggressive
5. Emotionally mature
6. Not easily frustrated

Step IV - Recommendations for Training - Course Titles

Secretarial

1. Business machines
2. Typing
3. Shorthand
4. Filing procedures
5. Accounting principles
6. Correspondence
7. Office procedures
8. Medical or legal vocabulary

Sales

1. Identifying customer needs
2. Relating your product to customer's needs
3. Qualifying and prospecting
4. Planning and presentation
5. Persuasive techniques
6. Closing techniques

Managers

1. Basic training techniques
2. Basic management and supervision
3. Human relations and supervision
4. Accounting overview and budgets
5. Techniques of interviewing and appraisal

Mechanical

1. Welding - Electric - Acetylene - Heli-arc

   a. Basic fundamentals
   b. Intermediate
   c. Advanced

2. Basic metallurgy
3. Kinds and uses of measuring instruments
4. Blueprint and specification interpretation
5. Sheet metal working

    a. Basic fundamentals
    b. Intermediate - advanced

6. Layout and design
7. Mechanical physics
8. Plane geometry
9. Electrical circuiting

    a. Fundamentals
    b. Advanced

10. Carburetor and Ignition
11. Automotive chassis maintenance
12. Automatic transmissions and differentials
13. Refrigeration

    a. Principles
    b. Shop Practice

14. Internal combustion engines

    a. Principles
    b. Shop Practice

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EXHIBIT D

Major Classification _____

Opening Remarks: I'm _____. I represent Temple University's Educational Research Bureau. The local community has asked Temple to determine from the employers the need for a special facility to train people for jobs in businesses like yours. We wish to find out from you your feelings about the need for such a facility and how well qualified you think applicants are who come to you for jobs.

Name: _____ Address: _____

_____

1. Typeof business _____. Wholesale ____ Retail ____ Service _____
   What kinds of jobs exist in DE within your organization?

2. How many employees have you at present? Full-time _____ Part-time _____
   How many work: evenings _____ weekends _____ afternoons _____

3. How many hours do your people work? Full-time _____ Part-time _____
   Evenings _____ Afternoons _____ Weekends _____

4. In what positions do you have the greatest turnover? a. _____
   b. _____ c. _____

5. For what positions do you have the most difficulty in finding qualified people?
   a. _____ b. _____ c. _____

   d. _____

6. Do you feel that you will need to hire people for your organization in the next year? Yes _____ No _____ Uncertain _____. If yes, how many? _____
   What kinds of jobs? a. _____ b. _____ c. _____

7. Would you prefer that the employees for your organization have previous experience or would you rather train them yourself? Previous experience
   _____ -- Train yourself _____

8. How much training is required for this? (refer to jobs in question 6 above in order listed). a. _____ hours. b. _____ hours.
   c. _____ hours

9. What kinds of training do you presently do?

10. What is the average length of time the employee works for you before you feel he can operate with minimal supervision? _____

11. In what job do people normally start in the organization? _____

_____

12. Through what jobs does the employee progress to get ahead?
a. _____ b. _____ c. _____
(Where a, b, c, are ranks from poorest to best position).

13. Would you be interested in having a program in the local schools to provide prospective employees with the skills you require? Yes _____ No _____ Uncertain _____

14. Would you be willing to give these people some experience in your organization while they are learning? Yes _____ No _____ Qualified:
Explain _____

15. Would you want these people: mornings _____ afternoons _____ evenings _____ weekends _____ a few full days a week _____?

Thank you for your interest and time!

EXHIBIT E

TEMPLE UNIVERSITY
EDUCATIONAL SERVICE BUREAU

1. Is your business wholesale _____ retail _____ or service _____?

2. What kind of jobs in distribution exist within your organization? Estimate the number of employees in each job. (Place a check after those jobs in your organization in the space indicating the number of present employees.)

JOB TITLE	NUMBER OF EMPLOYEES HOLDING EACH JOB				
	1-3	4-10	11-25	26-50	50+
1. Driver salesman	( )	( )	( )	( )	( )
2. Outside salesman	( )	( )	( )	( )	( )
3. Waiter - Waitress - Bartender	( )	( )	( )	( )	( )
4. Mechanics - service repairmen	( )	( )	( )	( )	( )
5. Cashiers	( )	( )	( )	( )	( )
6. Sales Person (Inside)	( )	( )	( )	( )	( )
7. Deliverymen & truck drivers	( )	( )	( )	( )	( )
8. Dispatchers	( )	( )	( )	( )	( )
9. Cooks	( )	( )	( )	( )	( )
10. Tellers	( )	( )	( )	( )	( )
11. Shipper - packer	( )	( )	( )	( )	( )
12. Clerks (stock)	( )	( )	( )	( )	( )
13. Buyers	( )	( )	( )	( )	( )
14. Material handlers	( )	( )	( )	( )	( )
15. Secretaries (those with direct customer contact)	( )	( )	( )	( )	( )
16. Managers (dept.)	( )	( )	( )	( )	( )
17. Other_____	( )	( )	( )	( )	( )
18. Other _____	( )	( )	( )	( )	( )
19. Other _____	( )	( )	( )	( )	( )
20. Other _____	( )	( )	( )	( )	( )

3. How many employees do you have at present? Full-time _____ Part-time _____

4. Do your <u>part-time</u> employees work mostly during the morning _____ afternoon _____ evening _____ weekends _____?

5. In what positions will you have the most difficulty finding qualified people?
a. _____ b. _____ c. _____ (Use list from question #2)

6. In what positions do you have the greatest turnover? a. _____
b. _____ c. _____ (Use list from question #2)

7. Do you anticipate the need to hire people for your organization in the next year?
Yes _____ No _____ Uncertain _____

8. Do you prefer that your employees have previous experience? Yes _____ No _____ Doesn't Matter _____

9. Do you presently have a training program? Yes _____ No _____. If yes, do you use on the job _____ classroom _____?

10. In what jobs do most of your people start in the organization? a. _____ b. _____ c. _____

11. Would you be interested in having a program in the local schools to provide prospective employees with the skills you require? Yes _____ No_____ Uncertain _____

12. Would you be willing to give these people some experience while they are learning? Yes _____ No _____ Uncertain _____

13. When would you best be able to use these trainees? Mornings _____ Afternoons _____ Evenings _____ Weekends _____ a few full days a week ___

14. Would you be interested in a program offered by the local schools to further train your present employees? Yes _____ No _____ Uncertain_____

EXHIBIT F

TEMPLE UNIVERSITY
COLLEGE OF EDUCATION
PHILADELPHIA, PENNSYLVANIA, 19122

EDUCATIONAL SERVICE BUREAU

August, 1965

Dear Sir:

The research facilities at Temple University's Educational Service Bureau have been commissioned by the Lower Bucks County School System to undertake the task of determining the need for vocational education in distributive occupations in your area. The purpose of this research is to measure the interests of the community in such a program so that a thorough curriculum may be designed to meet the present and future needs of the business community. As part of our project we have enclosed a three-to-five minute questionnaire which we are asking you to complete and return.

It is hoped that from the responses to the questionnaire by business organizations a comprehensive training program will be forthcoming that will adequately train the youth of your area in the skills necessary to enter the labor market fully qualified for employment. It can also offer you, by your participation in our survey, an opportunity to select employees with higher qualifications and the possibility of lower training costs and reduced turnover. The program can provide a real service to you and your community.

BUT, WE NEED YOUR HELP! All you need to do is to complete this questionnaire (taking a few minutes of your time) and return it in the self-addressed stamped envelope.

You will notice in filling out the questionnaire that there are questions regarding participation in the proposed program. These are questions regarding your <u>interest</u> and in no way obligate you.

Thank you for your cooperation.

Sincerely,

Peter H. Jenkins
Asst. to Norman I. Gekoski, Ph. D.

PHJ:mls

APPENDIX

Exhibits A to F
(for Chapter V)

Exhibit G
(for Chapter III)

EXHIBIT A

Distributive Education Questionnaire

This questionnaire is part of a research program to determine the interest in an adult program in Distributive Education in your school district. The return by you of the completed questionnaire makes a valuable contribution to the development of a program of significant value to the whole community. However, the completion of this questionnaire in no way obligates you to enroll in a program.

Your cooperation is sincerely appreciated.

1. Are you presently employed part-time? Yes _____ No _____ Afternoon _____ Evening _____ Weekends _____

2. How long have you held your present position? _____

3. What kind of work are you presently doing? _____

4. If you do not have a part-time job, would you like to have one? Yes _____ No _____ Undecided _____

5. What kind of part-time work do you think you would like? _____

6. How much formal education do you have at present? 10 years _____ 11 years _____ 12 years _____

7. Would you like an opportunity for further education for a specific kind of job? Yes _____ No _____ Undecided _____

8. How much time are you willing to invest in further training? 1 night/wk _____ 2 nights/wk _____ more than 2 night/wk _____ full-time day program _____ Other _____

9. Do you have a particular kind of job in mind after graduation? Yes _____ No _____ If yes, do you know the skills and requirements of the job? Yes _____ No _____ Do you have the skills necessary? Yes _____ No _____

10. Comments. (Indicate any comments or question you have relative to making an occupational choice; e. g. add any occupations in which you have particular interest, etc.)

Of the jobs listed below choose four (4) and indicate your order of preference (place a (1) before the job you like most, etc.)

Would you be interested in becomming trained in:

_____ Retail selling (selling directly to the consumer)

_____ Wholesale selling (selling to a middle man or manufacturer)

_____ Service sales (selling a service rather than a product)

_____ Operating a service facility (service station, rapair shop, etc.)

_____ Warehousing (learning the operation of storage and handling of perishable and non-perishable goods)

_____ Recreation management (theatrical agency, country club, bowling alley, hotel management)

_____ Credit (the operation of loan and finance agencies)

_____ Credit (the operation of credit in retail, wholesale and manufacturing companies)

_____ Advertising (both indoor and outdoor)

_____ News circulation (distribution of daily, weekly, and monthly publications)

_____ Insurance (life, casualty, fire, title insurance)

_____ Real estate (sales, development, etc.)

_____ Display (either interior or exterior)

_____ News composition (layout, design, etc.)

_____ Transportation (forwarding, dispatching, routing of shipments by air, truck, rail or sea)

_____ Purchasing agent (buyer for retailers, wholesalers, or manufacturing companies)

_____ Food handling (the distribution of perishable food stuffs in the retail and wholesale market)

Name: _____
Last First Middle

Address: _____ _____
Street City

Age: _____ Sex: Male _____ Female _____

EXHIBIT B

Distributive Education Questionnaire

This questionnaire is part of a research program to determine the interest in an adult program in Distributive Education in your school district. The return by you of the completed questionnaire makes a valuable contribution to the development of a program of significant value to the whole community. However, the completion of this questionnaire in no way obligates you to enroll in a program.

Your cooperation is sincerely appreciated.

1. a. Are you presently employed? Day _____ Evening _____ Part-time _____ Full-time _____
   b. How long have you held your present position? _____

2. What kind of work are you presently doing? _____

   _____

3. Are the rewards of your job based on educational achievement for which you have not prepared? Yes _____ No _____ Don't know _____

4. How well prepared are you for your present position? Very well _____ Adequately _____ Poorly _____

5. Would you like an opportunity for further education? Yes _____ No _____ Undecided _____

6. How much formal education have you at present? 9-10 years _____ 11-12 years _____ More _____

7. How much time are you willing to invest in further training? 1 night/week _____ 2 nights/wk. _____ more than 2 nights/wk. _____ full-time day program _____ Other _____

8. Do you feel that you would like to:
   a. have further training in your present job? Yes _____ No _____ Undecided ___
   b. seek a job in a new field? Yes _____ No _____ Undecided _____

9. Are you familiar with the skills and requirements of your present (prospective) employer? Yes _____ No _____

10. Comments. (Indicate any comments or questions you have relative to making an occupational choice; e. g., add any occupations in which you have particular interest, etc.

Of the jobs listed below choose four (4) and indicate your order of preference. Place a (1) before the job you like most, etc.

Would you be interested in becoming trained in:

_____ Retail selling (selling directly to the consumer)

_____ Wholesale selling (selling to a middle-man or manufacturer)

_____ Service sales (selling a service rather than a product)

_____ Operating a service facility (service station, repair shop, etc.)

_____ Warehousing (learning the operation of storage and handling of perishable and non-perishable goods)

_____ Recreation management (theatrical agency, country club, bowling alley, hotel management)

_____ Credit (the operation of loan and finance agencies)

_____ Credit (the operation of credit in retail, wholesale and manufacturing companies)

_____ Advertising (both indoor and outdoor)

_____ News circulation (distribution of daily, weekly, and monthly publications)

_____ Insurance (life, casualty, fire, title insurance)

_____ Real estate (sales, development, etc.)

_____ Display (either interior or exterior)

_____ News composition (layout, design, etc.)

_____ Transportation (forwarding, dispatching, routing of shipments by air, truck, rail or sea)

_____ Purchasing agent (buyer for retailers, wholesalers, or manufacturing companies)

_____ Food handling (the distribution of perishable food stuffs in the retail and wholesale market)

Name: _____
Last First Middle

Address: _____
Street City

Age: _____ Sex: Male _____ Female _____

EXHIBIT C

TEMPLE UNIVERSITY
COLLEGE OF EDUCATION
PHILADELPHIA, PENNSYLVANIA, 19122

EDUCATIONAL SERVICE BUREAU

June, 1965

Dear Former Student:

The Educational Service Bureau of Temple University has been commissioned by the Lower Bucks County school systems to determine the interest in a post-high school program for young adults in Distributive Education. The purpose of such a program would be to train interested people for jobs in all aspects of the distribution of goods, service occupations, and the management of small businesses.

In an effort to determine accurately what interest exists in such a program, we are turning to you for help. Since this program can affect you and your friends, we are asking you to complete the enclosed form and return it to us by return mail. From your response we can determine the kinds of problems you are facing in your job, the aspirations you have, and hopefully offer you a program which will best serve your needs. On the other hand, the completion of the questionnaire in no way requires you to participate in any program; this will be purely voluntary.

We wish to thank you for your cooperation with our research and your interest in the educational facilities of your community.

Sincerely,

Norman I. Gekoski, Ph. D.

NIG:mls

DEPARTMENT STORE ORGANIZATION CHART[1]

EXHIBIT G

STOCKHOLDERS

BOARD OF DIRECTORS

PRESIDENT

VICE PRESIDENT & GENERAL MANAGER

STAFF

Legal Counsel
Research Department

FINANCE & CONTROL DIVISION
Treasurer & Controller

ACCOUNTING OFFICE
- Accounts Payable
- Cash Office
- General Accounting
- Inventory Taking
- Insurance & Taxes
- Mail, Incoming
- Payroll Office
- Sales Audit
- Statistical

CREDIT OFFICE
- Billing Customers
- Cashiers in Office
- Charge Accounts

OPERATING DIVISION
Store Superintendent

ADJUSTMENTS
ARCHITECT'S OFFICE
CUSTOMER SERVICE
- Floor Superintendents
- Section Managers
- Salespeople
- Cashiers on Floor
- Inspectors
- Sales Clericals
- Service Desks
- Telephone & Mail Orders
- Register Service

DELIVERY

PERSONNEL DIVISION
Personnel Director

EMPLOYMENT OFFICE
- Interviewing
- Placement
- Terminations

HOUSE ORGAN
PERSONNEL BUDGETS
PERSONNEL TESTING
RECORDS & REVIEWS
- Budgets & Records
- Job Analyses
- Rating & Reviews

TRAINING
- Induction & System
- On the Job

WELFARE & HEALTH

MERCHANDISING DIVISION
General Merchandise Manager

BUYING OFFICES*
COMPARISION BUREAU
DIVISION MANAGERS
- Department Managers
- Ass't Managers
- Salespeople

FASHION COORDINATION
HOME PLANNING BUREAU
MERCHANDISE PLANNING & CONTROL
MERCHANDISE RESEARCH

* Buying offices are under jurisdiction of top management but used largely by the Merchandising Division

SALES PROMOTION DIVISION
Sales Promotion Manager

ADVERTISING DEPARTMENT
- Artists
- Copywriters
- Direct Mail
- Layout
- Radio & TV Programs

DISPLAY DEPARTMENT
- Interior Displays
- Sign Room
- Window Displays
- Exterior Displays

PUBLIC RELATIONS
- News Releases
- Public Fashion Shows

(Continued Next Page)

DEPARTMENT STORE ORGANIZATION CHART[1]

EXHIBIT G

STOCKHOLDERS

BOARD OF DIRECTORS

PRESIDENT

VICE PRESIDENT & GENERAL MANAGER

STAFF

Other Advisory Services

rtment

OPERATING DIVISION
Store Superintendent

ADJUSTMENTS
ARCHITECT'S OFFICE
CUSTOMER SERVICE
- Floor Superintendents
- Section Managers
- Salespeople
- Cashiers on Floor
- Inspectors
- Sales Clericals
- Service Desks
- Telephone & Mail Orders
- Register Service

DELIVERY

PERSONNEL DIVISION
Personnel Director

EMPLOYMENT OFFICE
- Interviewing
- Placement
- Terminations

HOUSE ORGAN
PERSONNEL BUDGETS
PERSONNEL TESTING
RECORDS & REVIEWS
- Budgets & Records
- Job Analyses
- Rating & Reviews

TRAINING
- Induction & System
- On the Job

WELFARE & HEALTH

MERCHANDISING DIVISION
General Merchandise Manager

BUYING OFFICES*
COMPARISION BUREAU
DIVISION MANAGERS
- Department Managers
- Ass't Managers
- Salespeople

FASHION COORDINATION
HOME PLANNING BUREAU
MERCHANDISE PLANNING & CONTROL
MERCHANDISE RESEARCH

* Buying offices are under jurisdiction of top management but used largely by the Merchandising Division

SALES PROMOTION DIVISION
Sales Promotion Manager

ADVERTISING DEPARTMENT
- Artists
- Copywriters
- Direct Mail
- Layout
- Radio & TV Programs

DISPLAY DEPARTMENT
- Interior Displays
- Sign Room
- Window Displays
- Exterior Displays

PUBLIC RELATIONS
- News Releases
- Public Fashion Shows

BRANCH STORES
Executive in Charge of Branches

Audit
Credit
Store Planning
Maintenance
Receiving
Transfer of Merchandise
Employment
Training
Merchandising
Sales Plan
Advertising
Display
Special Events

DEPARTMENT STORE ORGANIZATION CHART[1] (Cont'd)

Charge Authorization
Credit Interviewers
Deferred Payments
CREDIT UNION
EXPENSE CONTROL
LAYAWAY OFFICE
MERCHANDISE
STATISTICS

ELEVATORS & ESCALATORS
HOUSEKEEPING
MAIL DIVISION
MAINTENANCE
Air Conditioning
Carpenters
Electricians
Heating
Lighting
Painters
Plumbers
PACKING & PICK-UP
PRINTING
PURCHASING DEPARTMENT
RESTAURANTS
STORE PROTECTION
TRAFFIC DEPARTMENT
Order Office
Receiving
Marking
Stock Rooms
WAREHOUSE
WORKROOMS
Women's Alteration
Men's Busheling
Fur Repair
Fur Storage
Picture Framing

Special Events
Use of Auditorium

[1]pp. 14-15, The Buyer's Manual, National Retail Merchants Association, New York, 1965.

DEPARTMENT STORE ORGANIZATION CHART[1] (Cont'd)

ELEVATORS &
ESCALATORS
HOUSEKEEPING
MAIL DIVISION
MAINTENANCE
Air Conditioning
Carpenters
Electricians
Heating
Lighting
Painters
Plumbers
PACKING & PICK-UP
PRINTING
PURCHASING DEPARTMENT
RESTAURANTS
STORE PROTECTION
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Order Office
Receiving
Marking
Stock Rooms
WAREHOUSE
WORKROOMS
Women's Alteration
Men's Busheling
Fur Repair
Fur Storage
Picture Framing

Special Events
Use of Auditorium

. . . And any other matters pertaining to individual branches or liaison with main store

r's Manual, National Retail Merchants Association, New York, 1965.

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ILLINOIS AGRICULTURAL EDUCATION CURRICULUM RESEARCH PROJECT

FINAL REPORT

Pilot Programs in Agricultural Education

June 1966

by

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ILLINOIS AGRICULTURAL EDUCATION CURRICULUM RESEARCH PROJECT

FINAL REPORT

June 1966

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The supervisors of agricultural education for the pilot schools, Mr. Orval Floyd, Mr. Howard Strubinger, and Mr. Allen Utech, the entire joint staff in agricultural education in Illinois, and the teachers, school administrators, and guidance counselors in the pilot centers deserve special recognition for their efforts in promoting the project.

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INTRODUCTION

The Illinois Agricultural Education Curriculum Research Project originated in the joint staff in agricultural education; supervisors and teacher educators in agriculture from the University of Illinois, Southern Illinois University and Illinois State University at Normal, and representatives of the Illinois Association of Vocational Agriculture Teachers. This group was concerned whether or not the traditional curriculum in vocational agriculture was adequate to meet the increasing need to prepare persons for gainful employment in the many occupations requiring knowledge and skill in agricultural subjects.

The joint staff recognized that the agricultural industry was changing rapidly and that occupations which require knowledge and skills in agriculture were emerging or becoming of increasing importance. Some of these occupations were related to farming and some had no relationship to farming. The joint staff recognized further that many rural youth and some nonrural youth were interested in preparing for the many occupations requiring knowledge and skill in agriculture, whether or not they were related to farming.

To crystalize the concerns and ideas of the joint staff, the late Herbert R. Damisch appointed a planning committee.

This committee recommended the development of the Illinois Agricultural Education Curriculum Research Project. The committee envisioned a curriculum research project involving pilot schools which would be established to try out curriculum innovations with the assistance of an outside research group. This outside research troup would serve as instruction analyst consultants, data collectors and evaluators.

During 1963-64, under the direction of Professor Phipps and later under the direction of the new Chief of Agricultural Education, Ralph Guthrie, four pilot centers were approved.

The objective of the Illinois Agricultural Education Curriculum Research Project was to develop and try out innovations in agricultural education that would (1) improve agricultural education for farmers and prospective farmers and (2) provide agricultural education programs for occupations other than farming in which knowledge and skill in agricultural subjects are necessary for successful employment. The pilot programs were not developed as demonstration centers and were not considered demonstration centers. Their purpose was to provide a realistic setting for discovering both successful and unsuccessful curriculum practices. A future possible development in the Illinois Agricultural Education Curriculum Research Project might be the establishment of centers to demonstrate successful curriculum practices developed in the pilot centers.

At the end of the first year of the Project, 1963-64, the research staff in a preliminary report presented the following summary of what had been learned.

1. A community survey of nonfarm agriculturally oriented businesses needs to be completed before a course involving placement-employment is started.

2. Businessmen in the community must be involved in planning and developing a course involving placement-employment.

3. An agricultural advisory council including members from nonfarm agriculturally oriented businesses needs to be in operation before a change in courses is initiated.

4. A step-by-step procedure is needed in developing agricultural experience programs involving placement.

5. Classroom instruction concerning agricultural businesses and industries must be accompanied by related activities in agricultural experience programs, if it is to be most effective.

6. Classroom instruction in nonfarm oriented courses in agriculture must emphasize the knowledges and skills in agriculture which the pupils placed in agricultural business need to perform and to understand their work.

7. Teachers and others need to develop lesson planning guides and reference material guides related to agricultural businesses and industries.

8. Pupils who enroll in agricultural occupations courses or agricultural business courses need a background of basic instruction in agriculture.

9. A good community-wide public relations program is needed with as much "face-to-face" contact as possible.

10. Teacher enthusiasm and advance planning are essential ingredients in the success of new programs.

11. Teachers must assume responsibility for developing pupil agricultural experience programs in agricultural firms by:

    a. knowing the opportunities
    b. knowing the pupils
    c. contacting potential employers and placing pupils
    d. helping develop training program outlines
    e. helping develop training agreements
    f. coordinating and evaluating experience programs

12. Agricultural mechanics courses should emphasize the applied aspects of mechanics, including both theory and practice, and should be adapted to the needs of both present and prospective farmers and present and prospective workers in agriculturally oriented businesses.

13. Time, a difficult thing to find in a teacher's busy day, is essential in the operation of vocational agriculture programs designed to serve both production agriculture workers and workers in nonfarm agriculture businesses.

14. Traditional teacher activities need to be evaluated and nonessential activities eliminated.

15. Resource persons can be used effectively in teaching about agricultural occupations.

16. Well-planned field trips can be used effectively in teaching about agricultural occupations.

17. Pupils in an agricultural business course should obtain experiences in agricultural firms through the study of the firms, observation of work performed, and placement for experience.

18. A substantial core of instruction regarding technical agriculture needs to be included in courses designed to prepare pupils for employment in agriculturally oriented businesses and services.

19. A unit of instruction regarding agricultural occupations needs to be included in agricultural business courses.

20. On-the-job instruction and supervision need to be emphasized. It is a highly important ingredient of a successful agricultural business course.

21. The summer work of teachers is extremely important when placement-employment programs are conducted.

22. A core of experiences in both agriculture and the operation of agricultural firms needs to be included in an agricultural business course.

23. Guidance counselors need much instruction relating to the broadened objectives of vocational agriculture.

24. Systematic efforts must be initiated to change the production agriculture image of vocational agriculture. These efforts need to be focused on the faculty, all elementary and high school pupils, parents, businessmen, and the total community.

25. Businessmen and others providing placement-training stations need systematic instruction regarding their responsibilities in the program.

26. Detailed placement-training programs need to be developed for each pupil placed. These programs should be developed cooperatively by the employer, pupil, parents and teacher of agriculture. Periodic evaluations should be conducted to determine whether or not the placement-training program is being followed. Revisions in a placement-training program are often necessary after such evaluations.

27. Placement-training programs need to stress "education-through-work experience" and not just "work experience."

28. Titles of agriculture courses often need to be changed to capture the attention of prospective pupils and the public, and to alter the production-centered image of vocational agriculture.

29. Teachers of agriculture providing placement-training programs must learn the legal regulations involved.

30. Teachers of agriculture placing pupils for training must accept responsibility for placing pupils in jobs. They cannot delegate this responsibility to the pupils.

31. Teachers of agriculture have the competence in technical agriculture, or can acquire it with little difficulty, for offering instruction designed to prepare persons for nonfarm occupations requiring knowledge and skill in agricultural subjects.

32. Teachers of agriculture who attempt to prepare persons for gainful employment in agriculturally oriented businesses often need to learn more about the operation of these businesses, employer-employee relationships, and salesmanship. However, since they have had basic education at the university level in psychology, economics, accounting, and human relations, they can often develop competence in these areas by self-directed study of the agriculturally oriented businesses in their communities.

33. Records, both teacher and pupil, need to be emphasized in placement training programs.

34. Opportunities for jobs requiring knowledge and skill in agriculture exist and girls can be placed in training stations in jobs that are agriculturally oriented.

35. Good, enthusiastic teaching is all important in new programs designed to implement the broadening objectives of vocational agriculture resulting from the Vocational Education Act of 1963. The teaching must be systematic and carefully planned. The content must be solid. Pupils in a new course in agriculture such as agricultural business want to be taught in a systematic manner the technical agriculture they need in their placement-training programs, plus the other technical agriculture they will need for gainful employment in occupations requiring knowledge and skill in agriculture. If they do not receive instruction of this type, they soon start advising younger pupils to avoid enrollment in the course in following years.

The rest of this report summarizes the results and findings of the Project in its second year of operation, 1965-66.

DESCRIPTION OF PILOT PROGRAMS

Cissna Park High School, Cissna Park, Illinois

Setting. The Cissna Park High School is located in Cissna Park, Illinois, a rural village in east central Illinois with a population of approximately 800 persons. The Cissna Park High School enrollment for 1965-66 was slightly over 200 students. Courses in agriculture, home economics, and business education as well as general education and college-preparatory courses are included in the school curriculum.

Staff. High school staff members actively involved in the pilot program at Cissna Park were:

Mr. Charles Watson, Superintendent
Mr. Harold Nelson, Guidance Counselor
Mr. Roland Meyer, Teacher of Agriculture
Mr. Donald Whitten, Teacher of Agriculture

Description of vocational agriculture program. Six high school vocational courses were conducted during the 1965-66 school year. The titles of these courses and the number of students enrolled in each course were as follows:

Course	Enrollment
Basic agriculture (freshmen)	13
Agricultural science (sophomores)	16
Agricultural construction and electricity (juniors)	13
Farm operations (juniors)	8
Agricultural power and machinery (seniors)	10
Agricultural business (seniors)	10
Total	70

The total enrollment of 70 students in the six high school courses represents an increase of one over the 1964-65 enrollment in seven courses.

The teachers' schedules included the following activities:

Period	Mr. Meyer	Mr. Whitten
1	Farm operations	Free
2	Study hall	Agricultural power and machinery
3	Free	Shop maintenance
Lunch		
5	Agricultural science	Agricultural experience programs
6	Agricultural business	Basic agriculture
7	Agricultural experience programs	Home room

The pilot program at Cissna Park High School was focused on the ten senior students enrolled in the course, Agricultural Business. This course was

designed to provide senior students with an opportunity to receive classroom and on-the-job experiences that would prepare them for employment in occupations requiring a knowledge of agriculture.

Placement-employment programs. Each student enrolled in the agricultural business course was required to participate in a placement-employment program. The agricultural business course was operated in accordance with the provisions of Option II.[1]

Advisory council. The agricultural advisory council, organized during the past year, had a subcommittee on agricultural business programs. The advisory council consisted of nine farmers and three businessmen. The subcommittee included three additional agricultural businessmen. In addition to the advisory council activities, a meeting of businessmen-employers was held on December 15, 1965 to attempt to secure additional training stations for students.

Characteristics of students enrolled in pilot program. Data regarding the background, experiences, and scholastic achievement of the ten students enrolled in Agricultural Business at Cissna Park High School are presented in the following outline:

Student	Years in vocational agriculture	Percentile rank in class	Training station
1	4	30	Dairy equipment company
2	4	15	Farming program
3	1	33	Farming program
4	4	9	Farm equipment dealer
5	2	18	Bulk gasoline delivery in rural area
6	4	50	Gasoline service station for farmers
7	1	88	Grocery store
8	3	6	Onarga nursery
9	4	27	Onarga nursery
10	4	71	Farm equipment dealer

East Richland High School, Olney, Illinois

Setting. East Richland High School is located in Olney, Illinois; the county seat of Richland County in the southeastern part of Illinois. Olney has a population of slightly less than 9,000. The East Richland Community Unit District includes about two-thirds of the area of the county. The East Richland High School enrollment for 1965-66 was 1,032 students. Vocational education courses in business education (including cooperative distributive

[1]Option II plan leaves the time requirements for the employment-placement of students up to the local school.

education), home economics, and agriculture are offered. Machine shop, automotive shop, drafting and industrial arts courses are also offered. A complete offering of general and college-preparatory courses are included in the school curriculum.

The curriculum at Olney Community College is being broadened to include courses other than college-transfer courses. The Olney Community College enrollment is approximately 500 full-time student equivalents. Wabash Valley College, an institution offering post-high school vocational education in agriculture, is within easy commuting distance.

Staff. High school staff members involved in the pilot program at Olney were as follows:

Mr. Leslie Purdy, Superintendent
Mr. Lee Shafer, Assistant Superintendent
Mr. George Rumsey, Principal
Mr. Robert Green, Guidance Counsellor
Mr. Bob Whittington, Teacher of Agriculture
Mr. William Washburn, Teacher of Agriculture

Description of vocational agriculture program. Ten high school vocational agriculture courses, two of which were semester courses, were conducted at the East Richland High School during 1965-66, and one adult course in welding was conducted. The course titles and high school enrollment at the end of the 1965-66 school year by course were as follows:[2]

Course	Enrollment
Agriculture I (for nonfarm oriented upperclassmen)	12
Agriculture I (freshmen with limited future opportunity in farming)	18
Agriculture I (freshmen with opportunities to farm)	14
Agriculture II (pupils with limited future opportunities in farming)	10
Agriculture II (farm)	14
Agricultural mechanics I	9
Agricultural mechanics II	9
Agriculture III Farm operations	13
Agriculture III Farm operations	13
Agriculture IV Advanced farm management	13
Total	125

All courses were production agriculture oriented except the agricultural mechanics courses.

During the past two years a deliberate attempt has been made to maintain a dual-track program in agricultural education. The pupils were grouped on the basis of background (supervised farming program potential) and, on the basis of occupational interest (farm or nonfarm agricultural occupations).

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[2] Four students dropped out of school during the year.

During 1964-65, the "new course" was Agricultural Occupations. This year the new course was Agricultural Mechanics. Enrollment was insufficient to offer the agricultural occupation course during 1965-66. Pupils in the agricultural mechanics course had placement-employment programs.

Three sections of Agriculture I and two sections of Agriculture II were offered. Five sections of agriculture were available to juniors and seniors. Three of these sections were agriculture for farming and the other two were advanced agricultural mechanics courses. A few students having placement-employment programs were in each of the agricultural mechanics courses. Students in the agricultural mechanics courses changed instructors at midyear; however, the same teacher continued to supervise a student's agricultural experience program throughout the year.

Placement-employment programs. Eight pupils enrolled in the agricultural mechanics classes carried out placement-employment experience programs. Placement-employment experiences were obtained after school hours. The pupils kept records of their employment experiences in the French-Bray record book. Four types of training stations were used: a feed mill, a greenhouse, specialized commercial farms, and a small engine repair business.

Advisory council. A citizens' advisory council was organized during the 1964-65 school year. The council had a membership of 12, seven of which were farmers. The occupations of the other five members were: (1) SCS conservationist, (2) PCA fieldman, (3) owner of grain company, (4) owner of machinery company, and (5) a feedmill owner.

Characteristics of pupils enrolled in courses focusing on agricultural occupation other than farming. Pupils enrolled in the program were mostly nonfarm boys from town and rural areas who ranked in the lower quarter of their high school class. They were about evenly divided between students who had followed vocational agriculture since they were freshmen and students who enrolled in agriculture specifically for the agricultural occupations training. Two of the eight students were juniors and the remainder were seniors. Data describing the students enrolled in the pilot program at Olney are presented below.

Student	Residence	Years in vo-ag	Percentile class rank
1	Rural	2	20
2	Town	3	*
3	Town	2	29
4	Town	4	24
5	Rural	2	25
6	Rural	4	8
7	Rural	4	25
8	Farm	3	*

*Percentile rank not available for the two juniors.

St. Elmo High School, St. Elmo, Illinois

Setting. The St. Elmo High School is located at St. Elmo, Illinois, a rural town in south central Illinois with a population of approximately 1,500 persons. The St. Elmo High School enrollment for 1965-66 was 400 students. Courses in agriculture, home economics, business education, and industrial arts as well as general education and college-preparatory courses were included in the school curriculum.

Staff. High school staff members actively involved in the pilot program at St. Elmo were as follows:

Mr. James Smith, Superintendent
Mr. John Griffin, Principal
Mr. Jack Fowler, Guidance Counselor
Mr. Richard Lowe, Agriculture Teacher

Description of vocational agriculture program. Four high school vocational agriculture courses and one adult education course were conducted at St. Elmo High School during 1965-66. The titles of these courses and the number of pupils enrolled in each course were as follows:

Course	Enrollment
Agriculture I Production agriculture	25
Agriculture II Production agriculture	13
Agriculture III Production agriculture	11
Agriculture IV Cooperative agricultural business[3]	10
Swine and beef production (adult)	

Enrollment in the four high school vocational agriculture courses in 1965-66 was 59, an increase of sixteen over the 1964-65 enrollment. Agriculture I, II, and III included instruction in agricultural mechanics as well as instruction in crops, soils, livestock, farm management, and other areas of production agriculture. All seniors who enrolled in Agriculture IV, Cooperative Agriculture Business, participated in a placement-employment program on a farm or in an agricultural nonfarm business.

The agriculture teacher's schedule included the following instructional activities:

Period 1	Agriculture III
Period 2	Agriculture III
Period 3	Agriculture I
Period 4	Lunch
Period 5	Agriculture II
Period 6	Agriculture II

[3] Cooperative programs are vocational programs which require students to secure at least 15 hours of employment experience per week. Half of these hours shall be released time from school.

Period 7	Cooperative Agriculture Business
Period 8	Supervision
Period 9	Supervision

The pilot program at St. Elmo High School was focused on Agriculture IV, Cooperative Agriculture Business. This course differed significantly in content and in the nature of the experience programs of pupils from other agriculture courses offered at St. Elmo and from production agriculture courses commonly offered in most Illinois high schools.

Placement-employment programs. Each pupil enrolled in Cooperative Agricultural Business at St. Elmo was required to participate in a cooperative placement program. Eight seniors were placed on farms and two students were placed in nonfarm businesses (grain elevator and machinery company).

All students enrolled in Cooperative Agricultural Business were required to keep records of their employment experiences in the record book entitled, Records of Supervised Occupational Experience and Training in Vocational Agriculture.

Advisory council. Ten men served on the St. Elmo Vocational Agriculture Advisory Council in 1965-66. Six members were farmers and four members were employed in local businesses. The advisory council met once during the year with employers who had pupils placed in their businesses and school administrators. The purpose of this meeting was to review the pilot program and suggest changes that might be made.

Characteristics of pupils enrolled in pilot program. Data regarding the background, experiences, and scholastic achievement of the ten pupils enrolled in Cooperative Agricultural Business at St. Elmo High School are presented below.

Student	Years in vocational agriculture	Percentile class rank	Training station
1	4	5	Grain elevator
2	4	12	Farm
3	4	23	Grain elevator
4	3	23	Farm
5	3	25	Machinery dealer
6	4	27	Farm
7	3	36	Farm
8	4	36	Farm
9	4	47	Farm
10	4	52	Farm

From these data one can observe that practically all of the pupils enrolled in the Cooperative Agricultural Business course at St. Elmo have taken four years of vocational agriculture. All but one of the students ranked in the lower half of the senior class. Half of the pupils ranked in the lowest quarter of the senior class.

Woodstock High School, Woodstock, Illinois

Setting. Woodstock High School, Community High District 152, is located in northern Illinois, McHenry County. Woodstock, with a population of approximately 9,000, is in a rich farming area which supports many agriculturally oriented businesses. The population of the area is increasing. The Woodstock area is becoming a part of the greater Chicago metropolitan area. Woodstock has received the "All American City" award which is an indication of its progressive orientation. Farming and agriculture businesses serving farming are very important and will continue to be important to the economy of the Woodstock community.

Enrollment in the high school in 1965-66 was approximately 1,200. Approximately 100 of these students lived on farms, and many additional students came from homes where the family heads were employed in occupations requiring knowledges and skills in agriculture.

In recent years, the curriculum in the Woodstock High School has been oriented toward the academic subjects. However, prior to the late 1950's the school anticipated a larger vocational enrollment and constructed facilities for a two-man department in vocational agriculture. In addition, the curriculum was broadening and now includes courses in the practical arts and vocational areas. Programs in agriculture, home economics, industrial arts, business, and diversified occupations were provided in 1965-66.

The Woodstock High School had a professional staff of 53 in 1965-66. The staff members actively involved in the project were:

Mr. L. C. Shoberg, Superintendent
Mr. A. C. Drummond, Assistant Superintendent
Mr. L. L. Knott, Principal
Mr. W. E. Maxwell, Director of Guidance
Mr. George Forgey, Teacher of Agriculture
Mr. William Pictor, Teacher of Agriculture

Vocational agriculture program prior to 1964-65. Prior to 1964-65, the vocational agriculture program was conducted by one teacher of agriculture, and all the courses were oriented toward production agriculture and designed for present and prospective farmers. The courses emphasized agricultural mechanics, livestock, and crops. In recent years, emphasis on vegetable production has been increased. Until 1961, three high school courses in vocational agriculture were offered each year. After 1961, four courses in vocational agriculture were offered. They were Vocational Agriculture I, Vocational Agriculture II, Vocational Agriculture III, and Vocational Agriculture IV. The enrollment fluctuated from 40-45 high school students.

In addition to the high school vocational agriculture courses, a course for adult farmers was offered each year.

Vocational agriculture program for 1964-65. In 1964-65, the Woodstock Agricultural Department added a course in agricultural business to the curriculum in vocational agriculture. The agricultural business course was designed for pupils preparing for employment in occupations other than farming which involve knowledge and skill in agricultural subjects. A total of 18

pupils, including both boys and girls, were enrolled in the course. Their supervised agricultural experience programs involved placement for occupational experience in an agriculturally oriented business in the community. The plan of operation enabled students to obtain their supervised occupational experiences in the businesses after regular school hours, on Saturdays, and during the summer. Most pupils in the course continued to conduct farming programs as a part of their total supervised agricultural experience programs.

During 1964-65, the vocational agriculture courses designated as I, II, III, and IV were designed to provide (1) basic knowledge and skill with plants and animals and (2) knowledge and skill in agricultural mechanics. The supervised agricultural experience programs of the pupils enrolled in these four courses involved plant and animal projects and agricultural mechanics projects.

An additional teacher of agriculture was employed for the 1964-65 school year. A total of 67 high school boys and girls were enrolled in the five courses offered during 1964-65.

Adult education. During 1964-65, adult education courses in corn production and dairy production were offered.

Vocational agriculture program for 1965-66. Six courses in agriculture were offered high school boys and girls during 1965-66. Courses offered and enrollments in each were as follows:

Course	Enrollment
Agricultural science	10
Basic agriculture	22
Advanced agriculture	12
Agricultural power and machinery	16
Agricultural conservation and construction	13
Agricultural business	9
Total	82

The course in agricultural science was designed as an introductory and orientation course for boys and girls with no prior experience or instruction in agriculture. Pupils with an interest in agriculture, but who did not desire a four-year program of instruction, elected agricultural science as their first course which leads to the more specialized courses at the junior-senior level in mechancis, agricultural business, or production agriculture.

Basic agriculture and advanced agriculture were designed as courses primarily for ninth- and tenth-grade pupils. The courses dealt with the basic principles of crop and livestock production and an introduction to agricultural mechanics. Specialized courses in agricultural mechanics were designed to meet the needs of pupils with special interests and aptitudes in mechanics and engineering. A specialized course in farm management and operation will be offered in alternate years beginning in 1966-67. All specialized courses, including the agricultural business course, were available to juniors and seniors.

Pupils enrolled in each course conducted a supervised agricultural experience program appropriate to the course. In addition to the experience programs previously described, school laboratory facilities were used for

experience programs for the pupils enrolled in the agricultural mechanics courses.

The school continued in 1965-66 the employment of two teachers of agriculture to conduct the program.

Adult education. Adult education courses in soil management and farm welding were offered in 1965-66.

Community survey. In the summer of 1964 and in the early months of the first semester of 1964-65, a survey of the community was conducted to obtain information regarding the (1) location of the agricultural businesses, (2) number of people employed in these businesses and their job titles, (3) location of possible training centers, and (4) functions of the businesses. Several agriculturally oriented businesses that employed persons who must have knowledge and skill in agriculture subjects were identified. The survey was essential in locating and developing training centers and in development of the new courses in vocational agriculture.

Agricultural advisory council. Woodstock had a nine-member agricultural advisory council for many years. In 1964-65, this advisory council was enlarged to 12 members. The three persons added were businessmen in agriculturally oriented businesses. These three members also serve as a subcommittee to advise regarding the operation of the agricultural business course.

CURRICULUM CONTENT AND TEACHING AIDS

The teachers of vocational agriculture who participated in the Illinois Agricultural Education Curriculum Research Project during the 1964-65 and 1965-66 school years were encouraged to develop courses of study, to select appropriate aids, and to use teaching methods which they thought would be appropriate for the boys and girls enrolled in their pilot courses. The project staff provided consultant services by making monthly visits to each of the pilot schools and by conducting a series of group meetings for pilot teachers and other school personnel. Since the pupils enrolled in agricultural occupations courses at the four pilot schools were preparing for a wide range of agricultural occupations, no attempt was made to require pilot schools to follow a prescribed course of study. Teachers were encouraged to emphasize technical agriculture subject matter in their teaching and to supplement this agricultural subject matter with problem areas on human relations, agricultural business operation, and other elements of common interest to the boys and girls enrolled in the pilot courses.

One of the major instructional problems teachers faced in the pilot schools was the problem of identifying and teaching appropriate content to students involved in placement-employment programs. If teachers permitted students with a wide range of occupational interests to enroll in the agricultural occupations course, the number of common elements of instruction which were appropriate to all members of the class were definitely limited. On the other hand, homogeneous grouping based on occupational objectives was not feasible, especially in the smaller schools. This dilemma was handled by most of the teachers by increasing the amount of individualized instruction and supervision and by relying on employers to instruct students in areas of special interest.

Much of the agricultural subject matter taught in the agricultural occupations courses was similar to the content taught in farm-oriented courses. Attempts were made to use illustrations and problems from agricultural businesses as a basis of teaching and to make applications to training stations and other agricultural businesses.

The teaching outlines included in this report were restricted to examples of problem areas which are not commonly taught to vocational agriculture students in a farm-oriented program. The outlines are not teaching plans. They are a list of problems and questions that may be used to guide a class during the study of particular problem areas. Some of the references and aids used in the pilot schools are listed in the teaching outlines and also in the bibliography.

Examples of Teaching Outlines

The following classroom discussion outlines are a sample of some of the unit outlines used in the pilot courses. They were selected for presentation because they differ considerably from the typical content taught in traditional courses in agriculture designed to prepare for production agriculture.

Problem area: Managing an agricultural business.

Problems:

1. How can I keep making a profit?
2. How can I keep and get more customers?
3. How can I finance improvements or expansion?
4. How can I get and keep good help?
5. How can I advertise or promote my business?
6. What sales techniques do I need?
7. How can I learn to know my product better?
8. How can I learn the customer's wants?
9. What records are necessary?
10. How do I establish prices?
11. What needs to be considered in getting help?
12. What is good help?

Problem area: Retailing livestock feeds.

Problems:

1. What are the feed mill processes? Hammer, roller, and burr mills
2. How is feed supplied to the customer? Bags, bulk, block, liquid, pellets, meal, and granules
3. What are the regulations controlling feed businesses?
4. How are the pounds of TDN figured in a feed or ration?
5. How is the cost of TDN per pound figured?
6. How are the pounds of digestible protein figured in a feed or ration?
7. How is percent protein of a ration determined?
8. How is the cost per pound of protein figured?
9. How are the correct pounds of protein to add to grain figured in order to balance a ration?

Reference: Raising Livestock, pp. 113-126.

Problem area: Using communication services and skills in agricultural businesses.

Problems:

1. What are good telephone manners and habits?
2. How should long distance calls be placed?
3. How are rates determined?
4. How are postage rates determined?
5. How should envelopes be addressed?
6. How should business letters be written? What should a letter contain?
7. What are the different methods of sending letters?
8. How should letters be folded?
9. How can emergency telephone calls be made?
10. What are the advantages of the telegraph?
11. How is a telegram written?

Reference: General Business for Today and Tomorrow, pp. 318-353.

Problem area: Doing agricultural business as a proprietorship, in a partnership, in a corporation, and in a cooperative.

Problems:

1. How can profits be used?
2. How is the business started?
3. What does the owner put into the business?
4. How is the business financed?
5. How does a business become legal?
6. Who owns the business?
7. Who manages the business?
8. Who decides policy in the business?
9. What are the voting regulations?
10. Who is served by the business?
11. How high may the returns be?
12. What is the owner's liability?
13. What taxes need to be paid?
14. How can a business be closed out?

Reference: Four Common Ways of Doing Business, Vocational Agriculture Service Unit 2030, College of Agriculture, University of Illinois, Urbana, Illinois.

Problem area: Developing a sales personality for agricultural business.

Problems:

1. How can a person gain self-confidence?
2. How can a person show or develop enthusiasm?
3. What is courtesy?
4. What are indications of cheerfulness?
5. How far should we go in friendliness?
6. What are examples of initiatives?
7. How can a good memory help you?
8. How can you cultivate a good memory?
9. How can you make a good first impression?

Reference: Sales Horizons, pp. 43-62.

Problem area: Protecting an agricultural business.

Problems:

1. What is the purpose of insurance?
2. What are the risks we should try to transfer?
3. What are the kinds of automobile insurance?
4. What is the cost of automobile insurance?
5. What should you do in case of an automobile accident?
6. Why have life insurance?
7. Who should have life insurance?
8. What kind of insurance is available?
9. When does one start paying social security?

10. Who can receive benefits from social security?
11. What is the cost of social security?
12. Who is required to be under social security?
13. How can you invest in your health?
14. What kinds of benefits are available?
15. What kind of coverages are available?
16. What is workmen's compensation?
17. What can be covered in fire insurance?
18. How much will be paid on a fire loss?
19. What types of fires are covered?
20. What is extended coverage?
21. What is the difference between extended and full coverage?
22. What is Inland Marine Insurance?
23. What is home owners' insurance?

References: Health and Accident, pp. 234-238.
General Business for Today and Tomorrow, pp. 227-232.

Problem area: Getting started in an agricultural business.

Problems:

1. How did you get enough capital to start?
2. How does one get a franchise?
3. What legal matters need to be considered?
4. How did you decide on the kind of business?
5. How to get business at the start?
6. How did you learn or get experience to operate a business?
7. How do you get the help needed?
8. What are problems in starting a business?

Problem area: How agricultural businesses are organized.

Problems:

1. How are profits used or distributed?
2. Who has ownership?
3. Who manages the business?
4. Who sets policy for business?
5. What methods of finance are used?
6. How is the business taxed?
7. How is voting done?
8. How are businesses started?
9. How is the business ended?

References: Four Common Ways of Doing Business
General Business for Today and Tomorrow, pp. 381-392.

Problem area: Operation of agricultural cooperatives.

Problems:

1. What is an agricultural cooperative?
2. How is an agricultural cooperative managed?
3. What services do cooperatives provide and what products do they handle?
4. How many people can form a cooperative?
5. Who establishes policy?
6. How is the board of directors elected?
7. How does a cooperative differ from other forms of business organization?

Problem area: Banking operations for agricultural businesses.

Problems:

1. What are the functions of the commercial bank, savings bank, and federal reserve banks?
2. What are the differences in personal, business, joint, and individual checking accounts?
3. How do we get and use travelers' checks?
4. What kind of loans are available?
5. What is the cost of safety deposit boxes?
6. What is the cost of banking?
7. How does the endorsement stamp protect the endorser?

Teaching Aids and Materials

Field trips were used extensively in the pilot schools to give students opportunities to observe and study local agricultural businesses and to attend agricultural meetings. Some of the field trips used by teachers in their pilot programs and a list of questions used in one school to prepare for field trips are as follows:

Examples of field trips taken in pilot schools

1. Visit to a creamery
2. Farm Bureau Farm Management Field Day
3. Agronomy Day, University of Illinois
4. Farm Progress Show
5. Visit to a locker plant
6. Fertilizer and feed business trips
7. Visit to an elevator
8. Visit to grocery agency to observe meat retailing, cuts of meats, and other and produce displays

List of questions developed by a class in preparation for a field trip

1. What does one need to know to work in this business?
2. How many workers are in the business?
3. Who are the owners?
4. What are the functions of the business?
5. What products do you handle?
6. What services do you give or sell?
7. How much of your business is agricultural?
8. What kinds of jobs are there in the business?
9. How do you get your products?
10. How are your products delivered to the buyer?
11. What product is most profitable?
12. How do you improve your business?
13. What are the present trends in the use of products handled in this business?
14. What kinds of records do you keep?
15. Who keeps the books?
16. Are your books checked or audited by anyone?
17. What kind of taxes does the business pay?
18. What kind of inspections do you have?
19. What kind of insurance do you carry?
20. How are your profits distributed?

The following are free or inexpensive reference materials that were found to be useful in the pilot schools. The more typical reference materials in technical agriculture used by teachers of agriculture are not included. The technical agriculture reference materials used in the pilot courses and schools were essential to the success of the programs and were used extensively. The list was too long to include, however.

Free or inexpensive references for pupils

1. Accident Prevention Can Be Learned. School Health Bureau, Health and Welfare Division, Metropolitan Life Insurance Co., New York City, N.Y. 10017.

2. A Fistful of Future in 4 Easy Steps. Empire Sales Training Center, Inc., 443 N.E. 103rd Street, Miami 38, Florida.

3. Agriculture in the American Economy. By Eldon Smith, Misc. 205, Filing Code 7, Cooperative Extension Service, University of Kentucky, Lexington.

4. Agriculture is More Than Farming. Future Farmers' Supply Service, P.O. Box 1180, Alexandria, Virginia.

   This publication is an excellent fact resource. Copies are available in the following quantities and prices. 10-49, 15 cents each; 50-99, 12 cents each; and 100 or more, 10 cents each.

5. Better Retail Selling. Management Counseling Services, The National Cash Register Company, Dayton 9, Ohio.

6. Careers in Cooperatives. The Cooperative Foundation, 59 East Van Buren, Chicago, Illinois 60605.

7. Display Selling. Merchants Service, The National Cash Register Company, Dayton 9, Ohio.

8. Four Common Ways of Doing Business. Vocational Agriculture Service Unit 2030, College of Agriculture, University of Illinois, Urbana, Illinois.

9. Handbook for Young Workers. Bulletin 271, U.S. Department of Labor, 1965.

   Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., at 20 cents per copy. This booklet describes federal labor laws and federal programs which affect vocational students.

10. Handbook of the Insect World, Hercules Powder Co., Wilmington, Delaware.

    This free booklet includes pictures and description of insects which attack plants and animals.

11. How to Apply Modern Selling Methods. By John D. Maquire, Area Vocational and Technical School, Somerset, Kentucky.

12. How to Keep Customers Buying in a Self-Service Store. National Cash Register Company, Dayton 9, Ohio.

13. How to Manage Yourself. Cities Service Oil Co., Business Research and Education, Division Marketing Training Department, 60 Wall Street, New York 5, New York.

    This booklet includes valuable suggestions for managing time, giving speeches, writing reports, making decisions, remembering names and faces, building self-confidence, and other areas which are important to any prospective employee.

14. Illinois Town and Country Business Program. Department of Agricultural Economics, University of Illinois, Urbana.

15. Machinery Management Guide. Reprint from the January 1964 issue of Successful Farming.

16. Money Management--Your Food Dollar. Money Management Institute, Household Finance Corporation, Prudential Plaza, Chicago, Illinois.

17. Money Management--Your Savings and Investment Dollar. Money Management Institute, Household Finance Corporation, Prudential Plaza, Chicago, Illinois 60601.

18. The Mathematics of Life Insurance. Educational Division, Institute of Life Insurance, 488 Madison Avenue, New York 22, N.Y. 1958.

The unit was written for classroom use by three teachers. It includes life insurance problems plus explanations of mortality tables, the level premium system, and life insurance programming.

19. The Purina Salesman's Job.

20. The Use of Credit for Production and Marketing. Minneapolis Grain Exchange.

This booklet contains information on credit instruments, cost and sources of credit.

21. 1965 Vegetable Seed Handbook. Southern States Cooperative, Richmond, Virginia.

22. What You Should Know about Farm Tires. B. F. Goodrich Co., 500 South Main Street, Akron 18, Ohio.

23. Your Farm Background and Agri-Business Selling. Sales and Marketing Executives-International, 630 Third Avenue, New York, N.Y. 10017.

24. Your Off-the-Farm Business. Cooperative League of the U.S.A., 59 East Van Buren Street, Chicago, Illinois 60605.

Reference books for students

1. Ernest, John W. and DaVall, George, Salesmanship Fundamentals. McGraw-Hill Book Company, Inc., New York, New York, 1959.

2. Haas, Kenneth B. and Perry, Enos C., Sales Horizons, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963.

3. Hemp, Paul E. and Krebs, A. H., A Study Guide for Placement-Employment Programs in Agricultural Businesses and Industry. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1965.

4. Hoover, Norman, Handbook of Agricultural Occupations. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1963.

5. Kelley, P. C. and Lawyer, K., How to Organize and Operate a Small Business. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1961.

6. Krebs, A. H., Agriculture in Our Lives. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1964.

7. Newton, Ray and Green, Helen H., How to Improve Your Personality. McGraw-Hill Book Company, New York, New York, 1963.

8. Phipps, Lloyd J., Your Opportunities in Vocational Agriculture. The Interstate Printers and Publishers, Inc., 1962.

9. Sherle, John W., et. al., General Business for Today and Tomorrow. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963.

10. Weyant, J. T., Hoover, N. K., and McClay, D. R., An Introduction to Agricultural Business and Industry. The Interstate Printers and Publishers, Inc., 1965.

11. Wingate, John W. and Nolan, Carroll R., Fundamentals of Selling. South-Western Publishing Company, Cincinnati, Ohio, 1964.

12. Wingate, John W. and Weiner, J. D., Retail Merchandising. South-Western Publishing Co., Cincinnati, Ohio, 1963.

Reference books for teachers

1. Fuller, Gerald R., Education for Agricultural Occupations. The Interstate Printers and Publishers, Inc., 1965.

2. Mason, Ralph E. and Haines, Peter G., Cooperative Occupational Education and Work Experience in the Curriculum. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1965.

3. Weyant, J. Thomas, Hoover, N. K., and McClay, D. R., An Introduction to Agricultural Business and Industry--Teacher's Guide. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1965.

OCCUPATIONAL EXPERIENCE PROGRAMS

Each of the four pilot schools provided students with opportunities to participate in occupational experience programs. Most of these programs were conducted in agricultural business firms in the local communities.

A crucial recommendation made by the research staff as a result of their observations of pilot programs is that a written training program should be developed for each boy or girl placed in an occupational experience program. The training program should be outlined by the teacher and the employer before the pupil begins his occupational experience program. It should include learning experiences which will help a boy or girl advance towards an occupational goal. It should consist of activities which expose the pupil to various jobs within the training station where he is employed. The teacher of vocational agriculture must take the lead in surveying agricultural firms and identifying appropriate learning activities for pupils. This responsibility should not be shifted to the employer at the training station. The written training program outline must be developed on the basis of what new experiences students need, what experiences are available in the training station concerned, and what experiences pupils can effectively handle. Training program outlines should not be restricted to those activities for which employers are willing to pay pupils. Unpaid activities should be included in the training program whenever necessary to give the boy or girl a broad, educational experience.

Examples of six training programs are presented on the following pages. These outlines may not be suitable for conditions in all Illinois communities; however, they should serve as useful guides to teachers who are planning occupational experience programs of the placement-employment type.

TRAINING PROGRAM FOR SMALL ENGINE REPAIR

_____ _____
Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
*Report to prospective employer for job interview							
*Obtain social security card							
*Sign training agreement							
*Study the business, pp. 54-63, Study Guide[1]							
*List tools available for small engine repair and estimate cost of each tool							
*List parts, function of each part, wholesale and retail cost of each part							
*Make a diagram of location of parts and tools							
Clean motors and shop area							

*To be done on student's own time

[1]Hemp, Paul E. and A. H. Krebs, A Study Guide for Placement-Employment Programs in Agricultural Business and Industry, The Interstate Printers and Publishers, Inc., Danville, Illinois.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Care and maintenance of tools							
Clean and reset spark plugs							
Repair fuel lines and gasoline tanks							
Adjust carburetors							
Repair and overhaul carburetors							
Replace rings							
Replace inserts							
Grind valves							
Figure repair costs							
Prepare advertisement for overhauling and winterizing							
Estimate costs for repair jobs							
Trouble shoot small engines							
Operate the cash register							
Inventory parts							
Order replacement parts							
Answer the telephone							
Winterize small engines							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Unpack parts							
Stock parts							
*Review service and parts manuals							
Correct safety hazards, pp. 150-162, Study Guide[1]							
*Design practical tool and equipment racks							
*Evaluate the business, pp. 165-168, Study Guide[1]							

*Ibid.

[1]Ibid.

TRAINING PROGRAM FOR GRAIN ELEVATOR (FEED AND FERTILIZERS)

_____ _____
Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
*Study the business, pp. 54-63, Study Guide[1]							
Clean areas of elevator							
Clean and treat storage areas for grain							
Test grain for moisture							
*Make a diagram showing location of various feeds, fertilizers and equipment							
Determine dockage for various grains							
Weigh trucks and record weight tickets							
Load and unload grain							
*Observe record keeping procedures in the office							
Observe and record daily return from grain and futures market							

*To be done on student's own time.

[1]Hemp, Paul E. and A. H. Krebs, A Study Guide for Placement-Employment Programs in Agricultural Business and Industry, The Interstate Printers and Publishers, Inc., Danville, Illinois.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Blend grains of different moisture levels							
Load and unload box cars							
Operate and service grain handling and processing equipment							
Grind and mix feed							
Help make year-end inventory							
Complete records on feed sales							
Answer telephone							
Operate adding machine and calculator							
Send out monthly statements							
Sell chemicals, seeds, and supplies							
Order supplies							
Recommend feeding programs							
Balance rations							
Mix, inoculate, and bag farm seeds							
Deliver grain, mixed feeds, and other supplies							
Make bank deposits							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
*Study futures market and hedging							
*Study price trends							
Control rodents and pests							
*Observe grain drying facilities and study operator's manual							
Operate and service blower to aerate stored grain							

*To be done on student's own time.

TRAINING PROGRAM FOR GREENHOUSE

_____ _____
Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
*Discuss jobs and responsibilities with agriculture teacher and employer							
*Study the business, pp. 54-63, Study Guide[1]							
*List the positions of employees and define each person's jobs and responsibilities							
*Diagram the greenhouse for location of various flower beds, tools, chemicals, and supplies							
Clean the greenhouse							
Sterilize soil							
Prepare soil for flats							
Place soil in flats							

*To be done on student's own time.

[1]Hemp, Paul E. and A. H. Krebs, A Study Guide for Placement-Employment Programs in Agricultural Business and Industry, The Interstate Printers and Publishers, Inc., Danville, Illinois.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Plant common flowers and vegetables							
Transplant flowers and vegetables							
Water flats							
Pot and repot plants							
Fertilize beds							
Apply insecticides							
Air flower beds							
Apply pesticides							
Loosen soils							
*Study and identify common plant diseases and insects							
Cut flowers							
Mulch beds							
Prune and top evergreens							
Weed beds							
Take telephone orders							
Make deliveries							

*Ibid.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Propagate plants							
Maintain adequate temperature in greenhouse							
*Study the heating systems							
*Correct safety hazards, pp. 150-162, Study Guide[1]							
*Evaluate the business, pp. 165-168, Study Guide[1]							

*Ibid.

[1]Ibid.

TRAINING PROGRAM FOR AGRICULTURAL MACHINERY SALES AND SERVICE

_____ _____
Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Sweep and dust							
Wash windows							
Collect and carry out trash							
Diagram store layout							
Clean tools							
Hang tools							
Stock shelves and parts bins							
Unload machinery							
Load machinery							
Unpack merchandise							
Assemble machinery:							
1. Plows							
2. Planters							
3. Cultivators							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Assemble machinery (continued):							
4. Drills							
5. Corn Pickers							
6. Combines							
7. Disc							
8. Mowers							
9.							
10.							
Make deliveries							
Take telephone calls							
Make telephone calls							
Make out sales slip (charge)							
Make out sales slip (cash)							
Operate cash register and handle money							
Wait on customers							
Make a sale							
Take inventory							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Service:							
Lubricate							
1. Tractors							
2. Combines							
3. Corn Pickers							
4.							
5.							
Carburetor							
Fuel system							
Electrical system:							
1. Starter							
2. Generator							
3. Ignition							
4. Battery							
5. Spark plugs							
Power train							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Cooling system:							
1. Radiator							
2. Water pump							
Repairs:							
1. Valves							
2. Pistons							
3. Bearings crankshaft							
4. Tear down engine							
5. Assemble engine							
6. Cooling system							
7. Transmission							
8. Clutch							
9. Rear end							
10. Brakes							
11. Tires							
12.							
13.							
14.							

TRAINING PROGRAM FOR DAIRY EQUIPMENT SALES AND SERVICE

_____ _____

Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Sweep and dust							
Wash windows							
Pick up and carry off trash							
Diagram store layout and locate merchandise							
Stock shelves and parts bins							
Unload trucks, cars, etc.							
Load cars, trucks, etc.							
Deliver merchandise							
Unpack new merchandise							
Assemble equipment							
Take telephone calls							
Make telephone calls							
Make out sales slips							
Operate cash register and handle money							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Wait on customers							
Take inventory							
Repairs:							
1. Motors							
2. Switches							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
Installations:							
1. Vacuum pump							
2. Vacuum line							
3. Cooler							
4. Pipe line							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Installations (continued):							
5. Fans							
6. Washer							
7.							
8.							
9.							
10.							
Service:							
1. Vacuum pump							
2. Cooler							
3. Milker head							

TRAINING PROGRAM FOR VETERINARIAN ASSISTANT

_____ _____
Student learner Training center

Student learners will engage in (observe, help perform, or perform) the following activities to the extent that business policy, interest, student progress and time permit.

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours	
Answering telephone							
Greeting customers							
Making appointments							
Maintaining the waiting room							
Ordering informational material							
Ordering supplies							
Recording charges and receiving payments							
Filling out rabies forms							
Writing and sending business letters							
Filing materials							
Identifying instruments							
Determining location of instruments and supplies							
Bathing animals							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Penning or caging arriving animals							
Identifying drugs and medicines							
Cleaning pens							
Exercising animals							
Feeding animals							
Taking animal temperatures							
Operating sterilizing machine							
Operating x-ray machine							
Setting up stool test							
Setting up blood test							
Setting up urine test							
Mixing rations							
Developing x-rays							
Declawing cat							
Trimming claws of dog or cat							
Disinfecting wounds							
Changing dressings							

Activities	Observed		Helped		Performed		Remarks
	Date	(hours)	Date	(hours)	Date	(hours)	
Removing stitches							
Reading stool tests							
Reading blood tests							
Reading urine tests							
Assisting in animal autopsy							
Assisting in surgery							
Assisting in splinting and pinning bones							

EMPLOYER AND PUPIL EVALUATION

Personal interviews were conducted with a sample group of employers and pupils to solicit their opinions, attitudes, and suggestions regarding the occupational placement program and the classroom instructional activities which were conducted in the pilot centers. The interviews were conducted by graduate assistants from the University of Illinois who used the questionnaires included in the Appendix of this report.

In order to restrict the evaluation interviews to pupils and employers who had been actively engaged in the occupational program during the 1965-66 school year, only those pupils and employers who were engaged in placement-employment programs in agricultural businesses were interviewed. Several pupils and employers who were engaged in farm placement programs were not interviewed because the research staff wished to obtain data which were primarily related to the nonfarm, agricultural occupations programs.

Summary of Employers' Opinions

Fourteen employers in the four pilot school communities were interviewed by a member of the University of Illinois staff to collect information and opinions regarding the placement-employment programs in agriculture. Only one farmer-employer was included in the group interviewed because the Illinois Agricultural Education Curriculum Research Project was designed primarily to field-test instructional programs in nonfarm, agricultural occupations.

Each employer was interviewed during March or April, 1966, and was asked to respond to the items included on the Employer Questionnaire. A copy of the questionnaire appears in the Appendix of this report. The job titles of the employers interviewed were as follows:

1. Owner, automobile and tractor sales and service
2. Owner, farm machinery dealer
3. Owner manager, nursery
4. Owner, farm machinery sales and service
5. Manager, grocery agency
6. Owner, dairy equipment company
7. Shop foreman, agricultural machinery business
8. Owner, livestock and grain farm
9. Owner, grain elevator, feed, and fertilizer business
10. Owner, greenhouse and nursery
11. Owner, hardware store and machinery dealer
12. Owner, equipment and office supply wholesaler for lumbermen
13. Owner, feed mill
14. Owner, small animal hospital

In general, the employers interviewed in this survey were enthusiastic about the possibilities of placement-employment programs in vocational agriculture. One employer reacted this way to the program:

> If you don't show the students the vocational possibilities in the community, they will go elsewhere for work. If they do stay in the

local community after being shown the possibilities and if they do develop some initiative, chances are they will want to start on their own eventually. If they start on their own, the local community has gained a new asset. If they don't, at least the community knows that it has done right by its young students.

The strong points or features of the agricultural occupations program listed by the employers and the number of employers listing each item were as follows:

1. The program gives boys and girls practical experience in the business world (5).
2. The program aids the pupil in choosing a vocation (2).
3. The program furnishes good help (2).
4. The program helps the boy to learn to work with others and to assume responsibility (1).
5. The program provides for instruction by the teacher and the employer (1).
6. The program promotes pupil interest in local businesses (1).

The deficiencies or shortcomings of the program listed by the employers were as follows:

1. Lack of time for employer to train pupils properly (2).
2. Boys and girls did not have adequate instruction in basic reading, writing, and arithmetic (2).
3. Pupils do not ask enough questions concerning the placement-employment program (1).
4. The program should be used more extensively (1).
5. The teacher should define the experience which pupils are to receive at the training stations (1).
6. Coordination between the classroom phase and the on-the-job phase should be increased and improved (1).
7. Labor laws and regulations limit what can be done in some businesses (1).

During the course of the evaluation interviews, employers were asked about the use of the "joint conference" involving the teacher, employer and the pupil. Only three employers had been involved in such a conference, but ten employers thought these conferences would be a good approach to solving employment and training problems. Two employers thought the joint conference should be used for difficult problems only, and three employers thought the joint conference was of no value.

The importance and value of a written placement agreement with a checklist of responsibilities for the pupil, parent, teacher, and employer to follow was clearly indicated when employers were asked about this particular aid. Thirteen of the 14 employers said such agreements had been developed and used by the teachers and pupils. All of the employers thought the use of placement agreements and responsibility checklists was a desirable practice. According to the responses of the 14 employers interviewed, teachers of agriculture did work with employers to explain the training program and to discuss the kinds of experiences students should get at the training stations. All of the employers said the teacher of agriculture worked with them to develop an understanding of the training program, and eleven employers said the teacher

discussed with them the kinds of experiences pupils should get. Nine employers said the teacher let them know what was being taught at school in the agricultural occupations class and five employers said the teacher did not keep them informed of the instruction at school.

Employers were asked to indicate how often the teacher of agriculture should visit a business to observe and supervise boys or girls involved in placement programs. The frequency with which employers thought teachers should visit pupils at training stations is as follows:

1. Once a week (7%)
2. Once a week for the first 3 or 4 weeks (14%)
3. Once a month (43%)
4. Twice a month (14%)
5. Not at all. Leave supervision to employer (14%)
6. Frequency depends on needs of individual student (7%)

In order to obtain the opinions of employers regarding the calibre of boys and girls placed in their businesses, employers were asked to rate the pupils as prospective employees. Fifty percent of the pupils were rated good, twenty-nine percent were rated as excellent, and twenty-one percent were rated as fair prospective employees.

Employers evidently spend as much or more time training the pupils who were placed in their businesses as they normally spend with other employees. Six employers said they spent more time and six said they spent the same amount of time training these pupils as they did training other new employees. Two employers said they spent less time with the pupils than they did with other new employees.

In order to determine how the employers felt about certain issues and practices related to occupational placement programs a checklist of fourteen items was prepared and administered. Employers were asked to respond to each of the 14 items using a five-point scale. The responses of employers were as follows:

	Strongly agree %	Agree %	Uncertain %	Disagree %	Strongly disagree %
1. I should train the student for my business only.	0	7	0	86	7
2. Vocational education of our youth should be left to the schools.	7	7	0	79	7
3. I should assign the student employee to one position in my business.	0	0	7	72	21
4. The agricultural placement program serves to get students jobs in agricultural businesses.	7	93	0	0	0

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
5. The training of the student in the business should be left to the employer.	0	28	0	72	0
6. I know what is expected of me as an employer of a student learner.	0	86	7	7	0
7. I would like to have the agricultural teacher define experiences for the student to gain in my business.	7	58	14	21	0
8. My business would serve as a training station in the coming year.	0	79	14	0	7
9. I plan to offer the present student employee a full-time job at the end of the school year.	0	50	36	14	0
10. Besides the additional labor, serving as a training center has aided my business.	0	28	28	44	0
11. I feel the student employee in my business is getting good training experiences.	7	93	0	0	0
12. I would not object to the student studying my business during the first three weeks of the program on an unpaid basis.	0	65	7	28	0
13. The student employee was readily accepted by the regular employees.	0	100	0	0	0
14. I believe the training program is beneficial to the community.	36	57	7	0	0

Summary of Student Opinions

A sample of sixteen students from the four pilot schools were interviewed during the second semester of the 1965-66 school year to secure their opinions and reactions regarding the pilot programs in agricultural occupations. The number of boys and girls included in the sample from each of four schools was as follows:

School	Number included in sample
Cissna Park	8
Olney	3
St. Elmo	3
Woodstock	2
Total	16

Only two pupils placed on farms were asked to respond to the questionnaire. The research staff felt that opinions of boys and girls placed in nonfarm agricultural training jobs should be of more value to the future development of new vocational agriculture programs than the opinions of pupils who were preparing for production agriculture.

The data reported were collected by personal interviews. A copy of the questionnaire is included in the Appendix of this report.

Thirteen of the sixteen pupils interviewed said they would take this course again. Eleven said they would recommend it to their best friends. The reasons given by boys and girls for taking the course again or for recommending it to their best friends were as follows:

1. Learned a lot (9)
2. Provided experience (8)
3. Provided spending money (2)
4. Provided opportunity to assume responsibility (1)
5. Found out that I wanted to go to college (1)

Pupils who reacted unfavorably towards the course said it was poorly organized and could have been more interesting.

The major benefits which pupils reported they derived from the on-the-job portion of the programs in the four pilot schools were as follows:

1. Learned about a particular type of work (13)
2. Learned to work with others (9)
3. Learned the importance of responsibility (7)
4. Developed confidence (1)
5. Learned to handle money (1)

Pupils were asked to report the favorable and unfavorable comments made by parents, employers, and fellow enrollees regarding the on-the-job portion of the program. The favorable comments made by parents included the following:

1. Prepares boys for occupations (5)
2. Provides opportunity to earn money (2)
3. Provides opportunities for work which may have been avoided (2)
4. Teaches responsibility (1)
5. Teaches about other jobs (1)

The only unfavorable comments made by parents were that the distances traveled to jobs were excessive and that the pay was insufficient.

Favorable comments which pupils reported their employers had made were that the placement program provided boys and girls with opportunities to learn and opportunities to try different occupations. No unfavorable comments from employers were reported by the sixteen pupils interviewed.

The comments made by fellow enrollees and reported by the sixteen boys and girls interviewed in this evaluation study were as follows:

1. Pay is too low (5)
2. A good opportunity to earn and learn (3)
3. I plan to enroll next year (2)
4. I can be in the FFA (2)
5. Program should be better organized (1)
6. Course was boring (1)
7. I didn't like to work on Saturdays (1)
8. Too much work (1)
9. Who do you see to get enrolled? (1)

Twelve of the sixteen students responding to the questionnaire indicated that their interest in agricultural business had increased as a result of the training program, and four students replied that their interest had not increased. The chief reasons given by pupils for their increased interest in agricultural business included the following.

1. I study things with which I work (5)
2. I gained experience (2)
3. I learned about occupations (2)
4. I feel more "grownup" (1)
5. I got experience in the FFA (1)

Four of the sixteen students reported that their interest in school work in general increased as a result of the program. Reasons given for this increased interest were as follows:

1. I decided to go to college
2. I can see usefulness to my other school work
3. I wanted to improve my grades

A few pupils reported that they had to drive too far to work. The number of miles students drove to work (one way) was as follows:

1.	Less than one mile	8 pupils
2.	One to three miles	2 pupils
3.	Three to five miles	1 pupil
4.	Seven to eight miles	2 pupils
5.	Fourteen to twenty miles	3 pupils

Eleven of the sixteen persons interviewed reported that they had previous experience in the job in which they were placed. The pre-employment experiences, for the most part, were obtained on the home farm or at school.

Pupils were asked to rate the value of the five training activities commonly thought to be important to the development and completion of placement-employment programs in agriculture. These activities and the ratings assigned each activity by the pupils were as follows:

Activity	Rating: Much value %	Some value %	no value %	Did not accomplish %
1. Complete a written training agreement	6.25	62.5	6.25	25.0
2. Interview for my job	31.25	31.25	6.25	31.25
3. Classroom discussion of my job responsibilities	18.75	62.5	6.25	12.5
4. Conference of parents, teacher, and myself	6.25	25.0	6.25	62.5
5. Keeping records of my placement program	68.75	31.25	0.0	0.0

SUGGESTIONS FOR PLANNING AND CONDUCTING AGRICULTURAL OCCUPATIONS PROGRAMS

1. A period of occupational exploration should be provided to students prior to the time they are to select occupational objectives and to engage in occupational experience programs.

2. Schools located in communities where there are few agricultural training stations should develop "in-school" training programs in greenhouses, animal and plant laboratories, shops, and other types of physical facilities for their students.

3. Occupational education should be provided for the college-bound student as well as the student who plans to seek employment immediately after high school graduation. The agricultural experience programs and the classroom instruction provided for those students who plan to continue their formal education beyond high school should be broad and general. Students who plan to seek employment immediately after high school graduation should receive more specific job training.

4. Placement on farms can be a valuable experience for students preparing for nonfarm occupations providing the experiences which the students obtain are related directly to their area of occupational interest.

5. It is difficult to conduct farm placement programs and occupational experience programs in certain business firms when regulations require students to work a minimum number of hours each week. The seasonal nature of agricultural work makes it difficult for employers to employ students for specified periods of each week of the year.

6. Students should have written training program outlines which include the schedule of activities they are to participate in at their training stations. These outlines should be developed by teachers and employers before students begin work at their training stations.

7. The classroom phase of the agricultural occupations program should be related to the problems students are confronted with in their training stations, but instruction at school should <u>not be restricted</u> to these problems.

8. Schools which plan to initiate new programs in agricultural occupations must provide staff time to do the job. Teacher time must be earmarked for planning, supervising, and teaching activities.

9. Parental permission and provisions for transportation to and from training stations are items of high priority.

10. Screening of students in the placement-employment program should be severe enough the first year to avoid losing training stations. This is especially recommended for communities with few agricultural businesses.

11. Teachers who plan to start new programs in agricultural occupations should prepare themselves by participating in Votec. 474 and other graduate courses designed to help teachers teach the "new" agriculture.

12. Students enrolled in placement-employment programs must be adequately covered by insurance.

13. Students should be enrolled during the preceding spring for agricultural occupations courses which are scheduled to begin in the fall. A suggested step-by-step procedure for initiating placement-employment programs is as follows:

    a. Teacher conducts a preliminary survey of agricultural businesses in his community.

    b. Students complete application form for placement-employment program.

    c. Teacher interviews students to identify their specific occupational training needs.

    d. Teacher makes a tentative matching of students and training stations.

    e. Teacher surveys those businesses which may be used as training stations to secure specific information about activities which various workers perform.

    f. Teacher prepares tentative training program outline for each training station and reviews outline with employers.

    g. Teacher arranges student-employer interviews.

    h. Teacher, employer, and student meet to review and sign training program outline.

14. Maximum as well as minimum limits on hours students spend in training stations should be established. By allowing students to work an excessive number of hours, teachers of agriculture may be accused of encouraging students to drop out of school or to slight their school work.

15. Teachers must visit training stations periodically to supervise students and to help employers conduct on-job instruction. A suggested frequency for supervisory visits is one visit per month to each training station.

16. Placement-employment programs for seniors should be terminated about a month prior to the close of the school year so neither the student nor the employer will feel an obligation to continue the relationship on a permanent basis.

17. Training program outlines which include specific activities to be accomplished on a monthly schedule are almost impossible for employers to implement.

18. The common elements of content which apply to all students enrolled in an agricultural occupations course are drastically reduced as the diversity of occupational objectives and training stations within a class is increased.

APPENDIX

ILLINOIS AGRICULTURAL CURRICULUM PROJECT

Employer Questionnaire

Date _____

1. Name of firm _____ Location _____

2. Position of person interviewed _____

3. Name of person interviewed _____

4. Assume that you needed an employee with only a high school education in your business. How would you classify the students who have been placed with you?

Excellent prospective employee	Good prospective employee	Fair prospective employee	Poor prospective employee	Uncertain
_____	_____	_____	_____	_____

5. Did you, the teacher, and the student ever hold a "joint conference" to deal with student-employee problems? Yes ( ) No ( )

6. Would you consider the "joint conference" a good approach to solving student employment problems in your business, in this type of training program? Yes ( ) No ( )

7. Did the teacher and student work out a placement agreement with you for the student's occupational experience, spelling out the responsibilities of each party? Yes ( ) No ( )

8. In your opinion, do you think it is desirable to have a check-list type of placement agreement developed to make clear the responsibilities of the student, parent, teacher, and employee to prevent misunderstanding during the student employment period? Yes ( ) No ( )

9. To what extent should the teacher of agriculture visit a place of business where a student is getting his work experience to observe his work habits, dress, and the like, as a basis for improving student performance? (Check one or more.)

   a. Should be done quite frequently at first. _____

   b. Should be observed about once a week for first three or four weeks. _____

   c. Should be observed about once a week throughout the training period. _____

   d. Should be observed about once every two weeks throughout the training period. _____

e. Should visit and observe the student very little. _____

f. Should not visit to observe the student, but leave the supervision up to employer. _____

10. Did the teacher of agriculture work with you in terms of developing an understanding of the training program? Yes ( ) No ( )

Did he discuss with you the kinds of experiences he would like the student to get? Yes ( ) No ( )

Did he let you know what he would be teaching the students in the class at school? Yes ( ) No ( )

11. List any deficiencies or shortcomings in the training program.

_____

_____

_____

_____

_____

12. Please list any strong points or features in the training program.

_____

_____

_____

_____

_____

_____

13. In comparison to another employee, do you feel that you spent (a) more or (b) about the same amount of time training the student employee? Please circle (a) or (b) above.

14. For each statement check the most correct answer according to your own viewpoint.

	Strongly agree	Agree	Un-certain	Dis-agree	Strongly disagree
a. I should train the student for my business only	_____	_____	_____	_____	_____
b. Vocational education of our youth should be left to the schools	_____	_____	_____	_____	_____

	Strongly agree	Agree	Un-certain	Dis-agree	Strongly disagree
c. I should assign the student employee to one position in my business	_____	_____	_____	_____	_____
d. The agricultural placement program serves to get students jobs in agricultural businesses	_____	_____	_____	_____	_____
e. The training of the student in the business should be left to the employer	_____	_____	_____	_____	_____
f. I know what is expected of me as an employer of a student learner	_____	_____	_____	_____	_____
g. I would like to have the agricultural teacher define experiences for the student to gain in my business	_____	_____	_____	_____	_____
h. My business would serve as a training station in the coming year	_____	_____	_____	_____	_____
i. I plan to offer the present student employee a full-time job at the end of the school year	_____	_____	_____	_____	_____
j. Besides the additional labor, serving as a training center has aided my business	_____	_____	_____	_____	_____
k. I feel the student employee in my business is getting good training experiences	_____	_____	_____	_____	_____
l. I would not object to the student studying my business during the first three weeks of the program on an unpaid basis	_____	_____	_____	_____	_____
m. The student employee was readily accepted by the regular employees	_____	_____	_____	_____	_____
n. I believe the training program is beneficial to the community	_____	_____	_____	_____	_____

ILLINOIS AGRICULTURAL EDUCATION CURRICULUM PROJECT

Student Questionnaire

Date _____

1. Name _____ School _____

2. Name of business where you worked _____

3. Names and job titles of persons who supervised your work or provided on-the-job instruction _____

_____

_____

4. Rate the value you gained from each of the following activities:

Activity	Much value	Some value	No value	Did not accomplish
a. Complete a written training agreement				
b. Interview for my job				
c. Classroom discussion of my job responsibilities				
d. Conference of parents, teacher and myself				
e. Keeping records of my placement program				

5. Describe the major benefits which you have derived from the training program this year.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

6. List <u>any</u> comments your parents or guardians may have made regarding the program.

Favorable: _____

_____

_____

Unfavorable: _____

_____

_____

_____

7. List any comments your employer may have made regarding the program.

Favorable: _____

_____

_____

Unfavorable: _____

_____

_____

_____

8. Comments of other students enrolled in the program.

_____

_____

_____

9. Comments of other students in vo-ag who were not enrolled in this program.

_____

_____

_____

10. Did you have any previous knowledge or experience in the job in which you were placed? Yes ( ) No ( ). If so, what?

_____

_____

11. How far do you drive to work on a one-way trip? _____

12. Has your interest in agricultural business increased as a result of this program? Yes ( ) No ( ). Why? _____

_____

_____

13. Has your interest in school work increased? Yes ( ) No ( ). Why?

_____

_____

14. Would you recommend this placement program and course to your best friend? Yes ( ) No ( ). Why or why not? _____

_____

_____

15. Would you take this course over again? Yes ( ) No ( ). Why or why not?

_____

_____

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AGRICULTURAL MECHANICS SHOPS IN MODERN SECONDARY SCHOOLS

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Preface

The suggestions presented in this booklet are the result of a great demand by teachers of agriculture and others for information concerning the planning of new agricultural mechanics shops for secondary schools.

Although each community requires a shop tailored to its specific needs, it is important to have suitable guidelines to use as starting points.

The principles, examples, and references cited in the pages which follow should provide some of the basic information necessary for intelligent planning of new facilities.

I. General Principles of Planning Agricultural Mechanics Shops in Modern Secondary Schools

A. Basic Statements

1. An agricultural mechanics program in modern secondary schools includes all the mechanical activities that a progressive agricultural worker should perform with the kinds of tools he will have and/or should have available. The mechanical activities may be unspecialized or specialized

2. The areas of emphasis in agricultural mechanics are:

   a. Shop work

   b. Power and machinery

   c. Buildings and conveniences

   d. Soil and water management

   e. Electrification

   f. Processing of agricultural products

3. An understanding of present and future agricultural mechanics objectives is necessary for efficient shop planning. Among the objectives are:

   a. Develop a reasonable degree of skill in the use of tools, machines and materials

   b. Develop understandings of basic types of construction, repair and maintenance

   c. Develop sound practices, attitudes, and appreciations of safety

   d. Develop the ability to measure and calculate, and to use scientific information, graphic illustrations, and reference materials effectively

   e. Develop the ability to plan and work, alone and in cooperation with others, toward the orderly, efficient and complete performance of assigned and selected tasks

   f. Develop appreciation of good design, construction and craftsmanship

   g. Discover and develop personal aptitudes, interests, abilities, self-reliance, good judgment and resourcefulness through problem solving and self-expression

B. General Considerations for Planning

1. Plan for present needs, but take a careful look at possible future developments

2. Keep in mind the instruction which will be given

   a. Read courses of study, study teaching plans, and note tool inventories and other evidence

   b. The following may be obtained from the author, and will assist in determining tool requirements for agricultural mechanics shops: Specifications for Agricultural Mechanics Power Tools and Equipment; Listing of Agricultural Mechanics Small Tools

3. Find out types of classes to be served

   a. Farm oriented: high school students, out-of-school youth and adult farmers

   b. Agriculturally related: technicians who will work in metropolitan and/or rural areas. Specific examples of jobs which require special mechanical skills and knowledge are: parts men and women for power and machinery dealerships, greens keepers for golf courses, caretakers for large estates, and maintenance personnel for plant and warehousing operations of companies serving agriculture

4. Determine maximum size of classes, space to be allowed for each student, space to be occupied by machines, and size of necessary storage areas

   a. New agricultural mechanics shops in Illinois range from 40 to 50 feet in width and from 60 to 100 feet in length. The Handbook on Agricultural Education in Public Schools - Lloyd J. Phipps, The Interstate Printers and Publishers, Inc., Danville, Illinois, 1965, states: "A desirable minimum is 200 square feet of area for each student in the largest class in a department"

   b. Useful estimates of space to be occupied by machines are given in the "Space Saving Shop Ideas" section of this booklet

   c. Provide as much wall space as possible for area storage of tools. More specific suggestions for storage space requirements are listed under the "Storage Ideas" section.

      (1) Maximum economy and utility result when adequate provision is made for inside and outside storage

5. Consider requirements for lockers, drinking fountains, wash bowls, and toilets

6. Make decisions concerning such things as:

   a. Location of electrical outlets

   b. Lighting system

   c. Heating system

   d. Ventilating system

   e. Exhaust system

7. Decide overall dimensions of shop with particular attention to proportion of width to length

   a. A shop that is too narrow does not permit efficient arrangement and use of space

II. Examples of Agricultural Mechanics Shops

A. Example number 1 -- Figures 1 and 2

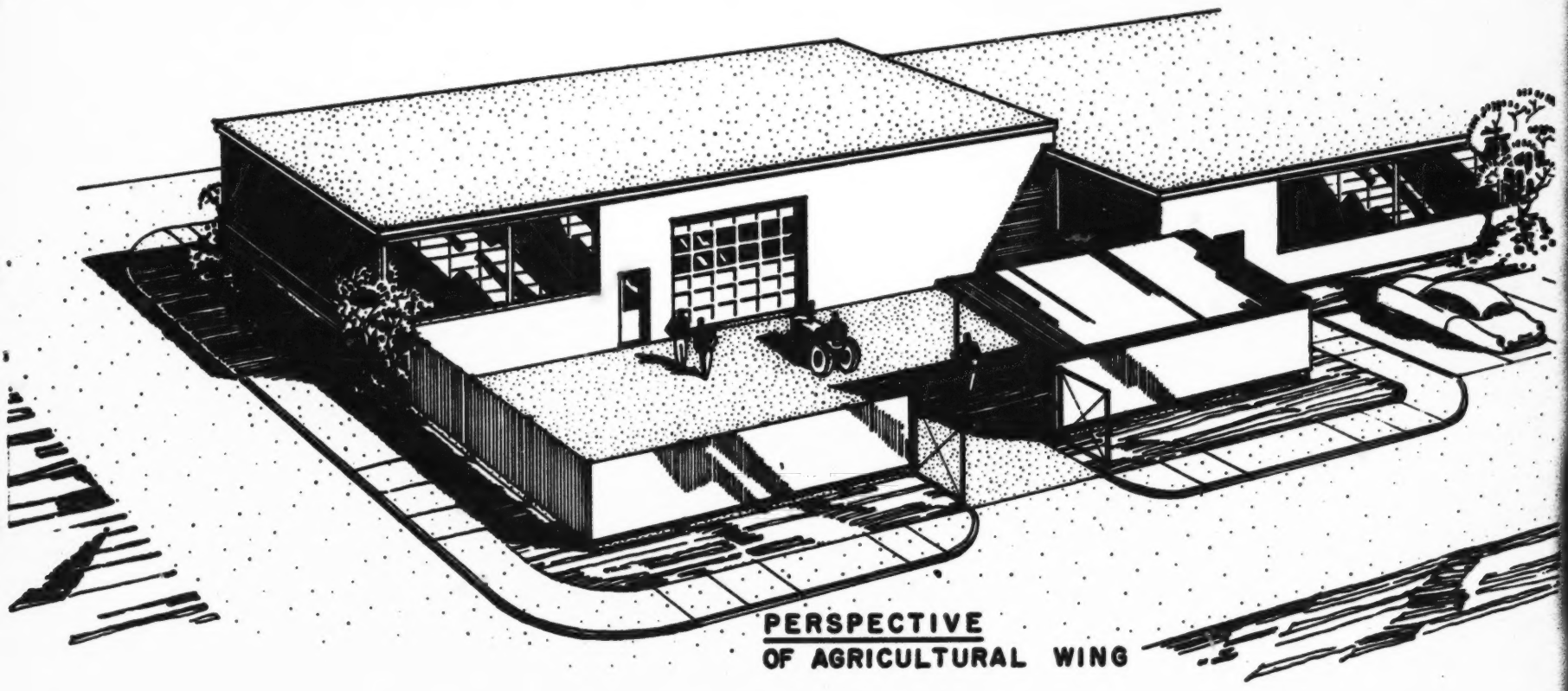


Figure No. 1

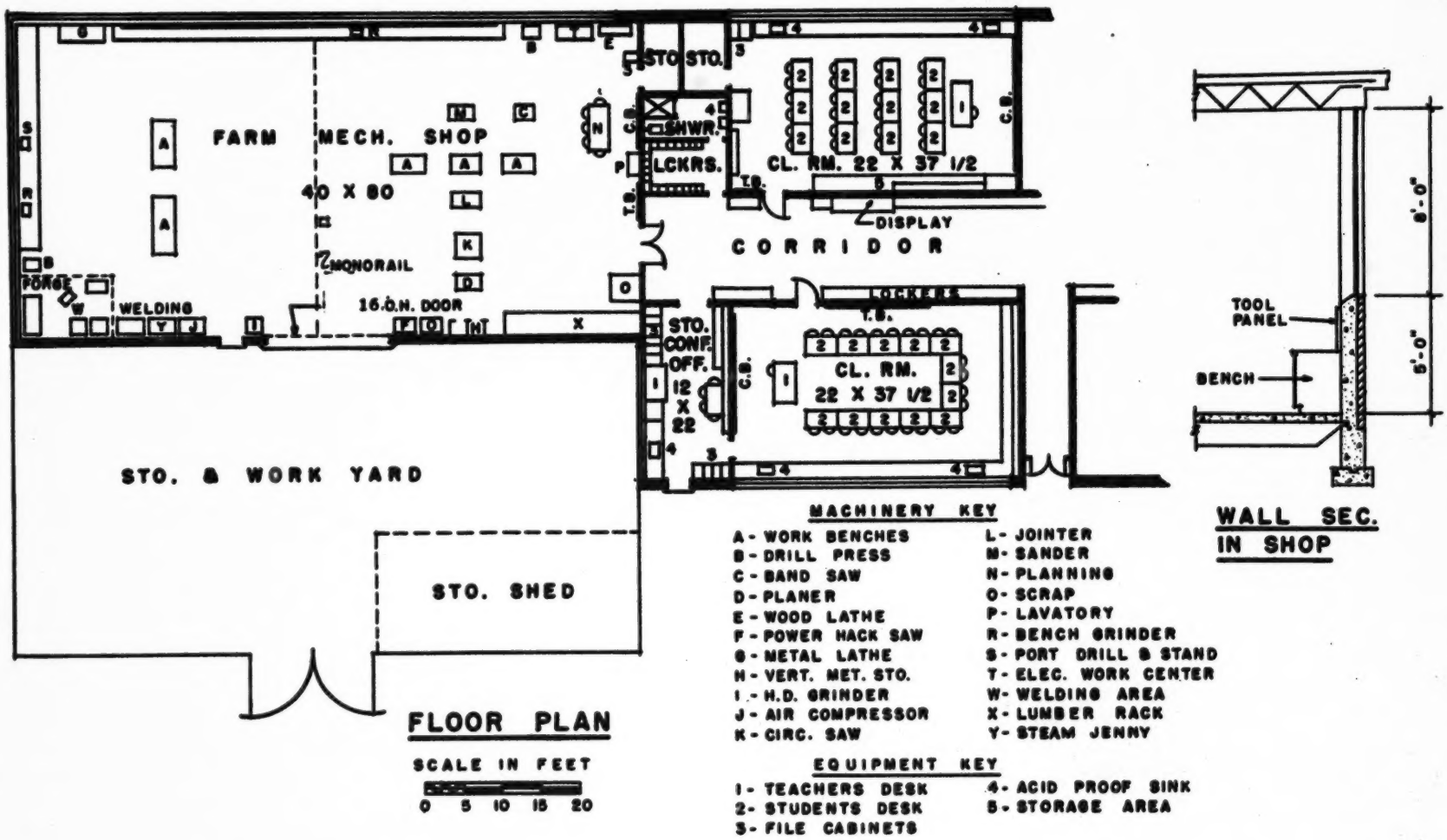


Figure No. 2

B. Comments -- Example number 1 -- Figures 1 and 2

1. The storage shed and outside work yard, size of shop, two classrooms, and other features make the facilities appropriate for a two-teacher department. Such facilities might be provided for one teacher wherever there is a good possibility of expanding the program within a reasonable period of time

2. The small access door beside the large shop door is a feature sometimes overlooked

3. Perhaps too much of the wall space of the shop is occupied by windows . Some studies have shown that a minimum space of six feet of masonry or brick wall below the window sills is necessary to allow for adequate wall storage space. This also promotes the safe use of power tools

4. There may be a few too many benches in the central area of the shop

5. A shower is not always necessary

6. Example number 2 -- Figures 3 and 4

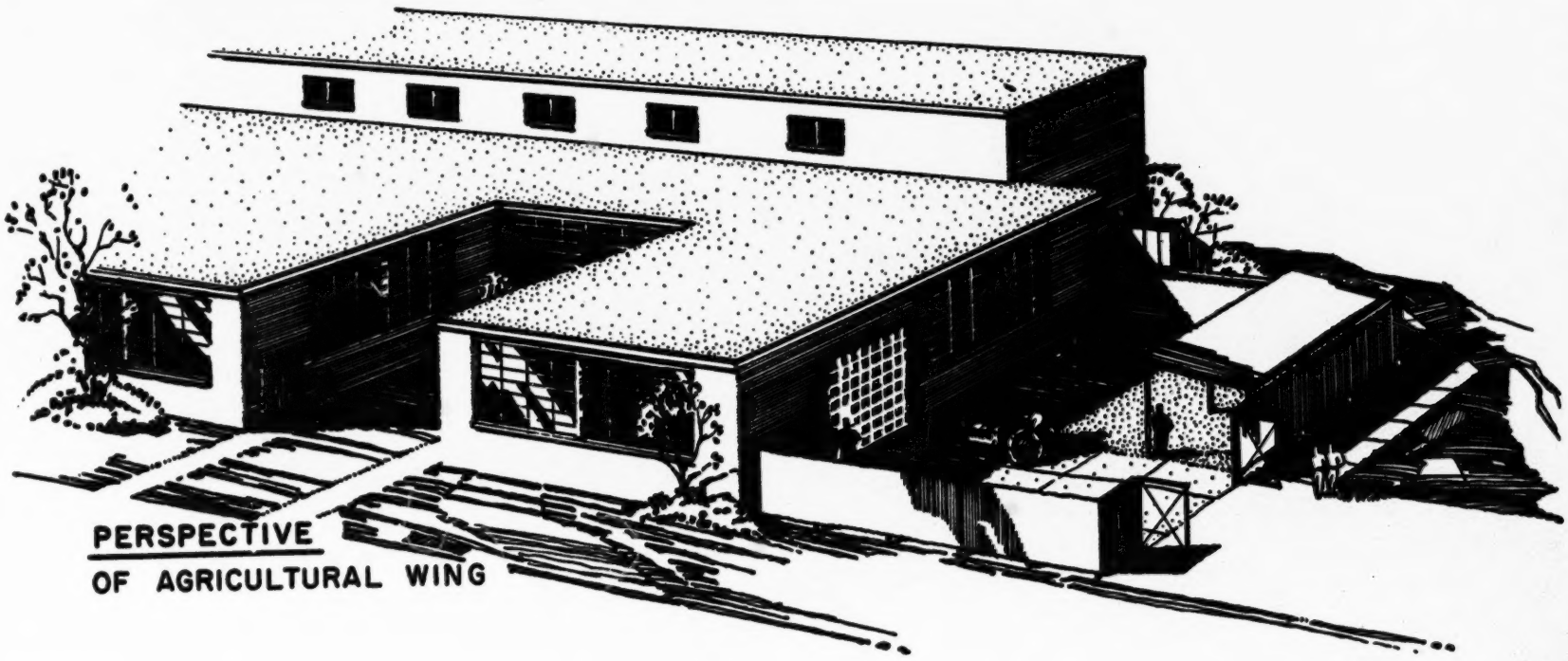


Figure No. 3

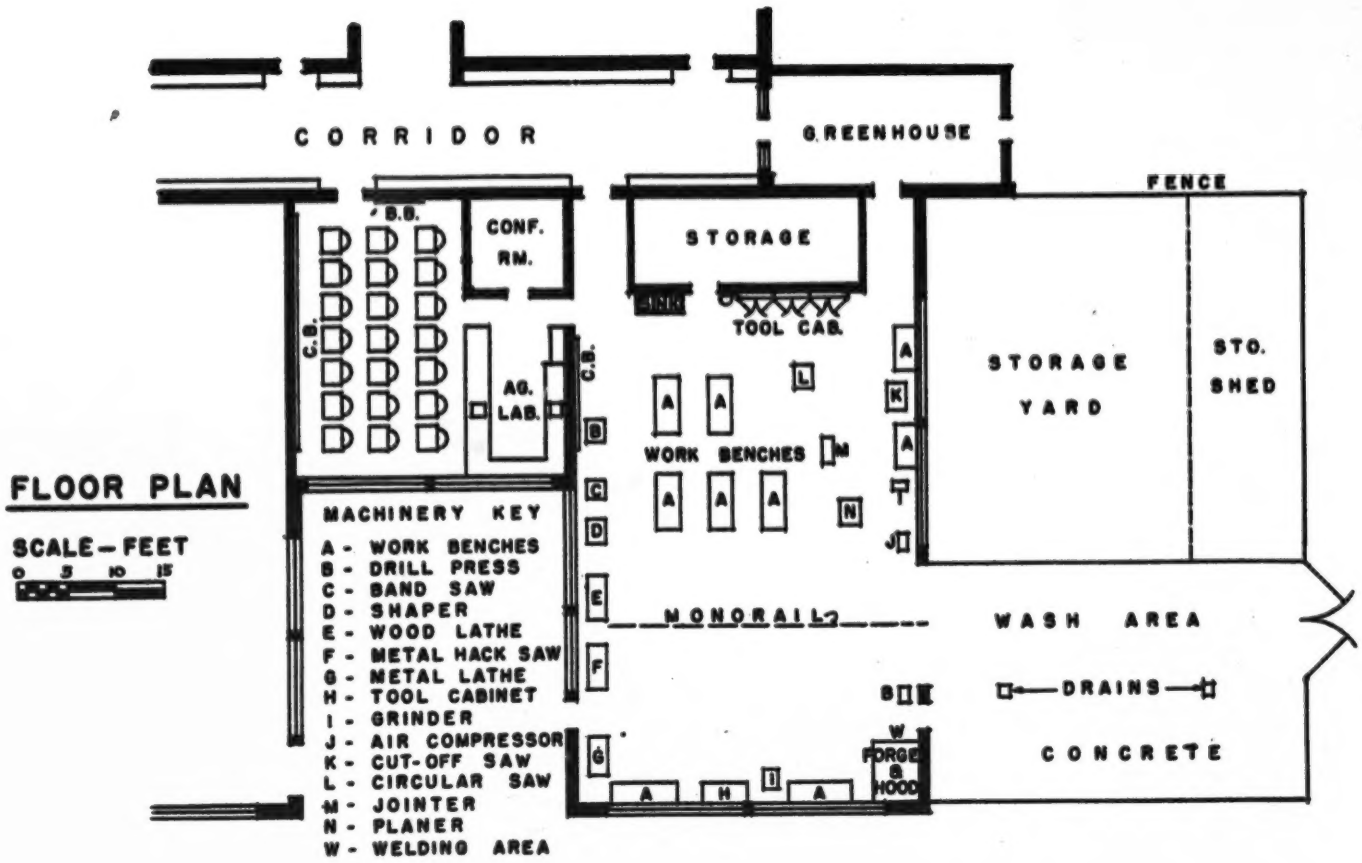


Figure No. 4

D. Comments -- Example number 2 -- Figures 3 and 4

1. The concrete apron and drains outside the large door of the shop allow effective use of a steam cleaner to get farm power and machinery units in proper condition for maintenance

2. The greenhouse is not as usable as it might be

a. An attached greenhouse, such as this one, is more appropriate for home gardeners than for school use

(1) An even span greenhouse offers up to 50 percent more growing space at small added cost. It can be built in any length, and is easier to cool and ventilate in summer

b. A separate workroom is necessary for potting plants, sowing seeds, preparing soil, and performing other tasks

3. There are more appropriate tools for agricultural mechanics shops than the shaper, wood lathe, and metal lathe shown

III. Space Saving Shop Ideas

A. Approximate Floor Space To Be Reserved for Selected Tools and Machines

1. Major Power Tools and Shop Equipment

Power Tools and Shop Equipment (with approximate floor space occupied by each unit)	Approximate Space By Each (which is required for safe operation)
Drill Press, Floor Model (18" x 27"); Grinder, Pedestal (18 1/2" x 20 1/2"); Washer, Parts (21" x 38")	36" at front, 36" at left, and 36" at right for each unit listed at left
Saw, Power Hack (18" x 30")	36" at front, 36" at left or right, and 252" at left or right
Saw, Radial Arm (26" x 36")	72" at front, 144" at left, and 144" at right
Saw, Tilting Arbor (44 1/2" x 50")	192" at front, 192" at back, 96" at left, and 96" at right
Welder, Electric (18" x 24"); Welder, Oxyacetylene (24" x 36")	36" at front, 36" at left, and 36" at right. Same space around each item being welded

Note: The list of power tools and equipment is not comprehensive. A complete program of agricultural mechanics will require additional items which occupy floor space. Still other units will be needed if off-farm agricultural occupations shop classes are included in the program.

Actual sizes of power tools and shop equipment should be used, if known.

The space required for safe operation of a machine is based on such things as the work it will be used for, the maximum size of the material to be worked, the number of persons working in the shop at the same time the machine is operating, and the number and ages of persons either working or observing near the particular machine.

2. Farm Power and Machinery Units

Farm Power and Machinery Units	Floor Space Occupied by Units
General-Purpose 2-Plow Tractor	6 ft. wide and 10 ft. long
Three-Bottom Moldboard Plow	7 ft. wide and 15 ft. long
Grain Drill	9 ft. wide and 16 ft. long
Two-Row Corn Planter	8 ft. wide and 10 ft. long
Mower	7 ft. wide and 8 ft. long
Side-Delivery Rake	11 ft. wide and 13 ft. long
Pickup Baler	13 ft. wide and 17 ft. long

Note: The approximate dimensions given for each farm power and machinery unit are listed for planning purposes only. Actual dimensions should be used when known. The size space to reserve for farm power and machinery work will depend upon such things as the machines to be worked on and the number of them in the shop at the same time.

B. Major Agricultural Mechanics Shop Space Areas

1. Inside of school building (according to location)	Use To Be Made of Areas Identified
Agricultural mechanics shop proper	Welding, forging, and metal working; farm power and machinery; electrical; woodworking; other
Special rooms or other space	Store room, storage over classroom or store room; balcony storage; paint room; other

2. Outside of School Building — Use To Be Made of Space

Outside of School Building	Use To Be Made of Space
Work yard	Maintenance of large machines and construction of large projects during good weather
Storage shed	Storage of lumber and metal. Protection of machines and large projects from weather
Separate storage	Storage of materials which cannot be stored safely inside of building

Note: The areas listed, and the uses to be made of them, are not comprehensive. They are examples which show the necessity for reserving certain areas for particular uses

C. Examples of Major Power Tools and Equipment, Hand Tools, and Materials Used in Agricultural Mechanics Shops

General Classification of Items	Specific Listing of Items
Major power tools and equipment	Arc welders, oxyacetylene welding and cutting outfits, power grinders, drill presses, power hack saw, steam cleaner, parts washer, spark plug cleaner and tester, tilting arbor saw, radial arm saw, air compressor, and work tables
Hand tools and equipment	Welding helmets, chipping hammers, vise grip wrenches, safety glasses and shields, cold chisels, battery hydrometer, speed indicator, gauges, crimping pliers, shock proof screwdrivers, hand saws, squares, hammers, and vises
Materials	Bolts, nuts, washers, screws, nails, other hardware, paints and thinners, metal stock, and wood

D. Basic Principles To Observe in Placement of Major Tools and Shop Equipment

1. Reserve certain areas of the shop for particular uses

   a. Welding and metal working areas should be located near the large entrance door

   b. Farm power and machinery work should be done in the open area in the central area of the shop reserved for this purpose

   c. Maintain as much flexibility as possible by anchoring as few major tools as possible

d. The electrical work center should not be located near a drinking fountain or area where the floor may be damp at times

2. Utilize portable equipment such as the portable rack for vertical storage of scrap lumber, portable waste can and broom rack, and heavy duty portable tool panel and work station shown in the Appendices

3. Use compact equipment

   a. Regular factory-made stands for saws, grinders, and similar power tools conserve space

   b. Avoid "making a home" for odd cabinets, tables, and racks even though they have been obtained free

   c. Wall benches seldom need to be more than 24" deep

4. Store only a small amount of wood or metal in the shop proper

   a. Better places for storing quantities of wood or metal are: balcony storage space, storage over classroom, and outside storage shed

      (1) In order to be of greatest usefulness, storage over classroom should be six and one-half feet high

E. Basic Principles of Hand Tool Storage

1. Hand tools should be stored on the wall in the area where they will be used, if this is possible

2. The following procedure has been used successfully by some teachers when placing hand tools on panels or in cabinets:

   a. Draw outline of space dimensions to be used for tool storage on shop floor with chalk

   b. Experiment with various arrangements of tools to be stored before beginning wall placement. This is done by placing the tools in various ways in the chalk-enclosed space

   c. Select the arrangement which seems best and transfer it to the wall space on the panel or in the cabinet provided

3. A modification of the power tool itself sometimes is appropriate, and makes accessories readily available to the operator

4. General rules to be considered when storing hand tools

   a. The tool should be easy to put away and easily checked

b. The tool should be accessible to the worker yet properly protected

c. At times, a "home-made" tool rack may be superior to ones that are available for purchase

d. Tools which are used only a few times a year should be stored "back out of the way" where they will be neither a physical nor a mental hazard

e. Some thought should be given to the storage of tools which will be acquired at a later date

IV. Storage Ideas and Related Information

A. Common Tool Storage Practices in Agricultural Mechanics Shops

1. Wall panel in shop

2. Wall cabinet in shop

3. Floor cabinet in shop

4. Portable panel and/or portable work station in shop

Note: There are other types of tool storage in use, but the above are the most common

B. Common Management Practices in Agricultural Mechanics Shops Which Are Related to Tool Control

1. Tools dispensed by self service

2. Tools stored according to work areas

3. Tools returned to storage by students

4. Final tool check made by both the students and the teacher

Note: There are other types of management practices related to tool control, but the above are the most common

C. Aids To Proper Tool Control

1. Buy the best tools obtainable

2. Keep the tools in "top notch" condition

3. Store tools out of sight which need reconditioning

a. Recondition them as soon as possible

b. Discard the ones which cannot be properly reconditioned

c. Replace discarded tools promptly

4. Keep the entire shop, including storage facilities, neat and attractive

D. Examples of Ways of Mounting and Storing Tools

1. Screws or nails

2. Screw hooks - 90 degree bend

3. Nail hooks - 90 degree bend

4. Commercial spring clips

5. Wood or metal shelves or supports

6. Pegboard panels with commercial hangers

7. Formed metal brackets or supports

8. Tool kit boxes with supports

9. Tool tote racks

10. Permanent magnet strips

11. Stands

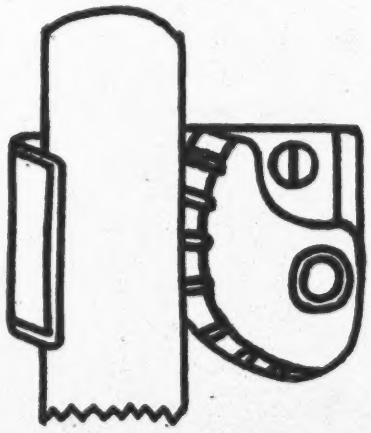
12. Brackets

13. Illustrations of various devices

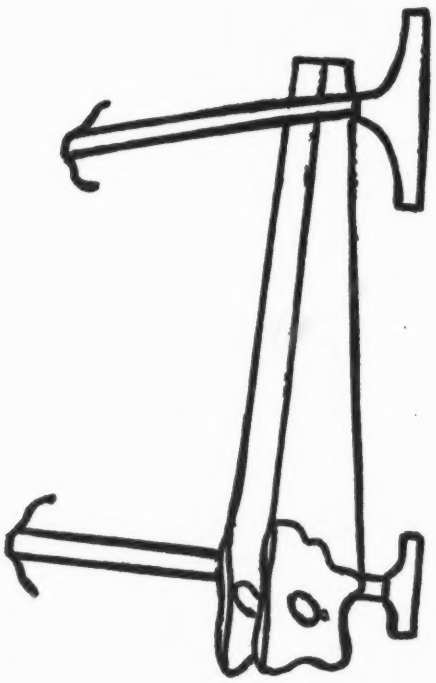
Square Bent Screw Hook

Screw Shoulder Hook

Screw Eye

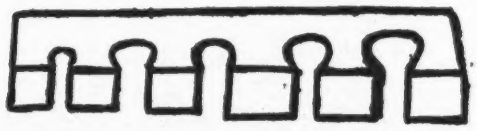


Non-Scratching Tool Holder

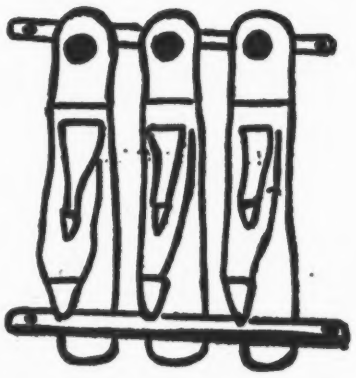


Storage of Hand Saws

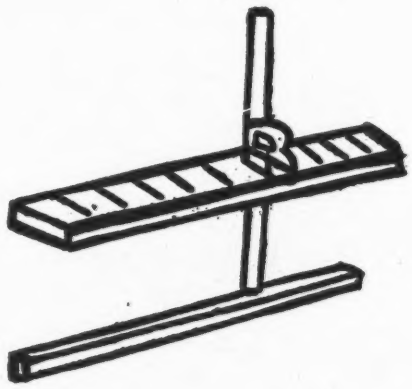
Storage of Files and Chisels



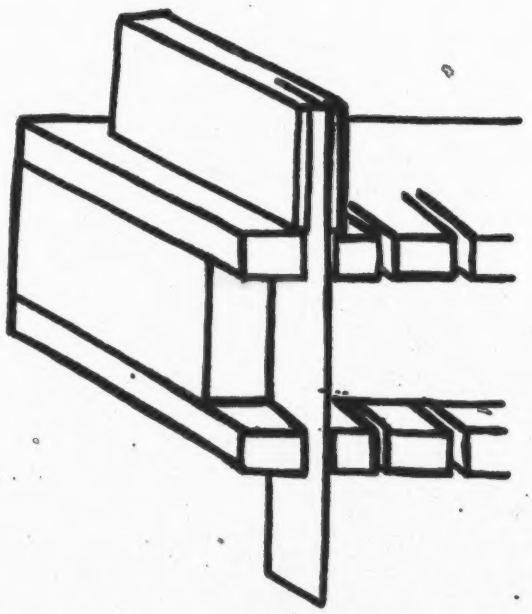
Storage of Screwdrivers



Storage of Planes

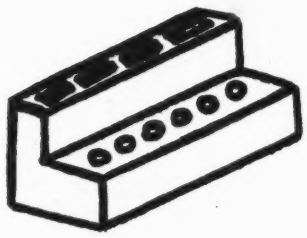


Storage of Squares

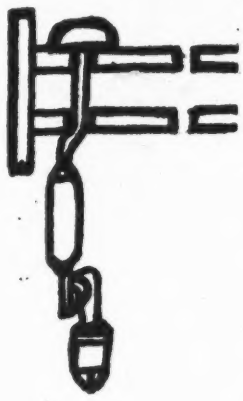


Another Way of Storing Squares

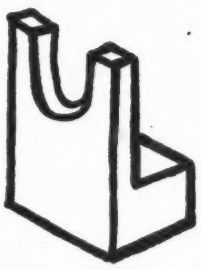
Note: None of the sketches are to scale



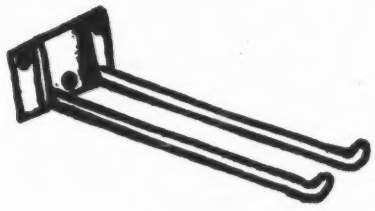
Storage for Punches and Rules



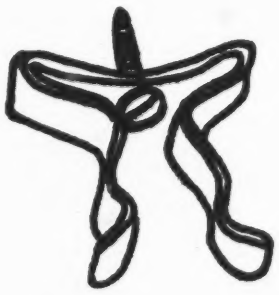
Storage for Braces



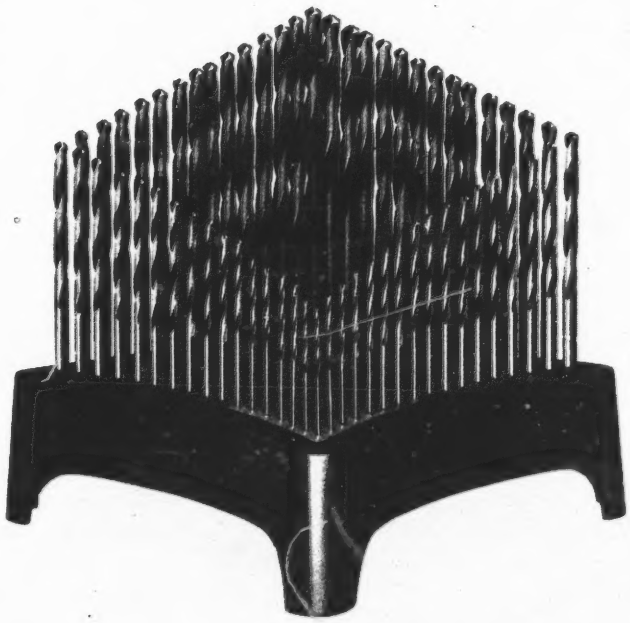
U-Shaped Slots



Tool Hangers

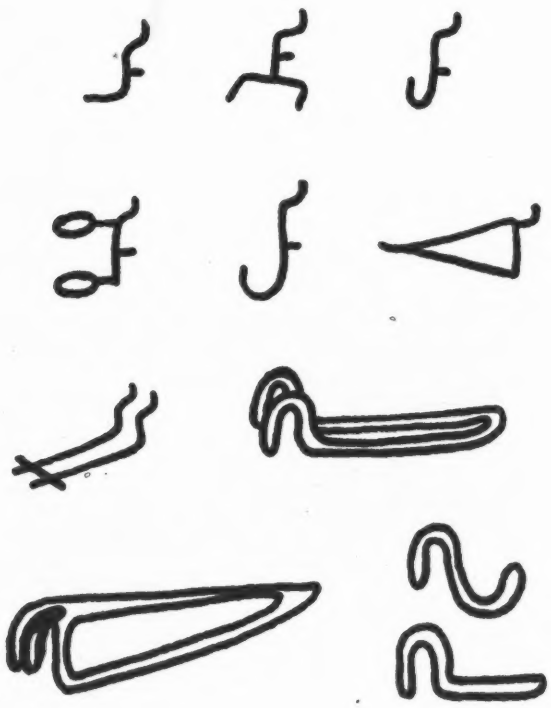


Adjustable Tool Clip

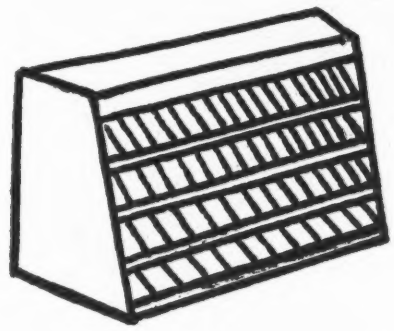


Drill Stand With Drills

Note: None of the sketches are to scale



Pegboard Fixtures



Storage for Drills

Tool Toter

E. Tool Storage Suggestions

1. Leave adequate space between tools on panel

2. Place sharp edged tools so as to prevent accidents when they are removed from panel or replaced

   a. Remember that removal of tools adjacent to sharp edged tools can cause accidents if the tools are not stored properly

3. Consider height of students who will use the tools from the panel

4. Arrange all tool panels so they present a balanced appearance

5. Attach only small, light-weight tools to cabinet doors

6. Design tool hangers and holders to:

   a. Emphasize strength, appearance, simplicity and adaptability

   b. Hold tool easily -- make it large enough to do the job

   c. Match the contour of the particular tool

   d. Keep tool from swinging once it is put in place

7. Store portable power tools on shelves

   a. A few of the portable power tools can be stored easily on special racks; but, as a general rule, shelves are better

F. Lumber Storage Suggestions

1. Vertical storage conserves space, and makes for easy removal of individual pieces

   a. There may be some restriction in lengths which can be accomodated, but this is not a major disadvantage in most shops

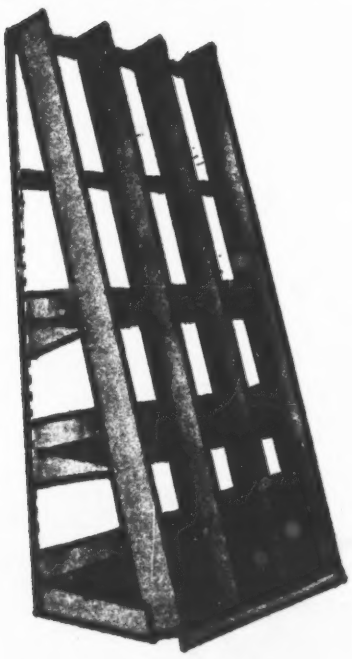
   b. Some boards may twist a bit more than they would in horizontal storage

2. Horizontal lumber storage requires careful organization

3. Some combination of vertical and horizontal storage facilities may be necessary to fit a particular situation

4. Short pieces present special problems which are solved most easily by the purchase of special racks from commercial sources

5. Examples of racks for lumber storage



The triangular rack to the extreme left is designed to store up to 14 foot lengths of lumber vertically. Each partition is adjustable on six inch centers. Three full-length shelves are provided per unit. Base shelf is 24 inches deep; intermediate shelf is 18 inches; and top shelf is 12 inches.

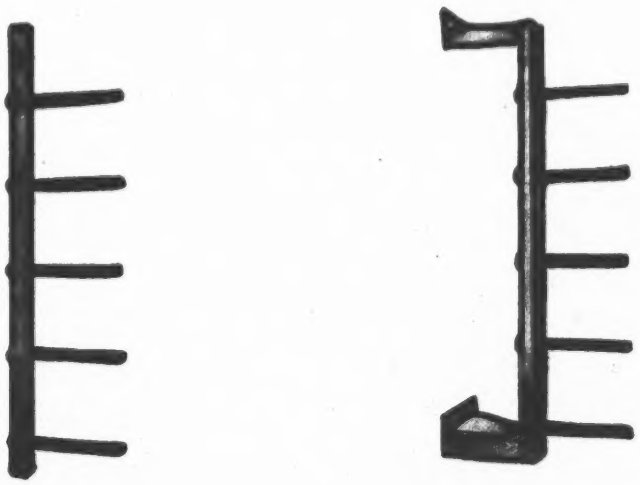
The unit shown to the right of the basic rack illustrates how a plywood rack can be added to the back and make the facility more versatile.

Overall size of the basic unit is 48" wide, 34" deep and 108" high.

The above unit is self supporting and does not require bolting to either the floor or the wall.

The hardwood frame is interlocked at every joint. The lumber racks are one inch iron pipe, 20 inches long. Ends are open to permit storage of extra long lumber.

Overall size is 13 feet long, 6 feet high, and 32 inches deep at base.



Upright without bracket and upright with bracket. Designed to provide storage of lumber in either vertical or horizontal position. Each upright is 84" high, constructed of 3" x 4" hard maple, and includes 10 openings for support arms.

Manufacturer recommends two foot spacing between uprights for horizontal or vertical storage.

The basic upright is designed for mounting directly to wall, but two heavy steel brackets can be supplied as optional equipment so the upright can be spaced 16" from wall. The brackets anchor the top and bottom to wall and floor, and allow storage of plywood as desired.

G. Metal Storage Suggestions

1. Metal should <u>not</u> be placed in overhead horizontal storage

   a. There is too much danger of it falling

   b. It generally is too heavy to be easily placed in (or taken from) such a location

2. Bar and flat stock stored horizontally under benches or against a wall are not easy to sort

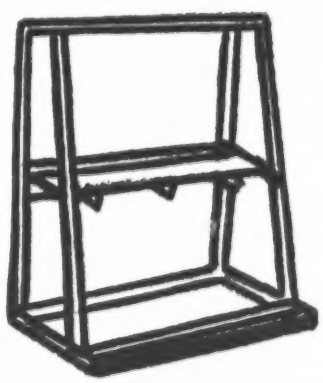
   a. The use of separate racks for each variety of stock helps considerably, but may require more space than is available

3. Vertical racks simplify sorting problems, but must be planned and used in ways which will avoid the chance of accidents when heavy stock is removed

4. Storing large metal sheets on edge makes them easier to sort

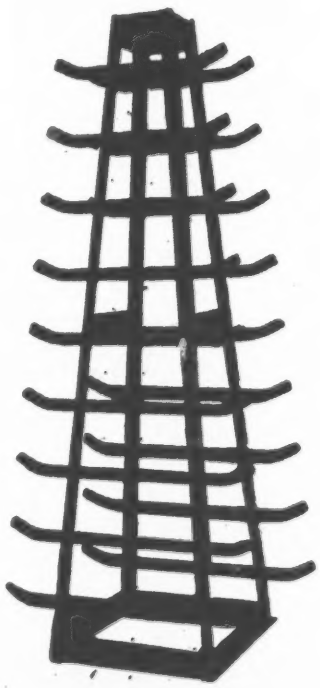
   a. They are quite difficult to handle when several are stored flat and stacked on top of each other

5. Examples of racks for metal storage



Vertical rack for short lengths of metal is shown at left.

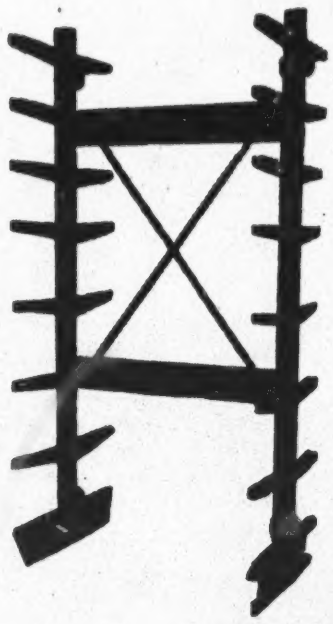
Taller racks may be purchased for longer lengths. Such racks are 84" high, 36" wide, and have 24" bottom depth.



The horizontal bar rack at left is designed for storing bars of all kinds. It may be used singly, or two of the racks may be placed in line to store long pieces.

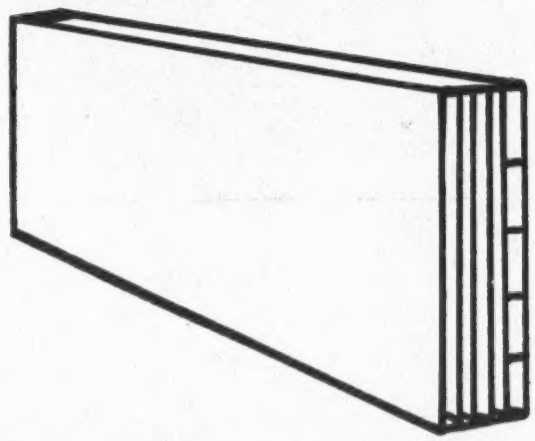
Cross bars are spaced seven inches apart and extend eight inches clear of uprights.

The rack is 84" high and 21" square at the bottom.



When used for metal storage, the double face free standing rack at left has a base of 36" and arms which are 12" long.

Available in three foot wide multiples.



The metal storage rack above is 10 feet long 12 3/16" deep and 37 7/8" high outside.

There are four vertical compartments for storage of flat sheets up to 3' x 10'.

Five additional compartments permit storage of rods, bars, and tubes up to 10' long.

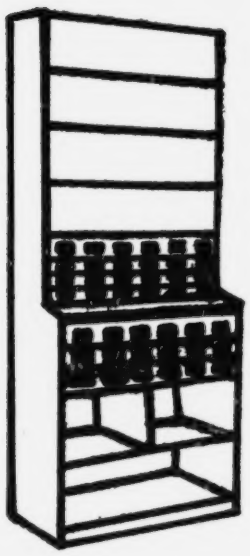
H. Hardware Storage Suggestions

1. Regular hardware cabinets from commercial sources are most satisfactory

   a. A description of a suitable cabinet complete with double doors and key lock follows: Size is 36" wide, 12" deep, and 7'3" high. Contains one bin 36" wide, 12" deep and 11" high; three bins, 12" wide, 12" deep and 12" high.

(continued on page 19)

Six bins are 6" wide, 12" deep and 12" high. Equipped with one 24 drawer unit, each drawer 5 1/4" wide, 11" deep and 1 3/4" high; and two 18 drawer units, eash drawer 5 1/4" wide, 11" deep and 2 5/8" high, with two adjustable dividers per drawer. Also equipped with 8 box drawers, each 8 1/4" wide, 11 3/4" deep and 4 5/8" high, with one adjustable divider per drawer.

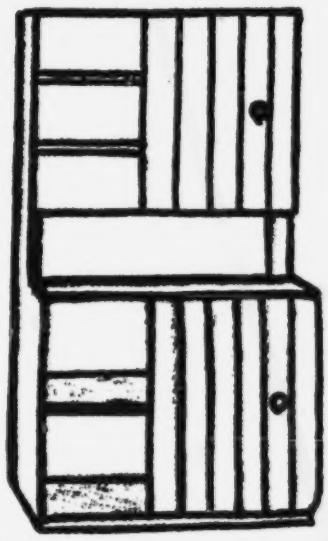


If open type storage is desired, the all-steel cabinet pictured at the left is worth considering.

The cabinet is 7 feet 3 inches high and 36" wide.

I. Paint Storage Suggestions

1. Paint should be stored in an all-steel paint cabinet such as the one shown below.



Overall height of the unit is 7 feet 3 inches. The work surface is 39 inches high, 48 inches wide and 24 inches deep. The base unit contains one adjustable shelf. The upper cabinet stands 12 inches above the work surface. It is 36 inches high and 12 inches deep. It is fitted with two shelves which are adjustable on one inch centers. Both upper cabinet and base are fitted with sliding doors equipped with cylinder locks.

V. Exhaust Systems

A. Need for Controlling the Quality of Air

1. Air contaminants, if present in sufficient quantities, can cause serious discomfort or injury to students and teachers

a. Even amounts which might not be detrimental to health can easily lessen the effectiveness of agricultural mechanics instruction

b. Examples of air contaminants common to school agricultural mechanics shops, descriptions, and origins follow:

Dusts -- Fine particles of solid materials projected into the air -- Operation of sanders, saws, grinders, drills, and sweepers

Fumes -- Very small solid particles formed by condensation of vapors from normally solid materials, such as molten metals -- Operation of soldering equipment, welders, and forges

Smokes -- Extremely small solid particles produced by incomplete combustion -- Operation of welders, forges, and engines

Gases -- Formless fluids which tend to occupy a space or enclosure completely and uniformly at ordinary temperatures and pressures -- Operation of soldering equipment, welders, forges, and engines

2. From the examples listed above, it is clear that:

a. Agricultural mechanics shop activities are varied and numerous

b. Many of the activities are apt to produce air contaminants

c. The air contaminants must be controlled so that injury and/or discomfort (which lessens effectiveness) will <u>not</u> result

B. A Scale of Odor Intensities and A Scale of Nasal and Eye Irritation

1. In the absence of research data which report concentrations of dusts, fumes, smokes, and gases which commonly occur in agricultural mechanics shops, it is necessary that students and teachers determine these for themselves

2. With practice, excessive concentrations can be determined with reasonable accuracy by their odors and irritant effects

3. A Scale of Odor Intensities

Degree of Intensity	Description
No odor	No odor which can be detected by person with normal sense of smell
Faint	Weak odor, but one which can be detected
Moderate	Half way between faint and strong
Strong	Forcible odor
Very strong	Intense odor with enough effect to irritate

4. A Scale of Nasal and Eye Irritation

Degree of Intensity	Description
No irritation	No irritation which can be felt by person with normal senses
Faint	Perceptible, but not painful
Moderate	Half way between faint and strong
Strong	Discomforting, but may be endured
Very strong	So painful as to be intolerable

5. Facts to remember when using the scales

   a. Odors are best determined by the first and second inhalations

   b. Nasal and eye irritation frequently increase with time, and last for the first several seconds. Sometimes the seconds stretch to minutes

   c. The scales make no provision for detecting carbon monoxide or similar toxic gases

      (1) Some gases are without odor or irritating qualities

   d. Industrial hygiene workers have determined that an evaluator may have some difficulty at first in making estimations that conform to the pattern of a representative group

      (1) They also have found that most persons overcome this difficulty rapidly so that with a group of six persons the deviation of individuals from the average is rarely more than one degree on the scale

e. On the basis of the best evidence available, it is believed that conditions which rate either "strong" or "very strong" on the two scales might affect student and teacher health adversely

(1) Ratings of "moderate" could have an undesirable affect on teaching efficiency

C. Suggestions and Basic Information about Exhaust Systems

1. Exhaust problems peculiar to agricultural mechanics shops must be solved whether the shops are new or have been established for some time

a. Most exhaust systems in agricultural mechanics shops seem to make use of "local" or space exhausting, i. e., attempt to exhaust the polluted air from specific areas of greatest concentration

(1) This is in contrast to "general" exhausting from the entire shop

b. Whatever system is used, it should have a high capacity

(1) A dozen or more "air contaminating activities" may go on during one shop period

c. An exhaust system with enough capacity to move the contaminated air out of the shop means that some provision should be made to bring in sufficient quantities of fresh air as replacement

(1) This needs to be done without creating undesirable drafts

D. Characteristics of One Successful Exhaust System

1. Parts of exhaust system, and characteristics of each:

a. Hood. Shape: Extends straight up for 10 inches and then slants inward at 45 degree angle to collecting box. Intake area: 4 feet x 16 1/2 feet with three sliding balancing dampers, each 18 inches x 24 inches. Height from floor: 7 feet

b. Duct. Size: 48 inches x 24 inches. Duct rises directly from top of collecting box to power ventilator on roof of building

c. Ventilators. Power roof ventilator exhaust from shop hood: 5815 cubic feet per minute at 1/4 inch static pressure, fan at 1750 R.P.M. Motor 3/4 horsepower, 3 phase, 60 cycle, 208 volts. Gravity ventilator exhaust from shop: Type B-1, 16 inches in diameter

d. Fresh air inlets. Windows on opposite wall, and three fresh air inlets connected to overhead heating system, provide the means for pulling fresh air in from the outside

Note: The shop furnishing the above example is 83 feet 8 inches long, 50 feet wide, and has a ceiling 12 feet above floor level

VI. Paint Spray Booths for Agricultural Mechanics Shops

A. Need for Controlling Paint Spray and Similar Combustible Materials

1. Safety and efficiency are the main reasons for controlling the spray of paint, varnish, lacquer and similar materials

a. Practical minimum requirements are outlined for obtaining reasonable safety and efficiency under average agricultural mechanics shop conditions

(1) Where unusual processes are involved, additional safeguards may be necessary, or some modifications of the outline may need to be made to provide equivalent safety

B. Definitions

1. Spray booth -- a power-ventilated structure provided to enclose or accomodate a spraying operation, to confine and limit the escape of spray, vapor and residue, and to safely conduct or direct them to an exhaust system

2. Dry booth -- a means of removing overspray by the use of baffles or arrestors

a. Baffles -- after the air has collected the overspray, it is then pulled by the fan through a series of alternated metal obstructions. These baffles are coated with an adherant which causes the paint particles to stick

(1) The adherant is so designed that it not only collects the overspray but also allows for simplified cleaning

(2) Baffles provide a good means for getting equalized air flow and uniform draft throughout the booth

b. Arrestors -- after the air has picked up the overspray, the fan pulls it through paper filters specially treated to cause paint particles to adhere

(1) The arrestors come in a 20" x 20" x 1" sized pad, and are located between the fan and the article being sprayed

(2) This type of filter not only removes the overspray but also does an efficient job of equalizing the flow of air. It provides a uniform draft throughout the booth. Arrestors can be removed easily and destroyed when they become filled with paint

c. Overspray -- paint particles which have not been retained by the article being painted and are present in the air

C. General Comments Concerning Paint Spray Booths for Agricultural Mechanics Shops

1. The spray booth should be located so that if a fire does occur the possibility of its spread to other property will be reduced

   a. The probability of damage to other property by extinguishing agents should be considered also

2. A wet booth is <u>not</u> suitable for high school programs of agriculture

   a. It is <u>not</u> well adapted to intervals of several days or weeks with no use

   b. It has high initial cost

   c. It has high maintenance cost

      (1) Paint sediment can do harm to the water pumping system of the wet booth under conditions which prevail in agricultural mechanics shops

3. The arrestor dry type booth has the following advantages for use in agricultural mechanics shops:

   a. Good air distribution within the booth

   b. Better control of overspray than is provided by the baffle type dry booth

   c. Ease of maintenance

      (1) Arrestor pads can be replaced easily. This eliminates many cleaning problems

4. Material used in booth construction must be fireproof. Additional Safety Features needed are:

   a. Lights may be either fluorescent or incandescent, but they must be explosion proof

   b. Many paint booths don't have enough lights, and sometimes the lights are poorly placed

   c. All switches must be located outside the booth. If within 30 feet of the face of the booth, they must be explosion proof. The wiring within 30 feet must be rigid or flexible metal conduits

d. At some location in the booth, one of the following fire extinguishers must be placed: soda acid, foam, carbon tetrachloride, or liquid carbon dioxide

e. The booth should be protected with automatic sprinklers located in front and back of the arrestors

f. Safety does not demand that the face of the booth be closed, but a better job of painting is possible when the face is closed and the incoming air is filtered by means of pads

5. The worker should wear a respirator for extra protection

6. Spray booths may be of various shapes and sizes, but the following is suggested as being appropriate for agricultural mechanics shops: booth 24 feet long, 15 feet wide, and 12 feet high

   a. The booth should be large enough to accomodate the largest tractor in the area and still allow for three feet of working space on all sides

7. It is important that the exhaust system be adequate. There is some tendency to underdesign such systems. On the basis of past experience, they are more likely to be too small rather than too large

8. The exhaust fan must be capable of moving air past the working face of the booth toward the fan at a speed of 125 lineal feet per minute. Therefore, the size of the booth will determine the size of the fan needed

   a. A booth that is 15 feet wide and 12 feet high will require a fan that will move 22,500 cubic feet of air per minute. This was determined as follows:

      Width of booth times height of booth times 125 equals fan capacity in cubic feet of air per minute

      or

      15 times 12 times 125 equals 22,500 cfm

      Note: To assure the correct amount of discharge, the fan should be rated to deliver the total number of cubic feet of air per minute at 1/8" static pressure

9. The fan rotating element shall be non-ferrous or non-sparking.

   a. Or the casing shall consist of or be lined with such material

b. There shall be ample clearance between the fan rotating element and the fan casing to avoid a fire by friction. Necessary clearance shall be allowed for ordinary expansion and loading to prevent contact between moving parts and the duct or fan housing

10. Fan blades shall be mounted on a shaft sufficiently heavy to maintain perfect alignment even when the blades of the fan are heavily loaded. Preferably, the shaft should have bearings outside the duct and the booth

    a. All bearings shall be of the self-lubricating type, or lubricated from outside the duct

11. Electric motors driving exhaust fans shall not be placed inside booths or ducts

12. Belts shall not enter duct or booth unless belt and pulley within the duct or booth are thoroughly enclosed

13. Exhaust ducts shall be constructed of steel and shall be substantially supported

    a. Exhaust ducts should be without dampers. If manually adjustable dampers are installed, they shall be kept in a full open position at all times ventilating system is in operation

    b. When spray booths are not in use and it is necessary to shut off ducts during cold weather, noncombustible removable covers completely closing ducts may be used

14. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted, and for sufficient time thereafter to allow vapors from drying coated articles and drying finishing material residue to be exhausted

15. Portable electric lamps shall <u>not</u> be used in any spraying area during spraying operations

16. All metal parts of spray booths, exhaust ducts and piping systems conveying flammable liquids shall be properly grounded in an effective and permanent manner

17. It is suggested that spray booths be substantially constructed of steel not thinner than number 18 U. S. gauge, securely and rigidly supported, or of concrete or masonry

18. If the booths contain windows or glass panels, wire glass shall be used provided the face area of the booth is more than four square feet

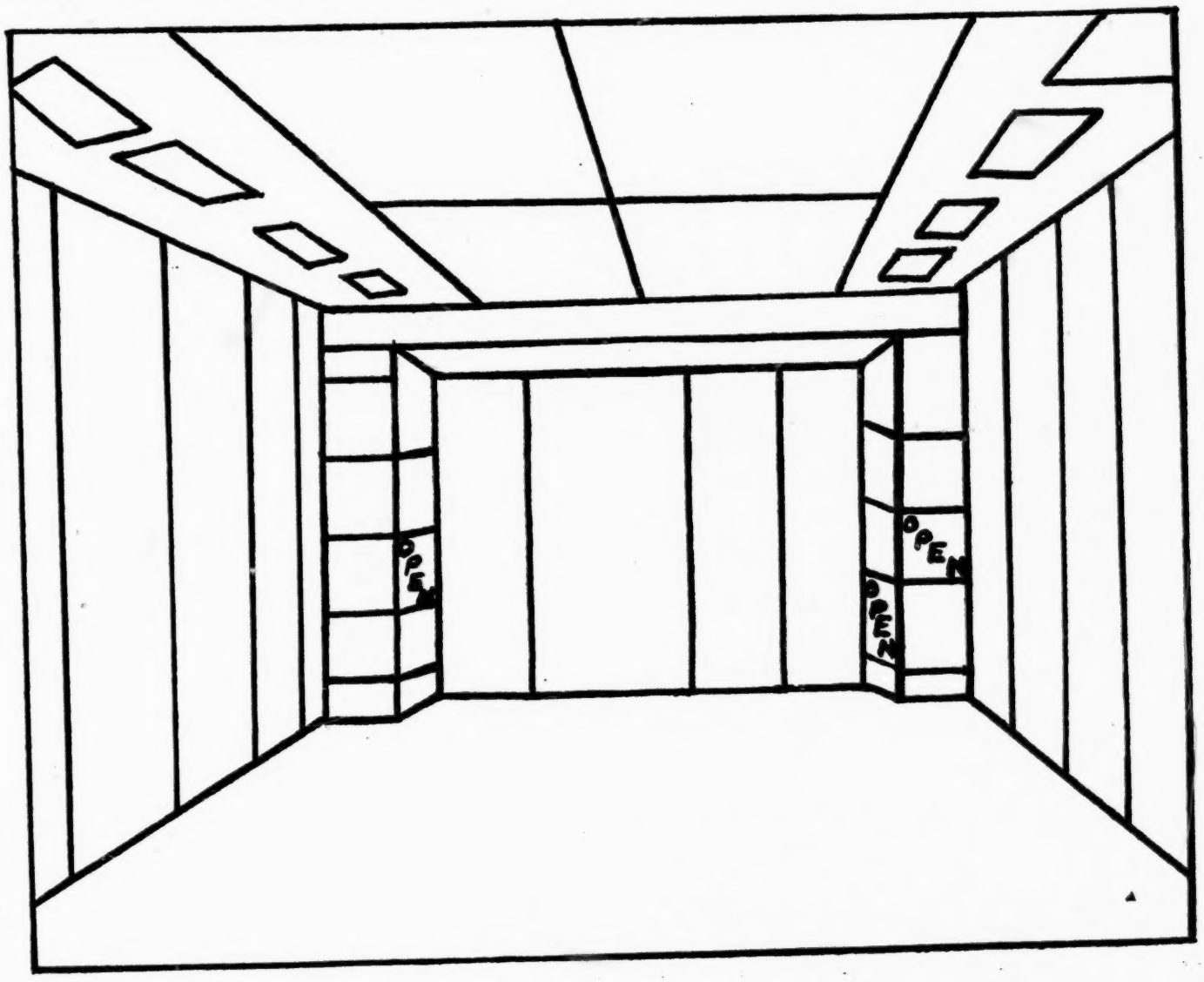
19. All booths used for spray painting shall be kept clean and free from accumulations of sprayed materials

20. Ducts should be of a diameter not less than the transverse diameter of the fan. They should preferably be of larger diameter so as <u>not</u> to introduce unnecessary air friction

    a. Turns in ducts should be avoided wherever possible

21. All ducts longer than 10 feet should have clean out doors at 10 foot intervals, or should be so constructed as to be easily taken apart for cleaning

D. Example of Paint Spray Booth



1. Construction: back, sides, and ceiling are of 18 gauge sheet metal; front has steel framing with filters; floor is concrete; size is 24 feet long, 15 feet wide, and 12 feet high

2. Ventilation

   a. Filters - arrestors

   b. Fan - 22 inches in diameter and moves approximately 22,400 cubic feet of air per minute

   c. Location - draws air into duct on columns in back and discharges it on the roof of the building

3. Lighting

   a. Kind - fluorescent

   b. Number of lights - 8

4. A sprinkler system is provided

5. Approximate cost of the paint spray booth at the time it was built several years ago: $2500

   a. It probably would cost more today

6. This paint spray booth would be appropriate for many agricultural mechanics shops

VII. Appendix -- Selected References

A. Architect's Sketches

1. Agricultural Department of the United Joint High School, Indiana County, Pa., designed by Hunter, Caldwell and Campbell, Architects, Altoona, Pa., in cooperation with the Indiana County Superintendent of Schools Office and the Agricultural Education Department at The Pennsylvania State College, State College, Pa.

2. Suggested Facilities for a Multiple Teacher Department of Vocational Agriculture Class Rooms, Laboratories and Farm Mechanics Shops, designed by Hunter, Caldwell and Campbell, Architects, Altoona, Pa., in cooperation with the Department of Agricultural Education at The Pennsylvania State University, University Park, Pa.

B. Books

1. Handbook on Agricultural Education in Public Schools by Lloyd J. Phipps, The Interstate Printers and Publishers, Inc., Danville, Illinois, 1965

2. Heating, Ventilating, Air Conditioning Guide, American Society of Heating and Air Conditioning Engineers, New York, 1957

3. Industrial Hygiene and Toxicology, Vol. II, Interscience Publishers, Inc., New York, 1949

4. Modern School Shop Planning by Prakken Publications, Inc., Ann Arbor, Michigan, 1965

C. Catalogs

1. Brodhead - Garrett, 4560 East 71st Street, Cleveland, Ohio, 44105, 1966

2. Paxton Equipment and Supply, 7401 South Pulaski Road, Chicago, Illinois, 60629, 1966

3. Sears, Roebuck and Company, Chicago, Illinois, 60607, 1966

D. Magazine Articles by Benton K. Bristol

1. How Adequate Is Your Shop's Exhaust System? County Agent Vo-Ag Teacher, April 1959

2. Safety in the School Farm Shop, Agricultural Education Magazine, January 1957

3. Space Saving Shop Ideas, County Agent Vo-Ag Teacher, December 1959

4. What Teachers Say about Tool Storage, Agricultural Education Magazine, January 1957

E. Research Studies

1. Essentials of Spray Coating Booths for Vocational Agriculture Shops by Herbert P. Ramsey, M. Ed. Paper, The Pennsylvania State University, University Park, Pa., August 1959

2. Physical Plant and Equipment Requirements for Departments of Vocational Agriculture in Pennsylvania High Schools, Progress Reports, Experiment Station Project 1195, The Pennsylvania State University, University Park, Pennsylvania, by Frank Anthony and Benton K. Bristol, 1955-63

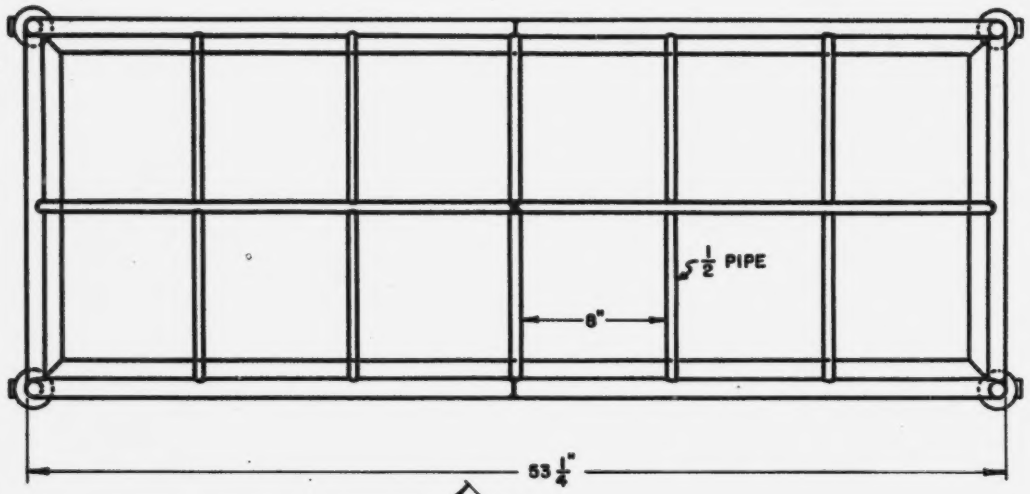
VIII. Appendix -- Sketches -- Helps in Shop Organization

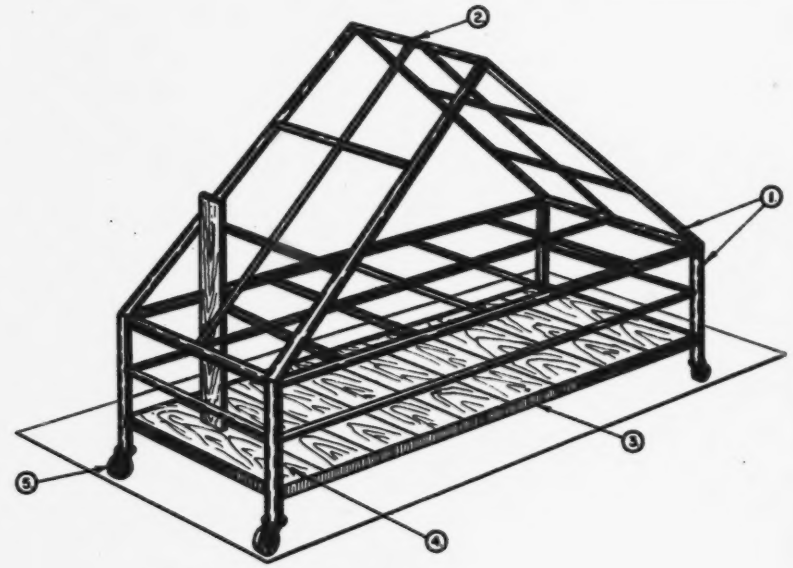
A. Portable Rack for Vertical Storage of Scrap Lumber -- page 30

B. Portable Waste Can and Broom Rack -- page 31

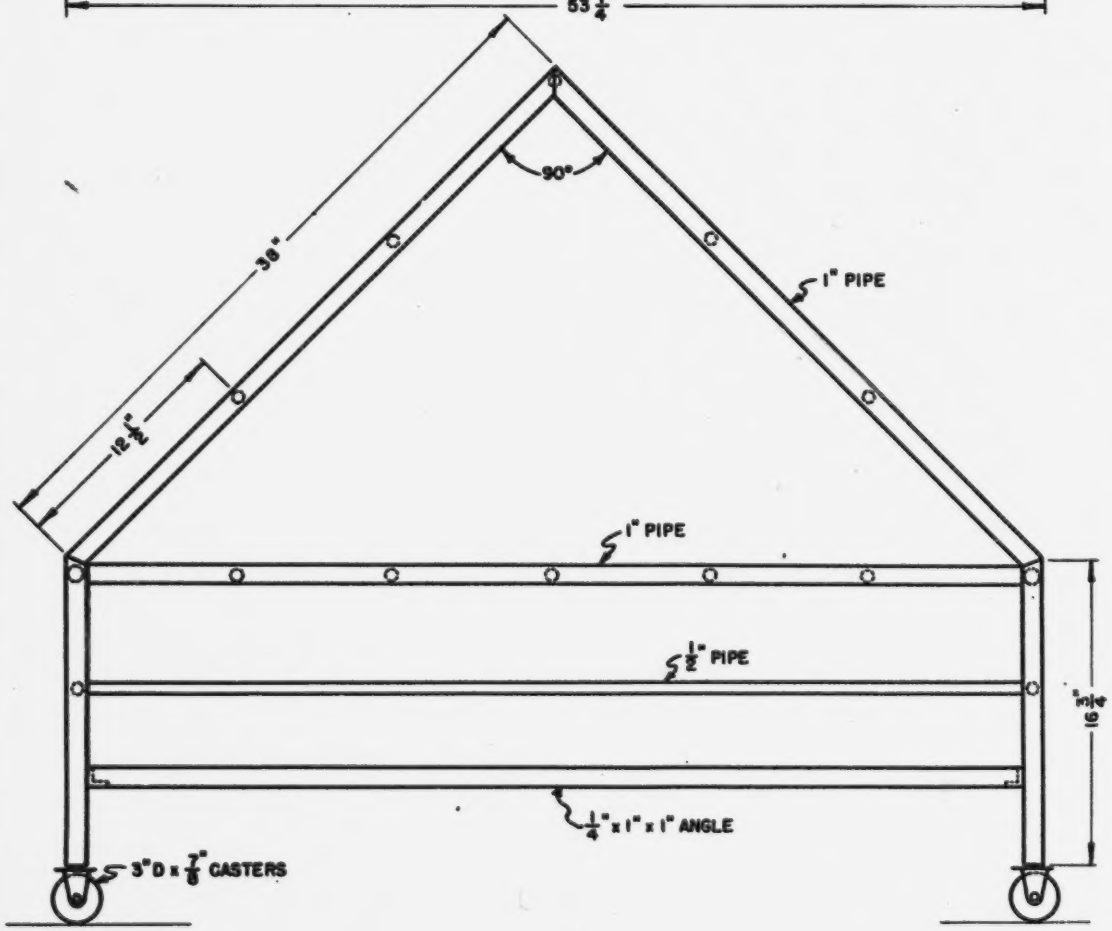
C. Tool Panel and Work Station -- page 32

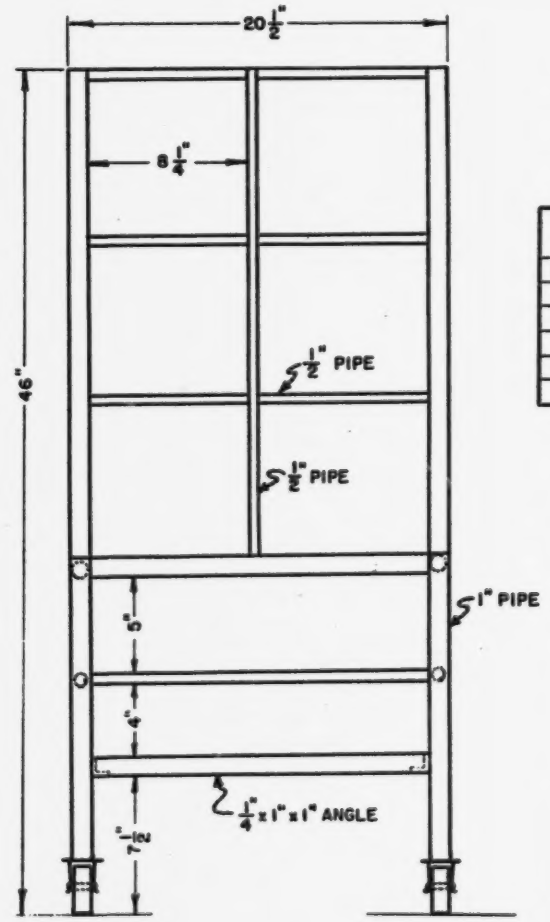
NOTE: WELD ALL JOINTS





PERSPECTIVE





BILL OF MATERIALS

NO.	NAME	MATERIAL REQUIRED
1.	FRAMEWORK	31 FEET OF 1" PIPE
2.	REINF. & SEPARATOR	40 FEET OF 1/2" PIPE
3.	FLOOR SUPPORTS	13 FEET OF 1/4" x 1" x 1" ANGLE IR.
4.	FLOORING	WOOD OR METAL
5.	CASTERS	3" D x 7/8"

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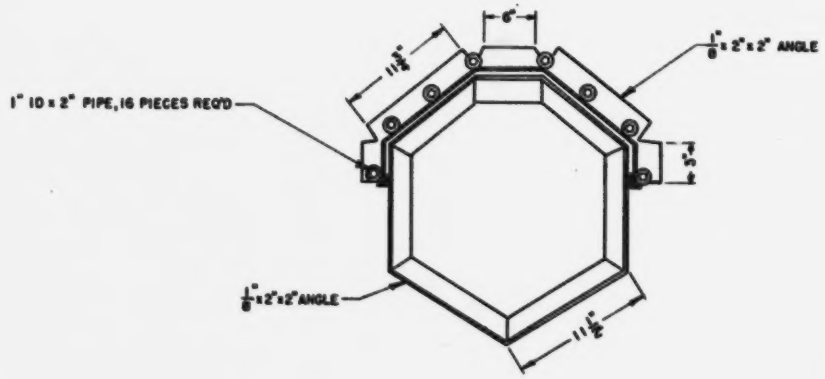
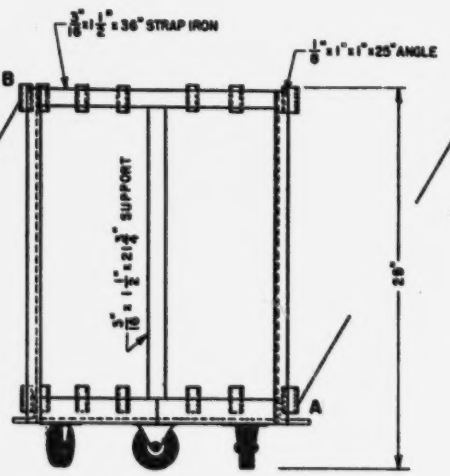
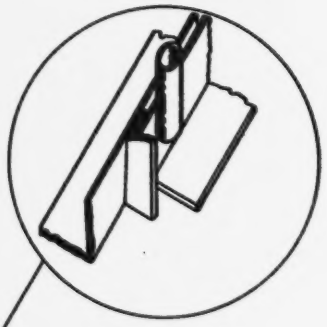
PORTABLE RACK FOR VERTICAL STORAGE OF SCRAP LUMBER

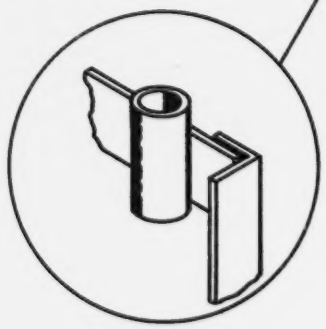
SCALE: 3/16" = 1"	DATE: OCTOBER 16, 1959
DESIGNED BY: S. E. RUNK	DRAWN BY: G. R. K.





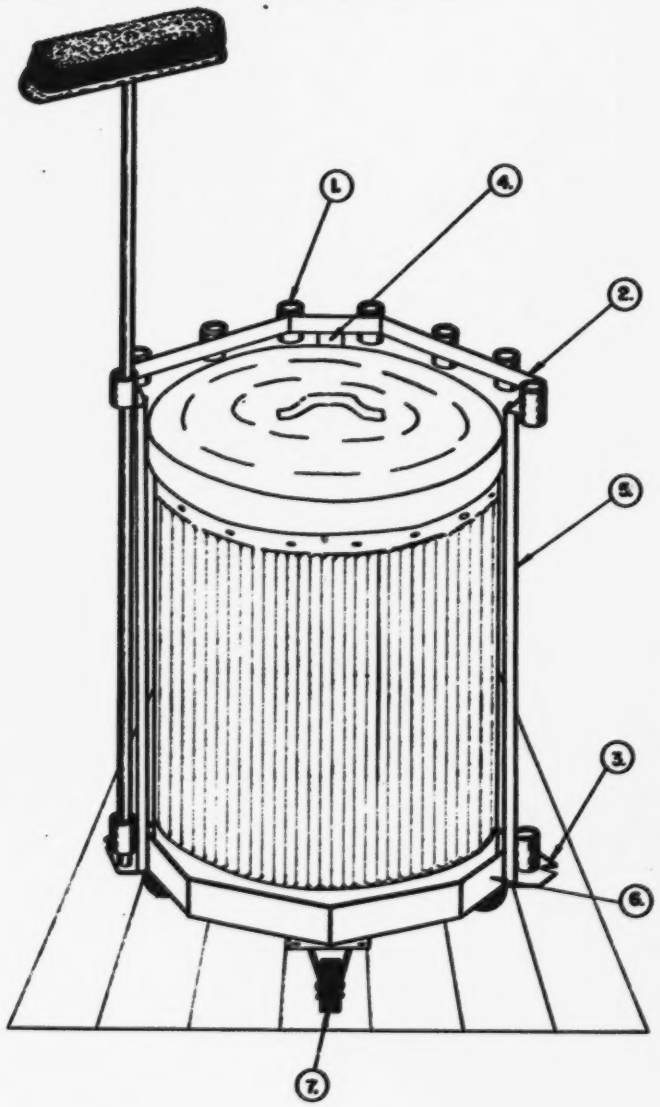


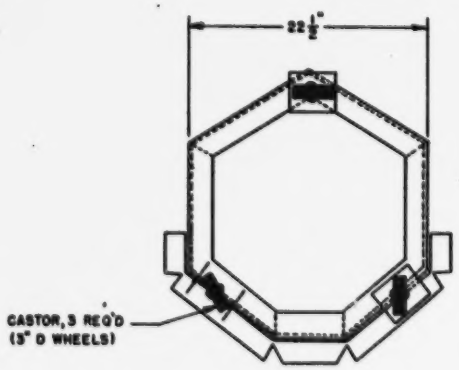
DETAILS AT A



DETAILS AT B

NOTE: ALL WELD CONSTRUCTION, DESIGNED AND BUILT FOR A 20 1/2" D x 28" HIGH WASTE CAN.





BILL OF MATERIALS

NO.	NAME	REQ'D	MATERIAL
1.	GUIDE	16	1" ID x 32" PIPE
2.	GUIDE RAIL	1	3/16" x 1 1/2" x 36" STRAP IRON
3.	GUIDE RAIL	1	1/8" x 2" x 2" x 36" ANGLE IRON
4.	RAIL SUPT.	1	3/16" x 1 1/2" x 21 3/4" STRAP IRON
5.	RAIL SUPT.	2	1/8" x 1" x 1" x 25" ANGLE IRON
6.	CAN BASE	1	1/8" x 2" x 2" x 6'-4" ANGLE IRON
7.	CASTOR	3	3" D HARD RUBBER WHEEL

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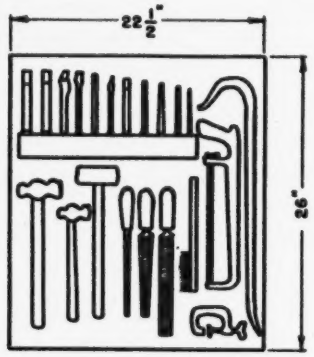
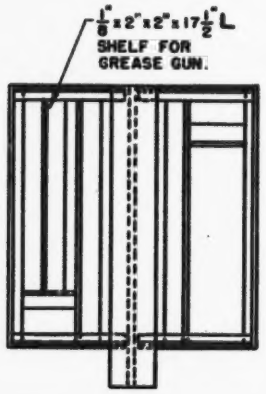
PORTABLE WASTE CAN AND BROOM RACK

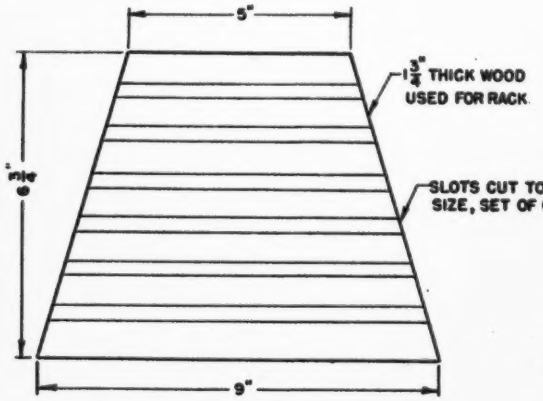
SCALE: 1/8" = 1"	DATE: JULY 27, 1959
DESIGNED BY: O.A.K., C.S.	DRAWN BY: GRE



LEFT PANEL DETAIL

(SHOWING TOOL ARRANGEMENT)



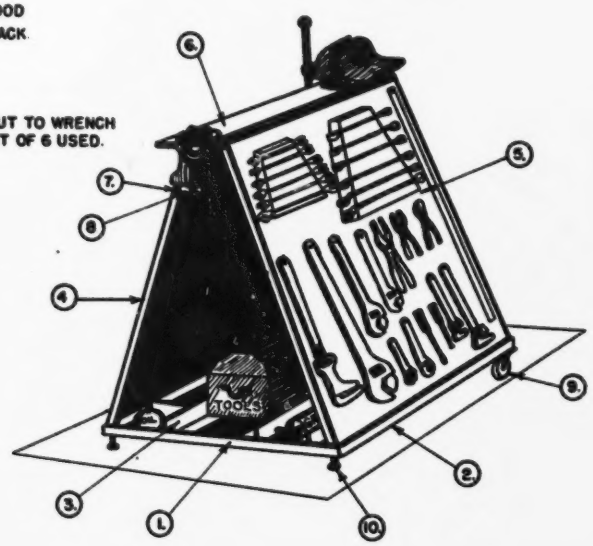


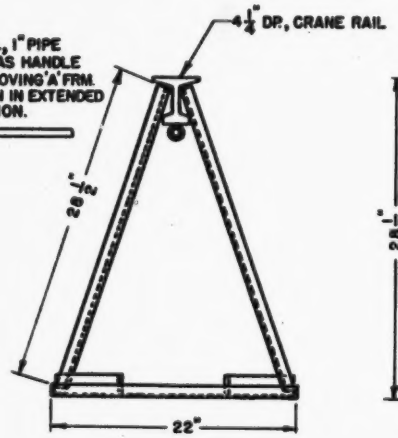
DETAIL B

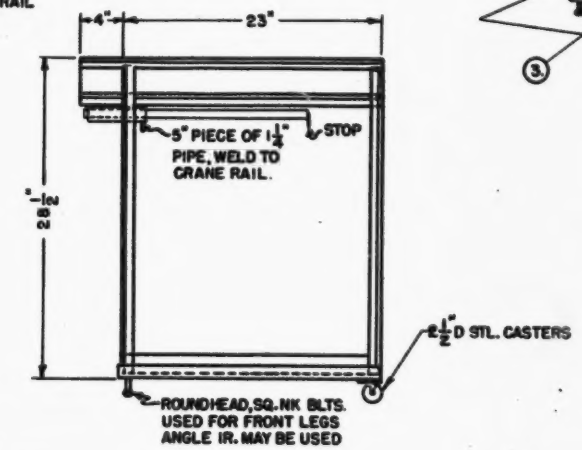
BOX-END WRENCH RACK

SCALE 1/2" = 1"

PERSPECTIVE

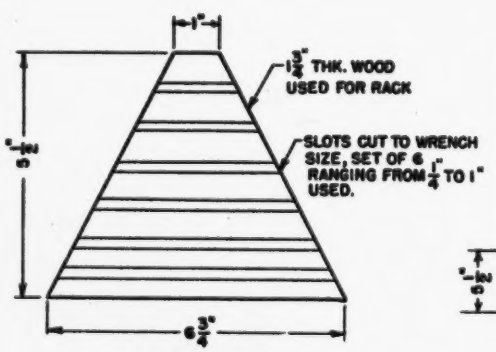






BILL OF MATERIALS

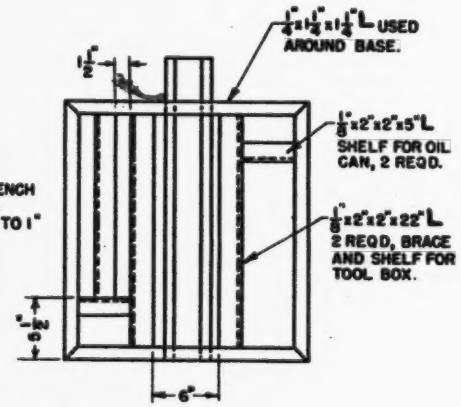
NO.	NAME	REQ'D	MATERIAL
1.	BASE ANGLE	2	1/4" x 1 1/4" x 1 1/4" x 22" ANGLE IRON
2	BASE ANGLE	2	1/4" x 1 1/4" x 1 1/4" x 23" ANGLE IRON
3	BASE SHELVES	1 PC.	1/8" x 2" x 2" x 6 FT. ANGLE IRON
4	PANEL SUPTS.	4	1/4" x 1 1/4" x 1 1/4" x 28 1/2" ANGLE IR
5	PANELS	2	3/8" x 22 1/2" x 26" PLYWOOD
6	CRANE RAIL	1	4 1/4" DP x 27" STEEL
7	HANDLE GUIDE	1	1 1/4" D x 5" PIPE
8.	HANDLE	1	1" D x 20" PIPE
9	CASTERS	2	2 1/2" D STL. USED (OPTIONAL)
10.	LEGS	2	1/2" RND. HD. BOLT (OPTIONAL)

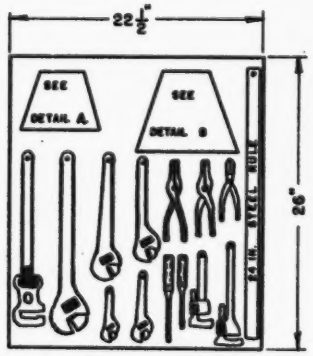


DETAIL A.

OPEN-END WRENCH RACK

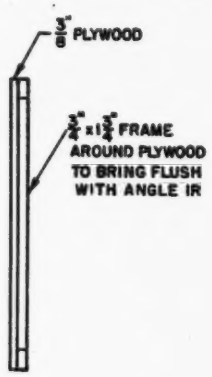
SCALE 1/2" = 1"





RIGHT PANEL DETAIL

(SHOWING TOOL ARRANGEMENT)



NOTE: ALL WELD CONSTRUCTION EXCEPT THE PLYWOOD TO ANGLE, VISE TO CRANE RAIL, AND RACKS TO PLYWOOD WHICH ARE BOLTED. TOOLS ATTACHED TO PLYWOOD PANELS BY SPRING CLIPS.

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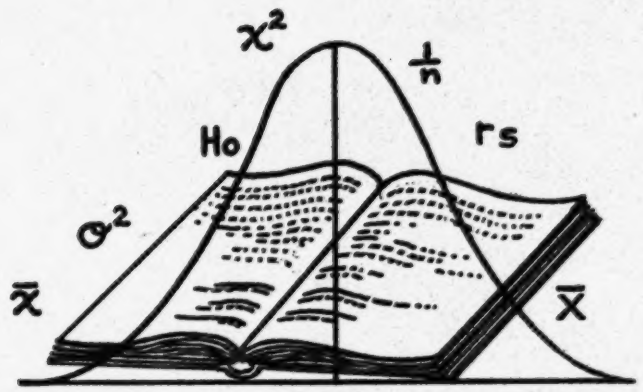
TOOL PANEL AND WORK STATION

SCALE 1/8" = 1"	DATE JAN 4, 1960
DESIGNED BY R.R.J. AND B.K.B.	DRWN. BY B.R.K.

ED013338

THE VOCATIONAL AGRICULTURE STUDENT AND HIS PEERS



LAWRENCE W. DRABICK

EDUCATIONAL RESEARCH SERIES NO. 1, 1963

DEPARTMENTS OF AGRICULTURAL EDUCATION
AND RURAL SOCIOLOGY

NORTH CAROLINA STATE, RALEIGH

VT 00136

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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OCCUPATIONAL AND EDUCATIONAL PLANS OF VOCATIONAL AGRICULTURE STUDENTS IN NORTH CAROLINA - A COMPARISON WITH OTHER STUDENTS

by Lawrence W. Drabick, Research Associate
Professor, Departments of Agricultural Education and Rural Sociology, North Carolina State, Raleigh

August, 1963

This study is a product of cooperative research programming by the Department of Agricultural Education and the Department of Rural Sociology, North Carolina State. Financial assistance was provided by the Vocational Education Section of the North Carolina Department of Public Instruction.

OCCUPATIONAL AND EDUCATIONAL PLANS OF VOCATIONAL AGRICULTURE STUDENTS IN NORTH CAROLINA - A COMPARISON WITH OTHER STUDENTS

INTRODUCTION

What occupational and educational plans have North Carolina students of vocational agriculture made for the future? Are their expectations consistent with their desires? Do they expect to enter occupations of high or low prestige? How many of them plan to attend college? In what ways do their backgrounds affect their choices and decisions? How do the plans of vocational agriculture students compare with those of students in other courses? Answers to such questions are necessary in order that the high school system of the state may provide the most effective education for young people in the most efficient manner and most attractive form.

This study investigates three facets of the occupational and educational desires and expectations of vocational agriculture students in North Carolina. These are: what vocational agriculture students would like to do and actually expect to do relative to future occupation and further education; the relationship of certain social and economic factors to occupational and educational plans; and the differences between the occupational and educational plans of vocational agriculture students and students from other curricula.

The sample, consisting of all male members of the senior class present on the day of the interview, was obtained in 23 high schools of the state. These represent each of the non metropolitan Economic Areas of the state, providing a representative sample. Within each Economic Area, the sample school was that with a student population nearest the average of all schools in the Area offering vocational agriculture. This procedure was followed for the 12 white and 11 Negro schools composing the sample. Although alternate schools were

designated, cooperation of the principals in the first-choice schools made possible their inclusion in each instance.

As reported here, the sample is divided on the basis of curriculum. A boy who had taken more than two years of vocational agriculture was designated in that category. A boy who had taken less than two years of vocational agriculture was not, all of the latter being combined in a category designated "other students." The "other student" category includes some boys who had taken one year of vocational agriculture because it was a mandatory Freshman course or because they were sampling the field. The few students who had taken two years of vocational agriculture were dropped from the sample rather than attempt to justify their inclusion in either category.

The interview schedule was based on questions probing both what the student would like to do and what he actually expected to do, occupationally and educationally. Additional questions were designed to provide insight into the background of these students which might aid in understanding the decisions to which they had come.

The Design of the Report

The report is divided into two major sections, one dealing with the response of white students and the other with that of Negro students. Due to the prevalent variance in economic condition and opportunity, any attempt to combine the data obviously would reduce the validity of the findings. In effect, the two groups are considered as separate samples about which similar deliberations are made.

The basis of the report is a comparison of response from those students classified as vocational agriculture students with the response from those who are not. Indicated levels of significance were obtained by the chi-square statistic. Comparisons of the student plans are followed by comparisons of their backgrounds. Each major section of the report terminates with conclusions.

WHITE STUDENTS

Occupational and Educational Desires and Expectations

Occupational Desires and Expectations

Students responded with the names of specific occupations in which they desired or expected to engage. To provide a standard of reference, these occupational titles were coded into prestige ranges according to a modified version of the North-Hatt scale. By means of this scale, it was possible to assign a score to each occupation given; i.e., school teacher 78, carpenter 65, truck driver 54. The per cent of vocational agriculture and of other students who both desired and expected to enter occupations of various prestige levels is indicated in Table 1. Let it be noted that the number of students responding in subsequent tables will vary, as not all respondents were able or willing to answer each question.

Table 1. Desired occupations and Expected Occupations, by Prestige Ratings

Prestige of Occupation, by Modified North-Hatt Scale	Per Cent of Students Who Desired Occupations of This Prestige Level		Per Cent of Students Who Expected Occupations of This Prestige Level	
	Vo-Ag (N=86)	Other (N=162)	Vo-Ag (N=84)	Other (N=162)
40-49	0.00	0.00	2.38	0.00
50-59	8.14	8.64	17.86	25.92
60-69	46.51	22.84	58.33	34.57
70-79	26.74	28.40	17.86	20.99
80-89	16.28	30.86	3.57	16.67
90-99	2.33	9.26	0.00	1.85

Desired Occupation - To determine the desired occupation of the student, each was requested to name the occupation he would prefer above all others of which he knew. Specifically, he was requested not to regard any hindrances to attainment of this position in naming it. Theoretically, the only limitation should be his knowledge of the range of alternative occupations.

Among vocational agriculture students there was a centrality of response in the prestige range of 60-69. Herein are grouped occupations such as machine operator in a factory, garage mechanic, policeman, and bookkeeper, to name just a few. Some vocational agriculture students named positions with prestige ranges higher than this, but the per cent in each successively higher range falls off radically.

"Other" students tended to name desired occupations with higher prestige ratings than did vocational agriculture students. The largest per cent was found in the range of 80-89, which includes such positions as author of novels, owner of factory employing about 100 people, minister and banker. In contrast to the distribution among vocational agriculture students, the per cent of other students in each prestige range increased as the prestige range became greater, except in the highest range.

The bulk of the vocational agriculture students named as most desirable occupations with relatively low prestige, with the per cent of response in each higher prestige position dropping off. The opposite obtained for the other students among whom the per cent of response increased as the prestige of occupation increased. The differences in prestige of desired occupations between vocational agriculture and other students were significant beyond the .001 level.

Expected Occupation - Respondents were requested to name the occupation in which they expected to engage upon completion of their education. For some this would be immediately following graduation from high school. For others it would involve some amount of post high school education. The per cent of response

distribution among occupational prestige ranges is shown in the right hand columns of Table 1.

Vocational agriculture students were grouped to large extent in the relatively low prestige occupations. Only 20% expected to enter occupations with prestige ratings in excess of 69. Other students named expected occupations in the higher ranges with more frequency, with 36% found above the 69 level. The difference in response between the two groups was significant beyond the .001 level.

It is observed that the prestige range of expected occupations is lower than that of the desired occupations for each student group. Practical problems prevent attainment of the occupations to which many students aspire. While half of the vocational agriculture students "desired" occupations with prestige ratings of less than 70, about three-quarters of them "expected" to move into occupations at this level. Similarly, only 29% of the students in other curricula desired occupations at this level, but 55% expected to be employed there.

The gap between desired and expected occupations was even greater for other students, precisely because they had greater aspirations initially. Reality forced each of the respondent groups to lower goals when transferring from desired to expected occupations, but the vocational agriculture students had initially expressed a lower plateau from which to retreat.

It should be pointed out that neophytes in the world of work do not have so many alternatives open to them as will be the case when they have become more experienced and better educated. Many of the respondents eventually may achieve the prestige levels to which they now aspire even though they must begin work at a lower level. These data cannot be interpreted as anything other than what they are, namely an expression of the respondents' expectations, as seniors in high school, for their first post-education occupations. It is not possible to draw conclusions from these data pertinent to the occupational prestige ratings of these groups at any time in the removed future.

Educational Desires and Plans

Desire to Attend College - Respondents were requested to state whether they would like to attend college, given a condition wherein there were no impediments to so doing. The results, along with other information concerning their college plans, is shown in Table 2. More than three-quarters of both the vocational agriculture and other students expressed a desire to attend college. There was a tendency for fewer vocational agriculture students to want to attend, but the difference was not statistically significant. It appears that all members of the sample share to large extent the cultural valuation attached to college attendance. They perceive it as valuable and desirable in a loose context where no proscriptions or sacrifices are associated with a positive response.

Table 2. Educational Desires, Educational Plans, and Ability to Name College of Attendance

Nature of Response	Per Cent of Students Who Desired to Attend College		Per Cent of Students Who Expected to Attend College		Per Cent of Students Who Were Able to Name College	
	Vo-Ag (N=90)	Other (N=173)	Vo-Ag (N=90)	Other (N=171)	Vo-Ag (N=88)	Other (N=170)
Positive	76.67	82.08	22.22	37.43	12.50	27.06
Negative	23.33	17.92	77.78	62.57	87.50	72.94

Plan to Attend College - To check on actual plans to attend a college, respondents were requested to state whether they planned to enter college in the fall following graduation from high school. Several restrictions were operative in the question. On the one hand, response was limited to four-year colleges. It is probable that a number of the respondents might attend business schools, two-year colleges or similar types of post high school educational institutions and from there filter into four-year institutions. But the number would be limited. On the other hand, a time limit was imposed by requesting a positive

response only from those who would matriculate in the fall. This was necessary to prevent optimism from generating an excessive number of positive replies. Perhaps a few individuals who do not move into college immediately will eventually be found there, but here too the number would be limited.

As would be expected, fewer persons actually planned to enter college than had expressed a desire to do so. Among the vocational agriculture students the decrease was larger than it was among the other students. Only 22% of the former indicated plans to attend college while 36% of the latter had such plans. This difference between the two groups was significant at the .02 level.

College of Attendance Named - As a final check on the probability that they would in reality be enrolled in a college in the succeeding fall, respondents were requested to name the college which they planned to attend. Among both groups, some of those who had indicated a plan to attend were unable to name the college. Since these students were left with a limited amount of time in which to make application and be accepted, it is doubtful that many of those unable to name a college in the spring actually would be in attendance in the fall. At this level of certainty, the per cent of students who could be expected to attend college was 12% for vocational agriculture students and 26% for other students. This difference was significant at the .05 level.

Background Factors - Occupational

Both theory and previous research have indicated a number of factors which are related to student occupational aspirations. We shall not attempt to test the relationship of these factors to the occupational desires and expectations of these students; but we shall determine whether the vocational agriculture students vary from other students with respect to a number of these factors. While our tests were not of such a nature that we may presume differences in background factors necessarily account for differences in occupational desires and expectations, background differences in such instances would lead to speculation concerning causality and should provide fruitful ground for further study.

Influences on Expected Occupation

Students do not make occupational decisions devoid of any influence from their surrounding environment. A number of questions were asked of the respondents to determine what those sources of influence might be and to investigate the variations in them between the student groups.

Sources of Influence - Students were asked to indicate the source of influence which had most affected their choice of an expected occupation, choosing from among an array of core family members and other persons with whom they might be in contact. The major finding was that these students in many cases did not recognize a source of influence outside of themselves, Table 3. Over half of the respondents in each group indicated that the expected occupation decision had been their own.

Table 3. Specific Sources of Influence Toward Student's Expected Occupation

Source of Influence	Per Cent of Vocational Agriculture Students Indicating Source (N=76)	Per Cent of Other Students Indicating Source (N=157)
Mother	3.95	2.55
Father	9.21	10.19
Sister	0.00	0.64
Brother	3.95	6.37
Relative	1.32	1.91
Friend	10.52	8.28
Teacher	5.26	6.37
Other	1.32	3.82
Own Decision	64.47	59.87

Those students who recognized an outside influential scattered their response among the possible sources in such a way as to absolve any one of a major responsibility. However, fathers were considered somewhat more influential than mothers, a finding not in agreement with some previous research. Also, a relatively small proportion of students from each group reported that a teacher had been influential in determining occupational choice, shattering an educational assumption of the part played by the teacher in formation of student opinions and resultant plans. This finding may be a result of increasing size and consequent depersonalization of current school systems. Friends, who may be inferred as members of the peer group, were cited as influential by a relatively large number of respondents; clearly, members of this sample are not adult-oriented.

The minor differences in sources of influence reported by the student groups were not significant.

Influence of High School Education Upon Occupational Expectation - To determine the part played by high school education in choice of an occupation, respondents were requested to state the amount of influence their high school education had had upon their occupational expectation. The results are shown in Table 4. Slightly more than a third of each group considered the influence to have been of major proportion while approximately an equivalent number assigned "some" influence in occupational expectation to their high school education. A bit more than one-fifth of each group concluded that their high school education had played essentially no part in formation of the occupational expectations held by them. There was no significant difference in the response of the two groups to this question.

Table 4. Influence of High School Education Upon Expected Occupation

Extent of Influence	Per Cent of Vocational Agriculture Students Indicating Extent (N=84)	Per Cent of Other Students Indicating Extent (N=160)
Great Deal	38.10	37.50
Some	39.29	38.75
Very Little	11.90	13.75
None	10.71	10.00

Parents' Attitudes Toward Expected Occupation - While perhaps not directly recognized by the students, the attitude of their parents toward occupational choices probably also works as a sort of influence upon the student's choice. To check this, students were requested to record their perceptions of the attitude of each of their parents to the occupation in which they expected to engage. Mother's and father's attitudes are shown separately in Table 5.

Table 5. Mother's and Father's attitude Toward Expected Position

Expression of Attitude	Per Cent of Students Perceiving Mother's Attitude in Specified Category		Per Cent of Students Perceiving Father's Attitude in Specified Category	
	Vo-Ag (N=81)	Others (N=159)	Vo-Ag (N=75)	Others (N=153)
Strongly agrees	32.10	28.30	37.34	30.07
Willing to accept	55.56	61.64	56.00	54.25
Doesn't care one way or other	3.70	6.92	4.00	12.42
Prefers something else	7.41	3.14	1.33	2.61
Very opposed	1.23	0.00	1.33	0.65

By small margins, fathers were perceived by students as being more strongly in agreement with their occupational expectations than were mothers. This relationship does not hold if response from "strongly agrees" and "willing to accept" are combined in a "favorable" category. When this condition prevails mothers were perceived as more favorably disposed toward occupational expectation by all students. It would appear, however, that there was no meaningful difference between the perceived attitude of mothers and fathers toward expected occupations.

It is evident that students perceived little conflict with their parents regarding expected occupations. Whether this was a reflection of student acquiescence with parental expectations or a willingness of parents to accept student decisions cannot be determined from these data. However, based upon the students' observation that they composed their own greatest source of influence toward expected occupations one might infer that the latter is the case. Regardless of which explanation is correct, upwards of 80% of perceived parental reaction was favorable to student expectation, and there was essentially no student perception of extreme parental opposition to occupational choices.

By a narrow margin, vocational agriculture students tended to see their parents as strongly in agreement with their occupational expectation more frequently than did other students. However, differences between the two groups were minor in response to both mother's and father's attitudes and not statistically significant.

Migration

Migration, both internal and external, has been a prominent part of the social ecology of North Carolina during the lifetime of most of these respondents. Many of these students will be caught up in the movement occurring about them. In some cases, it may be mandatory that they leave their home communities in order to follow the occupations in which they expect to engage.

Need to Migrate - The majority of schools in which interviews were conducted were located in open country or in small towns. Since occupational expectation might necessitate a move to areas offering the positions in which they expected to engage, students were requested to indicate the necessity of migration to pursue their occupational choices. The results are shown in Table 6; more than two-fifths of all students felt that they would be obliged to migrate. Somewhat fewer of the vocational agriculture students believed themselves to be under this compulsion, but the difference was not significant.

Table 6. Necessity to Migrate to Engage in Expected Occupation

Necessary to Migrate	Per Cent of Vocational Agriculture Students (N=83)	Per Cent of Other Students (N=159)
Yes	44.58	51.57
No	55.42	48.43

Intention to Migrate - The possibility that these students might plan to leave the community of residence even though not compelled to do so to follow their occupational choices was examined and the results are shown in Table 7. There is little difference from response under the compulsion of occupational choice and it appears that occupational pressures account for most of the migrational intentions of this sample. A few more vocational agriculture students plan to leave than must but the number of other students remains the same. Among both groups a few more students were able to respond to this question than had replied to the question about necessity for moving. Most of these show up in the category of planning to remain in their home community.

Table 7. Intention to Migrate

Plan to Migrate	Per Cent of Vocational Agriculture Students (N=89)	Per Cent of Other Students (N=163)
Yes	43.82	50.31
No	56.18	49.69

Differences in intention to move were not statistically significant in comparison of the two groups. But there is considerable meaning to the communities involved, for about half of the male senior population of the high schools expressed an intent to leave.

Differences Between Desired and Expected Occupations

It has been shown that there were differences in the prestige of desired and expected occupations for these respondents. Generally, the prestige of desired occupations was higher. The next several paragraphs deal with tests of the extent and direction of these differences between vocational agriculture students and others.

Extent of Differences - Differences in prestige of desired and expected occupations are shown in classifications of ten points in Table 8. More vocational agriculture students than other students reported expected occupations which did not vary in prestige from that of their desired occupations. Despite this, many vocational agriculture students were represented in the categories indicating much difference in prestige between desired and expected occupation. Apparently contradictory, these findings may be reconciled on the basis that vocational agriculture students will in fact engage in occupations of lesser prestige than will students in other curricula. Reality may have served to

depress the desires of some students, causing them to name desired and expected occupations of about equal prestige values. For those vocational agriculture students who let imagination take the reins and named a high prestige desired occupation, reality may have come into play when naming an expected occupation, resulting in high per cents of these students in the categories of large prestige differential.

Table 8. Difference in Prestige of Desired and Expected Occupation

Amount of Difference	Per Cent of Students Responding	
	Vo-Ag (N=68)	Others (N=111)
No difference	39.71	27.03
1-9 points	17.65	27.03
10-19 points	23.52	23.42
20-29 points	17.65	15.32
30-39 points	1.47	6.30
40-49 points	0.00	0.90

Other students also expressed expectations of obtaining occupations lower in prestige than those they desired. Each student group is exposed to the same dilemma - a theoretically open society in which there are practical limitations on achievement.

The differences in amount of prestige of desired and expected occupation between vocational agriculture and other students were not statistically significant.

Direction of Differences - The data on the direction of prestige differentials between desired and expected occupation were not completely satisfactory. However, they did indicate that considerably more students expected occupations which will

be lesser in prestige than those they would like to have. Differences in direction of occupational prestige between vocational agriculture and other students was not significant.

Some Miscellaneous Factors

Comparison of Prestige of Student's Expected Occupation and Father's Current Occupation - More than half of all students expected to begin employment in occupations of equal or superior prestige to those held by their fathers, Table 9. The vocational agriculture students did not exhibit quite so much optimism as did the others. The difference between the student groups was not significant.

Table 9. Difference in Prestige, Expected Occupation of Student and Current Occupation of Father

Prestige Difference	Per Cent of Students Responding	
	Vo-Ag (N=78)	Other (N=150)
Father's higher, 30 or more points	0.00	0.00
Father's higher, 20-29 points	3.85	0.67
Father's higher, 10-19 points	15.39	10.66
Father's higher, less than 10 points	21.79	20.67
No difference	16.67	10.66
Student's higher, less than 10 points	26.92	24.67
Student's higher, 10-19 points	12.82	22.00
Student's higher, 20-29 points	1.28	6.00
Student's higher, 30 or more points	1.28	4.67

Prestige of Father's Occupation - Slightly more of the fathers of other students were engaged in occupations with prestige ratings of 70 or above, Table 10, but for the most part the fathers of the students in the sample had

occupations with prestige ratings below 70. The difference in prestige of occupations held by fathers of vocational agriculture and other students was significant at the .001 level. This difference resulted in large part from the fact that greater numbers of the fathers of other students were in the lower prestige range, although they also were found more frequently in the upper prestige levels. The occupational prestige ratings of the fathers of vocational agriculture students clustered markedly in the 60-69 range.

Table 10. Prestige of Occupation Engaged in by Father

Prestige Category of Father's Occupation	Per Cent of Students Responding	
	Vo-Ag (N=84)	Other (N=164)
40-49 points	1.19	1.22
50-59 points	15.48	32.92
60-69 points	75.00	50.00
70-79 points	7.14	12.20
80-89 points	1.19	3.05
90-99 points	0.00	0.61

Certainty That The Student will Enter Expected Occupation - Vocational agriculture students were not as certain as others about entering the occupation they had indicated, Table 11. Seventy-eight per cent of other students either were certain or in the belief that they will enter the expected occupation as opposed to 73% of the vocational agriculture students. This difference may be meaningful but it was not statistically significant.

Table 11. Certainty on Part of Student of Entry Into Expected Occupation

Certainty of Entry	Per Cent of Student Responding	
	Vo-Ag (N=74)	Other (N=143)
Certain will enter	14.86	23.08
Believe will enter	58.12	55.24
Not sure	27.02	21.68

Background Factors - Educational

The educational hopes and plans of young people are known to be related to a number of other factors. For example, children from homes where one or both parents have attended college are more apt to go to college themselves. A number of factors which may be presumed to be in some way associated with educational desires or plans have been selected and the students from different curricula compared upon them. Any differences shown between the student groups should be regarded as informative rather than causative. Further research would be necessary to establish causality.

Influences Affecting Educational Intentions

Sources of Influence - Student perception of the source of greatest influence upon their college decision is shown in Table 12. This influence may be either positive or negative, for respondents were requested to answer regardless of their college attendance intention.

Students mainly perceived this as a choice they made themselves. Those who indicated some reliance upon an outside source failed to group their response around any particular individual, although mothers were the single most important outside influential. As in the decision concerning occupation, but even more surprising because of the linear relationship, teachers were accorded a minimal role as influentials despite the fact that they ranked right behind mothers for vocational agriculture students and behind mothers and fathers for other students.

Table 12. Sources of Influence Upon College Decision

Source of Influence	Per Cent of Students Responding	
	Vo-Ag (N=75)	Other (N=152)
Mother	6.67	15.13
Father	2.67	10.54
Sister	0.00	0.00
Brother	1.33	2.63
Relative	1.33	1.97
Friend	4.00	2.63
Teacher	5.33	3.95
Other	0.00	1.97
Own decision	78.67	61.18

There are some differences indicated in the source of influence upon college decision of vocational agriculture and other students. When sources of influence were grouped under headings of "core family," "others," and "self," the difference was significant at the .01 level. This basically was a result of the tendency of the vocational agriculture students to rely more upon their own judgment and less upon the influence of their families.

Influence of High School Education Upon College Decision - Apparently the experience of the individual in the high school is greatly influential in his decision of whether to attend college, Table 13. This would appear to be so in either case, for most of the students in this sample did not plan to attend college, yet an overwhelming per cent of them indicated that their high school education had influenced this decision. Are some students being deterred from a decision to enter college by unfavorable experiences in high school? If so, it would be a consequence of major proportions.

Table 13. Influence of High School Education Upon College Decision

Extent of Influence	Per Cent of Students Responding	
	Vo-Ag (N=86)	Other (N=164)
Great Deal	46.51	48.78
Some	37.21	28.05
Little	8.14	13.41
None	8.14	9.76

There were some minor differences in the extent to which vocational agriculture and other students believed that high school had influenced their college decision. However, the differences were not significant.

Mother's Attitude Toward College Decision - Most of the students perceived their mothers as favorably disposed toward college decision, Table 14. Mothers of vocational agriculture students were not as often in strong agreement with this decision as were mothers of other students. Also, mothers of vocational agriculture students were more frequently in disagreement with this decision than were mothers of other students. However, the prevailing opinion among both groups of students was that their mothers were by and large either strongly in agreement with or willing to accept the decision to which the student had come. Few of the students believed their mothers not to care about their decision, with vocational agriculture students indicating less apathy on the part of their mothers than did other students. There was a tendency for the mothers of vocational agriculture students to agree strongly with the college decision in fewer cases and to disagree with it more frequently than did mothers of other students. However, this trend was not sufficiently large to result in statistical significance.

Table 14. Mother's and Father's Attitude Toward College Decision

Expression of Attitude	Per Cent of Students Perceiving Mother's Attitude in Specified Category		Per Cent of Students Perceiving Father's Attitude in Specified Category	
	Vo-Ag (N=84)	Other (N=158)	Vo-Ag (N=78)	Other (N=154)
Strongly agrees	27.38	37.97	21.79	35.06
Willing to accept	51.19	40.50	55.14	38.96
Doesn't care one way or other	2.38	7.60	7.69	11.69
Disagrees	16.67	12.03	12.82	14.29
Opposed	2.38	1.90	2.56	0.00

Father's Attitude Toward College Decision - Fathers were regarded by most students as basically in agreement with their college decision, although not to quite the same extent as were mothers. Fathers also were perceived as apathetic toward college decision in more instances than were mothers. However, the prevailing opinion of students was that fathers were favorably disposed toward the college decision.

The fathers of vocational agriculture students were in strong agreement with the college decision to lesser extent than were the fathers of students in other categories. However, when the categories of "strongly agree" and "willing to accept" were combined into a favorably disposed" classification, the small difference favors the vocational agriculture students. To very slight extent, fathers of vocational agriculture students were less apt to be apathetic or opposed to the college decision than were fathers of other students.

There is a trend in these data for the fathers of vocational agriculture students to be less often in strong agreement with the college decisions of their sons. However, the chi-square value lies between that for the .10 and .05 levels of acceptance and is not considered significant.

Comparisons of Father's Education

Educational Achievement of Fathers - There were no statistically significant differences in the educational achievements of the fathers of vocational agriculture and other students, Table 15. A somewhat greater per cent of the fathers of the latter had completed college or had achieved at least some post high school education, but the difference was small. The population cohort comprising the fathers of these students had attained a rather limited educational level. About one quarter of them had completed high school, with another quarter having 8 grades of schooling. More than one-fifth had not even that amount of formal education.

Table 15. Education Achievement of Student's Father

Level of Father's Education	Per Cent of Students Responding	
	Vo-Ag (N=87)	Other (N=173)
College graduate	2.30	6.94
Attended college	5.75	4.05
Jr. college graduate	0.00	0.00
Attended Jr. college	0.00	1.16
High School graduate	24.14	26.59
Attended high school	24.14	16.75
Completed 8 years	22.98	21.97
Less than 8 years	20.69	22.54

Comparison of Student's Educational Aspiration with Father's Educational Achievement - By their presence as seniors in high school, something like two-thirds of these students already had surpassed the educational achievement of their fathers. It is not surprising therefore that the educational aspirations of these students was in excess of the achievements of their fathers in the majority of cases, Table 16.

Table 16. Comparison of Father's Educational Attainment and Student's Educational Aspiration

Relationship of Father's Education to Student's Educational Aspiration	Per Cent of Students Responding	
	Vo-Ag (N=87)	Other (N=171)
No difference	16.09	19.88
Father's achievement lesser	79.31	76.61
Father's achievement greater	4.60	3.51

Both vocational agriculture and other students expected to achieve greater educational goals than had their fathers, and in about equal proportions. Somewhat fewer of the vocational agriculture students expected their educational achievements to be the same as those of their fathers than was the case among other students. On the other hand, slightly more of the vocational agriculture students aspired to lesser education than had been attained by their fathers, while at the same time slightly more of them believed they would achieve more education than had their fathers. This apparently contradictory relationship between the student groups is relative and stems from the large proportion of other students who expected their educational attainment to equal that of their fathers. However, differences between the two groups were small in each instance and not statistically significant.

Effects of Planning to Farm Upon Educational Intentions

Previous studies have indicated that planning to farm has a depressing effect upon educational intentions. Boys who plan to farm evidently do not perceive as great a need for a college education as do those whose occupational plans lie in other fields of endeavor.

These data have been analyzed to determine the effects of planning to farm upon the educational intentions of the students. On the one hand, investigation was limited to the intentions of boys in vocational agriculture. On the other, students in vocational agriculture were compared to those in other courses. In the latter instance, the other students included five boys who indicated an intention to farm. They constitute so small a proportion of the respondents that it is not believed they influence the findings.

Comparisons Among Vocational Agriculture Students - Vocational agriculture students were grouped according to whether they planned to farm, and their desire to attend college, plans to do so, and ability to name a college of potential attendance were compared. Of the 90 respondents who were categorized as vocational agriculture students, 16 indicated an intention to farm.

Intention to farm was associated with a depressed desire to attend college, as shown in the left hand columns of Table 17. Many fewer of those vocational agriculture students planning to farm indicated a wish to attend. This trend was not quite sufficiently strong to be statistically significant.

Table 17. Effects of Planning to Farm Upon Educational Plans, Vocational Agriculture Students

Nature of College Decision	Per Cent of Students Who Would Like to Attend College		Per Cent of Students Who Plan to Attend College		Per Cent of Students Who Named College of Attendance	
	Plan to Farm (N=16)	Do Not Plan to Farm (N=67)	Plan to Farm (N=16)	Do Not Plan to Farm (N=67)	Plan to Farm (N=16)	Do Not Plan to Farm (N=66)
Positive	56.25	80.60	18.75	20.90	12.50	10.61
Negative	43.75	19.40	81.25	79.10	87.50	89.39

Planning to farm had little effect on plans to attend college, as indicated in the center columns of Table 17. A larger per cent of those who did not expect to farm planned to enter college, but the difference was slight and not significant.

There was little difference in ability to name college of attendance between those vocational agriculture students who planned to farm and those who did not, right hand columns of Table 17. In either case, the per cent of those planning to be in college was rather small. The difference was not significant.

Comparisons of Vocational Agriculture Students Who Do Not Plan to Farm With Other Students - Vocational agriculture students not planning to farm expressed a desire to attend college in about the same proportion as did students in other courses. Most of them would like to do so. The difference in expressed desire was minimal and not of statistical significance, Table 18.

Table 18. Effects of Planning to Farm Upon Educational Plans, Vocational Agriculture Students Who Do Not Plan to Farm and Other Students

Nature of College Decision	Per Cent of Students Who Would Like to Attend College		Per Cent of Students Who Plan to Attend College		Per Cent of Students Who Named College of Attendance	
	Vo-Ag (N=67)	Other (N=173)	Vo-Ag (N=67)	Other (N=171)	Vo-Ag (N=66)	Other (N=170)
Positive	80.60	82.08	20.90	37.43	10.61	27.06
Negative	19.40	17.92	79.10	62.57	89.39	72.94

On the other hand, vocational agriculture students not intending to farm planned to attend college in fewer numbers than did students in other courses, the difference was significant at the .05 level.

Students in other courses also were able to name the college they would attend in greater proportion than were vocational agriculture students not planning to farm, the difference being in a ratio of about 2 1/2 to 1, which proved significant at the .02 level.

Comparisons of Vocational Agriculture Students Who Plan to Farm with Other Students - When vocational agriculture students who expected to farm were compared with other students, it was found that the former responded less frequently with a desire to attend college, Table 19. Even though more than half of these vocational agriculture students wished to attend college, the difference between their response and that of the other students was significant at the .05 level.

Table 19. Effects of Planning to Farm Upon Educational Plans, Vocational Agriculture Students Who Plan to Farm and Other Students

Nature of college decision	Per Cent of Students Who Would Like to Attend College		Per Cent of Students Who Plan to Attend College		Per Cent of Students Who Named College of Attendance	
	Vo-Ag (N=16)	Other (N=173)	Vo-Ag (N=16)	Other (N=171)	Vo-Ag (N=16)	Other (N=170)
Positive	56.25	82.08	18.75	37.43	12.50	27.06
Negative	43.75	17.92	81.25	62.57	87.50	72.94

Comparing these two student groups on the basis of their plan to enter college revealed a different relationship. Although the vocational agriculture student expressed plans to enter college less frequently than did the other students, the difference was not sufficiently large to be significant.

Vocational agriculture students planning to farm were able to name the college of attendance less frequently than were students in other courses, in a ratio of about 1 to 2. While these differences are meaningful to persons responsible for the educational attainments of these young people, they are not statistically significant.

A Word of Explanation - It is necessary to take a closer look at these findings concerning the relationship between intent to farm and educational plans, for at first glance they seem somewhat contradictory.

There is a discrepancy within the vocational agriculture sample in that the respondents planning to farm express a desire to attend college much less frequently than do those not intending to farm, as seen in Table 17, but are able to name a college of attendance in a greater number of instances. It is possible only to guess at the reasons for this finding. It may be that those who plan to farm have reduced the number of alternatives open to themselves. They either will go to college prior to entering farming or they will not, while the boy who does not plan to enter farming is at this point not yet certain of what he will do. This leaves him free to believe that he would benefit from attendance at college and results in an expression of a desire to attend - a step which has lost its attraction to the boy committed to move directly into farming. As these two groups are requested to state their plans to attend college the per cent responding in the positive becomes more similar, perhaps as reality begins to influence expressions more directly. Finally, when it is necessary to state the college at which the individual will be in attendance, the undecided among the respondents not planning to farm are weeded out more ruthlessly, leaving this group with a smaller net total able to express a strong degree of commitment to college attendance.

In their educational intentions, the vocational agriculture students, whether planning to farm or not, were more like one another than like the students in other courses. It will be noted in Tables 18 and 19 that many fewer vocational agriculture students than other students stated a plan to attend college or were able to name a college of attendance. These differences were significant in comparison of the vocational agriculture students who did not plan to farm and were not significant in comparison of the vocational agriculture students who did plan to farm. But the levels of significance

were not high and the chi-square values resulting from each vocational agriculture group comparison were not much different. The point is that both vocational agriculture groups planned college attendance in considerably lesser numbers than did students in other courses. The fact that vocational agriculture students planning to farm were more nearly like other students in educational intention is meaningful and should not be neglected, but the importance of it should not be overemphasized.

Background Factors - Miscellaneous

There are a number of other factors upon which to analyze the response of students in the sample. It is believed that these factors are related to occupational and educational intentions of the respondents although it is not possible to draw those conclusions as a result of the data here presented.

For example, the educational aspirations of vocational agriculture students were not as great as those of students from other courses. If it were to be determined that vocational agriculture students planned to marry more quickly than other students, a relationship could be surmised even though the directional effect could not be determined. Two such factors are investigated - immediacy of marriage, and intelligence.

Immediacy of Marriage - Students in vocational agriculture planned to marry more quickly than did those in other courses, Table 20. There was little difference in marriage plans for the first year following graduation from high school; among both groups a small per cent either already was married or on the verge. But during the second and third years following graduation the vocational agriculture students expected to marry in greater number than other students. The latter planned to delay their marriages until the sixth year or later in much greater numbers than did vocational agriculture student, probably because of greater intention to attend college or because they aspired to occupational eminences to which they would regard early marriage as a hindrance.

Table 20. Anticipated Number of Years Until Marriage

Number of Years	Per Cent of Student Responding	
	Vo-Ag (N=86)	Other (N=167)
1	3.49	4.19
2-3	30.23	12.57
4-5	36.05	31.14
6-10	22.09	37.13
More than 10	8.14	14.97

The differences in immediacy of marriage between these two groups were significant at the .01 level. When marriage plan categories were reduced to less than five years and more than five years, the level of significance remained .01. But when those who intended to marry in 1-3 years were compared to those who expected to delay marriage more than five years, the significance level increased to .001. In other words, the greatest differences were between those foreseeing marriage quite soon after completing high school and those who plan to put off marriage for more than five years, or just about sufficient time to complete college and get established in an occupation.

Intelligence - It has been established by much research that there is a direct correlation between intelligence and aspiration. The more intelligent the individual, the greater the prestige of the occupation toward which he will plan and the larger amount of formal post-high school education he will seek. Since it was found that the vocational agriculture students did not aspire as highly occupationally and educationally as did the other students, the obvious question was whether the vocational agriculture students differed in intelligence from other students. Table 21 shows the results of this investigation.

Table 21. Comparison of Intelligence Quotients, by Ranges

I Q Range	Per Cent of Students Responding	
	Vo-Ag (N=85)	Other (N=170)
70-79	8.23	2.35
80-89	16.47	11.18
90-99	30.59	30.59
100-109	30.59	25.88
110-119	12.94	24.12
Above 119	1.18	5.88

The per cent of students with IQs in the 70-89 range was greater among the vocational agriculture group and the per cent of students with IQs of 110 and above was greater among the other students. The two groups were roughly equivalent in the IQ range 90-109. The differences were significant at the .05 level when tested across the complete array. In a test utilizing only the ranges 70-89 and 110 plus, the difference was significant at the .01 level.

Residence - A residence differential between vocational agriculture and other students would be expected and proved to be operative, Table 22. The difference was in the expected direction with a greater proportion of vocational agriculture students living on farms than was true of other students. The difference was significant at the .001 level.

Table 22. Comparison of Residence

Place of Residence	Per Cent of Students Responding	
	Vo-Ag (N=90)	Other (N=176)
Town or city of 2500 or more	5.56	13.64
Town or city of less than 2500	7.78	22.73
Open country, not a farm	24.44	34.09
Farm	62.22	29.55

Conclusions

White, male, senior vocational agriculture students in North Carolina aspire to occupations of lesser prestige than do their contemporaries in other courses. They both desire and plan to enter occupations which do not rank as high on a prestige scale as do those named by other students. At the same time, vocational agriculture students plan to attend college in lesser proportions than do other students and are able in fewer instances to name a college which they will attend. This latter in spite of the fact that they express themselves as desirous of a college education as frequently as do others.

In contrast to findings of other research, the differences in aspirations of vocational agriculture and other students do not seem to be a direct result of differences in socio-economic factors. The two student groups differed significantly in but a few of these variables and could be considered as drawn from the same population in most instances.

Social class differences were tested by comparing the occupational and educational attainments of the fathers of these students. There was no significant difference in education and the significant finding for occupational prestige differences was as much a result of lower occupational prestige rankings for fathers of other students as it was of the fact that the fathers of other students were more frequently found in occupations bearing higher prestige. Socio-economic, or class, differences between vocational agriculture and other students were no better than a stand-off. It would be difficult to believe that differences in student aspirations derived therefrom.

Vocational agriculture and other students differed significantly on several variables: other students tended to believe their parents to have been a major source of influence upon the college decision more frequently than did vocational agriculture students; vocational agriculture students more frequently

were from farm residences; vocational agriculture students more frequently believed that they would be married within three years following high school graduation. None of these factors can be considered causative of occupational and educational aspiration differences although the latter two probably are quite directly related to them.

There were differences in intelligence of the two groups which are meaningful in the context of differentiated aspirations. As derived from IQs supplied by the schools in which the students were in attendance, vocational agriculture students were disproportionately represented in the lower intelligence ranges. Since it is known that intelligence and aspiration are related, even causally, it is quite probable that the differences in aspirations of these student groups are mainly a result of differences in intelligence. If this indeed is the case, it is a finding to which attention should be given, for there is reason to believe that this difference will become greater in the future. Guidance teachers are prone to steer better students (that is, the more intelligent) out of vocational courses. With the advent of guidance programs in a greater number of rural schools, it may become increasingly difficult to get boys of higher than average intelligence into vocational agriculture courses. Given the constantly more complex nature of farming and the increased competencies necessary to operate a commercial farm, a condition wherein only boys of lower intelligence could enter the program would to large extent obviate its value.

In elaboration of this point, it should be noted that those boys in vocational agriculture who planned to farm were most like other students in educational aspirations. Although they planned to attend college less frequently than did other students the difference was not significant, as it was for those vocational agriculture students who did not plan to farm. Evidently those vocational agriculture students who planned to farm were more aware of the need for advanced education, and quite probably were better able to benefit from it.

Although they may not have been very realistic in their appraisal, most of the students believed themselves to have been responsible for their occupational and education decisions. While a majority believed their high school education to have been a "great deal" or "some" help in determining the occupation into which they would go or whether to attend college, well over half believed the ultimate decision to have been their own. They named no other source as being of major importance with the possible exception of their mothers, who were accorded some importance as a source of influence in the college decision.

Despite the indicated independence in decision-making, most of the students believed their parents to be in agreement with their occupational and educational decisions. This may indicate only that parents are willing to accept student decisions, but there is equally good reason to believe that parental attitudes may have played a perhaps unconscious part in the student's decision-making process. Very few students, indeed, perceived their choices to be in opposition to the wishes of their parents. This condition, although limited, was more evident among vocational agriculture students.

The general impression of students in the sample is that they are "on the make." By far the most of them expect to go into occupations of higher prestige than those occupied by their fathers. And beyond dispute most of the students in the sample already have exceeded the educational achievements of their fathers. Although the high drop-out rate in North Carolina schools serves to bias this sample toward the more upwardly mobile students, the impression still emerges that current students are exceeding the educational attainments of their fathers. A further indication of student orientation toward advancement is the fact that half or more expect to migrate from their home communities, mainly in order to pursue occupations not locally available.

These students appear to be carriers of the common culture values that education is a good thing and the more the better, that every person can do better in life than have his parents, and that striving will result in attainment. These beliefs may have led many to adopt overly sanquine attitudes. The occupational and educational goals expressed may often be out of reach. Many aspire to attainments which they do not actually expect to achieve. Others probably will not reach the goals which they named as expected. Certainly, most students will require additional experience and knowledge before their expected occupational goals become realistically attainable.

It is obvious from these data that high school represents terminal education for most youth in North Carolina. In fact, many have terminated their formal education short of high school graduation. This raises a question concerning the basic objectives of the high school program. In many schools, both program and guidance emphases are upon continuation of formal education at the college level. In view of the limited number of students who actually attend college, such emphasis is of questionable wisdom. It would appear that a major need in the high school program is provision of additional alternative routings specifically designed for the student who will become a member of the labor force immediately upon leaving school, whether via graduation or otherwise. The extent to which such alternatives are provided, and the practical nature of them, may decide the technical, industrial and social progress of North Carolina for the next several generations.

If there is a major difference between vocational agriculture and other students, in addition to intelligence, it is an amalgam of several characteristics which might be combined under the heading of stability. In comparison to other students, vocational agriculture students do not aspire as highly either in occupation or education, there is not as great a difference between their occupational and educational desires and expectations, they do not plan to move from their home community as frequently, and they expect to marry sooner,

presumably to settle down as core families in the local community. While at least the latter two characteristics usually are considered as virtues, they could represent stolidity rather than stability and do not necessarily contribute to the welfare nor the advancement of the community. It may be that the vocational agriculture students are to a lesser degree the doers, the movers, the contributors to society.

It is necessary in closing this section to comment once more upon the relative homogeneity of the two student groups. There are tendencies toward differentiation between them on a number of the variables mentioned in the body of the report, but in only a few instances were those differences statistically significant. By and large, the students could be considered as drawn from the same population, having the same characteristics, and expressing the same attitudes and intentions. However, the expressed differences in aspiration and the revealed differences in intelligence are meaningful and demand appropriate response by teachers and administrators.

NEGRO STUDENTS

Introduction

Of the male Negro seniors in the sample, 114 had taken more than two years of vocational agriculture and were designated as vocational agriculture students; 51 had taken less than two years of that subject and were designated as other students. Comparison is here made of the occupational and educational desires and expectations of these groups. They also are compared on a number of potentially related background variables. The chi-square test of significance was applied to differences in response. The N in the following tables infrequently reflects the full number of respondents, for some were unable or unwilling to respond to almost each question.

Occupational and Educational Desires and Expectations

Occupational Desires and Expectations

Respondents were requested to name both the occupation which they would most like to have if there were no impediments to its attainment and the occupation they expected to enter upon completion of their education. The prestige of the occupations given was derived from a modified version of the North-Hatt occupational prestige scale. The per cent of response categorizing into various prestige ranges is shown in Table 23 for both desired and expected occupations.

Desired Occupations - The occupations desired by vocational agriculture students tended to cluster in the relatively low prestige area, with the single greatest per cent occurring in the range of 60-69. The other students named desired occupations of higher prestige, with the greatest per cent in the 70-79 range. Far fewer of the other students named occupations in the 50-59 range than did vocational agriculture students, although there was little

difference in the frequency with which members of the two groups named occupations in the 80-99 range. The differences in prestige of desired occupation named by vocational agriculture and other students was significant at the .02 level by chi-square analysis.

Table 23. Desired Occupations and Expected Occupations, by Prestige Rating

Prestige Rating of Occupation	Per Cent of Students Who Desire Occupation of This Prestige Level		Per Cent of Students Who Expect Occupation of This Prestige Level	
	Vo-Ag (N=100)	Other (N=42)	Vo-Ag (N=97)	Other (N=45)
40-49	1.00	0.00	2.06	0.00
50-59	20.00	2.38	31.96	17.78
60-69	34.00	26.19	37.11	28.89
70-79	21.00	42.86	19.59	40.00
80-89	17.00	21.43	5.15	13.33
90-99	7.00	7.14	4.13	0.00

Expected Occupations - More than two thirds of the vocational agriculture students expected to enter occupations with prestige ratings below 70. At the other end of the scale, less than 10% expected to enter occupations with a prestige exceeding 80. The other students saw a somewhat brighter occupational future, as less than half expected to enter occupations scoring less than 70 in prestige. The greatest number of other students expected to engage in occupations in the 70-79 prestige range, with only slightly more expecting occupations in the range of 80-99 than was the case for vocational agriculture students. The difference in expected occupation prestige scores between the student groups was significant at the .02 level.

It is of interest to note the difference between prestige scores of desired and expected occupations for these respondents. As expected on the basis of previous research, there was a strong trend downward from desired to expected scores. For example, 55% of the vocational agriculture students named desired occupations scoring less than 70, but 71% named expected occupations in that range. Among other students, the comparable figures were 28% and 46%. These differences represent a sociological phenomenon known by the descriptive title of the "ideal and the real." In effect they show the difference between what the student would like to do if there were no limitations upon his power to achieve goals and what he believes it is likely that he shall be able to accomplish within the restrictions of the environment. The difference in prestige scores between desired and expected occupations serves a more pragmatic purpose also, for they are a proof of the validity of response to the study schedule.

Educational Desires and Plans

Desire to Attend College - Most of these respondents would like to attend college if it were possible, Table 24. More than 90% of both the vocational agriculture and other students so indicated. In effect, there was no difference in educational desire between the groups and the chi-square value was not significant.

Table 24. Educational Desires, Educational Plans, and Ability to Name College of Attendance

Nature of Response	Per Cent of Students Who Desire to Attend College		Per Cent of Students Who Expect to Attend College		Per Cent of Students Who Are Able to Name College of Attendance	
	Vo-Ag (N=109)	Other (N=51)	Vo-Ag (N=111)	Other (N=51)	Vo-Ag (N=112)	Other (N=51)
Positive	91.74	90.20	33.33	52.94	25.89	50.98
Negative	8.26	9.80	66.67	47.06	74.11	49.02

Plan to Attend College - Fewer students expected to attend college than had named a desire to attend, with attrition greater among vocational agriculture than among other students. One-third of the former stated that they planned to attend a four-year college immediately following high school graduation, as compared to somewhat more than half of the latter. Despite the relatively large per cent of each group planning to attend college, the difference between the two was significant at the .05 level.

College of Attendance Named - Only one of the other students who had expressed a plan to enter college was unable to name the college in which he would be enrolled in the fall. The number of vocational agriculture students unable to name a college of attendance was somewhat larger, resulting in a greater difference between the groups on naming of college than had been the case in expressing plans to attend. One-quarter of the vocational agriculture students were able to name a college of attendance. One-half of the other students were able to do so, and extraordinarily high rate. The difference between the groups was significant at the .01 level.

Background Factors - Occupational

Several factors which bear a possible relationship to the occupational plans of the students were investigated to determine whether there were differences in the extent of response between vocational agriculture and other students. The findings are presented in this section.

Influence on Expected Occupation

Sources of Influence - Students in each group tended to believe their occupationa choices were not influenced by an outside source, Table 25. Vocational agriculture students were somewhat more prone to perceive this as a personal decision than were other students, but the difference was not sufficient to be statistically significant.

Table 25. Major Source of Influence Toward Expected Occupation

Source of Influence	Per Cent of Students Reporting	
	Vo-Ag (N=95)	Other (N=45)
Mother	5.26	8.89
Father	5.26	2.22
Sister	2.11	4.44
Brother	6.32	6.67
Relative	1.05	8.89
Friend	5.26	6.67
Teacher	4.21	11.11
Other	3.16	0.00
Own Decision	67.37	51.11

Because of the lesser number of other students indicating self-reliance in making an expected occupational choice, greater per cents of them were found to rely upon other individuals than was the case with vocational agriculture students. Specifically, teachers and relatives were a source of influence with other students to larger extent. However, no one source of extra-personal influence stands out as a major directive force for either group.

Influence of High School Education Upon Expected Occupation - Although teachers were listed as a major source of influence upon occupational expectations by relatively few students, the high school experience was thought by a majority to have exercised some control over occupational expectations, Table 26. If teachers, per se, are not directly responsible, then the environment provided by high school must be responsible; i.e., exposure to new knowledge, opportunity to read books and magazines which might not be in the household, different points of view brought in by speakers, and mingling with peers not

otherwise in the acquaintance pattern. Well over half of the students considered that high school education had exercised a great deal of influence in their occupational choice and a total of more than 80% credited high school education with "some" or more influence. More of the vocational agriculture students credited high school as a major influence upon occupational choice than did other students, but the difference was not significant.

Table 26. Influence of High School Education Upon Expected Occupation

Extent of Influence	Per Cent of Student Responding	
	Vo-Ag (N=97)	Other (N=43)
Great deal	56.70	51.16
Some	30.93	30.24
Very little	7.22	13.95
None	5.15	4.65

Parents' Attitude Toward Expected Occupation - The mothers of these students were perceived as generally in agreement with the occupational choices cited, Table 27. Vocational agriculture students reported their mothers as being in strong agreement with their plans slightly more often than did other students, but fewer of them noted their mothers as "willing to accept" their decisions. In total, other students reported mothers as being slightly more favorably disposed toward their planned occupation than did vocational agriculture students. It is notable that absolutely no students from other curricula reported their mothers as looking with disfavor upon their vocational choice, while a total of 8% of the vocational agriculture students placed their mothers in this category. The relatively small differences were not statistically significant.

Table 27. Parents' Attitude Toward Expected Occupation

Expression of Attitude	Per Cent of Students Perceiving Mother's Attitude in Specified Category		Per Cent of Students Perceiving Father's Attitude in Specified Category	
	Vo-Ag (N=92)	Others (N=41)	Vo-Ag (N=84)	Others (N=35)
Strongly agrees	33.70	31.71	30.95	28.57
Willing to accept	57.60	65.85	55.96	62.86
Doesn't care one way or other	0.00	2.44	3.57	8.57
Prefers something else	7.61	0.00	7.14	0.00
Very opposed	1.09	0.00	2.38	0.00

Respondents also recorded their fathers as being mainly favorable toward their expected occupations, with more than 70% of the fathers from each student group either strongly agreeing with or willing to accept the student's decision. Despite this general agreement with student choices, some fathers were either apathetic or opposed to the student's occupational expectation, most notably among the vocational agriculture students. The other students, while reporting a certain number of their fathers as unconcerned about their choices, in no instance indicated a disfavorable attitude. The slight difference in response between the two groups was not statistically significant.

As a general rule, these students perceived considerable rapport between themselves and their parents regarding their expected occupation. Fathers were reported as less frequently in strong agreement with student choice than were mothers but no more frequently in opposition. The difference is taken up by a somewhat higher per cent of fathers who were reported as unconcerned. In passing, it seems apt once more to call attention to the fact that no student outside the field of vocational agriculture reported any disfavorable attitude toward their choice of occupation by either parent.

Migration

Necessity of Moving to Pursue Expected Occupation - In some cases, the occupation in which the student expects to engage may not be available to him in his home community. In these instances, the individual would have to migrate if he indeed were to participate in that occupation. Almost two-thirds of the vocational agriculture students indicated that this would be the case, while nearly three-quarters of the other students made this interpretation, Table 28. The difference was not statistically significant.

Table 28. Necessity To Migrate to Engage in Expected Occupation

Necessary to Migrate	Per Cent of Students Responding	
	Vo-Ag (N=98)	Others (N=45)
Yes	64.29	73.33
No	35.71	26.67

Intention to Migrate - Forces other than occupation may also have led to plans to migrate. Respondents were requested to indicate whether they did in fact plan to leave the community of residence. More than half of the vocational agriculture students and almost three-quarters of the other students indicated such intent, Table 29. The difference indicates a trend for other students to be migrationally motivated to greater extent, but the difference was not significant.

Table 29. Intention to Migrate From Community of Residence

Plan to Migrate	Per Cent of Students Responding	
	Vocational Agriculture (N=109)	Others (N=51)
Yes	57.80	72.55
No	42.20	27.45

It will be noted that a lesser per cent of students intend to move than had indicated it would be necessary to do so to pursue their expected occupation. This may indicate an unwillingness on the part of some students to sacrifice the emotional, social and psychological haven of the home community for the ego satisfaction of doing what they wish vocationally. But it is more probable that the difference is mathematical, in association with willingness or ability to express oneself, in that more students responded to the question about intention than did to the question concerning necessity. Perhaps those who were unsure about the necessity to move, or those who were compelled for personal reasons to remain at home in the face of a vocational need to move, chose not to respond to the question about necessity.

In any case, the pivotal point seems to be that more than three-fifths of the male seniors interviewed expressed an intent to move from the community. It would be of great value, as well as interest, to know their destinations.

Prestige Difference Between Desired and Expected Occupations

Extent of Difference - Procedural difficulties prevented determination of the prestige differential between desired and expected occupation for many of the students in the sample. The reduced number of respondents for whom this difference could be tested makes the findings less reliable than they otherwise would be, for it is possible that a bias was operative in those cases for which information could not be obtained.

Vocational agriculture students were more prone to name desired occupations greatly more prestigious than were their expected occupations, Table 30, the difference exceeding 30 points for ten per cent of the respondents. However, for the majority of students in each group the difference in prestige between desired and expected occupation was less than 10 points, indicating an operative rationality in designation of the desired occupation which probably was based upon a realistic assessment of self and environment. The differences between the groups were not significant.

Table 30. Differences in Prestige of Desired and Expected Occupations

Amount of Difference in Prestige	Per Cent of Students Responding	
	Vo-Ag (N=42)	Other (N=22)
No difference	2.38	4.54
1-9 points	54.76	54.55
10-19	19.05	18.18
20-29	14.29	22.73
30-39	7.14	0.00
40-49	2.38	0.00

Direction of Difference - As may be seen by reference to Table 23, the direction of the difference between desired and expected occupations favored the former; students aspired to higher prestige positions but expected occupations of lower prestige. This was the case both for vocational agriculture and other students. The difference between the groups was not significant.

Some Miscellaneous Factors

Comparison of Prestige of Student's Expected Occupation and Prestige of Father's Current Occupation - More than 80% of the respondents believed that they would obtain first positions exceeding in prestige the positions currently held by their fathers, Table 31. This may be a reflection of youthful enthusiasm, whetted by a lack of acquaintance with reality. On the other hand, it may indicate a sober intention on the part of these students to better their position in life, an intention clearly bespoken in the large per cent of respondents who indicated an intent to go to college.

Table 31. Differences in Prestige of Expected Occupation of Student and Current Occupation of Father

Prestige Difference	Per Cent of Students Responding	
	Vo-Ag (N=84)	Other (N=34)
Father's occupation higher, 30 or more points	0.00	0.00
Father's occupation higher, 20-29 points	0.00	0.00
Father's occupation higher, 10-19 points	3.57	5.88
Father's occupation higher, less than 10 points	3.57	8.82
Occupational prestiges equal	11.90	2.94
Student's occupation higher, less than 10 points	30.95	14.71
Student's occupation higher, 10-19 points	22.62	26.47
Student's occupation higher, 20-29 points	17.86	29.41
Student's occupation higher, 30 or more points	9.53	11.77

The intent to surpass the father's position was equally evident among students who were taking vocational agriculture and those who were not. There was no significant difference.

Prestige of Father's Occupation - To attach unclouded meaning to the intent of respondents to obtain positions exceeding in prestige those of their fathers, it is necessary to know the level of prestige attached to those fathers' occupations. The majority of these men occupied positions for which the prestige score was less than 60, Table 32. The fathers of vocational agriculture students were found slightly more frequently in occupations with prestige ratings of less than 50 and somewhat less often in occupations with prestige ratings of more than 69. The major difference in occupational prestige of the fathers occurred in the range of 70-79, wherein fathers of other students were located in much greater per cent. However, the differences on an overall basis were so small as to be non significant.

Table 32. Prestige of Father's Occupation

Prestige Category of Father's Occupation	Per Cent of Students Responding	
	Vo-Ag (N=92)	Other (N=37)
30-39 points	3.26	0.00
40-49 points	16.30	18.92
50-59 points	61.96	59.46
60-69 points	14.13	10.81
70-79 points	1.09	8.11
80-89 points	3.26	2.70
90-99 points	0.00	0.00

Certainty that Student Will Enter Expected Occupation - Vocational agriculture students were more certain that they would enter their expected occupations than were other students, Table 33. On the other hand, vocational agriculture students also expressed themselves as "not sure" more frequently. This is possible because other students more frequently "believed" that they would enter their expected occupations without being "certain" about it. The difference of response between the two groups was not significant.

Table 33. Certainty that Student Will Enter Expected Occupation

Degree of Certainty	Per Cent of Students Responding	
	Vo-Ag (N=88)	Other (N=43)
Certain will enter	26.14	16.28
Believe will enter	52.27	65.12
Not sure	21.59	18.60

Background Factors - Educational

In this section a number of variables frequently related to educational aspirations and plans of young persons are examined to determine whether the response of vocational agriculture students differed from that of other students.

Influences Affecting Educational Intentions

Sources of Influence - About three-fifths of the respondents saw their college decision as a personal matter unaffected by outside sources, Table 34. Of the remainder, quite a few mentioned their mother as the major source of influence and just a few less considered that a teacher had been a major influence in deciding whether to attend college. In some instances the decision of the student was to not attend, and it must be assumed that sources of influence were operative in a negative as well as a positive sense. However, it seems reasonable to assume that in the majority of instances in which an extra-personal source of influence was named the direction of impetus would be to attend college while most of the students who had decided not to attend would report this as a personal decision. On this basis, the mothers and teachers of these students assume a great deal of importance as factors influencing them

toward college attendance. No other source seems to have exercised much direct influence upon this decision. The difference in source of influence between vocational agriculture and other students was minimal and not significant.

Table 34. Major Source of Influence on College Decision

Source of Influence	Per Cent of Students Responding	
	Vo-Ag (N=102)	Other (N=49)
Mother	17.65	16.33
Father	1.96	2.04
Sister	0.98	4.08
Brother	3.92	0.00
Relative	0.00	0.00
Friend	1.96	0.00
Teacher	12.75	14.29
Other	3.92	4.08
Own decision	56.86	59.18

Influence of High School Education Upon College Decision - A majority of respondents indicated that their high school education had greatly influenced their college decision. In fact, a greater per cent so indicated than gave evidence of planning to attend college, leading to the assumption that in some instances a high school education either had shown the futility of attempting college or had predisposed the student against further study. A rather small per cent of the students reported that their high school education had played little or no part in their college decision. The differences between vocational agriculture and other students were small, and of no significance.

Table 35. Influence of High School Education Upon College Decision

Extent of Influence	Per Cent of Students Responding	
	Vo-Ag (N=108)	Other (N=51)
Great Deal	55.56	56.87
Some	27.78	29.41
Little	8.33	9.80
None	8.33	3.92

Parent's Attitude Toward College Decision - The mothers of the respondents were perceived as generally favorable to the decision the students had made of whether to attend college, Table 36. Perhaps there is a relationship between this fact and the relatively large number of students who reported their mother as the major source of influence toward a decision regarding college attendance. However, more than 10% of the mothers of each group disagreed with the student's decision and an additional 6% of the mothers of other students were very opposed.

Table 36. Parents' Attitude Toward College Decision

Expression of Attitude	Per Cent of Students Perceiving Mother's Attitude in Specified Category		Per Cent of Students Perceiving Father's Attitude in Specified Category	
	Vo-Ag (N=96)	Other (N=43)	Vo-Ag (N=90)	Other (N=39)
Strongly agrees	28.13	41.86	23.33	33.33
Willing to accept	55.20	34.88	55.56	41.03
Doesn't care one way or other	4.17	4.65	11.11	15.38
Disagrees	12.50	11.63	7.78	5.13
Very opposed	0.00	6.98	2.22	5.13

There was an observed tendency for the mothers of vocational agriculture students less frequently to be in strong agreement with their sons' college decisions. At the same time, mothers of other students were more apt to be unfavorably disposed toward the college decisions made by their sons. The differences were not sufficient to be statistically significant.

The fathers of vocational agriculture students were less frequently strongly in agreement with the college decision of the respondents than were the fathers of other students. However, in comparison of all favorable attitudes, the fathers of vocational agriculture students were somewhat the larger per cent. On the other hand, vocational agriculture students less frequently reported their fathers as apathetic or unfavorably disposed toward their college decisions. The differences between the reported attitudes of the two sets of fathers were not significant.

It will be noted in Table 36 that students less frequently reported their fathers than their mothers as being strongly in agreement with the college decision. they had made. In comparison of all favorable response, however, this difference about disappeared. Fathers also were perceived as more frequently apathetic about college choice, although mothers were considered more apt to be unfavorably disposed, by both student groups. Vocational agriculture students did not regard either parent as in strong agreement with their college decision as often as did other students.

Comparisons of Father's Education

Educational Achievements of Fathers - The fathers of most of the students in the sample had terminal educational levels at or below high school graduation, Table 37. A few more of the fathers of other students had attended college, but a few more of this sample group had terminated education at the 8th grade. Otherwise, the educational attainments of the fathers of these student groups were remarkably similar. The minor variations did not produce a statistically significant difference.

Table 37. Educational Achievement of Student's Father

Father's Educational Attainment	Per Cent of Students reporting Father's Education at Specified Attainment	
	Vo-Ag (N=109)	Other (N=46)
College graduate	3.67	2.17
Attended college	1.83	8.70
Jr. college graduate	0.00	0.00
Attended Jr. college	0.92	0.00
High School graduate	10.09	10.88
Attended high school	19.27	17.39
Completed 8 years	21.10	30.43
Less than 8 years	43.12	30.43

Comparison of Student's Educational Aspiration with Father's Educational Achievement - More than three-quarters of these respondents already had exceeded the educational attainments of their fathers by virtue of the fact that they were about to graduate from high school. This was true for 83% of the vocational agriculture and 77% of the other students. Given the fact that large numbers of these students planned to attend college, an even greater proportion of them expected to exceed the educational attainments of their fathers, Table 38. The difference between the student groups on this criterion was not significant.

Effects of Planning to Farm Upon Educational Intentions

It was not possible to investigate the potential depressing effect upon educational aspiration of plans to farm, because of the small number of respondents who indicated such a plan. Among all respondents in this sample, only four planned to farm and only two of these were located in the vocatinal agriculture sub-group.

Table 38. Comparison of Father's Education Achievement and Student's Educational Aspiration

Relationship of Father's Education to Student's Educational Aspiration	Per Cent of Students Responding in Specified Category	
	Vo-Ag (N=108)	Other (N=46)
No difference	9.26	8.70
Father's achievement lesser	88.89	91.30
Father's achievement greater	1.85	0.00

Background Factors - Miscellaneous

In this section comparison is made of the differences in response between vocational agriculture and other student, on three criteria; immediacy of marriage, intelligence, and residence. The first two are considered to some extent related to occupational and educational desires and expectations. The latter is more nearly a survey varible.

Immediacy of Marriage - Few of these students believed they would be married very soon after leaving high school, Table 39. The accumulation at the end of three years would be but 12 and 16 per cent for vocational agriculture and other students respectively. More of the vocational agriculture students believed they would marry during the fourth and fifth years than was the case for other students while the ratio was reversed during the sixth to tenth years. More of the vocational agriculture students believed that they would still be bachelors beyond the tenth year following high school graduation. The difference between the two groups were not significant.

Table 39. Anticipated Number of Years Until Marriage

Number of Years	Per Cent of Students Responding	
	Vo-Ag (N=111)	Other (N=48)
1	2.70	2.08
2-3	9.91	14.58
4-5	34.23	29.17
6-10	35.14	41.67
More than 10	18.02	12.50

Although the data as presented are not a true test, there is no apparent relationship between immediacy of marriage and level of occupational and educational aspiration and expectation. In view of the significant differences between the desires and expectations of vocational agriculture and other students, a significant difference in marriage plans would be anticipated if immediacy of marriage were related to aspirations. No such evidence accrued, although the relationship cannot be ruled out.

Intelligence - There was an observable difference in the intelligence scores attributed to the two student groups. With the exception of the lowest IQ range, vocational agriculture students were represented in larger proportions in each of the IQ ranges under one hundred and in smaller proportions in each of the IQ ranges above 100, Table 40.

These intelligence differences were not particularly large in most cases, and taken as a whole the difference was not significant. However, there was a trend for vocational agriculture students to be represented disproportionately in the lower IQ ranges which could not be ignored. Breakdown of the data into categories of lowest, medium, and highest ranges of intelligence represented among the respondents yielded a chi-square value significant at the .05 level. In fact, any test of the data based upon high and low-extremes was significant at this level.

Table 40. Comparison of Intelligence Scores

IQ Range	Per Cent of Students Responding	
	Vo-Ag (N=87)	Other (N=37)
50-59	1.15	8.11
60-69	9.19	8.11
70-79	28.74	18.92
80-89	37.93	29.73
90-99	17.24	13.51
100-109	3.45	16.22
110-119	2.30	2.70
Above 119	0.00	2.70

The data are not conclusive evidence of a relationship between intelligence and aspirational levels, but they do incline in that direction. The fact that about two-thirds of the students in this group were considered vocational agriculture students probably contributed to the lack of clarity. Vocational agriculture was not a selective agency among these students by virtue of the fact that there is a lack of suitable alternatives. Many students are in it because it is available rather than because they are committed to agriculture. Therefore, it may not cut the intelligence levels in the same way as it would were more alternatives available.

Residence - Place of residence differed significantly for the two respondent groups, Table 41. But farm residence had little to do with the difference. In large part, it was a result of a greater number of vocational agriculture students residing in open country but not upon farms, as opposed to the town residence of other students. The differences were significant at the .01 level.

Table 41. Comparison of Place of Residence

Place of Residence	Per Cent of Students Responding	
	Vo-Ag (N=108)	Other (N=51)
Town or City of 2500 or more persons	34.26	50.98
Town or city of less than 2500 persons	12.96	23.53
Open country, non farm	27.04	11.76
Farm	15.74	13.73

Conclusions

Negro, male, senior agriculture students did not desire occupations with as great prestige as did other students. Neither did they expect to enter occupations of as great prestige. The same relative relationship existed apropos the educational plans of these groups. Other students planned to attend college in greater proportions than did vocational agriculture students and were able to back up their plans with a greater ability to name the college of attendance. Despite these aspirational differences, vocational agriculture students did not differ from other students on potentially associated variables except in two instances, residence and intelligence. The former probably has no bearing upon the aspirational differences noted, while the latter probably does.

There was tendency for all respondents to regard themselves as independent functionaries when making decisions regarding occupational choice and college attendance. More than half of the students viewed these as their own decisions. Those who did ascribe some influence to an outside source scattered their response in such a way that no one persons could be considered to play a

dominant role. Mothers and teachers were reported as influencing educational decisions more than any other individual and brothers appear to have had sone influence, particularly among vocational agriculture students. However, the dominant finding is that for most students, these decisions were considered as made without a major external referent.

Parents were perceived to be in agreement with occupational and educational decisions by most students. Vocational agriculture students less often believed their parents to agree strongly with their decisions, and fathers were not so frequently perceived in strong agreement as were mothers. Mothers, on the other hand, were more frequently seen as disapproving choices than were fathers, especially choices having to do with education. These findings might be interpreted to mean that mothers were more concerned than were fathers. As a most unusual finding, other students reported no degree of opposition whatsoever to their occupational choices on the part of their parents.

The respondents were an upwardly mobile group, seeking education in very large numbers. Although most did not aspire to occupations of great prestige, they believed it would be necessary to migrate from their home communities to obtain the occupational opportunities they sought. Almost without exception they expected to better the occupational and educational achievements of their fathers.

The high per cent of respondents planning to attend college is revealing of the function which high school plays for them. It is not erminal education for most; neither does it prepare them for occupations which are available locally. Indeed, for the young person who intends to remain in his home community, there is little pragmatic reason to attend high school. High school is seen as a preparation for college, it is a way-station out of the community; in the more ideal situations it may prepare the student for an occupation available elsewhere; it performs a limited and limiting educational function.

An exceptionally large per cent of respondents were enrolled in vocational agriculture. This curriculum is not directly responsive to their needs was evidenced by the small number who planned to farm. One of the greatest needs of these students is a greater variety of educational routings, particularly in the vocational fields. High school does not now train them for productive and useful lives except as they intend to attend college. The evidence that this is so lies not only in the limited curricula available, or the emphasis upon college attendance, but also, and most dramatically, in the exorbitant drop-out rate.

It must be remembered that these respondents represented a select group. As seniors in high school they were the remnant of a much greater number of students who had entered school together. The occupational and educational aspirations of these individuals cannot be considered typical of their age group, but only of other seniors.

Vocational agriculture and other students statistically may be considered as drawn from the same population. They did not differ significantly from one another on socio-economic variables, except for residence and intelligence. The latter difference, while significant, was confined to the upper and lower extremes of intelligence, with the former largely missing and the latter present disproportionately among vocational agriculture students. Quite probably this difference would have been more marked if these students had been presented with a greater variety of curricula in their high schools.

Differences in occupational and educational aspirations quite likely were more a result of intelligence differences than of membership in the category of curriculum. These data do not support any contention that enrollment in vocational agriculture in any way depresses the aspirations of the students.

APPENDICES

APPENDIX A

A List of the Schools Participating in the Study

Economic Area 1

Bethel School, Haywood County

Economic Area 2

Glen Alpine School, Burke County; Lincoln Heights School, Wilkes County

Economic Area 3

South Granville School, Granville County; Mary Potter High School, Granville County

Economic Area 4a

Ledford High School, Davidson County; Peabody School, Montgomery County

Economic Area 4b

Mount Pleasant-McAllister School, Cabarrus County; Dunbar School, Rowan County

Economic Area 5

Piedmont High School, Union County; Western Union School, Union County

Economic Area 6

Union High School, Sampson County; Sampson High School, Sampson County

Economic Area 7

Murfreesboro High School, Hertford County; Central High School, Gates County

Economic Area 8

Grantham School, Wayne County; Frink High School, Lenoir County

Economic Area 9

Elise School, Moore County; Rosenwald School, Robeson County

Economic Area 10

Camden County High School, Camden County; S. W. Showden High School, Beaufort County

Economic Area 11

Burgaw School, Pender County; E. E. Smith School, Duplin County

APPENDIX B

The North-Hatt Scale of Occupational Prestige

The North-Hatt scale of occupational prestige was compiled from the response of a national sample. It was designed to determine the relative value people assigned to a variety of occupations. Respondents were asked to rate the 90 occupations given as "excellent, good, average, somewhat below average, or poor." Each occupation was then given a score based upon the response to it by all respondents. For example, a physician was rated 93, a county judge 87, undertaker 72, lumberjack 53, and bartender 44.

This method of rating occupations proved very useful, but the original 90 occupations were inadequate. Several researchers have added to the list, giving it greater utility. A modified version of the North-Hatt scale was used to determine the prestige of occupations recorded by respondents in this study.

APPENDIX C

Chi-Square and the Level of Probability

The chi-square statistic is used to determine whether observed differences between two groups are due to chance. If the difference is not due to chance then it is assumed to be a result of some specific variable, hopefully the one under study.

The value of the chi-square determines the level of significance at which it may be accepted. For example, a particular value of chi-square (under the conditions of the study) may be significant at the .05 level. This means that in only 5 times out of a hundred would such a chi-square value be due to chance factors rather than to the study variable. The .05 level usually is set as the minimum level of acceptance; the .01 level (one chance out of a hundred that the result is not due to the test variable) or the .001 level (one chance out of a thousand) are much stronger and more reliable.

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VOCATIONAL AND TECHNICAL EDUCATION IN VIRGINIA

PRESENT AND FUTURE NEEDS

REPORT OF THE

COMMISSION ON VOCATIONAL EDUCATION

to

THE GOVERNOR

and

THE GENERAL ASSEMBLY OF VIRGINIA

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VOCATIONAL AND TECHNICAL EDUCATION IN VIRGINIA

PRESENT AND FUTURE NEEDS

REPORT OF

THE COMMISSION ON VOCATIONAL EDUCATION

TO

THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

Richmond, Virginia, November 7, 1963

To:

HONORABLE A. S. HARRISON, JR., *Governor of Virginia*

and

THE GENERAL ASSEMBLY OF VIRGINIA

An immediate re-evaluation of vocational and technical education in Virginia has become urgent because of our changing economy, the rapid growth of technological knowledge and the increasing urbanization of our population.

The "explosion of knowledge" in the field of science and technology has had a tremendous impact on vocational and technical education. Automation and other advances have eliminated many jobs, changed many that remain, and created many new jobs.

The nature of jobs now available in Virginia business and industry demands a higher level of skills from more people than is now afforded by the available vocational and technical training.

In addition, if Virginia is to continue to attract new industry, the need for workers with new and advanced skills becomes even greater.

Conversely, more and more Virginians must have the necessary training to obtain employment and be able to advance in their chosen occupations. This will mean better paying jobs and rising standards of living for many Virginians.

These conditions—advanced skills, more knowledge and increased pay—are creating greater respect for the status and dignity of vocationally trained workers. There is a growing awareness that the new jobs created by technological development can lead to rewarding lifetime careers.

Accordingly, the General Assembly of Virginia, at its 1962 Regular Session, adopted House Joint Resolution No. 81, creating the Commission on Vocational Education, to make a study and offer recommendations for improving vocational and technical education in the publicly supported schools and at the post-high school level. The text of this resolution is as follows:

HOUSE JOINT RESOLUTION NO. 81

Creating a commission on vocational education in public high schools and terminal vocational education at the post-high school level.

Whereas, the quality and scope of vocational education has significant implications for business and industrial development in Virginia; and

Whereas, the need for skilled and semiskilled workers and the highly skilled technical workers is increasing; and

Whereas, the majority of high school graduates and those who drop out of high school before graduation seek employment immediately or pursue some type of post-high school technical training; and

Whereas, the report of the Commission on Public Education which was made to the Governor and General Assembly, emphasized the need for: vocational education to be placed within the reach of more people; new programs to be established and existing ones to be expanded in order to better prepare students now in school as well as to upgrade adults already in the labor force; now, therefore, be it

Resolved by the House of Delegates, the Senate concurring, That a Commission is hereby created to be known as the Commission on Vocational Education, to make a thorough study and offer recommendations for improving the program of vocational and technical education in the publicly supported schools of Virginia and at the post-high school level.

The Commission shall be composed of eleven members, of whom two shall be appointed by the President of the Senate from the membership of the Senate, three shall be appointed by the Speaker of the House of Delegates from the membership thereof, and six shall be appointed by the Governor including the following: (1) chairman or director of the State Council of Higher Education, (2) State Superintendent of Public Instruction, and (3) State Director of Vocational Education. The Governor shall appoint the Chairman of the Commission. All agencies of the State shall assist the Commission in furnishing information when requested so to do.

Because of the need for this review and evaluation, the Commission shall conclude its study and make its report to the Governor and General Assembly not later than July one, nineteen hundred sixty-three. The members of the Commission shall receive no compensation for their services but shall be paid their necessary expenses, for which, and for such secretarial and other assistance as the Commission may require, there is hereby appropriated from the contingent fund of the General Assembly the sum of twenty-five hundred dollars.

The following were appointed as members of the Commission: by the President of the Senate: Curry Carter, of Staunton, and Harold H. Purcell, of Louisa; by the Speaker of the House of Delegates: Howard P. Anderson, of Halifax; D. French Slaughter, Jr., of Culpeper; and W. Roy Smith, of Petersburg; and by the Governor: Lawrence A. Hill, Director, Danville Technical Institute, Danville; Mrs. Carolyn Moses Lusardi, Housewife and School Teacher, Brookneal; Dr. William H. McFarlane, Director, State Council of Higher Education, Richmond; George L. Sandvig, Director, Division of Vocational Education, State Department of Education, Richmond; Henry W. Tulloch, Manager of Employee and Community Relations, General Electric Company, Waynesboro; and Woodrow W. Wilkerson, Superintendent of Public Instruction, Richmond. (Prior to the conclusion of the study, Mr. Hill resigned from his position with Danville Technical

Institute, and entered into the employment of the Division of Vocational Education, State Department of Education.)

The Governor appointed W. Roy Smith as Chairman of the Commission. During the course of the study, Mr. Smith, on account of the press of business and the demand upon his time by other activities, requested the Governor to relieve him from his duties as Chairman of the Commission. The Governor then appointed D. French Slaughter, Jr., to succeed Mr. Smith as Chairman.

The Commission elected Mrs. Lusardi as Vice-Chairman. The Chairman, Mr. Smith, appointed John B. Boatwright, Jr., as Secretary, and Wildman S. Kincheloe, Jr., as Recording Secretary.

In order to ascertain the extent of offerings in vocational and technical education in the public schools of the State, as well as the number of students enrolled in the various courses offered, the Commission sent a questionnaire to all division superintendents of schools. Likewise, questionnaires were sent to the directors and principals of technical institutes, area vocational-technical schools, and technical schools operated by several of the State supported institutions of higher learning, to ascertain the vocational and technical courses offered, fees, dormitory and dining hall accommodations, scholarships, enrollment, enrollment capacity, and capital outlay. Compilations were made from the information given in the answers to these questionnaires.

The Commission, in order to gain first hand information about vocational and technical education offered in the State, made inspection tours of Danville Technical Institute, the Danville Branch of Virginia Polytechnic Institute, Roanoke Technical Institute, the Washington County Technical School at Abingdon, the Wise County Technical School at Wise, Clinch Valley College at Wise, and the Vocational-Technical Program at the E. C. Glass High School at Lynchburg. Several members of the Commission toured the Burlington Industrial Education Center at Burlington, North Carolina, this being one of the regional industrial education centers operated by the State of North Carolina.

In addition, three members of the Commission visited a State Industrial Training Program in Orangeburg, South Carolina, a new technical education center in Greenville, in that State, and heard explanations of South Carolina's occupational training program by members of the professional staff of South Carolina's Committee for Technical Education.

A public hearing was held in Richmond, and on this occasion many interested individuals, local and State officials, and representatives of local chambers of commerce and other groups appeared and gave the Commission the benefit of their suggestions and pertinent information possessed by them.

Conferences were held with Joseph G. Hamrick, Director, Division of Industrial Development and Planning of the State of Virginia, Richard C. Holmquist, Executive Director, Virginia Industrialization Group, Charles H. Taylor, Executive Vice-President, Virginia Manufacturers Association, and J. Eldred Hill, Jr., Commissioner, William B. Purser, Assistant Commissioner, and Randolph Bruce, Chief of Research, Statistics and Information, of the Virginia Employment Commission.

Also, Lucian Lombardi, Chief of the Bureau of Technical Institutes, Department of Education of the State of Connecticut, and Dr. Gerald B. James, Director of Vocational Education, Department of Public Instruction of the State of North Carolina, met with the Commission by invitation,

and explained in detail the vocational and technical education programs in their respective states.

The Commission was fortunate in securing the services, as Consultant, of Dr. Lynn A. Emerson, a recognized authority in the field of vocational and technical education.

The Commission held many meetings, and considered at length the information and data acquired through the activities detailed above, and the information and suggestions presented to it. As a result, the Commission presents its findings, recommendations and conclusions.

II. EMPLOYMENT OUTLOOK IN VIRGINIA

During the sixties, Virginia population will increase from 3,967,000 to 4,741,000, an increase of 19% over the decade. This compares with a predicted national increase of 15%.*

But while total population is increasing some 19%, the labor force of people seeking employment will increase 26%. This will be the greatest increase in the work force for any ten year period in Virginia's history.

Why will the work force grow so much faster than the overall population? Largely because of the phenomenal increase in young people who will reach working age and the rapid increase in the number of women workers.

Regarding youth, the number of young people reaching 18 each year, ready to enter the labor force or continue their education, will increase from 64,000 in 1960 to 81,000 in 1970, a rise of nearly 27%. Stated differently, there will be 150,000 more young workers entering the market for jobs during the sixties than entered the work force during the fifties, an increase of nearly 35%.

Regarding women workers, by 1970 there will be about 645,000 or 214,000 more than in 1960. Women employed in manufacturing will increase 47% as compared with a 38% increase in the number of men employed. About one of every three females over 14 will be in the work force, and nearly half of the women in the 35-64 age bracket are expected to be participants.

With this rapid increase in the work force will come the critical need for jobs. At currently projected rates of growth in Virginia's economy, employment is expected to increase only 16.6%. The result will be a rate of unemployment about three times worse than the current situation. In short, nearly one worker in ten, or about 200,000, will be unemployed in 1970, unless more jobs are created through two main steps: expansion of our industrial economy and training of workers to fit the new jobs that will become available.

As Virginia grows, significant changes are taking place in its economic makeup, bringing changes in the kinds of jobs for which workers are needed. And the biggest increases will occur in occupations requiring the most education and training.**

These anticipated changes in employment in various occupations in Virginia result from such factors as the continuing shift from an agricul-

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* See Table 1, page 20, Appendix, for figures on population and employment growth and available labor force, which are referred to in this Chapter.

** See Table 2, page 21, Appendix.

tural economy to an industrial and service economy, the rapid increase in research and development activities, and the widespread growth of record keeping and paperwork processing. All of these types of work will require greater occupational training than has been customary for a predominantly agricultural economy.

In addition, the rapid increase in the number of young people entering the work force, coupled with the increasing complexity of the world of work, means that young men and women will have to compete more keenly for jobs. Employers will require at least high school diplomas for more and more jobs, and will lean toward hiring those who possess not only a sound basic education, but who also possess some vocational or technical skills acquired at the high school or post-high school level.

In short, Virginia's manpower needs more education and greater vocational skills than ever before.

III. OCCUPATIONAL TRAINING IN VIRGINIA

Some jobs require only a short period of training. Other jobs require long periods of organized instruction. Usually school training is followed by some on-the-job training before the worker is fully competent.

Modern technology demands far more specialized knowledge and advanced skills than in the past. To qualify for employment in the future larger numbers of prospective workers will have to spend more time in organized instruction.

Typical patterns by which workers get their training are outlined below.* It should be kept in mind that significant and increasingly large numbers of women are being employed in most of the following classifications.

A. *Semiskilled Workers in Industry*

This category includes most of the production workers in manufacturing. The skills and technical knowledge required are not extensive and these jobs require only a relatively short training period.

While most semiskilled workers get their training through on-the-job experience, some are trained by the employer in the industrial plant or in programs jointly operated by the employer and the State. This is most likely to occur when new employers are moving into the State and require large numbers of trained employees in a short period of time.

In Virginia, approximately 240,899 semiskilled (operatives and kindred) workers were employed in 1960, and approximately 67,209 workers in this category will have to be trained by 1970, which means an annual training rate of 6,720 semiskilled workers.

Of the 6,720 semiskilled workers needed to be trained each year, selective surveys and general training patterns show that approximately 5,500 will be trained by industry or other private programs.

Thus, approximately 1,220 semiskilled workers will have to be trained in schools. This figure is the number which will have to complete their training each year. Most of the 1,220 will be trained in specially organized programs for new industry.

* Estimates of the number of semiskilled, skilled, and technical workers needed and the methods by which they are trained are shown in Tables 3 through 8, pages 22 through 26, Appendix.

High schools and area vocational and technical schools do not propose to train semiskilled workers except in special organized classes when a specific need arises. Many who attend high schools or vocational and technical schools that for any reason do not secure training to prepare them for skilled or technical occupations do accept employment in semiskilled jobs. The pre-employment training they have received may help them to qualify for the job, but they will receive additional training on the job.

B. *Skilled Workers in Trades and Industry*

Traditionally, skilled craftsmen obtained their training through serving an apprenticeship working under a master craftsman.

Today, technological advancements require classroom instruction in related technical subjects in addition to the work experience. Also, the rapidity and complexity of technological growth has greatly increased the cost of training skilled workers on the job, thereby forcing employers to rely more and more on vocational and technical schools as a source of skilled workers.

In Virginia, approximately 177,549 skilled (craftsmen, foremen and kindred) workers were employed in 1960, and approximately 65,000 workers in this category will have to be trained by 1970, which means an annual training rate of 6,500 skilled workers.

Of the 6,500 skilled workers needed to be trained each year, selective surveys and general training patterns show that approximately 2,000 will be trained by industry or other private programs. This includes the approximate 225 apprentices that are trained cooperatively by industry and the trade extension programs in the public schools.

Thus, approximately 4,500 skilled workers will have to be trained in schools. This figure is the number which will have to complete their training each year.

At the present time, approximately 2,450 skilled workers are completing their training annually. Of this number, approximately 1,850 are being trained in vocational programs in 111 public high schools throughout the State, and 600 are being trained at publicly supported area vocational and technical schools, such as Washington County Vocational School, Danville Technical Institute and New River Vocational-Technical School.

Therefore, the needs for school training, in addition to the present programs, are for 2,050 skilled workers each year.

The Commission recommends the expansion of 6 area vocational and technical schools which can produce 200 additional skilled workers per year, and the establishment of 5 new area vocational and technical schools which can produce 400 additional skilled workers per year and the expansion of vocational training in high schools which can train an additional 400 per year.

The total of 1,000 additional skilled workers which can be trained in schools each year by 1968 will not meet the need for 4,500 school trained skilled workers, but the Commission believes that the proposed program will be indispensable as a substantial beginning to meet the State's needs.

C. *Technicians*

Broadly speaking, technicians are workers requiring more "know-why" for their jobs, in contrast to the "know-how" of the skilled craftsman.

Their responsibilities lie between those of professional persons, such as the engineer, and those of skilled craftsmen, such as the machinist.

Technicians may be employed as aides to professional persons, such as engineers, doctors and dentists; or they may be employed by industry as supervisors of production and specialists in quality control, installation and maintenance.

Due to the technician's need for specialized knowledge, consisting largely of applied science and mathematics, most of them are trained in post-high school programs of one to three years duration, limited generally to high school graduates who meet certain requirements in science and mathematics.

Many technicians receive their training in the military services and through on-the-job experience, supplemented by evening classes and correspondence courses.

In Virginia, approximately 9,188 technicians were employed in 1960, and approximately 23,550 workers in this category will have to be trained by 1970, which means an annual training rate of 2,350.

Of the 2,350 technicians needed to be trained each year, selective surveys and general training patterns show that approximately 350 will be trained by industry or other private programs.

Thus, approximately 2,000 technicians will have to be trained in schools. This figure is the number which will have to complete their training each year.

At the present time, 300 technicians are completing their training this year in schools in Virginia. Approximately 30 are being trained in vocational programs in 2 public high schools throughout the State, and 270 are being trained at publicly supported area vocational and technical schools, such as Richmond Professional Institute, Danville Technical Institute and New River Vocational-Technical School.

Therefore, the needs for school training in addition to the present programs are 1,700 technicians each year.

The Commission recommends the expansion of 8 area vocational and technical programs to produce 270 additional technicians per year, and the establishment of 5 new area vocational and technical schools to produce 350 additional technicians per year.

The total of 620 additional technicians to be trained in schools each year by 1968 will not meet the need for 2,000 school trained technical workers, but the Commission believes that its proposals are essential first steps toward meeting the State's needs.

D. *Personal Service Workers*

Workers in this category provide various types of personal services, in health and other fields. This group includes such occupations as cosmetologists, barbers, practical nurses, nursing aides, medical and dental assistants, and medical laboratory technicians. The jobs vary greatly in the type of training required, some being similar to skilled crafts occupations, and others similar to technician jobs. These workers are trained in a variety of schools and institutions such as high schools, community colleges, technical institutes, vocational and technical schools, hospitals or medical colleges; some receive their training on the job.

E. *Office Workers*

This group includes a wide range of workers who are employed in clerical, secretarial, accounting, and other office jobs, from the level of the typist to that of the accountant. The jobs require knowledge of business practice, some mathematics, and various manipulative skills such as typing and the operation of business machines. Some of these jobs cut across other fields, such as that of the technical secretary who needs technology as well as business knowledge and skills.

Training for the simpler office jobs such as typing, office machine operation, stenographic and elementary accounting jobs is often provided in high school through electives in general high school programs or in vocational business curriculums. Training programs for advanced business occupations such as accounting, and business data processing, are usually provided in post-high school institutions.

Many office workers enter their jobs with a minimum of training, and rise to higher positions through on-the-job training and experience.

F. *Distribution Workers*

The field of distribution includes sales, purchasing, advertising, retail and wholesale merchandising, and warehousing and shipping. Some of these jobs cut across other fields, such as sale of technical products and agri-business occupations.

Many workers in the field of distribution receive their training on the job, sometimes supplemented by company sales training programs. Organized programs in distributive education, in the form of extension courses and cooperative work-study programs, are provided in high schools and in post-high school institutions.

G. *Agricultural Workers*

This group includes all workers on the farm, whether self employed or employees. Also included is the growing number of persons employed in farm related occupations in the field of agri-business such as farm supplies, equipment sales and service, and processors of farm products.

These workers may receive their training through agricultural programs in rural high schools, adult education courses, and post-high school agricultural institutes and colleges. Large numbers of farmers are farm reared and have been trained by their parents or other farm workers.

The categories of workers enumerated above are the subject of this study and include most of the wage earning occupations in Virginia that require vocational and technical education.*

IV. VOCATIONAL EDUCATION IN THE HIGH SCHOOL

The present program of vocational education in Virginia high schools is large and far reaching, comprising some vocational courses in all school divisions. These programs are organized into the following services: vocational agriculture, business education, distributive education, home eco-

* The breakdown in numbers of the demand for office workers, personal service workers, distribution workers and agricultural workers and the methods by which they get their training is not as complete as the available statistics for the semiskilled, skilled and technicians, but Tables 9, 10, and 11, found on pages 27 through 29, Appendix, show 1960 employment and projected 1970 employment in several of the categories mentioned. Tables 12 and 13, pages 30 through 31, Appendix, show the changes expected between 1960 and 1970 in manufacturing and construction employment.

nomics education, and industrial education (includes industrial arts and trades courses). High school facilities and staffs are also used for adult education in these fields.*

A. *Extent of Vocational Education in the High Schools*

Vocational training in the high schools is feasible for many occupations, such as auto mechanic, electrician, draftsman, cosmetologist, practical nurse, stenographer, bookkeeper and sales clerk. Training for other skills, such as machinists, can be provided in the high schools, but is not usually done there because of the large investment in shop equipment that is required and the lack of a sufficient number of students. In some localities the facilities of private business or industry may be utilized through the cooperative training courses in which the student spends a half day in school and a half day on the job. This is an economical arrangement suitable to many of the smaller high schools. In the vocational field there are still other categories of skilled occupations, such as data processing, and tool and die making, requiring higher levels of skill, knowledge and maturity that necessitate post-high school training.

The economy and effectiveness of high school vocational training leads this Commission to recommend strongly that renewed efforts be made by the State Board of Education and the local school divisions to strengthen and expand vocational offerings wherever feasible. These offerings must be based not only on the needs and aptitudes of the students, but also upon the requirements of business and industry and the availability of job opportunities.

Nevertheless, there are limiting factors on vocational education at the high school level. One is the fact that many high school students do not determine their vocational goals in time to complete the necessary training in high school. Other factors, mentioned above, are the narrow range of offerings which can be economically provided in small and medium sized high schools, especially in the rural areas, and the large investment needed for some types of training. All of these factors are additional reasons for the establishment of area vocational and technical schools at the post-high school level.

Where these limiting factors are not present, the Commission believes that vocational training should be offered in the high schools because of the financial savings to both the student and the State.

B. *Expansion of Vocational Education in the High Schools*

There are a number of localities in Virginia, perhaps as many as thirty, which have high schools with shops, facilities and staff that could provide a substantially expanded training program for specific skills and occupations to serve their surrounding communities if they were given some additional financial assistance by the State. This training should be provided for high school students in day classes and for out of school youths and adults at times when the school is not being used by the day students. This training is now being provided in a number of communities, but additional programs are needed, particularly in the business, distributive and industrial fields.

The Commission recommends that the State pay one half of the cost of equipment and two thirds of the instructional salaries of these programs as determined by the State Board of Education. This division of costs follows the present pattern of State-local financing of similar programs.

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* For detailed breakdown of the extent of these programs for adult and high school students, see Table 14, page 32, Appendix.

We have stated the factors which limit most high schools in the number of vocational courses that they can offer, and, as a result, much of the vocational training has to be done at the post-high school level. However, many high school students could benefit from basic training which would develop the understanding and elementary skills that are common to a cluster of related occupations, such as the metal working trades and the building trades. For example, training for the metal trades might include elementary machine tool operation, hand tool operation, welding, mechanical blueprint reading and the assembly and disassembly of machines. After taking this training in high school, the student would be well prepared for skilled craft training in industry or in post-high school institutions.

The Commission recommends that the State provide funds for the research and development of basic training programs for clusters of closely related occupations.

In addition, in view of the heavy future demand for technicians, a high school curriculum could be developed in larger schools that would provide a "technical" program for the future. The current emphasis on the "college preparatory" program might well be supplemented with courses that include physical sciences and mathematics taught with industrial applications, explorations in drafting and shop, and an understanding of materials and processes of industry. This specialized program featuring practical studies would help develop those technically-minded high school students who can later move into technical institute programs with a solid background. It would also provide a way for average students, as well as others, to prepare for a post-high school education. It is such students who are apt to drift, while the gifted and the retarded are singled out for special programs.

The possibilities discussed here point up the need for a continuing appraisal and development of the course content in the vocational curriculum in the high schools.

If the above programs for expansion of vocational training in the high schools and for experimental courses in this field are successfully developed in the next biennium, 1964-66, then these expanded and new programs would become a part of the normal operation and budget of vocational education at the high school level. Therefore, the Commission does not recommend any specific appropriations for these purposes after 1964-66.

C. *The Dropout Problem*

The plaguing problem of dropouts can be alleviated by a sufficiently broad range of offerings to meet the varied needs and aptitudes of all the students. Experimentation is needed to identify these needs and to devise training courses of value for students who do not show interest in the usual academic or vocational subject matter. This group includes both students who have the ability, but lack motivation, as well as students of limited ability for completing the standard academic or vocational work.

Although these students pose a persistent problem, they will become citizens in our society, and they are entitled to an appropriate education within our public school system as much as any other group. Programs for these students should lead to gainful employment, even if of an unskilled nature, by the development of proper work habits. In some instances these programs can lead to bringing the student back into the normal curriculum. In either case there will be substantial benefits for both society and the student in reducing the likelihood of unemployment and delinquency.

The Commission recommends that in selected schools the State provide funds for development of training courses of value for students who do not show interest in or aptitude for the standard academic or vocational curriculum.

D. *Vocational Agriculture*

Agriculture is a critically important segment of Virginia's economy. The health of Virginia's economy is heavily dependent on agriculture in all its various phases of production, processing and sale of farm commodities, sales and service of equipment used in these activities and the sale and distribution of farm supplies.

Nearly all rural high schools have had a program in vocational agriculture for many years. This program has been highly effective in meeting the needs of many students who have gone into farming, and has also served many adult farmers through evening classes.

Agriculture is changing as fast and as radically as any other industry in America. On-the-farm employment has declined substantially in Virginia for the last two decades, and this trend is continuing due to the increasing mechanization on the farms and the rapidly increasing productivity of the modern farm operation. Today vocational training for on-the-farm jobs is still vitally important but the decreasing job opportunities in this field require that rural youth be trained for other occupations related to agriculture in the field of "agri-business" (processing of farm products, sales and service of farm equipment, and sales and distribution of farm supplies) or in other business and industrial occupations where job opportunities are available.

It is gratifying to note that in Virginia the State Board of Education, school administrators, and teachers of vocational agriculture have made many changes to keep abreast of new developments in the total field of agriculture. Training in mechanical skills is being stressed. Students who are not likely to go into farming, but into related occupations, are being encouraged to undertake practice projects related to the mechanical and building trades rather than on-the-farm projects such as raising crops and livestock.

In some localities vocational agriculture teachers teach general mechanics courses for students who may enter farm related or industrial occupations.

There is a great reservoir of talent in the vocational agriculture teachers in Virginia and a substantial investment in many excellent shop facilities that are being utilized for other aspects of vocational training of value to rural youth today, such as instruction in general mechanics. Also, it is important to continue the trend toward farm mechanics in vocational agriculture because of the necessity of farmers today to operate and service expensive and complicated equipment.

The Commission recommends that the State Board of Education and the local school divisions continue their redirection and reorientation of vocational agriculture to meet the needs of today's rural youth to prepare them for the changing conditions of farm employment and to help prepare them for other business and trade occupations in which jobs may be available to rural youth.

E. *Home Economics*

The Commission recognizes the great value of home economics education in preparing young women for homemaking careers.

Home Economics education is offered in almost every Virginia high school. In Virginia, as in the nation as a whole, enrollments in home economics classes preparing for the career of homemaking greatly exceed those in home economics classes leading to wage-earning employment.

The Commission, however, is limiting its consideration of vocational education to wage-earning occupations, and the training of girls and women is included under the various classifications of wage-earning occupations discussed above.

F. *General Education*

The Commission has emphasized the necessity for strengthening and expanding vocational education in the high schools. These efforts, however, must not be permitted to detract from the emphasis on and the value of general education for high school students.

All students need a good general education to help them take their places as citizens and voters in our democratic society. The Commission does not advocate a reduction in the general education requirements, but rather a broadening in the variety of offerings in vocational education. The five year high school, beginning in the eighth grade, gives ample time and opportunity for a strong program in general education as well as the type of vocational training we envision.*

The Commission finds that high school education for those taking vocational courses would be strengthened by concentrating general education in the early high school years and offering vocational training the last two or three years.

The Commission recommends that general and pre-vocational education be emphasized in the early years of high school for vocational students, and that the more specialized vocational courses be scheduled in the last two or three years of high school. This would parallel the college preparatory curriculum in which students prepare specifically for various kinds of college careers in the upper years of high school.

G. *Industrial Arts*

Industrial Arts is ordinarily considered as a part of general education. Courses may begin in the eighth grade and give elementary training in certain basic skills, such as woodworking, metalworking and drafting.

Two important purposes of Industrial Arts are to encourage creativeness and to help the student decide whether he wishes to pursue training in one of the vocational fields. The guidance value of Industrial Arts is important.

However, the Commission recommends that training in Industrial Arts be modified to place greater emphasis on pre-vocational training, i.e., training that leads to further training in skilled crafts and technician-level occupations. This modification has been accomplished in some localities, using Industrial Arts instructors and facilities.

H. *Counseling*

Vocational Education, like education for the professions, is preparation for the world of work. Technicians and skilled craftsmen are as essen-

* For graduation requirements in a typical high school program encompassing both general education and vocational education, see page 33, Appendix. The industrial education program is used as an example.

tial to a balanced economy as are the professions. Modern technology has created jobs demanding skills as advanced as those possessed by engineers, dentists, and similar professionally trained persons.

The advance of technology has produced the ironic situation in which there are as many unfilled jobs as there are persons unemployed. This is due to the unemployed lacking the skill and knowledge needed in the available jobs.

The increasing economic rewards available to those trained for skilled occupations have not been generally recognized. Many technicians and skilled craftsmen receive starting pay in excess of $5,000 annually.

One major difficulty in providing vocational training for the high school student is the necessity of an early selection of his vocational objective and the planning of his courses.

All of these emphasize the need for effective vocational counseling. Students with aptitudes for vocational training must be identified at an early stage. The counselor must not only know the vocational courses that are offered but must be competent to advise the student in terms of generating the student's interest and acquainting him with the variety of job opportunities and prospective economic benefits.

The Commission recommends that the State Board of Education provide funds for summer or evening courses for high school counselors to enable them to become better qualified in the field of vocational guidance.

V. VOCATIONAL AND TECHNICAL EDUCATION ON THE POST-HIGH SCHOOL LEVEL

The most formidable task in vocational and technical education is to develop occupational training programs to keep pace with the complexity and rapidity of technological growth and economic changes. While the academic curriculum is relatively stable, the vocational and technical curriculum must undergo constant revision to meet changing skill requirements caused by technological advances. Also, the need for technical knowledge and advanced skills is becoming greater almost day by day in every field of employment.

Occupational training programs supported by public funds have a dual obligation: to meet the needs of employers for trained personnel and to meet the needs of citizens of the State who require training and retraining for occupational competency. In an economy that is changing as rapidly as the present one—in which every worker faces the possibility of changing to a new type of job two or three times during his lifetime—the overall potential number of persons who may need training at one time or another approximates the total population of working age.

This situation calls for a flexible but highly coordinated effort to meet the occupational training needs of employers for technicians and skilled craftsmen and to meet the needs of Virginia's citizens to qualify for employment and raise their standards of living.

The needs for the various types of training will differ in almost every cummunity in the State. The curriculum will have to fit the job opportunities in the area served by any particular school, and the curriculum must change from time to time to adapt to changing demands for various occupations. In some instances one training course in a particular field will be sufficient for all of Virginia, e.g., dental technology. In other fields, such as electronics, a wider distribution of training opportunities will be needed.

In many sections of Virginia, area vocational and technical schools are necessary to provide the range of offerings suitable to the needs and aptitudes of the students and the job requirements in the community. Even in larger urban centers the area schools on the post-high school level are highly desirable because the maturity of the student is an important factor in an intelligent choice of his occupation and his success in that field.

In view of these complex problems, the Commission believes that the greatest need for expansion of vocational and technical training is at the post-high school level.

A. *A State Administered Program*

With the varying requirements in different localities and the need to avoid duplication of facilities, the Commission recommends that the State administer all vocational and technical education offered in post-high school institutions with the exception of that offered in institutions which are operated by the four year colleges and universities.

The Commission recommends that the State pay the entire cost of equipment for the new area vocational and technical schools, and equipment to be purchased in the future for the present area vocational and technical schools. The Commission also recommends that the State pay the major share of instructional costs and supplies in both the new and present schools.*

The localities in which the new area vocational and technical schools will be located, in accordance with the determination of the State agency administering the program, will reap substantial benefits in the provision of training opportunities for their citizens and the promotion of their economic development.

Therefore, the Commission recommends that the political subdivisions to be served provide the land and buildings for the new area vocational and technical schools, and such operating and maintenance costs as utilities, fuel, insurance, and upkeep of buildings and grounds.

We realize that this recommendation may not be suitable for every contingency, but in any event, the State should fix definite requirements for participation by the localities in the establishment and operation of new area vocational and technical schools. The suggested division of costs would be consistent with the present pattern of financing area vocational and technical schools.

The Commission also recommends that tuition fees be charged students in the area vocational and technical schools in an amount to be fixed by the State agency administering the program. The amount of this fee should be carefully determined so as not to discourage attendance by qualified and deserving students. The revenue from these fees should be applied to the instructional costs of the schools.

The Commission again emphasizes that the size and scope of the program, in addition to the fast changing requirements in vocational and technical education, will place heavy demands upon those charged with the policy direction and administration of this segment of our public education. The State Board of Education already has the great responsibility and the enormous task of overseeing the administration and development of all the elementary and secondary schools in Virginia. To add the additional re-

* In the summary of recommendations, specific sums for appropriations are requested to carry out the recommendations contained in this Chapter.

sponsibility of developing and directing the area vocational and technical schools would not allow this Board sufficient time and opportunity for the efficient discharge of all of these duties.

B. *A State Board of Technical Education*

The Commission recommends that a separate and independent agency be created under the direction of a State Board of Technical Education, with the necessary administrative staff, to be charged with the development and administration of the new area vocational and technical schools.

It would be desirable if the existing area vocational and technical schools became a part of the same program and were operated in the same manner as the proposed new schools. However, the existing schools have been supported principally by the local school divisions up until this time.

For this reason, the Commission recommends that the local school divisions involved in maintaining and operating the existing area vocational and technical schools shall have the option of continuing the present arrangements or becoming a part of the proposed State system for the new schools.

C. *Technician Training*

The Commission recognizes that many of the programs producing skilled technicians can be offered in the two year branch colleges. Moreover, their parent institutions have expressed to the Commission their willingness to assist in meeting these needs. In addition, some technician programs can be suitably developed in area vocational and technical schools, although we contemplate that most of these programs will be provided in the branch colleges.

D. *Composition of the State Board of Technical Education*

As vocational and technical education is expanded and will be provided in the high schools, area vocational and technical schools and branch colleges, it will be most important that these programs be coordinated for maximum effectiveness. Liaison among the colleges, State Board of Education and State Board of Technical Education must be close and continuing. Therefore, the Commission recommends that the State Board of Technical Education include one member appointed by the Council of Higher Education and one member appointed by the State Board of Education from their memberships or staffs.

The industrial development needs of Virginia are also an important consideration in vocational and technical education. The demand for skilled craftsmen and technicians is a critical factor in industrial growth. Our neighboring states, which compete with Virginia for new industry, are expanding their vocational and technical training facilities.

The Commission recommends that one member of the State Board of Technical Education be appointed by the Governor from the membership of the Advisory Board on Industrial Development or from the staff of the Division of Industrial Development and Planning.

E. *Comprehensive Community Colleges*

In the long run, the State should consider meeting all of these post-high school educational needs through a system of comprehensive community colleges under the proposed State Board of Technical Education, perhaps with a more appropriate title. Consequently, the Commission recommends

that the parent institutions (Virginia Polytechnic Institute, University of Virginia, and The College of William and Mary), the Council of Higher Education and the State Board of Technical Education make a joint study of the feasibility of such a system, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

We believe that the above recommendations constitute the most effective manner of coping with future needs. However, the State Board of Education, the University of Virginia, the Virginia Polytechnic Institute and The College of William and Mary, through their capable leadership, have done the essential groundwork necessary for future progress.

VI. SUMMARY OF RECOMMENDATIONS

A. *To the General Assembly*

1. That the sum of $210,000 be appropriated for the Biennium 1964-66, and the sum of $75,000 for the Biennium 1966-68, for the expansion and upgrading of existing technical institute programs.

2. That the sum of $785,000 be appropriated for the Biennium 1964-66, and the sum of $327,500 for the Biennium 1966-68, for the expansion and upgrading of existing area vocational and technical schools.

3. That the sum of $2,651,250 be appropriated for the Biennium 1964-66, and the sum of $2,696,000 for the Biennium 1966-68, for the establishment of new area vocational and technical schools.

4. That the sum of $400,000 be appropriated for the Biennium 1964-66, for the expansion and upgrading of vocational training programs in the high schools.

5. That the sum of $350,000 be appropriated for the Biennium 1964-66, for the development and operation of experimental vocational programs in the high schools.

6. That the sum of $30,000 be appropriated for the Biennium 1964-66, and the sum of $20,000 for the Biennium 1966-68, to the State Department of Education for summer and evening courses in vocational guidance for high school counselors.

7. That the sum of $300,000 be appropriated for the Biennium 1964-66, and the sum of $400,000 for the Biennium 1966-68, to the State Department of Technical Education for administrative services, teacher training, research, curriculum and instructional materials in vocational and technical education.

8. That a State Board of Technical Education be created, with the necessary administrative staff, to be charged with the development and administration of the new area vocational and technical schools.

9. That the State Board of Technical Education include among its membership one member appointed by the State Board of Education, and one member appointed by the Council of Higher Education, from their respective memberships or staffs, and one member appointed by the Governor from the Advisory Board on Industrial Development or the Division of Industrial Development and Planning.

B. *To the State Board of Technical Education*

1. Determine the most feasible locations for the new area vocational and technical schools.

2. Determine the standards for buildings and equipment in the new area vocational and technical schools.

3. Provide the staff and determine the curriculum and the offerings in the new area vocational and technical schools.

4. Determine the requirements for participation by the localities in the establishment and operation of new area vocational and technical schools.

5. Determine tuition fees to be charged students in the new area vocational and technical schools.

6. Make a study jointly with the Council of Higher Education, Virginia Polytechnic Institute, University of Virginia and The College of William and Mary on the feasibility of a system of comprehensive community colleges, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

C. *To the Council of Higher Education, the Virginia Polytechnic Institute, the University of Virginia, and The College of William and Mary*

1. Make a study jointly with the State Board of Technical Education on the feasibility of a system of comprehensive community colleges, with particular emphasis upon such problems as accreditation, transfer of credits and financial savings.

D. *To the State Board of Education and/or the Local School Divisions**

1. That renewed efforts be made to strengthen and expand vocational offerings in the high schools to be based on the needs and aptitudes of the students and upon the requirements of business and industry and the availability of job opportunities.

2. That the State pay one half of the cost of equipment and two thirds of the instructional costs of expanded training programs for specific skills and occupations in selected high schools, with facilities and staff potential to serve their surrounding communities.

3. That in selected schools the State provide funds for development of training courses of value for students who do not show interest in or aptitude for the standard academic or vocational curriculum.

4. Undertake research for the development of basic training programs for groups of closely related operations.

5. Continue the redirection and reorientation of vocational agriculture to meet the needs of rural youth in training for the changing conditions of farming and related employment, and to help prepare them for other business and trade occupations in which jobs may be available.

6. That general and pre-vocational education be emphasized in the early years of high school for vocational students, and that the more specialized vocational courses be scheduled in the last two or three years of high school.

7. That training in Industrial Arts be modified to place greater emphasis on pre-vocational training, i.e., training leading to further training in skilled crafts and technician-level occupations.

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* Recommendations 2, 3 and 8 apply to the State Board of Education, recommendation 9 applies to the local school divisions, and recommendations 1, 4, 5, 6 and 7 apply to both.

8. That summer or evening courses be provided for high school counselors to enable them to become better qualified in the field of vocational guidance.

9. That the local school divisions involved in maintaining and operating the existing area vocational and technical schools shall have the option of continuing the present arrangements or becoming a part of the proposed State system for the new area vocational and technical schools.

VII. CONCLUSIONS

In a study of this complexity, conducted against a background of rapid growth and change, the Commission's major problem has been to chart a steady course towards the ultimate objective—to provide a better way of life for more and more Virginians through better and higher-paying jobs.

Virginia's existing programs for organized occupational training are generally underrated and little publicized. These include vocational programs in the high schools for training in basic trades and skills; area vocational and technical schools for training in basic and advanced skills; technical institutes and technician training programs; and community colleges. Like any educational effort in a rapidly changing world, however, there are needs for expansion, upgrading and improvement.

Existing vocational programs in the public high schools can be reoriented and revitalized to provide effective occupational training in the basic trades and skills required for today's world of work. In this effort, the teaching talents, equipment and facilities of vocational agriculture and industrial arts programs will play an especially crucial role.

Generally, the high school curriculum can be better organized to strengthen vocational education without affecting general education requirements. A concentration of general education in the early years of high school, and a wider variety of vocational offerings in the last two or three years is desirable.

To alleviate the problem of dropouts, the State and local school divisions need to promote educational programs of value adapted to the special interests and aptitudes of students who lack motivation or are otherwise unsuited to pursue the standard curriculum. Experimentation is needed to identify their needs and to develop courses to stimulate motivation and to develop proper work habits.

Through a strengthened counseling program much can be done to guide students into rewarding occupational careers, to stimulate greater respect for the dignity of manual skills and to create awareness of the economic rewards of occupations in these fields.

In many sections of Virginia, area vocational and technical schools are the only suitable means for providing the range and level of offerings required by job opportunities and the needs and aptitudes of the students. Technician training programs can be developed by existing community colleges as well as by area vocational and technical schools. A major effort is necessary to expand vocational-technical opportunities and to upgrade present programs.

In view of the need for flexibility, the varying training requirements in different loralities, and the general complexity of the problem, a State-administered program of vocational and technical training on the post-high school level is the most feasible approach to expansion and upgrading in this field.

To meet minimum needs for expansion and improvement in these areas, sums totaling $15,024,500 will be required during the 1964-66 and 1966-68 Biennia. Of this total, the State should provide $8,244,750 to finance developments in the several programs. This includes assistance to local high schools, development of new area vocational and technical schools and improvements in existing schools, expansion of technician training, and improvement of State-level supervisory and administrative services.

In the long run, the State should consider the feasibility of establishing all post-high school education of less-than-degree length under a system of comprehensive community colleges operated by a single State-wide board. The proposed State Board of Technical Education and the new schools founded under its sponsorship and administration should be the nucleus for this development.

The Commission has been impressed with the progress of occupational training in Virginia. From this base the need is to expand and improve vocational and technical education to a scale and level commensurate with the challenges of modern technology and our growing economy.

Respectfully submitted,

D. FRENCH SLAUGHTER, JR., Chairman

MRS. CAROLYN MOSES LUSARDI, Vice-Chairman

HOWARD P. ANDERSON

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LAWRENCE A. HILL

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HENRY W. TULLOCH

WOODROW W. WILKERSON

***Statement of Curry Carter**

I agree in the main with the Report, but feel that it would be more desirable to have all branches of public education under the State Board of Education with an appropriate division, than to establish a separate and independent agency. It is common knowledge that once an additional and separate agency is established in our State government it grows and grows with greater and greater cost to the taxpayer.

The State Board of Education seems inclined to prefer not to take on this additional work, but I believe there is where it belongs. If it needs more members and/or more personnel, they should be provided.

It is not clear to me that the Constitution of Virginia contemplates such a separate and independent agency and it is not beyond the realm of possibility that a clash of responsibilities, duties and jurisdiction may ultimately arise.

CURRY CARTER

APPENDIX

TABLE 1

OVERALL VIRGINIA POPULATION AND LABOR INFORMATION

	Number Employed in 1960 (a)	1970 Projection Rate	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	Total
Population	3,966,949	19.5%[b]	4,740,507			
All Employed Workers	1,340,800	16.6%[b]	1,563,392	222,572	168,160	390,732
Available Labor Force	1,400,000	26 %[e]	1,764,000[e]	ESTIMATED 200,000 UNEMPLOYED BY 1970		

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

e. Estimated by State Employment Service.

TABLE 2

PERCENT CHANGE IN EMPLOYMENT 1960-1970

IN SELECTED OCCUPATIONAL GROUPS

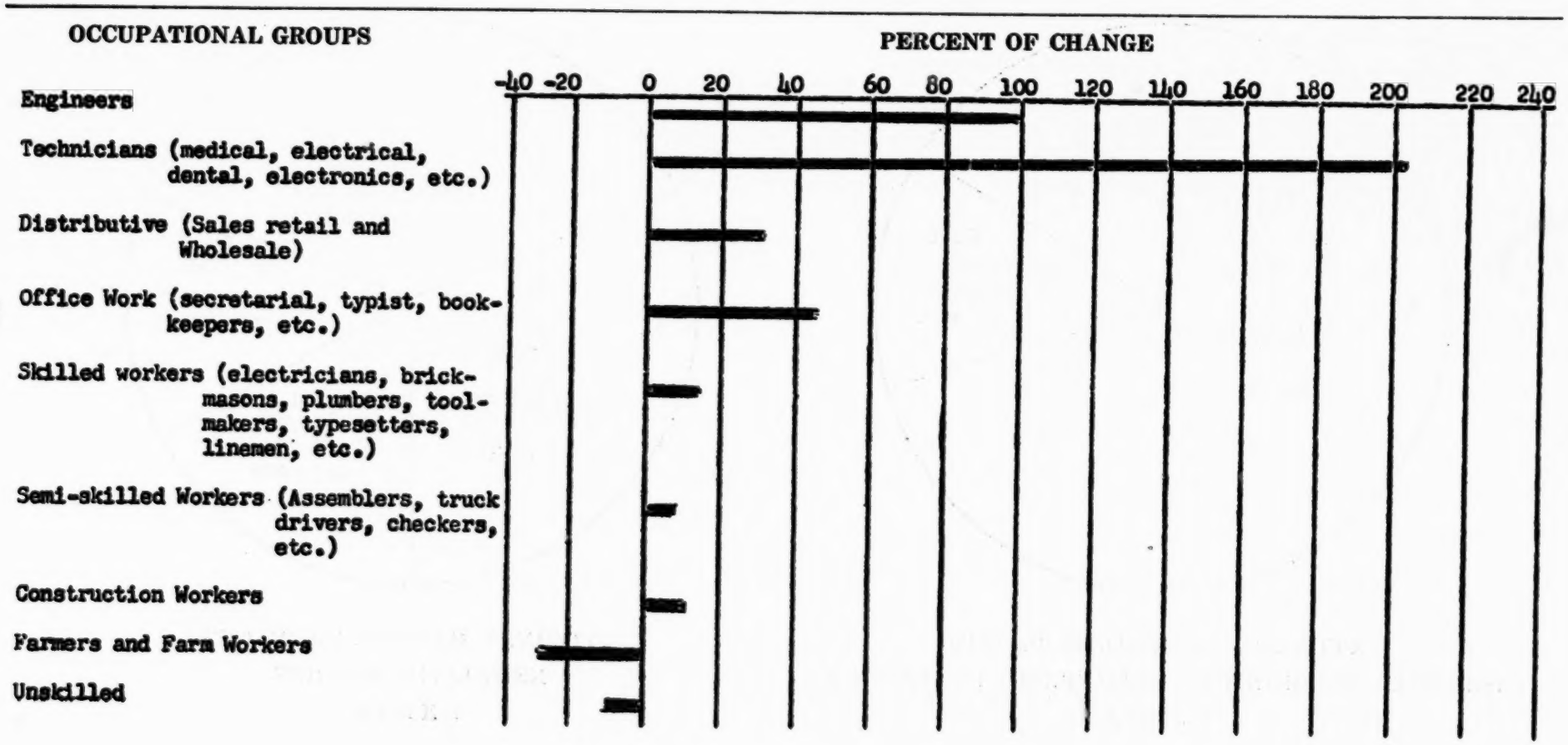
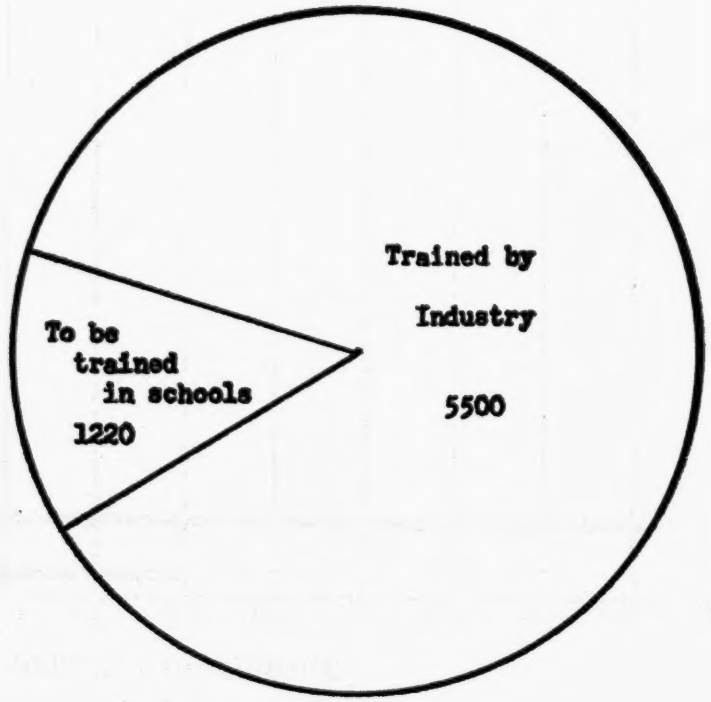


TABLE 4
SKILLED CRAFTSMEN
6,500 TO BE TRAINED ANNUALLY

The chart shows how they may be trained and that more facilities will be needed.

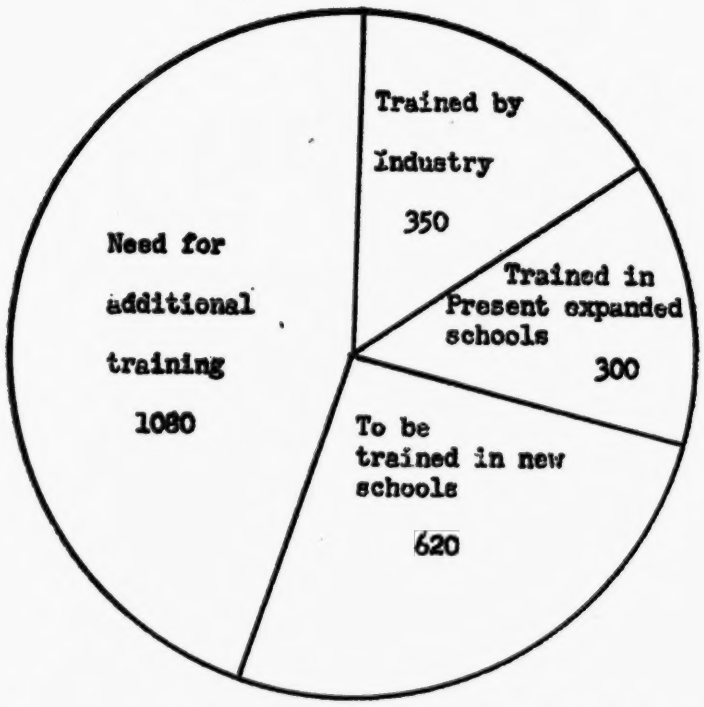
TABLE 3
SEMI-SKILLED (OPERATIVES AND KINDRED WORKERS)
6,720 TO BE TRAINED ANNUALLY



The chart shows how they may be trained.

TABLE 5

TECHNICIANS AND KINDRED WORKERS NEED 2,350 TRAINED ANNUALLY



The chart shows how they may be trained and that more facilities will be needed.

TABLE 6

SEMI-SKILLED (OPERATIVES AND KINDRED) WORKERS IN VIRGINIA

	Number Employed in 1960 (a)	1970		New Workers Needed by 1970			To Be Trained Each Year
		Projection Rate (b)	Number Projected	For Expansion (c)	For Replacement (d)	Total	
Selected Job Titles							
Assemblers	3,696	183.7%	10,485	6,789	739	7,528	752
Bus Drivers	5,990	45.6%	8,721	2,731	1,189	3,929	392
Checkers, Examiners, and Inspectors—Manufacturing	7,100	69.1%	12,006	4,906	1,420	6,326	632
Photographic Process Workers	636	59 %	1,011	375	127	502	50
Truck and Tractor Drivers	32,744	14.9%	37,662	4,878	6,548	11,426	1,142
Manufacturing	75,690	8.8%	82,350	6,660	15,138	21,798	2,179
Not Classified Above	115,043		107,694	7,309	23,018	15,700	1,573
All Semi-Skilled Workers	240,899	7.9%	259,929	19,030	48,179	67,209	6,720

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 7

SKILLED WORKERS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
For Selected Skilled Occupations							
Brickmasons, Stonemasons, Etc.	5,408	35.0%	7,301	1,893	1,081	2,874	287
Electricians	8,450	14.2%	9,650	1,200	1,690	2,890	289
Excavating, Grading and Road Machinery	4,319	68.0%	7,256	2,937	863	3,800	380
Composition and Typesetters	2,783	16.2%	3,233	450	556	1,006	100
Linemen—Servicemen, Telegraph, Telephone and Power	5,958	39.9%	8,335	2,377	1,192	3,569	356
Mechanics and Repairmen—Ins. A.C., Airplane, Auto and others not Classified	44,375	35 %	69,906	15,531	8,875	24,406	2,440
Plumbers and Pipefitters	7,781	16.4%	9,057	1,276	1,556	2,832	283
Tool and Diemakers	401	54.8%	621	220	80	300	30
Not Classified under Selected Skilled Occupations	98,074		92,012	3,944	19,617	23,664	2,368
All Employed Skilled Workers in Virginia	177,549	16.8%	207,371	29,828	35,510	65,338	6,533
Skilled Workers in Manufacturing	56,800	41 %	79,804	23,004	11,400	34,404	3,440

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 8

TECHNICIANS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
Technicians							
Medical and Dental	2,399	97.3%	4,733	2,334	480	2,814	281
Electrical and Electronics	2,399	576.3%	10,241	8,730	303	9,033	903
Other Engineering & Physical Sci.	3,846	148.3%	9,540	5,703	769	6,472	647
Not Elsewhere Classified	1,428	346.3%	6,368	4,945	286	5,231	523
Total Technicians in Virginia	9,188	225.0%	30,882	21,712	1,838	23,550	2,354
Technicians in Manufacturing Only							
Medical and Dental	62	97 %	122	60	11	71	7
Electrical and Electronics	2,399	576 %	3,120	2,658	93	2,751	275
Engineering & Phy. Sci.—Others	2,790	183 %	7,900	5,110	555	5,665	566
Designers and Draftsmen	2,061	86 %	3,830	1,769	411	2,180	218
Total Technicians in Manufacturing	5,375	197.0%	14,972	9,597	1,070	10,667	1,066

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 9

CLERICAL AND KINDRED WORKERS EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
For Selected Jobs							
Secretarial	34,467	99.5%	68,762	34,295	6,893	41,188	4,118
Bank Tellers	2,717	153.2%	6,879	4,162	543	4,705	470
Bookkeepers	16,038	27.3%	20,216	4,378	3,207	7,585	758
File Clerks	2,031	2.3%	2,077	46	406	452	45
Typists	13,476	75.9%	23,704	10,228	2,695	12,923	1,292
Not Classified under Selected Jobs	119,505		152,995	33,290	23,902	57,192	5,721
All Clerical and Kindred Workers	188,234	45.9%	274,633	86,399	37,646	124,045	12,404

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 10

RETAIL, WHOLESALE AND SERVICE WORKERS IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	New Workers Needed by 1970 For Replacement (d)	New Workers Needed by 1970 Total	To Be Trained Each Year
Major Areas in Distribution							
Wholesale & Retail Trade	229,255	21.4%	278,315	49,060	45,851	94,911	9,491
Service Businesses	72,773	17.2%	85,289	12,516	14,554	27,070	2,707
Hotels & Lodging Places	8,579	17.8%	10,106	1,527	1,715	3,242	324
Finance, Insurance & Real Estate	22,579	43.5%	22,400	9,821	4,515	14,336	1,433
Communication	1,782	134.0%	4,169	2,387	356	2,743	274
Transportation	7,725	no change	7,725	none	1,545	1,545	154
Total Major Areas	342,693	19.1%	408,004	75,311	68,536	143,847	14,383
Selected Occupations							
Managers, Officials, Proprietors	63,163	8.8%	68,721	5,558	12,632	18,190	1,819
Sales Workers	93,967	30.5%	122,626	28,659	18,793	47,452	4,745
Service Workers	31,427	28.2%	37,259	5,832	6,285	12,117	1,211

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 11

PROJECTED 1970 DEMAND FOR AGRICULTURAL WORKERS IN VIRGINIA

		1970		New Workers Needed by 1970		
	Number Employed in 1960	Projection[b] Rate	Number Projected	For Expansion	For Replacement[e]	Total
Farm Operators	97,619[a]	—30%	68,333	.....	17,580	17,580
Regular Hired Farm Workers	20,546	—30%	14,382	.....	3,600	3,600
Farm Related Occupations	62,600[c]	.....	62,600	.....	15,650	15,650
Total	180,765[d]	.....	145,315	.....	36,830	36,830

EXPLANATION OF ABOVE TABLE

a. Numbers reported United States Census of Agriculture for Virginia. (1959)

b. Percentage adjusted to compensate for change in definition of a farm between 1954 and 1959 Census.

c. Based upon figures released by Agricultural Economics Department at VPI and the Virginia Commission on the Industry of Agriculture. It is estimated that approximately 20% of the total of 313,000 individuals employed in the off farm segments of the industry of agriculture require some degree of agricultural training.

d. The figures do not include seasonal farm workers or unpaid family labor.

e. Based upon a 2½% annual replacement factor.

TABLE 12

MANUFACTURING EMPLOYED IN VIRGINIA

	Number Employed in 1960 (a)	1970 Projection Rate (b)	1970 Number Projected	New Workers Needed by 1970 For Expansion (c)	For Replacement (d)	Total
MALES						
Professional and Technical	14,693	127.5%	33,426	18,733	2,938	11,671
Managers, Officials and Proprietors	10,996	29.9%	14,283	3,287	2,199	5,486
Clerical and Kindred Workers	10,859	39.5%	15,148	4,289	2,171	6,460
Sales Workers	10,394	89.2%	19,665	9,271	2,078	12,349
Craftsmen, Foremen and Kindred Workers	54,406	41.6%	77,038	22,632	10,881	33,513
Operatives and Kindred Workers	84,448	13.2%	95,595	11,147	16,889	28,036
Service Workers	4,567	10.2%	5,033	466	913	1,379
Laborers	25,173	17.4%	21,793	None	4,352	4,352
Occupation not Reported	4,925	366.4%	22,970	18,045	985	19,030
Total Males	220,461		304,951	87,870	43,406	122,276
FEMALES						
Professional and Technical	1,992	74.9%	3,484	1,492	398	1,890
Managers, Officials and Proprietors	615	36.4%	838	223	123	346
Clerical and Kindred Workers	15,788	86.9%	29,507	13,719	3,157	16,876
Sales Workers	759	148.9%	1,889	1,130	151	1,281
Craftsmen, Foremen and Kindred Workers	2,394	19.3%	2,856	462	478	940
Operatives and Kindred Workers	54,082	24.2%	67,169	13,087	10,816	23,930
Service Workers	879	3.3%	908	29	175	204
Laborers	1,363	11.6%	1,205	None	241	241
Occupation not Reported	1,602	441.2%	8,670	7,068	320	7,388
Total Females	79,474		116,526	37,210	15,859	53,096
TOTAL IN MANUFACTURING	299,935		421,477	125,080	59,265	175,372

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.
b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.
c. Difference between number employed in 1960 and number projected for 1970.
d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 13

CONSTRUCTION WORKERS IN VIRGINIA

	Number Employed in 1960 (a)	1970		New Workers Needed by 1970			To Be Trained Each Year
		Projection Rate (b)	Number Projected	For Expansion (c)	For Replacement (d)	Total	
Selected Occupations							
Craftsmen, Foremen and Kindred Workers	49,020	4.7%	51,323	2,303	9,804	12,107	1,210
Professional and Technical	3,938	51 %	5,946	2,008	787	2,795	279
Managers, Officials and Proprietors	7,880	38.7%	10,933	3,053	1,576	4,621	462
Workers Not Classified above—Including Clerical	20,296		32,300	2,022	6,059	8,089	808
All Construction Workers	91,134	10 %	100,502	9,386	18,226	27,612	2,761

EXPLANATION OF ABOVE TABLE

a. Numbers as reported in U. S. Census of Population, 1960, Volume on Virginia, Detailed Characteristics.

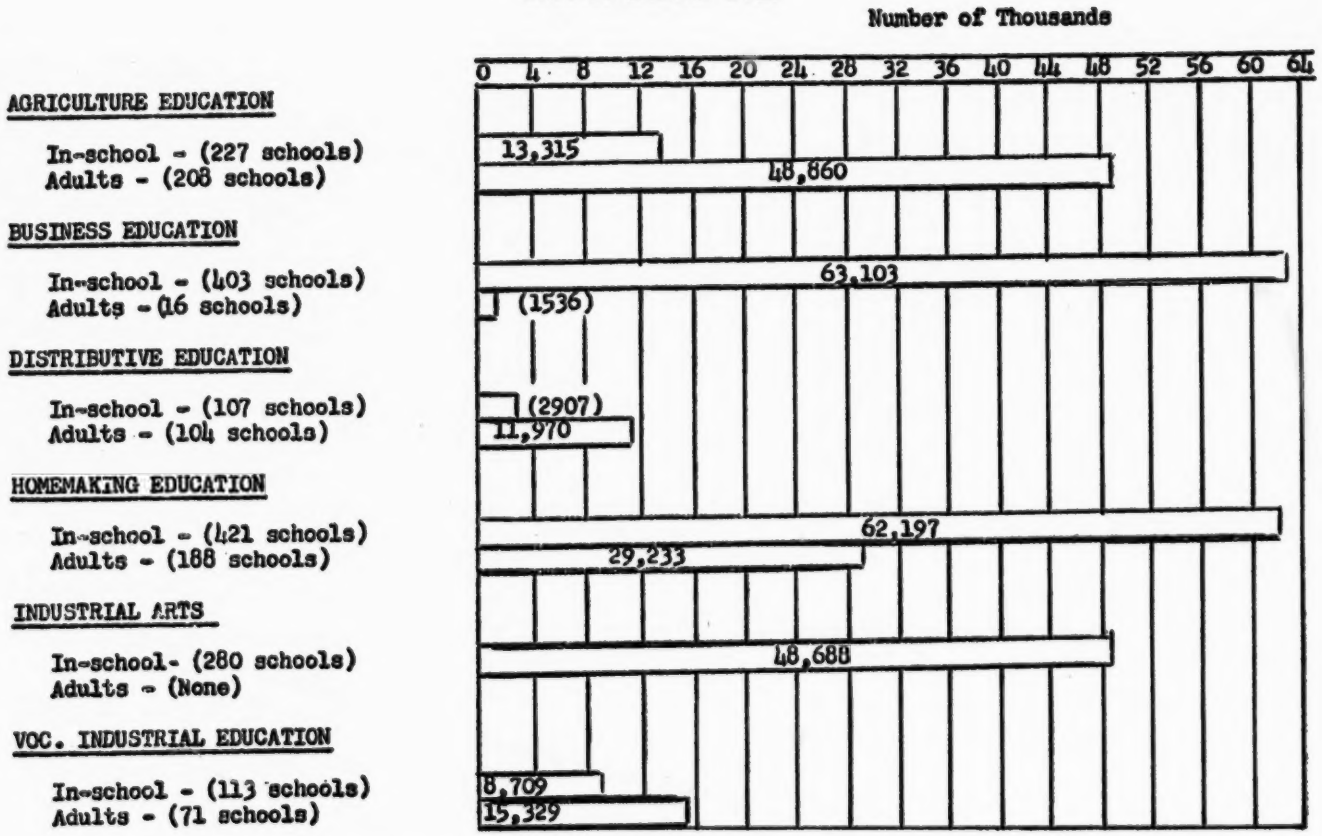
b. Same per cent at which these groups increased in Virginia from 1950 to 1960 as reported by the U. S. Census of Population.

c. Difference between number employed in 1960 and number projected for 1970.

d. Based on the assumption that 2 per cent annually of the persons working in 1960 will withdraw from the labor force because of death, retirement, marriage, childbearing, etc. See page 104 of A Report on Manpower Requirements, Resources, Utilization, and Training, by U. S. Department of Labor, March, 1963.

TABLE 14

IN-SCHOOL AND ADULT ENROLLMENT
BY VOCATIONAL SERVICES
1962-63 School Year



In-school includes all full time enrolees both high school and post high school.

Adult enrollment includes all persons enrolled on a part time basis.

No preparatory program in Distributive Education under present plan.

Pupils graduating from high school in the twelve-year system are required to complete twenty units of work for graduation, sixteen of which shall be in 9, 10, 11 and 12th grade subjects. A student pursuing an industrial education program would include the following required subjects during his five years in high school:

English—5 units; Mathematics—2 units; Science—2 units; Virginia and United States History—1 unit; World History or World Geography—1 unit; Virginia and United States Government—1 unit; Total required units—12.

In addition, six units in industrial education may include two years of industrial arts (2 units) in the earlier years of high school and 2 years in a specialized trade subject (4 units) such as auto mechanics, preferably in the last two years.

To make a total of 20 units, an additional two units may be selected from general education courses.

ED013338

THE PARTNERSHIP VOCATIONAL EDUCATION PROJECT

COMMUNITY COLLEGES
CMU
INDUSTRY SCHOOLS

Central Michigan University
Mount Pleasant, Michigan

VT00453

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A New Program in Industrial-Technical Education

THE PARTNERSHIP VOCATIONAL EDUCATION PROJECT

PROJECT DESCRIPTION

A Proposal
Presented to and Accepted by

THE FORD FOUNDATION

Project Administration

Charles B. Park, Administrative Director
Ernest L. Minelli, Project Director

1965

CENTRAL MICHIGAN UNIVERSITY
Judson W. Foust, President
Mount Pleasant, Michigan

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INTRODUCTION

This is a description of a new program in Industrial-Technical Education designed to improve the quality of industrial-technical education courses, the quality of instruction, the articulation from one phase of education to another, and the application of knowledge through correlation of industrial-technical subjects with other academic areas.

Called the Partnership Vocational Education Project, the program will function on three levels - university, community college, and high school.

This total effort accentuates a committed cooperative approach involving Central Michigan University, selected partnership schools, community colleges, industries and their related associations, Chambers of Commerce, and labor. These groups are unanimous in their belief that real accomplishments will result only from a cooperative effort.

The design of this new program incorporates the opinions of Central Michigan University administrators and faculty, participating school administrators, and representatives associated with industry.

UNDERLYING ASSUMPTIONS AND CHANGING CONDITIONS

This new program is based upon the following assumptions:

1. That our rapidly expanding technology has created a tremendous need for skilled technicians and specialists trained to work with people and with modern machines as they serve as teachers, supervisors, directors, and consultants in the fields of industry, technology, and education.

2. That the problem of unemployment and the growing national problem of the teen-ager without a job provides a real challenge to our total society and calls for new ways of solving these problems by our educational institutions.

3. That success in a new kind of training for a technological society will require a basic redesign in secondary school, community college, and university curricula which provides appropriate balance and relationship between the industrial-technical curricula and the general education curricula.

4. That a new approach to educating youth and teachers can best be accomplished through a cooperative partnership between the University, community colleges, the secondary schools, and industry.

The new Program also reflects certain beliefs held in common by the Central Michigan University faculty and the participating schools. These are.

1. That frequently there has been a lack of general education and professional experience to complement vocational experience in the preparation of vocational education teachers as well as a lack of industrial experience in the preparation of industrial arts teachers.

2. That vocational teachers often have not been given the opportunity to become familiar or work with the other disciplines.

3. That many school curricula offer few alternatives to college-bound students.

4. That high school schedules frequently have been so inflexible that course offerings have been limited and structured by this fact.

5. That too often school curricula offer little challenge to or stimulation for the under achievers.

6. That there has been a lack of coordination between the high school, the community college, and the university.

7. That students committed to vocational programs frequently get locked in, which, in turn, may result in a lack of general education.

8. That there is wide disparity between what is professed and what is taught in industrial-technical education.

PURPOSES

The basic purpose of this new program is to provide an industrial-technical educational program distinguished by the over-all high quality of the high school and college graduates prepared by it.

Supporting purposes are:

1. To improve the quality of and provide industrial-technical education programs designed specifically for the fulfillment of America's purpose and a changing world of work.

2. To provide occupational and professional guidance adapted to the individual competencies and special needs of students.

3. To engage a significantly higher proportion of capable high school graduates in preparing for careers in teaching or industry.

4. To better train high school graduates for continuing their industrial-technical training in college.

5. To make more effective use in industrial-technical education of modern industrial concepts, methods, and work-study internships in industry, and the secondary schools.

6. To provide an orderly transition from the classroom to jobs or continuing development.

7. To develop retraining in-service programs for industrial-technical teachers in the schools.

8. To bring about changes in current secondary, community college, and university curricula necessary to the upgrading of industrial-technical training.

9. To develop a partnership relationship with schools, community colleges, industry, and the University in carrying out a total improvement program.

10. To provide "on-the-job" load-bearing internships.

11. To select and work intensively with a variety of schools in developing pilot demonstration centers.

12. To provide, through the University, continuing guidance to schools interested in designing new and modern programs of industrial-technical education.

SOME BASIC CHARACTERISTICS OF THE PROGRAM

This is a plan for developing new industrial-technical education programs designed to train more and better qualified teachers and better qualified individuals for careers in industry, provide upgraded in-service education for teachers, and improve and enrich curriculum programs of industrial-technical education, both at the secondary and higher education levels. Changes will occur in current secondary, college, and university

programs compatible with our 20th century technological society.

Better industrial-technical education programs will result because this project will involve a closer, cooperative relationship between the secondary schools, industry, and the University. Individuals preparing for teaching industrial-technical education and for industrial careers will be better selected because the project program will begin with recruitment and counseling in the high schools. They will be better educated because the program will provide a more flexible, individualized course of study. They will be better prepared to adjust to changing demands because the program will provide additional and more suitable on-the-job experiences and contact with up-to-date programs.

To ease the transition from classroom to on-the-job performance, the project will provide more field work and field trips, more work-study experience, and more contact with practicing professionals.

Leadership will be provided to selected partnership schools to help them plan and initiate changes in the curricula of their secondary schools to better meet the challenges of our times and needs of our youth.

Industrial-technical education will be a joint responsibility of the secondary schools, industry, and the University. A cooperative approach will provide, not more of the same, but rather a different kind of practical experience-training, including more training under "battle conditions."

The new program will emphasize educating for the present and future beginning with the secondary schools and continuing through the community college and the University. Functioning at all three levels, university, community college, and high school, special emphasis will be on an interdisciplinary approach inter-relating industrial-technical education with other academic areas, namely, in the fields of English, physical science, and mathematics.

Partnership high schools will be concerned with curriculum development programs in industrial-technical education structured to provide for teaching the concepts that will more realistically lead to a fuller comprehension of present-day technology and meet the job preparation or college specialization needs of our youth.

The new industrial-technical education programs will provide experiences involving content not taught in other curriculum areas of the high school---involving an insight into and an understanding of the tools, machines, and industrial processes basic to our technical society. In addition, they will provide for the discovery and development of technical abilities possessed by students. The academic curriculum of the high schools will be adjusted where needed to better supplement and strengthen the total educational experience of the student.

The high school program will adequately provide for the basic instructional needs of 1.) those students who may or may not enter the labor force after graduation; 2.) those students planning to pursue advanced study and careers in an area of technology or applied science; and 3.) the reluctant or slow learner, the culturally deprived, and/or the prospective drop-out, who will be entering the labor force before graduation or immediately after.

The project will provide in-service education for the upgrading of secondary school teachers as well as supervisory and consultative services to partnership schools.

The community college program will be aimed at providing maximum technological training augmented by an interdisciplinary approach. Transfer to the University will be open if the student wishes to earn the bachelor's degree.

An updated University curriculum in industrial-technical education will provide a five-year program leading to a bachelor's degree and a teaching certificate for teachers of industrial-technical education. Emphasis will be on additional teaching and on-the-job

industrial experience and on an inter-departmental academic sequence.

The plan will provide students with a broad, general education background, plus training in communication skills, human relations, research, and practical on-the-job experience in the secondary schools and in industry. The "on-the-job" experiences will be load-bearing, paid internships in the schools and in industry. Key features of the plan will include individually planned courses of study and an improved and better balanced curriculum.

Guidance will be emphasized in the high school, the community college, and the University. The counselor will help the high school or college student plan a program suited to his strengths, weaknesses, and needs. Course requirements will be designed to reach this goal.

CHARACTERISTICS OF THE HIGH SCHOOL PLAN

The high school plan is designed to offer students basic industrial-technical training leading to a fuller comprehension of present-day technology and employment procedures as well as stimulating them to continue their education in the high school, community college, technical institute, or in a four-year college.

The program is intended to appeal to all boys regardless of abilities and talents. Effort will be made to allow for differences in abilities, interests, and needs, as well as afford learning experiences which are most significant for the success of each individual. For some, successful achievement because of the vocational interest of the student may be the motivating force for continuing in school.

The industrial-technical courses will have their content cast in science, mathematics, and English. The natural relationship of each subject to the others will be drawn out and used for augmenting knowledge and for the constant reinforcement of the relationship between the

vocational and the academic subjects. Therefore, inter-relationships between subjects is an integral feature of the program. The program will foster experiments, research, exercises, and opportunities for solving various types of technical problems.

Teaching teams, television, radio, electronic tape, excursions, self-teaching, teaching machines, and internships will be all-important and special features of the program.

In the ninth or tenth grade, the program will consist of "The Study of American Industry." At these grade levels it is hoped all boys in school will see and experience the unity or wholeness of modern industry. Opportunities to study the underlying functions of industry and explore their inter-relations will be provided. No attempt to group students by ability levels will be made in these grades.

During the eleventh and twelfth grades the program will consist of a two-year sequence of four major courses in the subject areas of English, science, mathematics, and industrial-technical education. Students will take courses in these subject areas as a group, but will mix with the rest of the pupils for other courses normally given in these grades.

The natural relationship of each major subject to the others will be drawn out and used for constant reinforcement. The inter-relationships between the subjects will be taught as an addition to the objectives of the courses themselves. Team teaching will be an integral feature of the program. Teachers from the four major subject areas will function as a planning team to organize the content and evaluate the students' work.

In order to accommodate ability differences among students, a three-level program will be followed when deemed desirable. The advanced level will accommodate the college-bound upper ability group. Graduates from this group will provide recruits into teaching and for advanced study and careers in an area of technology or applied science. This could occur either through immediate enrollment in the University or by community college transfer.

The intermediate level will accommodate those middle ability students who may qualify to enter the labor force after graduation or qualify to enter the community college or the University.

The lower level will accommodate the lower ability group of students who are not necessarily college caliber and who will enter the labor force before or after graduation.

No student will be permanently locked into any of the three-level programs if a shift to another program better meets his needs. The program at each level uses the vocational interest of the student as a motivating force in leading to a sound educational program, but the vocational interest does not result in an educational dead-end.

CHARACTERISTICS OF THE COMMUNITY COLLEGE PROGRAM

In the partnership community colleges and/or technical institutes, the training program is designed to give the student proficiency in his selected field of technology, augmented by mathematics, basic sciences, English, and technological principles relative to his selected field. Upon graduation the student should be able to communicate mathematically, scientifically, and linguistically. In order to provide proficiency in these areas and more meaningful experiences to the student, an inter-discipline approach will be used. The major disciplines involved will include the areas of English, science, mathematics, and technical education. As in the pilot partnership high schools, the natural relationships of each subject to the others will be drawn out and used for constant reinforcement. The inter-relationships between the subjects will be taught as an addition to the objectives of the courses themselves. The remainder of the student's program of work will be given over to meeting graduation requirements.

While many of the students in the participating community colleges and/or technical

institutes will probably seek the two-year Associate Degree, transfer to the University will be open to them if the student wishes to earn the bachelor's degree.

CHARACTERISTICS OF THE UNIVERSITY FIVE-YEAR PLAN

Under the University Five-Year Plan, students will have considerably more internship teaching experience than will the students in typical industrial-technical teacher education programs. In addition, on-the-job industrial internship experiences will be provided.

The first two years will be spent on campus in a program especially suited to the needs of each student and the challenge of our times. The remaining three years will consist of alternating semesters of on-campus and off-campus on-the-job paid internships.

The major part of the University program during the student's freshman year will be made up of a two-semester inter-departmental sequence. This major inter-departmental sequence will include the subject areas of English, physics and chemistry, mathematics, and industrial-technical education. Students will take these subjects as a group, but will mix with other college students for additional courses taken during each of these semesters. The natural relationship of each major subject to the others will be drawn out and used for constant reinforcement. The inter-relationships between the subjects will be taught as an addition to the objectives of the courses themselves. Instructors from the four major subject areas will function as a team to organize the content and evaluate the students' work.

The second year will be devoted primarily to general and specialized education. In the alternate semesters, during the remaining years on campus, general and special education will continue to constitute a large proportion of the student's program. Courses in professional education will also be completed during these semesters.

During the student's last semester in college, he will be enrolled in an independent study

dealing with "The Study of American Industry." A team of University professors from the curriculum areas of sociology, economics, commerce, and industrial education will serve as advisers and will help plan and evaluate the student's research. The study will include structure involving the underlying functions of industry and their inter-relationships, the unity or wholeness of modern industry, and a completed product.

In each of the three off-campus semesters, the student will both learn and earn as a full-time intern of a selected partnership school or industry. The student will intern for two semesters in a selected school and one semester in a partnership industry. His first experience will be that of a teacher assistant in a public school, the second in a partnership industry as a learner and employee. The last will be as a teacher associate under close University supervision in one of the partnership schools.

In addition to the three semester internships, the student will have one ten-week summer full-time internship both as a learner and employee in a partnership industry.

CHARACTERISTICS OF THE IN-SERVICE CRASH PROGRAM

Under the new program, extensive in-service education will be provided. Teachers of industrial-technical education will participate in seminars and take other appropriate University courses especially suited to the teachers' needs and for the upgrading of each participant. These seminars and courses will be taught by selected faculty members of Central Michigan University in regional centers or on campus in late afternoon, in the evening, on Saturday, or during the summer session. In some cases, where desirable, individuals from industry will be used to supplement instruction.

Another important feature of the Crash Program provides for an industrial internship where the participating teacher will both learn and earn as a full-time paid employee in a

selected partnership industry. The participant will be placed in a goods-producing or service industry related to his teaching area of specialization.

Participants of the Crash Program may earn credit toward a master's degree. The amount of credit will depend on the quantity and quality of the work completed.

EVALUATION

Evaluation procedures will be pointed toward measuring the effectiveness of this new program in meeting the present-day preparation needs of teachers and labor market trainees. The evaluation plan will be kept flexible in order to make it pertinent and applicable to the action demonstration concept on which this project is based.

IN SUMMARY

Believing that the educated citizen is an integral part of our rapidly expanding technical society, the Partnership Vocational Education Project takes as its major objectives the organization, fostering, and support of a program of education that will encourage and enable all boys to attain an education commensurate with their abilities, aptitudes, and interests.

This Project will establish the following:

1. Improved articulation between secondary schools, community colleges, technical institutes, and the University.

2. An all-university approach to industrial-technical teacher education.

3. Cooperative partnerships between the school, industry, and the University in educating our youth.

4. Greater application of team planning and team teaching.

5. The team idea application with reference to independent study.

6. The concept of more meaningful application to learning among all school disciplines.

7. An extension and a broadening of the base to the concept of "learning by doing."

8. An extension and a broadening of the base to the concept of "earning while learning."

9. A basic redesign for the secondary school, community college, and university curricula which provides appropriate balance and relationship between the industrial-technical curricula and the general curricula.

10. Programs that will accommodate various curriculum patterns in the secondary schools.

11. More effective use in industrial-technical education of modern industrial concepts, methods, and work-study experiences in industry and the secondary schools.

12. A more orderly transition from the classroom to jobs or continuing development.

13. Closer relationships between industrial-technical teachers and those from other disciplines.

14. An upgrading of industrial-technical teachers.

15. A sharing of the uniqueness of the immediate application of theory and practice as now used in industrial-technical classes with the English, science, and mathematics classes.

16. A sound secondary education for the vocational student, one where the vocational interest does not lead to an educational dead-end.

17. School curricula with more alternatives for the college-bound student.

18. A significantly higher proportion of capable high school graduates preparing for careers in teaching or industry.

19. Improved industrial-technical education programs to better meet today's needs.

20. Occupational and professional guidance adapted to the individual competencies and special needs of students.

21. Guidelines for planning new building facilities and for equipping the industrial-technical laboratory.

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REPORT
of
SECOND
RESEARCH COORDINATION CONFERENCE
on
AGRICULTURAL OCCUPATIONS

- SUMMARIZATION PROCEDURES -

- GUIDELINES FOR PILOT PROGRAMS -

January 13, 14, and 15, 1964

The Ohio State University
Columbus

Sponsored by

The National Center for
Advanced Study and Research in Agricultural Education

and the

Agricultural Education Branch
Office of Education
Washington, D. C.

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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REPORT OF

SECOND RESEARCH COORDINATION CONFERENCE ON AGRICULTURAL OCCUPATIONS

- Summarization Procedures -

- Guidelines for Pilot Programs -

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PREFACE

Recently there has been increased emphasis upon broadening vocational agriculture to serve the total agricultural industry. In projecting plans to serve a broader spectrum of agricultural education needs it became increasingly evident to agricultural education leadership that additional information was needed to provide a valid means for projecting needed adjustments and extensions. Recognizing these needs, the National Center, in cooperation with the Agricultural Education Branch of the Office of Education, jointly sponsored the first Research Coordination Conference on Agricultural Occupations, May 27-29, 1963. Fourteen states participated in this conference.

One of the major purposes of that conference was to maximize the possibilities for coordinating and achieving commonality in state agricultural occupations studies without violating the integrity of the individual studies and to provide opportunity for individual states to benefit from the experiences of others in further developing and refining their research proposals.

As the participants and other states moved ahead with their studies, the value of a second research coordination conference to further consider and refine procedures associated with summarization of the studies with a view toward national interpretation became apparent. It also seemed appropriate to give attention to the development of guidelines for establishing, conducting, and evaluating pilot programs growing out of these studies. Therefore, a Second Research Coordination Conference was held at the National Center, January 13-15, 1964, in cooperation with the Agricultural Education Branch of the Office of Education, to focus primarily on summarization procedures and guidelines for pilot programs. Representatives from 21 states participated in this three-day conference.

Time limitations posed certain restrictions on the meeting's purposes. Additional editorial work has been completed by the committee co-chairmen and conference coordinators since the conference. The committee reports, therefore, should be evaluated in terms of the frame-work in which they were produced. Furthermore, they should be looked upon as developmental and a suggested means of achieving some measure of coordination. States should adapt or add to these to fit their specific purposes. It is hoped, however, that each state will be able to retain as many as possible of the common elements identified in the reports and attain the suggested minimal summarization as a means of contributing to a broader summarization and interpretation.

Because of the breadth and implications of these studies, state personnel should give consideration to involving representatives of other vocational services and agricultural businesses in the interpretation and implementation of the findings.

In addition to the committee reports on summarization procedures and pilot programs, several appendices are included. These constitute a rich resource for the researcher.

Finally, it was not possible to include in the report all of the worthwhile ideas and suggestions that were presented. I sincerely hope that participating states will continue to share with the conference coordinators and their fellow participants materials that are developed incident to individual state studies.

A special note of thanks goes to the committee co-chairmen, Drs. J. K. Coster, Glenn Z. Stevens, and Richard A. Baker for their splendid leadership during the conference and for their editorial contributions beyond the conference. Special acknowledgement is due Dr. J. K. Coster and the Department of

Agricultural Education at Purdue University for developing and furnishing the insert page on electronic data processing. I also would like to express my appreciation to Dr. Duane Nielsen for his assistance in coordinating the conference and to the participants for their cooperation and contributions.

Robert E. Taylor
Director

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COMMITTEE REPORT

ON

SUMMARIZATION PROCEDURES

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SUMMARIZATION TABLES FOR AGRICULTURAL OCCUPATIONS DATA

Studies in agricultural occupations other than farming, which are being conducted in the several states, are directed, in part, toward (1) identifying these agricultural occupations by occupational title, (2) determining the number of persons employed in each occupational title, and (3) determining the extent to which competencies in one or more competency categories -- plant science, animal science, soil science, agricultural business management and marketing, and agricultural mechanics -- are needed for the occupations under consideration. In addition, there is interest in determining the extent and nature of non-agricultural competencies that are needed for the occupation.

Were no effort made to condense or consolidate the data collected in the studies of agricultural occupations, the ensuing tabular vehicle could be envisioned as a very large table, with the many occupational titles comprising the stub, and the long array of competencies making up the boxhead.[1] The tables on the pages that follow have been designed to interpret and present in detail pertinent and relevant data pertaining, first, to the occupations and the occupational titles, and, second, to the competencies required or desired.

The tables have been designed to permit maximum classification of the data relating to occupations. If the classifications are too fine or the numbers in the cells too small to suit the individual researcher, then appropriate combinations may be made. The basic format of the table design provides for the classification of occupational titles into eight occupational

---

[1]See Appendix 3 (Stevens' mimeograph on The Statistical Table).

families, and nine levels of employment within each occupational family, but researchers, of course, have the option of classifying occupational titles under occupational families only, or under levels of employment only.

In preparing the summarization tables, it has been assumed that an appropriate sampling procedure has been used to draw a sample of n businesses, industries, or agencies from a defined population of N businesses, industries, or agencies. The defined population may or may not include the entire state. The tables have been prepared especially to summarize data collected on Forms 1 and 2,[2] or modifications of these forms, supplied by one representative or respondent from each business, industry, or agency included in the sample.

Tables 1 through 7 have been designed to present population estimates based on the sample data. If the proportion n/N is known or may be estimated, and if the principle of randomization has been applied rigidly, then the quantity N/n or

$$\frac{1}{(\text{Number in sample} \;/\; \text{Number in population})}$$

may be applied to estimate populations (or parameters) of interest. For example, if a random sample of 20 per cent of the counties in the state is used in a study, and it is determined that there are 50 farm machinery sales and service establishments in the sample of counties, then an estimate of the population of establishments is 1/.20 = 5 (50) = 250 establishments. Specialists in sampling statistics should be consulted to determine error or estimation and confidence limits.

Part of Table 7 and Tables 8 to 11 have been designed to present data based on the sample, and these data, which primarily are proportions, do not

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[2]See Report of Research Coordination Conference on Agricultural Occupations, May 27-29, 1963. Columbus: The National Center for Advanced Study and Research in Agricultural Education, The Ohio State University.

need to be translated into population estimates of numbers.

Hypothetical data are used in the summarization tables to demonstrate the flow of data from table to table. A 10 per cent sample has been assumed. Descriptive statements regarding each table follow.

Table 1. Number of Agricultural Businesses, Industries, and Agencies, Grouped by Predominant Occupational Family

The data in Table 1 are taken from Form 1 and from the state census. This form provides for the classification of establishments in the sample into eight occupational families, based on the nature of the business, industry, or agency. The estimation of the number of establishments in each occupational family in the population is made from the sample.

Table 2. Number of Persons Employed in Agricultural Businesses, Industries, and Agencies, and Number of Persons Needing Agricultural Competencies, in the Sample and Estimated for the Population, by Occupational Family

Table 2 is a continuation of Table 1, and shows data taken from both Forms 1 and 2. It is assumed that the numbers include both full-time and part-time workers. If only full-time workers are to be reported in Table 2, then the title of the table should be modified to read "Number of Persons Employed Full-Time in Agricultural . . . .".

Column 1 of Table 2 represents the total number of persons employed in the sample of agricultural businesses, industries, and agencies shown in Table 1. Column 3 shows the total number of persons who hold occupational titles that require agricultural competencies employed in the sample of establishments. Column 5 shows the five year projection of agricultural workers needing agricultural competencies for the sample. Columns 2, 4, and 6 represent population projections.

Table 3. Estimated Number of Persons Employed Full-Time and Part-Time in Agricultural Businesses, Industries, and Agencies, Based on a Sample of 500 Establishments, Grouped by Occupational Family

Table 3 is a continuation of Table 2, Column 2, and deals with the total number of persons employed in the population of establishments, and shows the breakdown of full- and part-time workers sub-divided by sex.

Table 4. Number of Persons Employed Full-Time and Part-Time in Agricultural Businesses, Industries, and Agencies, Who Need Agricultural Competencies, Based on a Sample of 500 Establishments, Grouped by Occupational Family, and Expected Employment Five Years Hence

Table 4 also is a continuation of Table 2, Columns 4 and 6, and shows the population estimates of the number of persons who need agricultural competencies, both at the time of the study and five years hence, sub-divided by sex.

Table 5. Estimated Number of Persons Who Need Agricultural Competencies in Eight Occupational Families, by Level of Employment, Based on a Sample of 500 Establishments

Table 5 is an extension of Tables 2 and 4. The occupational families have been placed in the boxhead of the table, rather than in the stub, and the stub of the table shows the levels of employment. The field of the table shows the population estimates of each level of employment within each occupational family.

Table 6. Estimated Number of Employment Opportunities for Persons Who Need Agricultural Competencies, Current and Five Years Hence, Full-Time and Part-Time, in the Farm Machinery Sales and Service Occupational Family, by Level of Employment and Occupational Title

TABLE 1

NUMBER OF AGRICULTURAL BUSINESSES, INDUSTRIES, AND AGENCIES, GROUPED BY PREDOMINANT OCCUPATIONAL FAMILY, STATE*, 1964

Occupational family	Number in sample	Estimated in population	State census (1960)#
Farm machinery sales and service....	100	1000	1000
Farm supplies and equipment.....	100	1000	1000
Livestock and poultry industries....	100	1000	1000
Crops, forestry, and soil conservation	75	750	750
Ornamental horticulture.....	25	250	250
Wildlife and recreation.....	20	200	200
Farm service.....	40	400	400
Agricultural service.....	40	400	400
Totals.....	500	5000	5000

*Give area on which data were based, if data were not based on state-wide study.

#Give appropriate year for census data.

TABLE 2

NUMBER OF PERSONS EMPLOYED IN AGRICULTURAL BUSINESSES, INDUSTRIES, AND AGENCIES, AND NUMBER OF PERSONS NEEDING AGRICULTURAL COMPETENCIES, IN THE SAMPLE AND ESTIMATED FOR THE POPULATION, BY OCCUPATIONAL FAMILY, STATE,* 1964

	All persons employed		Persons needing agricultural competencies			
			Current employment		Expected employment five years hence	
Occupational family	Sample	Population estimate	Sample	Pop. est.	Sample	Pop. est.
Farm machinery sales and service.....	2800	28,000	1800	18,000	2500	25,000
Farm supplies and equipment.....	2700	27,000	1700	17,000	2400	24,000
Livestock and poultry industries.....	2600	26,000	1600	16,000	2300	23,000
Crops, forestry, and soil conservation	2500	25,000	1500	15,000	2200	22,000
Ornamental horticulture.....	2400	24,000	1400	14,000	2100	21,000
Wildlife and recreation.....	2300	23,000	1300	13,000	2000	20,000
Farm service	2200	22,000	1200	12,000	1900	19,000
Agricultural service.....	2100	21,000	1100	11,000	1800	18,000
Totals.....	19600	196,000	11600	116,000	17200	172,000

*Give area on which data were based, if data were not based on state wide study.

TABLE 3

ESTIMATED NUMBER OF PERSONS EMPLOYED FULL-TIME AND PART-TIME IN AGRICULTURAL BUSINESSES, INDUSTRIES, AND AGENCIES, BASED ON A SAMPLE OF 500* ESTABLISHMENTS, GROUPED BY OCCUPATIONAL FAMILY, STATE,** 1964

		Full-time		Part-time			
				More than ½ time		Less than ½ time	
Occupational family	Totals	Male	Female	Male	Female	Male	Female
Farm machinery sales and service..	28,000#	1111##	1111	1111	1111	1111	1111
Farm supplies and equipment.....	27,000	1111	1111	1111	1111	1111	1111
Livestock and poultry industries..	26,000	1111	1111	1111	1111	1111	1111
Crops, forestry, and soil Cons'v'n	25,000	1111	1111	1111	1111	1111	1111
Ornamental horticulture.....	24,000	1111	1111	1111	1111	1111	1111
Wildlife and recreation.....	23,000	1111	1111	1111	1111	1111	1111
Farm service.....	22,000	1111	1111	1111	1111	1111	1111
Agricultural service.....	21,000	1111	1111	1111	1111	1111	1111
Totals.....	196,000	1111	1111	1111	1111	1111	1111

* See Table 1.
** Give area on which data were based, if data were not based on state-wide study.
\# Population estimates are shown here, from Table 2.
Ciphers are used to demonstrate table entries.

TABLE 4

NUMBER OF PERSONS EMPLOYED FULL-TIME AND PART-TIME IN AGRICULTURAL BUSINESSES, INDUSTRIES, AND AGENCIES WHO NEED AGRICULTURAL COMPETENCIES, BASED ON A SAMPLE OF 500* ESTABLISHMENTS, GROUPED BY OCCUPATIONAL FAMILY, STATE,** 1964, AND EXPECTED EMPLOYMENT FIVE YEARS HENCE

		Full-time		Part-time				Expected employment five years hence		
				Over ½ time		Under ½ time				
Occupational family	Totals	Male	Female	Male	Female	Male	Female	Totals	Male	Female
Farm machinery sales and service.....	18,000#	1111##	1111	1111	1111	1111	1111	25,000#	1111	1111
Farm supplies and equipment	17,000	1111	1111	1111	1111	1111	1111	24,000	1111	1111
Livestock and poultry industries.....	16,000	1111	1111	1111	1111	1111	1111	23,000	1111	1111
Crops, forestry, and soil conservation.....	15,000	1111	1111	1111	1111	1111	1111	22,000	1111	1111
Ornamental horticulture.....	14,000	1111	1111	1111	1111	1111	11	21,000	1111	1111
Wildlife and recreation.....	13,000	1111	1111	1111	1111	1111	1111	20,000	1111	1111
Farm service.....	12,000	1111	1111	1111	1111	1111	1111	19,000	1111	1111
Agricultural service.....	11,000	1111	1111	1111	1111	1111	1111	18,000	1111	1111
Totals.....	116,000	1111	1111	1111	1111	1111	1111	172,000	1111	1111

* See Table 1.
** Give area on which data were based, if data were not based on state-wide study.
\# Population estimates are shown here, from Table 2.
Ciphers are used to demonstrate table entries.

TABLE 5

ESTIMATED NUMBER OF PERSONS WHO NEED AGRICULTURAL COMPETENCIES IN EIGHT OCCUPATIONAL FAMILIES, BY LEVEL OF EMPLOYMENT, BASED ON A SAMPLE OF 500* ESTABLISHMENTS, STATE,** 1964

Level of employment	Totals##	Occupational family#							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Professional.....	9,000	1400	1320	1240	1160	1090	1010	930	850
Technical.....	8,000	1240	1170	1100	1040	960	900	830	760
Agricultural service.....	23,000	3570	3370	3180	2970	2780	2570	2380	2180
Managerial.....	10,000	1550	1470	1380	1290	1210	1120	1030	950
Supervisory.....	8,000	1240	1170	1100	1040	960	900	830	760
Sales.....	16,000	2480	2340	2210	2070	1930	1790	1660	1520
Clerical.....	13,000	2020	1910	1790	1680	1570	1460	1340	1230
Skilled.....	13,000	2020	1910	1790	1680	1570	1460	1340	1230
Semi-skilled.....	16,000	2480	2340	2210	2070	1930	1790	1660	1520
Totals.....	116,000	18000	17000	16000	15000	14000	13000	12000	11000

* See Table 1.

** Give area on which data were based, if data were not based on state-wide study.

\# Key to occupational families: (1) Farm machinery sales and service; (2) Farm supplies and equipment; (3) Livestock and poultry industries; (4) Crops, forestry, and soil conservation; (5) Ornamental horticulture; (6) Wildlife and recreation; (7) Farm service; (8) Agricultural service.

Population estimates are shown here.

TABLE 6-1*

ESTIMATED NUMBER OF EMPLOYMENT OPPORTUNITIES FOR PERSONS WHO NEED AGRICULTURAL COMPETENCIES, CURRENT AND FIVE YEARS HENCE, FULL-TIME AND PART-TIME, IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE,** 1964#

Level of employment	Full-time						Part-time					
	Current			Five years hence			Current			Five years hence		
Occupational title	Total	Male	Fem.	Total	Male	Fem.	Total	Male	Fem.	Total	Male	Fem.
Professional												
Occupational title 1..	11111@	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111
Occupational title 2..	11111	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111
Sub-total, Prof's'l	11111	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111
Technical												
Occupational title 2..												
Sub-total, Techn'l.												
Agricultural Service												
Sub-total, Ag. Ser.												
Managerial												
Sub-total, Manag'l.												
Supervisory												
Sub-total, Superv'y												
Sales												
Sub-total, Sales												
Clerical												
Sub-total, Clerical												
Skilled												
Sub-total, Skilled												
Semi-skilled												
Occupational title 1..	11111	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111
Sub-total, Semi-sk'd	11111	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111
Totals	11111	1111	1111	11111	1111	1111	11111	1111	1111	11111	1111	1111

*Table 6-1 ...Farm Machinery Sales and Service Occupational Family....
Table 6-2 ...Farm Equipment and Supplies Occupational Family...
Table 6-3 ...Livestock and Poultry Industries Occupational Family....
Table 6-4 ...Crops, Forestry, and Soil Conservation ... Family...
Table 6-5 ...Ornamental Horticulture Occupational Family...
Table 6-6 ...Wildlife and Recreation Occupational Family...
Table 6-7 ...Farm Service Occupational Family...
Table 6-8 ...Agricultural Service Occupational Family...

**Give area on which data were based, if data were not based on state-wide study.

#Based on a sample of 500 establishments. See Table 1.

@Data are tabulated directly from Form 2; no comparable data are found in Tables 2 to 5.

Tables 6 through 11 provide for a complete listing of occupational titles in the stub, classified by occupational family and level of employment. The occupational family classification has been pulled out of the stub and placed in the title of the table. Each table, therefore, has eight parts, with the parts referring to the eight occupational families.

Table 6 may be used in two ways, depending upon the desires and intent of the researcher. It may be used to report the number of current vacancies and/or the occupational opportunities that would be filled if qualified persons were available for employment. With regard to projected employments five years hence, Table 6 may be used to report employment trends, specifically to indicate the number of persons projected for employment minus the number of persons currently employed.

If the researcher does not wish to report current or projected employment opportunities, then, as an alternative, he may modify Table 6, and use it to report current and expected employment for each occupational title, in which case Table 6 would become a continuation of Table 4.

Table 7. Estimated Distribution of Employees by Age in the Farm Machinery Sales and Service Occupational Family Who Need Agricultural Competencies, by Level of Employment and Occupational Title

Table 7 is a continuation of Table 5, with the population estimates for the occupational family--level of employment cells from Table 5 shown as sub-totals in Table 7. Population estimates of the number of persons employed in occupational titles within the cells are shown. The field of the table shows estimated numbers of persons employed in each occupational title in five age group categories.

The right hand side of the table field presents data pertaining to minimum and maximum age desired for initial entry in the occupation. These data are based on the responses checked or given by the persons interviewed and/or filling out Forms 1 and 2; hence, these data are based on the sample of establishments included in the study, with one person responding for each establishment.

The second part or right hand side of Table 7 and Tables 8 to 11 present data that are based on the number of establishments in the sample, rather than on population estimates.

Table 8. Distribution of Level of Education Desired for Initial Employment in the Farm Machinery Sales and Service Occupational Family, by Level of Employment and Occupational Title

Table 8 continues the occupational family--level of employment--occupational title breakdown, as has been used in Tables 6 and 7, but the first column in the field of the table reports the number of respondents (i.e., persons filling out Forms 1 and 2) who indicated that persons holding the occupational title shown in the table stub are employed in their establishment. The percentages shown in the field of the table represent the ratio of the number of respondents checking each level of education category to the total number of respondents who listed the occupational title on Form 1.

State researchers may modify the "Technical Education" column to agree more closely with the educational programs in their states. This column is designed to show occupations to be filled by workers who have had formal education at the post-high school level, such as "some college," "junior college," "13th and 14th year secondary school programs," or "technician training."

TABLE 7-1*

ESTIMATED DISTRIBUTION OF EMPLOYEES BY AGE IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY WHO NEED AGRICULTURAL COMPETENCIES, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE**, 1964#

Level of employment / Occupational title	Totals	Estimated number of persons employed in each age group					Preferences of respondents for age at time of employment@					
							Minimum			Maximum		
		Under 25	25-34	35-44	45-54	55+	% No pref.	Median	Range	% No pref.	Median	Range
Professional												
Occupational title 1.....	111	111	111	111	111	111	11	11	11-11	11	11	11-11
Occupational title 2.....	111	111	111	111	111	111	11	11	11-11	11	11	11-11
Sub-total, Professional	1400##	111	111	111	111	111	11	11	11-11	11	11	11-11
Technical												
Sub-total, Technical..	1240											
Agricultural Service												
Sub-total, Ag. Serv...	3570											
Managerial												
Sub-total, Managerial.	1550											
Supervisory												
Sub-total, Supervisory	1240											
Sales												
Sub-total, Sales.....	2480											
Clerical												
Sub-total, Clerical...	2020											
Skilled												
Sub-total, Skilled....	2020											
Semi-skilled												
Occupational title 1.....	111	111	111	111	111	111	11	11	11-11	11	11	11-11
Sub-total, Semi-sk'd..	2480	111	111	111	111	111	11	11	11-11	11	11	11-11
Totals.....	18000	111	111	111	111	111	11	11	11-11	11	11	11-11

*Table 7-1 ...Farm Machinery Sales and Service Occupational Family...
Table 7-2 ...Farm Supplies and Equipment Occupational Family...
Table 7-3 ...Livestock and Poultry Industries Occupational Family...
Table 7-4 ...Crops, Forestry, and Soil Conservation ... Family...
Table 7-5 ...Ornamental Horticulture Occupational Family...
Table 7-6 ...Wildlife and Recreation Occupational Family...
Table 7-7 ...Farm Service Occupational Family...
Table 7-8 ...Agricultural Service Occupational Family...

**Give area on which data were based, if data were not based on state-wide study.

#Based on a sample of 500 establishments. See Table 1.

@Based on data from representatives of 500 establishments in sample.

##Sub-totals from Column (1), Table 5. Figures represent population estimates.

TABLE 8-1*

DISTRIBUTION OF LEVEL OF EDUCATION DESIRED FOR INITIAL EMPLOYMENT IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE**, 1964#

Level of employment / Occupational title	No. of respondents listing this title	Per cent of respondents indicating each level of education category							
		No pref.	No high school	Some high school	High school grad.	Technical education@	Bachelor degree	Master degree	Doctor degree
Professional									
Occupational title 1.....	111	11	11	11	11	11	11	11	11
Occupational title 2.....	111	11	11	11	11	11	11	11	11
Technical									
Occupational title 1.....	111	11	11	11	11	11	11	11	11
Agricultural service									
Occupational title 1									
Managerial									
Occupational title 1									
Supervisory									
Occupational title 1									
Sales									
Occupational title 1									
Clerical									
Occupational title 1									
Skilled									
Occupational title 1.....	111	11	11	11	11	11	11	11	11
Semi-skilled									
Occupational title 1.....	111	11	11	11	11	11	11	11	11

*Table 8-1 ...Farm Machinery Sales and Service Occupational Family...
Table 8-2 ...Farm Supplies and Equipment Occupational Family...
Table 8-3 ...Livestock and Poultry Industries Occupational Family...
Table 8-4 ...Crops, Forestry, and Soil Conservation Occupational Family...
Table 8-5 ...Ornamental Horticulture Occupational Family...
Table 8-6 ...Wildlife and Recreation Occupational Family...
Table 8-7 ...Farm Service Occupational Family...
Table 8-8 ...Agricultural Service Occupational Family...

** Give area on which data were based, if data were not based on state-wide study.
# Based on sample of 500 establishments, with one respondent per establishment. See Table 1.
@ Use this column to report occupations which require training at the technical, 13th and 14th year post-high school, or junior college levels.
Note: Each line of this table is self-contained. The number given is the number of persons filling out Forms 1 and 2 who listed the occupational title. The percentages are based on the number of persons checking each level of education for a particular occupational title.

Table 9. Distribution of Residential Background Preferred for Initial Employment in the Farm Machinery Sales and Service Occupational Family, by Level of Employment and Occupational Title

Table 9 is based on information generally requested on Form 2, and reports the percentage of respondents representing the establishments in the sample who selected three residential preference categories, or who indicated no preference as to residential background.

Table 10. Salaries and Wages of Persons Employed in the Farm Machinery Sales and Service Occupational Family, by Level of Employment and Occupational Title

Table 10 presents salary and wage data, from Form 2, based on information supplied by the respondents included in the sample of establishments.

Table 11. Per Cent of Respondents Who Indicated That Continuing Education Is Needed for Each Occupational Title in the Farm Machinery Sales and Service Occupational Family, by Level of Employment

Most of the data collecting instruments provide for some indication as to the need for continuing education. Table 11, which follows the format of Tables 8 and 9, provides for a simple indication of the per cent of respondents who indicated that continuing education is needed for each occupational title. Researchers may wish to expand the boxhead of the table to provide information about the different levels or types of continuing education.

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SUMMARIZATION OF COMPETENCY DATA

Tables 1 to 11 have been designed to present summary data regarding agricultural occupations other than farming, listed by occupational titles under appropriate classifications. In this section of the report, attention is directed toward summarizing and presenting data regarding the competencies needed by workers in each occupational title. The common practice followed in the design of the studies is to include a list of competencies in Form 2, and to request the respondents to check the level of competency needed by workers in the occupational title.

The summarization of competency data is made somewhat more difficult by the variations in approaches to collecting competency data which is evidenced in studies of agricultural occupations currently in progress. In the first place, there are variations in the lists of competencies included in the Form 2's that have been prepared or modified for use in the several state studies. Fortunately, even though the individual competencies differ among the studies, there is general agreement on the competency categories. These categories include plant science, soil science, animal science, agricultural business management and marketing, and agricultural mechanics for the agriculturally oriented competencies, and business competencies and trade and industrial competencies for the related areas of competencies.

In the second place, researchers have used different scoring systems to denote the extent to which competencies are needed for specific occupational titles. Some forms call for responses on a two-point scale -- 0, 1, or "Yes" the competency is needed, "No" the competency is not needed. Other forms provide for three responses, e.g., "none," "some," or "high." Still other forms provide for responses on a four-point scale, e.g., "of little importance," "of some importance," "important," and "essential." It is not possible to standardize the

TABLE 9-1

DISTRIBUTION OF RESIDENTIAL BACKGROUND PREFERRED FOR INITIAL EMPLOYMENT IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE**, 1964#

Level of employment / Occupational title	No. of respondents listing this title	Per cent of respondents indicating each category			
		No pref.	Farm	Rural, non-farm	Urban
Professional					
Occupational title 1.....	111	11	11	11	11
Occupational title 2.....	111	11	11	11	11
Technical					
Occupational title 1.....	111	11	11	11	11
Agricultural service					
Occupational title 1.....	111	11	11	11	11
Maragerial					
Occupational title 1.....	111	11	11	11	11
Supervisory					
Occupational title 1.....	111	11	11	11	11
Sales					
Occupational title 1.....	111	11	11	11	11
Clerical					
Occupational title 1.....	111	11	11	11	11
Skilled					
Occupational title 1.....	111	11	11	11	11
Semi-skilled					
Occupational title 1.....	111	11	11	11	11

* Occupational Families:
9-1 ...Farm Machinery Sales and Service...
9-2 ...Farm Supplies and equipment...
9-3 ...Livestock and Poultry Industries...
9-4 ...Crops, Forestry, and Soil Conservation...
9-5 ...Ornamental Horticulture...
9-6 ...Wildlife and Recreation...
9-7 ...Farm Service...
9-8 ...Agricultural Service...

*** Give area on which data were based, if data were not based on state-wide study.

Based on a sample of 500 establishments, with one respondent per establishment. See Table 1.

TABLE 10-1*

SALARIES AND WAGES OF PERSONS EMPLOYED IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE**, 1964#

Level of employment / Occupational title	Monthly salaries of full-time employees: All employees		Monthly salaries of full-time employees: Starting salary		Hourly wages of part-time employees	
	Median	Range	Median	Range	Median	Range
Professional						
Occupational title 1.....	$1111	$1111-1111	$1111	$1111-1111	$1.11	$1.11-1.11
Occupational title 2.....	$2222	$2222-2222	$2222	$2222-2222	$2.22	$2.22-2.22
Technical						
Occupational title 1.....						
Occupational title 2.....						
Agricultural service						
Occupational title 1....						
Managerial						
Occupational title 1....						
Supervisory						
Occupational title 1....						
Sales						
Occupational title 1....						
Clerical						
Occupational title 1.....						
Skilled						
Occupational title 1.....						
Semi-skilled						
Occupational title 1.....	$1111	$1111-1111	$1111	$1111-1111	$1.11	$1.11-1.11

*Table 10-1 ...Farm Machinery Sales and Service Occupational Family...
Table 10-2 ...Farm Supplies and Equipment Occupational Family...
Table 10-3 ...Livestock and Poultry Industries Occupational Family...
Table 10-4 ...Crops, Forestry, and Soil Conservation Occupational Family...
Table 10-5 ...Ornamental Horticulture Occupational Family...
Table 10-6 ...Wildlife and Recreation Occupational Family...
Table 10-7 ...Farm Service Occupational Family...
Table 10-8 ...Agricultural Service Occupational Family...

** Give area on which data were based, if data were not based on state-wide study.
# Based on sample of 500 establishments, with one respondent per establishment. See Table 1.

TABLE 11-1*

PER CENT OF RESPONDENTS WHO INDICATED THAT CONTINUING EDUCATION IS NEEDED FOR EACH OCCUPATIONAL TITLE IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT, STATE**, 1964#

Level of employment Occupational title	No. of respondents listing this title	Per cent checking continuing education needed
Professional		
Occupational title 1	111	11
Occupational title 2	111	11
Technical		
Occupational title 1	111	11
Agricultural service		
Occupational title 1	111	11
Managerial		
Occupational title 1	111	11
Supervisory		
Occupational title 1	111	11
Sales		
Occupational title 1	111	11
Clerical		
Occupational title 1	111	11
Skilled		
Occupational title 1	111	11
Semi-skilled		
Occupational title 1	111	11

* Occupational Families:
11-1 ...Farm Machinery Sales and Service...
11-2 ...Farm Supplies and Equipment...
11-3 ...Livestock and Poultry Industries...
11-4 ...Crops, Forestry, and Soil Conservation...
11-5 ...Ornamental Horticulture...
11-6 ...Wildlife and Recreation...
11-7 ...Farm Service...
11-8 ...Agricultural Service...

** Give area on which data were based, if data were not based on statewide study.

Based on sample of 500 establishments, with one respondent per establishment. See Table 1.

scoring procedure of studies in progress, but it is suggested that studies instituted in the future use a three-, or, preferably, a five-point scale, especially if a factor analysis procedure is contemplated in the summarization of the data.

Table 12. Competency Indexes for Competencies in the Plant Science Category, in the Farm Machinery Sales and Service Occupational Family, by Level of Employment and Occupational Title

Table 12 illustrates a basic format suggested for presenting information regarding the competencies needed for occupational titles of interest to the researcher. The stub of the table represents the occupational titles, classified by occupational family in the table title, and by level of employment within occupational family in the stub of the table. Competencies are listed in the boxhead of the table, categorized, if desired, in the title of the table. In the illustrated table shell, plant science competencies are numbered 1, 2, 3, 4, 5, and so on up to a maximum of k competencies. (In the illustrated table shell k = 5.)

The competency index. The field of Table 12 is composed of a "competency index." For the individual competency, the competency index is defined as

$$\text{Index} = \frac{\text{Responses for a competency summed over workers}}{\text{Maximum possible sum of responses}} \times 100,$$

for each occupational title. Hence, if a 0, 1 (no, yes) scoring system were used, if scores were obtained for 120 workers, and if the competency under consideration were checked "Yes" or scored "1" for 80 workers, then the index would be (80 / 120) (100), or 67. If a three-point scale were used, with the points designated 0, 1, 2, and if there were 40 "0's," 40 "1's," and 40 "2's" assigned for 120 workers, then the competency index would be

$$\text{Index} = \frac{(40)\ (0) + (40)\ (1) + (40)\ (2)}{(120)\ (2)} = \frac{120}{240}\ (100) = 50.$$

The competency index provides a uniform method of reporting competencies, regardless of whether the competencies were scored on two-, three-, four-, or five-point scales. Caution should be exercised in comparing indexes derived from different methods of scoring, since there is no empirical evidence to denote whether an index based on a two-point scoring system is equivalent to an index based on a three-, four-, or five-point system. If it can be assumed, however, that the competency needed is distributed on a continuum, rather than dichotomized, and if the sample is relatively large, then it seems reasonable to assume that indexes based on different scoring systems are comparable.

Summarization across competencies. The detailed reporting on all possible competencies may tax both the publication resources of the researcher and the patience of the reader. Some researchers, therefore, may prefer to categorize or cluster competencies, and report indexes for the categories or clusters. The simplest method of categorization is to use arbitrary classifications, such as plant science or animal science, and report the average index for all competencies classified under each category. Such an average is shown in Table 12.

Indexes based on data averaged over several competencies in a competency category should be interpreted with a reasonable degree of caution. Generally, the individual competencies included in a competency category, such as plant science, do not represent a sample of competencies, but, rather, they represent competencies of special interest to the researcher. If the competencies within a category are highly correlated, then the averages are meaningful in the interprepation of data insofar as the data pertain to the description of competency needs of workers in the occupational titles. If, however, the competencies are uncorrelated, then the averages have limited value in describing the competency needs of the workers. The categorization or clustering of competencies is an area in which additional research is needed.

TABLE 12-1A*

COMPETENCY INDEXES FOR COMPETENCIES IN THE PLANT SCIENCE CATEGORY, IN THE FARM MACHINERY SALES AND SERVICE OCCUPATIONAL FAMILY, BY LEVEL OF EMPLOYMENT AND OCCUPATIONAL TITLE, STATE**, 1964

Level of employment / Occupational title	Plant science competency number# (1) Ind	(2) Ind	(3) Ind	(4) Ind	(5)..... Ind	(6) Ind	Aver. of k@ competencies Index
Professional							
Occupational title 1.....	66	55	44	50	60		55
Occupational title 2.....	55	60	65	60	55		59
Average, Professional.....	61	58	55	55	58		57
Technical							
Average, Technical.....	11	11	11	11	11		11
Agricultural service							
Average, Agr. Serv..							
Managerial							
Average, Managerial.							
Supervisory							
Average, Supervisory							
Sales							
Average, Sales.....							
Clerical							
Average, Clerical...							
Skilled							
Average, Skilled...							
Semi-skilled							
Occupational title 1.....	25	30	35	30	25		29
Average, Semi-skilled.....	25	30	35	30	25		29
Overall average.....	11	11	11	11	11		11

*Key to Table 12

Occupational families	Plant science	Animal science	Soil science	Agric. mgt.mkg.	Agric. mech.
1. Farm Machinery Sales and Service.....	12-1A	12-1B	12-1C	12-1D	12-1E
2. Farm Supplies and Equipment.	12-2A	12-2B	12-2C	12-2D	12-2E
3. Livestock and Poultry Industries.....	12-3A	12-3B	12-3C	12-3D	12-3E
4. Crops, Forestry, and Soil Conservation.....	12-4A	12-4B	12-4C	12-4D	12-4E
5. Ornamental Horticulture.....	12-5A	12-5B	12-5C	12-5D	12-5E
6. Wildlife and Recreation.....	12-6A	12-6B	12-6C	12-6D	12-6E
7. Farm Service.....	12-7A	12-7B	12-7C	12-7D	12-7E
8. Agricultural Service.....	12-8A	12-8B	12-8C	12-8D	12-8E

** Give area on which data were based, if data were not based on state-wide study.
# Show competency titles at bottom of table.
@ k refers to variable number of competencies. For this illustration, k = 5.

SUGGESTIONS FOR PROCESSING DATA

The processing of data and the derivation of competency indexes may be facilitated if the data are prepared for handling by high speed computer machines. Much time may be saved if data collecting instruments are designed to permit punching data cards directly from the instrument. Suggestions are given here for the preparation of data for machine computation. Before any suggestion is implemented, however, the researcher should consult computer programming specialists to determine the nature and capacities of the machines that are available locally.

Illustration of Lay-out of Data

The IBM card used widely in computer laboratories has 80 columns, with 10 digits (0 to 9) in each column. In addition, there is a possibility of using an "X" and "Y" overpunch in each of the 80 columns. Each number punched into the card occupies a "field." A single digit--e.g., 0, 1, 2--occupies a single column field. A two digit number--e.g., 21--occupies a two column field.

A sample IBM multiple card lay-out is included in this report. The local project number is coded in Columns 1-4. Most of the studies of agricultural occupations will require more than 80 columns to record the data from Forms 1 and 2 for each occupational title; hence, two or more cards will be required for each title. The card number is punched in Column 5, according to the example. In the example, Card 1 is used to record information regarding the number of workers for each occupational title, and Card 2 is used to record information regarding competencies. Columns 6 to 14 are identical for the two cards, and are used to record identification data as follows:

Columns 6-8 Code the business, industry, or agency number from Form 1.

Columns 9-12 Code the occupational title, e.g., 0001, 0002, or follow the Dictionary of Occupational Titles.

Column 13 Code the occupational family, e.g., 1 -- Farm Machinery Sales and Service; 2 -- Farm Equipment and Supplies, etc.

Column 14 Code the level of employment, e.g., 1 -- Professional; 2 -- Technical; 3 -- Managerial, etc.

Columns 15-16, as a field, show the number of full-time employees for each occupational title in Columns 9-12, for each establishment coded in Columns 6-8, on Card 1, and this information probably should be repeated for Card 2. Columns 17-18, as a field show the number of part-time employees, and this information also probably should be recorded in comparable columns in Card 2.

Competency scores -- for example, 0, 1 for two-point scales or 0, 1, 2 for three-point scales -- are coded directly on Card 2 in Columns 21 and following columns.

Summarization of Competency Data from Cards

The lay-out of Card 2 has been designed to facilitate the computation of competency indexes both for individual competencies and for the average of a competency category, such as the plant science competency category. Some computers may be wired to permit summations over columns so that, for example, the scores for Columns 21-25 may be summed for each individual entry, and the sum punched in a field on the same card. The sample lay-out shows the sums of Columns 21-25 punched in the Columns 61-62 field. The Columns 61-62 field sums then may be summed over individual entries to obtain the grand total summed over columns and summed over individuals. If j represents the number of individuals in an occupational title, and k represents the number of competencies, then the grand total is the sum of scores for jk entries. The maximum possible grand

I.B.M. MULTIPLE CARD LAYOUT

PROJECT 1863

DATE 3/13/64

1		1	1	1		1	
2	PROJE	2	2	2	PROJECT	2	
3	NUMBE	3	3	3	NUMBER	3	
4		4	4	4		4	
5	CARD 1	5	5	5	CARD 2	5	
6	BUSIN	6 S.S.	6	6	BUSINE	6 S.	
7	INDUSTR	7 Y.	7	7	INDUSTRY OR	7	
8	OR AGE	8 CY NUMBER	8	8	AGENCY	8 NUMBER	
9		9	9	9		9	
10	OCCUPA	10 IONAL	10	10	OCCUPA	10 IONAL	
11	TITLE	11 CODE	11	11	TITLE	11 CODE	
12		12	12	12		12	
13	OCCUPAT	13 IONAL FAMI	13 Y	13	OCCUPAT	13 IONAL FAMILY	
14	LEVEL OF	14 EMPLOYM	14 ENT	14	LEVEL OF	14 EMPLOYMENT	
15	NUMBE	15 CURRENT	15	15		15	
16	FULL-TIM	16 E EMPLOYE	16 ES *	16	LEAVE	16 BLANK	
17	NUMBER	17 CURRENT	17	17		17	
18	PART-TIM	18 E EMPLOYE	18 ES *	18	FOR OTHER	18	
19	NUMBER	19 FUTURE	19	19	IDENTIFICATION	19	
20	FULL-TIM	20 EMPLOYEE	20 *	20	DATA	20	
21	NUMBER	21 FUTURE	21	21	PLANT S	21 IENCE COMPETENCY	1 2 mos
22	PART-T	22 E EMPLOY	22 ES *	22	"	22 " "	
23	AVERAGE	23 NUMBER	23	23	"	23 " "	
24	YEARS IN	24 OCCUPAT	24 **	24	"	24 " "	
25		25	25	25	"	25 " "	
26	MONTHL	26 SALARY	26	26	ANIMAL S	26 IENCE COMPETENCY	1 2 mos
27	FULL-T	27 E EMPLOY	27 ES	27	"	27 " "	
28		28	28	28	"	28 " "	
29	HOURLY	29 RATE	29	29	"	29 " "	
30	PART-T	30 E	30	30	"	30 " "	
31	EMPLOY	31 ES	31	31	AGR. BUS	31 MGT. COMPETENCY	1 2 mos
32	EDUCATION	32 AL LEVEL	32 EPERRED	32	" "	32 "	"
33	RESIDEN	33 AL BACKG	33 OUND PREFE	33	" "	33 "	"
34	YEARS	34 OF	34	34	" "	34 "	"
35	EXPERIE	35 CE DESIRE	35	35	" "	35 "	"
36	ADVANC	36 D TRAINI	36 NEEDED	36	AGR. MECH.	36 COMPETENCY	1 2 mos
37		37	37	37	" "	37 "	
38		38	38	38	" "	38 "	
39		39	39	39	" "	39 "	
40		40	40	40	" "	40 "	
41		41	41	41		41	
42	* RECO	42 D NUMB	42 R OF	42		42	
43	EMPL	43 EES OF	43 OCCUPATI	43 AL		43	
44	TITLE	44 SHOWN	44 IN COLS.	44 9-12		44	
45		45	45	45		45	
46		46	46	46		46	
47	** AVER	47 AGE OF AL	47 EMPLOYEE	47		47	
48	HOLD	48 L SAME	48 OCCUPATIO	48 AL		48	
49	TITL	49 IN COLS	49 9-12	49		49	
50		50	50	50		50	
51		51	51	51		51	
52		52	52	52		52	
53		53	53	53		53	
54		54	54	54		54	
55		55	55	55		55	
56		56	56	56		56	
57		57	57	57		57	
58		58	58	58		58	
59		59	59	59		59	
60		60	60	60		60	
61		61	61	61	SUMS	61 COLS. 21-25	
62		62	62	62		62	
63		63	63	63	SUMS	63 COLS. 26-30	
64		64	64	64		64	
65		65	65	65	SUMS	65 COLS. 31-35	
66		66	66	66		66	
67		67	67	67	SUMS	67 COLS. 36-40	
68		68	68	68		68	
69		69	69	69		69	
70		70	70	70		70	
71		71	71	71		71	
72		72	72	72		72	
73		73	73	73		73	
74		74	74	74		74	
75		75	75	75		75	
76		76	76	76		76	
77		77	77	77		77	
78		78	78	78		78	
79		79	79	79		79	
80		80	80	80		80	

total is jk times the maximum possible coded score. Suppose j = 11, and k = 5, and suppose a three-point scale, coded 0, 1, 2 were used, then the maximum possible grand total would be 110. If the obtained grand total were 75, then the average index would be (75 / 110) (100), or 68. If indexes for the individual competencies were desired, then summations would be necessary for each competency over the j individuals in each occupational title, and the sum divided by j times the maximum score for each competency.

A matrix of scores for j = 11 and k = 5, where competencies have been scored 0, 1, 2 appears as follows:

	Establishment			Occupational title				Coded scores						
Columns--	6	7	8	9	10	11	12	21	22	23	24	25	61	62
	0	0	1	0	0	0	1	1	0	2	0	1	0	4
	0	0	2	0	0	0	1	1	2	2	1	1	0	7
	0	0	3	0	0	0	1	0	2	1	1	1	0	5
	0	0	4	0	0	0	1	2	2	1	1	1	0	7
	0	0	5	0	0	0	1	2	2	2	1	1	0	8
	0	0	6	0	0	0	1	2	1	2	1	2	0	8
	0	0	7	0	0	0	1	1	2	1	1	1	0	6
	0	0	8	0	0	0	1	2	1	1	1	1	0	6
	0	0	9	0	0	0	1	2	2	2	1	0	0	7
	0	1	0	0	0	0	1	2	2	2	2	2	1	0
	0	1	1	0	0	0	1	2	2	1	1	1	0	7
				Totals				17	18	17	11	12	7	5
				Maximum possible total				22	22	22	22	22	1 1	0
				Indexes				77	82	77	50	55	6	8

It is important to note that the examples shown are based on data supplied by the person interviewed, as listed on Form 1, for each occupational title listed on Form 1, for which detailed information is obtained on Form 2. Data, therefore, are based on the 500 establishments as indicated in Table 1, rather than on the sample of 11,600 workers, as indicated in Table 2. This procedure is satisfactory as long as there is approximately the same number

of workers in each occupational title in each establishment, or as long as the researcher is willing to assign equal weights to the persons interviewed. If the researcher is not satisfied with either of these implied assumptions, then a Card 2 should be prepared for each worker by preparing as many duplicate cards as there are workers numbered in Columns 15-16 and 17-18 for each occupational title in each establishment. Most computer laboratories have machines which may be used to prepare duplicate cards from a master card. If a card is prepared for each worker, then j would represent the number of workers, rather than the number of establishments employing persons with a specified occupational title.

COMMITTEE REPORT

ON

GUIDELINES FOR PILOT PROGRAMS

Glenn Z. Stevens - Chairman

Jerry J. Halterman	California
Irving C. Cross	Colorado
H. T. Lester	Georgia
Ralph A. Benton	Illinois
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James K. Baker	Oklahoma
Earl S. Webb	Texas
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GUIDELINES FOR PILOT PROGRAMS IN AGRICULTURAL EDUCATION*

The purpose of pilot programs is to provide a systematic basis through which program improvements may be brought about in agricultural education. While pilot programs are an essential part of an on-going program in agricultural education, they become particularly important at this time. Not only do we have the new national Vocational Education Act of 1963 which provides for a broader program but in addition we are faced with accelerating changes in the students, schools, and communities that we serve, as well as in agriculture. It is becoming increasingly essential that states provide for experimentation and program development in their state plans.

State staffs have an increased responsibility in providing leadership for changes in programs which will strengthen agricultural education. Pilot programs provide an opportunity to develop and refine new approaches and to offer tested recommendations for the further improvement of programs. We do not subscribe to change just for the sake of change, but recognize that change is inevitable, and the proper role of state staffs in agricultural education is to provide leadership to desired change. Planning for orderly, systematic change should be continuous. The changes to which we refer are not the kind that teachers traditionally make within their own departments. We are referring, rather, to major changes that have implications for state wide programs.

A pilot program is a planned activity for testing a new idea in a realistic situation. There are four distinct steps in a pilot program.

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*Adapted from an Ohio State University Agricultural Education Seminar Report by M. G. Linson, et al., 1962.

Each step is a different phase in the development or adoption of an innovation. Briefly, the four steps in a pilot program are:

1. Identifying new ideas and concepts
2. Designing ideas into workable educational programs of action
3. Evaluating through field testing
4. Disseminating ideas which have proven successful

Step one is the identification of ideas that have implications for educational improvement. Priority should be assigned to those ideas which appear to have particular significance for further development of the state program. Step two involves the process of designing the promising ideas identified in step one into workable educational plans. The third step is one of field testing and evaluation. The plan for evaluation should be developed prior to the beginning of the field test. The educational innovation should be thoroughly tested to determine its educational values and possible limitations or restrictions. The final step comes when a new idea has been proven valuable to education and is ready for wide dissemination.

These four steps are inter-related, but each is sufficiently important to merit individual attention. The competencies of specialized resource people should be utilized in each step. Brickell,[1] in a study of educational change in schools in the State of New York, concluded that the most formidable block to instructional improvement today is that education unlike medicine, agriculture, and industry fails to distinguish the three phases of change: design, evaluation, and dissemination. Moreover it fails to support adequately the basic research which should precede the design stage.

Pilot programs in agricultural education can best serve their purpose when each step is adequately developed to fulfill its specific purpose.

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[1]Henry M. Brickell, Organizing New York State for Educational Change. New York: The University of the State of New York. State Education Department, 1961.

Because each step is different the procedures and personnel used will vary accordingly. State staffs must assume the responsibility for guiding the innovation through the four steps in such a manner that the results can be evaluated and considered for use in improving vocational programs.

Only a small number of pilot programs should be attempted at any one time because of limitations of staff, financial resources, etc. Therefore, systematic procedures should be used in determining major changes and extensions in the on-going program.

STEP I - IDENTIFY IDEAS FOR PILOT PROGRAMS IN AGRICULTURAL EDUCATION

Teachers, state department personnel, teacher educators, and lay citizens all have ideas for improving vocational agriculture programs. Some ideas have limited possibilities for application in a state-wide program, but all need to be considered.

A. Guiding Principle

In identifying possible pilot programs in agricultural education, state leadership should actively and continuously encourage the development of new ideas for program improvement and expansion and new program development. A small committee should be charged with receiving the ideas, analyzing and determining those which appear to show promise, determining needed priorities, and recommending those for which pilot programs should be developed.

B. Guidelines

The following guidelines apply to joint state staffs in agricultural education.

1. Evaluate present programs within the state as a means of determining how well such programs are meeting current needs. Such an evaluation

might consider studies already completed as well as additional studies and surveys to identify needed improvements in the program.

2. Consider the need for expanding programs to meet the needs of additional students as provided by the national Vocational Education Act of 1963. Among these might be: Programs for Disadvantaged Students; Procedures for Training for Farm Related Occupations; Post-High School, including Technician Education; and Joint Programs with other Vocational Services.

3. Make an organized effort to secure suggestions from those now affected by the programs of agricultural education. Teachers, school administrators, board members, and their representatives on advisory committees should be invited to submit ideas for improving programs.

4. Appoint a state-wide Pilot Programs Committee.

   a. This committee should be limited in numbers and should include those with administrative responsibilities in agricultural education. Such a committee might include the head state supervisor, head teacher educator, and two or three additional persons from the staffs and advisory committee.

   b. Each suggested innovation should be considered in terms of its potential contribution to the state-wide program. Those which appear to have major implications should be referred to the joint staffs and advisory committee.

5. Consider recommendations of the State Pilot Programs Committee, assign priorities, and name a director with commensurate authority to give leadership to each pilot program.

STEP II - DESIGN THE EDUCATIONAL PLAN

The development of the design for the educational program is a basic step which must precede field testing. The cruciality of this step merits the use of the most competent talent and other resources that can be assembled.

A. Guiding Principle

The educational plan for each pilot program should be carefully designed. It should be developed in an atmosphere of freedom from normal controls, standards, and regulations which might limit the scope and direction of the program. The plan should "spell out" the things that are to be done, a time table (or schedule) for getting the program under way, and the person responsible for the different phases of the plan. The people who are closely involved in the pilot program should participate in designing the plan.

B. Guidelines

1. Designate a director who will have major responsibility for the development of the educational plan.
2. Use specialized consultants in developing the plan and to test ideas against known factors and basic research.
3. Involve school administrators and guidance counselors in developing the plan.
4. Consider the appointment of both state and local advisory committees, depending on the scope and significance of the pilot program(s).
5. Develop as part of the educational plan:
   a. A statement of the philosophical basis and/or situation which prompted the idea for the pilot program.
   b. Statements of purposes and objectives of the program.

c. Statement of what is expected from the pilot program and the resulting changes that will benefit the program of agricultural education.

d. Curricular content to be included in the pilot program.

e. Teaching materials and equipment needed.

f. Specific steps in the procedure to be followed.

g. Number of schools needed as pilot centers.

h. Criteria for selecting schools (kind of community and schools settings needed).

i. Qualifications of teacher and/or others who will be responsible for the program.

j. Number of students to enroll.

k. Criteria for selecting students.

l. Administrative changes the pilot school(s) will need to make to implement the plan.

m. Length of pilot program(s), including time needed for effective evaluation.

n. Estimated cost of conducting the program.

o. Orientation and training needed (and/or professional or technical course).

p. Records to be kept and the reports to be made.

6. Provide for critical review of plans by specialists, staff members, school administrators and counselors, advisory committees and others who are qualified by training and experience to make an appraisal.

7. Secure approval of the plan and necessary financing.

8. Designate a coordinator in each school where the plan is to be implemented. The coordinator, in many schools, may be the teacher of agriculture.

9. Postpone using the pilot schools as demonstration centers until evaluation proves the ideas or practices are educationally sound.

STEP III - EVALUATE THROUGH FIELD TESTING

This step involves taking the completed educational plan prepared in Step II and developing the evaluation procedure. The education plan is then field tested under actual conditions. The plan for evaluation of the innovation should be carefully followed.

Special attention given to the pilot program may result in over-achievement to the extent that the apparent beneficial effects of a given innovation will be due to the added effort (Hawthorne Effect) rather than to the innovation being tested. To insure a more accurate evaluation it is necessary to give control schools the same kind of attention.

A. Guiding Principle

Field testing of innovations in agricultural education should take place under carefully controlled conditions. The complete evaluation procedure should be developed prior to the field testing and followed throughout the trial. Criteria for evaluating outcomes must be clearly stated in advance. (A "no" may be as valuable as a "yes".)

B. Guidelines

1. Devise, with consultant help, the evaluation procedure and instruments that will be used to determine the degree to which the pilot program attained its objectives. (See suggested patterns for evaluation, section C which follows.)
2. Follow, with minimum deviation, the evaluation procedure developed prior to the field test.
3. Select participating field study situation(s).
4. Discuss detailed plan with those who will be involved.

5. Arrange for personnel, materials, and facilities and equipment necessary to conduct the program.
6. Agree on any financial aid that might be supplied.
7. Draw up agreements which clearly state the responsibilities of all individuals and agencies involved.
8. Have agreements signed by appropriate officials.
9. Since pilot programs are untried and may deviate considerably from standard procedure, involve only enough situations to allow for proper evaluation.

C. Patterns of Evaluative Procedures

The purpose of a pilot program is to obtain answers to clearly stated questions that have originated in an idea for a new direction in occupational education. The idea must appear to offer promise, the obstacles must not be insurmountable, the administrative limitations must be resolved, and valid criterion measures must be chosen or developed.

A pilot program is action research on which judgment is being suspended while comparisons involving some degree of controls are being made and an appraisal prepared for publication. There are varying levels of research sophistication in pilot programs. The results may be reported simply as verbal or mathematical observations. A next level might involve a kind of pre-experimental design. At the very best, a true experimental model will be appropriate to the most efficient use of available resources. If the proposal cannot meet necessary conditions for true experimentation, a quasi-experimental design may be substituted and a worthwhile complex developmental procedure synthesized.

The most frequently used pattern or model for an action program involves the application of a specially prepared, new treatment to one

group of students. Observations of outcomes are made. This design is known as a one-group case study.[2]

A treatment	$\longrightarrow$	Observation
X	is followed by	O

If a pre-test is administered before the treatment, the design is modified to measure change assumed to be due to the pilot program. It is a one-group pre-test-post-test study.

Pre-test	$\longrightarrow$	Treatment	$\longrightarrow$	Post-test
O_1		X		O_1

By testing students who received a special treatment and comparing results with scores of students who did not receive the treatment, a static-group comparison design has been effected without prior random assignment.

	Treatment	$\longrightarrow$	Observation
First group:	X		O_1
Second group:			O_2

Often the only feasible plan for trying out an innovation in teaching is to apply the treatment to an intact class. If this group of students and the students in another class not given the special treatment are pre-tested and post-tested, the model may be called a quasi-experimental non-equivalent control group design. If a considerable number of schools can be made available, with random assignment of half of them to each treatment, the school average scores may be analyzed as a true experimental design.

Pre-test	Treatment	Post-test
O_1	X	O_1
- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
O_2		O_2

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[2]N. L. Gage, ed., Handbook of Research on Teaching. Chicago: Rand McNally and Company, 1963. (See Chapter 5 by D. T. Campbell and J. C. Stanley.)

Another possibility is the use of entire schools or classes as intact experimental groups with matching schools or classes as control groups. To check for the Hawthorne effect, an extra group of control schools or classes could be used without a pre-test. This design might be labeled "A quasi-experimental matched control group design."

Pre-test	Treatment	Post-test
O_1	X	O_1
O_2		O_2
		O_3

Reference to the Campbell, Stanley chapter previously cited will give the potential coordinator of a pilot project suggestions on how to use a true experimental design if random assignment of students to treatment groups is feasible. Pre-test-post-test control groups, post-test only control groups, or an inclusive four-group design are recommended. Multivariate designs, such as factorial experiments, are highly efficient especially when interaction and covariation are taken into account.

For any appraisal to be worthwhile, valid criterion measures of outcomes must be constructed. Some measure student knowledge. Those that report occupational placement and progress, in forms germane to societal goals as well as to individual counseling, have special significance as agricultural education expands into new areas along with related vocational education fields.

STEP IV - DISSEMINATE FIELD TESTED INNOVATIONS

People who have studied the process of dissemination of new ideas indicate that observation brings about much more rapid adoption than written or oral reports. It is also true that people generally accept new practices faster when these practices are observed in situations similar to their own. For example, teachers and school administrators in small districts may be reluctant

to adopt new practices that have been demonstrated only in large school systems. The wide-spread dissemination of new practices should take place ONLY after field testing has shown that these practices are educationally and administratively sound. Even then, the results may be "good" but not something that every school should include.

A. Guiding Principle

Innovations in education should be demonstrated in schools in normal settings, providing maximum opportunity for interested personnel to observe and acquaint themselves with the development.

B. Guidelines

1. Select schools for demonstration centers, taking into consideration location, facilities, size, and potential of enrollment. Additional financial assistance may be needed to insure a complete and adequate demonstration.
2. Arrange for state department of education personnel, teacher educators, school administrators, teachers, and advisory groups to observe demonstration centers.
3. Prepare a complete, written description of the innovation.
4. Provide teachers with needed instruction, assistance, and materials to enable them to utilize the innovation when appropriate.
5. Publicize through professional journals and other appropriate media, the accomplishments and values gained from the innovation.

SUMMARY

The section on "Guidelines for Pilot Programs" suggests four steps: 1. Ideas, 2. Design, 3. Field Study and Evaluation, and 4. Dissemination. The suggestion that we start with "ideas" indicates that pilot programs should represent innovations in agricultural education. Educational needs stem

primarily from the basic needs of people. As many of the functions performed in agriculture have moved from farm to urban areas, the needs for training have expanded to include not only training for farming but also training for agricultural business and industry.

One of the major purposes of pilot programs is to explore areas of vocational education in which we would push back the horizons and develop ways to serve more effectively the present and emerging needs of people under the rapidly changing technology. Integrated programs of agriculture, distributive education, and trades and industry, along with related elements of science, social science, mathematics, and other aspects of general education, appear to be areas in which pilot programs should be developed. Programs to improve the conditions of socio-economic depressed groups and reduce the problems of school drop-outs and potential drop-outs need to be developed in order to meet our responsibilities under the Vocational Education Act of 1963.

The committee suggests the following as problem areas for pilot programs:

1. Developing programs where an agriculture teacher is the local school coordinator of cooperative education experiences.
2. Developing vocational agriculture programs in new school district reorganization patterns.
3. Cooperative related agricultural industries training:
   a. Cooperate with representatives of agricultural business and industry.
   b. Cooperate with other educational training programs.
   c. Cooperate with other agricultural agencies.
4. Effectiveness of providing specific in-service teacher education in:
   a. Technical agriculture, b. Distributive occupations, and c. Aspects of general education, such as social science, science, economics, and mathematics.

5. Providing programs with full-time adult teachers.
6. Providing subject matter specialists to improve instructional programs.
7. Developing programs for low income farmers.
8. Using resource persons for teaching, advisory work, and recruiting.
9. Measuring effectiveness of training in terms of technical principles as opposed to training in specific skills and abilities.
10. A program providing for specialized training in the operation, maintenance, and care of farm machinery.
11. A program in vocational agriculture at the junior high level for potential drop-outs in urban areas.
12. Providing educational programs for rural youth who did not complete high school.
13. Upgrading communications skills of high school agricultural students.
14. Measure effectiveness for training drop-outs and/or potential drop-outs for agricultural occupations other than farming.

APPENDICES

Appendix 1

EXAMPLES OF AGRICULTURAL OCCUPATIONS OTHER THAN FARMING AND RANCHING, CLASSIFIED BY AGRICULTURAL OCCUPATION FAMILIES

I. FARM MACHINERY SALES AND SERVICE OCCUPATIONS

Blacksmith, welder, and general repairman
Custom farm machine operator
Farm machinery mechanic's helper
Farm machinery mechanic
Farm machinery service center foreman
Farm tire service operator
Farm machinery parts helper or clerk
Farm machinery parts manager
Farm machinery salesman
Farm machinery fieldman

II. FARM SUPPLIES AND EQUIPMENT OCCUPATIONS

Country store clerk
Farm hardware and equipment store employee
Feed mill employee
Farm cooperative service store employee
Farm equipment and supplies salesman
Truck driver for a feed mill or farmer cooperative
Truck driver for a rural gasoline and oil distributor

III. LIVESTOCK AND POULTRY INDUSTRIES OCCUPATIONS Food Processing

Animal industry laboratory assistant or technician
Apiary inspector
Artificial inseminator (breeding technician)
Dairy herd supervisor
Dairy plant employee (creamery or milk plant)
Egg grader
Egg inspector
Live-car caretaker
Livestock auction employee
Livestock buyer
Livestock disease control worker
Livestock truck driver
Milk sanitarian
Milk truck driver
Poultry and egg buyer
Slaughter house, locker plant, and poultry processing plant employee
Stockyard employee
Veterinarian's assistant

IV. CROPS, FORESTRY, AND SOIL CONSERVATION OCCUPATIONS

Cannery or processing plant employee
Field crop, fruit, and vegetable inspection employee
Fruit and vegetable produce buyer
Grain elevator employee
Irrigation ditch rider
Lumberman or sawmill employee
Soil conservation aid
State or national forest employee

V. ORNAMENTAL HORTICULTURE OCCUPATIONS

City, state, or national park employee
Florist
Garden center employee
Greenhouse employee
Grounds maintenance employee
Landscape gardener
Nursery employee
Tree pruner
Tree surgeon

VI. WILDLIFE AND RECREATION OCCUPATIONS

Game bird propagator
Game management employee
Golf course employee

VII. FARM SERVICE OCCUPATIONS

Artificial inseminator
Auctioneer
Country butcher
Crop duster
Crop pollinator
Crop sprayer
Custom farm machine worker
Dairy herd supervisor
Farm building painter
Farm building renovator
Feed and hammer mill operator
Field supervisor (A.S.C.)
Fruit caretaker
Fruit sprayer
Lime spreader
Mobile blacksmith shop operator
Mobile repair shop operator
Sheep dipper
Sheep shearer

VIII. AGRICULTURAL SERVICE OCCUPATIONS

Farm auctioneer
A.S.C. field superintendent
A.S.C. office manager
A.S.C. checker
Farm placement representative
Farm advisory work, consultant
Field representative for agricultural marketing business
Ag advertising
Ag newspaper or magazine work
Farm appraiser
Farmer organization staff person
Agricultural economist
Agricultural engineer
Agricultural journalist
Agronomist
Agricultural college instructor
Entomologist
Extension work--county agent
Plant pathologist
Rural sociologist
Soil conservationist
Veterinarian
Vocational agriculture instructor

Appendix 2

LEVEL OF EMPLOYMENT CLASSIFICATION

1. Professional Occupations

This group includes occupations that predominantly require a high degree of mental activity by the worker and are concerned with theoretical or practical aspects of complex fields in human endeavor. Such occupations require for the proper performance of the work either extensive and comprehensive academic background or a combination of such education and experience.

2. Technical Occupations

Occupations concerned with many levels of skills and a wide variety of training requirements. Occupations where one performs specific tasks which are functional parts of scientific activities requiring knowledge of fundamental theory and requiring highly developed skills. usually

for a salary or wage

3. Agricultural Service Occupations

Occupations concerned with providing professional and semi-professional services largely protective in nature, in the public interest -- inspection, regulative, quarantine, grading, and serving.

4. Managerial Occupations

Occupations that are involved primarily with responsible policy-making, planning, supervising, coordinating, or guiding the work-activity of others, usually through intermediate supervisors.

5. Supervisory Occupations

Occupations concerned with supervising personnel involved in the production of materials or providing services are usually thought of by those individuals in the semi-skilled and skilled occupations as a foreman.

6. Sales Occupations

Occupations concerned with the sale of commodities, investments, real estate, products, and services, and occupations that are very closely identified with sales transactions even though they do not involve actual participation in such transactions.

7. Clerical Occupations

Occupations concerned with the preparation, transcribing, transferring, systematizing, or preserving of written communications and records in offices, shops, and other places of work where such functions are performed.

8. Skilled Occupations

This group includes craft and manual occupations that require predominantly a thorough and comprehensive knowledge of processes involved in the work, the exercise of considerable independent judgment, usually a high degree of manual dexterity, and in some instances, extensive responsibility for valuable products or equipment. Workers in these occupations usually become qualified by serving apprenticeships or completing extensive training periods.

9. Semi-skilled Occupations

This group includes manual occupations that are characterized by one, or a combination of parts, of the following requirements: The exercise of manipulative ability of a high order, but limited to a fairly well-defined work routine; major reliance, not so much upon the worker's judgment or dexterity, but upon vigilance and alertness in situations in which lapse in performance would cause extensive damage to product or equipment; and the exercise of independent judgment to meet variables in the work situation, which is not based on wide knowledge of a work field and with the nature and extent of the judgments limited either (a) by application over a relatively narrow task situation or (b) by having important decisions made by others.

Appendix 3

THE STATISTICAL TABLE*

Clear and forceful presentation of information aids in its understanding and correct interpretation. One method of summarizing large masses of data involves placing numbers in tables. A tabular form of presentation arranges the data in columns and rows. The effectiveness of a table lies largely in the arrangement of the data. This paper discusses the clear, concise presentation of data in a statistical table. The table should be as self-sufficient as possible. It should carry forward an analysis of the subject in a logical pattern of development. The structural parts of a table are shown in the following diagram:

HEADING

STUBHEAD	BOXHEAD
STUB	FIELD

FOOTNOTE:

Examples of statistical tables are on pages 72 to 75.

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*Prepared by Dr. Glenn Z. Stevens, Department of Agricultural Education, The Pennsylvania State University.

The Heading

The heading includes the table number and the title. A subtitle or a headnote may be used if the data in the table need more explanation than the title provides (2:159)[1].

The table number is an indicator of the relative position of the table within a series (5:59-66). Tables should be numbered in a single series of continuous Arabic numerals beginning with one. An appendix table may be identified by using a prefix capital letter with the table number. Example 4, page 75, shows an appendix table labeled A-4. Most tables illustrating statistical techniques will appear in the appendix.

The title is a brief statement indicating the nature, classification, and time reference of the data presented. It serves to catalog the table contents for reference purposes (5:31-58). The title answers questions as to the <u>what</u>, <u>how classified</u>, <u>who</u>, <u>where</u>, and <u>when</u>, which relate to the data in the table. The title always appears at the top of the table. Some authorities suggest that the table number be centered on a line above the title. If the heading is longer than the table is wide, set it in two or more lines. It may be arranged in inverted-pyramid form and single-spaced (4:52).

The heading may be typed flush with the left-hand edge of the table as in Example 1, page 72. This may be especially appropriate for long titles with only the first word, proper nouns, and proper adjectives being capitalized. A period is not used at the end of a table.

One style of arrangement or heading <u>must be used consistently</u> throughout the paper.

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[1]The numbers refer to the references and pages in the bibliography.

The Boxhead

The boxhead extends across the top of the columns. It contains the column heads which may be grouped under identifying captions called spanner heads. The boxhead designates the statistical units and classifies the summarized data. It describes the dependent variables in the relationship. Example 1, page 72, lists and classifies results obtained from an experiment into "yield per acre" and "average ear weight". The quantitative measures of bushels and pounds, respectively, are criterion measures of the experiment and are dependent on the variable of plant population listed in the stub. Plant population, therefore, is the independent variable. Whenever possible, it is best to list the dependent variables in the boxhead and the independent variables in the stub. A spanner head, as shown here, may be used when the individual column heads are subdivisions:

Spanner head		
Column head	Column head	Column head

The column head is the basic unit of the boxhead. Words in the column head should be written horizontally; they apply to every entry in the column. Normal rules governing punctuation, capitalization, and abbreviation should be followed in preparing column heads (1:47). The categories for column headings must be mutually exclusive, without any possibility of overlapping. At the same time they must be inclusive enough to provide a category for every observation. No period mark is used to terminate captions, but abbreviation periods are used.

The Stub

The stub is that part of the table, usually at the left, which contains row captions or descriptions, together with needed classifying and qualifying center heads and subheads. See Example 2, page 73.

The center head separates the table into readily identifiable blocks and implies relationships among various sections of the table (5:111-119). The subordinate relationship between center head and line captions must be made clear by differences in mechanical presentations:

CENTER HEAD

Total line caption

Line caption
Line caption
Line caption

The line caption is the basic unit of the stub. It is a descriptive title of the data appearing on a given line (5:121-134). Usually set in lower case, the line captions may be indented under a total line caption.

The Stubhead

The stubhead is a combination of the boxhead and the stub. The stubhead specifies the system of classification in the stub. The stubhead is a heading which provides the classification for the stub captions (2:159). A stubhead may have no heading if the stub consists of a heterogeneous list of items which are difficult to classify.

The Field

The field is that portion of the table extending from the bottom of the boxhead to the bottom of the table, and to the right of the stub. It contains the outcomes of the study as measured by the criterion instruments. The numerical data of the dependent variables belong in the field.

The cell is the basic unit of tabular presentation (5:246-247). It lies in a column and on a line. A given cell consists of the combination of the stub caption and the column caption, supplemented or qualified by related center heads and the applicable spanner heads in the boxhead. The cell entries usually will be figures, but may be words, phrases, or reference symbols. On rare occasions, a cell may be blank.

The Footnote

Footnotes qualify data which appear in only parts of the contents of the table (2:160). The footnote is used to explain or qualify a specific cell, line, column, or position of the table which is clearly identified by placement of the given reference symbol (5:67). Example 3, page 74, shows a footnote used to denote level of significance.

The reference symbol, a super script number or lower case letter, is usually placed immediately after the phrase or word it qualifies and is repeated directly before the footnote (Example 5, page 75). The numerical symbols or italicized letters are used consecutively, and running horizontally from the upper left to the lower right position in the table, first in the title, then in the captions of the boxes, then in the stub captions and rows of numbers in the cells (2:160).

Example 1[a]

TABLE 5. YIELD PER ACRE AND AVERAGE EAR WEIGHT AT EACH OF FIVE RATES OF PLANT POPULATION ON FIFTEEN DEMONSTRATION PLOTS

Plants per Acre	Yield per Acre (bushels)	Average Ear Weight (pounds)
7,000	85.7	.85
10,000	103.2	.83
13,000	118.1	.77
16,000	129.4	.70
19,000	133.4	.64

[a]Myers, John G., "Educational Effectiveness of Field Corn Plant Population Test Plot Demonstrations in York and Lancaster Counties, Pennsylvania" - Paper, M.Ed., The Pennsylvania State University, 1960.

Example 2[a]

TABLE 2. ADJUSTED MEAN TEST SCORES ON THREE CRITERION MEASURES BY TEACHING METHODS

Teaching Method	Number of Students	Reading Comprehension	Pretest Score	Adjusted Mean Test Score
KNOWLEDGE OF AGRICULTURAL OCCUPATIONS				
Integrated	134	144.0	22.2	25.9 **
Separate Units	141	144.4	22.3	25.5
Instructor's Own	149	144.2	23.0	22.0
KNOWLEDGE OF LAND USE AND CONSERVATION				
Integrated	134	144.0	21.1	25.0 **
Separate Units	141	144.4	22.1	24.8
Instructor's Own	149	144.2	21.0	22.4
EXPRESSED INTERESTS				
Integrated	134	144.0	33.6	34.5
Separate Units	141	144.4	32.9	34.6
Instructor's Own	149	144.2	33.4	34.4

** Differences in adjusted mean test scores among methods were significant at the .01 level by analysis of covariance.

[a]Shontz, David F., "An Experiment in Teaching Agricultural Occupations Information to High School Students." Thesis, D.Ed., The Pennsylvania State University, 1963.

Example 3[a]

TABLE 2. A COMPARISON OF PRE-TEST AND POST-TEST MEAN SCORES ACHIEVED BY STUDENTS INSTRUCTED BY THE CALENDAR OF ACTIVITIES METHOD AND STUDENTS NOT INSTRUCTED BY THE CALENDAR METHOD

Group	Number of students	Pre-test mean score	Post-test mean score	Difference
Students using calendar	37	10.02	18.57	8.55 ***
Students not using calendar	43	9.00	12.74	3.74 ***
Total	80	9.51	16.15	

*** Significant at .001 level by t-test

[a]Oliver, Craig Stanley. "Development and Testing of a Calendar of Activities for Greenhouses in Vocational Agriculture Departments in Pennsylvania High Schools," Thesis, M.Ed., The Pennsylvania State University, 1960.

Example 4[a]

TABLE A-4. ANALYSIS OF VARIANCE OF GRASSLAND FARMING TEST SCORES OF SOUTHERN FARM BOYS AND SOUTHERN NON-FARM BOYS

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	F
Sections	1	101.21	101.21	6.70 *
Within	119	1,796.33	15.10	
Total	120	1,897.54		

* Significant at the .05 level by analysis of variance

[a]Vesco, Lewis Martin. "Knowledge of Grassland Farming Practices of High School Senior Boys in Vocational Agriculture in Pennsylvania," Thesis, M.S., The Pennsylvania State University, 1956.

Example 5[a]

TABLE 3. CORRELATION OF ORGANIC MATTER AND PHOSPHORUS, AND ORGANIC MATTER AND POTASH IN 55 SOIL TESTS IN THE MORRISON COVE SCHOOL DISTRICT IN 1960

Predictive Index	Criterion	N	r[1]
Phosphorus	Organic Matter	55	.075
Potash	Organic Matter	55	.174

[1]The required r for significance at the .05 level is .271 with 53 degrees of freedom.

[a]Ruth, Paul V. "The Relationship of Soil Tests and Fertilization to the Amount of Plant Food in the Soil at the End of a Five-Year Period in Morrison Cove," Paper, M.Ed., The Pennsylvania State University, 1961.

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4. Turabian, Kate L. A Manual for Writers of Term Papers, Theses, and Dissertations. Chicago: University of Chicago Press, 1955.

5. U. S. Department of Commerce. Bureau of the Census Manual of Tabular Presentation. Washington: United States Government Printing Office, 1949.

Appendix 4

REPORT OF SELECTED STUDIES OF AGRICULTURAL OCCUPATIONS CURRENTLY IN PROGRESS

ALABAMA

1. Objectives

   a. To ascertain the nature and extent of off-farm agricultural employment opportunities in 20 counties.

   b. To ascertain the pre-employment educational needs for secondary school students desiring to enter off-farm agricultural occupations.

   c. To ascertain the pre-college educational needs for secondary school students desiring to enter agricultural college curriculums.

2. Procedure

   a. Collect and analyze data based on:

      (1) The number and kinds of positions of an off-farm agricultural nature being held by individuals in businesses, industries, and agencies.

      (2) The general nature, level, and scope of the pre-employment or pre-college educational needs as viewed by business and industry owners, managers, personnel directors, supervisors, and/or professional off-farm agricultural workers.

   b. Select 20 counties at random from a population stratification.

   c. Take an 8 per cent sample from 18 business and industrial categories in the 20 counties.

   d. Have teachers of vocational agriculture interview representatives of the businesses and industries.

   e. Mail questionnaires to all professional employees in the state and federal government agricultural services.

3. Present Status of Study

As of February 1, data are being tabulated and analyzed. (Copies of the proposal and instruments are available upon request.)

4. Contact Person

Dr. Richard A. Baker
Assistant Professor
Department of Agricultural Education
Thach Hall
Auburn University
Auburn, Alabama

KENTUCKY

1. Scope

Eight of 120 counties were selected. They are not representative of the state.

2. Objective

To determine the status of agricultural occupations other than farming in selected Kentucky counties and the implications for vocational education programs.

3. Procedure

a. Selected 8 of 120 counties on the basis of the amount of production of agriculture and agri-business in the area. Consideration also was given to geographic representation and area trade centers.

b. Prepared a list of agri-businesses from the yellow pages of the telephone directory. Additions were made by local agriculture teachers.

c. Prepared survey instruments. Form A requested general information on the business and Form B, information on each occupation in which agriculture is needed.

d. Determined, at the time each survey was made, whether employees in the job needed competencies in the major areas of plant science, animal science, agricultural mechanics, and agricultural business management.

e. Prepared check list of specific competencies needed under the major areas.

f. Conducted interviews of approximately 30 minutes duration by the persons conducting the study, with some assistance from teachers and area supervisors.

g. Used computing center on campus to tabulate data.

4. Present Status of Study

Interviewing is partially done and should be completed by March 1, 1964.

5. Termination Date

Summarization and writing should be completed by September 1, 1964.

6. Contact Person

Dr. William R. Bingham
Instructor
Department of Agricultural Education
College of Education
University of Kentucky
Lexington, Kentucky

LOUISIANA

1. Scope

State-wide and deals only with agricultural education

2. Objective

To determine pre-employment and continuing educational needs of persons engaged in off-farm agricultural occupations in selected areas of Louisiana.

3. Procedure

a. Use a schedule to obtain information through a personal interview with owner, manager, or person best qualified in agri-businesses.

b. Develop a complete list of agri-businesses, utilizing the Bureau of Employment Security, telephone directories, chambers of commerce, trade associations, and teachers of vocational agriculture.

c. Study every agricultural related business in the major metropolitan area in the first phase of the study.

d. Study the rural agricultural related businesses in phase two of the study.

e. Hire professional interviewers to conduct both phases of the study.

4. Present Status of Study

Interview stage in Baton Rouge

5. Termination Date

Preliminary reports from the Baton Rouge metropolitan area will be available February 15, 1964. Preliminary reports of the state-wide study will be completed September 30, 1964.

6. Contact Person

Dr. Charlie M. Curtis
Associate Professor, Agricultural Education
Louisiana State University
Baton Rouge, Louisiana

MICHIGAN

1. Scope

Eighty member groups of Michigan Agricultural Conference and their member firms, agencies, and organizations in Michigan

2. Procedure

   a. Collect data from five firms on a trial basis.

   b. Train a representative of the firm being surveyed to conduct the interviews.

   c. Have representative survey his firm, guided by an instructional manual.

   d. Have representative mail data to the Michigan Department of Public Instruction for summary.

3. Present Status of Study

   a. Five firms have been surveyed.

   b. Nine more have agreed to cooperate.

   c. Further contacts are planned.

4. Termination Date

   January 1, 1965

5. Contact Person

   Charles L. Langdon
   Agricultural Education Consultant
   State Department of Public Instruction
   Box 928
   Lansing, Michigan 48904

MINNESOTA

1. Scope

   Seventeen counties in southwestern Minnesota served by the Mankato Area regional analysis center for the farm management business analysis program. In addition, one county in northeast Minnesota. Plans call for a state-wide county by county study.

2. Procedure

   a. Utilize the interview method.

b. Have teachers of agriculture conduct interviews, under the direction of Ernest Freier of the Mankato Area Vocational School.

3. Present Status of Study

Ready to collect data

4. Termination Date

Tentatively set for October, 1964

5. Contact Person

Dr. Milo J. Peterson
Professor and Chairman
Department of Agricultural Education
College of Education
University of Minnesota
St. Paul, Minnesota

MISSOURI

1. Scope

Limited to Saline County, Missouri, which is one of the better crop and livestock areas of north Missouri

2. Objective

To determine the nature of agricultural occupations other than farming and the competencies and prerequisites needed by an individual to enter and advance in these occupations.

3. Procedure

a. Obtained a list of all businesses in the county from the city clerks, county clerk, and local chambers of commerce.

b. Obtained letters of introduction to the businesses from the secretary of the local chamber of commerce and the school superintendent.

c. Placed articles in the local papers explaining the nature and importance of the study. The writer was interviewed on a local radio

program and several spot announcements concerning the study were made by the radio announcers.

d. Interviewed owners, managers, or other office personnel to obtain data concerning the number of employees, employment opportunities, prerequisites, competencies needed, and the nature of the agricultural occupations, other than farming.

e. Analyzed, tabulated, and classified the data acquired for curricular and guidance implications as applied to the total program of vocational agriculture.

4. Termination Date

A brief report of the study will be available from the Department of Agricultural Education, University of Missouri, Columbia, about February 1, 1964.

5. Contact Person

Warren L. Griffen
Agricultural Education Department
University of Missouri
Columbia, Missouri

NEBRASKA

1. Scope

796 employers in 62 communities, involving 22,000 employees

2. Procedure

a. Identified firms from telephone directories.

b. Had vocational agriculture instructors and graduate students conduct interviews.

3. Present Status of Study

Raw data grouped in summary form

4. Termination Date

June, 1964

5. Contact Person

Dr. James T. Horner
Assistant Teacher Trainer
Department of Agricultural Education
College of Agriculture
University of Nebraska
Lincoln, Nebraska

NEW HAMPSHIRE

1. Scope

State-wide study involving all areas of agricultural education from the seventh grade through Ph.D. programs

2. Objective

To determine agricultural education needs of workers in New Hampshire.

3. Procedure

a. Stratify the population geographically into the areas serviced by the five area technical-vocational centers.

b. Draw samples of the businesses or agencies, etc., in these areas. Number drawn in each area will be dependent upon the ratio of the number of businesses or agencies, etc., in the area to the number in the state as a whole.

c. Utilize the interview technique to contact approximately 500 businesses or agencies, etc.

d. Use trained interviewers from outside agricultural education to collect the data.

4. Present Status of Study

Design stage

5. Termination Date

September, 1964

6. Contact Person

Dr. William H. Annis
Head, Department of Agricultural Education
College of Agriculture
University of New Hampshire
Durham, New Hampshire

OKLAHOMA

1. Objectives

a. To determine the present status of graduates of vocational agriculture in Oklahoma.

b. To identify present and emerging off-farm agricultural occupations for which vocational, technical, or higher education should be available.

c. To determine present and future numbers of employers in these occupations.

d. To estimate the annual turnover and entry opportunities in these occupations and job titles.

e. To determine competencies needed for entry and advancement in these occupations.

f. To determine other characteristics of these occupations, such as salary, minimum age for ~~entry,~~ labor laws, union restrictions, required formal education, licensing, and certification.

2. Procedure

a. Obtain information from the teachers of vocational agriculture for the first phase of the study concerning the present status of graduates. Ask each teacher to contact the graduates of his local department for the last five years to determine their occupational status.

b. Use survey form to secure information needed for the major phase of the study. Conduct personal interviews with owners, managers, or other persons who are considered best qualified in companies, agencies, or services to provide the desired information about the occupations and the employees. The more important types of agricultural industries and businesses in Oklahoma will be used, with a sample from each type being selected. The businesses studied will include the following: Horticulture; cotton products; feed, seed, and fertilizer; manufactured dairy products; farm machinery; meat processing; wood industry; and grain storage.

c. Obtain from the state level the job titles and numbers of persons employed by agencies and services, such as SCS, ASCS, Extension, agricultural workers in state government, DHIA supervisors, and artificial inseminators.

d. Draw samples of each of the off-farm agricultural businesses to determine those used in the study.

e. Have research assistants conduct interviews with the help of the teachers in the various areas.

f. Finance salaries of the graduate assistants through the College of Agriculture, Oklahoma State University, and the Oklahoma State Department of Vocational Education.

3. <u>Present Status of Study</u>

The next step is to determine the percentage of employees in each category and choose the sample accordingly. Interviews will be started in February and should be completed in October. Approximately 800 interviews will be conducted.

4. Termination Date

a. Data for the first phase is nearly completed and will be ready for distribution by May 1, 1964.

b. Final report will be written by April, 1965, and should be ready for distribution shortly after that time.

5. Contact Person

Dr. Everett D. Edington
Assistant Teacher Trainer
Department of Agricultural Education
Oklahoma State University
Stillwater, Oklahoma

PENNSYLVANIA

1. Scope

Sixteen Pennsylvania counties with additional ones as funds are available and teachers of agriculture are available for interviewing

2. Objectives

a. To identify present and emerging agricultural occupations, other than farming, for which vocational and technical education should be available.

b. To determine present and anticipated numbers of employees in these occupations and their job titles.

c. To estimate the annual turnover and entry opportunities in these occupations and job titles.

d. To determine competencies needed for entry and advancement in these occupations.

e. To determine other characteristics of these occupations such as salary, minimum age for entry, labor laws and union restrictions, required formal education and experience, licensing and certification.

f. To determine continuing education needs of those employed in these occupations.

3. Procedure

a. Use a survey form to secure information through personal interviews with owners, managers, superintendents, personnel managers, or other persons in companies, businesses, agencies or services who are considered best qualified to provide the desired information about the occupations and employees.

b. Use selected geographical areas of Pennsylvania and make a random sampling of companies, businesses, agencies, and services within the geographical area.

(1) Compile a list of businesses and services that have employees who need agricultural competencies.

(2) Determine the number of interviews to be conducted.

(3) Hold an orientation meeting with the teachers of the county or area involved.

(4) Conduct interviews to gather data, using teachers of agriculture.

4. Present Status of Study

a. Pilot study - June, 1963

b. Interviewing will begin February 1.

c. Data will be available September 1, 1964.

5. Termination Date

If a 1964-65 NDEA grant is provided, the study will continue through 1965.

6. Contact Person

Dr. Norman K. Hoover
Associate Professor
Department of Agricultural Education
Pennsylvania State University
University Park, Pennsylvania

TEXAS

1. Scope

State-wide sampling

2. Procedure

To be determined by state-wide research committee. Consider it desirable to hire someone to direct the study who will use hired interviewers.

3. Present Status of Study

Design stage

4. Termination Date

July, 1965

5. Contact Person

Dr. Earl S. Webb
Associate Professor
Department of Agricultural Education
Texas A. & M. University
College Station, Texas

WASHINGTON

1. Scope

Agricultural businesses in central Washington area, including the cities of Yakima, Moses Lake, Othello; the lower Yakima Valley; and the tri-cities area.

2. Procedure

a. Obtained names of agricultural businesses from the yellow pages of telephone directories.

b. Contacted state and federal government agencies.

c. Secured approximately 1200 names from these sources.

d. Stratified these businesses into six categories: farm machinery,

equipment, and implements; farm processing; farm marketing; farm supply; farm service; and miscellaneous.

e. Interviewed 12 per cent of the business concerns in the sample.

f. Had one person conduct all interviews, using three survey instruments.

3. Present Status of Study

Results of the study have not been summarized but will be soon. It is planned to extend the study to the entire state, employing vocational agriculture teachers to conduct the interviews.

4. Termination Date

October 1, 1964

5. Contact Person

Bert L. Brown
Director, Agricultural Education
State Board for Vocational Education
P. O. Box 250
Olympia, Washington 98501

WEST VIRGINIA

1. Scope

State-wide

2. Objectives

a. To determine the scope of non-farm agricultural occupations in West Virginia.

b. To use these data to implement a training program for some of the most prevalent occupations or occupational areas.

3. Procedure

a. Interview responsible personnel in businesses, industries, agencies, and services with workers who are required to possess knowledge of or competencies in agriculture.

b. Have teachers of vocational agriculture conduct the interviews.

4. Present Status of Study

   a. 20 of 55 counties completed.

   b. 160 different non-farm agriculture occupations have been identified in 40 different businesses, industries, organizations, and services.

5. Termination Date

   a. Data collection stage will terminate February 15.

   b. Tabulation will terminate March 1.

6. Contact Person

   Joseph K. Bailey
   Assistant State Supervisor
   Vocational Agriculture
   R.R. 1, Box 103-B
   Ripley, West Virginia 25271

Appendix 5

PILOT PROGRAMS IN AGRICULTURAL EDUCATION

California

Title: Technician training programs in artificial insemination, laboratory technicians, ornamental horticulture, and agricultural engineering technicians

Contact: Mr. Ernest Tarone
Head, Department of Agriculture
Modesto Junior College
Modesto, California

Georgia

Title: A pilot program in vocational education in agriculture involving students with either on-farm or off-farm agricultural experiences

Contact: Dr. A. O. Duncan
Associate Professor
Department of Agricultural Education
College of Education
Baldwin Hall
University of Georgia
Athens, Georgia

Illinois

Titles:

1. Horticultural specialty
2. Three-year common agricultural learning courses with fourth-year specialization courses
3. Two-track program
4. Vocational agriculture courses plus specialized vocational agriculture courses for the slow learners and the gifted
5. An agricultural orientation and guidance course in the first year of high school, with a series of courses organized around content required for major clusters of agricultural occupations for the remaining years
6. Two-year common learning courses in agriculture with two farm mechanics courses the third year plus fourth-year specialization

Contact: Dr. Lloyd J. Phipps
Professor and Chairman
Agricultural Education
103 Gregory Hall
University of Illinois
Urbana, Illinois

Indiana

Title: A program for high school students interested in off-farm agricultural occupations for the metropolitan school district of Wabash County (five townships)

Contact: Dr. J. K. Coster
Itinerant Teacher Trainer
Department of Agricultural Education
Education Building
Purdue University
Lafayette, Indiana

Kentucky

Title: Pilot programs for training workers in agricultural occupations other than farming

Contact: Dr. Harold Binkley
Associate Professor
Department of Agricultural Education
College of Education
University of Kentucky
Lexington, Kentucky

Mr. W. C. Montgomery
Assistant Director, Agricultural Education
State Department of Education
Frankfort, Kentucky 40601

Michigan

Title: To demonstrate one way to provide needed training for non-farm agricultural business in a local rural community

Contact: Dr. Raymond M. Clark
Assistant Teacher Trainer
Vocational Agricultural Education
College of Education
Michigan State University
East Lansing, Michigan

Missouri

Considering several types of pilot programs relating to urban schools, area vocational schools, large rural schools, and small schools with limited vocational offerings

Contact: Mr. Carl M. Humphrey
State Director, Agricultural Education
State Department of Education
Jefferson City, Missouri 65101

Ohio

Title: Application of biological principles to instruction in vocational agriculture

Contact: Mr. John T. Starling
Supervisor, Agricultural Education
Agricultural Administration Building
2120 Fyffe Road
The Ohio State University
Columbus, Ohio 43210

Pennsylvania

Titles:

1. Vocational agriculture-distributive education pilot study of agribusiness
2. Teaching agricultural occupations information to beginning high school students
3. Pennsylvania electronic farm accounting pilot project

Contact: Dr. Glenn Z. Stevens
Professor, Department of Agricultural Education
Pennsylvania State University
University Park, Pennsylvania

Dr. Norman K. Hoover
Associate Professor
Department of Agricultural Education
Pennsylvania State University
University Park, Pennsylvania

Tennessee

Title: The effectiveness of pilot programs compared to other programs of vocational agriculture in Tennessee

Contact: Dr. Otto P. Legg
Assistant Professor
Department of Agricultural Education
University of Tennessee
Knoxville, Tennessee

West Virginia

Title: Vocational forestry

Contact: Mr. Joseph K. Bailey
Assistant State Supervisor
Vocational Agriculture
Route 1, Box 103-B
Ripley, West Virginia 25271

Appendix 6

STATES THAT HAVE DATA SCHEDULES FOR AGRICULTURAL OCCUPATIONS STUDIES WHICH ARE AVAILABLE UPON REQUEST

Alabama	- Richard A. Baker, Department of Agricultural Education, Thach Hall, Auburn University, Auburn, Alabama
Indiana	- J. K. Coster, Associate Professor, Department of Agricultural Education, Education Building, Purdue University, Lafayette, Indiana
Kentucky	- William Bingham, Agricultural Education Department, University of Kentucky, Lexington, Kentucky
Louisiana	- Charlie Curtis, Associate Professor, Department of Agricultural Education, Louisiana State University, Baton Rouge, La.
Michigan	- Charles Langdon, Assistant Supervisor, Agricultural Education, Box 928, Lansing, Michigan
Minnesota	- Milo Peterson, Chairman, Department of Agricultural Education, University of Minnesota, St. Paul, Minnesota
Missouri	- Earl Carpenter, Assistant Professor, Agricultural Education Department, University of Missouri, Columbia, Missouri
Nebraska	- James T. Horner, Department of Agricultural Education, University of Nebraska, Lincoln, Nebraska
New Hampshire	- William H. Annis, Head, Department of Agricultural Education, University of New Hampshire, Durham, New Hampshire
New York	- Joe P. Bail, Chairman, Division of Agricultural Education, Department of Rural Education, Cornell University, Ithaca, New York
Ohio	- Herbert D. Brum, Assistant Supervisor, Vocational Agriculture, 220 South Parsons Avenue, Columbus, Ohio, 43215
Oklahoma	- Everett D. Edington, Department of Agricultural Education, Oklahoma State University, Stillwater, Oklahoma
Pennsylvania	- Norman K. Hoover, Associate Professor, Department of Agricultural Education, Pennsylvania State University, University Park, Pennsylvania
Texas	- Earl Webb, Agricultural Education, A. and M. College of Texas, College Station, Texas
Washington	- Bert L. Brown, Director, Agricultural Education, P. O. Box 250, Olympia, Washington
West Virginia	- Joseph K. Bailey, Assistant State Supervisor, Agricultural Education, Route 1, Box 103-B, Ripley, West Virginia

Appendix 7

STATUS OF STATE AGRICULTURAL OCCUPATIONS STUDIES*

State	Intent	Design	Data Col.	Data Tab.	Data Anal.	Report Avail.
Alabama	1	1	1	1	1	
Arizona	1	1				
California	1-2-3-4	1-2-3-4	1-2-3	1-2-3	1-2-3	1-2-3
Colorado	1	1	1	1	1	1
Connecticut	1	1				
Delaware	1					
Florida	1					
Georgia	1	1				
Idaho	1	1				
Illinois	1	1	1	1	1	
Indiana	1-2	1-2	1-2	1-2	1	1
Iowa	1	1	1	1	1	
Kansas	1	1	1	1	1	1
Kentucky	1-2	1-2	1-2			
Louisiana	1	1	1			
Maryland	1-2	1-2	1-2	1-2	1-2	1-2
Massachusetts	1	1				
Michigan	1-2	1-2	1-2	1	1	1
Minnesota	1-2	1-2	1-2	1	1	1
Mississippi	1	1	1			
Missouri	1	1	1	1	1	1
Montana	1					
Nebraska	1	1	1	1	1	1
New Hampshire	1	1				
New Jersey	1					
New Mexico	1	1				
New York	1-2	1-2	1-2	1-2	1	1
North Carolina	1-2-3	1-2-3	1-2	1-2	1-2	1-2
Ohio	1	1	1	1		
Oklahoma	1	1	1			
Pennsylvania	1-2-3	1-2-3	1-2-3	1-2	1-2	1-2
South Carolina	1-2	1-2	1	1	1	1
Tennessee	1	1	1			
Texas	1	1	1			
Utah	1	1	1			
Vermont	1	1				
Virginia	1	1	1	1		
Washington	1-2	1-2	1-2	1	1	1
West Virginia	1	1	1	1	1	
Wisconsin	1	1	1	1	1	

* Multiple numbers for a state indicate more than one study; the earlier ones usually of a limited geographical area.

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"A study to determine the effectiveness of Utah's public supported Vocational-Technical Education program in meeting the training needs of business and industry, with special emphasis on programs designed to upgrade the skills of the existing work force."

Prepared by Ernest H. Dean
Research Director
Utah Trade-Technical Institute
for Utah State Department for Vocational Education
Mark Nichols, Director
March 15, 1966

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Research Director
Utah Trade-Technical Institute
for Utah State Department for Vocational Education
Mark Nichols, Director
March 15, 1966

INTRODUCTION

* * * * * * *

In the past few years, there has been an ever increasing demand for trained people in industry and business in Utah.

The trade-technical institutes as well as other high school and post-high school institutions have been expanding in an attempt to meet these demands. In this expansion, emphasis has been placed on re-training people who find their occupation changing due to automation and technical advance.

In order to give some direction to future changes in the programs of these institutions, the State Board for Vocational Education promoted a study which would involve business and industry in determining programs to meet their needs, with special emphasis on programs designed to upgrade the skills of the existing work force.

Mr. Ernest H. Dean, Research Director of Utah Trade-Technical Institute, was selected as Director of the study.

Purpose of the Study

1. To determine the knowledge, support, and image, businessmen, industrialists, and public service people have of Vocational-Technical Education as a medium for upgrading the skills of their work force.

2. To determine the present relationship which exists between Utah's public supported Vocational-Technical Education system in meeting the training needs of business, industry, and public service organizations.

3. To determine any need for change in Utah's Vocational-Technical Education program which might more nearly serve the interests of business, industry, and the public service organizations.

Procedures

Mr. Dean visited the Utah State Board for Vocational Education with Mark Nichols as advisor and received a briefing of the outlined study. The expectations of the State Board for Vocational Education were explained to him.

Mr. Dean then consulted with other vocational educators and research personnel as well as some selected industrial and business managers in an attempt to determine the best approach for gathering data for this study.

With these ideas he again consulted with the State Board for Vocational Education. It was determined to proceed by personal interviews with business and industrial leaders using an instrument developed by Mr. Dean for this study.

Mr. Dean developed a rough draft of an instrument, had it reviewed by the State Board for Vocational Education, and then used it for a trial run on some select businessmen and industrial leaders. From this trial run, changes were incorporated in the instrument and final approval given by the State Board for Vocational Education of an instrument to be used in the study.

Preceding each Table is a question. A compilation of the twenty-three questions preceding the twenty-three Tables of this report plus question #24 constitutes the interview instrument. Question #24 is related to the list of recommendations which follows Table #23.

The next problem was the determination of the scope of business and industry to be included in the study. By conferences with the Vocational Education Division of the State Board for Vocational Education, there were three major considerations to be met in the survey.

First consideration was the determination of the geographical area to be surveyed. It was decided that the survey would cover three major areas of the State. These were -- Central Utah, Salt Lake and Weber areas. These areas cover the heavy business and industrial concentration of the State. Combined, they are generally referred to as the Wasatch Front. About seventy per cent of the State's population is concentrated in this area.

Another consideration was a designation of the various occupational areas to be surveyed. These were established as Service, Sales and Clerical; Construction; Manufacturing; Public Service, Government and Business Associations; Automotive; Electrical; and Health.

Another consideration was given to the size of business wherein three classifications were established. Those classifications and the sample size are:

1. Businesses and organizations with over 1000 employees or members. (It was decided that as near as possible all businesses with over 1000 employees should be interviewed.)

2. Businesses and organizations with employees ranging from 101 to 1000 in number. (Whereupon 10% should be interviewed)

3. Businesses with employees from 1 to 100. (It was established that as many as time would permit should be contacted)

The next part of the project was to make the actual interviews and record the responses. The final phase of the project was to analyze the data, compile and print the report.

All three of the foregoing considerations and the subdivisions under each have been included in each Table in the report.

Also, included as part of each Table is a reporting of the information as it relates to all the

companies and organizations that were interviewed. This is included under the designation of "Total".

All of the figures listed in the Tables, except Table #8, represent the percentage of those interviewed by category who answered yes to each of the subdivisions of the question listed in the Tables.

The no responses have not been included in the report. However, to obtain the percentage, by categories, of those who answered no to the questions indicated in the Tables, one has to subtract the percentage figure listed in the Table from 100 per cent.

Table #8 is explained in the information immediately preceding Table #8 in the report.

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PART III. RESEARCH INFORMATION

In reading this part of the report, the following considerations need to be kept in mind:

That one hundred and seventy-five interviews comprised the sample. Included in the sample were:

a. One hundred per cent of all corporations along the Wasatch front who employ 1000 or more employees.

b. One hundred per cent of all governmental agencies along the Wasatch front who employ 1000 or more employees.

c. Fifty per cent of all associations, connected with business, government or public service. (Statewide Associations only)

d. Slightly more than 20% of business along the Wasatch front with from 101 to 1000 employees.

e. One hundred and twenty-five businesses with 100 or less employees. This represents approximately 1% of the total number of this size business along the Wasatch front.

f. Fifty-two per cent of the total sample was from the Greater Salt Lake Area.

g. Twenty-seven per cent of the total sample was from North Davis County, Weber County and Box Elder County.

h. Twenty-one per cent of the total sample was from Utah County.

In compiling the report, excellence has not been ferreted out to include in the report. Rather, information has been included which provides a base for improvement.

The real strength of the report should be through a stimulation of all those in Vocational Education to do a still better job than they are now doing.

INTERVIEW QUESTION #1

Generally speaking, do you understand the role of each of the following different kinds of schools and the part each plays in the total Vocational Education program of Utah?

a. Comprehensive High School	yes ( )	no ( )
b. Trade-Technical Institute	yes ( )	no ( )
c. Junior College	yes ( )	no ( )
d. College or University	yes ( )	no ( )
e. State Department of Education	yes ( )	no ( )
f. Private schools	yes ( )	no ( )
g. University Extension Service	yes ( )	no ( )

INTERVIEW INFORMATION

In answering the question, those interviewed were asked to make three considerations, namely:

a. Did they have an understanding of the role each of the schools, listed in question #1 take in Utah's Vocational-Technical Education program, and did this reflect a similar understanding by their company or organization management personnel.

b. In their opinion, did they feel that the employees, or membership of their company or organization, were reasonably familiar with the role of each of the types of schools in Utah's Vocational-Technical Education program.

c. To consider the question as related to preparing workers for employment, and for upgrading the skills of their present work force.

Any response wherein the interviewee felt that a majority of employees or membership of their company or organization had a reasonable understanding of the role each type of school takes

in Utah's Vocational-Technical Education was recorded as a yes response.

TABLE 1-EXPLANATION

The percentage figures listed in Table #1 represent the percentage of those interviewed who felt that a majority of their employees or membership did have a reasonable understanding of the role of each of the types of educational institutions in Utah's Vocational-Technical Education program.

TABLE #1 ANALYSIS OF DATA

Based upon the results of all interviews, it would appear that:

a. The role of the Trade-Technical Institutes in Utah's Vocational-Technical Education program is most understood. Sixty-seven (67%) per cent of those interviewed felt a majority of their work force had a reasonable understanding of Trade Tech's Vocational program.

b. The role of the University, Jr. Colleges and Private schools in Utah's Vocational-Technical Education program is next most understood. The percentage figures for these institutions are: Universities - 65%; Jr. Colleges - 61%; and Private schools - 60%.

c. The least understood role in Vocational-Technical Education was that of the State Department of Vocational Education. Only 39% of those interviewed expressed a knowledge of this Department's role in Vocational-Technical Education, and felt that their work force had a similar understanding.

The percentage figures listed relating to businesses and organizations with over 1000 employees would indicate that employees in large companies or organizations are more knowledgeable of the role of the various institutions in Utah's Trade-Technical Education program than are employees from smaller companies.

Those who were classified as related to the health occupations seemed most knowledgeable about the

role of each of the institutions in Vocational-Technical Education, followed closely by public service and government.

A substantial majority of those interviewed felt their understanding of the role taken by each of the institutions was greater than that of the work force.

One-third of all those interviewed indicated that they had very little or no knowledge of the role of any of the institutions in Vocational-Technical Education.

TABLE #1. AWARENESS OF THE ROLE VARIOUS INSTITUTIONS TAKE IN UTAH'S VOCATIONAL-TECHNICAL EDUCATION PROGRAM.

Kind of Institution	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Comprehensive High School	79%	55%	46%	61%	49%	51%	46%	52%	62%	67%	51%	43%	67%	52%
Trade-Technical Institute	94%	68%	63%	92%	65%	51%	57%	77%	85%	83%	63%	63%	80%	67%
Junior College	85%	59%	55%	71%	59%	53%	54%	58%	83%	83%	58%	50%	87%	61%
College or University	82%	59%	59%	63%	65%	66%	61%	61%	62%	100%	63%	55%	87%	65%
State Department of Vocational Education	70%	45%	28%	37%	32%	53%	39%	13%	23%	17%	42%	32%	53%	39%
Private schools	76%	50%	49%	63%	54%	68%	61%	26%	83%	100%	51%	52%	73%	60%
University Extension Service	79%	45%	41%	37%	52%	38%	39%	32%	69%	83%	47%	32%	60%	45%

INTERVIEW QUESTION #2

Generally speaking, do you understand the role of each of the following Vocational Education programs and the part each plays in preparing workers for employment?

a. Vocational Agriculture	yes ( )	no ( )
b. Home Economics	yes ( )	no ( )
c. Office Occupations	yes ( )	no ( )
d. Trades and Industry	yes ( )	no ( )
e. Technical Education	yes ( )	no ( )
f. Service Occupations	yes ( )	no ( )
g. Marketing and Sales	yes ( )	no ( )

INTERVIEW INFORMATION

In answering the question, those interviewed were asked to make three considerations, namely:

a. Did they have an understanding of the several divisions of Vocational Education as listed in Question #2, and did this reflect an understanding by management?

b. In their opinion, did they feel that the employees or membership of their organization were reasonably familiar with each of the divisions of Utah's Vocational Education program, as listed in question #2.

c. To consider the question as related to preparing workers for employment and for upgrading the skills of their present work force.

Any response wherein the interviewee felt that a majority of all employees of the company or organization had a reasonable understanding of each of the divisions of Utah's Vocational Education program was recorded as a yes response.

TABLE #2 EXPLANATION

The percentage figures listed in the Table represent the percentage of those interviewed who felt that a majority of their employees or membership did have a reasonable understanding of the divisions of Vocational Education.

TABLE #2 ANALYSIS OF DATA

Based upon information obtained in the interview, the following conclusions can be drawn:

a. That 70% or more of those interviewed felt that a majority of their work force had a reasonable understanding of the following Vocational Education programs. Exact percentages are indicated:

Office Occupations	76%
Vocational Agriculture	71%
Home Economics	70%
Trades & Industry	70%

b. That the three least understood programs of Vocational Education are: Marketing and Sales - 25%; Service Occupations - 35%; and Technical Occupations - 53%.

The percentage figures indicate that employees of businesses and organizations with over 1000 employees understand Vocational Education more than employees from smaller companies.

Those interviewed in the Health Occupations and Public Service Occupations expressed that they felt the employees connected with these occupational categories had a relatively high understanding of the several divisions of Vocational Education.

From information gathered, it appears that employees have a greater understanding of the several

divisions of Vocational Education than they do of the role of the various institutions in Vocational Education. Table 2 as contrasted to Table 1 would substantiate this statement.

TABLE #2. AWARENESS OF THE VARIOUS TYPES OF VOCATIONAL EDUCATION

Type of Vocational Education	Size of Business: Businesses & Org. with over 1000 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Vocational Agriculture	82%	73%	67%	95%	65%	64%	71%	74%	62%	83%	70%	67%	87%	71%
Home Economics	85%	73%	63%	97%	66%	57%	68%	74%	69%	83%	63%	70%	87%	70%
Office Occupations	100%	73%	70%	97%	70%	70%	71%	78%	69%	100%	76%	73%	93%	76%
Trades and Industry	94%	73%	65%	67%	92%	60%	75%	84%	77%	87%	67%	57%	93%	70%
Technical Education	79%	41%	50%	57%	61%	41%	54%	48%	85%	33%	42%	47%	87%	53%
Service Occupations	64%	23%	27%	47%	31%	34%	39%	6%	23%	100%	30%	30%	67%	35%
Marketing and Sales	58%	23%	19%	37%	23%	19%	39%	6%	23%	0	23%	23%	60%	25%

INTERVIEW QUESTION #3

Has your firm contacted people engaged in Vocational Education for any of the following reasons within the last 12 months?

a.	To recruit employees	yes ( ) no ( )
b.	To set up apprenticeship related training programs	yes ( ) no ( )
c.	To set up training programs to upgrade the skills of workers other than apprentices	yes ( ) no ( )
d.	To obtain technical information	yes ( ) no ( )
e.	To donate books, supplies or equipment	yes ( ) no ( )
f.	To give advice regarding technological advance in industry	yes ( ) no ( )
g.	To recommend curriculum improvement	yes ( ) no ( )
h.	To evaluate student success as employees	yes ( ) no ( )
i.	To secure part-time teaching roles in Vocational Education	yes ( ) no ( )

INTERVIEW INFORMATION

If management personnel of the company or organization had made one or more contacts initiated by them with Vocational-Technical Education school personnel for any of the reasons listed in the question, the response was recorded as yes. The question was explained to relate to only tax supported public institutions.

TABLE #3 EXPLANATION

The percentage figures listed in Table #3 represent the percentage of those interviewed from the companies and organizations contacted which indicated that their management personnel had contacted Vocational-Technical school personnel within the last twelve months. A breakdown of the reasons for the contact or contacts is included in the Table.

Table #3 needs to be compared with Table #4 because the two tables have relevant information regarding contacts initiated by business, industry and public service people.

TABLE #3 ANALYSIS OF DATA

The percentage figures listed in the Table substantiate the conclusion that a small percentage of Utah's businessmen contact people engaged in Vocational-Technical Education for any one reason stated in the table.

The most prevalent reasons for contacts were to recruit employees and to establish training programs to upgrade the skills of the work force. Nineteen per cent of all companies and organizations contacted indicated their contact was for these reasons.

Of all companies and organizations contacted, it was determined that almost one-half had made at least one contact in the last twelve months. It was found from a compilation of information received that the larger the business, the more frequent the contacts and for more reasons. The smaller the business, the less frequent any kind of contacts were made.

TABLE #3. PURPOSE OF CONTACTS MADE BY MANAGEMENT RELATIVE TO VOCATIONAL-TECHNICAL EDUCATION WITHIN THE LAST TWELVE MONTHS.

Reason for Contact	Size of Business			Area			Occupational Category							TOTAL
	Business & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
To recruit employees	24%	14%	17%	21%	22%	13%	21%	26%	8%	67%	19%	10%	7%	19%
Apprenticeship related training	18%	27%	11%	14%	18%	9%	14%	35%	38%	0	12%	0	0	14%
Other training programs	58%	32%	6%	18%	19%	19%	8%	13%	15%	67%	28%	3%	47%	19%
To get technical information	15%	14%	4%	18%	6%	2%	4%	6%	8%	0	2%	0	40%	7%
To donate books, equipment, etc.	0	5%	3%	8%	0	2%	4%	3%	0	0	0	0	0	2%
To give technical advice	24%	5%	3%	8%	6%	9%	4%	10%	8%	0	7%	0	13%	7%
To recommend curriculum improvement	18%	23%	3%	16%	6%	9%	8%	20%	8%	0	5%	0	13%	9%
To evaluate student success as employees	9%	14%	1%	8%	6%	2%	4%	10%	0	0	5%	0	13%	5%
To secure part-time teaching	9%	5%	3%	8%	2%	4%	4%	3%	8%	0	2%	0	7%	4%

INTERVIEW QUESTION #4

Has your firm contacted people engaged in Vocational Education for any of the following reasons during the previous four years?

a.	To recruit employees	yes ( ) no ( )
b.	To set up apprenticeship related training programs	yes ( ) no ( )
c.	To set up training programs to upgrade the skills of workers other than apprentices	yes ( ) no ( )
d.	To obtain technical information	yes ( ) no ( )
e.	To donate books, supplies or equipment	yes ( ) no ( )
f.	To give advice regarding technological advance in industry	yes ( ) no ( )
g.	To recommend curriculum improvement	yes ( ) no ( )
h.	To evaluate student success as employees	yes ( ) no ( )
i.	To secure part-time teaching roles in Vocational Education	yes ( ) no ( )

INTERVIEW INFORMATION

If management personnel of the company or organization had made one or more contacts initiated by them with Vocational-Technical Education school personnel for any of the reasons listed in the question, the response was recorded as yes. The question was explained to relate to only tax supported public institutions.

"During the previous four years" was explained to be the four years previous to the last twelve month period of time included in Question #3.

It was explained that the purpose of this question was to make comparison with the information received from Question #3 to determine if contacts were more or less frequent during each period of time.

TABLE #4 EXPLANATION

The percentage figures listed in Table #4 were calculated in a like manner to those listed in Table #3, except the figures are for a different period of time.

TABLE #4 ANALYSIS OF DATA

It was determined that almost the same percentage of companies and organizations had contacted Vocational Education personnel during this period of time as during the one year time designated in Table #3.

Analysis of information received (not shown in Tables #3 or #4) would indicate that the same companies and organizations who were making contacts during the period of time covered in this Table are continuing to make the contacts shown in Table #3.

Large business makes more frequent contact than small business.

Approximately one-half of all companies and organizations contacted had initiated no contacts of any kind during the last five years.

TABLE #4. PURPOSE OF CONTACTS MADE BY MANAGEMENT RELATIVE TO VOCATIONAL-TECHNICAL EDUCATION WITHIN THE PREVIOUS FOUR YEARS.

Reason for Contact	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
To recruit employees	24%	14%	10%	24%	20%	13%	21%	26%	15%	67%	21%	3%	0	19%
Apprenticeship related training	18%	23%	5%	8%	15%	9%	8%	26%	38%	0	9%	0	0	12%
To set up other training programs	55%	36%	6%	18%	21%	23%	14%	16%	15%	67%	28%	3%	47%	21%
To get technical information	26%	9%	2%	11%	4%	2%	8%	6%	8%	0	5%	0	14%	10%
To donate books, equipment, etc.	0	5%	2%	5%	0	2%	14%	6%	0	0	0	0	0	4%
To give technical advice	24%	5%	2%	5%	4%	9%	12%	6%	8%	0	7%	0	14%	6%
To recommend curriculum improvement	15%	18%	1%	11%	3%	4%	8%	9%	15%	0	5%	0	0	5%
To evaluate students as employees	9%	14%	1%	11%	4%	2%	4%	6%	0	0	7%	0	14%	5%
To secure part-time teaching	9%	5%	2%	11%	2%	4%	4%	3%	8%	0	2%	0	7%	5%

INTERVIEW QUESTION #5

Has your firm or any of your employees been contacted by Vocational Education people for any of the following reasons within the last twelve months?

a.	For membership on a school advisory committee	yes ( ) no ( )
b.	For student placement	yes ( ) no ( )
c.	For an invitation to visit the school	yes ( ) no ( )
d.	For the purpose of establishing training programs	yes ( ) no ( )
	(1) apprenticeship	yes ( ) no ( )
	(2) trade extension classes (upgrade workers skills)	yes ( ) no ( )
	(3) supervisory or mgt. training	yes ( ) no ( )
e.	For technical assistance and know how	yes ( ) no ( )
f.	For follow up of Vocationally trained employees	yes ( ) no ( )
g.	For scholorships, grants, books, equipment	yes ( ) no ( )
h.	Through Vocational school mailings	yes ( ) no ( )

INTERVIEW INFORMATION

a. Explanation was made to those interviewed that this question related to only those contacts initiated by Utah's tax supported Vocational school personnel (not by students of Vocational Education seeking employment.)

b. If one or more contacts had been made for any of the reasons listed in the question, it was recorded as a yes response.

c. It was explained that question #5 had a direct relationship with question #6. The purpose of the two questions is to determine if contacts were more or less frequent during each period of time.

TABLE #5 EXPLANATION

The percentage figures listed in Table #5 represent the percentage of those interviewed who indicated that Vocational-Technical Education school personnel had contacted their company or organization's management personnel within the last twelve months. A breakdown of the reasons for the contacts is included in Table #5.

TABLE #5 ANALYSIS OF DATA

It appears from the data that Vocational school personnel initiate fewer contacts with business, industry and service organizations than do the business people with Vocational school personnel. (compare Tables #3 and #4 with Tables #5 and #6).

Vocational school personnel make very infrequent contact with small business. Most contacts which are made are with large and medium sized business.

Only one company out of all of the businesses under the occupational category of Service, Sales and Office occupations indicated they had been contacted. This represented 3% of the companies in this category contacted.

The most prevalent contacts made by Vocational school personnel are: Invitation to visit a school;

Vocational school mailings; Student placement, and to establish training programs.

Any contact made for the purpose of follow up of Vocationally trained students was almost negligible.

TABLE #5. PURPOSE OF CONTACTS MADE BY VOCATIONAL-TECHNICAL SCHOOL PERSONNEL WITHIN THE LAST TWELVE MONTHS.

Purpose of visit or Contact	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Advisory committee membership	30%	23%	5%	11%	11%	15%	7%	23%	15%	16%	9%	3%	13%	12%
Student placement	24%	18%	8%	8%	14%	9%	4%	3%	15%	83%	16%	3%	0	11%
Invitation to visit a school	39%	36%	7%	24%	14%	15%	11%	19%	15%	0	12%	6%	33%	16%
Establish apprentice-ship training	12%	23%	3%	11%	7%	6%	11%	19%	15%	0	7%	0	0	7%
Establish classes for craftsmen & technicians	58%	41%	3%	21%	20%	13%	11%	13%	8%	0	28%	3%	53%	18%
Supervisory or mgt. training	39%	18%	5%	11%	18%	6%	4%	0	31%	0	14%	0	40%	13%
For Technical advice	24%	5%	5%	8%	12%	2%	7%	6%	0	50%	7%	0	20%	9%
Follow up of students	9%	0	0	0	1%	4%	0	3%	8%	0	2%	0	0	2%
Scholorships, grants, or equipment	6%	0	2%	0	6%	0	4%	0	0	50%	0	0	0	3%
Vocational school mailings	27%	32%	11%	13%	21%	11%	11%	19%	23%	50%	19%	3%	20%	16%

INTERVIEW QUESTION #6

Has your firm or any of your employees been contacted by Vocational Education people for any of the following reasons during the previous four years?

a. For membership on a school advisory committee	yes ( ) no ( )
b. For student placement	yes ( ) no ( )
c. For an invitation to visit the school	yes ( ) no ( )
d. For the purpose of establishing training programs	yes ( ) no ( )
(1) apprenticeship	yes ( ) no ( )
(2) trade extension classes (upgrade workers skills)	yes ( ) no ( )
(3) supervisory or mgt. training	yes ( ) no ( )
e. For technical assistance and know how	yes ( ) no ( )
f. For follow up of Vocationally trained employees	yes ( ) no ( )
g. For scholorships, grants, books equipment	yes ( ) no ( )
h. Through Vocational mailings	yes ( ) no ( )

INTERVIEW INFORMATION

a. Explanation was made to those interviewed that this question related to only those contacts initiated by Utah's tax supported Vocational school personnel (not by students of Vocational Education seeking employment.)

b. If one or more contacts had been made for any reason listed in question #6, it was recorded as a yes response.

c. The previous four years considered in this question was designated as the four years previous to the twelve months designated in Question #5.

TABLE #6 EXPLANATION

Table #3, #4, #5 and #6 have an inter-relationship in telling the frequency of contacts made between businessmen, industrialists, government officials and Vocational Education personnel, and for what reasons the contacts were made.

TABLE #6 ANALYSIS OF DATA

The most prevalent response was again an invitation to visit a school, wherein 23% of those contacted indicated that management personnel had received an invitation to visit the school.

The least prevalent response was again any kind of follow up program related to Vocationally trained students.

Vocational school people made considerably more contacts with medium sized and large businesses and organizations than they did with small companies.

The least frequent contacts were made within the Service, Sales and Office occupational category.

Vocational school mailings was the only type of contact which had reached someone in all the occupational categories.

TABLE #6. PURPOSE OF CONTACTS MADE BY VOCATIONAL-TECHNICAL SCHOOL PERSONNEL WITHIN THE FOUR PREVIOUS YEARS.

Purpose of visit or contact	Size of Business: Businesses & Org. with over 1000 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Advisory committee membership	30%	23%	6%	13%	12%	17%	11%	26%	15%	16%	9%	0	13%	14%
Student placement	24%	23%	11%	18%	18%	13%	11%	23%	15%	83%	19%	0	0	16%
Invitation to visit a school	39%	59%	10%	45%	18%	17%	18%	23%	15%	0	33%	3%	47%	23%
Establish apprentice-ship training	12%	18%	3%	8%	4%	6%	14%	9%	15%	0	7%	0	7%	6%
Establish classes for craftsmen/technicians	52%	45%	3%	18%	15%	15%	11%	6%	7%	0	33%	0	47%	16%
Establish supervisory or mgt training	36%	18%	4%	16%	14%	9%	3%	0	31%	0	23%	0	40%	13%
For technical advice	15%	5%	5%	11%	14%	2%	6%	6%	0	50%	5%	0	20%	7%
Follow-up of Voc. students	9%	0	1%	3%	1%	6%	0	0	7%	0	5%	0	0	2%
For scholorships, grants, or equipment	6%	0	3%	3%	7%	2%	0	0	0	50%	2%	0	0	5%
Vocational School mailings	27%	50%	13%	34%	15%	15%	9%	26%	7%	33%	21%	3%	20%	19%

INTERVIEW QUESTION #7

Have the contacts outlined in Questions #3, #4, #5, and #6 been:

Satisfactory	yes ( )
Unsatisfactory	yes ( )
Of No Consequence	yes ( )

INTERVIEW INFORMATION

Those interviewed were asked to consider a satisfactory contact as being one in which management felt they received some benefit from the contact.

An unsatisfactory contact was one in which management felt that the Vocational school personnel did not measure up to the expectations of the company, except, if a company personnel director or manager made request for an employee and the school failed to make a referral that consummated in employment, this was categorized as of no consequence unless other responses indicated a satisfactory or unsatisfactory nature wherein the latter response was recorded.

TABLE #7 EXPLANATION

The data in Table #7 is related to all contacts referred to in Questions #3, #4, #5 and #6. The percentage figures listed in Table #7 relate to only those companies and organizations who indicated that contacts had been made.

TABLE #7 ANALYSIS OF DATA

Considering information received from Questions #3, #4, #5 and #6, and comparing this with information received to Question #7, the following interpretation can be made:

Approximately 33% of those interviewed, regarding Questions #3, #4, #5, and #6, indicated that contacts

of one kind or another had been made during the last five years. Of this one-third, more than one-half indicated a contact of no consequence. Therefore, one can conclude that slightly less than 17% of the companies felt that they had been part of a satisfactory experience. The other 83% really indicated no satisfactory relationship existed between their company and the Vocational Education program of Utah.

Those interviewed from larger businesses and organizations indicated a greater incidence of satisfactory contacts being made than did small businessmen.

The Service, Sales & Office Occupational and the Health Occupations categories registered the least satisfaction.

Three unsatisfactory complaints were registered; one relating to Utah Trade-Technical Institute; one to Salt Lake Trade-Technical Institute, and one to Weber State College.

One of the complaints was registered against a practical nurse training program; one against an automotive and heavy duty mechanical program; and one against an apprenticeship related training program.

Details of each of these unsatisfactory complaints were given to the training institutions and to the State Department of Vocational Education.

Seventy-five per cent of those interviewed indicated there was need for more frequent contacts by Vocational Educators.

A list of those companies or organizations wherein those who were interviewed expressed a willingness to relate to more frequent contacts by Vocational Educators is included in the appendix.

TABLE #7. AN EVALUATION OF CONTACTS MADE AS OUTLINED IN TABLES #3, #4, #5, and #6.

	Size of Business			Area			Occupational Category							TOTAL
Rating	Businesses & Org. with over 1000 employees	Businesses with 100 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Satisfactory	79%	65%	49%	55%	51%	36%	36%	58%	69%	83%	51%	17%	69%	48%
Unsatisfactory	0	0	3%	3%	1%	2%	0	0	0	0	0	0	0	2%
Of No Consequence	21%	35%	48%	42%	48%	64%	64%	42%	31%	17%	49%	83%	31%	50%

INTERVIEW QUESTION #8

How would you rate the following features of Vocational-Technical Education?

	Excellent	Very Good	Good	Fair	Poor
a. Your image of Vocational Tech. Education	( )	( )	( )	( )	( )
b. Buildings	( )	( )	( )	( )	( )
c. Equipment and tools	( )	( )	( )	( )	( )
d. Administration	( )	( )	( )	( )	( )
e. Advertising and Public Relations	( )	( )	( )	( )	( )
f. Research	( )	( )	( )	( )	( )
g. Qualification and ability of teachers	( )	( )	( )	( )	( )
h. Ability level of Vocational School graduates	( )	( )	( )	( )	( )
i. Competency of the Vocational school in upgrading the skills of your workers	( )	( )	( )	( )	( )

INTERVIEW INFORMATION

a. The interviewee was asked to consider a rating of good as being expected or average.

b. The interviewee was asked to consider Utah's total tax supported Vocational-Education program in his rating.

c. If the interviewee had an evaluation of one segment of the program which did not match his rating of the total program, details were solicited.

TABLE #8 EXPLANATION

The figures listed in the Table are an average of the responses based upon the following scores:

4 points for an excellent rating

3 points for a very good rating

2 points for a good rating

1 point for a fair rating

0 points for a poor rating

TABLE #8 ANALYSIS OF DATA

The average score for all factors evaluated is 1.93 which is slightly less than average or expected. (considering 2.0 average and acceptable)

A comparison of the computed ratings for the various occupational categories indicates a spread from 1.6 points to 2.4 points. The two lowest categories were: Service, Sales and Clerical occupations - 1.6, and Health occupations - 1.7. The high was the Electrical trades with a rating of 2.4.

In averaging the ratings for each category, there were no excellent or very good ratings.

Businesses and organizations with over 1000 employees rated all factors of Vocational Education higher than did small businessmen. The ratings were

Large Business	2.4
Small Business	1.8

Considering all responses, Research and Public Relations received the lowest ratings with 1.7 and 1.8 respectively. Rated highest were buildings and teachers with a 2.1 rating.

TABLE #8. AN EVALUATION OF THE VARIOUS COMPONENT PARTS OF VOCATIONAL-TECHNICAL EDUCATION.

Item Evaluated	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Image of Vocational Technical Education	2.5	2.3	1.7	2.4	2.0	1.9	1.9	2.2	2.2	1.8	2.0	1.7	2.5	2.0
Buildings	2.2	1.9	2.0	2.8	1.9	1.9	2.1	2.3	2.3	1.8	2.1	1.9	2.2	2.1
Equipment and Tools	2.3	2.3	1.8	2.5	1.8	2.1	2.0	2.2	2.2	1.6	2.0	1.8	1.9	2.0
Administration	2.4	2.2	1.8	2.1	2.0	2.2	1.9	2.0	2.4	1.3	2.1	1.5	1.9	2.0
Public Relations	2.3	2.0	1.6	1.5	2.0	1.9	1.3	1.8	2.1	1.8	1.7	1.3	1.5	1.8
Research	1.8	1.7	1.7	1.4	1.8	1.9	1.8	1.5	2.4	1.3	1.6	1.1	1.2	1.7
Ability of Teachers	2.5	2.4	1.9	2.2	2.1	2.1	1.7	2.1	2.3	1.5	2.1	1.5	1.7	2.1
Vocational School Students	2.4	2.0	1.8	2.0	1.8	2.1	1.7	2.0	2.3	2.5	1.8	1.4	1.3	1.9
Skill improvement classes	2.5	2.0	1.7	1.5	1.9	2.1	1.6	2.0	2.4	1.8	2.1	1.5	1.3	1.8

INTERVIEW QUESTION #9

Which of the following selections should Vocational Education stress in classes conducted to upgrade the skills of your work force?

a. Preference should be given to subjects such as science, math and communications and leave the skill training to your company — yes ( ) no ( )

b. Preference should be given to special skill training to match a specific job — yes ( ) no ( )

c. Skills should be taught which relate to cluster of closely related occupations — yes ( ) no ( )

d. All three types of training should be established as part of the curriculum — yes ( ) no ( )

INTERVIEW INFORMATION

Those interviewed were told that it was permissible to choose more than one selection if they felt they were applicable.

TABLE #9 EXPLANATION

The percentage figures in Table #9 represent more than one response from many of those interviewed.

TABLE #9 ANALYSIS OF DATA

Ten per cent of those interviewed indicated that preference should be given to science, math, and English and leave the skill training to the company. Many of the 10% felt that the ability to spell, write and do simple arithmetic represented the biggest weakness of their employees.

Over one-half of all companies and organizations contacted responded that they felt that these subjects needed to be included along with skill training.

In trying to analyze the question as to whether the Vocational Education program of Utah should be related to special skill training or training for a cluster of occupations, it was answered, wherein 50% indicated training for a cluster of occupations and 56% indicated special skill training. From the information gathered, it was interesting to note that most of those selecting one, selected both responses. This would indicate that both types of training are needed to upgrade the skills of the work force.

The larger the business, the greater the response towards training as it relates to three of the four categories, namely: skill training, training for clusters of occupations, and the category indicated as all three types of training.

Approximately 90% of those interviewed from large businesses and organizations indicated all three types of training were needed to be part of the curriculum, whereas 50% or less of those interviewed from small businesses indicated the need for each of the three types of training.

TABLE #9. CURRICULUM EVALUATION.

Curriculum Preference	Size of Business: Businesses & Org. with over 1000 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Preference should be given to science & math leaving skill training to company	18%	5%	10%	5%	9%	17%	11%	6%	15%	0	6%	17%	0	10%
Preference should be given to special skill training to match a specific job.	91%	70%	50%	50%	64%	47%	75%	71%	46%	83%	70%	57%	60%	56%
Skills should be taught which relate to cluster of closely related occupations.	88%	77%	36%	50%	47%	55%	61%	81%	69%	83%	47%	70%	47%	50%
All three types of training should be established as part of the curriculum.	91%	36%	35%	79%	47%	43%	36%	61%	38%	17%	53%	57%	80%	54%

INTERVIEW QUESTION #10

Can the Vocational Education program of Utah or the Vocational School nearest you do more than it is presently doing to help meet your Company's training needs?

(If answer is yes, indicate which areas of instruction)

a.	Apprenticeship	yes ( ) no ( )
b.	Classes to upgrade the ability of skilled employees other than apprenticeable occupations	yes ( ) no ( )
c.	Supervisory or management training	yes ( ) no ( )
d.	Teaching basic skills of reading - writing and computation	yes ( ) no ( )
e.	Preparing workers through pre-apprenticeship training	yes ( ) no ( )
f.	Marketing and sales training	yes ( ) no ( )
g.	Vocational Agricultural courses	yes ( ) no ( )
h.	Secretarial courses	yes ( ) no ( )
i.	Courses for technical occupations	yes ( ) no ( )
j.	Research (trouble spots in your plant or to meet technological advancement)	yes ( ) no ( )
k.	Properly certifying the amount of training and ability level of students who receive Vocational Education	yes ( ) no ( )
l.	Health occupations	yes ( ) no ( )

INTERVIEW INFORMATION

In many instances these various educational programs were elaborated upon so the interviewee

could express himself more adequately in relationship to each part of Utah's Vocational Education program.

Whenever the interviewee stated more could be done than is presently being done by Vocational Education to upgrade the skills of their work force, additional inquiry was made as to how.

These statements are included under Interviewee Recommendations, Part IV, Section 5 of this report.

INTERVIEWEE INFORMATION

In many instances these various educational programs were elaborated upon so the interviewee could express himself more adequately in relationship to each part of Utah's Vocational Education program.

Whenever the interviewee stated more could be done than is presently being done by Vocational Education to upgrade the skills of their work force, additional inquiry was made as to how.

These statements are included under Interviewee Recommendations, Part IV, Section 5 of this report.

TABLE #10 EXPLANATION

The percentage figures listed in the Table are based upon several responses from the same company or organization.

TABLE #10 ANALYSIS OF DATA

Whether the business was small, medium or large in size, there was a near unanimous response to the fact that Vocational-Technical Education can do more than it is presently doing to meet the training needs of Business, Industry and Public Service organizations.

It was determined from the interviews that the following Vocational Education program needs to be accelerated. Percentage figures relating to the percentage of those interviewed who indicated a need for program acceleration follows:

Skilled Occupations (including semi-skilled)	67%
Supervisory & mgt. training	46%
Pre-apprenticeship training	42%
Secretarial training	28%
Technician training	27%

Those who indicated a need for additional technical training were quite specific in their recommendations. Some of these recommendations are listed in the information presented in relationship to Question #24.

Eighty-one per cent of all those interviewed stated that Vocational-Technical Education could do more than they are presently doing to meet their company's or organization's training needs.

Forty-two per cent of those interviewed felt Vocational Education could be helpful through proper certification of the training received by Vocational students. They felt that some students have real talents, whereas others who indicate they have had Vocational training are misfits when hired on the job. Something which designates the students performance in school would be helpful.

TABLE #10. AREAS OF INSTRUCTION IN WHICH VOCATIONAL-TECHNICAL EDUCATION CAN DO MORE THAN AT PRESENT TO MEET THE TRAINING NEEDS OF BUSINESS, INDUSTRY AND ORGANIZATIONS INTERVIEWED.

Areas of instruction in which Vocational Education can do more than it is presently doing to meet the training needs of business and industry.	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Voc. Education in general	100%	90%	63%	92%	81%	70%	64%	77%	92%	100%	81%	73%	87%	81%
Apprenticeship	27%	18%	14%	13%	20%	17%	25%	23%	31%	0	9%	10%	33%	18%
Other skilled occupations	85%	64%	63%	87%	64%	57%	68%	68%	85%	17%	60%	63%	93%	67%
Supervisory or mgt. training	70%	36%	35%	58%	50%	30%	32%	39%	31%	50%	51%	43%	73%	46%
Reading, writing and arithmetic	27%	5%	9%	5%	18%	8%	11%	13%	0	0	12%	13%	7%	12%
Pre-apprenticeship training	67%	23%	36%	45%	43%	36%	36%	52%	31%	0	47%	40%	47%	42%
Marketing and sales training	15%	0	22%	37%	14%	15%	18%	13%	15%	0	5%	47%	7%	19%
Agricultural occupations	6%	0	1%	3%	3%	2%	0	0	8%	0	0	3%	20%	3%
Secretarial courses	45%	9%	25%	42%	29%	17%	30%	3%	15%	17%	19%	50%	47%	28%
Technician training	76%	18%	19%	8%	43%	23%	14%	19%	31%	67%	44%	10%	27%	27%
Research	27%	18%	10%	24%	16%	4%	14%	0	0	0	9%	17%	47%	15%
Health occupations	9%	0	5%	3%	8%	2%	0	0	0	67%	0	0	20%	5%
Certification of amt. of training	64%	27%	36%	45%	47%	30%	39%	55%	46%	0	47%	30%	47%	42%

INTERVIEW QUESTION #11

Does your company have a training program wherein the skills and ability of its work force can be improved?

a. Does part of your training program consist of apprenticeship training — yes ( ) no ( )

b. Does part of your training program consist of classes to upgrade the skills and understanding of your employees (other than apprentices?) — yes ( ) no ( )

c. Does part of your training program consist of management and supervisory training classes? — yes ( ) no ( )

d. Does part of your training program consist of general education courses? — yes ( ) no ( )

INTERVIEW INFORMATION

A training program was defined as one where company management designates employees within the plant to take time off their regular duties or are given a full time assignment teaching on the job skills or related knowledge to trainees.

Another definition of a training program would be where management enters into a training relationship with one of the educational institutions of Utah either directly or indirectly through another agency.

TABLE #11 EXPLANATION

The percentage figures listed on Table #11 indicate the percentage of all the companies and organizations

contacted who gave an affirmative answer that they conducted a training program as described in the question and interview information.

TABLE #11 ANALYSIS OF DATA

It was determined that approximately one-half of all the companies interviewed had a training program which met the qualifications indicated in the definition. (The definition is included in the Interview Information related to Interview Question #11.)

The highest rate of incidence of training conducted is that of training for skilled workers, craftsmen and technicians. Forty-two per cent of those interviewed indicated they were involved in these kinds of training programs. Thirty-six per cent indicated they had management and supervisory training programs. Apprenticeship training was next with twenty-six per cent.

More of the companies and organizations in the Salt Lake area were involved in training programs than were their counterparts in the Weber or Central Utah areas.

Health Organizations and Manufacturing firms had the greatest prevalence of training programs among the occupational categories.

A number of the larger companies expressed that they were relating to Utah's Vocational Education program through an intermediary agency such as the U. S. Employment Service.

TABLE #11. TYPES OF TRAINING PROGRAMS CONDUCTED BY THOSE INTERVIEWED.

Type of Training Program Conducted	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Training program	73%	77%	42%	45%	58%	45%	36%	58%	62%	83%	74%	33%	67%	52%
Apprenticeship training	33%	41%	22%	24%	26%	28%	32%	58%	54%	0	23%	3%	13%	26%
Training for craftsmen, skilled workers & technicians	73%	68%	40%	45%	48%	32%	36%	48%	15%	83%	63%	23%	53%	42%
Management and supervisory training	67%	36%	34%	39%	41%	23%	29%	6%	15%	83%	53%	30%	53%	36%
General education	27%	0	3%	3%	10%	6%	11%	3%	15%	0	7%	3%	13%	7%

INTERVIEW QUESTION #12

Does part of your training program consist of classes to upgrade the skills and understanding of your employees (other than apprentices) ? yes ( ) no ( )

a. Is this training conducted by company employees within the plant? yes ( ) no ( )

b. Are these classes taught by Trade-Technical Institute teachers within the plant? yes ( ) no ( )
At the Trade School? yes ( ) no ( )

c. Are these classes taught by College or University teachers within the plant? yes ( ) no ( )
At the University? yes ( ) no ( )

d. Are these classes taught through adult education programs of your local school district? yes ( ) no ( )

e. Do you use correspondence courses yes ( ) no ( )

(1) Company developed yes ( ) no ( )

(2) Private school courses yes ( ) no ( )

INTERVIEW INFORMATION

The question was delimited to exclude apprenticeship on-the-job training, apprenticeship related training, supervisory and management training, and general education classes.

Those interviewed were asked to consider this question as being related to training programs to upgrade the skills and understanding of semi-skilled, skilled, technicians, sales and service occupational workers who were presently employed. The previous definition of training programs applies.

TABLE #12 EXPLANATION

The previous explanation relative to percentage figures applies to this Table.

TABLE #12 ANALYSIS OF DATA

Forty-three per cent of all companies conduct training programs to meet the definition indicated under Interview Information.

Training programs conducted by company employees within the plant were the most prevalent, wherein 41% of all companies interviewed were involved in this type of training program.

Twenty-eight per cent of the companies and organizations were involved with a Trade-Technical school.

Twenty-four per cent of the companies and organizations were involved with a University program at the University. Included in this division, was Weber State College's Technical program.

School district adult education was the least used, followed closely by correspondence study, and in-plant training by school people.

The larger the business, the more comprehensive the training program and the more usage being made of all types of training institutions.

TABLE 12. TRAINING PRACTICES PRESENTLY USED TO UPGRADE THE SKILLS AND KNOWLEDGE OF THE WORK FORCE.

Where and by whom classes to upgrade the skills of workers (other than apprentices) are conducted.	Size of Business: Businesses & Org. with over 100 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Company program	73%	68%	40%	45%	48%	32%	36%	48%	15%	83%	63%	23%	53%	43%
Company conducted within the plant	64%	64%	24%	37%	48%	32%	32%	39%	15%	83%	51%	23%	53%	41%
Trade-Tech. in plant	24%	0	3%	0	11%	4%	4%	6%	8%	50%	7%	0	20%	7%
Trade-Tech. at Trade-Tech.	55%	32%	21%	26%	40%	9%	14%	39%	31%	83%	33%	3%	33%	28%
University in the plant	27%	14%	3%	3%	8%	11%	4%	3%	15%	50%	5%	0	27%	9%
University at the University	58%	27%	18%	11%	32%	21%	14%	26%	31%	83%	40%	10%	40%	24%
Adult Education of School District	12%	0	0	0	3%	2%	0	0	8%	0	5%	0	0	2%
Correspondence courses	21%	5%	9%	18%	9%	9%	25%	6%	15%	0	5%	10%	0	11%
Company developed correspondence course	21%	5%	5%	11%	6%	9%	18%	3%	15%	0	5%	3%	0	8%
Private school correspondence course	21%	0	3%	11%	9%	6%	18%	3%	15%	0	5%	10%	0	9%

INTERVIEW QUESTION #13

Does part of your training program consist of management and supervisory training classes?
yes ( ) no ( )

a. Is this training conducted by company employees within the plant? yes ( ) no ( )

b. Are these classes taught by Trade-Technical Institute teachers within the plant? yes ( ) no ( )
At the Trade School? yes ( ) no ( )

c. Are these classes taught by College or University teachers within the plant? yes ( ) no ( )
At the University? yes ( ) no ( )

d. Are these classes taught through the adult education program of your local school district? yes ( ) no ( )

e. Do you use correspondence courses yes ( ) no ( )

(1) Company developed yes ( ) no ( )

(2) Private school courses yes ( ) no ( )

INTERVIEW INFORMATION

A supervisory or management training program was defined to include all in-plant training for supervisory, management and professional personnel. Also, any formalized relationship whereby an educational institution, by understanding or agreement with the company or organization management, conducts the program.

TABLE #13 EXPLANATION

Previous explanation of per cent figures applies to this Table.

TABLE #13 ANALYSIS OF DATA

The most preferred institution in which to conduct supervisory and management training programs was in-plant company conducted programs. One-third of all companies and organizations interviewed, conducted this type of a program.

Slightly more than one-third of all companies and organizations interviewed had training programs for their company management and supervisory personnel.

Three out of every four large companies had supervisory and management training programs according to the definition previously indicated.

Twenty-one per cent of the businesses and organizations with over 1000 employees were affiliated with either a Trade-Technical Institute or the State Department of Trade and Industrial Education in-plant supervisory and management training program. This figure seemed high except that organizations like the County Officials Association and Municipal League do utilize these services. Also, the Union personnel have received some assistance. Some companies also have participated in supervisory training; Utah Power and Light and Kennecott Copper Co. being examples.

School district adult education was used by only one company of all companies interviewed.

TABLE #13. WHERE AND BY WHOM SUPERVISORY AND MANAGEMENT TRAINING PROGRAMS ARE CONDUCTED.

Where and by whom supervisory and management training programs are conducted.	Size of Business: Businesses & Org. with over 1000 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Company program	73%	36%	34%	39%	41%	23%	29%	39%	15%	83%	53%	30%	53%	36%
Company conducted within plant	67%	36%	31%	38%	32%	23%	25%	35%	15%	83%	44%	27%	53%	33%
Trade-Tech. in plant	21%	0	0	0	7%	0	4%	0	8%	0	0	0	20%	3%
Trade-Tech. at Trade-Tech.	30%	14%	5%	10%	14%	0	11%	3%	8%	33%	16%	0	20%	11%
University in plant	27%	6%	0	3%	8%	6%	4%	0	15%	0	5%	0	27%	6%
University at University	55%	14%	14%	10%	20%	11%	7%	32%	15%	33%	28%	10%	33%	15%
School District Adult Education	1%	0	0	0	1%	0	0	0	0	0	0	0	7%	0
Correspondence courses	9%	0	7%	16%	4%	2%	18%	0	8%	0	0	10%	0	6%
a. company developed	6%	0	5%	11%	3%	2%	7%	0	0	0	0	3%	0	5%
b. private school	9%	0	3%	8%	4%	0	11%	0	8%	0	0	7%	0	4%

INTERVIEW QUESTION #14

Does part of your training program consist of general education courses? yes ( ) no ( )

a. Is this training conducted by company employees within the plant? yes ( ) no ( )

b. Are these classes taught by Trade-Technical Institute teachers within the plant ? yes ( ) no ( )
At the Trade School? yes ( ) no ( )

c. Are these classes taught by College or University teachers within the plant? yes ( ) no ( )
At the College or University? yes ( ) no ( )

d. Are these classes taught through the adult education program of your local school district? yes ( ) no ( )

e. Do you use correspondence courses? yes ( ) no ( )

INTERVIEW INFORMATION

A general education course was defined as not being specifically related to job training, rather being more general in nature. Courses falling in this category would include, math, science, political science, etc. Classes could be conducted on or off the job.

TABLE #14 EXPLANATION

Previous explanation of percentage figures applies to this Table.

TABLE #14 ANALYSIS OF DATA

Very few companies were involved in this type of educational program, only 6% indicating company involvement.

Medium sized business, in terms of employees, conducted no training of this type.

Health Occupational training did not include these subjects except as they were job related.

TABLE #14. PRACTICES RELATED TO GENERAL EDUCATION.

Where and by whom General Education classes are conducted.	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 100 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Company conducted within the plant	21%	0	3%	3%	7%	8%	7%	3%	15%	0	7%	3%	7%	6%
Trade-Technical Inst. conducted within the plant	9%	0	0	0	3%	0	4%	3%	8%	0	0	0	7%	1%
Trade-Technical Inst. conducted at Trade-Tech.	15%	0	1%	3%	3%	4%	0	0	15%	0	2%	3%	13%	3%
Conducted by a Univ. within the plant	3%	0	0	0	1%	0	0	0	8%	0	0	0	0	1%
Conducted by a Univ. at the University	12%	0	1%	3%	2%	4%	0	0	15%	0	2%	0	7%	3%
Conducted through Adult Education program	9%	0	1%	3%	1%	4%	0	0	15%	0	2%	3%	0	2%
Through a correspondence study program	3%	0	1%	3%	1%	0	0	0	8%	0	0	3%	0	1%

INTERVIEW QUESTION #15

Which of the following school settings do you prefer to conduct classes for your employees to upgrade their skills?

a.	High Schools	yes ( ) no ( )
b.	Trade-Technical Institutes	yes ( ) no ( )
c.	Junior College	yes ( ) no ( )
d.	College or University	yes ( ) no ( )
e.	School district adult education	yes ( ) no ( )
f.	Correspondence Schools	yes ( ) no ( )
g.	University Extension	yes ( ) no ( )
h.	Private Trade Schools	yes ( ) no ( )

INTERVIEW INFORMATION

It was explained that the question referred to an inclusion of all off-plant training, including programs to upgrade the skills of craftsmen, technicians, and semi-skilled workers. Also included under the scope of this question, was supervisory and management training, and general education programs. Apprenticeship related training was excluded from the question.

TABLE #15 EXPLANATION

Previous explanation applies

TABLE #15 ANALYSIS OF DATA

1. Trade Tech. in the Salt Lake and Central Utah areas were preferred by the greatest majority

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of those companies interviewed to upgrade the skills of the majority of workers. Weber State College was preferred in the Clearfield and Ogden area.

2. Correspondence courses were the least preferred followed closely by high schools and school district adult education.

3. The figure relative to Junior Colleges is perhaps low, and does not reflect a true opinion. Perhaps if the area sampled had included those areas adjacent to the Junior Colleges, the percentage would have been significantly increased.

4. The larger the business, the more they preferred all types of institutions to conduct classes. Many expressed the feeling, the more education, regardless of where it is received, the better for the company and the individual.

5. If you include the University proper and University Extension or continuing education programs, this perhaps would total to a greater per cent preference than Trade-Tech. schools.

6. A significant factor was that in the Central Utah Area, all companies contacted, preferred an institution other than the high school to conduct training to upgrade the skills of the workers on the job.

TABLE #15. PREFERENCE OF TYPE OF INSTITUTION IN WHICH TO UPGRADE THE SKILLS AND KNOWLEDGE OF THE WORK FORCE.

Institution Preferred	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Business with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
High Schools	36%	14%	24%	0	20%	23%	11%	19%	15%	0	26%	23%	13%	16%
Trade-Technical Institutes	94%	91%	76%	93%	94%	63%	71%	90%	85%	100%	84%	63%	87%	83%
Junior College	76%	27%	29%	23%	35%	49%	39%	16%	23%	0	49%	40%	60%	34%
College or University	82%	63%	73%	68%	68%	81%	61%	71%	77%	100%	79%	70%	67%	72%
School District Adult Education	45%	14%	17%	3%	24%	28%	15%	26%	0	11%	35%	13%	13%	22%
Correspondence Schools	36%	9%	6%	5%	12%	15%	23%	6%	0	7%	23%	13%	7%	11%
University Extension	70%	32%	29%	8%	50%	59%	14%	26%	62%	83%	44%	23%	33%	38%
Private Trade Schools	36%	27%	33%	13%	33%	57%	57%	13%	38%	83%	30%	27%	13%	33%

INTERVIEW QUESTION #16

By what means do you provide the related instructions for your apprentices?

a.	Trade-Technical School courses	yes ( ) no ( )
b.	School district adult education	yes ( ) no ( )
c.	Junior College courses	yes ( ) no ( )
d.	University or University extension courses	yes ( ) no ( )
e.	Private Trade School courses	yes ( ) no ( )
f.	Correspondence courses	yes ( ) no ( )
g.	Company conducted programs	yes ( ) no ( )

INTERVIEW INFORMATION

This Question was not to include any of the programs listed under Question #15.

TABLE #16 EXPLANATION

The percentage figures listed in the Table represent the practices of all companies interviewed, not just those companies who conduct apprenticeship training.

TABLE #16 ANALYSIS OF DATA

The two institutions conducting most of the apprenticeship related training are the two trade-tech. schools and company conducted on-the-job programs.

Fifteen per cent of all companies and organizations expressed a preference for Trade-Technical schools to conduct their apprenticeship related training. Of the 42 companies who indicated they had an

apprenticeship program, 43% preferred a Trade-Tech. school to conduct the related training. Thirty-three per cent preferred to conduct the program themselves, independent of any school. Twenty-four per cent preferred a University or Junior College to provide the instruction.

TABLE #16. INSTITUTIONS WHERE APPRENTICESHIP RELATED TRAINING IS CONDUCTED.

Preference of Educational Institution to conduct apprenticeship related training.	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Trade-Technical School courses	27%	9%	11%	16%	21%	2%	18%	32%	23%	0	43%	10%	0	15%
School district adult education	0	0	1%	0	1%	2%	0	0	8%	0	0	0	0	1%
Junior College courses	9%	0	1%	0	4%	2%	4%	3%	8%	0	0	0	0	3%
University or University extension courses	15%	9%	6%	0	8%	15%	7%	13%	31%	0	7%	0	0	8%
Private Trade School courses	9%	0	3%	3%	5%	0	14%	0	15%	0	0	0	0	3%
Correspondence courses	15%	4%	2%	5%	7%	0	4%	3%	15%	0	28%	0	0	5%
Company conducted programs	15%	18%	10%	13%	11%	17%	18%	16%	23%	0	50%	3%	0	13%

INTERVIEW QUESTION #17

Indicate which of the following responses applies to your apprenticeship program?

a. State apprenticeship council endentured yes ( ) no ( )

b. Federal Bureau of Apprenticeship endentured yes ( ) no ( )

c. Company and Union sponsored yes ( ) no ( )

d. Joint apprenticeship committee sponsored yes ( ) no ( )

e. Company sponsored only yes ( ) no ( )

INTERVIEW INFORMATION

Apprenticeship was defined as, a system of training whereby an unskilled worker is given instruction and job experience, both on and off the job, which when completed, his classification will be journeyman or skilled craftsman.

TABLE #17 EXPLANATION

The percentage figures listed in the Table are based upon responses from all the companies and organizations interviewed.

TABLE #17 ANALYSIS OF DATA

Approximately 26% of all companies interviewed were involved in apprenticeship programs. Nine per cent of the companies interviewed indicated that they had an apprenticeship program which was company sponsored only.

One-third of the companies who had apprenticeship programs indicated their company was the sole sponsor of the program.

Approximately 20% of all companies indicated they were involved in an apprenticeship program which

was endentured by the Federal Bureau of Apprenticeship and by the Utah Apprenticeship Council.

A significant number of these indicated their apprenticeship program was inactive.

Of the companies who conducted apprenticeship training, approximately 77% indicated their program was affiliated with the two sponsoring apprenticeship organizations.

Approximately 20% of all companies interviewed indicated they had an apprenticeship program which was Joint Apprenticeship Committee sponsored. A similar percentage expressed that management and an employee group were jointly involved in the management of the program.

TABLE #17. SPONSORSHIP OF APPRENTICESHIP TRAINING.

Sponsorship of apprenticeship program	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
State apprenticeship council endentured	27%	27%	14%	13%	15%	26%	14%	48%	31%	0	16%	3%	0	20%
Federal Bureau endentured	24%	27%	14%	13%	15%	26%	14%	48%	31%	0	14%	3%	0	20%
Company and Union sponsored	30%	27%	14%	13%	22%	26%	14%	48%	38%	0	16%	3%	0	21%
Joint Apprenticeship committee sponsored	27%	27%	14%	13%	21%	26%	14%	48%	38%	0	12%	3%	0	20%
Company only	15%	14%	6%	11%	9%	6%	14%	10%	8%	0	9%	0	7%	9%

INTERVIEW QUESTION #18

Does your company provide incentives whereby your employees receive financial assistance or other consideration if they enroll in classes to upgrade themselves? If so, which institutions?

a.	Trade-Technical School classes	yes ( ) no ( )
b.	School district adult Vocational Education classes	yes ( ) no ( )
c.	Correspondence Courses	yes ( ) no ( )
d.	University	yes ( ) no ( )
e.	Junior College	yes ( ) no ( )

INTERVIEW INFORMATION

An affirmative answer to this question was not to be construed to include promotions within the plant, rather financial assistance or leave of absence of one kind or another to attend classes outside the plant.

The question was to be construed as related to all kinds of training as indicated in Questions #12, #13, #14, and #15. Financial assistance could include, tuition grants of any amount, travel expenses to attend conferences at educational institutions, etc.

If a company provided incentives, a designation of what these incentives were was a subsequent question.

TABLE #18 EXPLANATION

Some companies expressed that their incentives program could be applied to more than one type

of institution. These multiple responses are incorporated into the percentage figures in the Table.

TABLE #18 ANALYSIS OF DATA

Approximately one-third of all companies contacted, provide some kind of incentive for their employees to attend one or more educational institutions.

More companies and organizations provide incentives for their employees to attend Universities and Trade-Technical Institutes than they do to attend other kinds of institutions. Thirty-four per cent of the companies contacted provide incentives for their employees to attend a University. Thirty per cent provide incentives for their employees to attend a Trade-Technical Institute.

Within the larger companies and organizations, there is a more prevalent tendency to grant incentives than within the smaller companies.

Many of the larger companies related their incentive program to satisfactory training at any institution.

From experience of companies who provide tuition grants to attend a post-High School institution, it was learned that nearly 100% of the workers use the grant to attend a University.

Upon further questioning, it was felt by those interviewed that college credit was the motivation. They also felt that when and if the Trade-Technical School gives college credit for some of its curriculums that this pattern will change.

TABLE #18. TYPE OF EDUCATIONAL INSTITUTION IN WHICH THOSE INTERVIEWED PROVIDE INCENTIVES FOR THEIR WORK FORCE TO ATTEND VOCATIONAL-TECHNICAL EDUCATION CLASSES.

Type of Educational Institution	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	
Trade-Technical School Programs	58%	23%	28%	24%	38%	17%	11%	36%	54%	83%	28%	13%	33%	30%
School district adult Vocational Education classes	27%	5%	3%	8%	8%	28%	0	3%	15%	0	9%	7%	7%	13%
University Education	70%	32%	25%	18%	36%	43%	21%	36%	46%	83%	33%	20%	40%	34%
Junior College programs	36%	14%	3%	11%	12%	9%	7%	3%	15%	0	12%	7%	20%	11%
Correspondence courses	27%	0	3%	11%	9%	26%	4%	3%	15%	0	12%	13%	0	14%

INTERVIEW QUESTION #19

Indicate which type or types of assistance your company provides as an incentive for its employees to attend a trade school educational program.

a.	Apprenticeship related training tuition grant	yes ( ) no ( )
b.	Apprenticeship related training grant for books and supplies	yes ( ) no ( )
c.	Apprenticeship related training, released time from work with pay	yes ( ) no ( )
d.	Apprenticeship related training, correspondence school costs	yes ( ) no ( )
e.	Tuition grants for employees attending a full time or part time Vocational Education course	yes ( ) no ( )
f.	Book and supply costs for employees attending a full or part time Vocational Education program	yes ( ) no ( )
g.	Leave of absence with pay to attend part time or full time classes at a trade-technical school	yes ( ) no ( )
h.	Leave of absence without pay to attend a part time or full time class at a trade-technical school	yes ( ) no ( )

INTERVIEW INFORMATION

It was explained that incentives could be for any amount of money or for any length of leave, provided this was established as a company or organization policy.

TABLE #19 EXPLANATION

The previous explanation of percentage figures applies to this Table. The percentage figures in the Table relate to all companies interviewed, not just those who provide incentives.

TABLE #19 ANALYSIS OF DATA

Listed in the order of frequency of occurrence from most frequent to least frequent are: (as determined by percentage figures indicated on the Table)

a. Tuition grants for employees to attend a full or part time training program (other than apprenticeship) - 22%.

b. Books and supplies for Vocational classes (other than apprenticeship) - 19%.

c. Tuition grants and books and supplies (other than apprenticeship) - 18%.

d. Apprenticeship tuition grants - 16%.

e. Books and supplies for apprenticeship - 15%.

TABLE #19. TYPES OF INCENTIVES RELATED TO TRADE-TECHNICAL INSTITUTE EDUCATION.

Kinds of Incentives or Assistance	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Apprenticeship tuition grants	21%	27%	13%	8%	18%	21%	11%	42%	46%	0	12%	3%	7%	16%
Apprenticeship grants for books & supplies	21%	18%	13%	3%	18%	21%	11%	39%	46%	0	12%	3%	0	15%
Apprenticeship released from work with pay	3%	5%	1%	3%	3%	2%	0	6%	8%	0	2%	0	7%	3%
Apprenticeship correspondence school costs	12%	0	0	0	5%	0	4%	3%	8%	0	2%	0	0	3%
Tuition grants for full or part-time Voc. Ed.	61%	23%	12%	16%	25%	21%	14%	10%	8%	17%	30%	10%	60%	22%
Leave of absence with pay to attend Trade Sch	18%	9%	8%	13%	8%	4%	4%	19%	8%	0	5%	3%	40%	7%
Leave of absence w/o pay to attend Trade Sch	3%	5%	1%	11%	4%	0	4%	3%	0	0	2%	3%	20%	3%
Books & supplies for Voc. classes	61%	14%	10%	11%	22%	21%	14%	10%	8%	17%	26%	10%	40%	19%

INTERVIEW QUESTION #20

Does your company provide incentives for employees to attend classes at a Jr. College?

(If answer is yes, indicate which of the following responses apply:)

a. Tuition grants for Vocational classes yes ( ) no ( )

b. Cost of training connected with apprenticeship program yes ( ) no ( )

c. Leave of absence with pay to attend Jr. College full time yes ( ) no ( )

d. Leave of absence without pay to attend Jr. College full time yes ( ) no ( )

INTERVIEW INFORMATION

It was reaffirmed that incentives could be for any amount of money or for any length of leave, provided, this was a company or organization policy.

TABLE #20 EXPLANATION

The percentage figures in the Table relate to all companies interviewed, not just those who provide incentives.

TABLE #20 ANALYSIS OF DATA

The data is significant only as to companies and organizations interviewed from along the Wasatch front, and their policy regarding incentives for Jr. College education. Actual practice was almost nil except through apprenticeship training, supervisory training, and public service training.

If business had been contacted near a Jr. College, perhaps the percentage figures would have been appreciably altered.

TABLE #20. TYPES OF INCENTIVES RELATED TO JUNIOR COLLEGE EDUCATION.

Kind of Incentive	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Tuition grants for Vocational or Technical Education	33%	0	1%	6%	9%	6%	4%	0	15%	0	5%	7%	27%	7%
Apprenticeship training costs	6%	0	1%	3%	3%	0	4%	0	8%	17%	5%	7%	7%	2%
Leave of absence with pay to attend a Junior College	3%	0	1%	3%	1%	0	0	0	0	0	0	7%	7%	1%
Leave of absence without pay to attend a Junior College	0	0	1%	3%	0	0	0	0	0	0	0	3%	0	0

INTERVIEW QUESTION #21

Does your company provide incentives for employees to attend classes at a University? yes ( ) no ( )

(If answer is yes, indicate which of the following responses apply:)

a. Tuition scholarships yes ( ) no ( )

b. Tuition, fees, and books scholarships yes ( ) no ( )

c. Leave of absence with pay to attend full time class schedule yes ( ) no ( )

d. Leave of absence without pay to attend full time class schedule yes ( ) no ( )

INTERVIEW INFORMATION

It was reaffirmed that incentives could be for any amount of money or for any length of leave, provided, this was company or organization policy.

TABLE #21 EXPLANATION

The percentage figures relate to all companies, not just those who provide incentives.

TABLE #21 ANALYSIS OF DATA

Thirty-four per cent of the companies and organizations interviewed, provide incentives whereby their employees can attend a University. Of this 34%, 90% are for some kind of tuition scholarship. Of the 34%, 85% indicate they include books and supplies as part of the scholorship. Within each occupational category, some companies grant some type of incentive.

Large business again has a greater incidence among them of granting incentives than do the smaller companies.

Nearly one-half of all companies and organizations which are manufacturing or public service in nature, provide incentives for their employees to attend a University.

IMPORTANT NOTE

Upon questioning the interviewee from the larger companies who provide incentives such as tuition grants for their employees to attend a post High School institution, it was learned that, almost all employees who take advantage of the grant attend a University to get College credit.

It was determined from further interviews that the following incentives were most prevalent.

1. A full tuition grant, covering the fees connected to the course, contingent upon satisfactory completion of the course at a University.
2. A full tuition grant plus books and supply costs for a satisfactorily completed course at a University.
3. A one-half tuition grant for a satisfactorily completed course.

TABLE #21. TYPES OF INCENTIVES RELATED TO UNIVERSITY OR COLLEGE EDUCATION.

Type of Incentive	Size of Business			Area			Occupational Category							TOTAL
	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Any kind of incentive	70%	27%	25%	23%	36%	40%	29%	35%	46%	17%	35%	17%	47%	34%
Tuition Scholarship	67%	23%	25%	16%	34%	38%	18%	32%	46%	17%	30%	13%	47%	31%
Tuition, fees, books	64%	14%	25%	13%	33%	38%	21%	32%	38%	17%	28%	17%	33%	29%
Leave of absence with pay	15%	9%	4%	13%	5%	4%	0	0	8%	0	5%	7%	27%	7%
Leave of absence without pay	6%	14%	4%	16%	13%	2%	0	0	0	0	5%	7%	13%	6%

INTERVIEW QUESTION #22

Does your company or organization hire Vocationally trained students? yes ( ) no ( )

a. Upon High School graduation yes ( ) no ( )

b. Students with Trade-Technical School training yes ( ) no ( )

c. Students with Junior College or University training yes ( ) no ( )

INTERVIEW INFORMATION

Those interviewed were asked to consider only occupations which were not of a professional level. Reference was made to the following occupational categories: technicians, skilled craftsmen, semi-skilled workers, service workers and sales people as being applicable to this question and not laborers.

TABLE #22 EXPLANATION

None needed except the same basis applies to the percentage figures in this Table as the percentage figures in the previous Tables.

TABLE #22 ANALYSIS OF DATA

Employment practices indicate that Universities and Trade-Tech. Schools are preferred as institutions to draw skilled and semi-skilled workers from. Approximately 50% of those interviewed indicated that their company policy included hiring High School graduates who were Vocationally trained; whereas, approximately 75% indicated a preference for Trade-Tech. or University trained students.

Twenty-five per cent of those interviewed indicated that Vocational Education was not a criteria used in hiring employees.

All those interviewed from the health occupations indicated that they prefer to draw their Vocationally trained students from a Trade-Tech. school or a University.

TABLE #22. EMPLOYMENT PRACTICES AS RELATED TO WHERE VOCATIONAL TRAINED STUDENTS RECEIVE THEIR TRAINING.

	Size of Business			Area			Occupational Category							TOTAL
Type of Schooling	Businesses & Org. with over 1000 employees	Businesses with 101 to 1000 employees	Businesses with 100 or less employees	Central Utah Area	Greater Salt Lake Area	Weber Area	Automotive Trades	Construction Trades	Electrical Trades	Health Occupations	Manufacturing	Service - Sales Office Occupations	Public Service Occupations	TOTAL
Upon High School graduation	70%	59%	44%	42%	51%	60%	43%	55%	54%	0	58%	43%	73%	49%
Students with Trade-Tech. school training	82%	86%	72%	74%	76%	74%	71%	81%	85%	100%	77%	57%	80%	75%
Students with Junior College or University training	85%	77%	71%	68%	74%	77%	68%	77%	85%	100%	77%	60%	80%	73%

INTERVIEW QUESTIONS #21, #22, #23A, #23B and #23C

21. Should there be more apprenticeable occupations?

If answer is yes, list occupations

_____ _____

_____ _____

22. Are there summer employment possibilities with your company, whereby Vocational Education teachers can keep current with the skills and technical knowledge needed by today's craftsmen and technicians?

yes ( ) no ( )

23A. Is there need for more frequent contacts by Vocational School personnel to relate the Vocational School program to the needs of your work force?

yes ( ) no ( )

23B. Should the contacts referred to in Question 23A be with management only?

yes ( ) no ( )

23C. Should Vocational Education help in surveys of the employees' willingness to enroll in Vocational Education classes to upgrade their skills?

yes ( ) no ( )

INTERVIEW INFORMATION

The respondents were asked each of the above questions and their responses recorded.

Interview Question #22 was expanded to include summer employment possibilities for Vocational students.

Interview Question #23B, the word only was deleted.

TABLE #23 EXPLANATION

Rather than produce three separate Tables answering Questions #21, #22, and #23, they were all incorporated into the one Table entitled, "other factors determined in the interview".

TABLE #23 ANALYSIS OF DATA

Twelve per cent of those interviewed stated there should be more apprenticeable occupations.

Twenty-four per cent of the large business firms stated there should be more apprenticeable occupations.

Twenty-three per cent within the Construction trades, and 27% within the Public Service occupation categories made the same projection.

The following comments were made about expanding apprenticeable occupations:

1. "There should be more apprenticeable occupations, especially in the technical jobs. "
2. "Jobs are changing whereby many technical occupations are replacing some of the apprenticeable occupations. Those responsible for apprenticeship should relate their programs to these new occupations. "
3. "Apprenticeship needs to relate to the semi-skilled occupations, an example being a turret lathe operator. The period of time needs to be shortened, but many of these kinds of occupations should be apprenticeable."
4. "Government red tape prevents many companies from entering into apprenticeship agreements."
5. "Unions should accept apprenticeship more than they do. Selective processes whereby only those from the existing labor force are taken into the apprenticeship program is not a good practice."
6. "Emphasis needs to be placed on experience and training when selecting apprentices."

7. "Auto parts salesmen go through a training program which needs to be related to apprenticeship."

8." Heavy equipment operator's jobs need to be worked into more apprenticeship programs."

Regarding summer employment possibilities, 17% of those contacted gave a favorable answer. The highest categories in terms of percentages answering yes were, Public Service, Construction and Large Business.

Relative to whether there should be more frequent contacts, 74% of those contacted stated yes. Highest categories answering yes were Public Service groups, Manufacturing, Construction, Automotive Trades and the Service, Sales and Office occupations. Over 80% of the medium sized and large business indicated a need for more frequent contact.

Answering the question whether these contacts should be with management, there was almost a direct and significant correlation, wherein those who answered the previous question yes, answered this question yes, too.

A lesser number, but still over 50% of those contacted indicated their willingness to let Vocational Education School personnel relate directly to their work force to solicit and encourage enrollment into Vocational-Technical Education classes.

TABLE #23. OTHER FACTORS DETERMINED IN THE INTERVIEW.

FACTOR	Size of Business: Businesses & Org. with over 1000 employees	Size of Business: Businesses with 101 to 1000 employees	Size of Business: Businesses with 100 or less employees	Area: Central Utah Area	Area: Greater Salt Lake Area	Area: Weber Area	Occupational Category: Automotive Trades	Occupational Category: Construction Trades	Occupational Category: Electrical Trades	Occupational Category: Health Occupations	Occupational Category: Manufacturing	Occupational Category: Service - Sales Office Occupations	Occupational Category: Public Service Occupations	TOTAL: TOTAL
Need for more apprenticeable occupations	24%	0	12%	5%	16%	11%	14%	23%	8%	0	5%	10%	27%	12%
Summer employment possibilities	30%	18%	13%	39%	14%	2%	21%	32%	0	0	20%	7%	27%	17%
Need for more frequent contacts	88%	82%	68%	84%	71%	72%	71%	74%	69%	17%	74%	73%	93%	74%
a-Contacts should be with management only	88%	77%	68%	84%	69%	68%	71%	74%	69%	17%	77%	77%	87%	73%
b-Contacts can be with employees	85%	68%	54%	58%	59%	51%	54%	71%	46%	17%	70%	53%	80%	57%

PART IV. INTERVIEWEE RECOMMENDATIONS

While reading this section of the report, one needs to keep in mind that the question was phrased to get recommendations for improvement of Utah's Vocational-Technical Education program and did not solicit remarks related to any degree of excellence of existing programs.

There has been no effort to list the recommendations in any order of importance.

INTERVIEW QUESTION #24

Please indicate your ideas other than expressed in this questionnaire as to how to improve relationships between Vocational Education and your company or organization.

INTERVIEW INFORMATION

Each interviewee was urged to be as critical as possible so those responsible for Utah's Vocational Education program could incorporate their suggestions into an improved program.

Each interviewee was told that if he did not choose to be identified with his remarks, that his confidence would be respected.

To stimulate discussion relative to Question #24, four additional questions were posed, namely:

1. Is the Public Relations effort of Vocational Education reaching you and your company?
2. What has been your experience with Vocationally trained students, especially classes to upgrade the skills of your workers? Has the training helped?
3. What about the breadth of the curriculum offering? Should there be college credit for technical curriculums.
4. What about segmentation as it relates to Vocational Education? Can you receive all the information from one institution that you need regarding Vocational Education?

RESEARCH FINDINGS

QUESTION #1

Is Utah's Vocational Education Public Relations program reaching you and your company?

ANSWERS RECEIVED

a. Forty per cent of those interviewed indicated the need for a better public relations program by Vocational Education people.

b. Twenty per cent felt that Vocational school mailings to company management would be helpful, and is needed.

c. Five per cent said there needed to be increased effort by the State Department of Vocational Education to get advice from lay citizens and organizations. Several Statewide organizations expressed an opinion of need to be counseled with regarding the State's program in Vocational-Technical Education.

TYPICAL STATEMENTS MADE:

"There is little or no relationship between our company and its personnel and Utah's Vocational Education program." - Pyke Manufacturing Co. - Salt Lake City, Utah.

"There should be a more consistent relationship between Vocational Education and our company personnel. When our company was first established, we had an excellent relationship, but we have drifted apart to where there has been no relationship during the last two years." - Bayly Manufacturing Co. Pleasant Grove, Utah.

"We do not use the University training programs. On-the-job training is better for our needs. Vocational Education should relate their curriculums to meet our needs better." - Sierra Lingerie Company Ogden, Utah.

QUESTION #2

What has been your experience with Vocationally trained students, and with classes to upgrade the skills of the work force? Has the training helped?

ANSWERS RECEIVED

a. Many companies and organizations reacted favorably to this question. The larger businesses responded most favorably. However, some negative responses were made.

b. Fourteen per cent of those interviewed stated that Vocationally trained students did not possess the kinds of skills which related well to their work.

c. Three per cent rated instruction as inferior.

d. Seventeen per cent indicated curriculums should be changed to meet the needs of workers who could find employment with their company.

TYPICAL STATEMENTS MADE:

"Our relationship with Trade-Tech. is exceptionally good." - Memcor - Salt Lake City, Utah.

"Trade-Tech. is very important to the industrial development of Central Utah." - President - Utah County Industrial Development Committee

"Weber State College relates exceptionally well to our Defense training needs." - Hill Air Force Base - Clearfield, Utah.

"Students should be taught how to spell, write and do simple computations." - Roy Lumber Company- Ogden, Utah.

"There is need to teach clerical students to work with numbers, especially to type letters which relate to figures of all kinds." - General Motors Corporation - Salt Lake City, Utah.

"Secretarial courses need to be related closer to the health occupations." - Dentist - Orem, Utah.

QUESTION #3

What about the breadth of the curriculum offering? Should college credit be given for technical curriculum?

ANSWERS RECEIVED

a. Forty-six per cent said Vocational Education should do more in supervisory and management training.

b. Twenty-seven per cent said there needed to be more technical education.

c. Thirty-two per cent said there needed to be more training in the semi-skilled and service occupations.

d. Eight per cent said curriculums in technical education should be accredited to where college credit could be given.

TYPICAL STATEMENTS MADE

"Utah's Vocational Education program needs to be expanded to include more technical occupation and more semi-skilled and service occupational training programs." - Utah State Department of Welfare - Salt Lake City, Utah.

"Vocational Education should do more in sheet metal work." - Craghead Plumbing - Provo, Utah.

"Weber County is losing its Vocational program." - Carpenters Union - Ogden, Utah.

"There is a need in our kind of business for Vocationally trained students who have had instruction in waitress training, housekeeping aid, and grounds maintenance training. Each of these Vocational programs should include training in public relations programs, geared towards good customer relations." Royal Inn - Provo, Utah.

"There is a lack of consistency in scheduling classes to meet the needs of industry by the Trade-Tech. schools. Our company had to get a University to conduct a program in "micro wave" because Trade-Tech. could not provide the service when we needed it." - Utah Power & Light - Salt Lake City, Utah.

QUESTION #4

What about segmentation as it relates to Vocational Education? Can you receive all the information you need from one source regarding Vocational Education?

ANSWERS RECEIVED

a. Nine per cent of those interviewed said there was need for coordination among schools conducting Vocational Education, so their company could relate to an overall program instead of several individual programs.

b. Five per cent said that graduation dates should be staggered to where there would be several times a year that companies could secure employees. Some of these indicated that March 15th was a preferred date to increase their personnel, and that nowhere could they find Vocational school graduates to fill the jobs.

c. Three per cent said that instead of all the High Schools in the Salt Lake Area teaching the same Vocational subjects, that one centralized program should be administered by the four school districts, thereby permitting a substantially increased curriculum offering in the Salt Lake Area.

TYPICAL STATEMENTS MADE:

"Curriculums need to be broadened in number, and there needs to be greater Statewide coordination of the program." - Eimco Corporation - Salt Lake City, Utah.

"Utah's Vocational school curriculum needs to include courses in computor science. The State needs to regulate this program to where one or two schools could serve the State in programs to produce business and industries' needs in skilled computor programmers and technicians." - Barbizon - Provo, Utah.

"It is hard for business to work through the maze of agencies and schools involved in Vocational training. Something needs to be done to get the common story to Industry." - Marquardt Corporation - Ogden, Utah.

"We find a difference in Vocationally trained students. Some students are trashy! Others are very good! Vocationally trained students who go to work for a business firm should appreciate the businessman's concern to make a profit on his labor." - Reavilly Trucking Company - Salt Lake City, Utah.

"Vocationally trained students need to be taught to take orders and carry them out better than the ones our company has hired; however, one of our better boys is from Weber State College." Hilton & Carr Construction Company - Ogden, Utah.

5. OTHER RECOMMENDATIONS

"The total State program of Vocational-Technical Education needs to be evaluated in terms of the needs of youth and the adults in a changing world of work."

"Special classes for draftsmen related to architecture need to be included in the curriculum and those in architectural work need to be made aware of the classes."

"Classes in carpentry should include more emphasis on heavy construction."

"There should be a clearly defined State plan for Technical Education. Accreditation should meet the standards of the Committee on Engineering Technology of the Engineers Council for Professional Development."

"Systems analyists should be included in the curriculum offering."

"The union worker doesn't understand the true role of Vocational Education. A better understanding of the programs of Vocational-Technical Education is needed by the working men."

"Vocational Education needs to give more attention to informing small business of programs in Vocational-Education related to their company."

"There should be meetings between staff representatives of the C.I.O. and Vocational Educators at the State level to effectuate a program which reaches their union membership."

"Clerical training should include training in numbers and machine accounting."

"There needs to be an upgrading process take place with administrative and teaching personnel."

"There needs to be a more consistent relationship between the State Department for Vocational Education and the counties and cities of our State."

"The trade-technical institutes should include curriculums to train building maintenance men, landscapers, cooks, bakers, operating room technicians, nurses aides, store keepers and medical secretaries."

"The Utah Chapter of the American Institute of Architects would like to relate its advice to technical education curriculums related to architecture and engineering."

TECHNICAL CURRICULUMS RECOMMENDED

Aeronautical Drafting
Air Conditioning and Heating Drafting
Highway and Heavy Design Drafting
Architectural Drafting (Improved Basis)
Tool and Die Curriculum
Quality Control Curriculum
Layout (Mechanical Trades)
Time and Motion Study
Computor Programming
Computor Technology
Patternmaking
Logistics Technology

PART V. CONCLUSIONS AND RECOMMENDATIONS

All conclusions and recommendations contained in this part of the report are based upon information received from the series of interviews.

Several complimentary conclusions could have been included in the report. However, it was felt that the real purpose of this part of the report should be to include those recommendations which, if acted upon would improve Vocational-Technical Education

There has been no effort to list the conclusions and recommendations in any order of importance. It is felt that each recommendation is important.

1. The total State Vocational Education program needs to be evaluated in terms of extended curriculum offerings. Both technical curriculums and semi-skilled service occupational training, need to be accelerated in Utah's program.

The findings of this study support the position taken by the State Board for Vocational Education and the Legislative Council Junior College Study Committee, wherein both have indicated the need for an expanded curriculum to include Technical Education and the semi-skilled and service occupational programs.

2. College credit for some of the technical curriculums will help build a better relationship between Vocational-Technical Education and Utah's work force.

Several large companies who provide tuition grants as an incentive for their workers to improve themselves through education predict a substantial increase in Trade-Technical Institute enrollment if college credit is given for some of the technical courses taught.

3. There is a need for a much broader program in the health occupations. Practical nurse education is not doing the job that needs to be done to meet the needs of all health services.

It is recommended that this be the subject of a subsequent research project. Some of the interested organizations which should be included as advisory groups to the research project are:

State Department of Health
State Department of Public Welfare
Nursing Home Association
Utah State Hospital
Utah State Training School
Utah Business Regulation Department

Utah Medical Association
Utah State Hospital Administrators Association
Nurses Association
Senior Citizens, State Committee
State Civil Defense Council
State Department of Rehabilitation

4. More frequent contacts need to be made by Vocational Educators with Business and Industry. These contacts need to relate to several important considerations, namely:

a. To alert company management to the service Vocational Education can perform in upgrading the skills of their work force.

b. To establish lines of communications between the schools and business.

c. To provide borchures, catalogues, etc. These need to find their way into the hands of the workers.

d. For enrollment of employees in all kinds of Vocational-Technical Education classes.

e. To obtain follow-up information on Vocationally trained students who are employees of the company.

f. To relate Vocationally trained students to the company's employment needs.

g. To relate company training incentive programs to Vocational Education.

5. Extra emphasis needs to be placed upon building a better public relations program with small business, which would include all points mentioned in Recommendation #4 above.

6. Some of the technical curriculums which need to be included in the State's Vocational-Technical

program are:

a. Mechanical Trades Layout Men

b. Quality Control Engineer; Industrial Engineer; Tool Inspector

c. Special skill programs related to the health occupations.

d. Specialized secretarial training related to health occupations, legal work, etc.

7. There needs to be added to the curriculums of the schools, semi-skilled and service occupational training programs such as:

a. Heavy Duty Equipment Operators

b. Heavy Duty Truck Drivers

c. Service Station Attendants

d. Landscapers

e. Waitresses

f. Cooks and Bakers

g. Hotel - Motel Managers and Housekeepers

h. Warehousemen

i. Auto Parts Salesmen

8. The State Department for Vocational Education needs to be strengthened in relation to:

a. Establishing a Statewide, coordinated program of Vocational-Technical Education to meet the needs of youth in a changing world of work.

b. To stagger graduation dates to provide a more uniform flow of graduates, consistent with the employment needs of business and industry.

c. To provide means whereby business and industry of the State can relate through an agency who can tell the total story of Vocational Education for the State. This would be a means of decreasing business and industries' criticism of the segmentation aspect of Vocational Education wherein they have to relate to several agencies and institutions to get the whole picture.

d. To establish a relationship with all organizations and associations which have a direct and indirect relationship with Utah's economy.

9. It is recommended that immediate attention, by the State Department for Vocational Education, be given to effectuate a working relationship with all Statewide and regional associations whose purpose is to program in the interest of its affiliate members.

This recommendation is an outgrowth of several interviews wherein members of the twenty-four different associations made the request for a closer relationship with Vocational Education especially at the State level.

Many of those interviewed felt to avoid a segmented approach that the State Department for Vocational Education should initiate a relationship which could include such things as:

a. A Statewide projection of Utah's Vocational School program

b. Seeking the advice and council of their association in matters pertaining to training youth to fill jobs with their association members.

c. Establishing training programs beneficial to their membership.

Members of the following organizations indicated the need for a closer working relationship

with Vocational Education:

Utah Restaurant Association
Utah Mining Association
Salt Lake Advertising Association
Salt Lake Chamber of Commerce
Utah Canners Association
Utah Architects Association
Municipal League
County Officials Association
Utah Hotel - Motel Association
Utah State Press Association
Utah State Banking Association
Utah Savings & Loan League
Utah Automobile Dealers Association
A.F. of L. & C.I.O. both divisions
Several Unions
Utah Dental Association
Several Oil companies, including the Dealers Association and the Utah Petroleum Council
American Institute of Mining, Metallurgical and Petroleum Engineers, Utah Division
Utah Needle Trades Council
Utah Education Association
Utah Division of the United States Post Office System

10. Those who were interviewed related very well to the request for information. Only one person questioned the value of the project, whereas many expressed the desire for more frequent contacts.

Contacts designed to bring curriculum information to their company or organization or contacts to work out training programs in relationship to their work force would meet with good acceptance.

11. Only one serious complaint was registered in each of the areas covered in this survey. Therefore, one can conclude that very little negative attitude towards Vocational Education exists. Emphasis, then, needs to be placed upon relating to the 83% who indicated that Vocational-Technical

Education had been of no consequence to their company or organization.

12. Several of the leaders of the labor organizations of the State felt that the only time they were contacted by Vocational Educators were when the educators wanted something. They indicated that communications should relate both ways and that contacts need to be made by Vocational School Educators to work out training programs beneficial to more of the labor force than are presently being reached.

It is recommended that the State Department for Vocational Education take immediate steps to see that Vocational Education reaches more of the membership of all labor groups.

13. Apprenticeship training needs to be broadened to include more of the technical occupations and more of the semi-skilled occupations. It is recommended that the State Department for Vocational Education request the State Apprenticeship Council to make and evaluate a study of their present program to see if new occupations should be added to meet the needs of business and industry.

14. Government agencies, including State, County and City officials, are not utilizing the services of Vocational-Education to the best advantage of public employees.

Immediate steps should be taken to establish a Statewide advisory committee of government officials to work in the interest of bringing Vocational Education to as many public employees as possible.

15. Several interviewees indicated that Weber County was losing some of its Vocational training because of Weber State College's interest in only technological programs. Several others indicated that Weber was oriented to Hill Air Force Base and was perhaps doing an excellent job for the Base, but was not relating to the total needs of Weber County.

It is recommended that the State Department for Vocational Education make an analysis of the

Vocational offerings of all schools in Weber County and either validate or nullify these statements.

16. Several companies indicated that Vocational Education was too rigidly tied to existing curriculums, and was not flexible enough to meet their training needs.

Steps should be taken to rectify this criticism.

17. Vocational Education research funds could be used for projects related to the economic growth of all areas of the State. Two of those interviewed felt that a Vocational Research program could be a very useful service to industrial development committees.

The State Department for Vocational Education should conduct a survey to determine how it could be useful in industrial development through research.

18. Public Relations and Research were rated lower by those interviewed than the other parts of Vocational Education. Therefore, immediate action should be taken by each of the Trade-Technical schools, by Weber State College and by the State Department for Vocational Education to effectuate a better relationship with business and industry than now exists.

The image of Vocational Education is slightly less than expected.

19. The two occupational training programs rated lowest by those interviewed were the Health and Sales - Service categories.

Steps should be taken to improve relationships between these programs and the people they are serving.

One of the two practical nurse training programs did most to bring the Health rating down.

A lack of Sales and Service occupational training programs in the schools was instrumental in the low rating ascribed to this category.

20. Some companies indicated that it was easier to work out training programs related to the semi-skilled and service occupations with other governmental agencies than it was with Vocational Education.

Immediate steps should be taken to remedy this situation.

21. It is recommended that steps be taken to include curriculums related to agriculture, home making home economics, sales, marketing and the service occupations into the Trade-Technical school program.

22. Building maintenance training programs should be included in the Post High School Vocational School curriculum.

23. The Utah Chapter of the American Architects Association and the several State Associations of Engineers should be contacted to help set standards and establish curriculums for the technical training programs.

24. It is recommended that safety classes be included as part of the night school curriculum.

25. Many companies felt that the Vocational Education program should include a more extensive supervisory and management training program. It is, therefore, recommended that the State Board for Vocational Education call together an advisory committee to evaluate and recommend improvements in this part of the Vocational Education program. Special emphasis should be given to inviting small businessmen to attend these classes.

26. The Associated General Contractors of the State would like to help establish a business management class for small contractors. This should be followed up immediately by the State Board for Vocational Education.

27. Students taking classes at the two trade-technical schools should be required to study harder. Apprenticeship training was criticized as being too easy.

APPENDIX I

* * * * * *

COMPANIES INDICATING A NEED FOR MORE FREQUENT CONTACTS

Utah State Fish & Game Department
1596 W. North Temple
Salt Lake City, Utah

Provo School District
980 N. 300 W.
Provo, Utah

Jensen Reproduction Co.
125 E. 3rd S.
Salt Lake City, Utah

Orem-Geneva Times
546 S. State
Orem, Utah

Pioneer Finance & Thrift Co.
66 N. University Ave.
Provo, Utah

State Bank of Provo
75 N. University Ave.
Provo, Utah

Utah Savings & Loan Association
65 N. University Ave.
Provo, Utah

O'Loughlin's Radio Supply Co.
113 E. 3rd S.
Salt Lake City, Utah

Dixon-Long Architects
1275 N. 150 E.
Provo, Utah

Bestway Building Center
1551 N. Canyon Rd.
Provo, Utah

Wesko Cabinet & Trailer Supply Co.
296 N. State
Orem, Utah

All-Car Parts Co.
155 N. University Ave.
Provo, Utah

(perhaps)
Automatic Transmission Service Co.
845 S. Main
Salt Lake City, Utah

Royal Inn
55 E. 1230 N.
Provo, Utah

Sears Roebuck & Co.
207 N. 100 W.
Provo, Utah

Capital Chevrolet
8th South State
Salt Lake City, Utah

P. E. Ashton Co.
175 N. 100 W.
Provo, Utah

United Sales & Service
470 W. 100 N.
Provo, Utah

Provo Steel & Supply
1400 S. State
Provo, Utah

Steel Fabricators
General American
Transportation Corp.
520 W. 2000 S.
Orem, Utah

Carpenters Union
Local No. 1498
165 W. 1 N.
Provo, Utah

Weber County Commission
Municipal Bldg.
Ogden, Utah

Craghead Plumbing
56 N. 200 W.
Provo, Utah

(Appendix I continued)

Utah Auto Parts Co.
29 E. 9th So.
Salt Lake City, Utah

Utah Power & Light Co.
Statewide

Mountain Motors Inc.
265 So. 100 W.
Provo, Utah

Meadowgold Dairy
845 So. State
Orem, Utah

Ruff's Garage
38 W. Center
Springville, Utah

State Firemens' Association
State of Utah

Cal & Paul's Ford Tractor Co.
90 N. 600 W.
Pleasant Grove, Utah

Pleasant Grove City
Pleasant Grove, Utah

Barbizon of Utah
150 W. 1230 N.
Provo, Utah

John Bench D.D.S.
239 E. 800 S.
Orem, Utah

Colonial Real Estate
1197 N. 300 W.
Provo, Utah

Naylor Auto Inc.
145 W. 300 S.
Provo, Utah

Weber County Treasurer
Municipal Bldg.
Ogden, Utah

Weber County Clerk
Municipal Bldg.
Ogden, Utah

Nationwide Loans
323 So. State
Salt Lake City, Utah

State Bldg. Trades Council
Labor Temple
Salt Lake City, Utah

Great Basin Construction Co.
2075 West Center
Provo, Utah

Hillcrest Motel & Gay Lee Lingerie
1675 So. State
Orem, Utah

Strong Electronics
730 So. 500 W.
Provo, Utah

Provo School District
980 North 3rd West
Provo, Utah

Bayly Apparel Mfg. Co.
350 West Center
Pleasant Grove, Utah

Provo Post Office
95 West 100 South
Provo, Utah

Utah State Road Commission
American Fork
Utah

Corleissen's Cafe
690 West State Road
Pleasant Grove, Utah

Standard Stations, Inc.
2584 South Washington
Ogden, Utah

Arch Browning Motor
570 South Main
Salt Lake City, Utah

Salt Lake County Officials
County Court House
Salt Lake City, Utah

Utah Auto Dealers Association
Newhouse Hotel
Salt Lake City, Utah

(Appendix I continued)

Holiday Inn Cafe & Motel
3306 Washington Blvd.
Ogden, Utah

Mountain Lumber Company
860 Wall Street
Ogden, Utah

Roy Lumber Company
5540 South 1900 West
Roy, Utah

Stocks Lincoln Mercury
3230 Washington Blvd.
Ogden, Utah

Allied Building Materials Company
525 West 12th
Ogden, Utah

Beehive Clothing Mills
1665 Bennett Road
Salt Lake City, Utah

McGee & Hogan Machine Shop
1154 South 2nd West
Salt Lake City, Utah

Safeways
154 South 1st West
Salt Lake City, Utah

Eimco Corporation
537 West 600 South
Salt Lake City, Utah

Bennett Ford
47 West 6th South
Salt Lake City, Utah

Automatic Transmission Service Co.
845 South Main
Salt Lake City, Utah

Granger Lumber Co.
Builder's Supply
1900 West 3500 South
Salt Lake City, Utah

Nationwide Loans
323 South State
Salt Lake City, Utah

Precision Grinders
and Diesel Injector Co.
722 South 2nd West
Salt Lake City, Utah

Ogden Iron Works Co.
185 - 23rd
Ogden, Utah

Hill Air Force Base
Clearfield
Utah

Utah General Depot
Defense Depot
Ogden, Utah

Thiokol
Brigham City
Utah

United Brotherhood
of Carpenters #450
3350 Wall Street
Ogden, Utah

Meat Cutters Local #637
3930 Riverdale Rd.
Ogden, Utah

Superior Eng. & Sales Co.
Freeport Center
Clearfield, Utah

Sierra Lingerie Company
300 West 12th Street
Ogden, Utah

Utility Trailer
Freeport Center
Clearfield, Utah

California Packing Corp.
1325 Washington Blvd.
Ogden, Utah

California Packing Corp.
Freeport Center
Clearfield, Utah

Holbrook Company
Eng. Heating & Air Cond.
725 West Riverdale Rd.
Ogden, Utah

Merrill Bean Chevrolet Inc.
2626 Washington Blvd.
Ogden, Utah

Gardner's Frostop
Clearfield
Utah

(Appendix I continued)

Ogden Bus Lines
238 - 20th Street
Ogden, Utah

Marveon Sign Company
3532 Riverdale Road
Ogden, Utah

Arrowsmith Plastic Tooling
Freeport Center
Clearfield, Utah

Western Mill & Fixture Company
Freeport Center
Clearfield, Utah

United Steelworkers
2465 South Main
Salt Lake City, Utah

Utah Education Association
312 East South Temple
Salt Lake City, Utah

American Institute of Mining
Metallurgical & Petroleum Engineers
Newhouse Building
Salt Lake City, Utah

A.F. of L. - C.I.O.
424 South 4th East
Salt Lake City, Utah

Utah State Restaurant Association
Newhouse Building
Salt Lake City, Utah

Utah Petroleum Council
10 West 3rd South
Salt Lake City, Utah

Utah Mining Association
Kearns Building
Salt Lake City, Utah

State Department of Welfare
2835 South Main
Salt Lake City, Utah

Litton Industries
Guidance & Control Systems
2211 West North Temple
Salt Lake City, Utah

Pyke Manufacturing Company
1025 South 6th West
Salt Lake City, Utah

Litton Industries
Data Processing
640 North 21 West
Salt Lake City, Utah

State Road Commission
State Capitol Building
Salt Lake City, Utah

Goodyear Motor Sales
180 East 3rd South
Salt Lake City, Utah

Utah Canners Association
Salt Lake City
Utah

Karman Kitchens
1841 West 17th South
Salt Lake City, Utah

Memcor-Montek Division
2268 South 3270 West
Salt Lake City, Utah

Utah Architect's Association
Salt Lake City, Utah

Kelly Springfield Tire Co.
1200 Beck Street
Salt Lake City, Utah

Young Electric Sign Co.
1148 South 2nd West
Salt Lake City, Utah

Cudahy Packing Corp.
Cudahy Lane
Woodscross, Utah

Salt Lake Mfg. Co.
2305 South 1100 West
Woodscross, Utah

Salt Lake Mfg. Company
2305 South 1100 West
Woodscross, Utah

Beeline Gasoline Company
333 West Central
Woodscross, Utah

Dr. John R. Bench D.D.S.
239 East 800 South
Orem, Utah

Wilson Chevrolet
Murray
Utah

(Appendix I continued)

Reaveley Trucking Company
1330 Beck Street
Salt Lake City, Utah

Bearing Engineering Company
756 South 2nd West
Salt Lake City, Utah

Salt Lake Chamber of Commerce
207 South Main
Salt Lake City, Utah

Diehl Lumber Company
1756 South 6th West
Salt Lake City, Utah

Parkinson Advertising Company
Salt Lake City, Utah

Utah Municipal League
Newhouse Hotel
Salt Lake City, Utah

Phillips Petroleum Company
393 South 800 West
Woodscross, Utah

General Motors Corp.
Electro Motor Division
130 East 1100 North
Salt Lake City, Utah

Union Pacific - Traffic Division
Salt Lake City, Utah

Standard Oil of California
Woodscross, Utah

Big Vern's
345 North Main
Clearfield, Utah

General Mills
220 West 30th
Ogden, Utah

Hilton & Carr Construction Co.
120 West 21st
Ogden, Utah

Latter Day Saints Hospital
8 Ave. and C.
Salt Lake City, Utah

Ashton, Brazier & Montmorency
A.I.A.
24 S. W. Temple
Salt Lake City, Utah

Gustavson, A.I.A.
15 N. W. Temple
Salt Lake City, Utah

Cannon & Mullen A.I.A.
Beneficial Life Bldg.
Salt Lake City, Utah

Georgius Cannon, A.I.A.
19 W. S. Temple
Salt Lake City, Utah

Christiansen Bros. Inc.
209 W. 13 S.
Salt Lake City, Utah

Intermountain Pipe & Welding
1970 S. W. Temple
Salt Lake City, Utah

Cottonwood Sheet Metal
Salt Lake City, Utah

W. P. Harlin Construction
3091 S. Main
Salt Lake City, Utah

Wasatch Plumbing
2345 S. Main
Salt Lake City, Utah

General Electric
312 W. 2nd S.
Salt Lake City, Utah

Monarch T.V. Service
4500 South State
Salt Lake City, Utah

Midwest Electric
40 W. Truman Ave.
Salt Lake City, Utah

Westinghouse Appliance
1948 S. W. Temple
Salt Lake City, Utah

Utah County Rehabilitation
Office
285 N. 100 E.
Provo, Utah

A P P E N D I X I I

List of companies indicating number of employees, area of location, and division of work.

MANUFACTURERS

	No. of Employees	Area
Litton Industries - Guidance and Control System 2211 West North Temple Salt Lake City, Utah	Large	Salt Lake City
American Institute of Mining Metallurgical Petroleum, Inc. Newhouse Building Salt Lake City, Utah	Large	Salt Lake City
Eimco Corporation Salt Lake City Utah	Medium	Salt Lake City
Litton Industries (Data Processing) 640 North 21 West Salt Lake City, Utah	Medium	Salt Lake City
Utah Mining Association Kearns Building Salt Lake City, Utah	Large	Salt Lake City
Utah Petroleum Council 10 West 3rd South Salt Lake City, Utah	Large	Salt Lake City
Pyke Manufacturing Co. 1025 South 6th West Salt Lake City, Utah	Medium	Salt Lake City
Bayly Apparel Manufacturing Co. 350 West Center Pleasant Grove, Utah	Medium	Central Utah

A.F. of L. - C.I.O 440 South 4th East Salt Lake City, Utah	Large	Salt Lake City
Kennecott Copper 1515 Mineral Square Salt Lake City, Utah	Large	Salt Lake City
Utah Sand & Gravel Co. 1730 Beck St. Salt Lake City, Utah	Small	Salt Lake City
Sperry Company 322 North 21 West Salt Lake City, Utah	Large	Salt Lake City
Bearing Engineering & Sales Co. 756 South 2nd West Salt Lake City, Utah	Small	Salt Lake City
United Steel Workers 2465 South Main Salt Lake City, Utah	Large	Salt Lake City
Provo Steel & Supply 1400 South State Provo, Utah	Small	Central Utah
Pacific States Cast Iron Pipe Co. Ironton, Utah	Medium	Central Utah
General American Steel Company 520 West 200 South Orem, Utah	Small	Central Utah

Barbizon of Utah 150 West 1230 North Provo, Utah	Medium	Central Utah
Utah Canners Association Salt Lake City Utah	Large	Salt Lake City
Fram Corporation Clearfield, Utah	Small	Weber County
California Packing Corp. 1325 Washington Blvd. Ogden, Utah	Medium	Weber County
Mountain States Implement Co. 159 - 23rd St. Ogden, Utah	Small	Weber County
Utility Trailer Freeport Center Clearfield, Utah	Small	Weber County
Sierra Lingerie Co. 300 West 12th St. Ogden, Utah	Medium	Weber
Western Mill & Fixture Co. Freeport Center Clearfield, Utah	Small	Weber County
Freeport Distribution Center Freeport Center Clearfield, Utah	Small	Weber County
Arrowsmith Plastic Tooling Freeport Center Clearfield, Utah	Small	Weber County
Industrial Boxboard Corp. Freeport Center Clearfield, Utah	Small	Weber County

Hill Air Force Base C learfield, Utah	Large	Weber County
Marquardt Corporation 1000 West 33rd St. Ogden, Utah	Large	Weber County
Ogden Iron Works Co. 185 - 23rd Ogden, Utah	Small	Weber County
Thiokol Brigham City, Utah	Large	(Weber County)
Standard Oil of California (Woods Cross) Salt Lake City, Utah	Medium	Salt Lake City
McGee & Hogan Machine Shop 1154 South 2nd West Salt Lake City, Utah	Medium	Salt Lake City
Phillips Petroleum Co. 393 South 800 West Salt Lake City, Utah (Woods Cross)	Medium	Salt Lake City
Beehive Clothing Mills 1665 Bennett Road Salt Lake City, Utah	Medium	Salt Lake City
Memcor - Montek Div. 2268 South 3270 West Salt Lake City, Utah	Small	Salt Lake City
Beeline Gasoline Co. 333 West Central Salt Lake City, Utah	Small	Salt Lake City
Nu Art Lighting & Mfg. Co. 2360 West 21 South Salt Lake City, Utah	Small	Salt Lake City

United Steel Workers 2465 South Main Salt Lake City, Utah	Large	Salt Lake City
Salt Lake Mfg. Co. 2305 South 1100 West Salt Lake City, Utah (Woods Cross)	Small	Salt Lake City
Hercules Powder Co. Baccus Works Baccus, Utah	Large	Salt Lake City
Trumbull Asphalt Co. & Fry Roofing Co. 991 West 1500 South Salt Lake City, Utah (Woods Cross)	Small	Salt Lake City

CONSTRUCTION

Christiansen Bros 209 W. 13 S. Salt Lake City, Utah	Small	Salt Lake City
Gibbons & Reed 825 W. 9 N. Salt Lake City, Utah	Small	Salt Lake City
W. P. Harlin Construction Co. 3091 S. Main Salt Lake City, Utah	Small	Salt Lake City
Utah Construction Co. 144 E. Broadway Salt Lake City, Utah	Small	Salt Lake City
Young & Smith Construction Co. Salt Lake City, Utah	Small	Salt Lake City
Associated General Construction Co. 438 S. Main Salt Lake City, Utah	Small	Salt Lake City

Harold K. Beecher & Associates, Architects Dooly Bldg. Salt Lake City, Utah	Small	Salt Lake City
Cannon & Mullen Beneficial Life Bldg. Salt Lake City, Utah	Small	Salt Lake City
Woods & Woods 19 W. So. Temple Salt Lake City, Utah	Small	Salt Lake City
Bestway Building Products Co. 1551 North Canyon Rd. Provo, Utah	Small	Central Utah
Granger Lumber Co. 1900 West 3500 South Murray, Utah	Small	Salt Lake City
Diehl Lumber Co. 1756 South 6th West Salt Lake City, Utah	Small	Salt Lake City
Davis Construction Co. Provo, Utah	Small	Central Utah
Craghead Plumbing 56 North 200 West Provo, Utah	Small	Central Utah
Wesko Cabinet Co. 296 North State Orem, Utah	Small	Central Utah
Richard Miller Construction Co. 99 South 700 East American Fork, Utah	Small	Central Utah

Dixon-Long Architects 1275 North 150 East Provo, Utah	Small	Central Utah
State Building Trades Council Labor Temple Salt Lake City, Utah	Large	Salt Lake City, Utah
Ironworker Local 27 161 South 2nd East Salt Lake City, Utah	Medium	Salt Lake City, Utah
A.F.L. & C.I.O. 424 South 4th West Salt Lake City, Utah	Large	Salt Lake City, Utah
Hilton & Carr Construction Co. 120 West 21st Ogden, Utah	Small	Weber
Roy Lumber Co. 5540 South 1900 West Roy, Utah	Small	Weber
Allied Builder's Material Co. 525 West 12th Ogden, Utah	Small	Weber
Plumbers & Steamfitters Local 348 3930 Riverdale Rd. Ogden, Utah	Medium	Weber
Mountain Lumber Co. 860 Wall Ave. Ogden, Utah	Small	Weber
United Brotherhood of Carpenters 3350 Wall Ave. Ogden, Utah	Medium	Weber

Superior Engineering & Sales Co. Freeport Center Clearfield, Utah	Small	Weber
Marveon Sign Co. 3532 Riverdale Rd. Ogden, Utah	Small	Weber
Holbrook Engineering & Heating 725 West Riverdale Rd. Ogden, Utah	Small	Weber
Karman Kitchens 1841 West 17th South Salt Lake City, Utah	Small	Salt Lake City

ELECTRICAL

Westinghouse Electric Corp. 235 W. S. Temple Salt Lake City, Utah	Small	Salt Lake City
General Electric Co. 301 S. 7 W. Salt Lake City	Small	Salt Lake City
Mountain States Refrigeration & Appliance Co. 5024 S. State Murray, Utah	Small	Salt Lake City
Minneapolis Honeywell Co. 2280 S. Main Salt Lake City, Utah	Small	Salt Lake City
S. R. Ross Co. 1212 So. St. Salt Lake City, Utah	Small	Salt Lake City

Utah Power & Light Statewide Salt Lake City, Utah	Large	Salt Lake City
All Appliance Co. 122 East 3rd South Salt Lake City, Utah	Small	Salt Lake City
Strong Electronics Provo, Utah	Small	Central Utah
Oloughlin's Radio Supply 113 East 3rd South Salt Lake City, Utah	Small	Salt Lake City
Nu-Art Lighting & Manufacturing 2360 West 21st South Salt Lake City, Utah	Small	Salt Lake City
Marveon Sign 3532 Riverdale Rd. Ogden, Utah	Small	Weber
Holbrook Company 725 West Riverdale Rd. Ogden, Utah	Small	Weber
Hill Air Force Base Clearfield Utah	Large	Weber
Marquardt Corporation 1000 West 33rd Ogden, Utah	Large	Weber
Memcor-Montek Division 2268 South 3270 West Salt Lake City, Utah	Small	Salt Lake City

HEALTH

Dr. John Bench, D.D.S. Orem Utah	Small	Central Utah
St. Marks Hospital Salt Lake City Utah	Medium	Salt Lake City
L.D.S. Hospital Salt Lake City Utah	Medium	Salt Lake City
Holy Cross Hospital Salt Lake City Utah	Medium	Salt Lake City
Childrens' Service Society of Utah 576 E. S. Temple Salt Lake City, Utah	Medium	Salt Lake City
Utah Dental Association Salt Lake City Utah	Medium	Salt Lake City

SERVICE - SALES - OFFICE

Meadow Gold Dairy 845 South State Orem, Utah	Small	Central Utah
Deseret Travel Agency 58 North University Provo, Utah	Small	Central Utah
Sears Roebuck & Co. 207 North 100 West Provo, Utah	Small	Central Utah

Mertlich Antiques 3rd South 130 East Salt Lake City Utah	Small	Salt Lake City
Nationwide Loans 323 South State Salt Lake City, Utah	Small	Salt Lake City
Jensen Reproduction Company 125 East 3rd South Salt Lake City, Utah		
Covey Motel 522 South Main Salt Lake City	Small	Salt Lake City
Pioneer Finance & Thrift 62 North University Avenue Provo, Utah	Small	Central Utah
State Bank of Provo 75 North University Provo, Utah	Small	Central Utah
First Security Bank 92 North University Provo, Utah	Small	Central Utah
Meadow Gold Dairy (Service Dept) 340 - 21 Ogden, Utah	Small	Weber
Intermountain Farmers Association 1375 Wall Ave. Ogden, Utah	Small	Weber
General Mills 220 West 30th Ogden, Utah	Small	Weber

The Wilson Company 1700 Redwood Road Salt Lake City, Utah	Small	Salt Lake City
Bank of Utah 2641 Washington Blvd. Ogden, Utah	Small	Weber
Holiday Inn Cafe & Motel 3306 Washington Blvd. Ogden, Utah	Small	Weber
Jackson Finance & Thrift Co. 2604 Washington Blvd. Ogden, Utah	Small	Weber
Imperial 400 Motel 1956 Washington Blvd. Ogden, Utah	Small	Weber
Gardners Frostop Clearfield Utah	Small	Weber
California Packing Corp. Freeport Center Clearfield, Utah	Small	Weber
Meat Cutters Local #637 3930 Riverdale Rd. Ogden, Utah	Small	Weber
Safeway 154 South 1st West Salt Lake City, Utah	Medium	Salt Lake City
Kelly Springfield Tire Co. 1200 Beck St. Salt Lake City, Utah	Small	Salt Lake City
Cudahy Packing Corp Cudahy Lane Salt Lake City, Utah (Woods Cross)	Small	Salt Lake

Young Sign Company 1148 South 2nd West Salt Lake City, Utah	Small	Salt Lake City

AUTOMOTIVE

White Truck Company 712 South 2nd West Salt Lake City, Utah	Small	Salt Lake City
Precision Grinders & Diesel Injector Co. 722 South 2nd West Salt Lake City, Utah	Small	Salt Lake City
Bennett Ford 47 West 6th South Salt Lake City, Utah	Small	Salt Lake City
Arch Browning Motor 570 South Main Salt Lake City, Utah	Small	Salt Lake City
Reaveley Trucking Co. 1330 Beck St. Salt Lake City, Utah	Small	Salt Lake City
Goodyear Motor Sales Co. 180 East 3rd South Salt Lake City, Utah	Small	Salt Lake City
Capitol Chevrolet 8th South State Salt Lake City, Utah	Small	Salt Lake City
Conoco Service 5th South and Main Salt Lake City, Utah	Small	Salt Lake City
Cal & Paul's Tractor Repair 90 North 600 West Pleasant Grove, Utah	Small	Central Utah

Ruff's Garage 38 West Center Springville, Utah	Small	Central Utah
Standard Stations, Inc. 2584 South Washington Blvd. Ogden, Utah	Small	Weber
United Sales & Service 470 West 100 North Provo, Utah	Small	Central Utah
P.E. Ashton 175 North 100 West Provo, Utah	Small	Central Utah
Mountain Motors 265 South 100 West Provo, Utah	Small	Central Utah
Automatic Transmission Service Co. 845 South Main Salt Lake City, Utah	Small	Salt Lake City
All Car Auto Parts Co. 29 East 9th South Salt Lake City, Utah	Small	Salt Lake City
Wilson Chevrolet Murray Utah	Small	Salt Lake City
Ogden Implement Co. 4115 Riverdale Rd. Ogden, Utah	Small	Weber
Big Vern's 345 North Main Clearfield, Utah	Small	Weber

Stock's Lincoln Mercury 3230 Washington Blvd. Ogden, Utah	Small	Weber
Merrill Bean Chevrolet, Inc. 2626 Washington Blvd. Ogden, Utah	Small	Weber
Ogden Bus Lines 238 - 20th St. Ogden, Utah	Small	Weber
General Motors Corp-Electro Motor Division 130 East 1100 North Salt Lake City, Utah	Small	Salt Lake City

PUBLIC SERVICE - GOVERNMENT - BUSINESS ASSOCIATIONS

Weber County Commission Ogden Utah	Medium	Weber
Weber County Treasurer Municipal Building Ogden, Utah	Small	Weber
State Firemen Association State of Utah Salt Lake City, Utah	Large	Salt Lake City
Provo School District 980 North 300 West Provo, Utah	Small	Central Utah
Fish & Game Dept. 1596 West North Temple Salt Lake City, Utah	Medium	Salt Lake City
Pleasant Grove City Pleasant Grove Utah	Small	Central Utah

Provo City Government Provo Utah	Medium	Central Utah
Utah Education Association 312 East South Temple Salt Lake City, Utah	Large	Salt Lake City
Weber County Clerk Municipal Building Ogden, Utah	Small	Weber
Provo Post Office Provo Utah	Small	Central Utah
Salt Lake Chamber of Commerce 207 South Main Salt Lake City, Utah	Large	Salt Lake City
Utah State Road Commission 1200 South 500 West Salt Lake City, Utah	Large	Salt Lake City
Utah Municipal League Newhouse Hotel Salt Lake City, Utah	Large	Salt Lake City
County Officials Salt Lake City Utah	Large	Salt Lake City
Utah General Depot Defense Depot Ogden, Utah	Large	Weber
State Department of Welfare (Training Division) 2835 South Main Salt Lake City, Utah	Large	Salt Lake City

The Royal Inn 55 East 1230 North Provo, Utah	Small	Central Utah
Hillcrest Motel Orem Utah	Small	Central Utah
Colonial Real Estate 1197 North 300 West Provo, Utah	Small	Central Utah
Parkinson Adv. Co. Salt Lake City Utah	Small	Salt Lake City
Orem Geneva Times 546 South State Orem, Utah	Small	Central Utah
Utah State Restaurant Association Newhouse Building Salt Lake City Utah	Large	Salt Lake City
Corleissen's Cafe Pleasant Grove Utah	Small	Central Utah
Union Pacific Traffic Division Salt Lake City Utah	Small	Salt Lake City
Utah Savings & Loan Association 65 North University Provo, Utah	Small	Central Utah

Further companies contacted with regard to number of employees, area of location, and division of work.

HEALTH

Latter-Day Saints Hospital 8 Ave. and C. Salt Lake City, Utah	Medium	Salt Lake City

CONSTRUCTION

Gustavson, A.I.A. 15 N. W. Temple Salt Lake City, Utah	Small	Salt Lake City
Cannon & Mullen, A.I.A. Beneficial Life Bldg. Salt Lake City, Utah	Small	Salt Lake City
Georgius Cannon, A.I.A. 19 W. S. Temple Salt Lake City, Utah	Small	Salt Lake City
Intermountain Pipe & Welding 1970 S. W. Temple Salt Lake City, Utah	Small	Salt Lake City, Utah
Wasatch Plumbing 2345 S. Main Salt Lake City, Utah	Small	Salt Lake City

ELECTRICAL

Monarch T. V. Service 4497 So. State Murray, Utah	Small	Salt Lake City
Midwest Electric 40 W. Truman Ave. Salt Lake City, Utah	Small	Salt Lake City

ELECTRICAL (continued)

Westinghouse Appliance Supply 1948 S. W. Temple Salt Lake City, Utah	Small	Salt Lake City

VT 00464

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VOCATIONAL EDUCATION IN AGRICULTURE

Research Series June, 1964 Bulletin No. 3

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A Comparison of the College Performance of Students Who Did and Those Who Did Not Study Vocational Agriculture in Georgia High Schools in Terms of Grades Earned During Freshman Year of Study at Abraham Baldwin Agricultural College During 1960 - 1961 School Year

VT000464

The University of Georgia
College of Education
DEPARTMENT OF AGRICULTURAL EDUCATION
Athens, Georgia

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By G. L. O'Kelley, Jr., and H. T. Lester, Jr. [1]

As college admission standards have been revised upward in recent years, school administrators and counselors have tended increasingly to evaluate secondary school courses and curricula in terms of college preparatory values. As a result, questions are continually raised as to the effect of the study of high school vocational agriculture on students' subsequent college performance. The authors of this report made a rather careful study of the relative performance of former vocational agriculture and non-vocational agriculture students in the 1960-61 Freshman Class of the University of Georgia.[2] In view of the fact that a large number of Georgia high school graduates who intend to graduate from the University of Georgia complete the freshman and sophomore years of study at Abraham Baldwin Agricultural College prior to transferring to the University for the last two years of study, it was decided to make a comparable study of the 1960-61 Freshman Class at Abraham Baldwin Agricultural College. The tendency to complete two years of junior college work at Abraham Baldwin Agricultural College prior to enrolling at the University of Georgia is particularly pronounced in its College of Agriculture enrollment.

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[1]Professor and Assistant Professor, respectively, in Department of Agricultural Education, College of Education, University of Georgia.

[2]G. L. O'Kelley, Jr. and H. T. Lester, Jr., A Comparison of the College Performance of Students Who Did and Those Who Did Not Study Vocational Agriculture in Georgia High Schools in Terms of Grades Earned During Freshman Year of Study at the University of Georgia During 1960-61 School Year. Research Series, Department of Agricultural Education, University of Georgia, Bulletin No. 1, 1963.

The Problem

The study was designed to compare the college performance of students who did and those who did not study vocational agriculture in Georgia high schools in terms of grades earned during the freshman year of study at Abraham Baldwin Agricultural College during the 1960-61 school year.

The Specific Objectives

The specific objectives were as follows:

1. To determine if there was a significant difference between the mean grades earned during the freshman year by students who had studied vocational agriculture in high school and those who had not.

2. To determine if there was a significant difference between these two groups of students in terms of the distribution of letter grades on certain specified courses.

3. To determine if there was a significant difference between the College Entrance Examination Board scores[3] earned by these two groups of students.

4. To determine if there were significant differences between mean grades earned by students reporting one, two, three, or four units of high school vocational agriculture credit.

Limitations

The study population was limited to male members of the Freshman Class enrolled in Abraham Baldwin Agricultural College during the 1960-61 school year who completed the three full quarters of study during that school year and who were graduates of Georgia high schools. All students meeting these criteria were included in the study population.

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[3] Hereafter referred to in this report as CEEB scores.

Design of the Study

The study population was classified as to whether high school vocational agriculture credits were presented for admission to freshman status at the college. They were further classified as to the number of high school vocational agriculture units submitted by each student. Earned grades were determined for specific courses and a mean grade was calculated for all freshman courses for each student involved. Mean grades were calculated for the two study groups, differences were determined, and chi-square values were calculated to test significance of difference between groups in most of the comparisons made. In some comparisons t values were calculated by the sum of squares method for analysis of variance. CEEB scores, both verbal and mathematics, were determined for each student and group means were calculated as a basis for measuring variability, by use of t values, within groups due to factors which might affect the performance of students other than the grouping factor being studied.

Plan of Procedure

The registrar of Abraham Baldwin Agricultural College was requested to furnish a list of all freshman students enrolled at the college during the year as well as the courses in which each enrolled and the grades earned. Reference to the official record made it possible to divide this group according to sex and the number of quarters of work completed during the year.

When the names listed were checked against matriculation records in the registrar's files, the students who had graduated from Georgia high schools were quickly identified. From the same source a listing was obtained of all high school units of credit submitted in meeting college entrance requirements. This listing also gave the number of high school vocational agriculture units reported. The registrar also made available a record of official CEEB scores for each student listed.

All data were coded and punched in IBM cards by personnel of the University of Georgia Computer Center. This same group processed all data, supplying tabulations and summaries in addition to all chi-square calculations requested. When t values were needed, these were computed by the researchers from the Computer Center tabulations.

Population Studied

There were 159 male members of the freshman class who entered Abraham Baldwin Agricultural College at the 1960 fall registration and who completed the three following consecutive quarters of study there. These figures are shown in Table 1. Initial limitations placed on this study resulted in an analysis being made of the records of only those male students who had graduated from Georgia high schools. There were 148 such students on record in the registrar's office. This study concerns these 148 students. Of this group, 93 students, or 62.8 percent, reported vocational agriculture credits on their high school transcripts at time of admission. The remaining 55 students, or 37.2 percent, reported no high school vocational agriculture credits. This division identifies the two study groups compared in this report. It is interesting to note that an even higher percentage, 72.7 percent, of the out-of-state male students in this class reported vocational agriculture credits on their transcripts, but these were not included in the study.

Of the 148 students reporting vocational agriculture credits the largest single group, 31.7 percent, reported 4 such units, while only 12.8 percent and 10.8 percent reported 3 and 2 such units, respectively. Only 7.4 percent reported one vocational agriculture unit of credit. See Table 2.

TABLE 1

ABRAHAM BALDWIN AGRICULTURAL COLLEGE FRESHMAN MALES CLASSIFIED AS GRADUATES OF IN-STATE OR OUT-OF-STATE HIGH SCHOOLS AND WHETHER OR NOT VOCATIONAL AGRICULTURE UNITS OF CREDIT WERE SUBMITTED FOR COLLEGE ADMISSION

Classification	In-state students		Out-of-state students		All students	
	Number	Percent	Number	Percent	Number	Percent
With vocational agriculture	93	62.84	8	72.73	101	63.52
Without vocational agriculture	55	37.16	3	27.27	58	36.48
Totals	148	100.00	11	100.00	159	100.00

TABLE 2

STUDY POPULATION CLASSIFIED ACCORDING TO NUMBER OF UNITS OF VOCATIONAL AGRICULTURE CREDIT SUBMITTED FOR COLLEGE ADMISSION

Units of vocational agriculture	Number of students	Percent
4	47	31.76
3	19	12.84
2	16	10.81
1	11	7.43
0	55	37.16
Totals	148	100.00

COMPARISON OF STUDY GROUPS IN TERMS OF EARNED MEAN COLLEGE FRESHMAN GRADES AND MEAN CEEB SCORES

Mean college freshman grades earned by members of the vocational agriculture group and non-vocational agriculture group with recorded mean CEEB scores are shown in Table 3. The non-vocational agriculture group earned a mean college freshman grade of 74.78 as compared with 71.87 for the vocational agriculture group, a difference of 2.91 grade points. This difference, however, was not statistically significant.

It is interesting to note that the difference between the CEEB mean total scores of the vocational agriculture and of the non-vocational agriculture groups was significant with a probability of .02. The difference in CEEB mean verbal scores was highly significant with a probability of $<.01$. In each instance the difference favored the non-vocational agriculture group.

With CEEB scores held constant, it would appear that the vocational agriculture group did as well as the non-vocational agriculture group with reference to mean college freshman grades earned. In fact, with a significant difference at the .02 level between CEEB mean total scores and a difference between mean grades with a probability of .10, it would appear that the vocational agriculture group earned slightly better grades than would have been expected by using total CEEB scores as the predictor of mean college freshman grades.

COMPARISON OF STUDY GROUPS IN TERMS OF GRADES EARNED ON SPECIFIC FRESHMAN COURSES

In view of questions often raised regarding the relative performance of groups of students in specific course areas, it was decided that a comparison of the two study groups should be made in terms of their performance in specific college courses. Course areas selected in which to make comparisons were botany, chemistry, English, mathematics, American history, economics, and

TABLE 3

STUDY GROUPS COMPARED ACCORDING TO MEAN FRESHMAN GRADES EARNED AND MEAN CEEB SCORES REPORTED

Classification	Number of students	Mean grade	Mean verbal score	Mean math score	Total CEEB score
Without vocational agriculture	55	74.78	348	399	747
With vocational agriculture	97	71.87	309	372	681
Difference		2.91	39	27	66
Calculated t value		1.858	2.690	1.884	2.359
Probability		$<.10$	$<.01$	$<.10$	.02

zoology. In practice, it was found that the numbers of students reporting some of these courses were too small to permit statistical analysis. In these cases grades from two or more courses were combined to give a composite count for purposes of comparison.

The chi-square technique was used to test the significance of differences found to exist in the tendency noted between the members of the two groups to earn superior grades in specific course areas. Student grades were divided into three categories: "above C," "C," and "below C." An attempt was made to categorize groupings into A, B, C, D, and F classifications, but the results proved to be inaccurate because of the small numbers of grades reported in some classifications. Many of the grades for second courses within a course area sequence, e.g., Botany 121 and Botany 122, contained small numbers of grades and, therefore, grade differences were not computed for these particular courses. Whenever a composite of grades for the two courses within a course area was considered workable, however, this was done as a basis for making comparisons.

Botany

No significant difference was found between the grades earned by members of the two study groups in Botany 121 or between a composite of Botany 121 and Botany 122 grades. See Table 4. It was reported earlier that a significant difference was found between CEEB mean verbal scores as well as CEEB mean total scores of the two study groups in favor of the non-vocational group. This would tend to support the contention that students in the vocational agriculture groups earned better grades in freshman botany courses than they normally would have been expected to earn using CEEB scores as the predictor.

Chemistry

No significant difference was found between grades earned by members of the two study groups in Chemistry 121, in Chemistry 122, or in a composite of

TABLE 4

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN BOTANY 121 AND COMPOSITE OF BOTANY 121 AND BOTANY 122

	Botany 121						Botany 121 and 122 Composite					
	With vocational agriculture		Without vocational agriculture		Total		With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Above C	30	51.72	14	46.66	44	50.00	64	62.74	32	57.15	96	60.75
C	17	29.31	11	36.67	28	31.81	26	25.49	17	30.35	43	27.21
Below C	11	18.97	5	16.67	16	18.19	12	11.77	7	12.50	19	12.04
Totals	58	100.00	30	100.00	88	100.00	102	100.00	56	100.00	158	100.00

$X^2 = .5627$

Degrees of freedom = 2

Probability $<.80$

$X^2 = .5640$

Degrees of freedom = 2

Probability $<.80$

Chemistry 121 and Chemistry 122. See Tables 5 and 6. It should be noted again that there was a significant difference between the CEEB scores recorded by the two study groups, with the difference favoring the non-vocational agriculture group.

English

A significant difference at the $<.01$ level was found between grades earned by students in the two study groups in English 101. The difference favored the non-vocational group. See Table 7. Thus it appears that students in the vocational agriculture group made a significantly lower grade in English 101 than did students in the non-vocational agriculture group. If CEEB scores had been held constant, however, little, if any, difference between the English 101 grades earned by members of the two groups would have been found.

The difference between grades earned by the two study groups in English 102 was not statistically significant. A significant difference at the $<.01$ level of confidence, however, was also observed between the composite grades earned in English 101 and English 102 by the two study groups. See Table 8. The difference favored the non-vocational group. It is interesting to note that the difference in chi-square values between the study groups in grades earned in English 101 and English 102 decreased markedly.

These two observations make it appear that although students in the vocational agriculture group earned significantly lower grades in English courses than did students in the non-vocational agriculture group, the students in the former group also reported significantly lower CEEB mean verbal scores as well as CEEB mean total scores than did the non-vocational agriculture group. Again, should CEEB scores have been held constant, there would have been little, if any, difference in grades earned in freshman English courses.

TABLE 5

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTION IN CHEMISTRY 121 AND CHEMISTRY 122

	Chemistry 121						Chemistry 122					
	With vocational agriculture		Without vocational agriculture		Total		With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Above C	13	23.22	11	31.42	24	26.37	7	28.00	4	14.29	11	20.75
C	25	44.64	16	45.71	41	45.06	10	40.00	8	28.51	18	33.96
Below C	18	32.14	8	22.85	26	28.57	8	32.00	16	57.14	24	45.29
Totals	56	100.00	35	100.00	91	100.00	25	100.00	28	100.00	53	100.00

$X^2 = 1.325$

Degrees of freedom = 2

Probability .50

$X^2 = 2.7141$

Degrees of freedom = 2

Probability $<.30$

TABLE 6

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN A COMPOSITE OF CHEMISTRY 121 AND CHEMISTRY 122 GRADES

	Composite of Chemistry 121 and 122					
	With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent
Above C	20	24.69	15	23.81	35	24.30
C	35	43.21	24	38.10	59	40.97
Below C	26	32.10	24	38.09	50	34.73
Totals	81	100.00	63	100.00	144	100.00

$X^2 = .5913$

Degrees of freedom = 2

Probability $<.80$

TABLE 7

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN ENGLISH 101 AND ENGLISH 102

	English 101						English 102					
	With vocational agriculture		Without vocational agriculture		Total		With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Above C	10	12.99	19	38.77	29	23.02	5	9.80	10	23.81	15	16.13
C	46	59.74	23	46.94	69	54.76	32	62.74	20	47.62	52	55.92
Below C	21	27.27	7	14.29	28	27.22	14	27.46	12	28.57	26	27.95
Totals	77	100.00	49	100.00	126	100.00	51	100.00	42	100.00	93	100.00

$X^2 = 11.7619$

Degrees of freedom = 2

Probability $<.01$

$X^2 = 3.7192$

Degrees of freedom = 2

Probability $<.20$

TABLE 8

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN A COMPOSITE OF ENGLISH 101 AND ENGLISH 102

	Composite of English 101 and 102					
	With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent
Above C	15	11.72	29	31.87	44	20.09
C	78	60.94	43	47.25	121	55.25
Below C	35	27.34	19	20.88	53	24.66
Totals	128	100.00	91	100.00	219	100.00

$X^2 = 14.1270$

Degrees of freedom = 2

Probability $<.01$

Mathematics

A significant difference at the $<.01$ level of confidence was found between grades received in Mathematics 102 by students in the two study groups. See Table 9. The same was found true with reference to a composite of Mathematics 102 and Mathematics 103 grades. The difference observed favored the non-vocational group. The vocational group made significantly lower grades in mathematics courses than did members of the non-vocational group. Again, if CEEB total scores had been held constant, it would appear that there would have been little, if any, difference between freshman mathematics grades earned by members of the two study groups.

Others

No statistically significant difference was found between a composite of grades earned in American history, economics, and zoology by the members of the two study groups. See Table 10. Because of the small number of students who enrolled in these courses, it was necessary to make a comparison of composite grades earned in these courses instead of making individual course comparisons.

No significant difference was found between composite grades received in all agricultural courses by members of the two study groups. See Table 11. Because of the small number of grades reported in certain of the categories studied, it was necessary in this instance to classify all grades as "C or above" and "below C."

No significant difference was found between composite grades earned on all common freshman courses reported by the members of the two study groups. See Table 12. The chi-square value computed neared, however, the .05 level of confidence. By interpolation the probability was .06. Thus the difference found approaches significance. It should be pointed out that the chi-square value of the difference found between the composite grades for common freshman

TABLE 9

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN MATHEMATICS 102 AND A COMPOSITE OF MATHEMATICS 102 AND MATHEMATICS 103 GRADES

	Math. 102						Composite of Math. 102 and 103					
	With vocational agriculture		Without vocational agriculture		Total		With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Above C	14	20.58	23	48.94	37	32.17	18	17.82	43	53.08	61	33.52
C	36	52.94	19	40.43	55	47.83	55	54.46	30	37.04	85	46.70
Below C	18	26.48	5	10.63	23	20.00	28	27.72	8	9.88	36	19.78
Totals	68	100.00	47	100.00	115	100.00	101	100.00	81	100.00	182	100.00

$X^2 = 11.3871$

Degrees of freedom = 2

Probability $<.01$

$X^2 = 26.8431$

Degrees of freedom = 2

Probability $<.01$

TABLE 10

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN A COMPOSITE OF GRADES IN AMERICAN HISTORY, ECONOMICS, AND ZOOLOGY COURSES

	American History, Economics, and Zoology Composite					
	With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent
Above C	32	46.38	12	44.44	44	45.83
C	21	30.44	5	18.52	26	27.08
Below C	16	23.18	10	37.04	26	27.09
Totals	69	100.00	27	100.00	96	100.00

$X^2 = 2.0339$

Degrees of freedom = 2

Probability $<.70$

TABLE 11

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS OF A COMPOSITE OF GRADES IN ALL AGRICULTURAL COURSES

	Composite of Agricultural Courses					
	With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent
C or above	34	75.56	7	58.33	41	71.93
Below C	11	24.44	5	41.67	16	28.07
Totals	45	100.00	12	100.00	57	100.00

$X^2 = 1.3326$

Degree of freedom = 1

Probability $<.30$

TABLE 12

STUDY GROUPS COMPARED IN TERMS OF GRADE DISTRIBUTIONS IN A COMPOSITE OF ALL COURSES MEASURED

	Composite of All Courses Measured					
	With vocational agriculture		Without vocational agriculture		Total	
Grade	Number	Percent	Number	Percent	Number	Percent
Above C	183	34.79	138	42.73	321	27.80
C	226	42.96	124	38.39	350	41.23
Below C	117	22.25	61	18.88	178	20.97
Totals	526	100.00	323	100.00	849	100.00

$X^2 = 5.8250$

Degrees of freedom = 2

Probability $< .10$

courses reported by members of the two study groups approximates the probability found between CEEB scores reported by members of the two groups. It would thus appear that the CEEB scores were a fair predictor of college success in terms of grades received in common freshman courses at Abraham Baldwin Agricultural College by the Freshman Class of 1960-61.

COMPARISON OF STUDY GROUPS IN TERMS OF UNITS OF VOCATIONAL AGRICULTURE CREDIT IN RELATION TO MEAN FRESHMAN GRADES AND CEEB MEAN SCORES

Group With No Vocational Agriculture Units vs. Groups With Varying Units of Vocational Agriculture

Comparisons in terms of CEEB scores were made between students reporting no vocational agriculture units and those reporting one, two, three, or four units of vocational agriculture credit. Also, various combinations of these units were studied in the same way. All comparisons were made by use of t values determined by sum of squares method for analysis of variance.

Significant differences at the $<.01$ level of confidence were found between CEEB mean total scores for students reporting no vocational agriculture units and those reporting two, three or four units of such credit. The difference favoring the non-vocational agriculture students is shown in Tables 13, 14, and 15. A significant difference at the $<.05$ level of confidence was found between CEEB mean total scores for students reporting no vocational agriculture units and those reporting one unit of vocational agriculture credit. See Table 16. The difference favored the non-vocational agriculture students.

No significant differences were found between the mean freshman college grades of students reporting no units and students reporting one, two, or four units of vocational agriculture credit. A significant difference at the $<.01$ level of confidence was found between mean freshman college grades of students reporting no units and those reporting three units of vocational agriculture

TABLE 13

STUDENTS REPORTING FOUR UNITS OF VOCATIONAL AGRICULTURE CREDIT COMPARED WITH THOSE REPORTING NO SUCH UNITS

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
4	47	73.06	303	382	685
0	55	74.78	348	399	747
Differences		1.72	45	17	62
Calculated t values		1.092	2.904	1.020	3.214
Probability		.30	<.01	.30	<.01

TABLE 14

STUDENTS REPORTING THREE UNITS OF VOCATIONAL AGRICULTURE CREDIT COMPARED WITH THOSE REPORTING NO SUCH UNITS

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
3	19	68.53	292	355	647
0	55	74.78	348	399	747
Differences		6.25	56	44	100
Calculated t values		2.894	2.984	2.880	2.906
Probability		$<.01$	$<.01$	$<.01$	$<.01$

TABLE 15

STUDENTS REPORTING TWO UNITS OF VOCATIONAL AGRICULTURE CREDIT COMPARED WITH THOSE REPORTING NO SUCH UNITS

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
2	16	70.69	313	381	694
0	55	74.78	348	399	747
Differences		4.09	35	18	53
Calculated t values		1.624	2.480	.721	2.622
Probability		<.20	<.02	<.40	<.01

TABLE 16

STUDENTS REPORTING ONE UNIT OF VOCATIONAL AGRICULTURE CREDIT COMPARED WITH THOSE REPORTING NO SUCH UNITS

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
1	11	72.91	359	341	700
0	55	74.78	348	399	747
Differences		1.87	11	58	47
Calculated t values		.784	.392	2.381	2.131
Probability		$<.50$	.70	.02	$<.05$

credit. The difference favored the non-vocational agriculture group.

Significant differences at the $<.01$ level of confidence were found between the CEEB mean verbal scores of students reporting no units and those reporting three or four units of vocational agriculture credit with the difference favoring the non-vocational agriculture students. A significant difference at the $<.02$ level of confidence was found between CEEB mean verbal scores of students reporting no units and those reporting two units of vocational agriculture credit with the difference favoring the non-vocational agriculture students. No significant difference in CEEB verbal scores was found to exist between students reporting no units and those reporting one unit of vocational agriculture credit.

A significant difference at the $<.01$ level of confidence was found between CEEB mean mathematics scores of students reporting no units and those reporting three units of vocational agriculture with the difference favoring the non-vocational agriculture group. A significant difference at the $<.02$ level of confidence was found between CEEB mean mathematics scores for students reporting no units and those reporting one unit of vocational agriculture credit with the difference favoring the non-vocational agriculture group. No significant differences were found between CEEB mean mathematics scores for students reporting no units and those reporting two or four units of vocational agriculture credit.

In summary, even though the difference between CEEB mean total scores of the students reporting no units and those reporting one, two, or four units of vocational agriculture credit was significant, there was no significant difference between the groups in terms of mean freshman grades earned. In short, students reporting one, two, or four units of vocational agriculture seemingly earned higher mean freshman grades than they would have been expected

to earn using CEEB mean total scores as a predictor when compared with students reporting no units of such credit. The three-unit vocational agriculture group when compared to the non-vocational agriculture group earned practically the same mean freshman grades when CEEB scores were held constant.

Group With One Unit of Vocational Agriculture vs. Group With Two or More Units

No significant differences were found between CEEB mean total scores of students who reported one unit of vocational agriculture credit and those reporting two, three, or four units of such credit. See Tables 17, 18, and 19. No significant differences were found between freshman mean college grades of students who reported one unit of vocational agriculture credit and those who reported two, three, or four units of vocational agriculture credit.

No significant differences were found between CEEB mean mathematics scores of students reporting one unit of vocational agriculture credit and those reporting two, three, or four units of vocational agriculture credit. Significant differences at the $<.05$ level of confidence were found between CEEB mean verbal scores of students who reported one unit and students who reported three or four units of vocational agriculture credit. No significant difference was found between CEEB mean verbal scores of students who reported one unit and those who reported two units of vocational agriculture credit.

Group With Two Units of Vocational Agriculture vs. Group With Three or Four Units

No significant differences were found between either CEEB mean verbal or CEEB mean mathematics scores or mean freshman college grades of students reporting two units and those reporting three and four units of vocational agriculture credit. See Tables 20 and 21.

A significant difference at the $<.05$ level of confidence was found between CEEB mean total scores of students reporting two units and those reporting three units of vocational agriculture credit. The difference favored the two-

TABLE 17

A COMPARISON OF STUDENTS REPORTING ONE AND FOUR UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
1	11	72.91	359	341	700
4	47	73.06	303	382	685
Differences		.15	56	41	15
Calculated t values		.126	2.102	1.707	.391
Probability		$<$.90	.05	.10	.60

TABLE 18

A COMPARISON OF STUDENTS REPORTING ONE AND THREE UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
1	11	72.91	359	341	700
3	19	68.53	292	355	647
Differences		4.38	67	14	53
Calculated t values		1.5877	2.337	.607	.783
Probability		$<.20$	$<.05$	$<.60$	$<.10$

TABLE 19

A COMPARISON OF STUDENTS REPORTING ONE AND TWO UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
1	11	72.91	359	341	700
2	16	70.69	313	381	694
Differences		2.22	46	40	6
Calculated t values		.728	1.778	1.317	.403
Probability		$<.50$	.10	.20	$<.70$

TABLE 20

A COMPARISON OF STUDENTS REPORTING TWO AND FOUR UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
2	16	70.69	313	381	694
4	47	73.06	303	382	685
Differences		2.37	10	1	9
Calculated t values		.960	.902	.121	.736
Probability		<.40	<.40	<.90	.50

TABLE 21

A COMPARISON OF STUDENTS REPORTING TWO AND THREE UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
2	16	70.69	313	381	694
3	19	68.53	292	355	647
Differences		2.16	21	26	47
Calculated t values		.751	1.370	1.096	2.036
Probability		<.50	.20	.30	.05

unit group. No significant difference was found between CEEB mean total scores of students reporting two units and those reporting four units of vocational agriculture credit.

Group With Three Units of Vocational Agriculture vs. Group With Four Units of Vocational Agriculture

No significant differences were found between CEEB mean total, mean verbal, and mean mathematics scores of students reporting three units and those reporting four units of vocational agriculture credit. See Table 22. A significant difference at the .05 level of confidence was found between mean freshman college grades of students reporting three units and those reporting four units of vocational agriculture credit with the difference favoring the four-unit group of students.

Summary

Students with no units of vocational agriculture high school credit recorded significantly higher, at the $<.01$ level of confidence, CEEB mean total scores than did students reporting two, three, or four units of vocational agriculture. Students with no units also recorded significantly higher, at the $<.05$ level of confidence, CEEB mean total scores than did students reporting one unit of vocational agriculture credit.

No significant differences were found between mean freshman grades of students reporting no units and those reporting one, two, or four units of vocational agriculture credit. Students with no units of vocational agriculture credit recorded significantly higher, at the $<.01$ level of confidence, mean freshman grades than did students reporting three units of vocational agriculture credit. It would appear that students reporting varying units of vocational agriculture credit did as well in terms of mean freshman college grades as did those reporting no vocational agriculture units when CEEB total scores were held constant. In fact, the vocational agriculture group earned

TABLE 22

A COMPARISON OF STUDENTS REPORTING THREE AND FOUR UNITS OF VOCATIONAL AGRICULTURE CREDIT

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
3	19	68.53	292	355	647
4	47	73.06	303	382	685
Differences		4.53	9	27	38
Calculated t values		2.157	.542	1.081	1.476
Probability		$<.05$	.06	.30	$<.20$

somewhat better mean freshman grades than they would have been expected to earn by using CEEB total scores as the predictor. See Table 23. This seemed especially true of the students reporting one, two, or four units of vocational agriculture credit as shown in Table 24. Why students reporting three units of vocational agriculture credit behaved differently with regard to grades earned than did the one, two, or four unit group cannot be explained at this point.

SUMMARY

This study was designed to compare the college performance of students who did and those who did not study vocational agriculture in Georgia high schools in terms of grades earned during the freshman year of study at Abraham Baldwin Agricultural College during the 1960-61 school year. The study population was limited to these students who had graduated from Georgia high schools, registered as freshman at the college in the fall of 1960, and completed the next three consecutive quarters of study there. Comparisons were made in terms of CEEB scores and mean college grades earned.

The significance of differences found was tested by use of chi-square or t values according to whether comparisons were made in terms of units of credit or mean grades and scores.

The following observations are based on the findings reported:

1. Ninety-three percent of all freshman male students enrolled at Abraham Baldwin Agricultural College for the three quarters of the school year, 1960-61, were graduates of Georgia high schools.

2. More than three-fifths of all freshman male members of this class reported some high school vocational agriculture units of credit for matriculation purposes.

3. Almost one-third of the members of the study group with vocational agriculture units reported as many as four units each of such credit.

TABLE 23

A COMPARISON OF THE PERFORMANCE OF STUDENTS REPORTING VARYING UNITS OF VOCATIONAL AGRICULTURE CREDIT IN TERMS OF MEAN GRADES EARNED AND CEEB SCORES

Units of vocational agriculture	Number of students	Mean grade	Mean verbal score	Mean math. score	Total CEEB score
4	47	73.06	303	382	685
3	19	68.53	292	355	647
2	16	70.69	313	381	694
1	11	72.91	359	341	700
0	55	74.78	348	399	747
Total	148				

TABLE 24

STUDY GROUPS STRATIFIED ACCORDING TO NUMBER OF UNITS OF VOCATIONAL AGRICULTURE CREDIT AND COMPARED IN TERMS OF MEAN GRADES AND CEEB SCORES WITH PROBABILITY (DIFFERENCE CALCULATED BY t VALUES) SHOWN

Units of vocational agriculture	Probability of Mean Grades, and CEEB Scores															
	Units of vocational agriculture															
	0				1				2				3			
	Grade	Verbal	Math.	Total	Grade	Verbal	Math.	Total	Grade	Verbal	Math.	Total	Grade	Verbal	Math.	Total
1	<.50	.70	<.02	.05												
2	<.20	<.05	<.40	.01	<.50	.10	.20	.70								
3	<.01	<.01	<.01	.01	<.20	<.05	<.60	.10	<.50	.20	.30	.05				
4	.30	<.01	.30	.01	<.90	<.05	.10	.60	<.40	<.40	<.70	.50	<.05	.60	.30	<.20

4. Members of the non-vocational agriculture group earned higher mean freshman grades than did the members of the vocational agriculture group, but the difference was not statistically significant.

5. The members of the non-vocational agriculture group recorded higher CEEB mean verbal scores than did the members of the vocational agriculture group. This difference was significant at the $<.01$ level of confidence.

6. The members of the non-vocational agriculture group recorded higher CEEB mean mathematics scores than did the members of the vocational agriculture group, but this difference was not statistically significant.

7. Members of the non-vocational agriculture group recorded higher CEEB mean total scores than did the members of the vocational agriculture group. The difference was significant at the $<.02$ level of confidence.

8. Differences between grades earned by the two study groups were not statistically significant in freshman courses of (1) botany, (2) chemistry, (3) English 102, (4) a composite of American history, economics, and zoology, (5) all agricultural courses, and (6) a composite of all courses. The group reporting the better grades varied from course to course.

9. Differences between grades earned in freshman courses of (1) English 101, (2) a composite of English 101 and 102, and (3) mathematics by members of the two study groups were statistically significant at the $<.01$ level and favored the non-vocational agriculture group.

10. When the non-vocational agriculture group was compared with the group reporting three units of vocational agriculture credit, the non-vocational agriculture group earned higher mean freshman grades but also recorded higher CEEB mean verbal scores, CEEB mean mathematics scores, and CEEB mean total scores. The difference in each instance between the two groups was statistically significant at the $<.01$ level of confidence.

11. When the non-vocational agricultural group was compared with the group composed of students reporting two or four units of vocational agriculture, the non-vocational agriculture group recorded higher CEEB mean total scores. The difference between the CEEB mean total scores of the two groups was significant at the $<.01$ level of confidence. The difference between the mean freshman grades earned by these two groups, on the other hand, was not statistically significant.

12. When the non-vocational agriculture group was compared with the group composed of those reporting one unit of vocational agriculture credit, the members of the non-vocational agriculture group recorded higher CEEB mean total scores. This difference was statistically significant at the $<.05$ level of confidence. There was no significant difference, however, between the mean freshman grades earned by the members of these two groups.

13. When students with one unit of vocational agriculture were compared with those reporting two, three, or four units of such credit, there was no significant difference between either the mean freshman grades earned or the CEEB mean total scores recorded.

14. When students reporting two units of vocational agriculture were compared with students reporting three or four units of such credit, there was no statistically significant difference between the two groups in terms of mean freshman grades, CEEB mean verbal scores, CEEB mean mathematics scores, or CEEB mean total scores.

15. When students reporting three units of vocational agriculture were compared with students reporting four units of vocational agriculture, the four-unit group earned higher mean freshman grades, and this difference was significant at the $<.05$ level. The differences between these groups in terms of CEEB mean verbal scores, CEEB mean mathematics scores, and CEEB mean total scores were not statistically significant. It should be pointed out, however, that the difference between the CEEB mean verbal scores of these two groups closely approached significance with a probability of .06.

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OCCUPATIONAL GUIDANCE FOR OFF-FARM AGRICULTURE

The Center for Research and Leadership Development
in Vocational and Technical Education

The Ohio State University
980 Kinnear Road
Columbus, Ohio 43212

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Publications on Off-Farm Agricultural Occupations
Available From
The Center for Research and Leadership Development
in Vocational and Technical Education
The Ohio State University
980 Kinnear Road
Columbus, Ohio 43212

This publication is one of a series relating to Off-Farm Agricultural Occupations developed at The Center for Vocational and Technical Education under a grant from the Division of Adult and Vocational Research, U. S. Office of Education. Each of these publications was designed for a specific purpose. However, they are designed to complement and reinforce each other. It is suggested that persons using any of these materials will want to familiarize themselves with the other publications in this series. Following is a complete listing of this series:

1. Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations

2. Vocational and Technical Education in Agriculture for Off-Farm Occupations

3. Summary of Research Findings in Off-Farm Agricultural Occupations

4. Planning and Conducting Cooperative Occupational Experience for Off-Farm Agriculture

5. Occupational Guidance for Off-Farm Agriculture

6. Horticulture - Service Occupations (Course outline and twelve modules)

7. Agricultural Supply - Sales and Service Occupations (Course outline and twelve modules)

8. Agricultural Machinery - Service Occupations (Course outline and sixteen modules)

9. Agricultural Chemicals Technology (Course outline and nine modules)

PREFACE

Nearly every handbook concerning agricultural occupations suggests that the student seek further information from the guidance counselor and the vocational agriculture instructor. Yet there has been a dearth of information written to specifically assist educational leaders in performing this guidance function.

This publication is one of a series developed by a national task force at The Center for Vocational and Technical Education to assist state and local vocational education leaders in developing programs to prepare youth and adults for employment and/or advancement in off-farm agricultural occupations.

The project had its origin in the National Research Coordination Conferences on Off-Farm Agricultural Occupations sponsored by The National Center for Advanced Study and Research in Agricultural Education and the Agricultural Education Branch of the U. S. Office of Education in May of 1963 and January of 1964. These conferences were designed to assist states in undertaking studies of off-farm agricultural occupations.

Hundreds of occupations requiring a knowledge of agriculture were identified as a direct result of the national project. A special committee was assembled at The Center to categorize the job titles into logical instructional areas. This committee consisted of the following individuals: Linwood K. Bailey, Staff Assistant - Manpower, PPA Division, ASCS, U.S. Department of Agriculture,

Washington, D. C.; R. A. Baker, Auburn University, Alabama; Herbert D. Brum, Assistant Supervisor of Vocational Agriculture, Columbus, Ohio; William E. Drake, Cornell University, Ithaca, New York; James W. Hensel, Center Staff; Norman K. Hoover, Pennsylvania State University; Glenn Z. Stevens, Pennsylvania State University; Bill W. Stevenson, Oklahoma State University; Emanuel Weinstein, Occupational Analyst, Ancillary Service Section, Division of Vocational and Technical Education, Washington, D. C.

Subsequent association of several of the committee members with other national committees and in consultation with Neville Hunsicker, Chief, Agricultural Education, U. S. Office of Education, Washington, D. C., resulted in the major instructional area categories listed in this publication.

Special group work under the direction of Dr. Glenn Z. Stevens was completed at Pennsylvania State University to match major agricultural occupations identified in the state studies with the definitions in the Dictionary of Occupational Titles and with the structure of the Standard Industrial Classification.

Dr. Glenn Z. Stevens, Professor, Pennsylvania State University, provided the leadership and assumed the major role for the development of this publication. Credit is due Mr. Linwood K. Bailey, United States Department of Agriculture, who assisted in the editorial review and played an active role in the committee work concerning the total project. Further review suggestions were offered by Emanuel Weinstein, Occupational Analyst, Division of

Vocational and Technical Education, Washington, D. C. Dr. Earl Webb, Texas A & M, assisted in the final review of the publication.

It is hoped that "Occupational Guidance for Off-Farm Agriculture" will provide a basis for clustering certain agricultural occupations within instructional area categories. It is not the purpose of this material to assign specific numbers to agricultural occupations. We feel that this would most certainly lead teachers into a dead-end road. Yet there is a need for an identification of certain clusters in relation to the accepted classification systems.

It should be recognized that this material is developmental in nature and only the first step toward identifying the role of vocational agriculture in the off-farm agricultural occupations. Although considerable time and effort have been expended to bring the work to this stage of development, this material is not the final answer in guidance for off-farm agricultural occupations.

We hope that the reader will share his suggestions with the Center concerning the material in this publication.

James W. Hensel
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I

INTRODUCTION

The concept that agriculture is more than farming is recognized within the framework of the Vocational Education Act of 1963. Vocational and technical educators and others are striving to implement a revision of vocational education in agriculture so as to aid persons whose interests are in off-farm occupations that require knowledge and skills in agricultural subjects. The occupations have been termed "off-farm occupations requiring agricultural competencies."

To identify educational objectives a commonality of terms is necessary as a beginning. What occupations are involved? What definition or job content is given to an occupational title in one area of the country? Does it mean the same in other areas? What does an occupational title mean to a school administrator and to a school? What occupations require agricultural competencies, and how much? What are the occupational opportunities? What are the relationships of occupational titles requiring various degrees of agricultural competencies to occupational titles used in other classifications and for other purposes?

To come to grips with these questions, vocational educators have taken small first steps. The cooperative research project which was initiated by state leaders in vocational agriculture in 1964 is considered as one of the significant steps.

The research data from this project have been used for a number of purposes. One is in the drafting of this publication which is prepared to give instructors and counselors a guide to the off-farm occupations in which employers state present or increasingly prospective employment opportunities and in which some degree of knowledge and skill in agricultural subjects is desired.

The occupations herein are stated in terms of titles only. They have not been defined nor is there a specified degree of agricultural competence needed. The occupational titles in this publication merely show the direction in which educators and counselors should encourage curriculum development for those to be trained and occupational objectives for those interested in employment opportunities.

A task force involving persons from a representative number of states, the U. S. Office of Education, the U. S. Department of Labor and from the U. S. Department of Agriculture, met at The Center for Vocational and Technical Education at The Ohio State University and later in Washington, D. C. to attempt to categorize instructional areas of vocational education in agriculture and the occupations in off-farm businesses requiring agricultural competencies.

It has been the consensus of the group that a publication such as this is needed which will give teachers of agriculture and guidance personnel a ready reference for general guidelines concerning off-farm occupations. The authors recognize that this is only the first small step toward a complete classification system which will lend the

off-farm agricultural occupations real visibility. Further work is underway which will carry this first step into a more detailed publication, which will introduce specific occupational descriptions and definitions as well as information on employment opportunities, job requirements, educational requirements including training, and indicated salary ranges.

The preparation of guidelines with respect to off-farm occupations in no way excludes agricultural production as a learning area. Indeed, employers contacted in the research project expect students to acquire much of their knowledge and skill in agriculture through course subject instruction under "Agricultural Production." The production phase is the keystone upon which all other agricultural occupations must build. This fact is recognized, but some of the specific work concerning the production phase of agriculture has been omitted from this publication since the primary focus was given to the off-farm occupations.

II

OCCUPATIONAL OBJECTIVES AND INSTRUCTIONAL AREAS IN AGRICULTURE

Occupations in which knowledge and skills in agriculture are required may be classified into major instructional areas. They are (1) agricultural production, (2) agricultural mechanics, (3) agricultural supplies, (4) agricultural products, (5) agricultural resources, (6) forestry, (7) ornamental horticulture, and (8) other agriculture. Groups of related courses or units of subject matter in each instructional area are organized for teaching that will help students to develop knowledge, skills, insights, and attitudes involved in preparing to enter and advance in agricultural occupations. Learning activities include classroom instruction, laboratory practice, and experience on farms or in agriculturally related business establishments. The FFA and associated leadership training activities contribute to individual student development. An agricultural occupation may require education in one or more of the following instructional areas:

Instructional Area	Examples of job titles
Agricultural Production - an organization of subject matter and learning activities concerned with principles and practices in the production of livestock, field crops, fruits and vegetables, fiber and other crops, on commercial and part-time farms. In addition to plant science, animal science, farm mechanics, and farm business management, instruction specific to each production enterprise is emphasized. Knowledge and skills taught involve the economic use of agricultural land, labor, capital and management. The safe and efficient operation of modern farm equipment and the proper harvesting and handling of high quality products are important for beginning workers.	Livestock Farmer Dairy Farmer Crop Farmer General Farmer Part-time Farmer Farm Manager Farm Equipment Operator

Instructional Area	Examples of job titles
Agricultural Mechanics - an organization of subject matter and learning activities concerned with marketing and service of agricultural power and machinery and related equipment. Opportunities are provided for students to study and gain experience in assembly, adjustment, maintenance, and repair of agricultural machinery and of structures and conveniences. Students learn tool processes and how to perform services.	Ag. Mach. Manager Ag. Mach. Service Manager Ag. Mach. Salesman Ag. Mach. Partsman Ag. Mach. Set-up Man Ag. Mach. Mechanic
Agricultural Supplies - an organization of subject matter and learning activities concerned with principles and practices involved in the processing, marketing, and servicing of agricultural supplies such as agricultural chemicals, livestock feeds, seed, fertilizer, and other supplies including small equipment. Many businesses are organized principally to provide services to agricultural production.	Ag. Supplies Manager Ag. Supplies Salesman Ag. Supplies Installation and Service Man Ag. Supplies Applicator Ag. Supplies Equipment Operator
Agricultural Products - an organization of subject matter and learning activities concerned with principles and operations involved in the preparation of agricultural products for sale. Subject matter and experiences are organized under the descriptive titles of meat, poultry, and eggs; dairy products; fruits and vegetables; cereal grains; and non-food products (wool, cotton, tobacco). Learning activities are provided in assembling, sorting, testing, grading, processing, storing, and marketing of each agricultural product.	Meat Processing Manager Dairy Products Tester Meat and Poultry Products Salesman Poultry Processor Fruit and Vegetable Inspector Grain Elevator Operator Agriculture Commodity Grader

Instructional Area	Examples of job titles
Agricultural Resources - an organization of subject matter and learning activities designed to provide opportunities for students to study principles and processes dealing with the conservation and improvement of resources such as forested and other natural areas, fish and wildlife, soil, water and air, and with the establishment, management, and operation of recreational facilities.	Recreation Farm Manager Soil Conservation Aid Wildlife Conservation Officer Fish Hatchery Worker Park Worker
Forestry - an organization of subject matter and learning activities concerned with the management of trees grown as a crop. Other aspects of forestry are protection, logging, wood utilization, recreation and special products.	Forester Forest Ranger Forestry Aid Log Grader Saw Mill Operator Christmas Tree Grower
Ornamental Horticulture - an organization of subject matter and learning activities concerned with production, sales and services in greenhouses, nurseries, and garden centers, and with the establishment and maintenance of turf and landscape areas.	Nursery or Greenhouse Manager Florist Garden Center Salesman Landscape Aid Nursery or Greenhouse Grower Greenskeeper Tree Surgeon
Other Agriculture - an organization of subject matter and learning activities concerned with specialized business services, education, inspection, regulation and other government services ordinarily not included in the first seven categories.	Vocational Agriculture Instructor County Agricultural Extension Agent Farm Loan Officer

III

INSTRUCTION AREAS IN AGRICULTURE

The following outline was prepared by a committee working with the U. S. Office of Education. It is a list of areas of subject matter content (courses) in agriculture taught in the several types of school organizations: elementary, secondary, junior and community colleges, vocational-technical and adult programs. Regional and local consideration will influence the course content and the level at which it is taught.

In developing the outline, the FFA and related leadership training and supervised occupational experience programs were considered to be important instructional media and highly significant integral activities that aid agricultural education in making contributions to the guidance and total general education development of students.

AGRICULTURE

I. Agricultural Production

A. Animal Science

1. Dairy cattle, livestock, and poultry
   a. Dairy cattle
   b. Beef cattle
   c. Swine
   d. Sheep
   e. Poultry
   f. Other
2. Nutrition
3. Genetics
4. Physiology
5. Animal Health
6. Production management
7. Marketing
8. Other

B. Plant Science

1. Crops
   a. Field and forage crops
   b. Tree fruit and nut crops
   c. Small fruit crops
   d. Vegetable crops
   e. Farm forestry
   f. Other
2. Soils
3. Nutrition
4. Genetics
5. Physiology
6. Pest control
7. Other

C. Agricultural Mechanics (farm)

1. Farm power and machinery
2. Farm structures and conveniences
3. Soil and water management
4. Farm electrification
5. Farm construction and maintenance
6. Other

D. Farm Business Management

1. Farm accounts
2. Performance records
3. Budgeting and analysis
4. Purchasing and marketing
5. Financial and legal management
6. Farm organizations
7. Governmental programs
8. Other

II. Agricultural Mechanics (off-farm)
(Sales and Service)

A. Agricultural power and machinery

B. Agricultural structures and conveniences

C. Soil and water management

D. Agricultural electrification

E. Agricultural construction and maintenance

F. Other

III. Agricultural Supplies
(Processing, marketing, and services)

A. Agricultural chemicals

B. Livestock feeds

C. Seeds

D. Fertilizer

E. Other

IV. Agricultural Products
(Processing, marketing, and services)

A. Food products

1. Meet, fish, poultry, eggs
2. Dairy products
3. Fruits and vegetables
4. Cereal grains
5. Other food and beverages

B. Non-food agricultural products

1. Cotton
2. Tobacco
3. Wool
4. Other

V. Agricultural Resources
(Conservation, recreational utilization, and services)

A. Forested and other natural areas

B. Wildlife - including game farms and hunting areas

C. Fish - including fish farms and hatcheries

D. Soil

E. Water

F. Air

G. Other

VI. Forestry
(Production, processing, marketing, and services)

A. Forest management

B. Forest protection

C. Logging

D. Wood utilization

E. Recreation

F. Special products

G. Other

VII. Ornamental Horticulture
(Production, processing, marketing, and services)

A. Arboriculture

B. Floriculture

C. Greenhouse management

D. Nursery management

E. Landscaping

F. Turf management

G. Other

VIII. Other Agriculture

A. Business services

B. Education

C. Inspection and regulation

D. Other

IV

CLASSIFICATION SYSTEMS

As vocational agriculture teachers find a growing emphasis in their curriculum upon preparing young persons for off-farm agricultural occupations, they become increasingly aware of classification problems. Information often is requested in terms of an established and coded classification system and a standard terminology often is sought as teachers of agriculture discuss occupational information with school counselors.

This publication has attempted to familiarize the reader with the two most widely used classification systems: The Dictionary of Occupational Titles and the Standard Industrial Classification. If the reader wants details concerning the taxonomy and code of either system, he should study the introductory material in the appropriate publication.

The Dictionary of Occupational Titles

A major resource concerning occupational information for teachers of vocational agriculture is the "Dictionary of Occupational Titles," Third Edition, Bureau of Employment Security, U. S. Department of Labor, United States Government Printing Office, Washington, D. C., 1965.

The Dictionary serves vocational and educational guidance personnel as a basic source of occupational information in terms of both duties performed and relationships among jobs. Guidance personnel consider the Dictionary as one of the basic tools used

to help the individual evaluate his qualifications and potential in the selection of appropriate educational or vocational goals. The Dictionary of Occupational Titles is a two-volume source of occupational information in the broad area of manpower and related fields, provides a current inventory of jobs in the American economy, and gives an extensive analysis and description of what each involves and what personal traits are needed by workers. The Dictionary may be found in libraries and in the offices of many guidance counselors. Vocational agriculture teachers should become familiar with this reference.

Volume I of the Dictionary of Occupational Titles contains the names and definitions of nearly 22,000 separate occupations in the economy. The jobs are arranged in alphabetical order and followed by definitions which include information on what gets done, how it gets done, and why it gets done.

The complete job definitions, with information on the what, how, and why of the job, as well as indications of the knowledge and abilities required, are designed to give a concise and concrete occupational picture which also will convey some indication of the level of complexity involved.

Volume II complements Volume I by serving as a method of grouping jobs having the same basic occupational, industrial, or worker characteristics to help the user discern relationships among occupations. It is also a standard approach to classifying abilities, vocational experiences, and potentials of workers.

The occupations in the Dictionary have been incorporated into a classification structure in which the individual occupations are identified by six-digit code numbers. Throughout the occupational group arrangement, the jobs are grouped according to a combination of work field, purpose, material, product, subject matter, service, generic term, and/or industry, as reflected in the first three digits of the code.

The last three digits of the code number identify specific worker functions associated with each job. The digits refer to worker functions as they relate to Data, People, and Things, with the lower numbers generally signifying the higher degrees of complexity. Together, the last three digits of each code number express the total level of complexity at which the job requires the worker to function.

The task force working with problems of off-farm agricultural occupations requiring agricultural competencies suggested that the titles of the occupations found in the State research projects be compared to the extent feasible with titles in the Dictionary of Occupational Titles (D.O.T.). The listing that follows reflects this comparison under each of the seven major instructional areas. In examining and using the comparative titles it should be emphasized that the listings are <u>titles only</u>. The occupational titles found in the State studies are in the closest proximity to similar titles in the D.O.T. Occupational titles in the area of Agricultural Production have been included in appendix A as this publication is primarily devoted to the off-farm agricultural occupations.

A logical step beyond this publication would be to develop definitions of the occupations stemming from the State studies. These may or may not conform to the current D.O.T. definitions. The objective of the definition development project would be to determine which do conform. For those that do not, the Department of Labor could be advised and a request made for inclusion in the next D.O.T. revision.

To make the most effective use of the following pages of occupational titles, it is suggest that the reader:

(1) Determine the appropriate major area heading, i.e. Agricultural Supplies, Agricultural Mechanics, Ornamental Horticulture, etc.

(2) Locate the job title in question by checking the left hand column entitled: "Occupational Titles Found in Many of the State Studies." The partial listing of titles in this column should be familiar to most teachers of vocational agriculture.

(3) Move directly across the page to the right hand column entitled: "Dictionary of Occupational Titles, Third Edition, 1965." This column listing identifies the corresponding title which can be found in the Dictionary.

(4) Using Volumn I of the Dictionary of Occupational Titles, Third Edition, 1965, locate the complete definition of the job. The titles in Volumn I are listed in alphabetical order.

(5) Use the code number of the job and Volume II of the Dictionary of Occupational Titles if you wish to determine the grouping of jobs having the same basic occupational, industrial, or worker characteristics.

Occupational Titles in the Area of AGRICULTURAL SUPPLIES

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Ag. Supplies Manager	Manager, Store (ret. tr.) 185.186
Ag. Supplies Production Manager	Manager, Production (any ind.) 185.168
Ag. Supplies Sales Manager	Manager, Sales (any ind.) 185.168
Ag. Supplies Service Manager	Manager, Service (ret. tr.; whole. tr.) 187.168
Ag. Supplies Office Manager	Manager, Office (ret. tr.) 185.168
Ag. Supplies Research and Development Director	Manager, Product Development (any ind.) 189.118
	Chemist, Agricultural (profess. & kin.) 022.081
Ag. Supplies Fieldman	Fieldman (any ind.) 180.118
Ag. Supplies Bookkeeper	Bookkeeper (clerical) I 210.388
Ag. Supplies Product Salesman	Salesman, Farm and Garden Supplies (whole. tr.) 277.358
Ag. Supplies Service Mechanic	Maintenance Mechanic (any ind.) II 638.281
Ag. Supplies Applicator	Sprayer (agric.) 424.883
Ag. Supplies Equipment Operator (Feed)	Feed Mixer (grain & feed mill.) 520.885
Ag. Supplies Warehouseman	Laborer, Stores (any ind.) 922.887

Occupational Titles in the Area of AGRICULTURAL MECHANICS

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Ag. Machinery Manager	Manager, Store (ret. tr.) 185.168
Ag. Machinery Service Manager	Manager, Service Department (whole. tr.) 187.168
Ag. Machinery Parts Manager	Manager, Parts (ret. tr.; whole. tr.) 185.168
Ag. Machinery Sales Manager	Manager, Sales (ret. tr.; whole. tr.) 185.168
Ag. Machinery Office Manager	Manager, Office (any ind.) 169.168
Agricultural Engineer	Agricultural Engineer (profess. & kin.) 013.081
Ag. Machinery Fieldman	Fieldman (any ind.) 180.118
Ag. Machinery Bookkeeper	Bookkeeper (clerical) I 210.388
Ag. Machinery Salesman	Salesman, Tractor and Farm Implements (ret. tr.; whole. tr.) 277.358
Ag. Machinery Mechanic	Farm-Equipment Mechanic (agric.) I 624.281
Ag. Machinery Mechanic's Helper	Farm-Equipment Mechanic (agric.) II 624.381
Ag. Machinery Field Mechanic	Farm-Equipment Mechanic (agric.) II 624.381
Ag. Machinery Welder	Welder, Repair (welding) 812.884
Ag. Machinery Parts Man	Salesperson, Parts (ret. tr.; whole. tr.) 285.358
Ag. Machinery Set-up Man	Farm-Machinery Set-up Man (whole. tr.) 624.381
Ag. Machinery Warehouseman	Laborer, Stores (any ind.) 922.887

Occupational Titles in the Area of
AGRICULTURAL PRODUCTS

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Meat, Poultry, Eggs	
Meat Processing Plant Manager	Production Superintendent (any ind.) 183.118
Poultry Products Processing Plant Manager	Production Superintendent (any ind.) 183.118
Meat and Poultry Products Sales Manager	Manager, Sales (any ind.) 163.118
Meat and Poultry Products Department Manager	General Foremen (any ind.) 183.168
Veterinarian, Meat Quality	Veterinarian, Meat Inspector (gov. ser.) 168.284
Meat Grader	Grader, Meat (slaugh. & meat pack.) 525.387
Poultry Grader	Grader, Dressed Poultry (slaugh. & meat pack.) 529.687
Meat Processor	Butcher, All around (slaugh. & meat pack.) 529.887
Poultry Processor	Poultry Dresser (agric.; slaugh. & meat pack.) 525.887
Egg Candler	Egg Candler (any ind.) 529.867
Meat Plant Worker	Laborer (slaugh. & meat pack.) 529.887
Meat and Poultry Products Salesman	Salesman, Foodstuffs (whole. tr.) 292.358
Livestock Buyer	Buyer, Livestock (slaugh. & meat pack.) 162.158
Poultry Buyer	Buyer, Poultry (whole. tr.) 162.158

AGRICULTURAL PRODUCTS--Continued

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Dairy Products	
Dairy Products Processing Plant Manager	Production Superintendent (any ind.) 183.118
Dairy Products Plant Production Manager	General Foreman (any ind.) I 183.168
Dairy Products Sales Manager	Manager, Sales (any ind.) 163.118
Dairy Store Manager	Manager, Store (ret. tr.) I 185.168
Dairy Products Plant Fieldman	Field Contact Man (dairy prod.) 162.158
Dairy Products Laboratory Technician	Dairy Technologist (profess. & kin.) 040.181
Dairy Products Quality Control Technician	Dairy Tester (agric.) 469.381
Dairy Products Plant Office Manager	Manager, Office (any ind.) 169.168
Dairy Products Plant Bookkeeper	Bookkeeper (clerical) I 210.388
Dairy Products Plant Processing Supervisor	General Foreman (any ind.) 183.168
Dairy Products Plant Processor	Dairy Processing Equipment Operator (dairy prod.) 529.782
Dairy Products Plant Worker	Dairy Helper (dairy prod.) 529.886
Dairy Products Salesman	Salesman, Foodstuffs (whole. tr.) 262.358
Dairy Products Driver Salesman	Salesman, Driver (any ind.) 292.358
Dairy Products Plant Mechanic	Maintenance Man (any ind.) 899-381
Dairy Products Plant Routeman	Milk Driver (dairy) 905.883

AGRICULTURAL PRODUCTS--Continued

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Fruit, Vegetables	
Fruit and Vegetable Market Manager	Wholesaler (whole. Tr.) 185.168
Fruit and Vegetable Processing Plant Manager	Manager, Food Processing Plant (can. & preser.) 185.168
Fruit and Vegetable Sales Manager	Manager, Sales (any ind.) 163.118
Fruit and Vegetable Product Manager	Superintendent (agric.; can. & preser.) 180.168
Fruit and Vegetable Field Man	Field Man (any ind.) 180.118
Fruit and Vegetable Office Manager	Manager, Office (any ind.) 169.168
Fruit and Vegetable Salesman	Salesman, Foodstuffs (whole. tr.) 262.358
Fruit and Vegetable Processing Plant Foreman	Superintendent (agric.; can. & preser.) 180.168
Fruit and Vegetable Processing Worker	Production Helper (food prep., 529.886
Fruit and Vegetable Market Worker	Classified by specific duty
Fruit and Vegetable Buyer	Buyer, Agricultural Produce (whole. tr.) 162.158
Fruit and Vegetable Inspector or Grader	Grader Man (agric.) 521.885

AGRICULTURAL PRODUCTS--Continued

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Cereal Grains	
Grain Elevator Manager	Superintendent, Grain Elevator (grain & feed mill.) 529.138
Grain Elevator Sales Manager	Manager, Sales (any ind.) 163.118
Grain Buyer	Buyer, Grain (whole. tr.) I 162.168
Seed Analyst	Seed Analyst (profess. & kin.) 040.381
Grain Elevator Office Manager	Manager, Office (any ind.) 169.168
Grain Salesman	Salesman, Grain & Feed Products (whole. tr.) 262.358
Grain Elevator Processing Supervisor	Miller, Foreman (grain & feed mill.) 521.130
Grain Elevator Man	Grain Elevator Man (grain & feed mill.) 921.883
Grain Elevator Mill Operator	Miller, Foreman (grain & feed mill.) 521.138
Grain Elevator Processing Worker	Grinder Operator (grain & feed mill.) 521.782
Grain Dryer and Cleaner	Grain - Dryer Operator (grain & feed mill.) 523.885
Ginner	Ginner (agric.) 461.885
Grain Elevator & Mill Maintenance Man	Millwright (any ind.) 638.281

Occupational Titles in the Area of
AGRICULTURAL RESOURCES

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Recreation Farm Manager	Manager, Recreation Establishment (amuse. & rec.) 187.168
Dude Ranch Manager	Manager, Lodging Facilities (hotel & res.) 320.127
Soil Conservationist	Soil Conservationist (profess. & kin.) 040.181
Soil Scientist	Soil Scientist (profess. & kin.) 040.181
Soil Conservation Technician	Soil Conservationist (profess. & kin.) 040.181
Soil Conservation Aid	Soil Conservationist Aid (profess. & kin.) 040.181
Park Naturalist	Park Naturalist (gov. ser.) 099.228
Zoo Keeper	Animal Keeper, Head (amuse. & rec.) 356.138
Aviary Manager	Animal Keeper, Head (amuse. & rec.) 356.138
Gamekeeper	Gamekeeper (hunt. & trap.) 481.181
Huntsman	Huntsman (amuse. & rec.) 187.168
Wildlife Conservation Officer	Fish and Game Warden (gov. ser.) 379.168
Government Trapper	Predatory Animal Hunter (hunt. & trap.) 451.781
Park Worker	Park Worker (gov. ser.) 407.887
Game Farm Worker	Game Farm Helper (hunt. & trap.) 419.884
Animal Keeper	Animal Keeper (amuse. & rec.) 356.874

Occupational Titles in the Area of FORESTRY

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Forestry Manager	Forester (profess. & kin.) 040.081
Forest Warden	Chief Warden (gov. ser.) 188.168
Forest Cruiser	Chief Cruiser (forestry) 449.168
Field Man	Field Man (forestry) 162.158
Forester Aid	Forester Aid (gov. ser.) 441.384
Buyer	Logging Contractor (logging) 183.168
Foreman, Saw Mill	Foreman (wood working) 669.137
Log Grader	Log Grader (logging) 941.387
Log Scaler	Log Scaler (logging) 941.488
Logging Operations Inspector	Logging Operations Inspector (forestry) 449.287
Timber Marker	Timber Marker (logging) 940.348
Bough Cutter	Bough Cutter (forestry) 442.887
Christmas Tree Cutter	Christmas Tree Cutter (agric.) 406.887
Greens Picker	Greens Picker (forestry) 442.887
Logger	Logger, All around (logging) 940.884
Saw Mill equipment operator	Gang Sawyer (sawmill) 667.782
Timber Cutter	Faller (logging) 940.884
Seed Cone Picker	Seed Cone Picker (forestry) 449.887
Sprayer	Sprayer (forestry) 441.887
Tree climber	Tree climber (forestry) 449.884
Gum Gatherer	Sap Collector (agric) 442.887

Occupational Titles in the Area of ORNAMENTAL HORTICULTURE

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Nursery Manager Greenhouse Manager	Nurseryman (agric.) 406.168
Garden Center Manager	Manager, Store (ret. tr.) I 185.168
Florist	Manager, Retail Floral (ret. tr.) 185.168
Park Superintendent	Park Foreman (gov. ser.(407.134
Tree Service Manager	Manager, Service Department (whole. tr.) 187.168
Landscape Architect Highway Landscape Architect	Landscape Architect (profess. & kin.) 019.081
Golf Course Superintendent	Superintendent, Greens (amuse. & rec.) 407.138
Landscape Consultant Landscape Aid	Landscape Gardener (agric.) 407.181
Floral Designer	Floral Designer (ret. tr.) 142.081
Ornamental Horticulture Bookkeeper	Bookkeeper (clerical) 210.388
Nursery Salesman	Salesman, Horticulture and Nursery Products (whole. tr.) 260.---
Garden Center Salesman	Sales Person, Flowers (ret. tr.) 260.458
Nursery Grower Greenhouse Grower	Nurseryman (agric.) 406.168
Nursery Shipping Clerk	Shipping Clerk (clerical) II 222.578

ORNAMENTAL HORTICULTURE--Continued

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Nursery Worker Greenhouse Worker Garden Center Worker	Nursery Worker (agric.) 406.887
Garden Center Mechanic	Maintenance Mechanic (any ind.) II 638.281
Greenskeeper	Greenskeeper (any ind.) 407.137
Groundskeeper	Groundskeeper (any ind.) 407.884
Tree Surgeon	Tree Surgeon (agric.) 407.181
Tree Pruner Tree Pruner Helper	Tree Pruner (agric.) 404.884 Groundman (agric. & hort. ser.) 951.884
Tree Sprayer	Sprayer (agric.) 424.883

Occupational Titles in the Area of
OTHER AGRICULTURE

Occupational Titles Found in Many of the State Studies	Dictionary of Occupational Titles Third Edition, 1965
Business Services	
Agricultural Consultant, Bank	Credit Reporter (bus. ser.) 249.368
Farm Appraiser	Appraiser, Real Estate (real estate) 191.287
Farm Loan Officer	Loan Officer (banking) 186.288
Farm Placement Officer	Personnel Recruiter (profess. & kin.) 166.268
Farm Organization Fieldman	Membership Solicitor (bus. ser.) 293.358
Breed Association Fieldman	Representative (bus. ser.) 293.358
Education	
Vocational Agriculture Instructor	Teacher, Secondary School (educ.) 091.228
County Agent	County - Agricultural Agent (gov. ser.) 096.128
Agriculture Professor	Faculty Member, College or University (educ.) 090.228
Vocational-Technical Instructor	Teacher, Technical Education (educ.) 090.228
Agricultural Journalist	Reporter (print. & pub.) 132.268
Market News Analyst	News Analyst, Broadcast (radio & t.v. broad.) 131.068
Inspection, Regulation Other Government	
ASCS Compliance Supervisor	Investigator (gov. ser.) 168.168
ASCS Field Reporter	Farm Checker (gov. ser.) 249.368
Agriculture Commodity Grader	Agriculture Commodity Grader (gov. ser.) 168.287

OTHER AGRICULTURE--Continued

Agricultural Produce Inspector	Food and Drug Inspector (gov. ser.) 168.287
Agricultural Chemicals Inspector	Quality Assurance Representative (gov. ser.) 168.287
Brand Inspector	Brand Inspector (gov. ser.) 413.687
Apiary Inspector	Apiary Inspector (gov.ser.) 168.287
Livestock Inspector	Veterinary Livestock Inspector (gov. ser.) 073.181

THE STANDARD INDUSTRIAL CLASSIFICATION

A classification system which was designed for a different purpose than the Dictionary of Occupational Titles is the Standard Industrial Classification system (SIC). This system was prepared by the Technical Committee on Standard Industrial Classification and was published in 1957 by the Bureau of the Budget, Executive Office of the President.

The Standard Industrial Classification was developed for use in the classification of establishments by type of economic activity in which engaged, and for the purpose of facilitating the collecting, tabulation, presentation, and analysis of data relating to the establishments.

The classification is arranged in major groups (identified by three digit numbers) and industry number (a four digit number).

The SIC arrangement which has been developed for this publication may be used as a reference for classification. It is compatible with the on-going systems of classifications now in popular use by leaders in guidance and by personnel in business and industry.

The arrangement developed for this publication is according to the seven major instructional areas of agricultural subject matter. Faculty and facilities requirements are specific to each area. In addition, there are other occupations that are not as readily classified by subject matter. They are added according to the instructional area they serve or as other.

The inclusion and arrangement of the SIC for this publication is primarily for information and convenience of teachers and guidance counselors. It provides, in effect, an "umbrella" activity classification under which all instructional areas and occupational titles may

be grouped. If educators are requested to program or report under an activity or establishment classification system, this information may be helpful. If reporting should be required for any purpose under SIC, this arrangement would be of direct assistance.

In connection with the currently increasing use of data processing it is entirely possible that educational information may be gathered on the basis of codes used in both or either of the DOT and SIC classifications. If this develops, the SIC as arranged in this publication may be useful.

INSTRUCTIONAL AREAS FOR VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTURE WITH GROUP AND INDUSTRY NUMBERS FROM THE STANDARD INDUSTRIAL CLASSIFICATION MANUAL

1. AGRICULTURE PRODUCTION

a. Commercial Farms

Group	Industry	
011		FIELD CROP FARMS
	0112	Cotton farms
	0113	Cash grain farms
	0119	Field crop farms (NEC)*
012		FRUIT, TREE NUT, AND VEGETABLE FARMS
	0122	Fruit and tree nut farms
	0123	Vegetable farms
013		LIVESTOCK FARMS
	0132	Dairy farms
	0133	Poultry farms (pheasants, quail, etc.)
	0139	Livestock farms (NEC)
014		GENERAL FARMS
	0142	General farms -- primarily crops
	0143	General farms -- primarily livestock
019		MISCELLANEOUS COMMERCIAL FARMS
	0192	Horticultural specialties (mushrooms, etc.)
	0193	Animal spcialties (fur farms, worms, etc.)
	0199	Commerical farms (NEC)

b. Non-commercial Farms

021		NON-COMMERCIAL FARMS
	0212	Part-time farms
	0213	Residential farms
	0214	Institutional farms

c. Production Facilities

071		AGRICULTURAL SERVICES, EXCEPT ANIMAL HUSBANDRY AND HORTICULTURAL SERVICES
	0714	Corn shelling, hay baling, and threshing
	0715	Contract sorting, grading, packing, shipping fruits and vegetables for grower
	0719	Agricultural services (NEC)
072		ANIMAL HUSBANDRY SERVICES
	0722	Offices of veterinarians and animal hospitals
	0723	Poultry hatcheries
	0729	Animal husbandry services (NEC)
179		MISCELLANEOUS SPECIAL TRADE CONTRACTORS
	1799	Special trade contractors (NEC)
497		IRRIGATION SYSTEMS
	4971	Irrigation system operation

*NEC not elsewhere classified

2. AGRICULTURAL MACHINERY

Group	Industry	
352		FARM MACHINERY AND EQUIPMENT
	3522	Farm machinery and equipment (manufacturing)
508		MACHINERY, EQUIPMENT, AND SUPPLIES
	5083	Farm machinery (wholesale)
525		HARDWARE AND FARM EQUIPMENT
	5252	Farm equipment dealers (retail)

3. AGRICULTURAL SUPPLIES

a. Feed, Seed, and Fertilizer

204		GRAIN MILL PRODUCTS
	2042	Prepared feeds for animals and fowls
209		MISCELLANEOUS FOOD PREPARATION & KINDRED PRODUCTS
	2091	Cottonseed oil mills
	2092	Soybean oil mills
596		FARM AND GARDEN SUPPLY STORES
	5962	Hay, grain and feed stores
	5969	Farm and garden supply stores (NEC)

b. Agricultural Chemicals

287		AGRICULTURAL CHEMICALS
	2871	Fertilizers (manufacturing)
	2872	Fertilizers (mixing only)
	2879	Agricultural chemicals (NEC)
502		DRUGS, CHEMICALS AND ALLIED PRODUCTS
	5029	Chemicals and allied products (NEC)

c. Equipment

525		HARDWARE AND FARM EQUIPMENT
	5251	Hardware stores
539		MISCELLANEOUS GENERAL MERCHANDISE STORES
	5399	General stores (includes farm supplies)

4. AGRICULTURE PRODUCTS

a. Meat Products

201		MEAT PRODUCTS
	2011	Meat packing plants
	2015	Poultry & small game dressing, packing, whole.

Group	Industry	
504		GROCERIES AND RELATED PRODUCTS (wholesale)
	5044	Poultry and poultry products
	5047	Meats and meat products
542		MEAT AND FISH (Sea Food) MARKETS (retail)
	5421	Meat and fish (sea food) markets
549		MISCELLANEOUS FOOD STORES (retail)
	5499	Egg and poultry dealers

b. Dairy Products

202		DAIRY PRODUCTS
	2021	Creamery butter
	2022	Natural cheese
	2023	Condensed and evaporated milk
	2024	Ice cream and frozen desserts
	2026	Fluid milk
504		GROCERIES AND RELATED PRODUCTS (wholesale)
	5043	Dairy products
545		DAIRY PRODUCTS STORES (retail)
	5451	Dairy products stores

c. Fruits and Vegetables

203		CANNING AND PRESERVING FRUITS & VEGETABLES
	2033	Canned fruits, vegetables, preserves, jams, jellies
	2034	Dehydrated and dried fruits and vegetables
	2035	Pickling fruits and vegetables
	2037	Frozen fruits and vegetables
504		GROCERIES AND RELATED PRODUCTS (wholesale)
	5048	Fresh fruits and vegetables
543		FRUIT STORES AND VEGETABLE MARKETS (retail)
	5431	Fruit stores and vegetable markets

d. Grain

204		GRAIN MILL PRODUCTS
	2041	Flour and other grain mill products
	2043	Cereal preparations
	2044	Rice milling
206		SUGAR
	2061	Cane sugar, except refining only
	2063	Beet sugar
504		GROCERIES AND RELATED PRODUCTS (wholesale)
	5049	Groceries and related products (NEC)

e. Marketing facilities

Group	Industry	
422		PUBLIC WAREHOUSING
	4221	Farm products warehousing and storage
	4223	Food lockers, with or without preparation facilities
473		STOCKYARDS
	4731	Stockyards
505		FARM PRODUCTS - RAW MATERIALS
	5051	Farm products - raw materials (livestock, wool, grain, cotton, leaf tobacco)
539		MISCELLANEOUS GENERAL MERCHANDISE STORES
	5399	General stores (includes farm supplies)

5. AGRICULTURAL RESOURCES

074		HUNTING AND TRAPPING AND GAME PROPAGATION
	0741	Hunting and trapping and game propagation
703		TRAILER PARKS AND CAMPS
	7032	Sporting and recreational camps
794		MISCELLANEOUS AMUSEMENTS AND RECREATION SERVICES
	7942	Public golf courses
	7947	Golf clubs and country clubs
	7948	Racing stables
	7949	Riding academies and stables
098		FISHERY SERVICES
	0989	Fishery services

6. FORESTRY

081		TIMBER TRACTS
	0811	Timber tracts, including Christmas tree farms
082		FOREST NURSERIES, TREE SEED GATHERING, AND EXTRACTING
	0822	Forest nurseries
	0823	Tree seed gathering and extracting
084		GATHERING OF GUMS AND BARKS
	0842	Gathering of gums and barks
085		FORESTRY SERVICES
	0851	Forestry services

7. ORNAMENTAL HORTICULTURE

a. Nurseries, Greenhouses

019		MISCELLANEOUS COMMERCIAL FARMS
	0192	Horticultural specialties
596		FARM AND GARDEN SUPPLY STORES
	5969	Farm and garden supply stores (NEC)

b. Landscaping, Turf

Group	Industry	
073		HORTICULTURAL SERVICES
	0731	Horticultural services

c. Floriculture

599		RETAIL STORES (NEC)
	5992	Florists

8. OTHER AGRICULTURE

a. Business Services

613		AGRICULTURAL CREDIT INSTITUTIONS
	6131	Agricultural credit institutions
739		BUSINESS SERVICES (NEC)
	7391	Research, development and testing laboratories
	7392	Business and management consulting services
	7399	Business services (NEC)
861		BUSINESS ASSOCIATIONS
	8611	Business associations
862		PROFESSIONAL MEMBERSHIP ORGANIZATIONS
	8621	Professional membership organizations

b. Education

821		ELEMENTARY AND SECONDARY SCHOOLS
	8211	Elementary and secondary schools
822		UNIVERSITIES AND JUNIOR COLLEGES
	8221	Universities
	8222	Colleges
824		CORRESPONDENCE AND VOCATIONAL SCHOOLS
	8241	Correspondence schools
	8242	Vocational schools
899		SERVICES (NEC)
	8999	Services, not elsewhere classified, such as agricultural communications, including writing, editing, broadcasting

c. Inspection, Regulation, Other Government

9--		GOVERNMENT
	91--	Federal Government
	92--	State Government
	93--	Local Government
	94--	International Government

V

RESOURCES

Included in this chapter are resources to aid in guidance, counseling, and placement of students enrolled in preparatory or supplementary education in off-farm agricultural occupations. A selected bibliography lists the best printed resources concerning occupational guidance in agriculture. Tests which can be utilized in occupational guidance in agriculture are also listed which should assist the teacher in working with individual students.

The earliest needs of students, before reaching senior high school, are for educational guidance. The selected bibliography and test materials should be particularly helpful to the vocational agriculture teacher in this function.

Placement is here defined as assistance to persons in locating and obtaining satisfactory employment following completion of an educational program. It is a function that should be accepted as a formal responsibility of all secondary schools, and surely also of area vocational-technical schools and community colleges. Former students should be considered as alumni and welcomed to return for help at any time later in life.

There is limitless opportunity for pilot programs to test new ways to upgrade instructors in their effectiveness in helping students to locate fields of specialization most suited to the students' characteristics. Some of the published standardized instruments listed on the following pages are worth being used in almost all new educational programs for off-farm agricultural occupations.

A dialogue between a student and a teacher has been included in Appendix B to give the reader some idea as to the manner in which the material in this publication can be utilized.

A Selected Bibliography on Occupational Guidance in Agriculture

1. Bureau of Employment Security, Dictionary of Occupational Titles, Volumes I and II, Gov't. Pr. Off., Third Edition, 1965. X

2. Bureau of Employment Security, Guide to Local Occupational Information, U. S. Dept. of Labor, Manpower Administration, Washington, D. C. 20210, 1962.

3. Bureau of Employment Security, Job Guide for Young Workers, 78 pp. Gov't. Pr. Off., 1963. (New edition in process will include more off-farm agricultural occupations.) X

4. Bureau of Labor Standards (Bul. 271) Handbook for Young Workers. 29 pp. Gov't. Pr. Off., 1965. X

5. Byram, Harold M. and Albracht, James J. Publications on Occupational Information in Agriculture, College of Education, Michigan State University, East Lansing, Michigan, 1964. O

6. Byram, Harold M. Guidance in Agricultural Education, Danville, Illinois, The Interstate Printers & Publishers, Second Edition, 1966. X

7. Chronicle Occupational Briefs, 1965-66. Volumes 1, 2, 3. (Set of 306 briefs including 25 in agricultural occupations.) Chronicle Guidance Publications, Inc., Moravia, New York. X

8. Department of Agriculture, Profiles, Careers in the USDA, Gov't. Pr. Off., 1964. X

9. Hoover, Norman K. Handbook of Agricultural Occupations, Danville, Illinois, The Interstate Printers & Publishers, 1963. X

10. Hutchison, Chester S. Your Future in Agriculture, New York, N. Y. Richards Rosen Press, Inc., 1965. X

11. Occupational Briefs. Science Research Associates, Inc., 259 East Erie Street, Chicago, Illinois 60611, 1965. X

12. Office of Statistical Standards, Standard Industrial Classification Manual, Gov't. Pr. Off., 1957. Supplement, 1963. X

13. Phipps, L. J. Handbook on Agricultural Education in Public Schools. (Chapters 31 and 32.) Danville, Illinois, The Interstate Printers & Publishers, 1965. X

14. Stone, Archie A. Careers in Agribusiness and Industry. Danville, Illinois, The Interstate Printers & Publishers, 1965.

15. There's a New Challenge in Agriculture, 21 pp. Resident Instruction Section, Division of Agriculture, American Association of Land-Grant Colleges and State Universities, 1962.

16. U. S. Department of Labor. Occupational Outlook Handbook, Bulletin No. 1375. Gov't. Pr. Off., 1963-64.

Tests to Use in Occupational Guidance in Agriculture

Bureau of Employment Security, General Aptitude Test Battery. Contact state employment service offices to have the tests administered, scored, and interpreted. There is no charge to schools, workers, or employers.

Bureau of Employment Security, Interest Check List. Contact a state employment service office. A counselor will administer the instrument and discuss the results with the individual.

California Test Bureau. Occupational Interest Inventory and related instruments in a series. Intended for use in a counseling sequence.

Clark, Kenneth E. Minnesota Vocational Interest Inventory. New York, The Psychological Corporation, 1965. Specially designed to measure interests in non-professional occupations. Useful with vocational and technical school students and with unemployed adults.

Kuder, G. Frederick. Kuder Preference Record Occupational Form D and Kuder E General Interest Survey. Chicago, Science Research Associates, 1957, 1963. Keys have been prepared for Form D for several agricultural occupations.

Oliver, James E. Educational Interest Inventory. Dearborn, Michigan, Educational Interest Testing Associates, 1962. Self-administering. Agriculture is one of nineteen subject areas of interest for men.

Sextant Series for Exploring Your Future in Agriculture. Milwaukee, Wisconsin, American Liberty Press, 1962. A 90-page combination self-assessment device and set of occupational briefs in agriculture. The Wilkinson method of personal profiling also has been used in eleven other subject areas for high school students.

Walker, R. W., Stevens, G. Z., Hoover, N. K. Vocational Agriculture Interest Inventory. Danville, Illinois, The Interstate Printers & Publishers, 1965. Intended for use with eighth grade boys. High scores indicate interest and probable success in high school courses in agriculture.

APPENDICES

APPENDIX A

Occupational Titles in the Economic Area of PRODUCTION AGRICULTURE

Dictionary of Occupational Titles Third Edition, 1965	
Animal Breeder (agric.)	419.181
Auctioneer (ret. tr; whole. tr.)	294.258
Beekeeper (agric.)	419.181
Berry Grower (agric.)	404.181
Broker and Market Operator (finan.;whole. tr.)	162.158
Buyer, Wool (whole. tr.)	162.158
Camp Tender (agric.)	413.138
Cattle Rancher (agric.)	413.181
Commission Man, Agricultural Produce (whole.tr.)	261.158
Cotton Grower (agric.)	402.181
Crab Farmer (fish.)	436.884
Dairy Tester (agric.)	469.381
Detasseling, Crew Supv. (agric.)	469.137
Farmer, Cash Grain (agric.)	401.181
Farmer, Contract (agric.)	409.883
Farmer, Dairy (agric.)	411.181
Farm Equipment Operator (agric.)	409.883
Farm Foreman (agric.)	429.131
Farm Hand I (agric.)	401.884
Farm Hand II (agric.)	401.887
Farmer, Tenant (agric.)	408.181
Fence Erector (const.)	869.884

Dictionary of Occupational Titles Third Edition, 1965	
Field Hauler (agric.)	409.883
Fish Farmer (agric.)	436.181
Flower Grower (agric.)	406.181
Frog Grower (fish.)	436.181
Fruit Harvester Operator (agric.)	404.883
Fur Farmer (agric.)	419.181
Game Farmer (agric.)	419.181
General Manager, Farm (agric.; whole, tr.)	180.168
Grape Grower (agric.)	404.181
Harvest Contractor (agric.)	469.158
Hay Grower (agric.)	405.181
Horseshoer (any ind.)	356.381
Irrigator, Head (agric.)	422.137
Manager, Farm (agric.)	409.168
Manager, Irrigation District (waterworks)	184.118
Migrant Leader (agric.)	180.168
Milking Machine Operator (agric.)	411.181
Mushroom Grower (agric.)	406.181
Orchardist (agric.)	404.181
Peanut Grower (agric.)	405.181
Peanut Picker Operator (agric.)	405.885
Poultry Breeder (agric.)	412.181

Dictionary of Occupational Titles Third Edition, 1965	
Poultryman Eggs (agric.)	412.181
Seed Grower (agric.)	405.181
Sharecropper (agric.)	409.884
Sheep Herder (agric.)	413.887
Sheep Rancher (agric.)	413.181
Sheep Shearer (agric.)	469.884
Shell Fish Grower (fish.)	436.181
Tobacco Grower (agric.)	405.181
Vegetable Grower (agric.)	404.181
Worm Grower (agric.)	419.181

APPENDIX B

A Dialogue of a Teacher-Student Interview Developed to Indicate How the Booklet "Occupational Guidance For Off-Farm Agriculture" Can Be Used in Guidance for Off-Farm Agricultural Occupations.

Interviewer - Hi, Bill.

Student - Hello, Mr. Jones.

Interviewer - Have a seat, Bill.

Student - Thank you. Yesterday in class you talked to us about occupations that require a knowledge of agriculture. I'm not sure what I want to do when I finish high school, but I think I would be interested in some kind of agricultural work. My parents want me to go to college, but I'm not sure I want to go.

Interviewer - Are you interested in working with your father on your farm?

Student - No. Our farm is not large enough to support two families, and I don't have enough money to become established in farming for myself.

Interviewer - Uh huh. You are interested then in working somewhere in agriculture. You may consider college, but you are unsure at this time.

Student - That's right.

Interviewer - As we discussed in class, there are many off-farm agricultural occupations in which a knowledge of agriculture is required. Before we explore these occupations further, let's look at your permanent

record folder to see what we can learn about your achievements, aptitudes, and interests.

Student - I remember taking the tests and would like to know how I scored.

Interviewer - The California Achievement Test that you took last year indicates that you have above average ability in math and science, average ability in social studies and reading, and a little less than average ability in English. How are your grades in the courses you are taking this year?

Student - Well, I'm not doing too badly this year. I have a B in Algebra II, a C+ in history, a C- in English, a B in biology, and as you know, I'm making A's in agriculture.

Interviewer - Your present grades appear to be consistent with your academic ability. You may try to improve English since it is important for any occupations in which you must be able to communicate with people. A person from the Bureau of Employment Security will be in our school next week to administer the General Aptitude Test Battery, called the GAT-B. Let me suggest that you sign up at the guidance office to take it.

Student - I will do that. I hope you will be present when they come back to discuss my scores. And, as you mentioned, I should work harder on English. What information do you have about my interest scores?

Interviewer - We have the Vocational Agriculture Interest Inventory on which you scored a 60. This means that you have a high interest in agriculture. This includes farming and off-farm agriculture.

Student - I like agriculture very much.

Interviewer - On the new Kuder Preference Record, Form E, you have high scores on the outdoor, computational, and mechanical scales. You scored average on scientific, clerical, and social service and you scored low on persuasive, artistic and literary.

Student - Exactly what do these scores mean?

Interviewer - They tell us that you have interest in working outdoors and in the area of mechanics. The high score on computational indicates that you have a preference for working with numbers.

Student - I see. What off-farm agricultural jobs are available that would fit my interests?

Interviewer - Let's find out. We have a new booklet on "Guidance for Off-Farm Agriculture." Let's look at it and find out what is available. As you can see, the booklet lists seven areas of off-farm agricultural occupations. They are: agricultural mechanics, agricultural supplies, agricultural products, agricultural resources, forestry, ornamental horticulture, and other, which includes business services, education and research, inspection, regulation, and other government services.

Interviewer - Have you ever visited any off-farm agricultural businesses?

Student - Yes, I have looked around the implement dealer's shop when I helped my father take tractors and other equipment to be repaired.

Interviewer - Do you think you might be interested in the area of agricultural mechanics?

Student - I think so. I'm not sure, but I enjoy our agricultural mechanics classes and I like to work with the farm equipment at home. I think I would like to work with agricultural machinery, but I need to know more about it.

Interviewer - Fine. Let's look closely at some occupational titles in the area of agricultural mechanics that are listed here in the booklet on off-farm agricultural occupations.

Student - Okay. (Student reads the page of job titles).

Interviewer - Are there any job titles that interest you?

Student - Yes, there are several. I think I would be interested in agricultural machinery set-up man, agricultural machinery parts man, or agricultural machinery mechanic. If I go to college, I might even be interested in becoming a manager of an agricultural machinery business.

Interviewer - Very good. You think you would be interested in these areas then. If you had to decide upon one, which one would you select?

Student - I don't know. Do you know more about what these men actually do on their jobs?

Interviewer - Yes, I do. Let's look at the job descriptions in the Dictionary of Occupational Titles and find out what employees in these occupations actually do. (Discuss each one from D.O.T.)

Student - I still haven't decided which job I would like best, but I do think I would like to work in the area of agricultural mechanics.

Interviewer - Would you be interested in learning at first hand the competencies workers in these jobs must have?

Student - Yes, I think I would like that very much.

Interviewer - As you know, we have a program of placement for supervised occupational experience for our ag mechanics students who are not going into farming. In this program we place boys in agricultural mechanics businesses where they work part-time and thus learn what is involved in the various jobs. Do you think you might be interested in participating in this program next year?

Student - Yes, I think I would enjoy doing that. It might help me decide which one of the jobs I would like to go into after graduation.

Interviewer - Fine. We will get together with you and your parents sometime in the near future and talk more about it.

Student - That's fine with me. I'll talk with dad and mother.

Interviewer - Before you leave perhaps we had better look into your schedule for next year. Do you think there is a possibility you may want to go to college when you graduate from high school?

Student - I'm not sure, but there is a possibility.

Interviewer - What courses will you need to schedule during the next two years if you would want to go to college?

Student - I suppose chemistry and physics and possibly more math.

Interviewer - Yes, take the best selection of these courses for you. Will you stop in to see me before you register for next year and I'll help you work out your schedule? Is that okay with you?

Student - Thank you. I will be glad to have you help me.

Interviewer - Fine. You think about what we have discussed today and we will talk about it again when you see me about your schedule for next year.

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A STUDY

OF

VOCATIONAL AGRICULTURE

IN THE SCHOOLS OF

THE PHOENIX UNION HIGH SCHOOL SYSTEM

JULY 1966

VT 00523

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A STUDY OF VOCATIONAL AGRICULTURE IN THE SCHOOLS OF THE PHOENIX UNION HIGH SCHOOL SYSTEM

CONDUCTED UNDER THE

AUSPICES OF

ARIZONA OCCUPATIONAL RESEARCH COORDINATING UNIT

1439 N. First Street

Phoenix, Arizona

A Project Of

NORTHERN ARIZONA UNIVERSITY

FLAGSTAFF, ARIZONA

WITH THE ASSISTANCE OF

THE

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1717 W. Jefferson

Phoenix, Arizona

JULY 1966

INTRODUCTION

The agricultural industry of Arizona and specifically of Maricopa County has evolved and changed considerably during the past few years. The Board of Education of the Phoenix Union High School District has had a constant and long-term awareness of the necessity of periodic re-evaluation of the scope, content and role of the vocational agricultural education program in the system. For this reason, the Board of Education and the administrative staff of the Phoenix Union High School District have undertaken periodic appraisals and re-appraisals of the program as it is offered at the Phoenix Union High School.

In November of 1965 the school District requested that the Occupational Research Coordinating Unit, a division of Northern Arizona University, prepare a proposal for evaluation of the effectiveness of the Vocational Agriculture program as a part of the District's overall and constant evaluation. Subsequent to that date, the RCU submitted a tentative proposal to the school officials. In March of 1966 the Board of Education of the Phoenix Union High School District approved the scope and content of the survey and requested that the Research Coordinating Unit immediately undertake the project.

The specific objectives of this study were:

1. To identify, through a follow-up study of recent graduates, the effectiveness and usefulness of the vocational agricultural program of Phoenix Union High School;
2. To identify, through an economic survey of employment opportunities emerging requirements in occupations for which vocational agriculture or training in agricultural-related occupations may prepare high school terminal students;

3. To identify the personal and family characteristics of students who have been in the past, and are currently enrolled in vocational agricultural programs;
4. To make recommendations as to the direction and content of vocational agriculture and agriculturally-related programs in the schools of Phoenix Union High School System;
5. To determine the motivation of current students for studying vocational agriculture;
6. Check status of "slow learners" in vocational agriculture.

Section I of the following report consists of an analysis and appraisal of the effectiveness of the vocational agriculture program as it has existed in the past few years at Phoenix Union High School. This primarily is based upon an extensive and exhaustive follow-up study of past students of the program.

The Arizona State Employment Service, as a part of its continuing program of occupational industrial surveys and labor market information agreed to conduct a study of employment opportunities (objective 2 above). This study, to cover the Agriculture and Agricultural Services industry, would be supplemented by the Employment Service with information from the reports of the United States Bureau of Census, personal interviews to be conducted with the Farm Bureau; cattlemen; Salt River Water Users Association; major growers; agricultural distributors; farm implement, chemicals and supply manufacturers and distributors; and employers associations such as the Associated Landscape Contractors of America and professional associations including the American Landscape Architects Association. In addition, information previously assembled and analyzed by the Employment Service for purposes of research associated with Manpower Development and Training Act requests would be included. The Employment Service also would consider the research conducted

by the University of Arizona, the Department of Agriculture and other schools and research agencies throughout the State. The results of the Employment Service survey constitutes Section II of this report.

Section III presents an exhaustive comparison of personal and family characteristics of the student bodies of the high schools of the Phoenix Union District. These data are presented on the assumption that the personal and family characteristics of the vocational agriculture students may well be of assistance in identifying potential future locations for vocational agriculture and/or horticulture programs in the schools of the Phoenix Union system. For this reason, the profiles of the vocational agriculture students who have taken courses in the past few years at Phoenix Union High School are compared with a scientifically selected random sample of students in all high schools of the system. An extensive tabular comparison of these characteristics is presented by an appendix to this report.

Section IV presents an analysis of student vocational interest. On the assumption that the interests of the students may very well be of primary concern in the curricula offerings of individual high schools, three schools have been analyzed to determine the vocational aspiration of the male students. These are: Maryvale High School, South Mountain High School and Phoenix Union High School.

Because of the interest of some educators in the effectiveness of vocational agriculture as an educational program for slow learners and under-achievers, Section V of this report has been included. This presents an analysis of the experience of the very small percentage of all students in vocational agriculture who would be classed in the slow learner category.

Section VI of this report presents the results of an inquiry into the causes and factors relating to an unusual increase in agriculture course enrollments at Phoenix Union High School during the second semester of 1965-1966 school year.

The final section of this report presents, in summary form, the findings and conclusions of the preceding sections. In addition, certain recommendations of a rather general nature have been brought forth for consideration by the administrative staff and the officials of the Phoenix Union High School System.

This research was conducted under the auspices of the Arizona Occupational Research Coordinating Unit. Principal Investigator was Mr. William A. Langbehn and primary research was under the direction of Miss Wilma Richard, a Consulting Research Specialist contracted specifically for the conduct of this study. Section II of this report was prepared by the Manpower Research Section of the Arizona State Employment Service. Appreciation is expressed to the staff and faculties of the high schools of the Phoenix Union High School System and particularly to Mr. W. E. Smith of the Vocational Agriculture Department of Phoenix Union High School. Without their cooperation, this study could not have been possible.

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SECTION I

THE EFFECTIVENESS OF THE VOCATIONAL AGRICULTURAL PROGRAM AT PHOENIX UNION HIGH SCHOOL, 1957 THROUGH 1965

The overall effectiveness of the vocational agriculture program at Phoenix Union High School is extremely limited if its primary purpose is to educate high school students for a vocation in agriculture. Though the Vocational Education Act of 1963 has been interpreted to broaden the scope of vocational agricultural programs to include training for off-farm agricultural related work, it is still required that the student entering such training shall have made an appropriate vocational choice.

The numbers of students from the "Classes" of 1961 through 1965 taking some agriculture at Phoenix Union High School and the number who completed a minimum of four semesters indicate a rather serious breakdown in vocational planning or in student selection. Table 1 illustrates that only 16% of those registering for courses in agriculture completed four semesters. Six of the 55 students who did complete four semesters, had

TABLE 1

NUMBER OF STUDENTS FROM "CLASSES" OF 1961 THROUGH 1965 WHO REGISTERED FOR ONE OR MORE COURSES IN AGRICULTURE

	General Agriculture Only	Vocational Agriculture	TOTAL
NUMBER REGISTERED	143	211	354
NUMBER COMPLETING AT LEAST ONE COURSE	101	186	287
NUMBER COMPLETING FOUR SEMESTERS*	0	55	55
PERCENT COMPLETING ONE COURSE	71	88	81
PERCENT COMPLETING FOUR SEMESTERS	0	26	16

*Many of those taking vocational agriculture also took general agriculture but are shown only in the vocational agriculture column to avoid duplication.

less than four semesters of academic agricultural classwork, but had two or more agricultural projects. This history of doubtful student selection was continued to an even more startling degree in the second semester of the 1965-1966 school year and an analysis of the new agriculture students is contained in Section VI of this report.

During the eight-year period from 1957-58 through 1964-65, a total of 559 individual students from all graduating classes were registered in at least one agricultural course. Of these, 354 were in the "Classes" of 1961 through 1965. (A total of 21 students not in the classes of 1961 through 1965 completed four or more semesters of agriculture during the eight-year period.) On the average, these were 69.9 students enrolled per year during the period. An average of only 13.6 students per "class" completed four semesters of course work and projects.

The vocational agriculture program appears to have very beneficial side effects for those few students who do complete four semesters or more, though only a small proportion are working at present in agriculture according to a follow-up study conducted during March and April, 1966.

A total of 55 students were identified who met the following criteria:

1. In the "Classes" of 1961 through 1965
2. Completed four semesters or more of agriculture in high school
3. Not now a regular student at any high school in the Phoenix Union High School System

A questionnaire was mailed to each of the 55 former students identified. Nine questionnaires were returned by mail and the information for an additional 35 students was obtained by telephone or personal

visit with parents or other family members. This represents an 80% response. (Every effort was made to reach the remaining 11 but to no avail.) A copy of the questionnaire is presented as an appendix to this report.

Responses to questionnaires showed the length of attendance at Phoenix Union High School to be: 1½ years--1; 2 years--8; 3 years--7; 4 years or more--28. Eighty-nine percent (40 students) had graduated from high school (one considered graduated received his equivalency certificate through G.E.D.) Although 13 (30%) left Phoenix Union High School before graduating, of the total 75% continued their education after leaving Phoenix Union High School. Table 2 presents the highest level of continued education reported by the responding individuals. Since nine are known to have continued high school and only three are shown in the Other High School category, six of these have had additional schooling after completing high school.

TABLE 2

TYPE OF CONTINUED EDUCATION AFTER LEAVING PHOENIX UNION HIGH SCHOOL

Kind of School	Total	Currently Enrolled
College or University	6	2
Junior College	15	7
Vocational School	1	1
Correspondence School	1	--
Military School	2	1
Other High School	3	--
Night School	3	2
Other	3	--

Table 3 lists the present activity status of the former vocational agricultural students by "Class". The one shown as "Not Employed" in the Class of 1965, is not unemployed--just not in the labor market at present (according to his mother). He usually works, but has not settled on a specific occupation as yet.

It is apparent from the number who have continued their education since leaving high school (75%) that something about the vocational agriculture program fosters the ambition to finish high school, take additional vocational training, or go on to college. According to the Annual Report of the Superintendent of the Phoenix Union High School System, for the 1964-65 year, 51% of the 1964 graduates of Phoenix Union High School were continuing their education. Of 11 vocational agricultural students graduating in 1964, nine (82%) have continued their education--7 at the junior college or university level and two in vocational schools. All but two of the responding 12 vocational-agriculture seniors in 1964 graduated and another graduated in January 1965, bringing the total to 92%--a very high percentage for any high school senior class.

Of the 34 responding former students not now in military service, all but one was employed or in school. Eight of the ten in school were also working part time. The one not working and not in school, usually worked and was not actually unemployed; but even if he were, the percentage of unemployment would be only 3.0--far below National and State estimates for unemployment among 18 and 19-year old youth.

Table 4 contains a detailed compilation of current and previous employment by occupational and industrial group. All but six of the 44 respondents either have or have had a job. Each of the six who reported never having a job are in military service. Among the 38 reporting a

TABLE 3

CURRENT ACTIVITY BY "CLASS" OF
FORMER VOCATIONAL AGRICULTURAL STUDENTS

Activity	1961	1962	1963	1964	1965	Total
Agriculture and agriculture related	-	2	-	-	2	4
Professional and managerial	1	-	1	1	-	3
Clerical and sales	1	-	-	1	-	2
Service	1	1	-	1	-	3
Skilled	-	3	2	1	-	6
Semiskilled	1	1	1	1	1	5
Student	1	2	1	4	2	10
In Military	0	1	2	3	4	10
Not Employed	-	-	-	-	1	1
TOTAL	5	10	7	12	10	44

TABLE 4

OCCUPATION AND INDUSTRY OF CURRENT EMPLOYMENT AND PREVIOUS EMPLOYMENT BY CURRENT ACTIVITY OF VOCATIONAL AGRICULTURE STUDENTS

	CURRENT EMPLOYMENT (INDIVIDUALS)			PREVIOUS EMPLOYMENT (RESPONSES)				
OCCUPATION	Full Time	Part Time	Total	Employed Full Time	In Military Service	In School	Other	Total
Agricultural	4	0	4	5	2	3	1	11
Professional & Managerial	3	1	4	1	0	0	0	1
Sales and Clerical	2	1	3	5	1	1	1	8
Service	3	3	6	4	1	0	0	5
Skilled	6	1	7	0	0	0	0	0
Semiskilled	5	1	6	5	3	4	1	13
Unskilled	0	1	1	2	0	2	0	4
None	0	0	0	9	6	3	0	18
TOTAL	23	8	31	31	13	13	3	60
INDUSTRY								
Agriculture	2	0	2	6	2	2	1	11
Agricultural & Related Services	2	1	3	0	0	2	0	2
Construction	2	2	4	1	0	2	0	3
Government	4	0	4	4	1	0	0	5
Manufacturing	6	0	6	1	1	1	0	3
Other Services	2	2	4	0	1	0	0	1
Trade	5	2	7	11	2	3	1	17
Other*	0	1	1	1	0	0	1	2
None	0	0	0	7	6	3	0	16
TOTAL	23	8	31	31	13	13	3	60

*Other includes Finance, Transportation and Communications.

job: 12 have had only one job (ten, the one they have now, one service man and one student who had one previous job); 13 have had at least one other job before present work; eight have had at least two jobs other then their present employment; and five had at least four jobs including their present one.

Though only five are working in agricultural occupations and/or agricultural related industry, 12 others have previously done agricultural or related work (one now farming for himself reported a previous agricultural job.) In addition to these 17, four more work or have worked in other occupations or industries for which agricultural training is helpful. This brings the total of those working or having worked in agriculture or agricultural related occupations and/or industries to 21 (48%). This 48% cannot be found in Table 5, showing the per cent distribution of current and previous employment by occupation and industry, as four are shown in other occupations and industries not wholly related to agriculture. These occupations and industries include one currently employed and one previously employed doing delivery and general work in florist shops (semiskilled in trade industry), one employed as a fireguard in the Forest Service (service work in government), and one employed as a butcher in a meat packing plant (skilled in manufacturing).

It is interesting to note that not one of those working full time are in unskilled jobs. The agricultural occupations in which four are involved full time include self-employed farming, wage and salaried farm work, groundskeeper at a school, and self-employed in the sale and application of insecticides and fertilizers on farms. Table 6 presents the occupations in which the former students are or have been engaged.

TABLE 5

PERCENT DISTRIBUTION BY OCCUPATION AND INDUSTRY OF CURRENT EMPLOYMENT BY CURRENT ACTIVITY OF FORMER VOCATIONAL AGRICULTURE STUDENTS

	CURRENT EMPLOYMENT (INDIVIDUALS)			PREVIOUS EMPLOYMENT (RESPONSES)				
OCCUPATION	Full Time	Part Time	Total	Employed Full Time	In Military Service	In School	Other	Total
Agricultural	17	0	13	16	15	23	33	18
Professional & Managerial	13	12	13	3	0	0	0	2
Sales and Clerical	9	12	10	16	8	8	33	13
Service	13	38	19	13	8	0	0	8
Skilled	26	12	23	0	0	0	0	0
Semiskilled	22	12	19	16	23	30	33	22
Unskilled	0	12	3	7	0	15	0	7
None	0	0	0	32	46	23	0	30
TOTAL	100	100	100	100	100	100	100	100
INDUSTRY								
Agriculture	9	0	7	19	15	15	33	18
Agricultural & Related Services	9	12	10	0	0	15	0	3
Construction	9	25	13	3	0	15	0	5
Government	17	0	13	13	8	0	0	8
Manufacturing	26	0	19	3	8	8	0	5
Other Services	9	25	13	0	8	0	0	2
Trade	22	25	19	35	15	23	33	28
Other*	0	12	3	3	0	0	30	3
None	0	0	0	23	46	23	0	27
TOTAL	100	100	100	100	100	100	100	100

*Other includes Finance, Transportation and Communications.
Note: Totals may not add to 100 due to rounding.

TABLE 6

OCCUPATIONS OF FORMER
VOCATIONAL AGRICULTURE STUDENTS

CURRENT OCCUPATIONS

AGRICULTURAL-ON FARM

General Farm Hand
Self-employed Farmer

AGRICULTURAL-OFF FARM

Groundskeeper-Public School
Self-employed (insecticide and fertilizers)

AGRICULTURAL RELATED

Warehouseman-Produce (Sk)
Delivery-Florist Shop (Ssk)
Fire Guard-Forest Service (Serv)
Butcher-Meat Packing (Sk)
Veterinary Assistant* (Serv)
Produce Man-Grocery* (Sales)

NOT AGRICULTURAL RELATED

Instructor, Mentally Retarded-Govt. (Prof)
Management Trainee-Ser.Sta. (Mgrl)
Stage Crew Mgr.-Theatre (Mgrl)
Counselor, Boys Home* (Prof)
Hotel Desk Clerk (Cler)
Tool Crib Attendant-Mfg.* (Cler)
Salesperson, Dept. Store (Sales)
Cook-Restaurant (Serv)
Janitor* Bank (Serv)
Janitor-Govt. (Serv)
Electronics Tester-Mfg. (Sk)
Machinist-Mfg. (Sk)
Roofer-Const. (Sk)
Track Boss-Logging (Sk)
Body and Fender (Sk)
Auto Parts Driver (Ssk)
Machine Operator (Ssk)
Plumber Apprentice-Const. (Ssk)
Plywood Maker-Mfg. (Ssk)
Swim Pool Const.-Apprent. (Ssk)

PREVIOUS OCCUPATIONS

AGRICULTURE-ON FARM

Harvest Work
Date Farm Laborer
Cotton and Cattle Farming
Cowboy
Farm Hand in Midwest
Beekeeping

AGRICULTURE-OFF FARM

Lawn Work

AGRICULTURAL RELATED

Florist-Delivery (Ssk)
Produce Packer (Unsk)

NOT AGRICULTURAL RELATED

Night Club Singer (Prof)
Mimeograph Operator (Cler)
Shipping Clerk-Mfg. (Cler)
Travel Clerk-Air Line (Cler)
Sales-Auto and Other (not specified) (Sales)
Busboy (Serv)
Custodian (Serv)
Kitchen Helper (Serv)
Carpenter Appr. (Ssk)
Construction Equip. Oper. (Ssk)
Delivery (Ssk)
Drapery Work (Ssk)
Metal Machine Operator (Ssk)
Sawmill Work (Ssk)
Service Station Attdnt. (Ssk)
Swim Pool Const. (Ssk)
Carry Out Boy (Unsk)
Grocery Stocker (Unsk)

* Indicates part time while in school

In reviewing Tables 4 and 5, please keep in mind that the data under previous employment comes from only 38 former students and represents total responses, not individuals. The two additional responses in the industrial employment results from two former students having jobs of a different nature but of the same skill level in different industries.

Table 7 is a compilation of all responses to all items of the questionnaire. The current employment data was compiled without complete conformance to the Dictionary of Occupational Titles or the Standard Industrial Classification Manual. Some of the occupations shown under the Agricultural Related Column are those for which agricultural training is helpful; such as butcher or veterinarian assistant. Lawn work has also been considered agricultural off farm activity.

All responses recorded in Table 7, with the exception of positive responses to previous occupation, are shown in accordance with the present activity of the former student. It is interesting to note that one respondent, now employed in a produce firm (Agricultural Related) states that he would change his high school course of study, and that only three of eight now enrolled in a non-related college or junior college course would change his high school curriculum. Three of four now employed full time in agricultural occupations have had some college. Only five of 15 (33%) now employed full time in non-related work have had any college, though six additional (making 73% in all) have had some education after leaving Phoenix Union High School. Only one of the 15 now employed in non-related occupations stated that he would change his high school curriculum. He had lost interest in the vocational agriculture course because he didn't have enough money to "buy into" agricultural projects and eventually dropped out of high school before graduation.

TABLE 7

RESPONSES OF FORMER VOCATIONAL AGRICULTURE STUDENTS TO ITEMS ON FOLLOW-UP QUESTIONNAIRE BY ACTIVITY IN WHICH CURRENTLY ENGAGED

	PRESENTLY EMPLOYED				IN SCHOOL					
	Agri on farm	Agri off farm	Agri Re-lated	Not Re-lated	Agri	Agri Re-lated	Not Re-lated	Mili-tary Serv	Other	Total
PRESENT OCCUPATION										
Full time	2	2	4	15		2	8	10	1	44
Part time						2	6			8
PREVIOUS OCCUPATION	10	1	2	25						38
None Reported	1		2	4		1	2	6		16
GRADUATION FROM HIGH SCHOOL?										
Yes	1	2	3	14		2	8	9	1	40
No	1		1	1				1		4
FURTHER EDUCATION										
College or University		1	2	1		1	1			6
Junior College			1	4		1	6	3		15
Vocational School							1			1
Correspondence School				1						1
Military Specialist				1				1		2
Other High School		1		2						3
Night School				2						2
Other	1							2		3
SELF EMPLOYED	1	1								2
WOULD CHANGE FROM VOC. AG. HIGH SCHOOL COURSE										
Yes			1	1			3			5
No	2	2	3	14		2	5	10	1	39

Another approach to the value of the vocational agriculture program is comparison of the characteristics and activities of those students in the program who lived out of the geographic service area with those who lived within the geographic service area of the Phoenix Union High School. Just over one-half (28) of the 55 former vocational agriculture students under study came from areas outside the Phoenix Union High School service area. (One, who attended a parochial high school for all work except agriculture but who lived in the Phoenix Union High School District is included in the 28.) It is not unreasonable to assume that these students came to Phoenix Union High School to take vocational training and, since they had at least four semesters of agriculture, it can also reasonably be assumed that vocational agriculture was the prime purpose for attending Phoenix Union High School. Of the 28 who came from out-of-area, 13 transferred to Phoenix Union High School after starting at another high school service areas were distributed as follows: Alhambra-6; Camelback-2; Carl Hayden-4; Central-4; North-4; South Mountain-5; West-2; Tempe-1; Buckeye-1; St. Mary's-2.

Comparison of achievement in the agriculture program shows that the out-of-area students were probably more highly motivated as 43% over-achieved in agriculture while none under-achieved compared to over-achievement of only 20% of the students from the Phoenix Union High School District and under-achievement by 10%. Unfortunately, 10 Stanines were not available for one-half of the out-of-area students and these percentages were based on only 14 of 28.

Over-achievement and under-achievement is defined for purpose of this study as falling above or below an empirically determined range of

grade-point averages converted according to the Phoenix Union High School System grade point conversion scale.* It can best be described by Chart I which illustrates the achievement in vocational agriculture by Out-of-area and Within area students. The area within the heavy black line indicates expected achievement for the IQ Stanine.

Those in areas to the left of the heavy blcak line achieved a grade point average above that expected (over-achieved) and those to the right achieved below that expected (under-achieved). This concept of over and under-achievement, (admittedly open to criticism, but what concept of this complex and important educational enigma is not open to criticism?), will be used throughout this report so that all comparisons will be on a comparable basis.

Though no definite conclussion can be drawn concerning over and under-achievement among those students for which no IQ was available, the

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*Grade-point average conversion used throughout the report conformed and the Phoenix Union High School System's grade-point conversion scale shown on the bottom of the grade record sheet, except that no cognizance was taken of students in A classes for acedemically superior students and they were converted as "Regular Section". Slow sections were noted and slow section grade-point conversion was used for the semesters of slow learner classes. These grade-point conversions are as follows:

Regular Section		Slow Section	
Grade	Grade Points	Grade	Grade Points
1	5	1	4
2	4	2	3
3	3	3	2
4	2	4	1
F	0	F	0

The numerical grade-points for each semester in a subject were assigned according to grade and type of section and averaged to get converted grade-point average.

CHART I

ACHIEVEMENT IN VOCATIONAL AGRICULTURE BY
OUT-OF-AREA STUDENTS (TOP) AND
WITHIN AREA STUDENTS (BOTTOM)

OUT-OF-AREA STUDENTS
Grade Point Average

IQ Stanines	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
9											
8											
7			1		1						2
6		1			1						2
5			2		2	1					5
4				1		1					2
3											
2			1		1						2
1				1							1
Total		1	4	2	5	2					14

WITHIN AREA STUDENTS
Grade Point Average

IQ Stanine	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
9											
8											
7						2					2
6			1	4	1	2					8
5			1		1						2
4				2		2					4
3		1		1	2						4
2											
1											
Total		1	2	7	4	6					20

average grade point achievement in vocational agriculture is considerably greater for the out-of-area students.

	4.8 to 5	4.3 to 4.7	3.8 to 4.2	3.3 to 3.7	2.8 to 3.2	2.3 to 2.7	1.8 to 2.2	1.3 to 1.7	0.8 to 1.2	F	Total
Out-of-area		1	3	6	1	3					14
Within area				3	2	2					7

Grade comparisons of out-of-area students with those from the Phoenix Union High School District in English and mathematics are not as conclusive. The proportion of out-of-area students over-achieving in English was higher (14% to none for within area students) and in mathematics was higher (21% to 4% for within area), but under-achievement was mixed. The proportion of out-of-area students who under-achieved was higher in English (57% to 40%) but was lower in mathematics (75% to 60%).

Further evidence of motivation for the study of vocational agriculture on the part of out-of-area students in a comparison of the deviations of agriculture grade point averages from composite grade point averages for each individual student in English and mathematics. The deviations for out-of-area students was significantly greater than those for within area students.*

Deviation	2.5 to 2.9	2.0 to 2.4	1.5 to 1.9	1.0 to 1.4	.5 to .9	0 to .4	-.1 -.5	- .6 to -1.0	Total
Out-of-area students	5	2	7	10	2	0	0	1	27*
Within area students	0	3	3	11	7	2	1	0	27

*One out-of-area student took only agriculture at Phoenix Union High School. English and mathematics grades not available.

*The mean deviation of all students was 1.3. A Chi Square test of significance produced a value of 12.69 for two degrees of freedom. The probability of deviations as those of out-of-area students would occur only 1% of the time among within area students.

The deviation of agriculture grades from those in basic academic courses such as English and mathematics may be due to student interest or it could be that agriculture is an easy subject or that agriculture teachers are lenient in grading. Some light may be thrown on this subject by an examination of grading by two agriculture teachers on the staff during the period under study. A total of 24 students took courses under both Mr. Smith and Mr. Kovash. Grade point averages were prepared for the courses taken under each and deviations from average English and mathematics grades were compared. With 10 out-of-area students, deviations of agricultural grades given by Mr. Kovash were significantly higher (at the 5% level) than those given by Mr. Smith. The opposite was true for deviations of 14 within area students, with Mr. Smith's grades having significantly (5% level) higher deviations than those of Mr. Kovash. When deviations of all 24 students were combined, there was no significant difference between the grades given by the two teachers. The average agriculture grade earned by both out-of-area and within area students under Mr. Smith was 3.3. The average grade for out-of-area students was 3.8 and for within area students was 3.2 in Mr. Kovash's classes.

There were no failures in agriculture classwork by out-of-area students, but three failed in at least one project. Among within area students, two failed at least one semester of classwork and four failed at least one project. Eleven of the 28 out-of-area students had no failures in agriculture, English or mathematics, while only seven of the within area students had no failures in any of the three subjects. The out-of-area students took slightly more courses in agriculture with 54% completing eight or more semesters compared to 52% for within area students. The median number of courses completed by out-of-area students was nine and by within area students was eight.

One final comparison between the group who chose to attend Phoenix Union High School and those who lived in the area is the success in agriculture projects as measured in net profit. Table 8 shows the distribution of yearly average profit among within area students, out-of-area students, (including those who transferred), and transfer students.

TABLE 8

YEARLY AVERAGE PROFIT FROM APPROVED AGRICULTURE PROJECTS BY AREA OF RESIDENCE AND TRANSFER STATUS

DOLLARS	Within area	Out-of-area (includes transfers)	Total	(Transfers)
500 or more	3	1	4	1
400 to 499	1	1	2	1
300 to 399	1	3	4	1
200 to 299	1	6	7	3
150 to 199	2	2	4	1
100 to 149	2	3	5	2
50 to 99	1	4	5	1
0 to 49	9	3	12	1
-1 to -50	0	1	1	1
Total with Projects Reported	20	24	44	12
INA	7	4	11	1
TOTAL	27	28	55	13
MEDIAN	100	175	140	200
MEAN	196.65	188.38	192.14	214.67

Though one out-of-area student sustained a net loss and all within area students showed a net profit, the median average yearly net profit was $100.00 for within area students, $175.00 for all out-of-area students, and $200.00 for those students who had transferred to Phoenix Union High School after starting at some other high school in the area. This data is based on only 24 out-of-area students and 20 within area students as project records were not available before Calendar 1960. Over the six-year period from 1960 through 1965, the students earned a total of $11,194.07 in individual agricultural projects, $328.06 in

cooperative farm projects, and $6,899.62 in approved agriculture and related work experience, making a total of $18,093.69. Since the students spent varying lengths of time in approved projects, all data for individuals was reduced to annual average profit for comparability.

It is thought by some that success in agriculture projects measured by profit will be followed by success in later life. Table 9, a comparison of present occupation against earnings in agriculture projects

TABLE 9

OCCUPATION OF FULL-TIME EMPLOYED AND OTHER ACTIVITY STATUS BY AVERAGE YEARLY AMOUNT EARNED IN AGRICULTURE PROJECTS AND BY AVERAGE AGRICULTURE GRADE POINT AVERAGE

OCCUPATION	Earned under $192	Earned over $192	Project INA	Average Agriculture Grade Point		
				Under $192	Over $192	INA
Agriculture	1	3		2.8	3.4	
Prof. and Mgr'l.	1	1	1	2.6	4.0	3.0
Clerical & Sales	1	1		2.7	2.4	3.0
Service	2		1	3.6		3.3
Skilled	5		1	3.2		3.8
Semiskilled	3	2		3.4	3.6	
TOTAL Full-time Employed	13	7	3	3.2	3.4	3.4
Student	6	3	1	3.6	3.7	2.8
Military Service	5	4	1	3.0	3.6	3.6
Other*	1			3.1		
TOTAL	25	14	5	3.3	3.5	3.3
AVERAGES						
Full-time employed	$ 72.48	$384.65		3.2	3.4	3.4
Students	28.37	488.77		3.6	3.7	2.8
In Military Service	106.43	420.93		3.0	3.6	3.6

*Not in labor force at present

among the 44 former students responding to the survey reveals no discernible pattern, though three or four who earned more than the average yearly profit of all students studied ($192.00 per year) were employed full time in agriculture. Table 9 does illustrate that the profit measure did appear

to have some relationship to grades in agriculture; however, as those who made more than the average profit had a grade point average of 3.5 in all agricultural courses; those who made below the average annual profit had a grade point average of 3.3 and those who either had no project or records were not available on them averaged 3.3. The addition of this data for the 11 not responding to the survey makes this even more apparent, as all students averaging less than $192.00 per year averaged 3.5 and those on whom project data was not available had a combined grade point average 2.9.

Success in projects seems to depend to some extent at least on the student's financial resources. One student stated in the follow-up study that he could not afford to buy into projects and lost interest in agriculture. Inspection of the details of project data indicates that $1,000.00 or more was invested by some students in farm shares, cattle, or land rental. Students not having large sums of money to invest made small profit on small investments in rabbits, pigeons, or fractions of an acre of land. These students may have been proportionately more successful than the "big operators", but data on the amount invested for the profit obtained was not available and this could not be followed up.

In summary, the vocational agriculture program is very effective for the small group of students who take two years or more in agriculture. It apparently fosters ambition to get further education and to work, once school is completed. Several of the former students who were in military service or working in an occupation with which they were dissatisfied had strong intentions to enter college at the earliest possible time and several expressed the hope of owning a farm or ranch at some time in the future even though they might earn their living in

some other line of work. The choice of agriculture in high school was reinforced through their educational experience and the will to reach ambitious but attainable goals seems to be deep-seated.

The vocational agriculture program has little impact on a large number of students and much expensive training is wasted on students who only "sample" agriculture for one reason or another.

Recommendations for improvement and economy in the course are as follows:

1. Institute more productive selection techniques for enrollment in vocational agriculture.

2. Review the requirements of Federal legislation covering funding for vocational agriculture with counselors in the entire school system.

3. Give more publicity to earnings of agriculture students in connection with their projects. Practically everyone knows about the Junior Achievement program, and a large number are aware of the cooperative school work programs in office work, distributive education, and industrial trades. It is reasonable to believe that the general public has no idea of the earnings in agriculture projects and approved work experience. More publicity would help the public to understand the value of the program and case history publicity on approved work should open up more opportunities for cooperative school-work projects. This would also provide greater opportunity for those who could not afford to buy animals or lease land to engage in approved work experience projects.

SECTION II

JOB OPPORTUNITIES IN AGRICULTURE AND AGRICULTURE RELATED OCCUPATIONS

The cooperative nature of this report is typified by the ecomomic survey of employment opportunities conducted by the Arizona State Employment Service. This survey was undertaken to identify the emerging requirements in occupations for which vocational agriculture or training in agricultural -related occupations may prepare high school terminal students.

These data, together with information gleaned from the reports of the United States Bureau of Census, personal interviews conducted with the Farm Bureau, cattlemen, Salt River Water Users Association, major growers, agricultural distributors, farm implement, chemicals and supply manufacturers and distributors, and employers' association, such as, the Associated Landscape Contractors of American and Professional Associations including the America . Landscape Architects Association, etc, were combined with information available from sustantiating research for Manpower and Development Training Act training programs, and the considerable research conducted by the University of Arizona, College of Agriculture and its' affiliated agencies. Information was gathered and analyzed on the occupations for which demands currently exist; on the occupations for which demands seem to be increasing at the greatest rate; on the skill and training content of these occupations; on the suggested curricula that might be offered at a high school level program for these occupations; as well as on a number of other facets and aspects related to such programs.

The following pages present the report of the Employment Service in its' entirety.

OCCUPATIONAL-INDUSTRY STUDY
AGRICULTURAL AND AGRICULTURAL SERVICES
MAY-JUNE 1966

This study of occupations in the agricultural and agricultural services industries is one phase of a large, long-range project designed to determine the occupational make-up of Arizona's employed work force. Data related to the occupations of the employed is regularly available only once every ten years when the federal censuses are conducted. In a rapidly changing economy such as Arizona has experienced in recent years, up-to-date occupational information is essential for realistic planning for the efficient development and utilizations of the State's manpower (and womanpower).

Studies such as this one provide the only source of quantitative occupational information during intra-census periods. Consequently the data obtained from these studies have been of great assistance in providing answers to questions submitted to the Arizona State Employment Service by training institutions, industrial development groups, and others interested in manpower development.

As a case in point: The Agency was asked to conduct this study of agricultural employment during May and June of 1966, a period of low employment for the industries surveyed. More information could have been obtained had the project been delayed until a season of high or average employment occurred. However, the need for information on which to base curriculum planning for the 1966 Fall semester was so pressing that it was considered expedient to not wait until more inclusive information could be obtained.

STUDY SCOPE AND METHODOLOGY

This phase of the Occupational-Industry Study was designed to include those establishments in Maricopa County with permanent or full-time employment and which are classified by the Standard Industrial Classification (SIC) Manual as Farming (major groups 01 and 02), Agricultural Services, Hunting, and Trapping (major group 07), Forestry (major group 08), and Fisheries (major group 09). The records of the Arizona State Employment Service, Farm Division, were used to obtain the listings from which the Study sample was selected. These records are reliably estimated to include 90 to 95 percent of all establishments within the Study scope. The listings revealed that Maricopa County establishments within the scope of the Study are limited to major groups 01 ond 07 (commercial farms and agricultural services).

This universe of farms and agricultural service firms was stratified by four-digit SIC class and by six categories of employment size. Data relating to employment size was also obtained from Farm Division records. Samples were selected from each employment size category within each four-digit class. From the 15 four-digit classes represented in the universe, 48 samples were thus obtained. Since most of the employing units in the universe had less than 50 employees, most of the SIC classes included four or less size categories and only one included all six. Sample sizes varied with size and number of employing units within each universe segment. If a segment

contained only one or two employing units, all were included in the sample. If a segment contained 100 or more very small employing units only 4% or 5% were included in the sample.*

The Study data were collected during the latter part of May and the first part of June 1966 by interviews with employers at the locations of the sample establishments. The data requested included for each "nonseasonal" occupation employed, the current employment, current female employment, expected employment 12 months hence, the number of persons hired during the past 12 months to replace workers who left the area or the occupation for which they had been hired, the number of persons receiving on-the-job training, and the number of job vacancies.** The persons interviewed were also asked to express opinions regarding vocational training for agricultural employment and to suggest areas of training which might be included among vocational agriculture courses.

* The term "employing unit" is used because both farms and agricultural service firms are frequently operated at more than one location by a single employer or company which does not maintain separate employment records for each installation.

** Based on past Employment Service experience with farmers, the current employment data obtained may be accepted as accurate (within the limitations imposed by varying definitions of "permanent." See footnote on page 26) However, many farmers are reluctant to commit themselves as to future employment and state that they have no control over factors which exert strong influences on their employment needs. When employment 12 months hence was not obtainable, current employment was substituted. This resulted in a very small over all difference between current and "12 months hence" data. Replacements must be interpreted as "turnover" because farmers generally have no knowledge of the plans of employees who leave. On-the-job training on farms is usually limited to close supervision while an employee is learning the tasks of a job. Job vacancies represent those openings for which active recruitment was being conducted at the time of the survey.

As sample data were received, some adjustments were made in the basic universe data as originally obtained from Farm Division records. Establishments found to be no longer in business or operating without any nonseasonal employees were removed. In some cases information obtained during the interview resulted in an employing unit being moved from one SIC classification to another.

From these revised data, inflation factors were developed for each of the 48 samples. These factors reflect the relationship between the total employment for each sample and the total employment for the universe segment it represented, based on the original data obtained from Farm Division records. The following report provides the estimates of employment by occupation which resulted when these factors were applied to the occupational data obtained for each of the 48 samples.

FINDINGS

The Study results as presented in Table 10 show that there are approximately 5,100 "permanent" or "regular hired" workers employed by farms, ranches*, and agricultural service establishments in Maricopa County**. Well over half (55%) of these workers are employed by employing units which vary in employment size between 4 and 19 employees. Units of this size comprised almost exactly half (50.1%) of the 687 units within the scope of the Study. One-third (33.2%) of the workers are employed by general farms which are engaged in raising various crops (but are not primarily cotton or vegetable farms). Close to one-fifth (18.5%) are employed by vegetable farms and about one-eighth (12.2%) work for cotton farms. Other types of farms in the area together with their proportions of the employees included in this Study are: Livestock or primarily livestock farms (9.3%), dairy farms (8.8%) fruit farms (3.7%), rose plant farms and general nurseries(7.1%) and general farms raising both crops and livestock (2.0%). Agricultural

* "Dude" ranches are not included in the scope of this Study as they are classed as "service establishments" by the Standard Industrial Classification Manual.

** The Terms "permanent," "full time," "regular hired," and "non-seasonal" are used by farmers to refer to employees who comprise their basic complement of workers. These terms are rather loosely defined and the criteria used for identifying such workers frequently varies between employers and with the purpose for which the information is desired. The interviewers who collected data for this Study accepted each employers's statement as to the number of such workers without attempting to establish any uniform definition of "permanent."

TABLE 10
AGRICULTURAL EMPLOYMENT IN MARICOPA COUNTY BY TYPE OF ESTABLISHMENT

Occupations	Cotton Farms	Fruit & Tree Nut Farms	Vegetable Farms	Dairy & Poultry Farms	Livestock & Primarily Livestock	Primarily Crop & Cash Grain	Crop & Livestock Farms	Horticultural Specialists	TOTAL FARM & RANCH	Cotton Ginning & Processing	Other Agricultural Services	TOTAL AGRICULTURAL SERVICES	TOTAL
PROFESSIONAL & MANAGERIAL			15		4	7	1	3	30	43	22	65	95
Accountants			1						1	7		7	8
Airplane Pilots											5	5	5
Horse Trainers					2				2				2
Purch. Agents & Buyers					2				2		2	2	4
Managers & Officials			14			7	1	3	25	36	15	51	76
CLERICAL	13	7	49	2	31	31	5	7	145	29	19	48	193
Bookkeepers	10	6	33	2	22	22	5	1	101	7	5	12	113
Secretaries					2	3			5		3	3	8
Other Clerical	3	1	16		7	6		6	39	22	11	33	72
SALES			4					7	11				11
SERVICE OCCUPATIONS					4	2	1		7				7
"PRODUCTION" WORKERS	604	179	800	456	342	1527	86	341	4335		67	67	4402
Stock & Crop Managers	3		29	24	3	8		8	75				75
Foremen	90	55	108	33	23	152	5	25	491		19	19	510
Farm Hand Gen. I	225	13	103	16	56	473	9		895		1	1	896
Farm Hand (Spec.) I		79	6	183	142	73	9	8	500				500
Irrigators	97	17	193	20	19	356	11	3	716		6	6	722
Tractor Operator I	96	5	154	12	14	241	12	11	545		18	18	563
Tractor Operator II (Cat)			9			46			55		7	7	62
Farm Hand Gen. II	90	10	95	9	85	160	38	285	772		3	3	775
Farm Hand (Spec.) II	3		103	159		18	2	1	286		13	13	299
SKILLED & SEMISKILLED	7	2	74	6	85	67	9	7	257	102	16	118	375
Ginners										95		95	95
Millers & Batch Mixers					45				45				45
Mechanics & Maint. Men	5	2	29	4	18	44	4	4	110	7	16	23	133
Truck Drivers			45	2	22		5	3	77				77
Other Skilled & Semiskil.	2					23			25				25
LABORERS					9	9			18		2	2	20
TOTALS	624	188	942	464	475	1643	102	365	4803	174	126	300	5103

service firms employ 5.9% of the total.*** Table 10 shows the distribution of current employment by type of employing unit.

About 4,400 of 86% of the total of 5,100 workers included in the Study scope are employees who engage in activities directly related to the production of crops, livestock, or primary dairy products. In addition to field or herd workers, this group includes irrigators, tractor drivers and those managers, and foremen. About 100 or 2% of the total are professional or managerial people. Most of these (76) are business managers or office managers but accountants, purchasing agents, airplane pilots, and horse trainers are also included. More than two-thirds of this group are employed by agricultural service firms. Some 375 or about 7% of all employees included in the survey are mechanics, machine operators and other skilled or semi-skilled workers who engage in activities requiring skills not exclusively related to crop or livestock tending. They include truck drivers, and workers skilled in construction trades as well as farm equipment repairmen, gristmill operators, and ginners.

Clerical workers comprise about 200 or 4% of the total. More than half of these workers are bookkeeping machine operators. About four-tenths of 1% are laborers engaged in work requiring minimal training. Sales people total 11 or two-tenths of 1%. A little more than one-tenth of 1% are classed as janitors, charwomen, or watchmen.

***Cotton gins accounted for 175 of the 302 employees of agricultural service firms. However, the Study was conducted during the "off" season and it is likely that more employees would be reported as "full time" if the Study were reconducted during the ginning season.

Those occupations which occur in greatest number are farm hand, irrigator, and tractor operator. Together these occupations account for more than 3,800 or about 75% of all employment included in the Study. They also account for close to 93% of the replacements (turnover) and nearly 83% of the job vacancies.

Data for four types of farm hands are presented in Table 11. The designation Farm Hand I is used to refer to workers who are sufficiently experienced to be able to function with only general supervision. There are nearly 1,400 of these workers. Almost 900 General Farm Hands capable of handling a wide variety of tasks associated with the raising of various crops or types of livestock. Turnover (replacements) for Farm Hands General I totaled 375 or (39.8%) of current employment in this occupation.

The remaining Farm Hands I are classified as specialty farm hands and are primarily skilled in work related to a particular type of farm. Their specific titles may be Farm Hand Dairy, Farm Hand Citrus, Farm Hand Fruit, Farm Hand Poultry, Farm Hand Livestock, Range Hand, Cowpuncher, Sheepherder, Nurseryman, Stableman, or Gardener. Table 10 shows the distribution of current employment by type of employing unit. The distribution of specialty farm hands by specific title may be inferred from the type of farm by which they are employed. Turnover (replacements) for Farm Hands (spec.) I totaled 173 or 34.6% of current employment in the occupation.

TABLE 11

AGRICULTURAL AND AGRICULTURAL SERVICE OCCUPATIONS
IN MARICOPA COUNTY

Occupations	Current Employment	Female Employment	Employment 12 mos. Hence	Replacements	On-The-Job Training	Vacancies
PROFESSIONAL & MANAGERIAL	95	8	76	0	0	0
Accountants	8	0	1			
Airplane Pilots	5		5	0	0	0
Horse Trainers	2	0	2	0	0	0
Purch. Agents & Officials	4	0	4	0	0	0
Managers & Officials	76	8	76	0	0	0
CLERICAL						
Bookkeepers	113	54	110	8	0	0
Secretaries	8	7	8	2	0	0
Other Clerical	72	32	69	8	0	0
SALES	11	3	13	3	0	0
SERVICE OCCUPATIONS	7	3	5	3	0	0
"PRODUCTION" WORKERS	4402	77	4425	1495	13	35
Stock & Crop Managers	75	0	77	5	0	2
Foremen	510	3	514	22	0	0
Farm Hand Gen. I	896	0	895	357	0	14
Farm Hand (Spec.) I	500	6	514	173	0	2
Irrigators	722	0	734	426	5	8
Tractor Operator I	563	0	568	240	3	2
Tractor Operator II (Cat)	62	0	62	12	0	0
Farm Hand Gen. II	775	55	757	167	0	7
Farm Hand (Spec.) II	299	13	304	93	5	0
SKILLED & SEMISKILLED	375	0	324	65	0	5
Ginners	95	0	95	8	0	0
Millers & Batch Mixers	45	0	37	17	0	0
Mechanics & Maint. Men	133	0	122	9	0	1
Truck Drivers	77	0	61	20	0	1
Other Skilled & Semiskil.	25	0	29	11	0	3
LABORERS	20	0	20	3	0	0
TOTALS	5103	184	5082	1587	13	40

The designation Farm Hand II is used to identify those workers who perform simple tasks under close supervision. There are about 1,079 of such workers in the area studied. Turnover (replacements) among General Farm Hands II totaled 167 or 21.5% of the current employment in the occupation (775). Turnover among Farm Hands (spec.) II totaled 93 or 31.1% of current employment (299).

The study revealed 722 workers classed as Irrigators. Irrigating is an activity sometimes performed by workers classed as Farm Hand I. The title of Irrigator is used when this work is deemed to be a worker's primary activity. Among workers classed as Irrigators the turnover (replacements) totaled 426 or 59% of current employment in the occupation.

Part of the work of a Farm Hand I may also include tractor operation. Workers who drive tractors as their primary tasks are given the title Tractor Operator I or Tractor Operator II, the latter title being used to refer to operators of "caterpillar" or crawler-type equipment. There are 625 workers in the Study area who are classed in this category, 62 of whom are Tractor Operators II. The turnover (replacements) of Tractor Operators (both I and II) totaled 252 or 40% of current employment.

About one-third (35.5%) of the 375 workers classed as skilled or semiskilled in Table II are mechanics, repairmen, or maintenance men. Farm mechanics and farm equipment mechanics together totaled 97.

These two titles are almost interchangeable. The Farm Mechanic may also do repair work on farm structures in addition to repair work on farm structures in addition to repair and maintenance of machinery. Turnover for all skilled and semiskilled workers totaled 65 or 17.3% of current employment in these occupations. The ratio of turnover to current employment was lowest for the mechanics, repairmen, and maintenance men (6.7%).

COMMENTS REGARDING VOCATIONAL EDUCATION FOR AGRICULTURAL EMPLOYMENT BY MARICOPA COUNTY EMPLOYERS

The responses obtained when agricultural employers were asked to comment on vocational education reflected considerable interest in this subject. Only 35 of the 199 persons contacted declined to comment, and 16 of these were engaged in providing agricultural services rather than farm operation. Among the farmers, 145 or 88% had some comment to make.

The types of training most often referred to concerned farm machinery and equipment operation, maintenance, and repair. A need for training in equipment operation and maintenance was expressed by 54 persons. Training in mechanics, welding, and other repair skills was a subject of 43 comments. Some respondents indicated a need for training in both of these areas and are included in both groups.

Other comments were related to agricultural science and technology (Animal Husbandry, Horticulture, and use of soils, water, and agricultural chemicals).

A sizeable group of respondents (39 or 25.8% of all persons offering comments) felt that on-the-job training was essential to adequate preparation for farm work. Some of these persons felt that this was the only type of training needed, while others held that classroom work should be supplemented by on-the-farm experience.

TABLE 12

EMPLOYER COMMENTS CONCERNING
VOCATIONAL TRAINING FOR AGRICULTURAL OCCUPATIONS

Comment Categories	Farm or Ranch Operators	Agricultural Service Operators
No Comment	19	16
Farm Machinery Operation & Maintenance	52	2
Farm Machinery Mechanics (including repair and welding)	39	4
On-Job Training required for any farm job	34	5
Horticulture: soils, fertilizers, insecticides, plant growth and agrochemicals	23	1
General Farm Operation & Management	16	0
General Agriculture: growing crops and raising livestock	13	3
Animal Husbandry: raising livestock, poultry, breeding horses	12	0
Irrigating	9	0
Bookkeeping & other farm record keeping	8	2
Recommended no vocational training for Agriculture	4	0
Gardening & Landscaping	3	0
Automated Milking	3	0
Cotton Ginning	0	3
Miscellaneous: English, sense of responsibility, farm law, honesty	7	2
Total Comments	242	38
Total Employers Contacted	164	35
Estimated Total Employers in Study Scope*	657	71

*Agricultural and agricultural service establishments which Arizona State Employment Service records indicate are likely to have "regular" or "permanent" (nonseasonal) employees in Maricopa County.

Four respondents felt that vocational agriculture should not be taught at all because it would be a disservice to encourage young people to enter a field in which opportunities are declining.

Table 12 shows the distribution of comments by category and source, together with estimates of the total number of establishments within the Study scope and the number of employers contacted.

It should be restated that the report of the Employment Service reproduced in the preceding pages covers only production agriculture (commercial farms) and Agricultural Services. There are, of course, job opportunities related to vocational agriculture and horticulture in other industries in Maricopa County. Within the manufacturing industries, firms engaged in meat products manufacturing, primarily meat and poultry packing, employ over 750 persons in the county. Opportunities in this industry tend to expand slightly; however the movement of pen-feeding operation out of the urban area may call for a subsequent movement of the packing plants. The Dairy Products industry employs over 1000 persons in the county, including a large number of route men and truck drivers. There are, however, many production manufacturing jobs in this industry in which an employee could benefit from prior vocational agricultural education. Other job opportunities in manufacturing might be found in the Grain Mill, Products firms (employment of about 200) and in the Miscellaneous Food Preparations and Kindred Products firms (employment of about 1000). This latter group includes the Cottonseed Oil Mills which provide the majority of the opportunities in this industry in Maricopa County.

Non-manufacturing opportunities would seem to be concentrated in the Wholesale and Retail Trade industries. This would include wholesale distribution of Farm Machinery and Equipment and Agricultural Chemicals, concentrated in a few smaller firms (employment of less than 50 in each firm). Retail Trade opportunities are concentrated in Farm and Garden Supply stores (which employ about 500 persons in total in the county) and in Florists shops (which generally employ fewer than

20 persons in each establishment). A few opportunities might be found in Agricultural Credit and Agricultural Insurance establishments.

In the case of the agricultural-related occupations, job requirements typically include preparation beyond that offered in vocational agriculture programs. Most commonly, this would be in the general field of sales (distributive) education and/or business (office) education. This suggests that a merging of programs at the high school level might be investigated.

Results of the study conducted by the Arizona State Employment Service indicate that opportunities in on-farm and agricultural services industries are declining rather than increasing, as a whole. Replacement figures were low in all occupations except production occupations, many of which are learned on the job or take a comparatively short time to learn, such as Irrigator.

Operation of tractors did have fairly high replacement figures, but indicated very little expansion in the future. Many employees stated that education and on-the-job training were needed for farm equipment mechanics and repairmen, but replacement figures were low, total employment was only 133 and the outlook was for a loss of ten positions over the next 12 months--so the figures do not bear out the stated need.

Implications of this study are that the traditional vocational agriculture program for farm operation or on-farm agricultural work is not needed in Maricopa County.

Unfortunately agricultural related business; such as florist, farm and garden stores, grain, hay and feed stores, agricultural real estate and finance firms, farm equipment dealers and agro-chemical industries were not covered by the survey and these are the types of business which expect to grow in many areas where agricultural-related employment opportunities have been studied.

It is recommended that further effort be made to discover the employment potential in these related businesses in order to tailor the vocational agriculture program more closely to the needs of the community. If employers are contacted or recontacted for this information, they should also be sounded out for their willingness to provide related school-work experience to supplement the present agricultural projects which are a part of the present program.

More data concerning opportunities in agricultural related businesses might well solve the dilemma of "where to offer vocational agriculture". An education program tailored to meet the needs of florists, implement dealers, farm and garden stores, etc., would be using the businesses for work experience and obviate the necessity for expensive agricultural laboratories. These types of courses could be offered in several schools.

One physical location would still be required for farm machinery operation and repair before putting students into related work experience but most other laboratory practice could be accomplished in related work situations.

The program envisioned would be much like the present distributive education program and other school work-cooperative programs in clerical and industrial occupations. This might change the content of horticulture courses to floricultural chemistry and salesmanship courses for farm equipment or garden supplies.

A survey of these types of businesses might well be done under the auspices of the vocational agriculture department so that cooperative-work experience situations could be developed at the same time. With certain knowledge of employer needs and work-school experience available, curriculum content could be confidently tailored for employment opportunity.

It is recommended that further effort be made to discover the employment potential in these related businesses in order to tailor the vocational agriculture program more closely to the needs of the community. If employers are contacted or recontacted for this information, they should also be sounded out for their willingness to provide related school-work experience to supplement the present agricultural projects which are a part of the present program.

More data concerning opportunities in agricultural related businesses might well solve the dilemma of "where to offer vocational agriculture". An education program tailored to meet the needs of florists, implement dealers, farm and garden stores, etc., would be using the businesses for work experience and obviate the necessity for expensive agricultural laboratories. These types of courses could be offered in several schools.

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SECTION III

IDENTIFICATION OF PERSONAL AND FAMILY CHARACTERISTICS

The personal and family characteristics of male students in all high schools of the Phoenix Union High School System were collected and analyzed for comparison with those of the former vocational agriculture boys in an attempt to identify the schools with similar characteristics as one factor in selection of the school best suited to offer vocational agriculture. A five percent sample of all boys currently in school was chosen randomly and the following characteristics were recorded:

1. Date of entry
2. Date of birth
3. Last school attended
4. State of birth
5. Intelligence score
6. Street address
7. Grades in English
8. Grades in mathematics
9. Relationship of student to male parent
10. Occupation and employer of male parent
11. Relationship of student to female parent
12. Occupation and employer of female parent
13. Number of children in family
14. Age rank of student among children in family
15. Age spread of children in family
16. Presence or absence of telephone in home
17. Number of address changes since starting high school
18. Extra curricular activities of student

The 5% sample was taken from attendance records, grade records, or student index. The sample size for each school was as follows:

Alhambra	76	Central	61	North	54
Camelback	68	East	40	Phoenix Union	99
Carl Hayden	54	Maryvale	80	South Mountain	56
West	67				

Access to all records was made available in nine high schools. As was anticipated, many items of information were not recorded. For example, South Mountain High School does not give I.Q. tests until the sophomore year and I.Q.'s on only 27 of the 56 in the sample were available. Due to the priority of another experimental project, complete records were not available at West High School on all students and family information was available on only 25 of 67 in the sample at this school. Only a few records showed education attained by parents and this would not be included. On the whole, however, most of the desired information was obtained directly from records or from couselors who assisted with the work.

In only a few instances were the characteristics distributed in even assemblance of the classic normal distribution in individual schools. Data for the entire system did approach normal distribution, though all distributions were somewhat skewed and grade-point averages in English and mathematics were bimodal as well as skewed. Charts II, III, IV and V graphically illustrate these deviations from normal.

A total of 36 items were developed for comparison of personal and family characteristics with those of the former vocational agriculture students. Table 13 is a summary of those characteristics. Detailed data for the various schools is included in the supplemental tables

TABLE 13

SUMMARY OF PERSONAL, SOCIAL, AND ECONOMIC CHARACTERISTICS AMONG BOYS IN PHOENIX UNION HIGH SCHOOL SYSTEM BY SCHOOLS AND AMONG FORMER VOCATIONAL AGRICULTURE STUDENTS

Characteristics	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	Total for System	Former Voc. Agri. Students
1. Median IQ Stanine	5.5	6.6	5.2	6.0	5.8	6.3	6.4	4.6	5.6	6.6	6.0	5.6
2. Median English Grade Point Average	2.3	3.2	2.4	3.1	3.0	2.9	2.5	2.0	2.4	3.1	2.7	2.2
3. Median Math Grade Point Average	2.3	2.9	2.6	2.7	2.1	3.0	2.3	2.2	2.7	3.1	2.7	1.9
ACHIEVEMENT-ENGLISH												
4. Overachieved	1%	11%	11%	6%	23%	4%	2%	9%	15%	10%	8%	6%
5. Underachieved	47%	20%	48%	48%	30%	39%	53%	49%	37%	34%	41%	47%
6. Expected Achievement	52%	69%	41%	46%	47%	57%	45%	42%	48%	56%	51%	47%
ACHIEVEMENT-MATHEMATICS												
7. Overachieved	6%	9%	12%	6%	5%	8%	6%	16%	15%	10%	9%	15%
8. Underachieved	28%	36%	30%	63%	55%	29%	61%	45%	30%	27%	40%	53%
9. Expected Achievement	66%	55%	58%	31%	40%	63%	33%	39%	55%	63%	51%	32%
10. Last School Arizona Elementary	80%	87%	84%	85%	87%	76%	77%	79%	85%	82%	82%	67%
11. Last School in Another State	12%	12%	6%	3%	0	16%	10%	8%	6%	12%	9%	5%
12. Born in Arizona	27%	38%	58%	56%	45%	18%	47%	55%	55%	32%	42%	49%
13. Live with Both Parents	77%	78%	76%	86%	90%	76%	61%	53%	75%	69%	66%	66%
14. Median # of children in Family	2.7	2.4	2.9	2.6	2.8	3.2	3.2	4.3	3.6	2.2	3.1	2.7
15. Students Who are Oldest Child	47%	34%	41%	27%	47%	49%	42%	28%	41%	24%	39%	42%
16. Families on Welfare	0	0	4%	0	0	0	0	7%	2%	0	1%	2%
17. Both Parents Work	38%	27%	26%	24%	34%	46%	33%	18%	27%	35%	32%	38%
18. Mothers Work	42%	37%	30%	28%	40%	50%	58%	36%	31%	53%	42%	48%
19. Families Supported by Mother	6%	10%	4%	4%	6%	4%	25%	18%	4%	18%	10%	10%
20. Mothers in White Collar Jobs*	57%	80%	65%	78%	82%	63%	65%	12%	46%	84%	60%	43%

*White collar jobs include P.T.& K., managerial, clerical and sales.
(see note on next page)

TABLE 13 (cont.)

Characteristics	ALHAMBRA	CAMELBACK	CARL HAYDEN	CENTRAL	EAST	MARYVALE	NORTH	PHOENIX UNION	SOUTH MOUNTAIN	WEST	Total for System	Former Voc. Agri. Students
21. Mothers in Service Occupations	30%	15%	20%	8%	9%	17%	35%	59%	33%	7%	26%	43%
22. Mothers in Clerical Occupations	35%	15%	47%	55%	55%	40%	20%	4%	13%	45%	30%	14%
23. Mothers in P.T.& K** Occupations	11%	45%	0	15%	18%	11%	45%	4%	20%	13%	18%	10%
24. Mothers in Service Industry	22%	9%	60%	56%	20%	28%	37%	64%	25%	19%	33%	24%
25. Mothers in Manufacturing	13%	26%	10%	0	20%	19%	10%	20%	19%	19%	17%	19%
26. Mothers in Government	22%	36%	0	0	10%	21%	25%	20%	18%	26%	18%	25%
27. Mothers in Trade Industry	30%	18%	20%	33%	20%	25%	5%	8%	38%	31%	21%	10%
28. Fathers in White Collar Jobs	40%	80%	31%	82%	46%	44%	66%	14%	18%	71%	48%	15%
29. Fathers in Skilled Jobs	50%	18%	40%	10%	32%	42%	26%	34%	43%	18%	32%	57%
30. Fathers in Agricultural Occupations	2%	0	0	0	9%	2%	0	10%	6%	0	3%	14%
31. Fathers in Manufacturing	35%	30%	26%	11%	26%	24%	19%	8%	26%	32%	24%	28%
32. Fathers in Government	13%	11%	16%	14%	21%	22%	20%	22%	14%	11%	17%	31%
33. Fathers in Agricultural Industry	0	0	0	0	4%	3%	0	8%	7%	0	2%	16%
34. Fathers in Construction	7%	14%	21%	5%	17%	9%	22%	12%	19%	11%	13%	16%
35. Fathers in Service Industry	11%	16%	5%	24%	4%	11%	14%	21%	5%	21%	13%	9%
36. Fathers in Trade	19%	16%	19%	19%	13%	22%	14%	16%	12%	14%	17%	9%

**P.T.& K.: Professional, Technical and Kindred Occupations

Note: All data based on statistical sample of student records. Percentages in lines 19 through 36 are based on numbers employed.

CHART II

PERCENTAGE DISTRIBUTION OF
I.Q. SCORES AMONG BOYS
PHOENIX UNION HIGH SCHOOL SYSTEM
MARCH, 1966

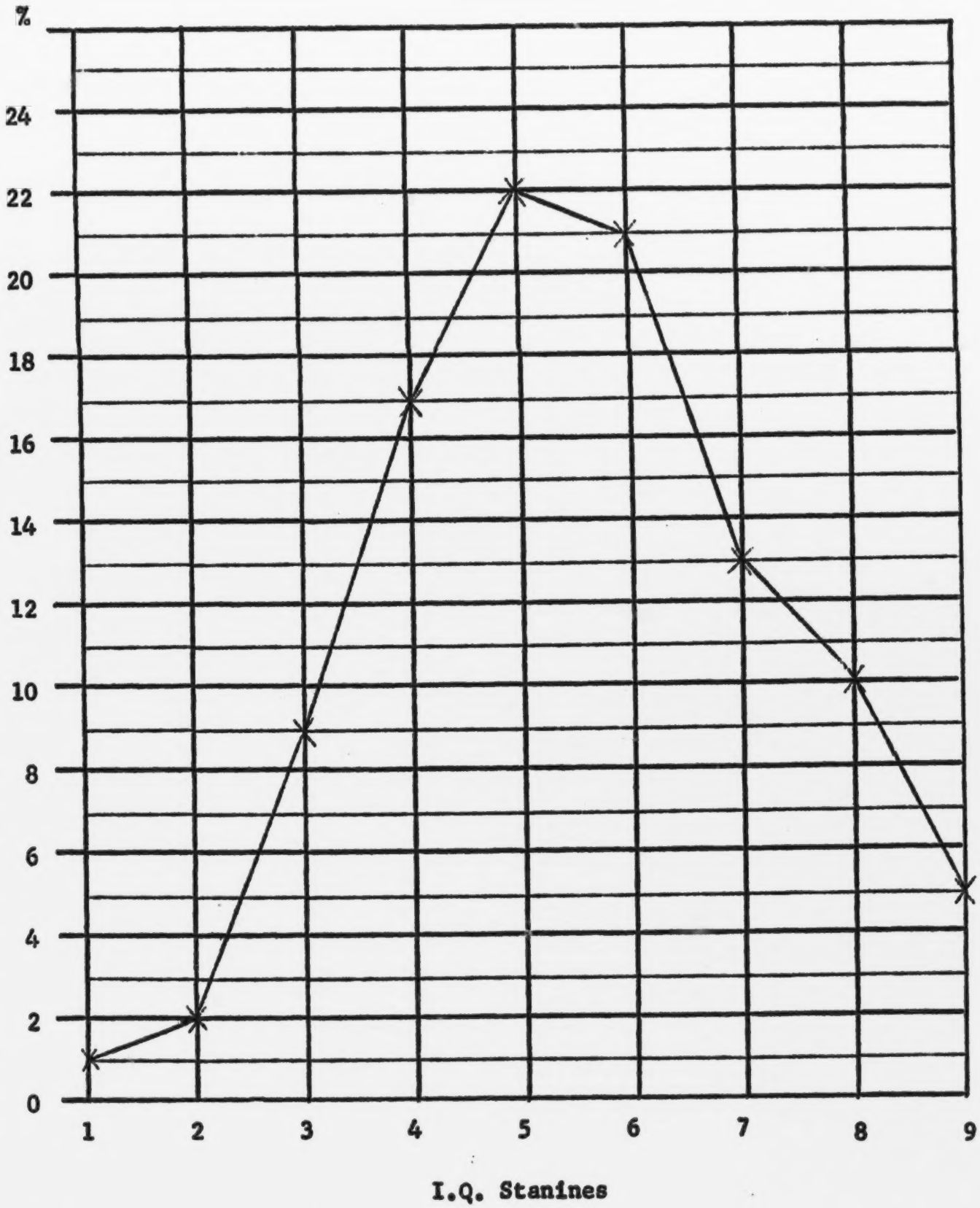


CHART III

NUMBER OF CHILDREN IN FAMILY
PERCENTAGE DISTRIBUTION

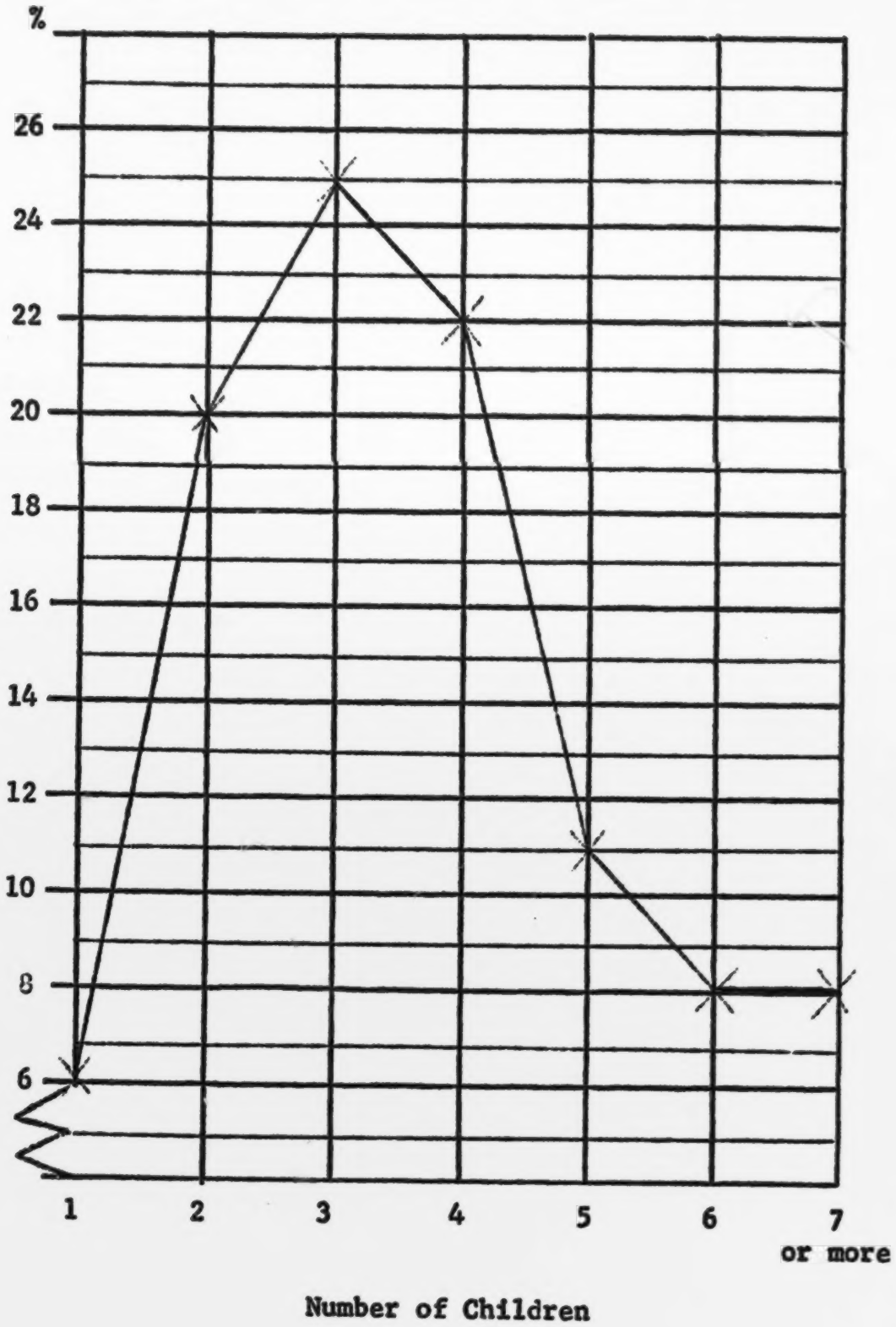


CHART IV

ENGLISH
PERCENTAGE DISTRIBUTION OF BOYS' GRADES

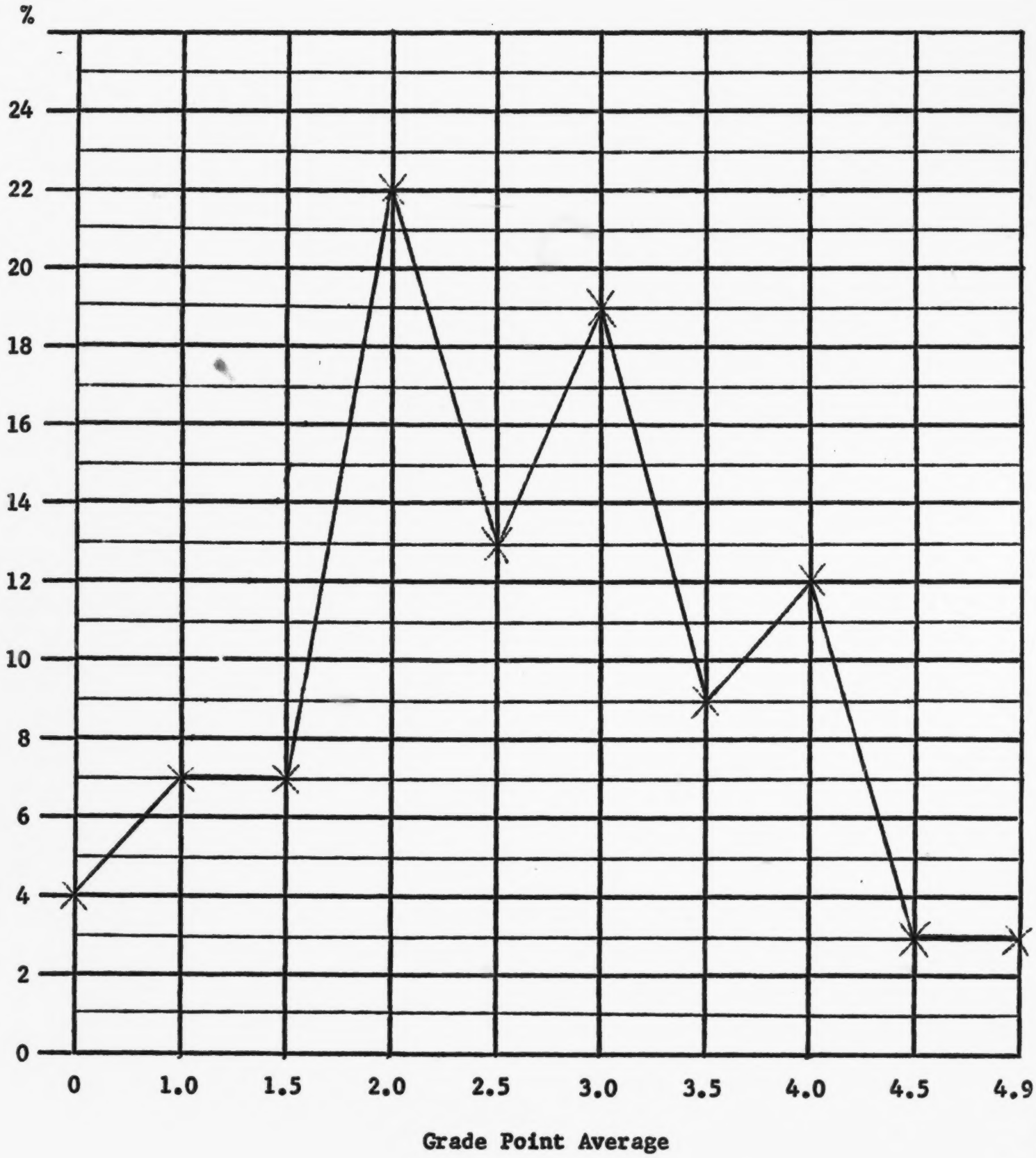
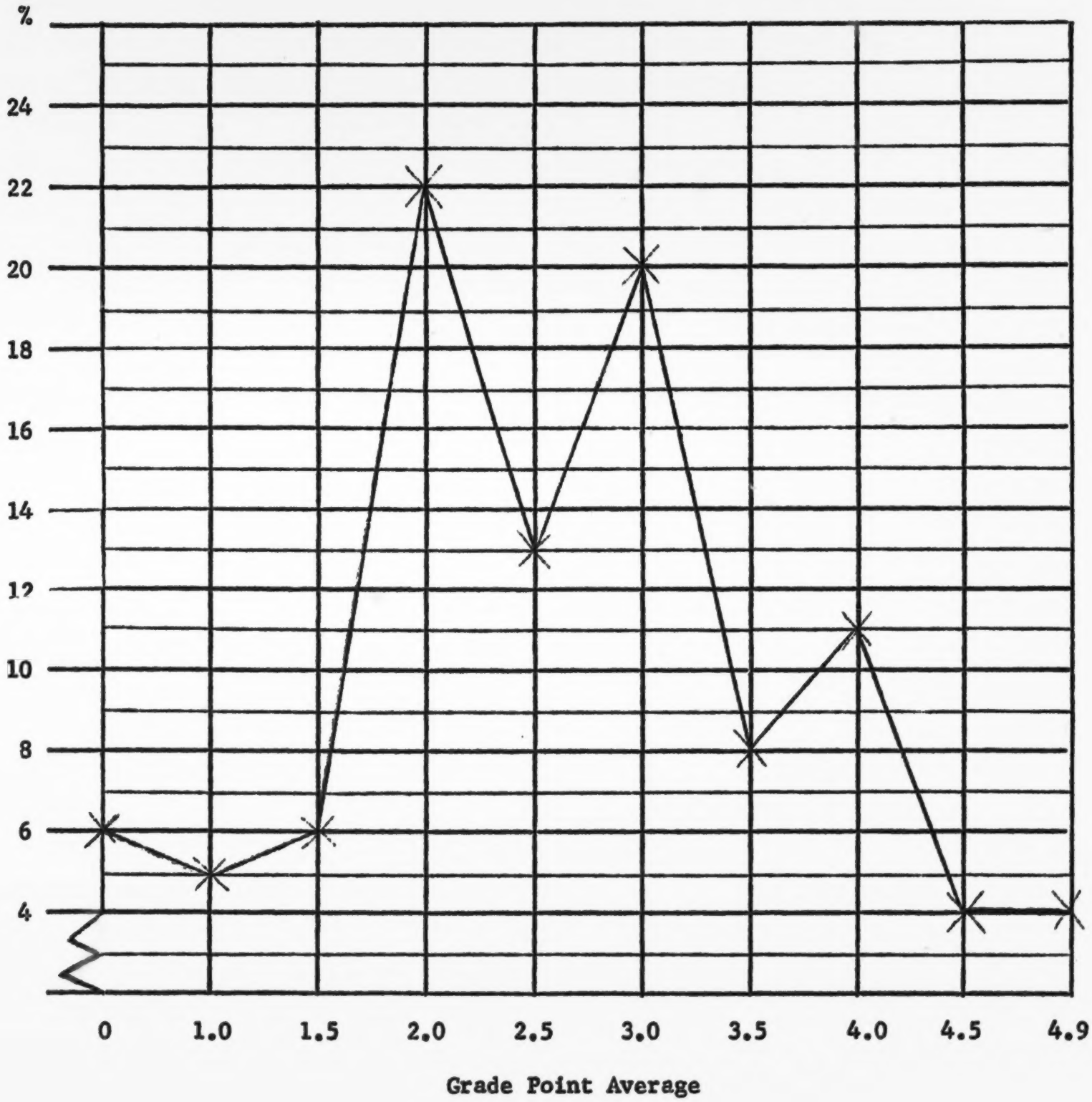


CHART V

MATHEMATICS
PERCENTAGE DISTRIBUTION OF BOYS' GRADES



attached as a portion of this report. Points of closest comparison with the various schools in the system are as follows:

Vocational Agriculture Student		High School with Similar Median or Percent	
1. Median I.Q.	5.6	South Mountain (Alhambra 5.5)	5.6
2. Median English Grade-Point Average	2.2	Alhambra	2.3
3. Median Mathematics Grade-Point Average	1.9	East	2.1
Achievement:			
4. English over-achieved	6%	Central	6%
5. Under-achieved	47%	Alhambra	47%
		Carl Hayden	48%
		Central	48%
6. Expected	47%	East	47%
		Central	46%
		South Mountain	48%
Mathematics:			
7. Over-achieved	15%	South Mountain	15%
		Phoenix Union	16%
8. Under-achieved	53%	East	55%
9. Expected	32%	North	33%
		Central	31%
Last School Attended:			
10. Arizona Elementary	67%	North	77%
11. Elementary or High School in Another State	5%	Carl Hayden	6%
		South Mountain	6%
12. Born in Arizona	49%	North	47%
13. Live with Both Parents	66%	West	69%
14. Median No. Children in Family	2.7	Alhambra	2.7
		Central	2.6
		East	2.8

15. Students who are Oldest Child	42%	North	42%
		Carl Hayden	41%
		South Mountain	41%
16. Families on Welfare	2%	South Mountain	2%
17. Parents Both Work	38%	Alhambra	38%
18. Mother Works	48%	Maryvale	50%
19. Families Supported by Mother	10%	Camelback	10%
20. Mothers in White Collar jobs	43%	South Mountain	46%
21. Mothers in Service Occupations	43%	Maryvale	35%
		South Mountain	33%
22. Mothers in P.T. & K. * Occupations	43%	Alhambra	11%
		Maryvale	11%
23. Mothers in Clerical Occupations	14%	Camelback	15%
		South Mountain	13%
24. Mothers in Service Industry	24%	South Mountain	25%
		Alhambra	22%
		Maryvale	19%
		South Mountain	19%
		West	19%
26. Mothers in Government	25%	North	25%
		West	26%
27. Mothers in Trade	10%	Phoenix Union	8%
28. Fathers in White Collar Jobs	15%	Phoenix Union	14%
29. Fathers in Skilled Jobs	57%	Alhambra	50%
30. Fathers in Agriculture Occupations	14%	Phoenix Union	10%
		East	9%

* Professional technical and kindred occupations

31.	Fathers in Manufacturing Industry	28%	Carl Hayden East South Mountain	26% 26% 26%
32.	Fathers in Government	31%	Maryvale Phoenix Union	22% 22%
33.	Fathers in Agriculture Industry	16%	Phoenix Union South Mountain	8% 7%
34.	Fathers in Construction	16%	East Camelback	17% 14%
35.	Fathers in Service Industry	9%	Alhambra Maryvale	11% 11%
36.	Fathers in Trade	9%	South Mountain East	12% 13%

South Mountain had the same median or percentage on 4 items, was closest of all schools on 6 items and differed only slightly from closest in 4 items, making it close enough to mention on 14 or 49% of the 36 items. All schools had at least one item the same except Phoenix Union and Carl Hayden and all schools were closest on at least one item. A tabular summary of the same, closest and next closest along with the number of former vocational agriculture students from each school are as follow:

	Same	Closest	Next Closest	Number of Former Vocational Agriculture Students
Alhambra	3	4	2	6
Camelback	1	1	1	2
Carl Hayden	0	2	2	4
Central	1	1	3	2
East	1	4	3	0
Maryvale	1	5	0	0

North	2	3	0	4
Phoenix Union	0	5	1	27
South Mountain	4	6	4	5
West	1	1	1	2
Other	-	-	-	3

From the above table, it would seem that the characteristics of the male student bodies at Alhambra and South Mountain most closely approximate the characteristics of the former vocational agricultural students. Analysis of the items on which these two schools compare closely shows two points in each school on achievement, only .1 difference in median I.Q., 8 similarities on occupation and industry for South Mountain and 4 points at Alhambra. One important similarity at South Mountain was next closest on fathers employed in agricultural industries.

A few comparisons with data developed by the anemical economic and consumer study conducted by the Arizona Republic and Phoenix Gazette* will serve to show that the sample data from the schools was quite reliable when the special nature of our sample data is taken into consideration.

The sample data implies that the youngest populations are in the Maryvale and Alhambra districts. According to the Republic and Gazette study, Maryvale High School District is located primarily in the study District 12 in which the median age of heads of household is 40.0 years compared to 46.1 for the Phoenix Metropolitan area. Only 6% of the heads of households in this district are retired while, 20% of heads of household are retired. Alhambra High School District

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* Inside Phoenix, The Arizona Republic and Phoenix Gazette, 1966.

falls in the Republic and Gazette Districts 5 and 11 which have a combined median age of 42.2 for heads of houselold. While several districts have a lower median age, they are not in the Phoenix Union High School District. In the entire Metropolitan area, only 22% of all wives work, but the high percentage of mothers working in Maryvale (50%) and Alhambra (42%) are from homes where a large proportion of the oldest children are already in high school and all children are likely to be old enough to attend school--a time when mothers normally return to the labor force.

Since the comparison of personal and family characteristics was not conclusive, and no further information could be gleaned from the data originally collected, further evidence was needed to give direction for a choice of physical location for the vocational agriculture program.

SECTION IV

STUDENT INTEREST

One desirable attribute of the location of a program of vocation agriculture would be student interest in agricultural and agriculturally related occupations as a career choice. Counselors' records and personal knowledge of individual students might well be a valid source for determining potential interest in such a program. In order to test this hypothesis, counselors were polled at the Maryvale High School concerning the vocational choice of male students in a randomly selected sample. The sample of male students was the same as that which has been used in other parts of this survey. In no way were these counselors informed that the desired information concerning future vocational choice was related to a study of vocational agriculture.

Information was obtained on the 80 male students in the sample. Of these, counselors were able to provide immediate information on the great majority. In instances where the counselors were not able to provide such information, the student was called in for a brief interview.

Of the 80 students, approximately 20% (15) were undecided as to their future vocational role. This is not surprising in that the sample of students included all classes at the Maryvale High School from freshmen through senior. Forty-six of the 80 students or nearly 60% indicated that they planned to attend college. In many instances the vocational choice or the choice of specific curricula in college had not been determined. Six of the students indicated that they planned to enter the military service as a vocational choice. Of the 80 students only two expressed a vocational choice that could be considered an agriculture or agriculture-related occupation.

TABLE 14

STATED VOCATIONAL CHOICE OF A SAMPLE OF MALE MARYVALE HIGH SCHOOL STUDENTS

Students Plans or Occupational Choice	Number in Sample	Percent
Military Service	6	7
Undecided	15	19
College	46	58
(Agricultural Related)	(1)	--
(Engineering)	(10)	--
(Science)	(7)	--
(Undecided)	(11)	--
(Miscellaneous)	(18)	--
Craftsman	4	5
Agricultural Related	1	1
Miscellaneous	7	9
TOTAL	80	100

Interestingly enough, four of the students indicated vocational choices in craft occupations (electricians and mechanics) that would suggest that other programs of vocational education are equal to vocational agriculture in student interest. A number of students giving a choice of college level training were interested in technician level occupations such as electronics technicians, draftsmen, etc., that might call for technician or pre-technician vocational training.

The use of counseling records and the knowledge of counselors of the occupational choice of the students has indicated that the male students of Maryvale High School are, with less than two percent exception, not interested in vocational choices of agriculture or agriculturally-related occupations.

It is probable, however, that with a "public relations" campaign relating to the opportunities in occupations in agriculture or agriculturally-related fields the incidence of selection of career choices related to agriculture might very well be increased. However, the impact of any "public relations" campaign could similarly be predicted for any occupation or occupational field.

This test of a source of information has also indicated that counselors and counseling records may very well prove to be a valuable source of data for guidance to the District in determining where the vocational agriculture programs should be offered.

After comparing the personal characteristics of boys in all high schools in the Phoenix Union System with those of the former vocational agriculture students, it was determined that the male student body at South Mountain was most nearly like that of the former students. In order to further test cumulative records of the sample

taken previously at South Mountain were examined for vocational choice. Cumulative records of the sample at Phoenix Union were also examined, since it is the only school in the system now teaching vocational agriculture.

Results of the examination of records at all three schools are tabulated in Table 15 and Table 16. In tha analysis of records at South Mountain and Phoenix Union, if no vocational choice was stated in the counseling record, information on vocational training plans was inferred from the four-year course plan contained in the record. The data, then, for these two schools is not strictly comparable to that from Maryvale, where counselors were consulted. As the talbes show, there was a high proportion of choice of crafts (or skilled trades) among the South Mountain and Phoenix Union Students. The craft choices at Phoenix Union covered a wide variety of occupations with more than one-third (37%) having chosen auto mechanics, 20% woodworking trades, 15% upholstery, and 15% electrical or electronics, including radio and T.V. repair. Well over half (55%) of those choosing crafts at South Mountain selected auto mechanics, with 17% choosing metal trades and 11% electronics.

Maryvale had two choosing agriculture related occupations--one forest ranger and one work in the produce business. South Mountain had only one choosing agriculture related work--ranger--and he was taking a college prep course. The one at Phoenix Union whose four-year course plan included two years of vocational agriculture lived in the South Mountain area. He had started at Phoenix Union to study refrigeration but had changed his major to agriculture. The student at Phoenix Union taking college preparatory work had chosen veterinary medicine.

TABLE 15

VOCATIONAL PLANS OF BOYS IN SAMPLE AT MARYVALE, SOUTH MOUNTAIN AND PHOENIX UNION HIGH SCHOOLS SPRING, 1966

Student Plans or Vocational Choice	Maryvale # In Sample	Maryvale Percent	South Mountain # In Sample	South Mountain Percent	Phoenix Union # In Sample	Phoenix Union Percent	TOTAL # In Sample	TOTAL Percent
Agriculture	--	--	--	--	1	1	1	**
Agricultural Related	1	2	--	--	--	--	1	**
Crafts	4	5	18	32	41	41	63	27
Clerical & Sales	1	1	2	4	4	4	7	3
Service Occupations	1	1	1	2	6	6	8	3
Miscellaneous	5	6	2	4	3	3	10	4
Military Service	6	8	*	--	1	1	7	3
College	47	59	25	45	21	21	93	40
Undecided	15	19	3	5	4	4	22	9
Information Not Available	--	--	5	9	18	18	23	10
TOTAL	80		56		99		235	

* One taking college preparatory for Air Force Academy shown under college.
** Less than one-half of one percent.

TABLE 16

VOCATIONAL PLANS OF COLLEGE BOUND BOYS IN SAMPLE AT MARYVALE, SOUTH MOUNTAIN AND PHOENIX UNION HIGH SCHOOLS SPRING, 1966

Student Plans or Vocational Choice	Maryvale		South Mountain		Phoenix Union		TOTAL	
	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample	# In Sample	Percent of All Boys In Sample
Engineering	10	12	6	11	6	6	22	9
Science	7	9	4	7	1	1	12	5
Law	1	1	2	4	2	2	5	2
Agriculture & Related	1	--	1	2	1	1	3	1
Other	17	21	6	11	4	4	27	12
Undecided	11	14	6	11	7	7	24	10
TOTAL	80		56		99		235	

Note: Other includes such occupations as teacher, accountant, pharmacist, artist, minister and male nurse.

There is very little evidence in the data collected to point to any one school as the logical place to offer vocational agriculture. Only one of the 235 sample boys in the three high schools was actually enrolled in vocational agriculture. A total of five (2%) had chosen a vocation related to agriculture, three of which required college education.

A comparison of the vocational choices of students attending Phoenix Union from other geographic areas with the sample from all three schools show that a higher proportion had chosen crafts (41% compared to 27%); a lower proportion intended to go to college (14% compared to 40%); and that a higher proportion had chosen service occupations (7% to 3%). Only 3% of those attending Phoenix Union from other geographic areas and on whom information was available, had not yet made a vocational choice, while 12% of the others on whom information was available were still undecided.

Interest in vocational agriculture is rather limited as only 165 students in the entire Phoenix Union System are registered this semester. More than half (64%) in agriculture classes now did not voluntarily choose agriculture, as shown in Section VI of this report. Therefore, less than 1% af all boys in the Phoenix Union High School System have chosen to study vocational agriculture.

It is quite possible that vocational agriculture would attract a number of students in any school in which it was offered as has been experienced at Phoenix Union. On the follow-up study, 49% of the boys completing two years or more lived in the Phoenix Union geographic area, but the characteristic sample at Phoenix Union was quite dissimilar from that of the vocational agriculture students. No one high school

service area provided a preponderance of the out-of-area vocational agriculture students, though 21% came from South Mountain.

It is probable that the changing emphasis in the vocational agricultural related businesses would have more bearing on the physical location in which agriculture is taught than past experience. It may be that agriculture related courses can be taught in several schools with related work experience taking the place of expensive laboratories.

The study of opportunities in farming and agricultural services conducted by the Arizona State Employment Service indicates that many employers feel that on-the-job training is essential to adequate preparation for farm work.

Unfortunately florists, farm implement dealers, grain and feed businesses, and several others businesses using agricultural-related occupations, were not surveyed and much of the employment opportunities for youth trained in vocational agriculture will occur in these types of establishments.

The survey does support the need for training in farm equipment operation, as employment of tractor operators was well over 600 with replacements (or turnover) of 250 last year. Employment projections in on-farm occupations overall show a continuation of the trend toward gradual loss in total employment on farms, though limited expansion is anticipated in a few occupations.

SECTION V

SLOW LEARNERS IN AGRICULTURE

Seven students among the group who had two or more years of agriculture had I.Q. stanines below four. The I.Q.'s were as follows: Stanine 1---1; Stanine 2---2; Stanine 3---4.

Those with Stanines of 1 and 2 were all from high school service areas other than Phoenix Union High School. Those with Stanines of 3 were all from the Phoenix Union High School service area.

The student with Stanine 1 I.Q. was from South Mountain High School and his converted grade-point average in agriculuure was 3.5, representing considerable over-achievement. His biggest agriculture grade was 2 and lowest was 3. His grades in English and mathematics had converted averages of 1.5. All of his mathematics was in slow learner classes and 2 of 4 semesters of English were in slow learner sections.

One with Stanine 2 was from South Mountain and one was from North High. Their converted grade-point averages were as follows:

	South Mountain	North
Agriculture	3.0	4.0
English	.43	1.0
Mathematics	.66	2.5
Slow Semesters in English	4	6
Highest English Grade*	4	4 (c)
Highest Agriculture Grade	3	1
Lowest Agriculture Grade	3	3
Highest Mathematics Grade	3 (c)	3

* Grades in specific courses not converted. (c) designates special class for slow learner.

The four students with I.Q. Stanines of 3 had the following converted grade-point averages and highest unconverted grades in English and mathematics:

	#1-	#2	#3	#4
Agriculture	4.5	2.8	3.0	3.3
English	2.5	2.6	2.1	1.6
Mathematics	2.3	1.3	3.0	2.0
Highest Agriculture Grade	1	2	3	2
Lowest Agriculture Grade	2	4	3	4
Highest English Grade	3	3 (c)	1 (c)	4
Highest Mathematic Grade	4	3	2 (c)	4

It can readily be seen that all but one of the group with I.Q.'s lower than Stanine 4 over-achieved in agriculture and that English and mathematics grades were usually either expected or under expectation.

Motivation to study agriculture is probably a very important factor. It seems, from this small group at least, that agriculture is a subject in which slow learners can do well.

Five students in the normal I.Q. range of 4 to 6 Stanines took one or more course in slow learner classes in either English or mathematics or both. Their coverted grade-point averages were as follows:

	#1	#2	#3	#4	#5
Agriculture Average	2.3	2.7	3.1	2.9	3.3
English Average	.67	2.1	1.0	1.0	2.3
Mathematics Average	1.5	2.0	2.5	1.3	2.0

Six students with I.Q.'s not available took slow learner classes in English or mathematics or both. Their converted grade-point averages were as follows:

	#1	#2	#3	#4	#5	#6
Agriculture Average	3.5	3.3	3.3	2.7	3.6	2.7
English Average	2.1	1.2	2.0	0	.63	2.8
Mathematics Average	1.0	1.7	1.0	---	2.0	2.0

All but one of those students with I.Q. not available were from other high school service areas and all five had trasferred from other high schools. Achievement was better in agriculture than in either English or mathematics for those with normal I.Q.'s as well as those with I.Q.'s not available with the exception of one getting 2.7 in agriculture and 2.8 in English.

In these 19 cases, the students did better in agriculture, even though most had to take slow learner classes in English and mathematics. From this evidence, it would seem that agriculture is a suitable subject for slow learners--particularly when they are interested enough and motivated to take four semesters of agricultue.

A large percentage of the new students in agriculture the second semester 1965-66 were registered in one or more slow learner classes and a large proportion were in agriculture apparently not of their own choice. An examination of the achievement in agriculture of these students would provide more conclusive data on the ability of slow learners to achieve in agriculture when it is not necessarily their vocational choice.

SECTION VI

ANALYSIS OF CAUSES FOR UNUSUAL INCREASE IN AGRICULTURAL COURSE ENROLLMENTS AT PHOENIX UNION HIGH SCHOOL SECOND SEMESTER 1965-1966

A list of students new to agricultural courses in the second semester, 1965-1966, from Mr. W. E. Smith of the Phoenix Union High School Vocational Agriculture Department. The list included 114 students--67 boys and 47 girls. There were new students in six agriculture classes being offered. Nearly half (54) were enrolled in General Agriculture; but well over half of the girls (70%) were enrolled in Vocational Agriculture courses.

A random sample including just over half (58) of the total new students was drawn for study of the counseling records and possible personal interview if the records did not contain adequate data for conclusions. Personal interviews were not, however, necessary.

Study of the counseling records indicated quite conclusively that the students themselves had not, except in only a very few instances, chosen to study agriculture. Of 58 records studied, only seven students--five boys and two girls--were shown to have chosen to enroll in an agriculture course. Two of the boys simultaneously enrolled in two agriculture courses during the semester.

Table 17 lists the characteristics of the sample students with respect to their course planning schedules, vocational choices, their success as students and their attendance history. Nearly three-quarters (74%) did <u>not</u> indicate in their four-year planning schedules that any agriculture course was anticipated. More than half of the boys (53%) and 37% of the girls had chosen a vocation <u>not</u> related

TABLE 17

Characteristics of Students Enrolled in Agriculture
for the First Time Second Semester 1965-1966
By Course in Which Enrolled and By Sex

Characteristics	General Agriculture		Animal Science		Plant Science		Horti-culture		Agriculture Bus.& Law		Farm Mechanics	TOTAL		
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Boys	Girls	Total
Agriculture NOT indicated in course planning schedule	15	4	1	4	2	5	2	6	1	1	2	23	20	43
Has chosen a Vocation NOT related to Agriculture	11	0	1	1	2	4	3	3	0	1	1	18	9	27
Failed at least one course last semester	11	3	1	4	2	3	2	4	1	1	2	19	15	34
Registered in at least one "slow" class	7	2	0	2	2	5	2	3	1	1	0	12	13	25
Has history of being dropped for failures or non-attendance	5	0	0	3	1	3	2	3	0	0	1	9	9	18
Is not dropped for non-attendance	3	1	0	0	0	0	1	4	0	0	2	6	5	11
Chose Agriculture over some other course this semester	2	1	0	0	1	0	0	1	1	0	1	5	2	7
Size of Sample	21	5	1	4	3	7	4	7	1	1	4	34	24	58

Note: Two boys enrolled in two courses this semester but are shown here under only one.
(One shown under Agriculture Business and Law also taking Animal Science.)
(One shown under Farm Mechanics also taking General Agriculture)

to agriculture. Over half of the students had already registered for the first semester, 1966-1967, and only two had enrolled in agriculture course.

In the initial discussion of this sudden increase in agriculture enrollments, it was believed by the Chief Counselor that it could be explained largely by the fact that many students had failed courses the first semester and had found classes of their choice already full at the time of second semester final registration.

The theory that desired classes were full was not substantiated as only four counseling folders specifically stated that classes desired were full. An additional five students entered late and classes may have been filled, but this was not so stated.

The theory that many of the new agriculture students had failed a course last semester was substantiated as 56% of the boys and 62% of the girls had failed at least one subject the first semester this year. In at least eight folders, the counselor had stated that the student had been "given" agriculture in order to make up for credit lost in an academic subject. Two students had requested to change from the agriculture course they were enrolled in, but the counselor had felt the credit was needed and did not process the change.

Further evidence that these students had difficulty, academic or otherwise, is shown by the fact that 43% were registered in at least one "slow" learner class, 31% had a history of being dropped for failure or non-attendance, and 19% had already been dropped this semester for non-attendance.

Though the information obtained from the sample folders served to indicate that most of the new students were not taking agriculture by choice and that nearly half of them would fall into the "poor student" category, it still did not explain why the students were taking agriculture rather than some other class.

An anlysis was made of the counselors who had worked with the students enrolled in agriculture for the first time. Table 18 shows that 84% of the students under study were counselees of four of the fifteen counselors on the faculty. Almost one-third (32%) were counselees of one counselor. Further analysis, by student identification number, showed that 41% were freshmen and 51% were sophomores. (See Table 19). All of the freshman were taking General Agriculture, while the sophomores and the few upper classmen were taking primarily Vocational Agriculture.

Based upon the 5% sample of all boys at Phoenix Union High School, taken for purposes of this overall study, approximately 120 freshman boys and 85 sophomore boys had failed either English or mathematics last semester--so all of those failing a subject were not enrolled in agriculture.

Since agriculture was not the only subject which failing students were taking, a discussion was held with the Chief Counselor and one of the counselors who had a number of students in their first agriculture class. These discussions revealed that there had been a school policy change this year with respect to course offerings. Heretofore, many courses had been offered during the second semester as well as the first. Those who had failed a course during the first semester could repeat the same course during the second semester. This

TABLE 18

STUDENTS ENROLLED IN AGRICULTURE FOR THE FIRST TIME SECOND SEMESTER
1965 & 1966 - COURSES IN WHICH ENROLLED BY COUNSELOR AND BY SEX

COURSE	COUNSELOR																		TOTAL			Percent of Total		
	B		C		E		H		J		K		N		P		R							
	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Total	B	G	Total
Animal Science								4						3	1	1			1	8	9	2	17	8
Agriculture Business & Law			1										1	3					2	3	5	3	6	4
General Agriculture					1		1	1	4		27	9	2		1		7	1	43	11	54	64	23	47
Plant Science	1						1	2					1	3	4	5			7	10	17	11	21	15
Horticulture		1		1			2	7				1	1	1		4	1		4	15	19	6	32	17
Farm Mechanics							1						3		6				10	0	10	15	0	9
TOTAL	1	1	1	1	1	0	5	14	4	0	27	10	8	10	12	10	8	1	67	47	114	100	100	100
TOTAL OF BOTH SEXES	2		2		1		19		4		37		18		22		9				114			
Percent of Boys	2		2		2		8		6		40		12		18		12		100					
Percent of Girls		2		2		0		30		0		21		21		21		2		100				
Percent of Both Sexes	2		2		1		17		4		32		16		19		8				100			

Note: Two boys, both counselees of N, enrolled in two courses but are listed here only once.

TABLE 19

DISTRIBUTION OF NEW ENROLLMENTS IN AGRICULTURE COURSES
BY COURSE, BY CLASS AND BY SEX

	Freshman		Sophomore		Junior		Senior		From Earlier Classes		Total	
	B	G	B	G	B	G	B	G	B	G	B	G
Animal Science	-	-	1	8	-	-	-	-	-	-	1	8
Agriculture Business & Law	-	-	1	2	-	1	-	-	1	-	2	3
General Agriculture	37	10	4	1	-	-	2	-	-	-	43	11
Horticulture	-	-	3	12	1	2	-	-	-	1	4	15
Plant Science	-	-	6	10	1	-	-	-	-	-	7	10
Farm Mechanics	-	-	10	-	-	-	-	-	-	-	10	-
TOTAL	37	10	25	33	2	3	2	0	1	1	67	47

Note: Two boys, both sophomores, enrolled in two classes, but are counted under only one.

year, the practice was discontinued. Those who had failed a course were unable to enroll in repeat classes as they were not offered. Nor could they enroll in second semester courses as they lacked prerequisites. The counselor stated that she had "persuaded" several students to take agriculture because they had to take something and could not repeat courses they had failed.

SUMMARY

The unusual increase in agriculture course enrollments this semester cannot be explained by a sudden increase of student interest in agriculture, as very little evidence of student interest was found.

The elimination of first semester courses forced students who had failed in one of more classes to seek course offerings not requiring prerequisites.

Four counselors apparently turned to agriculture as the solution for many of their students who were faced with the necessity of selecting a course to replace the second semester of a subject they had failed.

The "intent" of vocational agriculture legislation has been stretched considerably in that very few of the students plan to take further courses in agriculture.

Further study of course enrollment records would probably show that other subjects not requiring prerequisites had also absorbed a greater than normal number of students this semester.

SECTION VII

CONCLUSIONS AND RECOMMENDATIONS

The overall effectiveness of the vocational agriculture program at Phoenix Union High School is extremely limited if its' primary purpose is to educate high school students for a vocation in agriculture. Though the Vocational Education Act of 1963 has been interpreted to broaden the scope of vocational agriculture programs to include training for off-farm agricultural related work, it is still required that the student entering such training shall have made an appropriate vocational choice.

The expense of any vocational program is difficult to justify if students receiving the training do not have a reasonable expectation of entering the vocation.

The vocational agriculture program does seem to be very effective for the small group of students who take two years or more in agriculture. It apparently fosters ambition to get further education and to work, once school is completed. Several of the former students who were in military service or working in an occupation with which they were dissatisfied had strong intentions to enter college at the earliest possible time and several expressed the hope of owning a farm or ranch at some time in the future even though they might earn their living in some other line of work. The choice of agriculture in high school was reinforced through educational experience and the will to reach ambitious but attainable goals seems to be deep-seated.

The vocational agriculture program has little impact on the larger number of students. Much expensive training is wasted on students who only "sample" agriculture for one reason or another.

Recommendations for improvement and economy in the vocational agriculture course are as follows:

1. Institute more productive selection techniques for enrollment in vocational agriculture.
2. Review the requirements of Federal legislation covering funding for vocational agriculture with counselors in the entire school system.
3. Give more publicity to earnings of agriculture students in connection with their projects. Practically everyone knows about the Junior Achievement program and a large number are aware of the cooperative school-work programs in office work, distributive education, and industrial trades. The general public has little idea of the earnings in agriculture projects and approved work experience. More publicity would help the public to understand the value of the program and case history publicity on approved work should open up more opportunities for cooperative school-work projects. This would also provide greater opportunity for those who could not afford to buy animals or lease land to engage in approved work experience projects.

Results of the study conducted by the Arizona State Employment Service indicate that opportunities in on-farm and agricultural services industries are declining rather than increasing, as a whole.

Replacement figures were low in all occupations except production occupations, many of which are learned on the job or take a comparatively short time to learn; such as Irrigator.

It should be restated that the report of the Employment Service reproduced in Section II covers only production agriculture (commercial farms) and agricultural services. There are, of course, job opportunities related to vocational agriculture and horticulture in other industries in Maricopa County.

In the case of the agricultural-related occupations, job requirements typically would include preparation beyond that offered in vocational agriculture programs. Most commonly, these would be in the general field of sales (distributive) education and/or business (office) education. This suggests that a merging of programs at the high school level might be investigated.

The study of opportunities in farming and agricultural services conducted by the Arizona State Employment Service indicates that many employers feel that on-the-job training is essential to adequate preparation for farm work.

Unfortunately florists, farm implement dealers, grain and feed businesses, and other types of businesses using agricultural-related occupations, were not surveyed. Many of the employment opportunites for youth trained in vocational agriculture will occur in these types of establishments.

The survey does support the need for training in farm equipment operation as employment of tractor operators was well over 600 with replacements (or turnover) of 250 last year. Employment projections in on-farm occupations overall show a continuation of the trend toward

gradual loss in total employment on farms, though limited expansion is anticipated in a few occupation.

Slow learners did better in agriculture, even though most had to take slow learner classes in English and mathematics. From this evidence, it would seem that agriculture is a suitable subject for slow learners--particularly when they are interested enough and motivated to take four semesters of agriculture.

A large percentage of the new students in agricultue the second semester 1965-66 were registered in one or more slow learner classes and a large proportion were in agriculture apparently not of their own choice. An examination of the achievement in agriculture of these students would provide more conclusive data on the ability of slow learners to achieve in agriculture when it is not necessarily their vocational choice.

The unusual increase in agriculture course enrollments during the second semesters, 1965-1966, cannot be explained by a sudden increase of student interest in agriculture, as very little evidence of student interest was found. The elimination of first semester courses forced students who had failed in one or more classes to seek course offerings not requiring prerequisites. Four counselors apparently turned to agriculture as the solution for many of their students who were faced with the necessity of selecting a course to replace the second semester of a subject they had failed. The "intent" of vocational agriculture legislation has thus been stretched considerably in that very few of the students plan to take further courses in agriculture.

Further study of course enrollment records would probably show that other subjects not requiring prerequisites had also absorbed a greater than normal number of students this semester.

Interest in vocational agriculture is rather limited as only 165 students in the entire Phoenix Union System are registered this semester. More than half (64%) in agriculture classes now did not voluntarily choose agriculture, as shown in Section VI of this report. Therefore, less than 1% of all boys in the Phoenix Union High School System have chosen to study vocational agriculture.

It is quite possible that vocational agriculture would attract some students in any school in which it was offered. On the follow-up study, 49% of the boys completing two years or more lived in the Phoenix Union High School service area, but the student characteristic sample of all boys at Phoenix Union High School was quite dissimilar from that of the vocational agriculture students. No one high school service area provided a preponderance of the out-of-area vocational agriculture students, though 21% came from South Mountain.

It is probable that the changing emphasis in the vocational agricultural related businesses would have more bearing on the physical location in which agriculture is taught than would past experience. It may be that agriculture related courses can be taught in several schools with related work experience taking the place of expensive laboratories.

It is recommended that further effort be made to discover the employment potential in these related businesses in order to tailor the vocational agriculture program more closely to the needs of the community. If employers are to be contacted or recontacted for this

information, they should also be sounded out for their willingness to provide related school-work experience to supplement the present agricultural projects which are a part of the present program.

More data concerning opportunities in agricultural related businesses might well solve the dilemma of "where to offer vocational agriculture". An education program tailored to meet the needs of florists, implement dealers, farm and garden stores, etc., would be using the businesses for work experience and would obviate the necessity for expensive agricultural laboratories. These types of courses could be offered in several schools.

One physical location would still be required for farm machinery operation and repair before putting students into related work experience but most other laboratory practice could be accomplished in related work situations.

The program envisioned would be much like the present distributive education program and other school-work cooperative programs in clerical in industrial occupations. This might change the content of horticulture courses to floricultural chemistry, and salesmanship courses for farm equipment or garden supplies.

A survey of these types of businesses might well be done under the auspices of the vocational agriculture department so that cooperative-work experience situations could be developed at the same time. With certain knowledge of employer needs and work-school experience available, curriculum content could be confidently tailored for employment opportunity.

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AUG 24 1966

"THE DEVELOPMENT OF A WORK ORIENTATION PROGRAM FOR HOME ECONOMICS RELATED OCCUPATIONS"

1964 - 1966

Home Economics Education Service
Bureau of Vocational Services, Division of Vocational Education
Connecticut State Department of Education
Hartford, Connecticut

VT 00554

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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"The Development of a Work Orientation Program for Home Economics Related Occupations"

1964 - 1966

Mrs. Elsie Fetterman, Supervisor
Windham High School, Willimantic, Connecticut

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FOREWORD

By offering programs in vocational homemaking, education has recognized the role of the family in our economy. By providing students with the skills and understandings essential to effective home management, vocational homemaking has contributed to the effectiveness of the wage earner.

As the role of the woman changed and as the societal demands for service occupations increased, educators recognized the possibility of utilizing the trained talents of the home economics teachers to provide an educational program preparing students for gainful employment.

The Connecticut State Department of Education sought information concerning home economics related occupations and existing work-oriented programs. It was with these objectives in mind that Dr. Elsie Fetterman's services were sought and obtained. Dr. Fetterman's study showed the various avenues that homemaking programs could take in order to provide occupational education.

The educational objective of meeting the needs of all students is a challenge to all educators. It calls for new programs and new approaches. The information presented in this paper should assist home economics teachers and school administrators in identifying and developing some of these new programs.

Dr. Herbert Righthand, Chief
Bureau of Vocational Services

INTRODUCTION

It is hoped that the reader will find, in these pages, the highlights of the doctoral dissertation, "The Development of a Work Orientation Program for Home Economics Related Occupations" undertaken in 1964-66 at the University of Connecticut.

Major adviser was Dr. Philo T. Pritzkan with Dr. John W. Karnes, Jr. and Dr. W. Howard Martin serving on the committee. Special recognition given to Miss Ruth C. Cowles, Consultant, Home Economics Education, for her support and inspiration received in this study.

The writer is indebted to the Division of Vocational Education of the Connecticut State Department of Education for the financial remuneration made available.

The dissertation - in its complete form - is available on loan from the Wilbur Cross Library, University of Connecticut, Storrs, Connecticut.

Statement of the Problem. The purpose of this study was to develop a work orientation program for home economics related occupations. The problem was treated under these main divisions:

1. Identification of occupational areas related to home economics located in Connecticut;
2. Investigation of existing work orientation programs in home economics related occupations in the United States, Puerto Rico, and the Virgin Islands;
3. Recommendation of regional pilot centers for developing work orientation programs for home economics related occupations in Connecticut.

Procedure. Letters were sent to all state supervisors of home economics education in the United States, Puerto Rico, and the Virgin Islands for names and addresses of teachers who conducted work orientation programs for home economics related occupations. The five state supervisors who did not respond received personal telephone calls from the investigator to make the responses one hundred percent from the state supervisors.

Questionnaires were sent to forty-three teachers of secondary school work orientation programs for home economics related occupations in the United States. After follow-up letters and telephone calls to those who had not responded, a total of forty-three or one hundred percent, were returned.

In addition to the questionnaire, a total of twenty interviews were held with Connecticut State Employment Service managers in order to determine available job opportunities in home economics related occupations.

Socio-economic index scores for the one hundred sixty-nine communities in Connecticut were ranked and then averaged for each labor market area in the state.

Home Economics teachers in federally aided departments in Connecticut were asked to rank objectives of work orientation programs according to the priority as they perceived them.

Summary. A summary of this study including a review of the literature, information received from the questionnaires and personal interviews, revealed that one hundred percent of the Connecticut home economics teachers in this study would consider the development of a work orientation program in home economics related occupations worthwhile. High school home economics courses are an asset to job attainment.

In 1962 two and one-half million salespersons were employed in close to one hundred kinds of retail businesses in the United States. The number of babysitters (child monitors) reported employed in 1960 was 327,781. This represented a growth of three hundred sixty-seven and four-tenths percent from 1950 to 1960. More than one and two-tenths million men and women were employed in the apparel industry in early 1963. Two million people worked in establishments serving food in 1960.

Clusters of jobs existing in Connecticut in home economics related occupations are: food service, 1708; private household, 2990; clothing related, 2011; sales, 1279. The total number of job opportunities in home economics related occupations in Connecticut on file in Connecticut employment offices is almost eight thousand.

Seven of the labor market areas in the state showed close relationship between the number of job opportunities and socio-economic index scores. For these seven labor market areas, the higher their socio-economic index average, the more openings existed in home economics related occupations.

Conclusions. The large number of persons employed in home economics related occupations and the employment outlook for these positions justifies the development of a work orientation program for home economics related occupations in Connecticut. Home economics content should be utilized to help prepare individuals for employment as well as homemaking.

Home economics teachers need to be more realistic in their instruction and explore the kinds of work that individuals can and will do within the geographical area of employment of their graduates. Necessary for the development of the programs is cooperation with public employment service personnel who have occupational information continuously available regarding reasonable present and future prospects for employment in the community and elsewhere. Assurance of placement after completing the program is necessary for the successof the program.

The development of a work orientation program for home economics related occupations in Connecticut would be principally concerned with the recognition of realities and values regarding our society.

Although the beginning positions are the initiating experiences for the majority of students, the work orientation program should be concerned with advancement opportunities as well as entry level jobs. Additional training beyond high school is necessary for advancement to higher levels of employment.

WORK ORIENTATION PROGRAMS IN HOME ECONOMICS RELATED OCCUPATIONS IN THE UNITED STATES

The author contacted forty-three teachers of work orientation programs in home economics related occupations recommended by state supervisors of home economics education.

Their programs were analyzed with respect to the following:
Objectives: titles; length in weeks and clock hours per week; scheduling patterns; advisory councils; facilities; diversity of jobs held by students; recognition given upon completion; job availability; instructional arrangements; students enrolled in the program.

Home Economics Teachers in Connecticut Surveyed

In addition to the forty-three teachers of work orientation programs in home economics related occupations, the author also contacted home economics teachers in federally-aided departments in Connecticut. These sixty-six teachers were asked to rank nine objectives of work orientation programs at their annual fall conference at Norwich, Connecticut in September 1964.

Rankings of Objectives

Teachers in Connecticut and teachers of work orientation programs in the United States ranked the objectives according to the priority they placed on each - with number one indicating the most important and number nine the least important.

Although both groups of teachers ranked five out of the nine objectives the same rank order, a significant difference existed statistically between the two composite groups of priority rankings.

Using the Mann and Whitney Rank Test for two independent samples, a "z" score of 2.60 was obtained - which is significant at the one percent level. Table IX shows the composite rankings of the sixty-six Connecticut teachers and the forty-three teachers of work orientation programs.

Both groups agreed on the most important and the least important objectives as they perceived them. The objective ranked most important by both groups was "to achieve an introduction to the activities and demands of a wage-earning situation". The one ranked least important was "to be competent in the management of personal and family finances". It appears that neither of these groups of teachers felt that this was an important objective of work orientation programs in home economics related occupations.

Priority rankings of objectives of work orientation programs as

perceived by these two groups were significantly different, statistically.

However, because of the small sampling, these results must be evaluated cautiously. It appears from the data that objectives of these programs will vary in different communities.

For example, the objective "to be competent in the management of personal and family finance" which was ranked the least important by these two groups of teachers, might be ranked higher in other communities. According to a recent publication by the Consumers Union of the United States, Inc., Only a third of the families having difficulty managing finances knew of any source where they could get professional help, and only nine percent sought help.

TABLE IX
COMPOSITE PRIORITY RANKINGS OF OBJECTIVES
BY CONNECTICUT TEACHERS AND
WORK ORIENTATION PROGRAM TEACHERS

OBJECTIVE	COMPOSITE RANKINGS OF CONNECTICUT TEACHERS N - 66	COMPOSITE RANKINGS OF WORK ORIENTATION PROGRAM TEACHERS N = 43
To achieve an introduction to the activities and demands of a wage-earning situation	1	1
To be competent in the management of personal and family finance	9	9
To develop acceptable work habits	2	2
To develop skills for a cluster of occupations	6	6
To develop skills for a specific occupation	8	3
To explore home economics related occupations	5	7
To motivate interest in school	4	4
To promote good employer-employee relationships	7	5
To recognize realities and values regarding our society	3	8

Titles of Work Orientation Programs

Fourteen of the work orientation programs had titles pertaining to Food Services; other titles pertained to Homemaking Services, Hospital Services, and general titles.
Table IX indicates the various titles used for the programs.

Location of Programs

The forty-three work orientation programs were located in twenty different states, with California having the largest number of such programs.

Length of Programs

The most popular length of time for work orientation programs was thirty-six weeks. Five clock hours per week were reported most frequently.

Scheduling Patterns

The following patterns seemed to dominate the scheduling of the work orientation programs with cooperative work experiences: school one-half day - employment other half day; school one week - employment alternate week; employment after school and/or weekends.

TABLE X
TITLES OF WORK ORIENTATION PROGRAMS

AREA OF HOME ECONOMICS	TITLE
Food Services	Commercial Foods (2)
	Culinary Careers
	Commercial Food Trades
	Food Service I and II
	Home Economics Occupations - Food Service
	Hospitality Course
	Motel and Restaurant Service
	Preparation for Employment in Food Service
	Project FEAST (Food Education and Service Technology)
	Restaurant and Hotel Services
	Short Order Cooking
	Supervised Food Service Worker
	Vocational Foods
Homemaking Services	Homemaker's Assistant - Occupational Training
	Housekeeping Technology
	Occupational Training in Home Services
	Practical Homemaking
Hospital Services	Home Economics for Nurse's Aide
	Nursing Aide Course
Clothing Services	Clothing Services
	Vocational Dressmaking
Child Care Services	Child Care Aide Training
General Services	Career Guidance Program
	Cooperative Careers Program in Home Economics
	Home Economics Major
	Home Economics Related Occupations
	Job Pre-Training
	Orientation for Home Economics for Wage-Earning
	Pre-Occupational Home Economics
	Work-Study Program

Make-up of Advisory Councils

Personnel serving on advisory councils included: social welfare workers, representatives of Parent-Teacher Association organizations, vocational technical educators, representatives of the League of Women Voters, employers, educational committee of the Chamber of Commerce and guidance directors.

Helen J. Evans prepared some suggestions for setting up an advisory council and steps in initiating a supervised cooperative education program. She suggested that an advisory committee be established before attempting to initiate any training program. She further recommended that a strong advisory committee with representatives of the lay public, professional groups, the State Employment Service, business and industry and civic and church groups could assist the coordinator to:

> disseminate information; provide professional guidance in curriculum development; secure jobs for training students; place students; raise funds; recruit; document the need for training in the area.

Placement of Students in Jobs

Almost half of the teachers responding stated that they worked directly with employers in placement of students. Thirteen teachers reported that employment office personnel assumed the responsibility for placement, while thirteen teachers reported that the guidance director assumed this responsibility.

Since twenty-two of the forty-three work orientation programs were were organized in 1964, many of the respondents could not give any information concerning placement of students in jobs upon completion of the program. However, Table XI on the next page reflects the diversity of the types of jobs held by students completing such a program.

Recognition Given upon Completion

Since many of the work orientation programs were so very new, teachers stated that there were no completions yet in many of the programs. However, sixteen teachers did report awarding of certificates, while three honored the students at a banquet or a tea.

TABLE XI
DIVERSITY OF TYPES OF JOBS
HELD BY STUDENTS

STATE	JOB	NO. OF STUDENTS GIRLS	BOYS
California	Homemaker's Assistant	2	0
Delaware	Bakers	0	4
	Waiters	0	3
	Dishwashers and short order cooks	0	4
	Waitresses	3	0
Illinois	Nursery school aides	5	0
	Cook apprentices	0	6
	Hand sewers	4	0
	Kitchen helpers	0	2
	Waitresses	5	0
	Grocery store department managers	0	6
	Maintenance aides	0	4
	Sales clerks of household items	4	4
New Hampshire	Kitchen assistant	1	1
New York	Snack bar waitresses	2	0
	Assistant cooks	14	0
Oklahoma	Waitresses	2	0
	Cook	1	0
	School lunch checker	1	0
Pennsylvania	Nurse's aides	30	0
	Short order lunch waiters	0	2
Virginia	Cooks	2	0
	Waitresses	2	0
Total		77	36

Job Availability

In the communities in which work orientation programs in home economics related occupations were organized, job opportunities were organized, job opportunities existed in many occupations related to home economics. Heading the list was the need for waitresses, with thirty-six teachers reporting some or great demand for this position. Other opportunities which were available in some or great demand included short order cooks, kitchen helpers, counter girls, nurse's aides, sales clerks, day workers, institutional cooks and child monitors.

The teachers were asked what the basis was of their knowledge of job availability. Seventeen teachers reported that they estimated the job availability in the community. Other bases of teachers' knowledge concerning job availability included: community surveys, employment office figures and classified advertisements.

Instructional Arrangements

Thirty-three teachers reported the use of team teaching, prospective employers and other resource personnel in answer to the question concerning instructional arrangements in the work orientation program. Other individuals cooperating in the work orientation program included: state supervisors of home economics education, guidance directors, employers, employment office personnel and school cafeteria managers.

Students Enrolled in Program

Almost fifteen hundred students were enrolled in the work orientation programs for home economics related occupations. While the greatest number of the girls were enrolled in the twelfth grade, the greatest number of boys were enrolled in the ninth grade.

Occupational inventories or aptitude tests administered to the students in the work orientation program included: Kuder Preference Record, California Achievement Test, Differential Aptitude Test, Iowa Test of Educational Development, California Test of Mental Maturity and the General Aptitude Test Battery by the State Employment Office. The last mentioned was reported most frequently. Teachers in only seven out of the twenty states in the study reported occupational inventories or aptitude tests administered.

The question on the questionnaire, "What are the future plans of the students enrolled in the work orientation program?", revealed that only twenty students out of the fifteen hundred planned to leave school before twelfth grade graduation. Perhaps the work orientation has provided a greater incentive for students to remain in school. Four hundred sixty-eight of the students planned to terminate their formal education upon twelfth grade graduation and two hundred seven planned to continue their formal schooling beyond the twelfth grade. Others were uncertain of their plans at the time of the study. Since over two hundred students were planning to continue their education beyond the twelfth grade, then the work orientation program was offered to all

students who desired to elect it - and not just the students in "non-academic " programs. Students should have the opportunity for entry into the work orientation program as a phase of their basic general education.

Summary

Priority rankings of work orientation program objectives as perceived by Connecticut home economics teachers and teachers of work orientation programs showed a significant difference statistically - although both groups ranked five out of the nine objectives the same rank order.

The majority of the work orientation programs focused on food services, with others pertaining to homemaking services, hospital services, clothing services and general service.

Advisory councils were initiated in communities having work orientation programs with personnel representing Parent-Teacher Associations, vocational technical educators, employers, League of Women Voters, social welfare workers and others.

The work orientation programs reflected the exixtence of occupations related to home economics.

THE STUDY

The purpose of this study was to develop a work orientation program for home economics related occupations.

In carrying out this study, the problem was treated under these main divisions:

1. Identification of occupational areas related to home economics located in Connecticut;

2. Investigation of existing work orientation programs in home economics related occupations in the United States, Puerto Rico, and the Virgin Islands;

3. Recommendation of regional pilot centers for developing work orientation programs for home economics related occupations in Connecticut.

In order to determine the available job opportunities in home economics related occupations in Connecticut, every Connecticut State Employment Service manager in each of the labor market areas was interviewed.

Four sources were used to develop recommendations of pilot centers for work orientation programs for home economics related occupations: review of related literature; interviews with Connecticut State Employment Service managers; average socio-economic rankings of labor market areas; and a study of existing work orientation programs for home economics related occupations in the United States, Puerto Rico and the Virgin Islands.

Procedure

Letters were sent to all state supervisors of home economics education in the United States, Puerto Rico, and the Virgin Islands for names and addresses of teachers who conducted work orientation programs for home economics related occupations. The five state supervisors who did not respond received personal telephone calls from the investigator to make the responses one hundred percent from the state supervisors.

Questionnaires were sent to forty-three teachers of secondary school work orientation programs for home economics related occupations in the United States. After follow-up letters and telephone calls to those who had not responded, a total of forty-three or one hundred percent, were returned.

In addition to the questionnaire, a total of twenty interviews were held with Connecticut State Employment Service managers in order to determine available job opportunities in home economics related occupations.

Socio-economic index scores for the one hundred sixty-nine communities in Connecticut were ranked and then averaged for each labor market area in the state.

Home economics teachers in federally-aided departments in Connecticut were asked to rank objectives of work orientation programs according to the priority as they perceived them.

Summary

A summary of this study including a review of the literature, information received from the questionnaires and personal interviews, is presented as follows:

1. One hundred percent of the Connecticut home economics teachers in this study would consider the development of a work orientation program in home economics related occupations worthwhile.

2. High school home economics courses are an asset to job attainment.

3. In 1962 two and one-half million sales persons were employed in close to one hundred kinds of retail businesses in the United States.

4. The number of babysitters (child monitors) reported employed in 1960 was 327,781. This represented a growth of three hundred sixty-seven and four-tenths percent from 1950 to 1960.

5. More than one and two tenths million men and women were employed in the apparel industry in early 1963.

6. Two million people worked in establishments serving food in 1960.

7. Clusters of jobs existing in Connecticut in home economics related occupations are: food service, 1708; private household, 2990; clothing related, 2011; sales, 1279.

8. The total number of job opportunities in home economics related occupations in Connecticut on file in Connecticut employment offices is almost eight thousand.

9. Seven of the labor market areas in the state showed a close relationship between the number of job opportunities and socio-economic index scores. For these seven labor market areas, the higher their socio-economic index average, the more openings existed in home economics related occupations.

Conclusions

In terms of the results of this study, the following conclusions were inferred from the analysis of the obtained data:

1. The large number of persons employed in home economics related occupations and the employment outlook for these positions justifies the

development of a work orientation program for home economics related occupations in Connecticut.

2. Home economics content should be utilized to help prepare individuals for employment as well as homemaking.

3. Home economics teachers need to be more realistic in their instruction and explore the kinds of work that individuals can and will do within the geographical area of employment of their graduates.

4. Necessary for the development of the program is cooperation with public employment service personnel who have occupational information continuously available regarding reasonable present and future prospects for employment in the community and elsewhere.

5. Assurance of placement after completing the program is necessary for the success of the program.

6. The development of a work orientation program for home economics related occupations in Connecticut would be principally concerned with the recognition of realities and values regarding our society.

7. Although the beginning positions are the initiating experiences for the majority of students, the work orientation program should be concerned with advancement opportunities as well as entry level jobs.

8. Additional training beyond high school is necessary for advancement to higher levels of employment.

TABLE II

PRIVATE HOUSEHOLD JOBS IN CONNECTICUT

LABOR MARKET AREA	DAY WOR-KER	LIVE-IN MAID	CHILD MON-ITOR	COM PAN-ION	NURSE'S AIDE	CHAR WOMAN	TOTAL
Ansonia	7	0	3	0	4	6	20
Bridgeport	450	375	75	50	50	3	1003
Bristol	30	1	25	5	6	0	67
Danbury	6	10	1	3	2	1	23
Danielson	1	3	1	1	2	1	9
Hartford	50	50	10	15	8	6	139
Manchester	45	30	30	25	6	9	145
Meriden	50	15	15	3	0	3	86
Middletown	15	18	15	1	15	4	68
Milford	8	10	6	5	3	1	33
New Britain	100	100	50	50	25	5	330
New Haven	20	65	20	15	15	10	145
New London	180	15	30	1	20	10	256
Norwalk	0	0	0	25	30	25	80
Norwich	20	3	25	3	20	4	75
Stamford	150	0	42	1	13	4	210
Thompsonville	30	6	6	3	4	3	52
Torrington	30	48	12	2	7	2	101
Waterbury	47	12	14	6	12	20	111
Willimantic	24	1	5	5	2	0	37
Total	1263	762	385	219	244	117	2990

TABLE III

CLOTHING RELATED JOB OPPORTUNITIES IN CONNECTICUT

LABOR MARKET AREA	WEA - VER	TAI - LOR	SAM - PLE CUT - TER	HOUSE - HOLD SMO*	GAR - MENT SMO*	PRES - SER	TOTAL
Ansonia	0	0	3	0	20	6	29
Bridgeport	2	3	2	15	15	10	47
Bristol	0	3	0	0	0	4	7
Danbury	0	0	0	0	5	0	5
Danielson	1	0	1	5	9	1	17
Hartford	0	15	0	2	40	6	63
Manchester	10	2	0	4	35	6	57
Meriden	0	0	0	0	24	0	24
Middletown	0	1	0	0	206	6	213
Milford	0	0	0	0	0	0	0
New Britain	0	0	0	0	100	20	120
New Haven	6	10	3	0	200	25	244
New London	10	2	2	0	20	5	39
Norwalk	0	0	0	0	600	50	650
Norwich	30	1	1	25	20	2	79
Stamford	0	0	0	0	8	0	8
Thompsonville	10	1	0	0	0	1	12
Torrington	4	3	0	6	50	4	67
Waterbury	0	5	0	0	300	5	310
Willimantic	3	1	0	0	3	3	10
Total	76	57	12	57	1655	154	2011

*SMO = Sewing machine operator

TABLE IV

FOOD SERVICE JOB OPPORTUNITIES IN CONNECTICUT

LABOR MARKET AREA	COUN - TER GIRL	WAIT - RESS	SHORT ORDER COOK	KIT - CHEN HEL - PER	INST. COOK	SPEC. DIET WOR - KER	TOTAL
Ansonia	10	30	1	6	0	0	47
Bridgeport	11	60	9	9	9	3	101
Bristol	15	40	15	10	0	0	80
Danbury	7	15	12	15	1	0	50
Danielson	2	2	5	2	1	0	12
Hartford	44	20	32	10	20	0	126
Manchester	50	15	20	15	1	0	101
Meriden	8	8	3	6	0	0	25
Middletown	3	10	1	3	2	0	19
Milford	15	15	11	4	1	0	46
New Britain	30	60	45	60	12	0	207
New Haven	25	25	25	4	7	0	86
New London	15	15	25	9	1	0	65
Norwalk	100	100	50	50	0	0	300
Norwich	25	35	10	25	0	0	95
Stamford	0	12	13	0	0	4	29
Thompsonville	10	10	10	6	3	0	39
Torrington	4	24	4	10	2	0	44
Waterbury	59	46	20	18	16	3	162
Willimantic	10	15	3	25	15	0	68
Total	443	557	314	287	91	16	1708

TABLE V

HOME ECONOMICS RELATED SALES

OPPORTUNITIES IN CONNECTICUT

LABOR MARKET AREA	NUMBER OF SALES CLERKS
Ansonia	40
Bridgeport	5
Bristol	40
Danbury	10
Danielson	2
Hartford	60
Manchester	30
Meriden	21
Middletown	9
Milford	50
New Britain	35
New Haven	800
New London	30
Norwalk	26
Norwich	25
Stamford	18
Thompsonville	20
Torrington	36
Waterbury	7
Willimantic	15
Total	1279

TABLE VI

NUMBER OF HOME ECONOMICS JOBS IN RELATION

TO POPULATION OF LABOR MARKET AREA

LABOR MARKET AREA	TOTAL POPU - LATION	NUMBER OF HOME ECONOMICS JOBS	RANKING ACCORDING TO MOST JOBS PER POPULATION
Ansonia	45,343	136	11
Bridgeport	337,983	1286	5
Bristol	54,480	194	6
Danbury	90,323	88	16
Danielson	47,436	40	17
Hartford	545,974	844	13
Meriden	104,324	156	14
New Britain	106,600	702	2
New Haven	324,759	1275	4
New London	120,350	391	9
Norwalk	100,795	1058	1
Norwich	59,805	275	3
Stamford	178,409	265	15
Torrington	73,605	248	8
Waterbury	190,340	590	10
Willimantic	51,101	130	12

TABLE VII

TOTAL NUMBER OF JOB OPPORTUNITIES

AND AVERAGE SOCIOECONOMIC INDEX SCORES

FOR EACH LABOR MARKET AREA

LABOR MARKET AREA	TOTAL NO. OF JOB OPPORTU - NITIES	RANKING ACCORDING TO JOB OPPOR. PER POPULATION	AVERAGE SOCIO - ECONOMIC INDEX SCORE	RANKING OF SOCIO - ECONOMIC INDEX SCORES
Ansonia	126	11	54.9	15
Bridgeport	1286	5	72.3	6
Bristol	194	6	54.8	16
Danbury	88	16	72.8	5
Danielson	40	17	49.6	17
Hartford	844	13	73.9	4
Meriden	156	14	63.9	11
Middletown	311	7	66.3	8
New Britain	702	2	63.0	12
New Haven	1275	4	75.5	3
New London	391	9	66.5	7
Norwalk	1058	1	87.7	1
Norwich	275	3	55.1	14
Stamford	265	15	86.2	2
Torrington	248	8	64.2	10
Waterbury	590	10	64.4	9
Willimantic	130	12	61.8	13

Recommended Regional Centers for Developing Pilot Programs

On the basis of the data received, it is recommended that the following work orientation programs in home economics related occupations be developed in regional centers in Connecticut:

Clothing related: Ansonia, Bridgeport, Danielson, Hartford, Manchester, Meriden, Middletown, New Britain, New Haven, New London, Norwalk, Norwich, Thompsonville, Torrington, Waterbury, Willimantic.

Food service: All employment centers in the state.

Private household: Ansonia, Bridgeport, Bristol, Danbury, Hartford, Manchester, Meriden, Middletown, Milford, New Britain, New Haven, New London, Norwalk, Norwich, Stamford, Thompsonville, Torrington, Waterbury, Willimantic.

Sales related: Ansonia, Bristol, Danbury, Hartford, Manchester, Meriden, Milford, New Britain, New Haven, New London, Norwalk, Norwich, Stamford, Thompsonville, Willimantic.

Since a pilot program is an exploratory one - - a program to develop or refine ideas and attitudes that in most instances have not yet crystallized sufficiently for inclusion in rigidly controlled experimental studies, the participating teachers must feel free to modify and refine materials and methods as they proceed.

It is further recommended that the teachers of the proposed programs become highly involved with the managers and educational leaders in these home economics related occupations. This would be necessary in order to study the labor market, wages, working conditions and other clues to the program.

The tremendous job of meeting the needs of youth in our changing society is too big for any one agency or one program of action. We must coordinate the efforts of those who have jobs for youth, those who find jobs for youth and those who know youth best. All agencies working with youth must learn what the realities of the world of work are now, and what they can be expected to be in the future, so that they can see the dimensions of the job of preparing youth for these realities.

Problems for Future Study

During the process of making this study, other problems and questions developed which need further study and are presented as follows:

1. Are certain occupations "dead end" jobs? If so, how does this affect the people involved in such situations?

2. How can women be helped to assume the dual role of homemaker and employed person more effectively?

3. Is preparation for employment a distinctly separate facet of a home economics program or should it be combined with preparation for improved family living?

4. How can more positive attitudes be gained toward such jobs as babysitting, domestic service, etc.?

5. Can a work orientation program be planned to prepare assistants for professional workers in nursery schools, child care centers, hospitals, etc.?

6. What evalustive criteria should be used for judging students' performances in a work orientation program?

7. What preservice and inservice preparation is needed for the teachers of work orientation programs for home economics related occupations?

SURVEY FORMS
CONNECTICUT STATE DEPARTMENT OF EDUCATION
Home Economics Education Service
Hartford

Survey of Occupational Background

Teacher's Name _____

School _____

Town _____

A. PERSONAL DATA
(Check those describing educational background)

B.A. or B.S. _____ Home Economics Education _____

M.A. or M.S. _____ Area of Specialization _____

Sixth Year _____ Area of Specialization _____

Number of Years of Teaching as of September 1965 _____

Levels of Teaching Experience

Elementary _____ Senior High _____

Junior High _____ College _____

Employment Experience Other Than Teaching:
(Please list in chronological order jobs during summers while in college, jobs between teaching assignments and all employment experience to present time)

B. SCHOOL FACILITIES
(Check those best describing present school lay-out)

All purpose laboratory _____ Child development center _____

Clothing room _____ Living area _____

Foods laboratory _____ Workshop _____

Rating of equipment for job oriented teaching:
(Rate as sufficient or insufficient)

Food _____ Child Development _____

Clothing _____ Management _____

Housing _____ Home Nursing _____

Small materials of instruction
(Rate as sufficient or insufficient)

Food _____ Child Development _____

Clothing _____ Management _____

Housing _____ Home Nursing _____

G. COMMUNITY RESOURCES
(Check yes or no)

Community has a State Employment Office _____

School has a functioning placement system _____

Employers inquire about knowledge and skills of girls registered in home economics classes _____

School officials are interested in work-orientation _____

Guidance would be willing to recommend specialization _____

Home Economics Teachers consider development worthwhile _____

Resource people from community would be available _____

Some parent-student interest has been indicated _____

Job availability can be recognized in the following fields:

Day Care Center	_____	Mender in Dry Cleaner	_____
Nursery School	_____	Counter Girl	_____
Playground Center	_____	Waitress	_____
Recreation Center	_____	Salad Girl	_____
Paid Baby Sitter	_____	Hostess	_____
Seamstress	_____	Receptionist	_____
Alterer	_____	Telephone Answering Service	_____
Retail Sales Girl	_____	Nurse's Aide	_____
Milliner Assistant	_____	Housekeeper	_____
Laboratory Assistant	_____	Convalescent Home Maid	_____
Laboratory Tester	_____	Ward Maid	_____
Sample Girl of Bakery	_____	Kitchen Maid	_____
Baker	_____	Hotel or Motel Maid	_____
Decorator	_____	Others	_____
Catering	_____		_____
Hand Presser	_____		_____
Mender in Laundry	_____		_____

(Use other side of paper for all extra data)

A doctoral study in cooperation with

THE CONNECTICUT STATE DEPARTMENT OF EDUCATION

Home Economics Education Service
Hartford, Connecticut

SURVEY OF WORK ORIENTATION PROGRAMS FOR

HOME ECONOMICS RELATED OCCUPATIONS

To be filled out by teacher of work orientation program. If you are in another position other than that of teacher, would you please state your title? _____

I. SCHOOL

A. Name of school _____

B. Address of school _____

C. Enrollment in school by grades:

Grade	Number enrolled girls	boys
7. _____	____	____
8. _____	____	____
9. _____	____	____
10. _____	____	____
11. _____	____	____
12. _____	____	____
Total Student Enrollment	____	____

D. Total home economics program. Please list all home economics courses offered in the school and please check the appropriate space column to indicate if course is required or elective.

Title of Course	Elective	Required for whom
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Title of Course	Elective	Required for whom

E. Total number of full time home economics teachers in the school? _____

II. TEACHER OF WORK ORIENTATION PROGRAM

Please check the statements which best fit your background.

1. Has had wage-earning experience in an occupation other than teaching _____
2. Is a certified home economics teacher in the school _____
3. Is certified in home economics, but does not teach home economics in this school _____
4. Is not a certified home economics teacher _____
5. Has less than 4 years of college _____
6. Holds a bachelor's degree _____
7. Holds a master's degree or higher _____
8. Other - please specify _____ _____

III. OTHER TEACHERS IN THE WORK ORIENTATION PROGRAM

A. Please indicate the number of teachers involved in the program

B. If more than one teacher is involved in the program, please check the most appropriate statements which apply to your situation:

1. Do you have a team teaching arrangement?

If so, please specify topics related to work orientation taught by the other teachers involved:

_____

_____

_____

_____

2. Prospective employers assist in teaching the program _____

They include: (i.e., manufacturer, restaurant proprietor, etc.)

_____

_____

_____

3. Other resource people assist in teaching _____
They include:

_____

_____

IV. STUDENTS ENROLLED IN WORK ORIENTATION PROGRAM

A. Grade level and number enrolled in each.
Please indicate the number of students enrolled in the work orientation by grade level.

Grade level	Number enrolled girls	Number enrolled boys
7. _____	____	____
8. _____	____	____
9. _____	____	____
10. _____	____	____
11. _____	____	____
12. _____	____	____

B. Future plans of students in the work orientation program.
Please state the approximate number of students you feel are in each category:

Plans of students	Number of students
1. Plan to leave school before 12th grade graduation	_____
2. Plan to terminate formal education upon 12th grade graduation	_____
3. Plan to continue formal schooling after 12th grade graduation	_____
4. Uncertain of plans at this time	_____

C. If occupational inventories or aptitude tests are administered to students enrolled in the work orientation program, please list them below by title.

_____

_____

_____

V. WORK ORIENTATION PROGRAM

A. Title of program _____

B. Length of program _____ weeks

C. Number of clock hours per week in work orientation program _____ hours

D. Date program was organized _____

E. Is there cooperative work experience in the program? _____

If yes, what is the arrangement? Please check the statement which best describes the arrangement:

1. School one-half day; employment other half day _____

2. School one week; employment alternate week _____

3. Employment after school and/or week-ends _____

4. Other - please specify: _____

F. Personnel working with work orientation program.

Please check and respond only to those descriptions which apply to your program.

1. Advisory council works with the teacher Membership of the council is representative of: (i.e., employers, parents, etc.) _____

_____

_____

_____

2. Several teachers cooperatively plan the program. _____
   Teaching areas of these instructors are:

   _____

   _____

   _____

3. Other individuals cooperate in the program _____

   They include: (i.e., state supervisor of home economics education, guidance director, employers, employment office manager, etc.)

   _____

   _____

   _____

4. Other - please specify:

   _____

   _____

G. Facilities used in connection with <u>work orientation</u> program.
   Please check and respond to the descriptions which best apply to your situation:

   1. Home economics facilities _____

   2. Specialized equipment added for this program _____
      Please specify _____

   3. Community resources _____
      Please specify _____

      _____

      _____

   4. Other - please specify: _____

      _____

H. Facilities which you feel are needed for the work orientation program. In addtition to the above (section G) what other facilities and/or equipment do you feel are needed for the work orientation program?

_____

_____

_____

_____

I. Course content of work orientation program. Please check the descriptions which best describe the content of the course:

1. Foods and Nutrition _____
2. Clothing and textiles _____
3. Child development _____
4. Home furnishings _____
5. Home Nursing _____
6. Other - please specify _____

_____

_____

_____

_____

_____

_____

_____

J. Placement of students in jobs.

Please check the descriptions which best apply to your program.

1. School assumes no direct responsibility for placement of students in jobs. _____
2. Teacher of the work orientation program works closely with the local employment manager (affiliated with the U.S. Employment Service) in placing students in jobs. _____

3. Teacher of the program works directly with employers in placement of students in jobs _____

4. Guidance director assumes responsibility of placement _____

5. Principal or vice-principal assumes responsibility of placement _____

6. Other - please specify: _____

_____

_____

K. If students have been placed in jobs upon completion of the program, please specify jobs, and the approximate number of students in each since the program was started.

Jobs	Number of students girls	boys
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____
_____	____	____

L. Recognition given upon completion of work orientation program. Please check and respond to the descriptions which best apply to your program.

1. No recognition given other than that of completion. ____

2. Certificate awarded stating: _____ ____

_____

3. Banquet ____

4. Other - please specify: _____

M. Recognition you feel should be given to students who have completed the work orientation program. If you feel that recognition should be given to students who have completed the work orientation program, please state the type and/or kind of recognition.

_____

_____

_____

_____

N. Availability of jobs in local community.
Please check the source of your information concerning availability of jobs:

1. Your estimate _____
2. Community survey _____
3. Employment office figures _____
4. Classified ads _____
5. Other - please specify: _____

_____

_____

_____

Please check the availability of specific jobs related to home economics in your community. Please add any other headings which you feel are necessary.

Job	Dictionary of Occupational Titles Number	Do not know	Absolutely no demand	Very little demand	Some demand	Great demand
Sales clerk	1 - 70.10					
Day worker	2 - 01.01					
Live-in-maid	2 - 06.11					
Child monitor	2 - 07.01					
Companion	2 - 09.03					
Institutional cook *	2 - 26.32					

Continued

*Pre-apprenticeship or entry level

Job	Dictionary of Occupational Titles Number	Do not know	Absolutely no demand	Very little demand	Some demand	Great demand
Short order cook	2 -26.33					
Waitress	2 - 27.12					
Counter girl	2 - 27.13					
Kitchen helper	2 - 29.71					
Nurse's aide	2 - 42.20					
Charwoman	2 - 82.10					
Weaver	4 - 05.010					
Dressmaker	4 - 25.039					
Tailor *	4 - 26					
Sample cutter	6 - 27.042					
Sew. machine operator, Household	6 - 27.511					
Sew. machine operator, Garments	6 - 27.535					
Presser, machine Laundry	7 - 57.511					

VI. OBJECTIVES

Listed below are some objectives of work orientation programs in home economics related occupations. What would you consider as the most important objective to be accomplished in such a program? Would you please rank all of these objectives in the order of importance with #1 indicating the most important and #9 the least important?

OBJECTIVE	Ranking
To achieve an introduction to the activities and demands of a wage-earning situation	_____
To be competent in the management of personal and family finances	_____
To develop acceptable work habits	_____
To develop skills for a cluster of occupations	_____
To develop skills for a specific occupation	_____
To explore home economics related occupations	_____
To motivate interest in school	_____
To promote good employer-employee relationships	_____
To recognize realities and values regarding our society	_____

If you would like a summary of this study when it is complete, will you please indicate it by checking the first statement?

1. I would like a summary of this study when it is complete. Please send to: (Name)_____
   (Address) _____

2. I do not care to have a summary of this study when it is complete.

_____

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ATTITUDINAL CHANGES TOWARD ADULT EDUCATION DURING STUDENT TEACHING

By
TEXTON R. MILLER
and
HENRY PASOUR
1967

RESEARCH SERIES IN OCCUPATIONAL EDUCATION
NORTH CAROLINA RESEARCH COORDINATING UNIT IN OCCUPATIONAL EDUCATION
In Cooperation With
DEPARTMENT OF AGRICULTURAL EDUCATION

VT 00558

SCHOOL OF EDUCATION
NORTH CAROLINA STATE UNIVERSITY AT RALEIGH
RALEIGH, NORTH CAROLINA

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Attitudinal Changes Toward Adult Education During Student Teaching

Texton R. Miller
and
Henry Pasour

1967

Research Series No. 3
A report of research conducted by the Department of Agricultural Education, North Carolina State University, Raleigh. Publication and dissemination of research findings is in cooperation with the North Carolina Coordinating Unit in Occupational Education

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Special appreciation and recognition are extended to Dr. H. E. Beam for the original idea, the design of the instrument, and the administration of the study in the first years, and to Professor F. E. McVay, Department of Experimental Statistics, for his interest and assistance in the statistical analyses used in the study.

FOREWARD

The North Carolina Research Coordinating Unit in Occupational Education is pleased to have the opportunity of disseminating this report of a study recently completed in the Agricultural Education Department, School of Education, North Carolina State University, Raleigh, North Carolina.

This study was completed and written by Dr. T. R. Miller, associate professor of Agricultural Education, with the valuable assistance of Mr. Henry Pasour, Graduate Assistant. Mr. Pasour made a significant contribution in the compilation, graphing, and statistical analysis of the data.

This publication and others to follow are a result of the partial fulfillment of the commitment of the North Carolina Research Coordinating Unit to:

(a) Stimulate research in occupational education

(b) Identify problems for research

(c) Develop a system by which national, state, and local data may be organized and made available.

(d) Maintain communication between people who are working in occupational education and research workers.

(e) Assist in conducting training programs on activities involved in the research-action continuum.

(f) Provide consultant services in state, local, and area research developmental activities.

Joe R. Clary
Director

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Attitudes of Agricultural Education Seniors
Toward Adult Education Before and After
Student Teaching, N. C. State University, 1960-65

This is a longitudinal study of the viewpoints of senior college students toward adult education as a function of the public school. The primary purpose was to determine the extent and direction of attitudinal changes during the student teaching semester. It was expected that implications would be seen for the programs of both preservice and inservice experiences in adult education.

The sample consisted of all students who experienced the student teaching semester during the six year period 1960-1965, a total of 166 seniors. The data were gathered each year at the beginning and the close of each student teaching semester, which included a period of approximately seven weeks on campus and ten weeks off campus in a student teaching center. The attitude inventory instrument was designed by Dr. H. E. Beam, a member of the Agricultural Education Staff in 1960, and consisted of twenty-nine items concerning public school education and education in agriculture. All of the items related to assumed responsibilities of the school and the teacher for adult education in agriculture.

The attitude inventory instrument consisted of three parts. The first contained 14 statements to which students gave their reactions in terms of a 5-point scale ranging from "strongly agree" to "strongly disagree". Exactly half of these items exemplified positive attitudes toward adult education. Part II provided a problem situation with a range of eleven possible choices for an answer in terms of the percentage of teacher time to be devoted to adult education. The third aspect of

the schedule requested students to indicate which of thirteen adult education activities they believed a teacher of agriculture should sponsor. Because of the design of the instrument, the data is reported by sections of the inventory.

Tests of Significance of Data

Since it contained the most items and was the most comprehensive in its coverage of the subject, Section I of the Attitude Inventory was selected as the most appropriate portion of the schedule for tests of statistical significance.

The primary goal was to determine whether attitudinal changes observed for the period of student teaching could be attributed to chance. The three techniques used involved the "t" test, an analysis of variance, and the establishment of confidence limits for each of the fourteen items.

The "t" test was used to test the attitudinal gains for each of the six years in the study, with the exception of 1964. In this instance, the inadvertent omission of student names from some of the 1964 schedules prevented the use of the "t" test. However, it was assumed that the class gain for 1964 was significant since the difference of "before" and "after" mean-scores was greater than that of the 1965 class, which had fewer students and which showed a significant mean difference.

The question might well be asked: Can the yearly variations in scores, either the "before" scores or the "after" scores, be attributed to chance. A partial answer of "no" was obtained by using the "t" test to show that the variation between the lowest and highest class score on the "before" scores, and also on the "after" scores, was a significant difference statistically at the .01 level. It appears that there was an

important difference in attitude toward adult education among the different classes of student teachers as they began their final year of college study. Furthermore, some of the classes reached a level of "positive" attitude toward adult education that is statistically higher than that reached by other classes.

The analysis of variance was employed to test the significance of differences noted among the mean-increases made by the various classes during their student teaching. This variation was significant at the .05 level.

As a matter of interest, each of the 14 items in the inventory had a "positive" mean-increase. By using the "error term" derived in the analysis of variance, "confidence limits" were placed on each of the mean increases to determine which were significant gains. Comparing the fourteen individual items by the mean-increases between "before" and "after" scores, it was found that eight items had mean-increases greater than that assigned to chance. Further information may be found in Appendix A.

In summary, the testing of the data showed that there were statistically significant variations among the classes (or by the years) on (a) Entrance mean-scores, (b) Ending mean-scores, and (c) Mean-score of gain during student teaching. Further, on eight of the fourteen inventory items, mean-increases of "ending scores" over beginning scores were statistically significant.

PRESENTATION OF DATA

The data are presented in two sections. The first (Section A) shows a comparison by classes for each of the three parts of the inventory. In Section B, each item in part one is presented separately, showing mean-scores by classes to provide a longitudinal view of the acceptance or rejection of each attitudinal statement.

Section A - Overall Comparison of Year Groups

Part I. Fourteen Statements with 1-5 scale score.

Figure 1 compares the overall level of student attitudes toward adult education before and after student teaching for each of six years. The data consist of the mean-score for each class on a total of 14 items. The perfect mean-score would be 70 and indicate unanimous selection of "strongly agree" for those seven statements favoring adult education and the reverse, "strongly disagree", for the other seven statements not favorable to adult education as a responsibility of the public schools. In making the graph, the data were adjusted by reversing the scale for seven of the 14 items so that all scores reflecting a positive attitude toward adult education would read toward the high end of the 1 to 5 attitude scale.

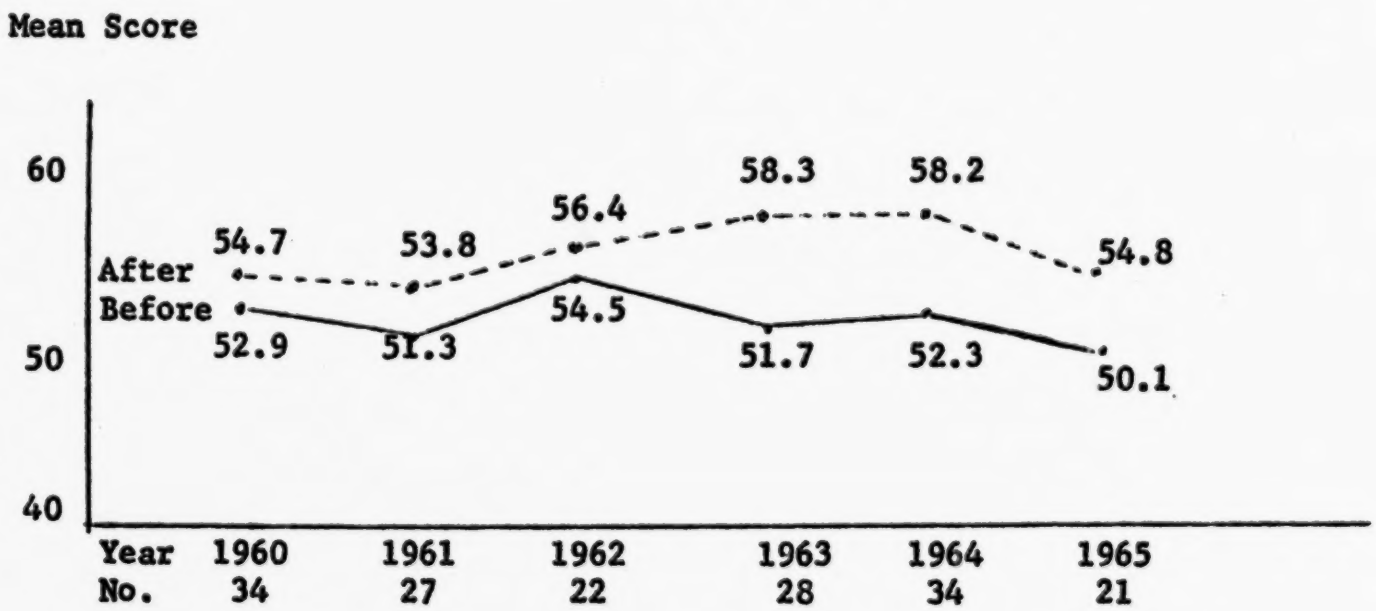

Figure 1. Comparison of Viewpoints of College Seniors Toward Adult Education Before and After Student Teaching N. C. State, Agricultural Education, 1960-1965.

It is evident from Figure 1 that there was a gain by each class during the student teaching period. As previously indicated, these gains were statistically significant except for the class of 1962. Even for

the class of 1962, the mean-increase was equal to the 1960 class, but the smaller number of cases (22 vs 34) prevented it from being statistically significant. Thus, overall, one can say that these students had made significant improvement in their viewpoints toward adult education while doing their student teaching. In addition, the gains of the last three years were obviously greater than those of the first three years.

Figure 1 also indicates a difference in the attitude of student teachers by years (or classes) as they enter student teaching. The amount of this variation was shown to be statistically significant. Beginning in 1962, there was a general downward trend in attitude mean-scores of entering groups of student teachers. One can only speculate about what factors might be correlated with this phenomenon since this study is not sufficiently comprehensive to provide the data needed for a calculation.

The line-graph "after student teaching" mean-scores (Figure 1) also has a statistically significant variation over the six year period. Generally, the more recent classes reached higher levels of "positive" attitude toward adult education.

It is interesting to note that the class (1965) with the lowest average score on the "before" inventory was not the class with the greatest gain. On the other hand, the class with the highest entry score (1962) made one of the lower gains. A more comprehensive study than this one would be needed before conclusions could be drawn concerning the importance and meaning of the variation between classes on either the entry or concluding scores.

Part II - The Amount of Time for Adult Education

Part two of the Attitude Inventory consisted of a problem situation designed to make realistic a decision by the student concerning the percentage of teacher time which should be given to the adult education phase of the local vocational agriculture program.

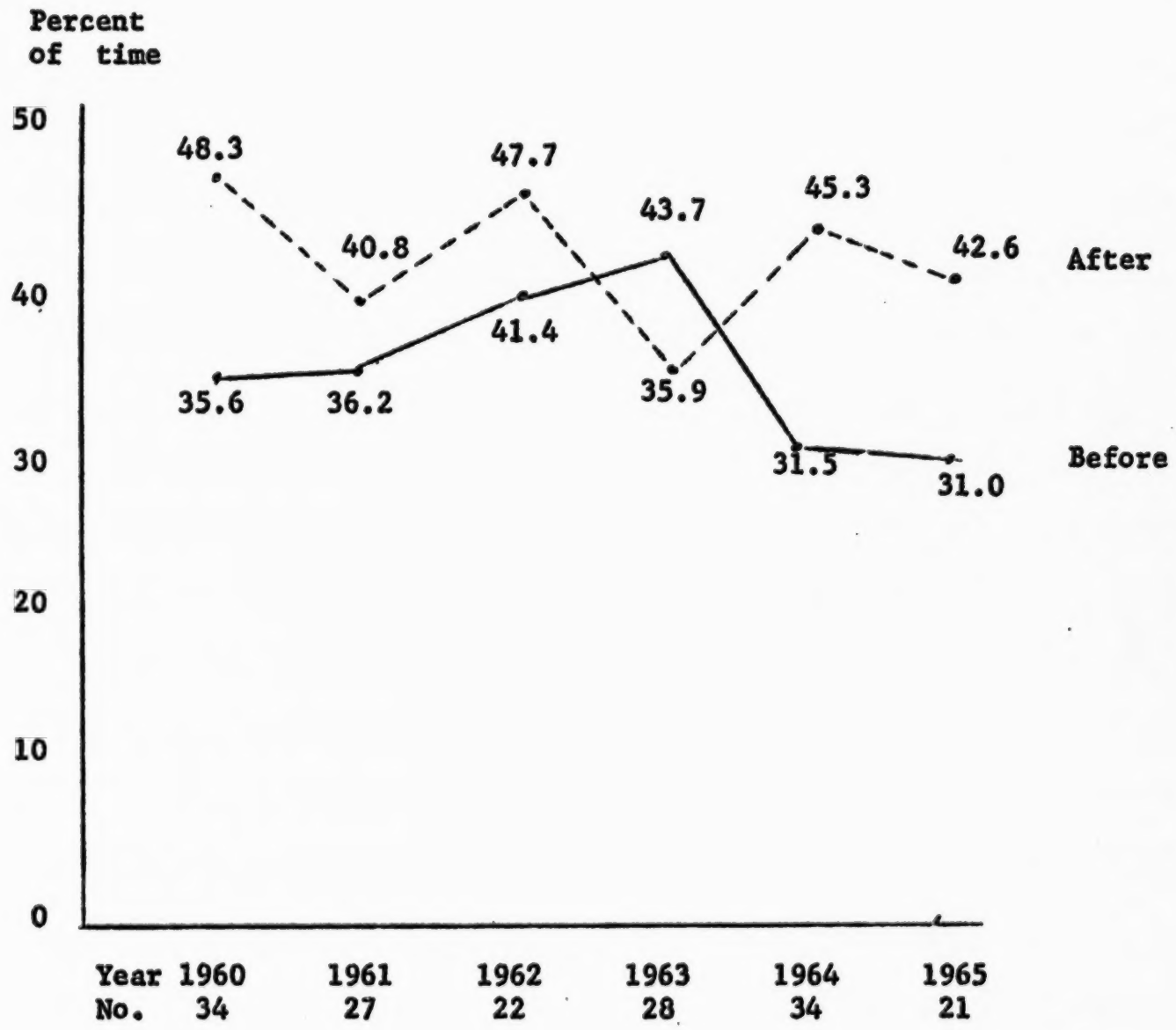

Figure 2. Mean Percentage of Teacher Time Proposed For Adult Education by Six Groups of Student Teachers Before and After Student Teaching, N. C. State, Agricultural Education, 1960-1965.

Figure 2 indicates that the mean score of five of the six classes of student teachers moved considerably toward the assumed, appropriate

appointment of fifty percent teacher time devoted to the adult education program. Many interesting questions are posed by (1) the consistent rise and fall in alternate years of the final scores reached by the different classes, (2) the sharp contrast of the 1963 class to the other five groups on both the initial and final scores, and (3) the generally "high" entry level of the classes of both 1962 and 1963. Future study should include data which could be analyzed to determine factors associated with the observed variation in both entrance and concluding scores.

Part III - Adult Education Activities

The third part of the attitude inventory provided student teachers with the opportunity to check any or all of a list of thirteen teacher activities related to adult education in agriculture. Figure 3 shows that all groups of student teachers accepted more of the activities after completing their student teaching. There appears to be a downward trend over the years in the number of adult education activities acceptable to student teachers. This seems true for both the number acceptable when student teachers began their student teaching semester and when they concluded it. The 1960 class accepted 9.4 of the activities at the beginning compared to 8.4 activities by the 1965 groups. Following student teaching, the 1960 group was favorable to 11.3 activities but the 1965 group averaged only 9.2 activities. Here again more data concerning the students, the trends among teachers in the field, and other factors (such as state leadership emphasis) could be utilized in an analysis of items associated with these apparent trends in attitudes by student teachers.

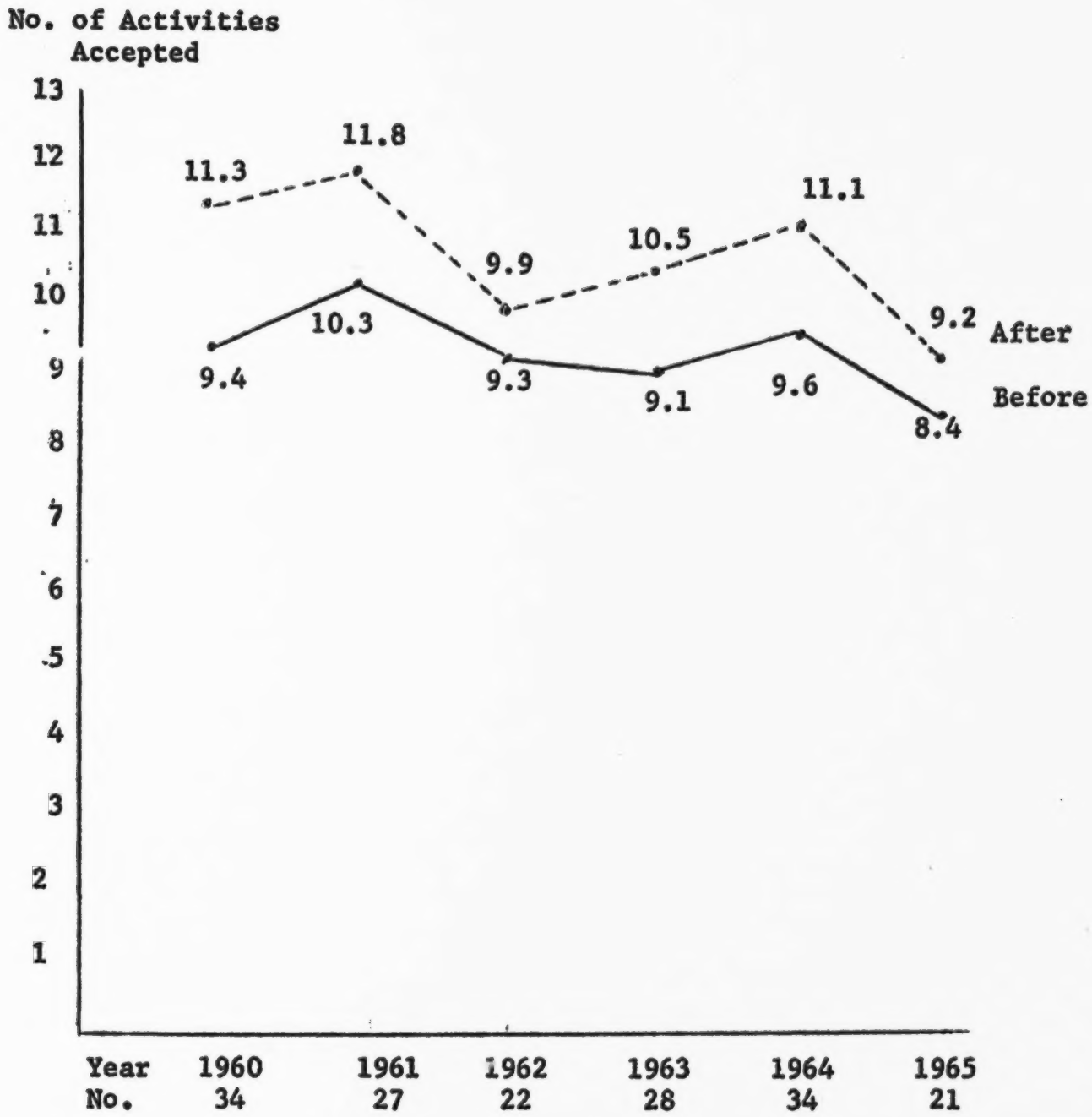

Figure 3. Average Number of Adult Education Activities Acceptable to 6 Groups of College Seniors Before and After Student Teaching, 1960-1965.

Figure 4 shows how student teachers accepted each of the 13 adult educational activities. Greatest gains were shown for (1) utilizing farmer clubs (20.2 per cent), (2) newspaper releases (19.4 per cent), (3) enterprise short courses (16.2 per cent), and (4) radio and television programs, (14.8 per cent).

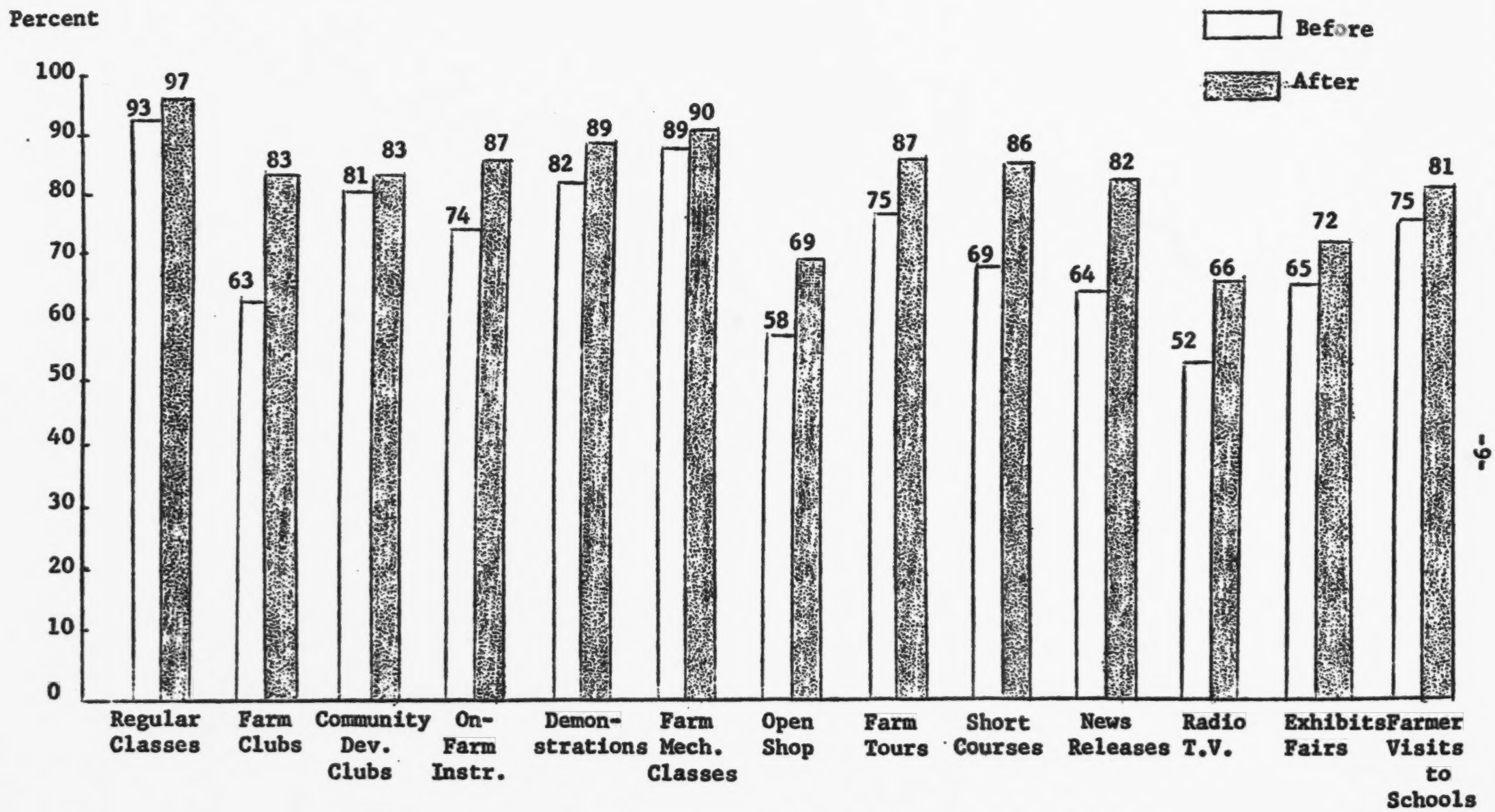

Figure 4. Percentage Acceptance of 13 Adult Education Activities Before and After Student Teaching, N. C. State, AED, 1960-1965

It should also be noted that most of the adult education activities had very high acceptance among the student teachers. Ten of the 13 activities were acceptable to at least 80 per cent of the 166 student teachers upon completion of their student teaching. This can also be seen from Figure 4.

Section B. Comparison of Year-Groups By Scaled Items

In the beginning it was explained that the first 14 items of the Attitude Inventory were answered on a five-point scale of agreement-disagreement. One-half of the items were designed to reflect a favorable attitude toward adult education when checked at the "agreement" end of the scale. In contrast, the other seven statements reflected a negative attitude when answered at the "agreement" end of the scale. The following analysis begins with that group of seven attitude items for which the most appropriate responses should have been "disagreement" with the statement. Thus on a five-point scale marked as follows, the more "positive" attitude toward adult education is reflected in the higher score:

SA	A	N	D	SD
1	2	3	4	5
Strongly Agree	Agree	Undecided or Neutral	Disagree	Strongly Disagree

Reaction to Negative Statements

In Figure No. 5 concerning the major function of Vocational Agriculture, it can be seen that four of the six groups of students began student teaching while tending to agree that "teaching boys" was the major function of Vocational Agriculture. A fifth group (1960) seemed essentially neutral on this item. After student teaching, the situation was reversed with four groups tending to disagree with the

above item and a fifth group having definitely moved toward disagreement. More important perhaps, is the indication that all six of the groups ended with a more favorable viewpoint toward adult education than they showed at the beginning.

Inventory Item No. 2. "The Major Function of the Vocational Agriculture Department Should be that of Teaching Vo-Ag to High School Students"

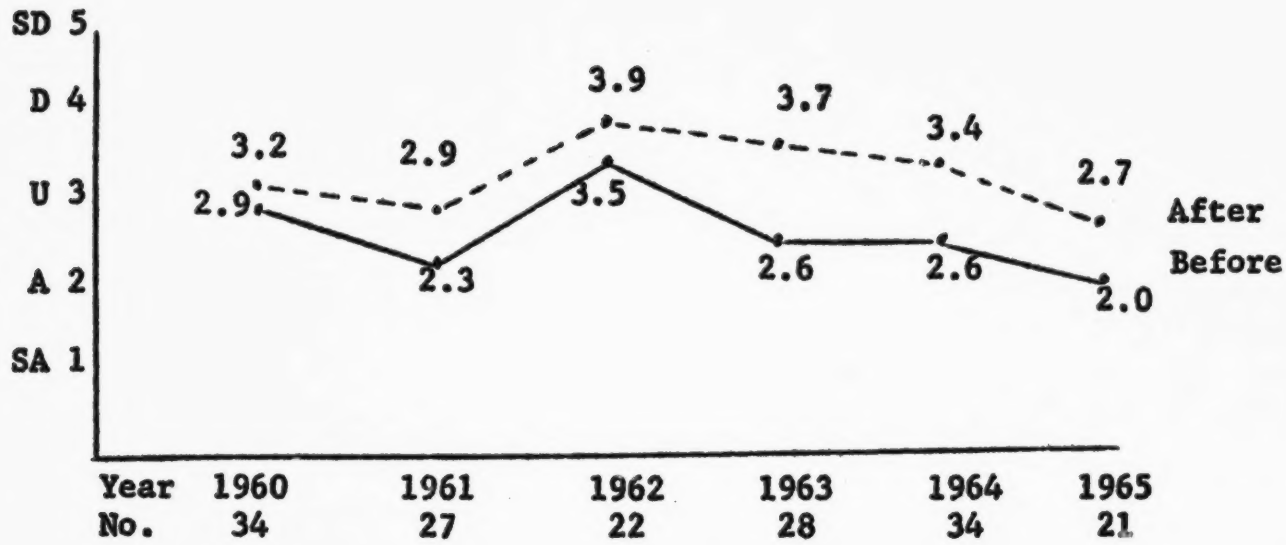

Figure 5. Comparison of Viewpoints of College Seniors Toward Statement No. 2 Before and After Student Teaching, N. C. State, Agricultural Education, 1960-1965.

The next item for which "disagreement" obviously represented a positive attitude toward adult education in the public school was the No. 3 statement. In essence, the statement proposed that the public schools should not provide adult education for farmers. In this case, all student groups entered student teaching with such strong views against the proposition that one would not expect much "gain" during the student teaching experience. Nevertheless there were slight gains exhibited by each class except for the 1960 group, which had only a slightly lower mean score at the end of the semester of work than at the start.

Inventory Statement No. 3: "All agricultural education for adult farmers should be provided by agricultural agencies other than the public schools."

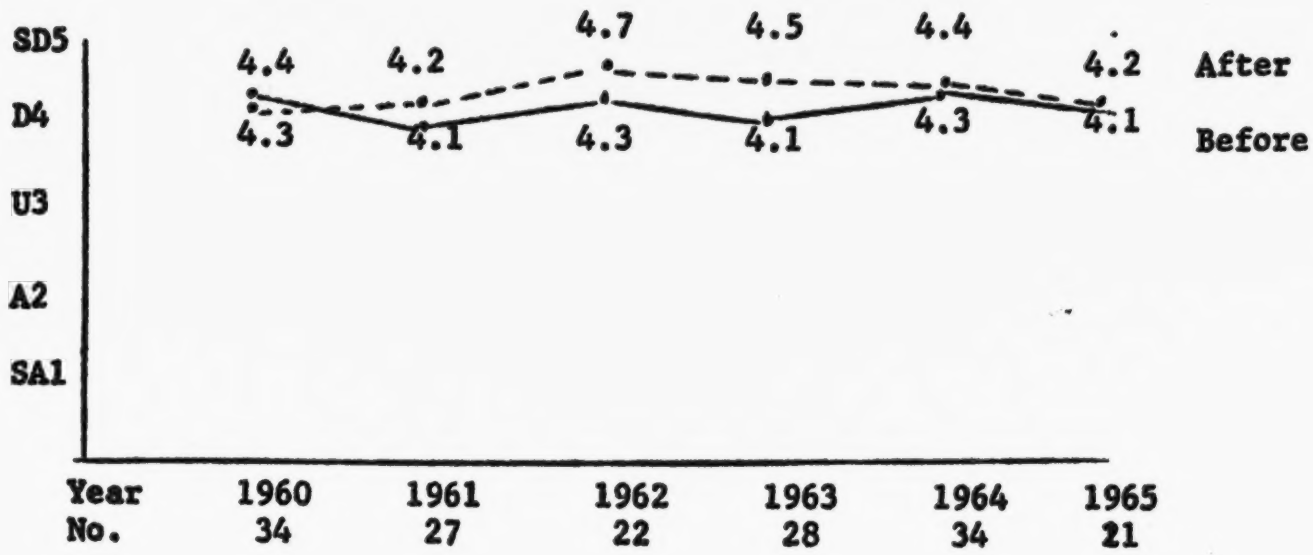

Figure 6: Comparison of Viewpoints of College Seniors Toward Statement No. 3 Before and After Student Teaching, N. C. State, AED, 1960-1965.

All classes except the 1963 group began student teaching with a definite tendency to disagree with viewpoint No. 8, (p. 13) an item which implied that public school education should not serve drop-outs or those over 21 years of age. However the 1963 group showed remarkable gain and ended with a mean score of 4.6, practically equal to the most advanced group. There was a decided gain here toward adult education for all the groups except the 1960 students, and their entry score was quite high. In addition there was a trend toward higher levels of positive attitudes toward adult education from the 1960 group to the 1965 group.

Inventory Statement No. 8: "Free public school education in N. C. should stop with age 21 or upon completion or dropping out of high school".

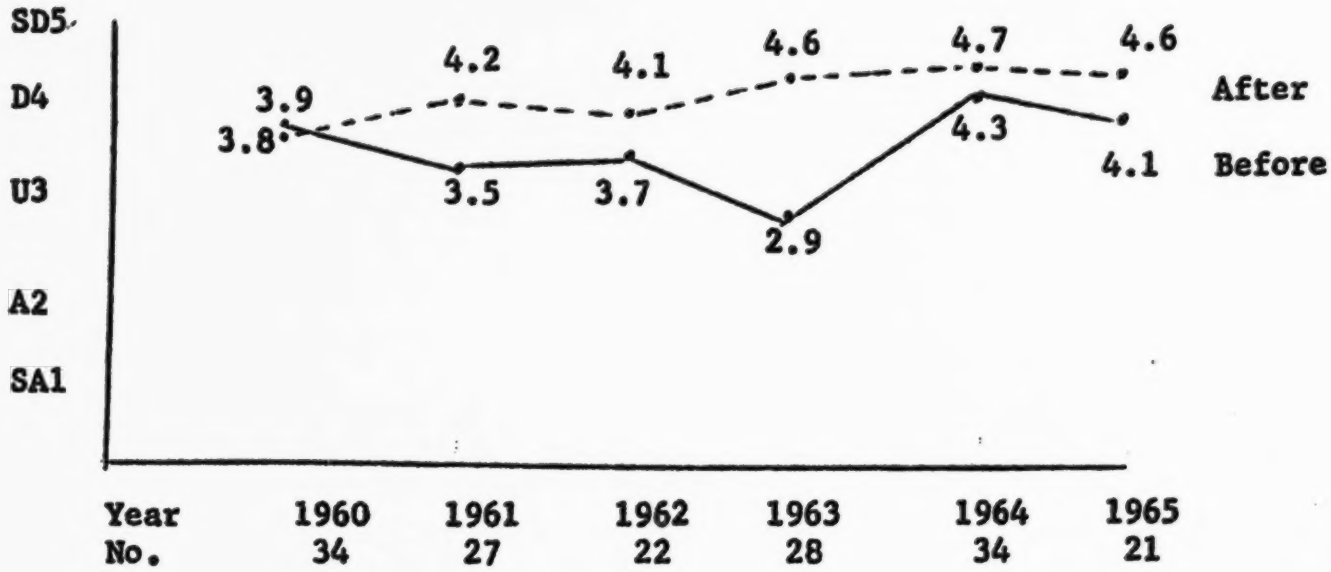

Figure 7: Comparison of Viewpoints of College Seniors Toward Statement No. 8 Before and After Student Teaching, N. C. State, AED, 1960-1965.

The next two items, No. 10 and 11, attached school fees to the privilege of having adult education programs. The No. 10 item placed all costs upon the adult receiving the education. On the initial survey, the student teacher groups generally (5 of 6) exhibited only slight disagreement with this view. All six groups increased slightly in this disagreement during their student teaching. Generally the gains were greater over the last three years (1963-1965) than in the earlier years; this despite the somewhat higher entering scores of student teachers during the latter years.

As for item 11, which asked only that a major portion of the cost be paid by adult students, the student teachers tended to be neutral or slightly less critical of it. Upon completion of student teaching, some gains had been made by four of the six groups, while the 1960 and 1965 students evidenced little change in their views.

Inventory Statement No. 10: "Public school education in N. C. should be extended beyond the high school level to specialized groups with specialized needs provided these groups pay all of the costs of such education."

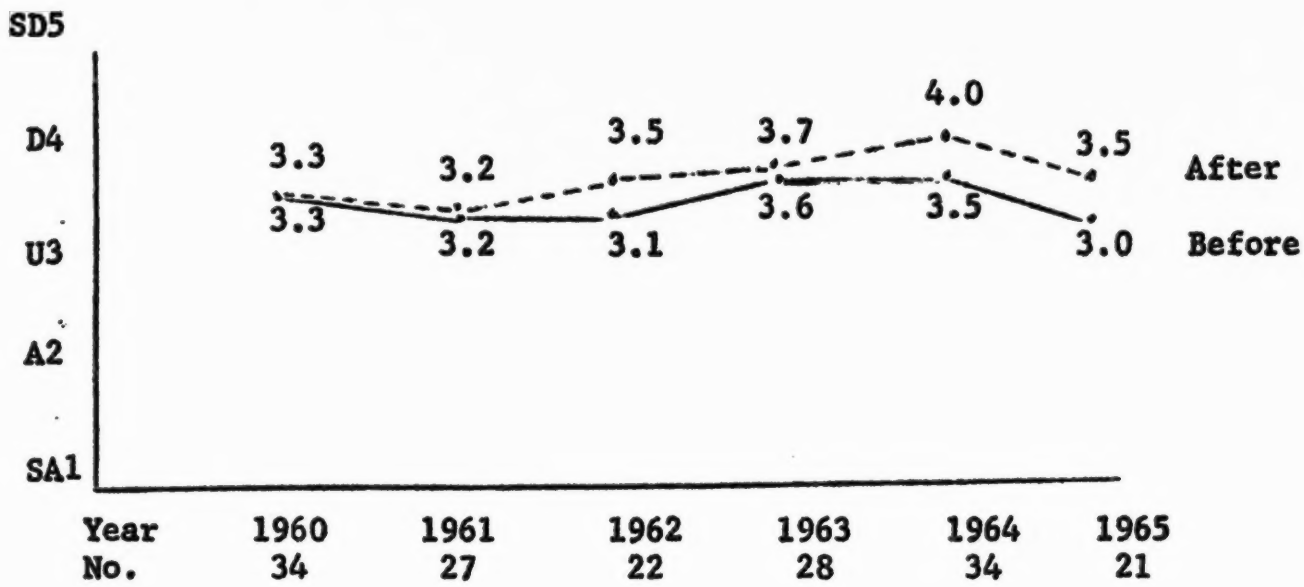

Figure 8: Comparison of Viewpoints of College Seniors Toward Statement No. 10 Before and After Student Teaching, N. C. State, AED, 1960-1965.

Inventory Statement No. 11: "Same as No. 10 except provided these groups pay a major portion of the cost of such education.

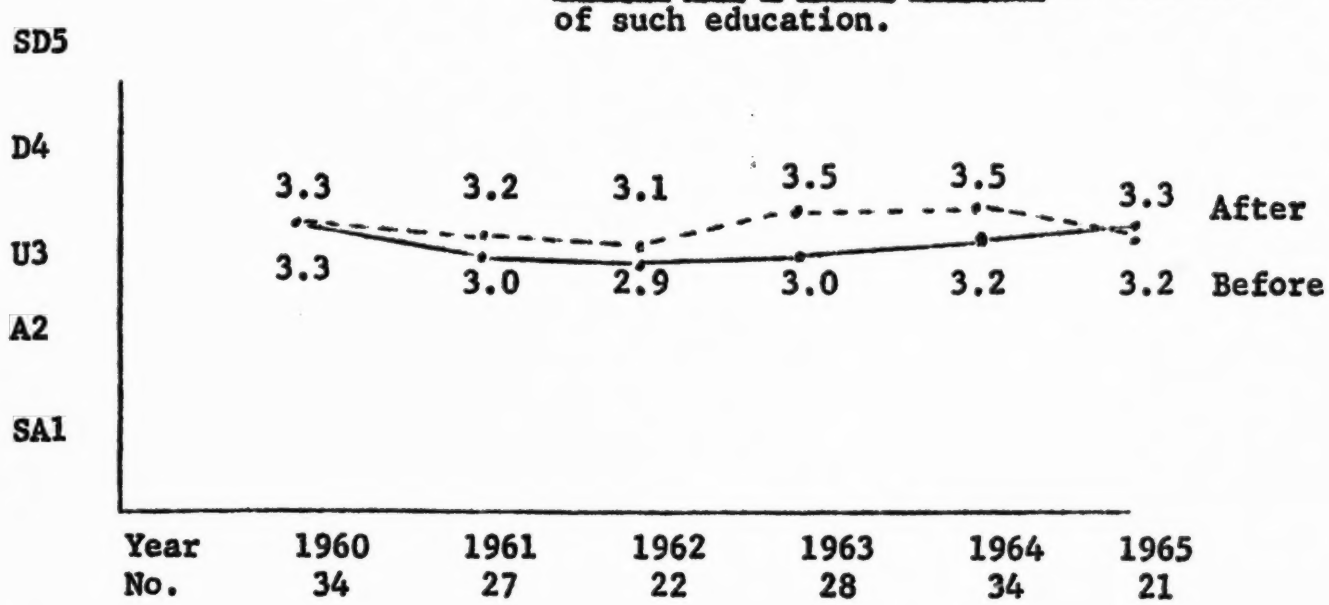

Figure 9: Comparison of Viewpoints of College Seniors Toward Statement No. 11 Before and After Student Teaching, N. C. State, AED, 1960-1965.

Item 13 was in a sense another way of stating Item 3 of the inventory and was considered an aid to the validity of this inventory. The classes varied mainly in the attitude they brought to the student teaching semester. The 1960, 1961, and 1962 classes gave generally uniform, high initial scores, reflecting confidence in the Vo Ag Departments' programs for meeting educational needs in adult farmer education. The 1963, '64, '65 groups exhibited considerably lower scores. In addition, each of the last three years showed declining scores over the previous year. However, all six groups ended student teaching with fairly uniform, high mean-scores. Again, the results indicated approval of adult education in agriculture as a function of the public schools.

Inventory Statement No. 13: "Other agencies, such as Agri. Extension, Soil Conservation Service, and F. H. A. are in far better position to meet the educational needs of farmers than are the public schools through their programs of Vo. Ag.

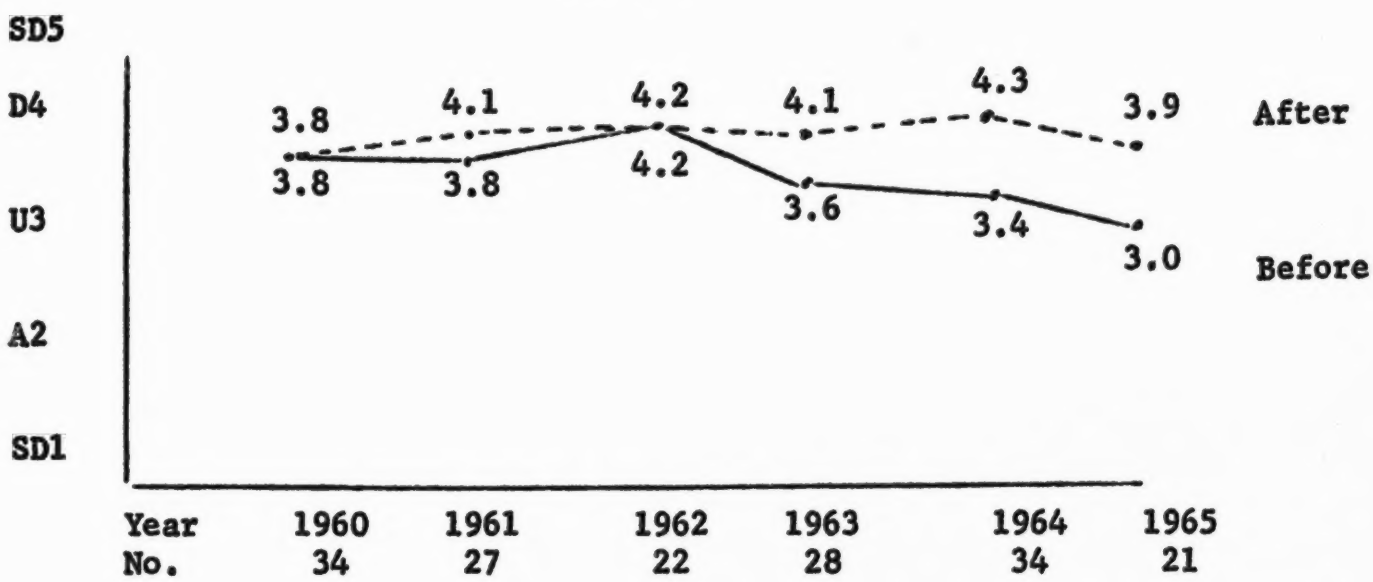

Figure 10. Comparison of Viewpoints of College Seniors Toward Statement No. 13 Before and After Student Teaching, N. C. State, AED, 1960-1965.

On the question of administrative problems (Item 14), five of the six groups concluded student teaching with mean-scores more favorable to adult education than they were at the beginning. The 1962 class showed a slight regression in their score but still ended with a position equal to the 1960 class. In summary, the groups tended to be neutral toward the statement upon entry and tended to see adult education favorably at the conclusion of student teaching.

Inventory Statement No. 14: "Having adult education programs in Vo Ag causes many administrative problems".

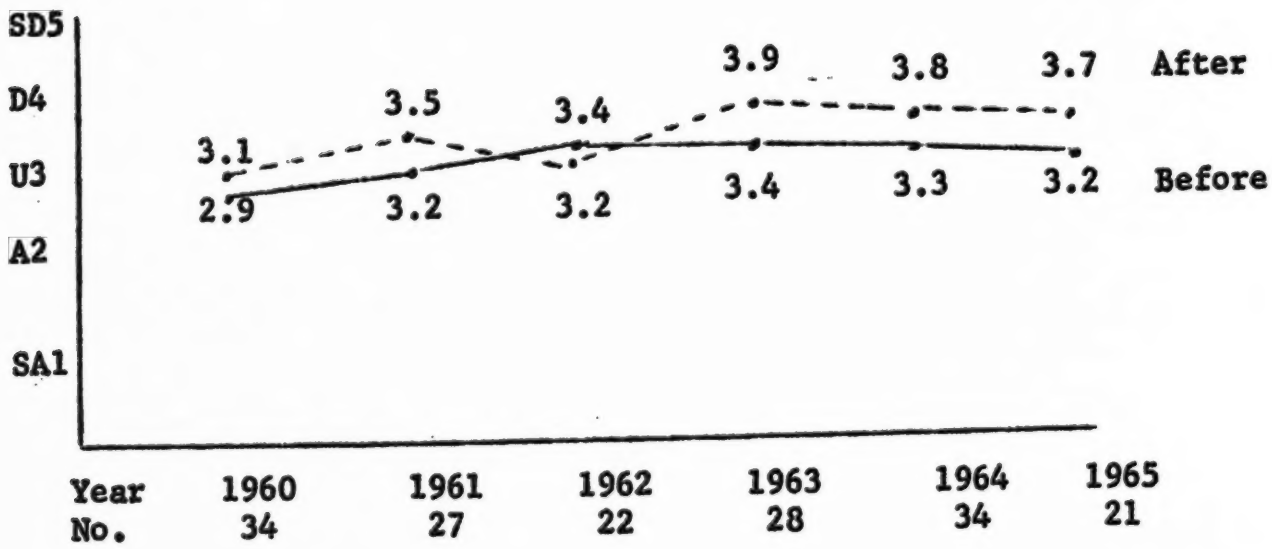

Figure No. 11. Comparison of Viewpoints of College Seniors Toward Statement No. 14 Before and After Student Teaching, N. C. State, AED, 1960-1965.

Reactions to the Positive Statements

This final group of seven attitude-inventory items are all statements favorable to adult education. They were distributed at random within the inventory but are presented here as a group for convenience in comparison of student reactions.

In the previous seven negative items, a high score indicated favorable attitude toward adult education, although disagreement with the inventory

item. To preserve the continuity of the report and provide convenience in comparing the two sets of seven items, it was decided to present each of this second set of statements on a "reversed" scale. The scale thus appears as follows with SA meaning "strongly agree" and SD, "strongly disagree".

SA	A	N	D	SD
5	4	3	2	1

In all of the following seven statements a <u>high score</u> is considered favorable to adult education in agriculture, just as in the first set of scores.

The next graph, Figure 12 shows that entering student teachers strongly approved of the general responsibility of public schools for adult education. Following student teaching, students were even stronger in their approval and this held for all six groups.

Inventory Statement No. 1: "It is the responsibility of public schools to provide educational opportunities for all persons who need, desire, and can profit by such education".

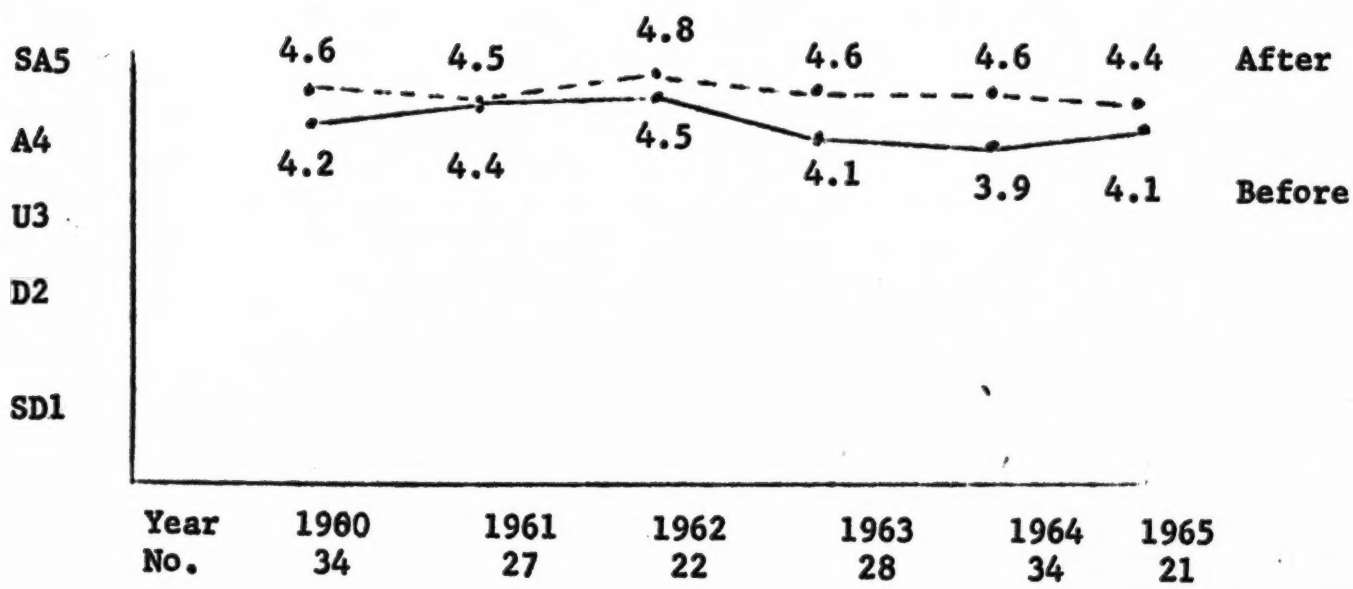

Figure 12. Comparison of Viewpoints of College Seniors on Statement No. 1 Before and After Student Teaching, N. C. State, AED, 1960-1965.

As seen in Figure 13, when the question of adult education was related to the responsibility of the depattment of vocational agriculture and stated as a primary responsibility, the approval of entering student teachers was less favorable than in the preceding question. Yet the final reaction of each of the six groups showed "approval" gains, and the concluding levels of approval were high. The last three groups (1963-64-65) tended to show slightly lower entrance scores but responded with generally larger gains.

Inventory Statement No. 4: "Teaching Vo Ag to Adult Farmers is one of the primary responsibilities of the Vo Ag teacher."

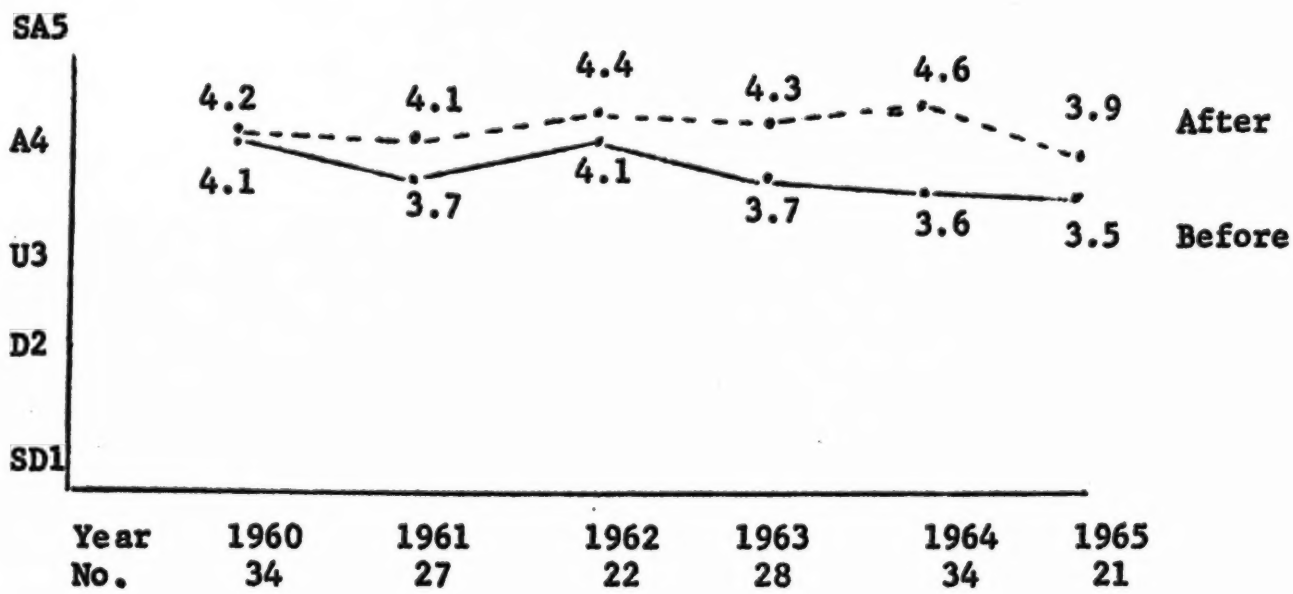

Figure 13. Comparison of Viewpoints of College Seniors Toward Statement No. 4 Before and After Student Teaching, N. C. State, AED, 1960-1965.

The graph for Item 5, concerning home visitations as a part of the Vo Ag program, indicated almost universal agreement among the six groups and at a very high level of approval for the item. In the retrospect, this item might be improved by making it more specifically related to visits to adults. In the minds of entering student teachers, the word "students" probably does not include "adults". Thus the high

initial score could be more a product of their favorable reaction to home visits to pupils. Since it may be assumed that the final score includes "adults" as part of the concept of "students" (because of the nature of student teaching), one can speculate that the final score here represents more gain than is indicated by the score.

Inventory Statement No. 5: "The time for making home visits to students of Vo Ag should be recognized as part of the Agriculture teacher's load".

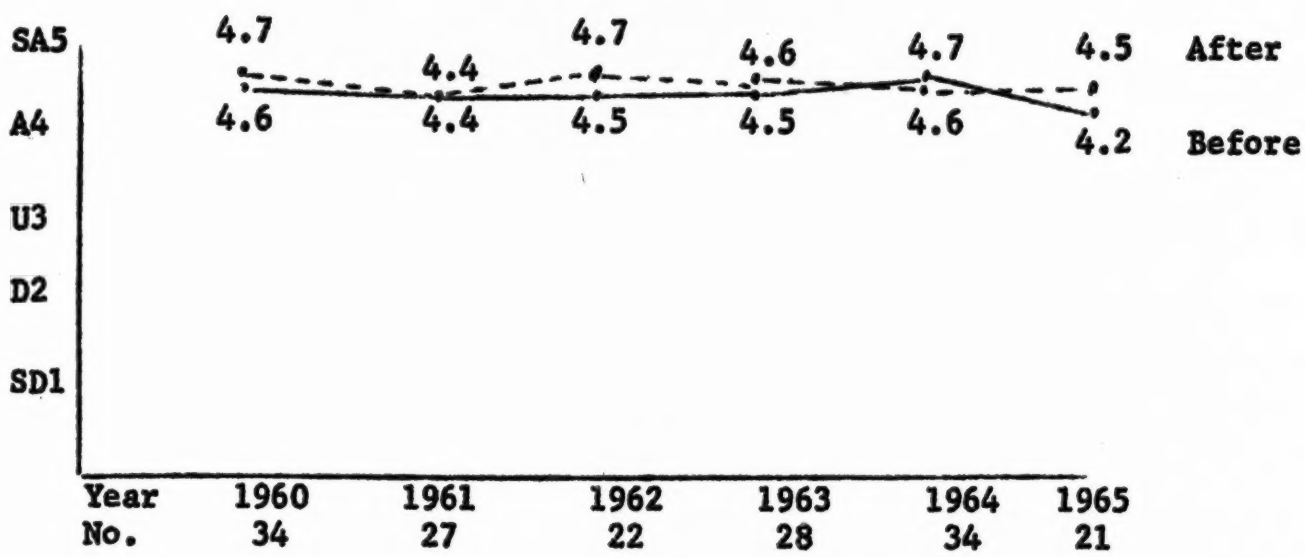

Figure 14. Comparison of Viewpoints of College Seniors Toward Statement No. 5 Before and After Student Teaching, N. C. State, AED, 1960-1965.

In the next graph, student teachers indiaated the strongest approval for any statement in the inventory. This statement, No. 6, dealt with time for adult classes. In no case was there a mean score below 4.2 (4.0 is "agreement"), and for five of six groups this high approval was increased during student teaching. It may be noted that in the last three years (1963-1964-1965) the entrance scores were somewhat lower than for the first three years.

Inventory Statement No. 6: "Schedules for Vo Ag Teachers should provide time for work with adult classes.

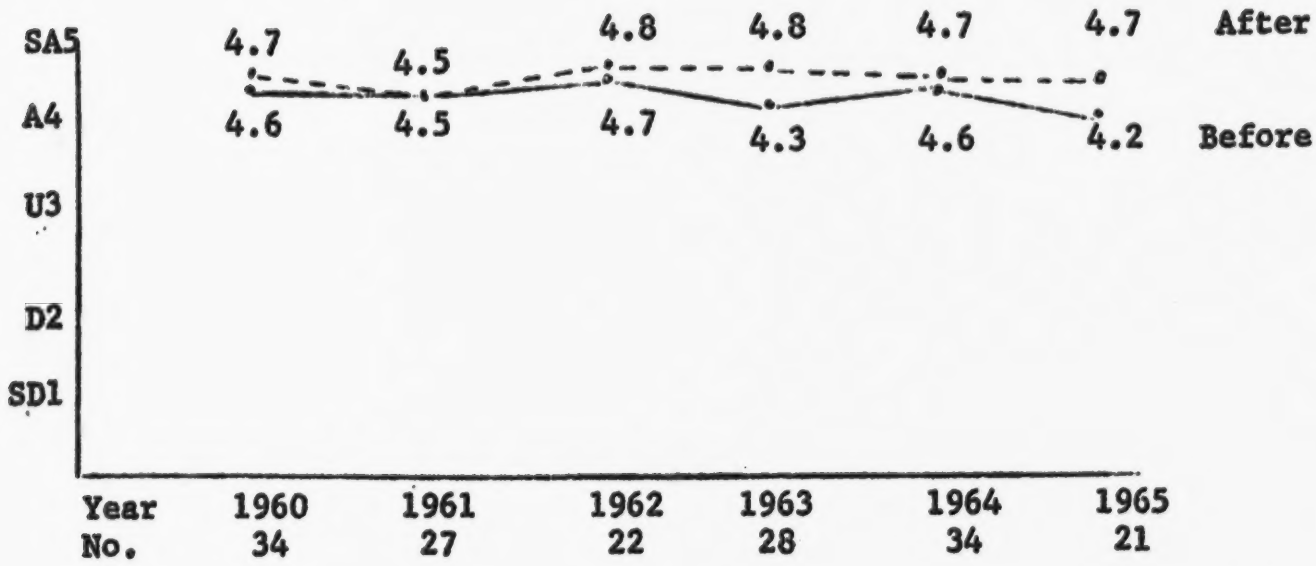

Figure 15. Comparison of Viewpoints of College Seniors Toward Statement No. 6 Before and After Student Teaching, N. C. State, AED, 1960-1965.

Item 7 is shown in Figure No. 16 and indicates greater variation and lower approval both on beginning and ending mean scores than was shown in the previous two items. In general, there was approval on entrance scores for the concept that adult farmer classes should be held in every Vo Ag department. There was also "gain" for each group except in 1962, and these gains were exceptionally uniform in amount.

Inventory Statement No. 7: "Classes for adult farmers should be organized and conducted in each school that maintains a department of Vo Ag.

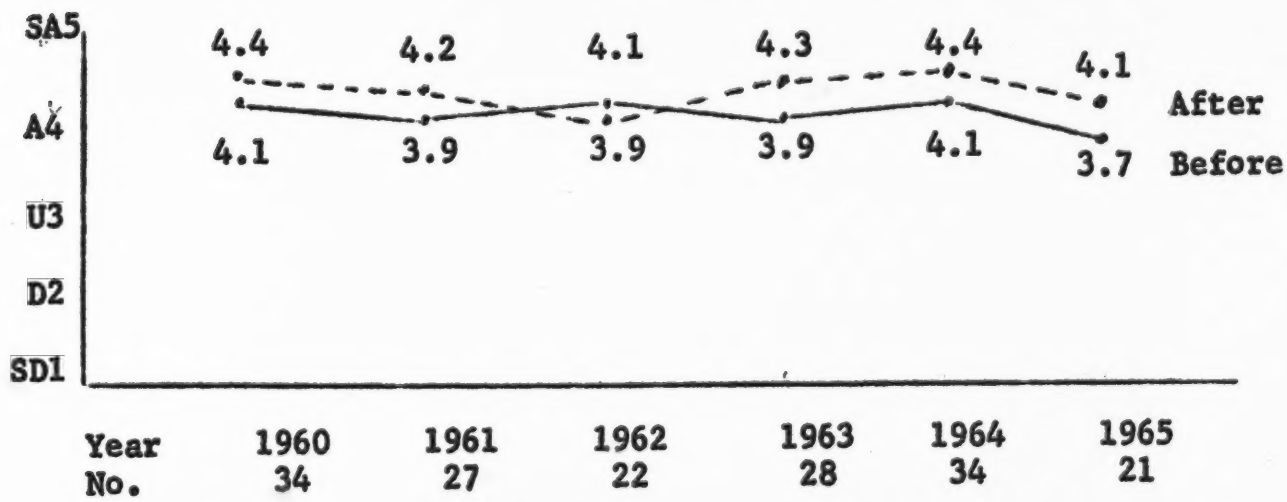

Figure 16. Comparison of Viewpoints of College Seniors Toward Statement No. 7 Before and After Student Teaching, N. C. State, AED, 1960-1965.

On the question of public school adult education for specialized groups with specialized needs (Figure 17), beginning student teachers over the years exhibited a fairly uniform tendency for approval at the 3.6 to 3.9 level. And there was a general gain exhibited by five of the six groups. However, the 1962 group again, as in Figures 11 and 16 showed exception to the trend and dipped considerably below their initial viewpoints. The final mean-score of 3.1 for the 1962 group is so much below the final mean-score of the second lowest group (3.8) that further study of this group and the student teaching situation in 1962 might provide insights helpful in future planning.

Inventory Statement No. 9: "Public school education in N. C. should be extended beyond the high school level to specialized groups with specialized needs."

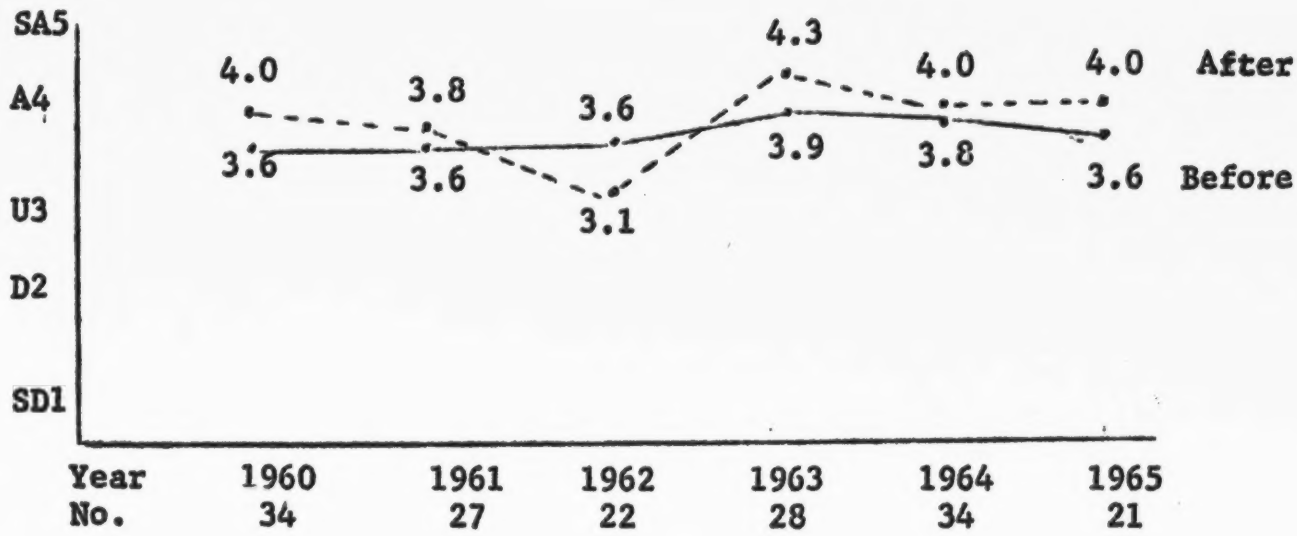

Figure 17. Comparison of Viewpoints of College Seniors Toward Statement No. 9 Before and After Student Teaching, N. C. State, AED, 1960-1965.

The final item discussed in this section is shown in Figure 18 and is a modification of Item 9 presented previously in Figure 17. In

essence, it adds "cost", only a part of the cost, to the question of public schools providing adult education for specialized groups. The responses to this statement are unique in that three of the six groups tended to lower their approval for it after having had student teaching, and a fourth group indicated no gain in viewpoint. The scores after student teaching did however show more uniformity among the six groups than did the entrance scores. In general, student teachers indicated little change of viewpoints and the overall ending scores were among the lowest for any of the fourteen items--although still indicating a slight tendency to approve the practice of charging part of adult education costs to the enrollees.

Inventory Statement No. 12: "Same as No. 9 except add: 'Provided these groups pay a part of the cost of such education'."

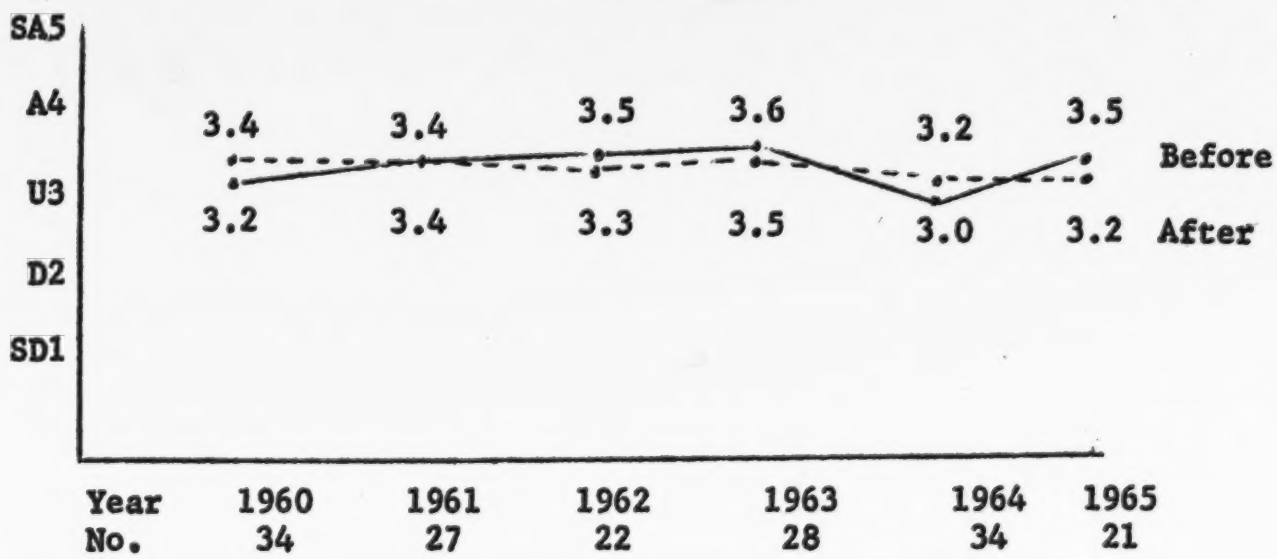

Figure 18. Comparison of Viewpoints of College Seniors Toward Statement No. 12 Before and After Student Teaching, N. C. State, AED, 1960-1965.

Summary

This was a study of the differences in attitudes toward adult education exhibited by college seniors before and after their semester of student teaching. The sample was the total population and consisted of 166 student teachers who experienced student teaching during the six year period 1960-1965. Data were collected at the beginning and ending of each semester by means of a twenty-nine item attitude inventory. The following is a summary of the data:

(1) Each of the six student groups showed a gain in favorable attitude toward adult education as a function of the public school. (p. 3)

(2) There was a statistically significant variation by years (classes) in (a) the initial scores, (b) ending scores, and (c) amount of change in attitude toward adult education. (p. 2)

(3) There was, generally, a trend toward lower student attitude scores upon entry during the last half of the study. (p. 4)

(4) There was, generally, a higher level of ending scores during the last three years than during the first part of the study. (p. 4)

(5) After student teaching, five of six groups specified a larger proportion of teacher time should be devoted to the adult education program. (p. 6)

(6) Before student teaching, the amount of teacher time which students reported should be devoted to adult education ranged from 31 to 43.7 per cent. After student teaching, the range became 35.9 to 48.3 per cent. (Figure 2, p. 5)

(7) All year-groups of student teachers accepted a wider range of adult education activities after having had student teaching. At the end, ten of 13 activities presented were acceptable to 80 per cent or more of the 166 teachers. (P8)

(8) Analysis of 14 individual items revealed:

(a) Prior to student teaching five of six groups tended to agree that "teaching high school boys" was the major function of Vo Ag (Figure 5, p. 10)

(b) After student teaching, four of six classes tended to disagree with the above statement, and all six classes showed changes in viewpoint which implied greater acceptance of adult education as a major function of the Vo Ag department. (Figure 5, p. 10)

(c) In the last three years (1963-4-5) there were successive increases in the tendency of entering student teacher groups to agree that teaching high school boys is the major function of vocational agriculture. (Figure 5, p. 10)

(d) Student teachers exhibited strong disagreement (before and after student teaching) with the ideas of (1) all adult education should be left to "other" agricultural agencies and (2) "Other" agencies are better able to serve farmer needs than the public schools. (Figure 6, p. 10)

(e) Student teachers strongly approved (before and after student teaching) adult education by public schools for all who need and desire it, and (2) of teaching Vo Ag to adult farmers as a primary responsibility of the Vo Ag teacher. (Figure 12, 13) There were indications of substantial gains in these viewpoints during the student teaching period.

(f) Student teachers did not approve of assessing adult farmer enrollees with more than a minor part of the costs of adult education. (Figures 8, 9, 17, 18)

Conclusions and Implications

This study is evidence that student teachers gained a more positive attitude toward adult education as a function of the public school and as a primary responsibility of the teacher of agriculture.

There is indication that the student teaching experience in more recent years has been more effective in the above respect than it was in the first three years of the study.

During their student teaching semester, students also developed greater acceptance of a broad spectrum of adult education activities in agriculture and elevated their standards concerning the amount of teacher time which should be devoted to adult education.

The study also revealed some attitudinal levels among entering student teachers which indicate further study is needed. There should be some concern that the more recent classes entered student teaching with lower attitudes toward adult education than exhibited by earlier classes.

Implications

Some implications from this study are:

1. For research: Future studies of the student teaching program should be designed to include pertinent independent variables. Among these variables should be student characteristics, factors pertaining to the off-campus student teaching situations, and selected economic, sociological, and educational trends which would have potential for providing greater understanding of the problem under study.
2. Teacher educators should be acquainted with this study as one means of supporting their belief in the value of the student teaching experience. Other institutions should attempt to verify the conclusions drawn herein with studies of their own situations.
3. The evidence that the more recent student teachers seem to be entering student teaching with less appreciation for the public school adult education function should be used to stimulate discussion

among leaders in adult education concerning this question:

"In this changing society, to what extent should the public school assume a responsibility for adult education in the future."

APPENDIX A

Significance of Mean-Increases By Items

A comparison and indication of significance[1] of the mean increases for each of the 14 items concerning attitudes toward public school adult education from before to after student teaching involving 5 years[2] or a total of 133 students.

Item	Mean Increases
1. It is the responsibility of public schools to provide educational opportunities for all persons who need, desire and can profit by such education.	.2706*
2. The major function of the vocational agriculture department should be that of teaching vocational agriculture to high school students.	.5939*
3. All agricultural education for adult farmers should be provided by agricultural agencies other than the public schools.	.2105
4. Teaching vocational agriculture to adult farmers is one of the primary responsibilities of vocational agriculture teachers.	.3909*
5. The time for making home visits to students of vocational agriculture should be recognized as part of the agriculture teacher's load.	.1353
6. Schedules of vocational agriculture teachers should provide time for work with adult classes.	.2706*

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[1] By using the error term derived in the analysis of variance, confidence limits can be placed on each mean-increase to determine its significance. Those increases signified by asterisks are significant at the .05 level.

[2] One year, 1964, was omitted from statistical analysis due to the omission of student names on the questionnaires.

7.	Classes for adult farmers should be organized and conducted in each school that maintains a department of vocational agriculture.	.2180
8.	Free public school education in North Carolina should stop with age 21 or upon completion of, or dropping out of high school.	.3458*
9.	Public school education in North Carolina should be extended beyond the high school level to specialized groups with specialized needs.	.2656
10.	Same as Number 9 except add: "Provided these groups pay all of the cost of such education."	.1052*
11.	Same as Number 9 except add: "Provided these groups pay a major portion of the cost of such education."	.0601
12.	Same as Number 9 except add: "Provided these groups pay a part of the cost of such education."	.0075
13.	Other agencies such as Agricultural Extension, Soil Conservation Service, and Farmers Home Administration are in far better position to meet the educational needs of farmers than are the public schools through programs of vocational agriculture.	.3157*
14.	Having adult education programs in vocational agriculture causes many administrative problems.	.2255*

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ED013338

CONNECTICUT STATE DEPARTMENT OF EDUCATION
Division of Vocational Education
Hartford, Connecticut

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A Survey to Determine The Need for Auto Body Workers in Connecticut

May, 1966
Project Number 6514

VT000606

A SURVEY TO DETERMINE THE NEED FOR AUTO BODY WORKERS IN CONNECTICUT

The Greater Hartford Auto Body Association requested the Division of Vocational Education to conduct a survey of the needs for auto body workers. This organization offered to help in the identification of their own manpower needs and to involve other auto body associations throughout the state in the conduct of this survey. A questionnaire was designed by the Research Coordinating Unit of the Division of Vocational Education and was used by the interviewers to record the data obtained.

Table I shows the number of auto body shops listed in the yellow pages of the various area telephone directories as well as the number and percentages of these shops which were included in the survey.

TABLE I

A COMPARISON OF SAMPLE TAKEN
BY THE INDUSTRY WITH NUMBER OF SHOPS
LISTED IN THE YELLOW PAGES OF TELEPHONE DIRECTORY

Area	Shops Listed* in Yellow Pages	Auto Body Shops Contacted	Percent of Yellow Page Listings Sampled
NEW HAVEN	91	34	37
NORWALK	39	26	67
HARTFORD	96	40	42
NEW LONDON	27	13	48
BRIDGEPORT	55	30	55
WATERBURY	50	11	22

*Includes all establishments advertised as doing auto body work including new and used car dealers, paint and radiator shops.

RESULTS OF SURVEY

PRESENT EMPLOYMENT AND PROSPECTS FOR AUTO BODY WORKERS

TABLE II

Location	Presently Employed	Present Vacancies	Estimated Needs next 10 years
NEW LONDON	27	5	21
BRIDGEPORT	123	56	76
WATERBURY	43	7	19
NORWALK	107	27	71
NEW HAVEN	186	38	103
HARTFORD	216	52	354
TOTALS	702	185	644

TABLE III

SPECIAL STUDY OF OCCUPATIONAL
NEED FOR AUTO BODY WORKERS BY
LABOR MARKET AREAS*

ANSONIA	5	NEW HAVEN	20
BRIDGEPORT	10	NEW LONDON	25
BRISTOL	5	NORWALK	10
DANBURY	5	NORWICH	10
DANIELSON	5	STAMFORD	5
HARTFORD	45	TORRINGTON	5
MERIDEN	10	WATERBURY	15
MIDDLETOWN	5	WINDHAM	5
NEW BRITAIN	15		
		TOTAL	200

* According to the Labor Department these estimates were made without formal survey and were based upon a wide variety of source material.

OTHER SOURCES OF EMPLOYMENT FOR AUTO BODY WORKERS

It was suspected that a number of auto body workers find employment in the aircraft industries in Connecticut. Telephone conversations with personnel directors of the following companies revealed: (1)

1. On the date called, Sikorsky Aircraft would have hired, if they were available, 100 auto body workers.

2. Pratt & Whitney indicated that they do occasionally hire auto body workers for their mechanical skills, but do not hire auto body workers per se.

3. Kaman Aircraft indicated that they do hire skilled body workers but had no demand at that time.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Greater Hartford Area showed an immediate demand for 52 workers with an estimated demand for 354, or 35 per year over the next 10 years. The Labor Department showed an immediate demand for 45 auto body workers. Evidence seems to indicate that there is a need to provide auto body training somewhere in the Greater Hartford Area.

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(1) The question asked was - "Would you have a need for, or would you hire people trained in auto body work?"

Bridgeport showed an immediate need for 56 workers with a need for approximately 7 per year over the next 10 years. Sikorsky, a division of the United Aircraft Corporation located in Stratford, would have hired 100 auto body workers if they were available. It would appear that there is a need to introduce a training program in auto body mechanics somewhere in the Bridgeport Area.

New Haven showed an immediate need for 38 auto body workers with an estimated need for 103, or 10 per year over the next 10 years. Indications would seem to favor the inclusion of an auto body training program somewhere in the New Haven Area.

Norwalk showed an immediate need for 27 auto body workers with 71, or 7 per year needed over the next 10 years. Stamford was not included in this survey, however the Labor Department showed an immediate need for 5 workers in this area. Some consideration should be given to instituting an auto body training program in the Norwalk-Stamford Area in the near future.

The New London survey showed 5 immediate openings for auto body workers with 21, or 2 per year over the next 10 years. The Labor Department showed an immediate need for 25 workers in the New London Labor Market Area. Findings appear to indicate that while there may be a future need for an auto body training program somewhere in the New London Area, there may be some question as to its continuing demand.

The Labor Department showed a need for 5 auto body workers in the Windham Labor Market Area. There was no auto body survey conducted by the association in this area.

ED013338

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CONNECTICUT STATE DEPARTMENT OF EDUCATION
Division of Vocational Education
Hartford, Connecticut

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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A Statewide Survey of the Manpower Needs in the Fisheries Occupations in Connecticut

January, 1966
Project Number 6511

VT000617

Prepared by:
Robert E. Bennett
Consultant in Research
Research Coordinating Unit
Bureau of Vocational Services
Hartford, Connecticut

A STATEWIDE SURVEY OF THE MANPOWER NEEDS IN THE FISHERIES OCCUPATIONS IN CONNECTICUT

Purpose of the Study

To determine the occupational training needs in the fisheries industries including processing and marketing, and to further identify related occupations associated with the industry.

Methodology

Personal interviews were conducted with personnel in the Water Resources Commission, Board of Fisheries and Game, Marketing Division, Department of Agriculture and Natural Resources, the Shell Fish Commission, The State Department of Health, The State Development Commission, and the State Labor Department. Also interviewed were Mr. Edward Stolartz, Governor Dempsey's appointee to the Committee of Atlantic States Marine Fisheries and Mr. Edward Kelsey, boat repairman among others in the fishing industry.

Additional information was obtained from the United States Census of Population: 1960, the New England Annual Summaries of the Bureau of Commercial Fisheries for 1963 and 1964, and other related publications.

Overview of the Fisheries Industry in Connecticut

EMPLOYED IN THE FISHERIES OCCUPATIONS BY LABOR MARKET AREAS, CONNECTICUT CENSUS, 1960

Bridgeport	16
Hartford	14
New Britain	16
New Haven	31
New London, Groton and Norwich	81
Stamford	7
Waterbury	4
Grand Total	169

According to the 1960 Census seventy people were employed in fish processing. This indicates that there was a total of 239 people in the commercial fisheries industry in Connecticut.

ESTIMATES EMPLOYED BY OCCUPATIONAL GROUPS, 1965 ACCORDING TO INTERVIEW RESPONSES

1. The Fin Fishermen	175
2. The Shell Fishermen	100
3. Lobstermen	100
4. Manufacturing and Processing	70
Approximate Total	445

According to Board of Fisheries and Game, there were 352 licenses issued to shad, commercial lobstermen and fin fishermen. When 100 shell fishermen are added, the total number of people employed in the commercial fisheries industry amounts to 452.

The differences which are reflected in the three accounts can be attributed to at least three factors; first, five years have elapsed since the 1960 Census, and the unavoidable error in 25% sampling, second, the definition of a full-time commercial fisherman is not clearly delineated, and lastly, the obvious difficulty of tabulating cross-occupational interests in the industry, in terms of full-time employment. According to the licensing figures provided by the Board of Fisheries and Game it would appear reasonable to expect that upwards of 400 people are employed in the commercial fisheries industry in Connecticut. It should be remembered that sports fishermen are not a part of this tabulation.

Some estimates of the industry's total contribution to the Connecticut economy run as high as four million a year, but the 1964 Annual Report of the Bureau of Commercial Fisheries placed it at one million four-hundred and eighty-eight thousand dollars, considerably short of the estimate. The Bureau's Report for 1964 was $300,000 less than was reported in 1963. The industry has been in an almost continual decline since reaching its peak in the early 1900's.

THE FIN FISHERMEN

The fin fishermen, though largely operating off-shore, include in their numbers approximately 120 full and part-time fishermen who operate on the Connecticut River between April and June of each year. The shad harvest is worth upwards of $350,000 to the fishermen for this short season. Approximately 20-30 of these shad men fill out their fishing year with lobstering, scalloping and shore work.

The three cycle shad fishermen have invested up to $10,000 in pots, boat and gear, and other holdings. One of the major concerns of the shad fishermen is his net. Changes have taken place in net manufacturing which requires new methods of repair. It was felt that some training in net use and repair might be beneficial to the shad fishermen.

Some of the processing which takes place with the fisheries industry in Connecticut takes place in the shad filleting operations mostly performed between the areas of Haddam and Saybrook during the shad season. Approximately 60% of the shad is marketed out of the state to the Fulton Fish Market in New York and approximately 40% are sold in Connecticut. It was estimated that this industry could double it's income if enough trained filleters were available.

The off-shore fishermen whose harvest consist of both edible and trash fish have suffered most with the changing times. Stonington is the largest off-shore fishing center in the state with some 15 boats operating out of that port. Altogether there are approximately 20-25 off-shore fishermen operating from Connecticut ports. A few of them also dredge for clams and trawl for lobsters. Approximately 90% of their catch is marketed through either the Cooperative Processing Plant at Point Judith, Rhode Island, or the Fulton Fish Market in New York, or both. Most of the trash fish go to Point "Jude". It was felt by some that this was not a satisfactory arrange-

ment for Connecticut fishermen since Connecticut does not get the credit for fish landings and the allocation of funds from Public Law 88-309 is based upon the average of the values of both raw fish landed and fish manufacturing values for the three most recent calendar years as it relates to the total averages of the other states.

The question of the off shore fishermen's survival has many deep-seated problems associated with it, not the least of which is the economic plight with which he is faced. His boats are old and his gear needs up-dating. Without the sophisticated electronic equipment he does not venture out too far from the Connecticut shore. Some authorities interviewed felt that Connecticut could never have a good commercial off-shore fishing fleet because of its geographical location in reference to open ocean. Yet others felt that with modern up-to-date equipment this was a minor consideration and pointed to the out-of-staters harvesting the fish off Connecticut shores.

The investment required for modern equipment for the off-shore fishermen could exceed a million dollars. Young people are not encouraged in the face of this investment, nor do they show any great desire to enter into a commercial fisheries career when attracted by shorter hours and the prospect of steady work in other industries on shore. Replacement is normally through family tradition, but with each year there are fewer and fewer newcomers. It was estimated that because the average age of the off-shore Connecticut fishermen is between 50 and 70 years, Connecticut would need no more than 15 replacements in the next five years to maintain present manpower needs in this occupation. Training was not seen as a need for the off-shore fishermen, but a better information service was found to be more essential.

THE SHELL FISHERMEN

The number of shell fishermen have been estimated from 75 to 100. They deal primarily with oysters, clams and scallops. Lobstermen are not ordinarily included within this group, but together their numbers approach approximately 200. So far as the Connecticut fisheries industries are concerned in terms of economic contribution to the state, this group is responsible for almost two-thirds of the fisheries income. Once again, these businesses are fundamentally one-man operations. Some of them have invested up to one half million dollars in equipment and gear. Their markets are spread throughout nearby states and as far away as Pennsylvania. The lobstermen find little difficulty in marketing their catch. There is a ready demand on Connecticut's own shores and many take advantage of retailing to restaurants, or selling directly. A lobsterman is considered commercial when he has 25 or more lobster pots.

The shell fishermen has difficulty finding and holding labor when he is in his busy season. He depends on "pick-up" help, boys between 18 and 20 years of age, for which he pays from $1.50 to $2.00 an hour and the turn-over rate is high. Here again, the initial investment, the rugged character of the work, and the uncertainties of the yield, do not attract young career-minded youth into the occupation. The father's investment in boat, gear, and shore holdings is handed down to the most wanting sibling along with an apprenticeship of hard work.

Research facilities for the shell fishermen are growing in Connecticut. A great deal of new information is now becoming available which offers new hope for the future. Connecticut had entered into the seed oyster business and is exporting this seed to growing beds out of the state. This specialized business, while growing in importance, does not now create many jobs for the skilled or semi-skilled, though some likelihood for the need of technicians may develop in time. Presently only the highly trained professional is involved with the industry. The control conditions in the seeding and culturing process requires advanced training.

New Processes have been introduced into the shell fish industry, one of which involves depuration, a cleaning or decontamination process. Connecticut has no such processing center and the shells must be sent to Massachusetts for this operation. An added premium can be realized by the shell fishermen when he markets his product when this "shell-cleaning" operation has been performed, but there was no expressed need for individual training in this area.

It is generally well known that shell fish require special handling to get them to the market in good condition, and everyone agreed (including the Connecticut State Department of Health) that the Connecticut fishermen do a good job of maintaining quality. Little need was seen for the improvement in fish-keeping operations, but improvement was needed in the packaging and display of the product. It was also felt there was need for improvement in the dissemination of the latest trade information to the fishermen. It was further estimated that replacement needs for the shell fish industry would not exceed more than 20 people over the next five years in order to maintain present levels.

PROCESSING

As was mentioned, the shad industry does involve itself with "boning" the fish for approximately two months during April, May and part of June along the Connecticut River between Haddam and Saybrook. About 35 people, mostly women, are employed at approximately 10 different stations along the river in this work. The standard rate paid for filleting is 40¢ per fish and up to $200 per week can be earned by skilled filleters. Normally it would take about two weeks on the job to perfect this skill to enable a worker to reach the efficiency standard of eight fish per hour. It was estimated that there was a need for an additional 40-60 trained workers for this job. The availability of such a pool, it was estimated, could double the shad fish income in Connecticut.

Shucking of oysters, clams and scallops also takes place in Connecticut more or less on a part-time, or seasonal basis. It is difficult to tabulate the number of people involved with the operations, but 1964 Census figures indicate that there are approximately 70 processors. This Census also reported the value of manufactured fishing products at $375,000 for Connecticut.

SUMMARY

The industry has been on the decline since reaching a peak in the early 1900's. According to Mr. Theodore Bampton, Director of Fisheries and Game in Connecticut, the primary reasons for the decline include the failure of the

fishermen to modernize their gear, the lack of adequate facilities for docking and processing and the fact that young people are not encouraged to enter the business.

The indicated replacement total to maintain present levels of employment in the fishing categories was no more than thirty-five people. There was no indication of a need for replacement in the processing activities of the fishery industries except for the filleting of shad. In this operation it was determined that between 40-60 new employees would be needed on a seasonal basis over the next five years. In addition, there was a need for the up-dating and training of shad fishermen in the use and maintenance of nets.

Further information concerning the need for net maintenance and shad filleting training programs including possible locations and material needed could be had by contacting Mr. Edward Stolartz, Haddam, Connecticut.

It was generally agreed by most of those interviewed that the commercial fisheries industry needs to be better informed about the latest trade information and the results of new research now being presented.

CONCLUSIONS

1. The commercial fisheries industry in Connecticut appears to be a declining industry.

2. The shad fish industry could nearly double its income with more skilled filleters. However, this would involve training for seasonal employment in an area in which there may be difficulty obtaining interested students.

3. There is very little processing associated with the fisheries industry in Connecticut.

4. There is a natural reluctance for youth to enter the fisheries industry.

5. There was some need indicated for supplementary training in net use and maintenance for the fishing industry.

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ORGANIZING TO PROVIDE AGRICULTURAL EDUCATION

FOR

OFF-FARM OCCUPATIONS

(Outline from which transparencies
for overhead projection may be made)

The Center for Research and Leadership Development

in Vocational and Technical Education

The Ohio State University
980 Kinnear Road
Columbus, Ohio, 43212

The development of these materials was supported by a grant
from the
Division of Adult and Vocational Research
United States Office of Education

August, 1965

INTRODUCTION

The materials included herein have been prepared for use by interested individuals considering programs in off-farm agricultural occupations. They will be of value when working with school boards, administrators, consulting (advisory) committees, and other lay groups on state and local levels. These materials will be very useful to state vocational leaders when working with the above groups, with vocational teachers, and with vocational administrators or coordinators.

The format of these materials will allow the user to adapt them to his needs. They summarize points which must be considered when organizing any program that is to provide agricultural education for off-farm occupations.

These master sheets were prepared in large type to increase their effectiveness as a visual aid. Each page may be used directly on an opaque projector or reproduced by mimeograph for use with discussion groups. Transparencies to be used on an overhead projector may be made directly from each of these pages.

These materials were originally presented by Dr. H. M. Hamlin at the National Conference on Off-Farm Agricultural Occupations sponsored by the Center for Vocational and Technical Education in May, 1965.

OCCUPATIONAL EDUCATION: All education that contributes to occupational choice, competence, and advancement

VOCATIONAL EDUCATION: Specialized education for work in a particular non-professional occupation or a cluster of these occupations

TECHNICAL EDUCATION: Education provided ordinarily in one- or two-year programs beyond the high school which emphasizes science, mathematics, and laboratory procedures related to the occupations for which the students are preparing

AREA SCHOOLS: Junior and community colleges, vocational schools, technical institutes, and branches of universities serving areas usually larger than school districts

THE NEW PROGRAM IS MUCH MORE COMPLICATED THAN TRADITIONAL VOCATIONAL AGRICULTURE

1. Oklahoma study revealed 125 job titles.

2. Within each occupation there may be managers, supervisors, technical workers, salesmen, clerical workers, semiskilled workers, and unskilled workers.

3. Positions are filled by persons at many levels of ability.

4. Many more are available for inservice education than for preservice education.

WORK IN THIS FIELD IS DIFFERENT FROM ANYTHING WE HAVE DONE

1. Number training for any one cluster of occupations or any one level of an occupation usually too small to provide specialized training in high schools.

2. Teachers of agriculture cannot offer these programs without help from other vocational teachers, teachers of mathematics, science, and communication, and persons from business and industry.

3. We shall be working with a different set of people in business, industry, and government.

4. More responsibility for the success of these programs rests upon supervisors and teacher educators.

ALL TYPES OF AGRICULTURAL EDUCATION NEED FURTHER DEVELOPMENT

Non-vocational education in agriculture from the nursery school through the university

Counseling about agricultural occupations

Vocational education in farming for present and prospective farmers

Education for the agricultural professions

Education in agriculture for off-farm occupations

NO FORM OF AGRICULTURAL EDUCATION SHOULD BE ABANDONED OR SLIGHTED IN PROVIDING THE NEW PROGRAMS.

FACTORS FAVORING DEVELOPMENT OF THE NEW PROGRAMS

1. Displacement from farms

2. Shortage of skilled personnel in farm-related businesses and industries

3. Shortage of skilled services farmers would buy

4. Youth remaining longer in school and able to take specialized training

5. Reorganization of school districts makes more specialized programs in high schools possible.

6. New funds are available for new types of training.

7. Area schools, developing rapidly, provide settings for this kind of education not before available.

THE NEW PROGRAMS INVOLVE SHARED RESPONSIBILITIES

1. Local schools, area schools, colleges, and private agencies may share.

2. Governing boards, administrators, counselors, several kinds of vocational teachers, and "academic" teachers are involved.

3. Must work with organizations of employers and labor.

4. Many governmental regulations apply; government is an employer of our graduates.

5. Required by law to work with Employment Security.

STRONG STATE ACTION NEEDED IN DEVELOPING THE NEW PROGRAMS

1. Control over the number of schools offering any one program

2. State-level choice of schools in which new programs are likely to succeed

3. State-level help in conducting and evaluating pilot programs

4. More than customary percentage of funds from state and national sources

5. Recruiting and training a new group of teachers and program administrators

AREA SCHOOLS, RAPIDLY DEVELOPING, ARE ENGAGING IN AGRICULTURAL EDUCATION

1. Average of 35 area schools per state in 13 southern states

2. Six states have considerable agricultural education in area schools:

California	Minnesota	New York
Connecticut	Mississippi	North Carolina

3. At least nine other states are introducing agriculture into area schools:

Delaware	Kentucky	Tennessee
Florida	Oklahoma	Texas
Kansas	Oregon	Washington

4. A few area schools in other states are teaching agriculture.

AREA SCHOOLS OFTEN PROVIDE THE BEST SETTINGS FOR THESE NEW PROGRAMS

1. More students of a given kind can be assembled, costs per student can be kept down.

2. Some occupations call for entrants beyond high school age.

3. Many who need and want the training have left the high schools and will not return to them.

4. An area school with 10 to 20 vocational courses and a battery of related courses offers opportunities few high schools can provide.

5. Area schools are set up to cost more than high schools; more is spent for teachers and facilities.

6. Most area schools serve adults attending part-time as well as full-time students.

RESPONSIBILITIES FOR THE NEW PROGRAMS MUST BE DIVIDED

Local schools can:

- Provide education basic to specialization
- Counsel about agricultural occupations
- Introduce to broad fields within agriculture
- Prepare some for employment on school-leaving, others for further work in area schools or colleges
- Offer courses for adults with help of area schools and colleges

Four-year colleges and universities can:

- Help in conducting pilot programs
- Supplement offerings of local schools in states where area schools are not feasible
- Prepare personnel for the new programs
- Provide teaching aids
- Conduct related research

AIDS IN RECRUITMENT OF STUDENTS

1. Organizations of employers and workers

2. All publicity media

3. School representatives to the high schools of an area

4. Part-time employment

5. Financial aid for needy students

6. Low tuition costs

PLACEMENT SUGGESTIONS

1. Seek employment at standard wages wherever it can be found.

2. Develop contacts with employers outside the community or area as well as within it.

3. Services to local employers likely to be principally in upgrading their current employees.

STATE-LEVEL RESPONSIBILITIES IN DEVELOPING THE NEW PROGRAMS

1. Provide state-board policy adequate to support a developing program.

2. Formulate state administrative regulations.

3. Divide responsibilities between state department and colleges.

4. Arrange adequate financing.

5. Choose pilot centers, provide continuing, on-the-spot assistance to them.

6. Secure cooperation of supervisors and teacher educators in other vocational fields.

7. Recruit and train teachers.

8. Prepare teaching aids.

9. Arrange for evaluation and replanning of pilot programs.

10. Develop programs in areas other than the four in which the National Center has been working.

STATE-LEVEL ACTIVITIES MUST BE COORDINATED

Teamwork, such as we have never had, is required to coordinate the efforts of:

Supervisors and teacher educators in agriculture

Supervisory and teacher-education staffs in all vocational fields

Vocational educators and vocational counselors

Vocational educators and general educators

Local schools, area schools, colleges and universities

OFFICIAL POLICIES MUST BE DEVELOPED ADEQUATELY

New programs must not be introduced until policies governing them are adopted by the responsible boards:

State boards

Area school boards

Local boards

Board members must understand the policies adopted and be ready to back them against opposition.

THERE ARE MANY ADMINISTRATIVE DECISIONS TO BE MADE

1. Who will plan and conduct the programs?
2. How are classes to be scheduled?
3. How are students to be recruited, screened, counseled, placed, and followed up?
4. How is related work experience to be organized?
5. What will be the entrance and graduation requirements?
6. What testing will be provided? How?
7. How will deficiencies in basic education be removed?
8. What new vocational courses will be needed? What new supporting courses?
9. How will the programs be affected by labor laws?
10. What contributions will Employment Security make?
11. How can the programs be accredited?
12. Will it be possible to transfer credits to four-year colleges?

SOME HAZARDS IN DEVELOPING THE NEW PROGRAMS

1. Improvisation rather than planning
2. Many weak centers rather than a few strong ones
3. Attempting the impossible in high schools because most of our staff is in them
4. "Going it alone" and acquiring the misunderstanding of other educators
5. Failure to secure sponsorship by business and industry
6. Undertaking new programs with unqualified and overloaded teachers
7. Careless selection of trainees
8. Training persons who will not be employed or will be employed in dead-end jobs
9. Keeping capable youth away from programs better adapted to them
10. Forgetting the advantages of supervised practice and attempting to do everything in school buildings
11. Cheating youth out of general education
12. Allowing policy to be made by advisory committees and employers rather than by official boards

SUMMARY

1. Teachers of agriculture and school counselors must become better informed about the wide range of occupations requiring some education in agriculture.

2. Aggressive but careful state action is required in promoting the new programs.

3. We cannot depend on the local schools and colleges to develop specialized programs preparing for these occupations; most of these programs will be in area schools.

4. From the beginning we must work toward a broad pattern that takes into account all kinds and levels of these occupations although our beginnings are small.

5. We must avoid precedents which cannot be followed later.

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POLICY AND ADMINISTRATIVE DECISIONS NEEDED WHEN INTRODUCING VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTUR FOR OFF-FARM OCCUPATIONS

The Center for Research and Leadership Development
In Vocational and Technical Education

The Ohio State University
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Columbus, Ohio, 43212

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Policy and Administrative Decisions Needed When Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations

For boards and administrators of local schools, area schools, and colleges

The Center for Research and Leadership Development
in Vocational and Technical Education
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Publications on Off-Farm Agricultural Occupations
Available From
The Center for Research and Leadership Development
in Vocational and Technical Education
The Ohio State University
980 Kinnear Road
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This publication is one of a series relating to Off-Farm Agricultural Occupations developed at the Center for Vocational and Technical Education under a grant from the Division of Adult and Vocational Research, U. S. Office of Education. Each of these publicatuons was designed for a specific purpose. However, they are designed to complement and reinforce each other. It is suggested that persons using any of these materials will want to familiarize themselves with the other publications in this series. Following is a complete listing of this series.

1. Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations

2. Vocational and Technical Education in Agriculture for Off-Farm Occupations

3. Summary of Research Findings in Off-Farm Agricultural Occupations

4. Planning and Conducting Cooperative Occupational Experience for Off-Farm Agriculture

5. Occupational Guidance for Off-Farm Agriculture

6. Horticulture - Service Occupations (Course outline and twelve modules)

7. Agricultural Supply - Sales and Service Occupations (Course outline and twevle modules)

8. Agricultural Machinery - Service Occupations (Course outline and sixteen modules)

9. Agricultural Chemical Technology (Course outline and nine modules)

PREFACE

The implementation of the provisions of the Vocational Education Act of 1963 has rapidly increased the number of schools providing training for off-farm agricultural occupations. Programs are being developed for several levels of preparation by local schools, area schools, and community colleges. In most of these institutions, policy will have to be established or re-examined before these programs can be made operational. Crucial administrative decisions affecting the success of such programs also need to be made.

This publication has as its major objective the orientation of boards and administrators of local schools, area schools, and colleges to the fundamental policy and administrative decisions upon which the success of programs preparing students for entry into off-farm agriculture depend. Identified herein are the critical areas and prime considerations where basic policy and administrative decisions pertaining to the school's program in off-farm agriculture are needed.

Background information presenting the needs, objectives, benefits, means of involving the community, and descriptions of typical programs appeared in a companion publication of The Center entitled, Vocational and Technical Education in Agriculture for Off-Farm Occupations. These two publications provide assistance for governing boards and administrators to "think through" the essential elements of designing and establishing administratively sound programs of education for occupational entry into off-farm agricultural positions.

This publication was prepared by Dr. Herbert M. Hamlin, former Chairman and Professor Emeritus, Division of Vocational and Technical Education, College of Education, University of Illinois. Dr. Hamlin's writing and leadership in policy development and interest in total

community programs of vocational education eminently qualify him to prepare this publication.

Although the final responsibility for the content rests with Dr. Hamlin and members of the Project Task Force, grateful acknowledgment is made of the assistance of the following persons who reviewed drafts of this publication and made many valuable comments: Mr. Harry G. Beard, Associate Professor of Education, School of Education, North Carolina State University, Raleigh, North Carolina; Dr. James Hensel, Specialist in Agricultural Education, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus, Ohio; Mr. Robert Kozelka, Chief of Business and Distributive Education, State Department of Education, Springfield, Illinois; Dr. William B. Logan, Professor and Director, Distributive Education Institutes, College of Education, The Ohio State University, Columbus, Ohio; Mr. Sidney S. Sutherland, former Chairman and Professor Emeritus, Department of Agricultural Education, University of California at Davis; and Dr. Ralph Wenrich, Head, Department of Vocational and Practical Arts Education, College of Education, University of Michigan, Ann Arbor, Michigan.

The reader's attention is directed to the other publications developed by the project and designed to supplement this title.

We hope this material will be of assistance to teachers and administrators in developing needed programs in this area. We solicit your reactions and suggestions for its improvement.

Robert E. Taylor
Director
The Center for Research
and Leadership Development in
Vocational and Technical Education

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SUMMARY

In introducing vocational and technical education in agriculture for off-farm occupations, schools and colleges are entering a broad area that has been only partially explored.

The new program must be related to existing programs of agricultural education, other forms of vocational and technical education, and the total program of a school or college.

The clientele who might be served by this kind of education is almost two times as large as the traditional clientele (farmers and prospective farmers) of vocational agriculture based on research evidence now available.

Policy decisions should be made by a governing board when the first program of this type is introduced. Their decision should not have to be abandoned or greatly changed as other related programs are added.

Because the program is new and those conducting it are often inexperienced in this type of education, the risk of failure is great. Every possible precaution should be taken in developing the program if it is to succeed and grow.

The understanding and support of governing boards is indispensable.

Administrators of several kinds are involved: The chief administrative officer of an institution, the top-level administrators associated with him, and the heads of divisions and departments. Counselors and several kinds of teachers share in providing the program. It is the responsibility of administrators to see that the needed cooperation is secured.

Consulting committees (advisory committees) have proved their worth in

conducting these programs, but they must be established and used with care and must be restricted to advising the board and the professional staff.

The need for vocational and technical education in agriculture for off-farm occupations and some general suggestions for developing it have been discussed in another publication in this series.[1] This publication deals with policy decisions governing boards may need to make and administrative arrangements for introducing this new type of education.

Policy Decisions

Some schools and colleges may be operating under policies so broad that this type of education can be introduced without altering policy. Even in these cases, policy should be re-examined to insure that it is explicit with regard to the points which follow. In many cases, policy will have to be developed "from scratch."

Education in agriculture for off-farm occupations is not to be considered a step-child of an institution but an integral part of it. Boards and administrators are as much responsible for this part as for any other part.

The policy issues to be faced are in the following fields:

Policy-making process

Clientele to be served

---

[1] Vocational and Technical Education in Agriculture for Off-Farm Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus, Ohio.

Purposes to be achieved

Arrangement for evaluation to be set up

Personnel to be employed and the conditions of its employment

Arrangments for developing programs and procedures

Organization to be provided

Financial arrangements

Provisions for research and development

Arrangements for providing public information and maintaining desirable relationships

The policy-making process. Many boards in schools and colleges which should introduce these new programs have had no experience in the development of comprehensive policies. Instead, they have dealt with particular issues as these have arisen. We cannot risk the casual policy-making procedures many boards follow; the stakes are too great.

Our studies, admittedly limited, revealed that policy for this type of education was often not being made properly. Instead, all sorts of flagrant violations of accepted practices were found. Polices were being established by teachers, by administrators, and by advisory committees heavily stacked with special interests. Boards of education, the official policy-making bodies, seldom were important in the determination of policy.

These situations may have arisen because the new field is regarded as a small and unimportant one. The early efforts have been small, but the number of persons eligible for the new type of education is two to three times the number of farmers, who have been the traditional clientele of vocational agriculture. Although the pioneering programs

have been small at the start, they have often grown with amazing rapidity. None is yet serving more than a small fraction of the potential clientele. Precedents established on the assumptions that the field is small and unimportant may be disastrous as the field develops and it becomes difficult to depart from them.

It is important that governing boards understand the new area of education their schools and colleges are entering. Their support will be critical in the development of these programs.

If a board can be guided into desirable means of policy-making in the initiation of these new programs, it may profitably carry them over to policy-making for the entire system under its control.

Adequate policies cannot be written in board meetings. At a board meeting there may be recognition of the need for new or modified policy and authorization of the steps to produce a tentative policy statement. The head of the school would then be expected to set in motion the machinery for producing a draft of policy for the board to review. Drafting of a proposed policy statement should be shared by the chief administrative officer, the teaching staff or a committee from it, and a citizen's committee. The board may choose to return the proposal to its authors for revision. If so, the revised edition should be reviewed by those who drafted the original statement.

Obviously, an adequate process takes time, but it avoids costly mistakes. Once policies are well established, the time of all concerned is saved. It is not necessary to go to the board with a succession of unforseen difficulties.

There are those who say that lasting policy cannot be made for a

new program, such as the one under discussion. There are examples which refute this contention. The Constitution of the United States has endured with few changes in 176 years, although the founders set up a type of government then unknown in the world. There are many examples of far-sighted policies in education, set up with no precedents, which have endured for decades, such as those for the establishment of the Milwaukee Vocational School and the Joliet, Illinois, Junior College, both in 1902.

Programs and procedures must, of course, change. Policies establish basic principles which can be expected to endure as guides in the development of programs and procedures. Even so, policies themselves will need to undergo periodic examination and possible revision.

The following are some considerations in establishing basic policy for agricultural education for off-farm occupations which need to be taken into account. Policy will need to be established in each of these areas.

Clientele. There are policy decisions to be made regarding the clientele to be served. Not all within the potential clientele can be served at the outset; choices must be made based to the extent possible upon the urgency of the needs of each group that might be included. Some schools have chosen a particular business or industry or a particular age-group for preferential treatment. Some have allowed admission requirements to be set up which have reserved these programs for an elite. Some have seemed unwilling to allow establishment of admission requirements. Some have been interested only in full-time students and have paid no attention to the educational needs of adults. The

total clientele that might be served by these programs include persons from 14 to 45 years of age or more, persons whose years of schooling may range from eight to 16 or more, and persons whose I.Q.'s range from very low to very high. Business and industry can make some use of almost everyone in some capacity provided he has training. We serve well neither our clientele nor business and industry when educational services are limited to a few selected groups.

Purposes. There must be a decision made as to whether a school or college is trying to produce narrowly-trained specialists, or well-balanced human beings with occupational competency, or persons of both types. Certainly there is grave danger that individuals may be well prepared for entry jobs who have not developed the capacities needed for advancement. Individuals may be deprived of their opportunity to enter or transfer to higher institutions, or be discouraged from doing so, if the credits they earn cannot be applied elsewhere. Opportunities for extended general education, which all need, may be lost in too highly specialized programs.

There must be a decision made as to whether individuals are to be trained to take advantage of opportunities wherever they may be or only for local businesses and industries. Local enterprises are sometimes served principally through the upgrading of their current employees in classes for adults.

Evaluation. Regular and fair evaluation is essential if these programs are to be improved. Arrangements must be made for the establishment of criteria and procedures for evaluation, the choice of evaluators, and reports to the governing board. Local and state staffs,

consultants, representatives of businesses and industries served, and representatives of the public should be included.

Personnel. Traditional requirements for personnel employed in the new programs may not be appropriate. It may be necessary to recruit teachers from business and industry and give them special training. If competent teachers are to be secured, salaries may have to be established that are higher than those ordinarily paid persons in business or industry. Provisions must be made for the coordinated participation of teachers of agriculture and other vocational subjects, "academic teachers," counselors, and special teachers from business and industry employed part-time by the school. Adequate clerical services must be provided.

Planning programs and procedures. The responsibility of a governing board is to see that programs and procedures are planned, not to plan them. Planning them is the responsibility of the professional staff. A board may have to intervene to see that programs and procedures are not dictated by private interests related to the programs offered. Time for planning must be provided. Plans must be consistent with board policies. Outside consultants may be needed and a board may have to finance all or a part of such costs.

Organization. The new programs should be organized into, not outside of, the existing structure. Intricate details need to be worked out administratively in bringing together for fruitful cooperation those who should be involved. It is a board's responsibility to demand proper organization and to give the chief administrator authority to bring it about. These programs are likely to fail if they are turned

over to the exclusive control of teachers of agriculture. In some of them teachers of agriculture should have a minor part.

Finance. The new programs are expensive and they are likely to fail unless they are well financed. All opportunities for the use of federal and state funds should be explored. Federal funds for vocational education are being increased each year until 1967-68 and remain constant thereafter unless new legislation is passed. They may be used for buildings for area schools and for the salaries of teachers in local and area schools. There are other sources of federal funds if vocational education funds are exhausted: The Higher Education Facilities Act, The Economic Opportunity Act, The Elementary and Secondary School Act, The National Defense Education Act, and The Appalachian Act. Because programs preparing for off-farm agricultural occupations are few as yet, and funds to aid them are abundant, there is no excuse for jeopardizing them through inadequate financing. Equipment and teaching aids from the businesses and industries benefited may further increase a school's resources.

Research and development. The programs discussed in this publication are new. They will not reach their full potential without extensive research and systematic development projects. The universities have a special responsibility for research and development in this field, but they must have the cooperation of schools which have the programs. State Departments of Education have funds and an interest in research and development activities in this area. There are also available federal funds amounting to 10 percent of the toal annual appropriation for vocational education under the 1963 Vocational Education Act which

are earmarked for research, development, and training. Information about them may be had from universities involved in vocational education, state departments of education, and the U. S. Office of Education.

Public information and relations. A program in a new area must be publicized extensively and with care. The public is entitled to know what is being attempted and why it is being attempted. Publicity is needed in attracting students to unfamiliar programs.

In many parts of the country, there is stiffening resistance to federal participation in education. If the new programs are to be federally-aided, the conditions under which aid is granted must be made clear to board members, administrators, advisory committee members, the school staff, and the public. Knowledge of the purposes the federal government is pursuing and the reasonable conditions on which funds are available should forestall unreasoning cries of "federal dictation."

A complicated set of relationships must be worked out in providing these programs. There are relationships with business, industry, agriculture, government, and labor.

Providing public information and developing public relations requires time and adequate time should be provided in any budgeting arrangement.

Administrative Decisions

Assuming that policies have been established which set an official course, there is much to be done by administrators in implementing these policies.

Surveys to determine needs. A survey when a new program is being

planned helps to pinpoint the special needs for trained workers and also to call attention to the possibility of school training for types of workers who have never received it. Forms for gathering information of many types have been used. Sample forms are included in the publication entitled, "Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture," available from The Center for Vocational and Technical Education, The Ohio State University.

The teachers involved in a program may do some of the surveying to secure background for their work, but the job is too big for them to attempt it alone. Members of advisory committees, students, and others can help. The teachers' principal contributions are in developing good forms and in interpreting the data derived from their use.

Local surveys should not be relied upon exclusively. Many opportunities for employment are outside a school district. Students have a right to know about these opportunities as well as those in a district. The nature of a program may be shaped in part by outside opportunities and demands.

It is possible to use too much time in making detailed surveys. It is also possible to arouse expectations that cannot be satisfied if every kind of off-farm agricultural occupation is surveyed and only one or two programs can be provided. It may be better to arrive by rather crude procedures at a choice of the first programs to be provided and then survey in detail the related businesses and industries. Time may sometimes be spent in surveys that is needed more urgently in initiating programs.

The interpretation of data from surveys of the need for off-farm

agricultural workers is so difficult that a survey is sometimes judged to be nearly useless. Employers are not accustomed to having trained workers for these occupations and frequently see no need for special training, but once training has been provided the advantage is seen and employer demands rise sharply. Artificial training standards are indicated by some employers who want their employees to be high school or college graduates although detailed analysis shows that graduates are not really needed and could not be employed at the salaries offered. Employers unused to thinking in terms of education and training for the jobs they have are often unable to define the duties of their employees, indicate those which call for special training, or designate the training needed.

Demands for training, when they are expressed, are often in terms of present needs rather than future needs. We have been told by some leaders in agricultural business and industry that it would have been better to consult a few national authorities in each business or industry regarding future training needs than to survey thousands of employers.

Much statewide data is available in the respective states which should be analyzed to see how the proposed program in a particular community can be most effectively oriented or directed without needless duplication. Sometimes much of the information needed can be secured through a business or industrial organization, which has already made its survey or will make one. Chambers of Commerce have been responsible for surveys of occupational training needs. The Employment Security Agency knows a good deal about employment demands. State and

local agencies responsible for attracting industries know their requirements.

A school undertaking a survey needs help from those who have had survey experience. State departments of education and universities can provide this help. State departments of education and state employment security agencies have made sample surveys useful in planning programs for areas in their states which offer suggestions for planning surveys in other areas. Survey suggestions are included in another publication in this series.[2]

Program and course planning. There are aids in planning programs and course outlines available from The Center for Vocational and Technical Education at The Ohio State University, from other universities, and from state departments of education. Supplementary aids, adapted to a community or an area, are needed. The contributions to be made by teachers of agriculture, other vocational teachers, teachers of related and "general" subjects, and part-time teachers from business and industry must be determined.

Courses may be needed at various levels: for semi-skilled, skilled, and technical workers and for persons of low, average, and superior ability. It is possible to have courses of high quality at each of these levels. One of the hazards in developing this kind of education is that the schools may be interested only in developing programs for occupations that carry prestige.

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2 Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio, 43212.

Personnel services. Guidance personnel should be involved with the vocational teachers and representatives of the Employment Security Agency in counseling those considering the programs in testing and screening applicants in arranging personal finances for students in handling personal problems, and with placement.

Selection of trainees. Trainees must be selected who are capable of the intellectual work involved, are acceptable for part-time employment during training, and are likely to engage in work related to their training after they are trained. The standards used will vary widely with the types of jobs for which training is given. Fairness to all concerned demands that a variety of criteria be used in judging an individual's fitness for training: school records, personality, social adjustment, desire and interest, willingness to work, and other factors. It demands also that more than one person be involved in a decision about an individual's fitness for a program.

Scheduling. The rigid scheduling suitable in most schools and colleges may not be adapted to many who enroll in these programs. Students may be working part-time in order to remain in school. They may be absent during a part of the school day for on-the-job training. For example, it may be desirable to hold classes during the forenoon and the evening, leaving the afternoon free for work.

The schedule of classes for part-time students must be even more flexible. The days of the week and the hours of the day when adults can attend school vary greatly. The heaviest enrollment in these programs may be from 4 to 10 p.m.

Work experience. There is wide agreement that on-the-job experience

is a desirable adjunct to school training in most, if not all, of these programs. However, it is often difficult to provide it satisfactorily.

Even when the jobs are close at hand, as in the neighborhood school, it may not be feasible to schedule students for them at stated hours each day. The decision as to when to schedule students must be made on the basis of educational opportunities available at different times and must not be dictated by employers' desires. Employers often want help during rush seasons, on Saturdays, and during summer vacations. Specific information on establishing on-the-job training for students in these programs may be found in the publication entitled, "Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture."

In an area school the problem is even more difficult, and unfortunately some area schools have abandoned work experience. Where it is being provided, it is usually during the summer or under an arrangement whereby students spend in rotation a quarter in school and a quarter on the job.

It is necessary to choose training stations carefully and to train the cooperating trainers. An agreement must be worked out carefully among the school, the student, the parents (if the student is a minor), and the employer specifying which each is to do and what the student is to gain from his work experience.

Ample time must be allowed teachers to arrange training stations and supervise their students on the job. Coordination of school instruction and practical work must be planned.

Removing deficiencies in basic education. Students should not be barred from programs because of remediable defects in their basic

education. A testing program for applicants will reveal these defects. If a student's motivation is strong, he can make surprising progress in removing them. Each North Carolina area school has a "learning laboratory" equipped with a variety of self-teaching and self-testing devices. A teacher is available to give individual assistance.

Many of the occupations for which training will be given involve extensive contacts with people. Courses in applied psychology, personal and social development, and conventional behavior have an important place.

Specially tailored courses in related subjects. There will be a temptation to put into these new programs the conventional courses in science, social science, mathematics, English, speech, and other related fields instead of developing special courses for the new groups. Special courses may not always be feasible. It is often possible to group students from several vocational fields in courses better adapted to them than the traditional courses. Some teachers of related subjects are much better than others for work with students preparing for off-farm agricultural occupations.

Teacher certification. The usual requirements for teacher certification may well be waived in providing the new programs. Most states have special requirements for occupationally competent persons who are wanted as teachers. There are usually special, and more limited, requirements for teachers of adults.

Labor laws. State and federal laws governing employment, and especially the employment of persons under 18 years of age, are many and must be observed. The offices of the Employment Security Agency

are the best sources of the special information which may apply in a given school situation discussed in "Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture."

Licensing. Some of the occupations for which training may be given are state-licensed and graduates of training programs must be prepared to pass licensing examinations. The Employment Security Agency can also provide information about licensing requirements.

Accrediting. Most schools and colleges want the new programs to be accredited by some recognized agency. State accrediting may be all that some programs can now secure. Regional accrediting agencies are developing standards which would apply to programs of this type. The American Technical Society approves programs in technical education that meet its high standards.

Recruitment of professional personnel. Teachers for the more specialized programs involving one or two years of work beyond the high school will not be recruited from the usual sources. Often they will come from business and industry. Help in locating personnel can be had from the state departments of education and the universities. The American Vocational Association, Washington, D. C., maintains a placement service which gives special attention to the location of prospective teachers for area schools whose experiences have been primarily in the armed forces, business, and industry. State trade associations and state vocational supervisory personnel can also be of assistance in this area.

Terms of employment of professional personnel. Full-time teachers in these special programs are usually employed for 12 months with two

to four weeks of vacation. When a teacher is not fully qualified, there is usually provision that he attend school for a given period or earn a given number of college credits each year.

Non-professional personnel. An unusual amount of clerical work, record-keeping, and reporting is involved in conducting these programs. It is uneconomical to use professional persons to perform these tasks which a trained clerical staff could do better with some professional guidance.

Transfer of credits. In publicizing federally-aided post-high schools courses, it should be pointed out that these courses are not designed primarily for transfer to four-year institutions. Such a statement does not preclude acceptance of the courses by some four-year colleges. However, federal funds may not be used in programs consciously designed to lead to baccalaureate degrees.

Equipment and teaching aids. Special equipment and teaching aids are needed in teaching the new programs. Lists for agricultural business, ornamental horticulture, agricultural chemical technology, and agricultural machinery are included in various publications of The Center for Vocational and Technical Education, The Ohio State University.[3]

Regulations regarding the use of facilities. There must be rules governing the use of the facilities, often expensive, which a school has provided. Since many of the students are adults, a special area

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[3] These sets of curricular materials are entitled:

"Agricultural Machinery--Service Occupations"
"Agricultural Supply--Sales and Service Occupations"
"Horticulture--Service Occupations"
"Agricultural Chemical Technology--Service Occupations".

for smoking is usually provided. Part-time and adult students should understand that the general rules of a school system apply to them also.

Developing desirable work attitudes and habits. In this type of education, conditions approaching those to be found on the job are sought. Absence and tardiness are not tolerated. In visiting schools with vocational and technical programs, one is impressed by the serious work habits of the students and the absence of horse-play.

Financial aids for students. Many students in these programs are needy. Many have families. Financial aid can often be provided for them. Schools may secure scholarships from some prospective employers. Up to $500 a year per student can be obtained under the work-study provisions of the 1963 National Vocational Education Act. Funds for working students can also be had under the National Economic Opportunity Act. Part-time employment, useful both in securing experience and in financing schooling, can often be secured.

Consultant help. Persons attempting the new programs for the first time should recognize that there are those with experience in these programs who can serve as consultants. Personnel in other schools with ongoing programs, state university personnel, and state department of education personnel may be able to provide help. These are more plentiful in some parts of the country than in other parts. They may be useful. There is danger, however, in relying unduly upon the experience and concepts of any one consultant.

Records and reports. Records are especially necessary in conducting new programs whose continuance is in doubt and which will frequently be evaluated and will require defense. The school record and

the employment record of each trainee should be carefully maintained, not only while an individual is in school but thereafter for as long a period as is feasible. Reports, using records, should be made regularly to governing boards, administrators, all of the professional personnel of a school system, and the public.

Adapting These Programs to the High Schools

A whole series of administrative problems arise when somewhat specialized programs preparing for off-farm occupations are attempted in the high schools. Some of these are indicated and sources of help are suggested.

Outcomes to be expected from broadened high school programs in agriculture. Students, parents, teachers, and the community should be clear about the outcomes to be expected from these somewhat specialized programs. Although there will be a vocational emphasis, general education values must be kept in mind; often these will be the major outcomes in working with relatively immature students.

It is not to be expected that every high school student will make a life work of the occupation in which he receives school-directed training and experience. He can be expected to learn some of the general requirements of holding a job: working with others, taking orders, being on time, reporting regularly for work, doing the unpleasant as well as the pleasant jobs. He will get help in choosing an occupation and perhaps find out why he should not pursue further the occupation in which he has received his high school training. He can learn what is required for advancement from the occupation in which his initial training has been received and may be induced to take further

training in an area school or a college. He can build a reputation as a worker that will be useful to him regardless of his future occupation. His interest in school may be increased as he sees the practical usefulness of high school studies and his inclination to drop out of school may be reduced. He may be employable after high school graduation--and many high school graduates are not--because he has "a foot in the door" of a business or industry. He may acquire skills that will enable him to finance all or a part of the costs of college.

However, experience indicates that many who have special training in high school, including on-the-job experience, continue in the fields for which they have been trained, frequently with the employers under whom they received their work experience while in high school.

Students reared under modern conditions often know little at first hand about the world of work. Frequently they crave practical experience and many drop out of school to get it. Many high school students know that they are almost useless to others and are financial burdens to their families. Human beings do not thrive under these conditions. A sense of competence and usefulness is needed for well-rounded development. Rewarding work and hope for future congenial employment are potent spurs to the wholesome maturation of adolescents.

Specialized vocational education and individualized work experience often brings out qualities in high school students that have not been noted or appreciated when they have been confined to the traditional high school routines.

Adjustments to single- and multiple-teacher departments. Most of the high schools teaching agriculture are small and have only one

teacher of agriculture although multiple-teacher departments are on the increase. In these schools somewhat specialized education in agriculture for off-farm occupations can be achieved in three principal ways:

1. By providing two programs in the 11th and 12th grades, one for prospective farmers and one for prospective workers in off-farm occupations.
2. By grouping students within an 11th and 12th grade class and providing some small-group instruction related to particular clusters of occupations.
3. By individualizing instruction: providing related cooperative work experience in a variety of occupations and individual classroom teaching.

In a larger high school, three to five programs might be provided for 11th and 12th grade students. These might include courses in farming, agricultural business, agricultural mechanics, and horticulture, as well as a course preparatory to further specialization in agriculture in an area school or college. Individual and small-group instruction would be needed for the students in each of these programs which could be related to the specialized types of work experience the students would be having.

Finding work opportunities for high school boys. A school bears the responsibility for finding training stations for high school boys admitted to programs preparing for off-farm occupations. It can be assisted by consulting committees and community organizations. The firms of a school district should be canvassed to locate work opportunities. Visits should be made to those which have these

opportunities. Not every firm willing to take trainees is suitable. Only those which accept conditions laid down by the school should be used. Use of some of these firms may have to be discontinued if they do not provide the educational experiences for which they are responsible.

Not every high school student who wishes to enroll in a program involving work experience can be accepted. Enrollments must be limited to those who can be recommended for part-time employment taking into account ability, interest, aptitude, personality, and work habits.

Ordinarily, high school students are limited legally to 40 hours per week spent in school and on the job. A reasonable amount of this time must be spent on the job. Some schools are requiring 250 hours per year. The time required for vocational agriculture must not be allowed to pre-empt time required for other subjects. Frequently three classes other than agriculture are scheduled during the forenoon and the afternoon is devoted to class work and work experience in agriculture. However, many employers prefer to have their part-time workers scheduled irregularly. Students may be most useful and may participate in some of the most educational experiences by working weekends or during vacations. Time away from school is reduced when such arrangements are possible.[4]

Supervision of work experience. The work experience of students preparing for off-farm occupations must be more closely supervised than the farm-practice programs of students in vocational agriculture

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[4] A much more extensive treatment of work experience is provided in another publication in this series entitled, Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture.

have usually been. Students new on a training program and employers unaccustomed to their responsibilities as trainers must be visited at least weekly and in some cases almost daily until a routine is established. Training can degenerate into routine work unless this is done. Fortunately, trainees in these programs are usually clustered in or near towns or cities so that travel time in visitation is less than in visiting farm boys.

Class size. The large classes sometimes found in vocational agriculture are not suited to programs preparing for off-farm occupations. Sixteen is often set as the maximum enrollment, particularly in courses such as agricultural mechanics or other courses requiring a good deal of practical work and individualized teaching. The number of training stations, quality, and quantity of equipment available are other factors to be considered.

Using Consulting Committees

Almost everyone interested in providing vocational education in agriculture for off-farm occupations subscribes enthusiastically to the use of consulting (advisory) committees. Full usefulness or value from such committees is seldom, if ever, attained.

Setting up a consulting committee properly involves more work than most people are willing to do but an improper arrangement can lead to difficulties far more troublesome than those involved in initiating a committee properly. It may lead to the denial by an official board of the privilege of having these useful committees.

The starting point in thinking about consulting committees is recognition that, in this country, policy-making is a lay responsibility.

Governing boards authorized by state legislatures share with the legislatures in enacting the policies effective in local and area schools, colleges, and universities conducted under public auspices.

Professional educators may be allowed, and should be encouraged, to advise about policy. They are responsible for executing policy.

A lay committee is primarily useful in advising a board about policy. It is useful also to professional educators in advising about programs and procedures. Neither a board nor a professional staff is required to accept the advice given. This should be understood clearly at the outset by all concerned.

The first step in organizing consulting committees is the adoption by a governing board of the policies under which these committees will be set up and operated. An advisory committee must never be allowed to set the basic policies governing its operation; it should adopt rules for carrying on its work that are consistent with board policies.

A school system well organized for citizen participation would have a network of citizens' consulting committees. A general committee, directly advisory to the board, would have a set of committees reporting to it, one of them for the broad field of occupational education. The committee for occupational education would have satellite committees, some of them for agricultural education. When a comprehensive system of committees is lacking, an individual committee for education in off-farm occupations must be related directly to the board.

The choice of members of a consulting committee is critical, It cannot be left to the teacher of agriculture, the superintendent, or

the board, or to all of these acting jointly. Recommendations for membership should be made by a selection committee composed of both professional and lay membership, which is thoroughly acquainted with the work the consulting committee would do. A selection committee has two functions: (1) to canvass an area for nominations of consulting committee members, and (2) to recommend to the board the number of members the board has designated, taking into account the criteria for merbership the board has set up.

A well advised board would set up criteria for membership such as these:

1. High general ability and, if possible, demonstrated ability in dealing with school affairs.
2. Understanding of the importance of the educational program with which they are to be associated and sufficient interest so that time and effort would be given to the work of the committee.
3. Certain personal characteristics essential to the success of the committee: personal integrity, responsibility, maturity of thought and action, ability to cooperate, a constructive attitude, openmindedness, and tolerance of varying points of view.

The committee as a whole should be representative of all elements in the population affected directly or indirectly by the program with which it is to be associated.

A program in agricultural business requires a consulting committee which includes not only employers but employees, representatives of

those served by these businesses, parents of students, and representatives of the public. It is dangerous to secure counsel only from the firms engaged in agricultural business. Seven to nine members are ordinarily required; more may be needed. Smaller committees are likely to exclude representatives of groups that should be included. The absence of one or two members may ruin a meeting of a small group. More ideas and more fruitful discussions can be expected from a group of nine than from a group of three.

Committee members should be appointed for staggered terms so that there is gradual replacement of members. A three-year term is satisfactory. It may be advisable to provide that a member cannot be reappointed until after a year's absence from a committee. There is plenty of talent for these committees; it is unnecessary and unsafe to depend indefinitely on a few for counsel.

A properly formed and functioning consulting committee can perform indispensable services. It can make a governing board aware of the need for education for off-farm agricultural occupations, indicate to a board the scope of such a program, and insist on high standards and adequate financing. It can assist a professional staff in community studies, in locating training stations and developing training programs, in finding occupationally competent teachers and resource persons, in explaining the program to the public, in arranging for contacts by teachers with businessmen and industrialists, and in evaluating and revising programs.

Persons associated with the school should never be consulting committee members; they are the recipients of counsel. The teachers of

agriculture concerned should always be present at meetings. Others from a school system involved in these programs should be present to the extent that they are able to be.

Rather frequent meetings of consulting committees are necessary, particularly when a new program is getting under way. Member interest will be better held with monthly meetings than with meetings held less frequently. It grows with work and accomplishment. The problems with which a committee will deal are complex and many members will have little comprehension of them on joining a committee. It is imperative that agenda for committee meetings be prepared in advance and that the members share in determining them. Agenda should not be handed to the chairman by a teacher of agriculture when a meeting begins.

There is a wide array of topics appropriate for consulting committee meetings. Early in the life of a committee the members should come to understand the developments across the country in the kind of education they are to help in sponsoring, the sources of the funds used in these programs, and the decisions about them that may be made by state and national officials, local boards and administrators, teachers, and consulting committees. The carefully chosen members of a committee want the committee to stay in its place and not encroach upon others' prerogatives, but they must know their place. They do not want to get into trouble or get others into trouble.

They need to know about programs paralleling or related to those for which they are advisors. They must have some basic understanding of the entire school system of which these programs are only a small part.

After some orientation, they are prepared to look at the findings of studies to discover training needs or to participate in making studies, to review proposed courses, to help in creating community interest in them, and to react to problems the teachers lay before the group.

Beware of the committees which act too quickly on the teacher's insistence. A good committee is primarily a deliberative body that may slow action rather than hasten it.[5]

Publicity and Promotion

Needs for these programs exist rather generally across the country. New programs must be "sold" and kept "sold" to the public. Excessive claims will backfire, but the programs have enough merit that, when they are presented factually and without distortion, they will commend themselves to most people. Publicity and promotion cannot substitute for a quality program, but quality programs are sometimes not appreciated or used adequately because publicity and promotion are lacking.

Newspapers, television, and radio are means whereby a school can reach the public, whose money is being spent, prospective students and their parents, and employers. It is ordinarily better to cultivate reporters and have them write their own stories than to provide handouts. However, handout materials are also needed. Each program should be announced in an attractive brochure. One-minute spot announcements of programs are usually welcomed by broadcasting stations. The farm

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[5] For a more detailed treatment of citizens' consulting committees see Citizen Participation in Local Policy-Making for Public Education, College of Education, University of Illinois, Urbana, Illinois. Revised 1964. 35 pp.

journals have been found effective in locating prospective students.

Letters may be sent to selected mailing lists of high school seniors and graduates who may become interested in area school programs. Letters to employers may bring in their employees or their prospective employees.

High school assembly programs provide good audiences. Exhibits can be provided for special school occasions, fairs, and shows. Window exhibits in downtown stores help. Those interested in the program should welcome every opportunity to explain it before service clubs and other organizations. Employment Security offices, which deal daily with persons in search of work and with employers, are important sources of information about these programs. Adults, and particularly older adults, are often best reached through personal contacts by members of consulting committees, the school staff, and other adults.

Publicity and promotion efforts must be spaced throughout a year, be made regularly, and be directed through a variety of media. Spasmodic campaigns avail little. Always the emphasis must be that this is <u>your</u> program, conducted for <u>your</u> benefit through <u>your</u> public schools. Reports to the public are made not merely to gain support for a school program but to give the public the facts to which it is entitled.

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VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTURE FOR OFF-FARM OCCUPATIONS

The Center for Research and Leadership Development
In Vocational and Technical Education
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980 Kinnear Road
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Vocational and Technical Education in Agriculture for Off-Farm Occupations

For counselors, teachers, board members, and administrators at all levels

The Center for Research and Leadership Development
in Vocational and Technical Education
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Publications on Off-Farm Agricultural Occupations
Available From
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This publication is one of a series relating to Off-Farm Agricultural Occupations developed at the Center for Vocational and Technical Education under a grant from the Division of Adult and Vocational Research, U. S. Office of Education. Each of these publications was designed for a specific purpose. However, they are designed to complement and reinforce each other. It is suggested that persons using any of these materials will want to familiarize themselves with the other publications in this series. Following is a complete listing of this series.

1. Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations

2. Vocational and Technical Education in Agriculture for Off-Farm Occupations

3. Summary of Research Findings in Off-Farm Agricultural Occupations

4. Planning and Conducting Cooperative Occupational Experience for Off-Farm Agriculture

5. Occupational Guidance for Off-Farm Agriculture

6. Horticulture - Service Occupations
(Course outline and twelve modules)

7. Agricultural Supply - Sales and Service Occupations
(Course outline and twelve modules)

8. Agricultural Machinery - Service Occupations
(Course outline and sixteen modules)

9. Agricultural Chemical Technology
(Course outline and nine modules)

PREFACE

The implementation of the provisions of the Vocational Education Act of 1963 has rapidly increased the number of schools providing training for off-farm agricultural occupations. Programs are being developed for several levels of preparation by local schools, area schools, and community colleges. Personnel, both in and outside of the profession, are seeking information about the objectives, costs, benefits, needs, procedures for initiating, and the relationship of these programs to existing educational programs.

This publication has as its major objective the orientation of board members, administrators, teachers, counselors, and laymen to the emerging concept of programs for off-farm agricultural occupations as part of a comprehensive program of agricultural education and vocational education. The publication provides assistance in planning such programs and includes short descriptions of some successful programs in operation.

Critical areas and prime considerations where basic policy and administrative decisions pertaining to a school's program in off-farm agriculture appear in a companion publication of The Center entitled, Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations. These two publications are designed to aid governing boards and administrators in "thinking through" the essential elements of designing and establishing administratively sound programs of education for occupational entry into off-farm agricultural positions.

This publication was prepared by Dr. Herbert M. Hamlin, former Chairman and Professor Emeritus, Division of Vocational and Technical Education, College of Education, University of Illinois. Dr. Hamlin's writing, leadership in program development, and interest in total community programs of vocational education eminently qualify him to prepare this publication.

Although the final responsibility for the content rests with Dr. Hamlin and members of the Project Task Force, grateful acknowledgement is made of the assistance of the following persons who reviewed drafts of this publication and made many valuable comments: Mr. Harry G. Beard, Associate Professor of Education, School of Education, North Carolina State University, Raleigh; Dr. James Hensel, Specialist in Agricultural Education, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus; Mr. Robert Kozelka, Chief of Business and Distributive Education, State Department of Education, Springfield, Illinois; Dr. William B. Logan, Professor and Director, Distributive Education Institutes, College of Education, The Ohio State University, Columbus; Mr. Sidney S. Sutherland, former Chariman and Professor Emeritus, Department of Agricultural Education, University of California at Davis; and Dr. Ralph Wenrich, Head, Department of Vocational and Practical Arts Education, College of Education, University of Michigan, Ann Arbor.

The reader's attention is directed to the other publications developed by the project and designed to supplement this title.

We hope this material will be of assistance to teachers and administrators in developing needed programs in this area. We solicit your reactions and suggestions for its improvement.

Robert E. Taylor
Director
The Center for Research
and Leadership Development
Vocational and Technical Education

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Summary

Vocational and technical education in agriculture for off-farm occupations is developing in the local schools, area schools, and colleges.

The need for this type of education has been well established.

Progress has been made in clustering the hundreds of individual occupations of this type so that training programs are feasible.

State participation in the planning and operation of pilot programs is imperative. An unusually high percentage of the costs of these initial programs will have to come from state and federal funds.

Education that leads to gainful employment in these occupations can be provided at some levels in some of these occupations in some high schools. The four-year colleges and universities can provide some education for the technical occupations in agriculture and can aid in many ways in developing vocational and technical programs in local and area schools. It is to be expected, however, that the principal burden will fall upon area schools supported by public funds.

If local schools, area schools, and universities combine their efforts, they are likely, together, to be able to provide in the forseeable future only a part of the education for these occupations that is needed. If their efforts are not coordinated, there will be waste and frustration.

No other part of a comprehensive program of agricultural education should be slighted in developing these programs.

Basic education, vocational counseling, and grounding in science, mathematics, and communication are as essential to the success of the new program as are sound organization and effective teaching.

The entire eduational establishment from the nursery school through the university will share responsiblity for its success or failure.

Terminology

Since there is not an accepted terminology for some of the concepts included in this publication, working definitions had to be provided.

Occupational education: All education designed to contribute to occupational choice, competence, and advancement.

Vocational education: Specialized education for work in a particular non-professional occupation or a cluster of non-professional occupations.

Technical education: Education at the semi-professional level provided ordinarily in one- or two-year programs beyond the high school which emphasizes science and mathematics in addition to laboratory procedures and technical information related to the occupations for which students are preparing.

Area schools: Junior and community colleges, vocational schools, technical institutes, and branches of universities serving areas usually larger than local school districts.

Education in Agriculture for Off-Farm Occupations - A Broad Field Within a Comprehensive Program of Agricultural Education

This publication deals with vocational and technical education for off-farm occupations using agricultural science and technology. There are no suggestions in it that other forms of agricultural education should be abandoned or slighted in order to provide this new form. All other types of agricultural education are also important and underdeveloped.

A modern, broadened concept of agricultural education is emerging. It includes:

Appropriate education in agriculture as a part of the education of all;

Counseling about occupations in or related to agriculture;

Education in production agriculture for those who are engaged in or who expect to be engaged in farming; and

Vocational, technical, and professional education in agriculture for those who are engaged in or who expect to be engaged in off-farm occupations using agricultural science and technology.

The task of providing agricultural education is shared by local schools, area schools, and colleges and universities in our system of public education plus a host of private agencies.

The Need for the New Program

The number of workers in off-farm occupations requiring some knowledge of agriculture has increased rapidly in recent years while the number engaged in farming has been decreasing. Depending upon the definition used, there are almost twice as many persons employed in off-farm occupations as there are farmers today. This number is continuing to increase.

Specialized education in agriculture for farmers has been developing throughout the current century. Education in agriculture for off-farm occupations has usually been improvised under private auspices during the relatively short period in which these occupations have been important. There has been no public effort to provide appropriate education in these occupations comparable to that provided for farmers.

Shortages of trained and competent workers exist in almost all of these off-farm occupations at a time when there is concern about employment for young people. These young people include recent high school graduates and youth unneeded in production agriculture.

The occupations which serve farmers have become critical factors in the successful operation of farms. Programs which improve the competency of workers in off-farm occupations serving agriculture benefit not only farmers, but also businesses and industries in which these workers are employed, and the public.

Anticipated Benefits from the New Programs

Some benefits, not all of them obvious, which might accrue from providing education in agriculture for off-farm occupations where needed are the following:

Many, who have special aptitudes useful in these occupations, but are not now receiving specialized vocational-technical education would become trained and employable.

Employers, now searching almost frantically for competent workers, would have a supply of them available.

The entire agricultural industry would be served by attracting competent young people into these occupations who might otherwise be lost to it.

Training costs to business and industry would be reduced as public institutions make their contributions.

High school programs in agriculture could be reorganized to provide programs which appeal to students interested especially in agriculture but who are not adapted to or interested in production farming.

The cooperation of the different vocational education services which is necessary for providing training for these workers might lead to other desirable forms of cooperation among these services.

If the proposed plan is followed, a whole school system becomes involved in preparing people for these occupations. Elementary schools as well as high schools, area schools, and colleges would make conscious contributions, establishing a precedent desirable in all forms of vocational-technical education.

Distribution of Responsibilities for the New Type of Education

Federal funds for vocational and technical education in agriculture for off-farm occupations and related vocational counseling may be used by public high schools, area schools, and colleges, and by private, non-profit agencies under contracts with public schools or colleges. Federal funds must be supplemented by state and local funds. State and local funds are the primary sources which will provide the basic and supporting education required for successful vocational-technical education.

Local schools could perform the following indispensable functions:

1. Provide the education and counsel required if students are to specialize successfully.
2. Offer courses for high school students in two or more areas of agriculture which may lead to employment or to further specialization in area schools or colleges.
3. Prepare for employment in low-level occupations many who will leave schools at or before graduation.
4. Offer the agricultural courses needed by adults in off-farm occupations with the help of the area schools and colleges.

Colleges and universities could serve in a variety of ways:

1. Conduct pilot programs.
2. Supplement the offerings of local and area schools.
3. Conduct research related to these programs.
4. Aid in preparing course and teaching suggestions.
5. Prepare the specialized personnel needed for the new programs, providing both preservice and in-service education.

State departments of education could exert leadership in the following ways:

1. Take the initiative in developing a state-wide master plan with attendant state policies for vocational-technical education including programs for off-farm agriculture.
2. Promote the development of policy by institutions initiating programs in off-farm agriculture.
3. Develop in-service workshops for teachers involved in these programs.
4. Provide active support, including funds, for pilot programs.
5. Coordinate the efforts of personnel engaged in the different programs within the state to avoid duplication of effort.
6. Serve as a medium of communication by which persons in different institutions may learn of results of methods and techniques used by other institutions.
7. Develop procedures for and assist in the evaluation of these programs.

Although local schools and colleges are performing their functions fully, it is to be expected that the brunt of specialized vocational-technical education in agriculture for off-farm occupations will be borne by the area schools. Many employers demand that new employees be 18 to 20 years of age or older and expect their training to be recent. Also, there are many more adults in need of retraining and being brought up to date than there are youth needing pre-employment training.

The Growing Significance of Area Schools

Over a long period we relied upon local schools and colleges to provide education in agriculture. Now we have large numbers of area schools. Many of them are providing, and more will provide, programs of vocational and technical education related to agriculture. A few states are almost completely blanketed with area schools; most of the other states are developing state-wide systems.

Area schools with programs in agriculture are concentrated largely in six states: California, Connecticut, Minnesota, Mississippi, New York, and North Carolina. At least nine states are developing state systems of area schools in which provisions will be made for teaching agriculture: Delaware, Florida, Kansas, Kentucky, Oklahoma, Oregon, Tennessee, Texas and Washington. Individual area schools offering courses in agriculture are to be found in several other states.

Area schools are a necessity if the full possibilities of vocational and technical education in agriculture for off-farm occupations are to be developed. The number of persons in a single school district needing any particular kind of education is likely to be small and the costs of providing it adequately would be high. In some of these occupations, there is little demand for new high school graduates; more maturity is required. A comprehensive area school with 10 to 20 or more occupational curricula provides other advantages not to be found in most high schools. Students better adapted to a particular program are likely to be selected since there are alternatives available to them. Much of the vocational training required in some occupations may have to be provided by teachers of

business, distributive, or industrial education. Specially tailored supporting courses in communication, mathematics, science, and other fields which few high schools can provide are needed. A course in agriculture mechanics taught in a small, rural high school is likely to be far different from one taught in an area school with a well-planned, comprehensive program.

Studies Confirm the Need for Agricultural Education for Off-Farm Occupations

A summarization has been made of the findings of predominantly interview-type surveys, nearly all conducted in 1964, in twenty-six states in relation to employment needs in off-farm agricultural businesses.[1] There was considerable variation in the way the states conducted their studies and reported the findings. Much of the research is still in progress and additional state publications of findings will be issued.

The report is divided into four sections. The first deals with numbers of people employed, numbers needing agricultural competencies, and expected number of new workers to be hired in the next five years. The second section analyzes the competencies needed by persons in the different occupational classifications. The third section takes a look at worker characteristics such as age, education, background, and salary. The fourth section is a brief summary of the results of each state survey.

Generalizations that may be drawn from the findings are:

1. Almost half the people employed in off-farm agricultural businesses need education or training in agriculture.

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1 Summary of Research Findings in Off-Farm Agricultural Occupations

2. Employers expect about a twenty per cent increase in the next five years in the number of employees needing agricultural competencies.
3. The greatest need in numbers for agriculturally-trained employees will be in agricultural supplies sales and services, agricultural machinery sales and services, ornamental horticulture services, and marketing and distribution of livestock and crop food products.
4. Agricultural competencies needed are determined mainly by the products handled by a business.
5. The need for industrial competencies is low in most agricultural businesses.
6. Many of the agricultural subjects taught to students preparing for production farming will be needed also by students who enter off-farm agricultural occupations.
7. There are many instances in which vocational agriculture may support, or in turn be supported by, other vocational subjects.
8. Salesmanship, human relations, and business management are competencies needed by all employees, but in varying degrees.
9. Beginning salaries and wages for service workers are relatively low. Effective training programs should make it possible for new employees to earn higher incomes.
10. Continuing in a vocational-technical education program beyond the twelfth grade is appropriate for many persons since most employers consider twenty years of age to be a minimum entry level.
11. Trainees with farm background or farm experience have a definite advantage when seeking employment in off-farm agricultural businesses.

12. Occupational titles needing the greatest number of new employees, not including professional workers, in the next five years are:

Agricultural Machinery Mechanics	Greenhouse Grower
Agricultural Machinery Mechanic's Helper	Greenhouse Worker
Agricultural Machinery Set-up Man	Nursery Worker
Agricultural Machinery Salesman	Greenskeeper
Agricultural Machinery Partsman	Groundskeeper
Agricultural Supplies Salesman	Food Products Processman
Agricultural Supplies Serviceman	Food Products Salesman
Agricultural Supplies Deliveryman	Food Products Dept. Manager

Research in this area is just beginning to provide direction to curriculum planning. Much more is necessary if needs of students and industry are to be met.

Programs are Under Way

Programs to prepare certain kinds of workers for off-farm occupations involving agriculture have developed in every region of the country and in almost every state. Five of these programs are described in the appendix. One of them has been in operation for 38 years, another for 21 years. Many other programs could have been cited. Those reported here have been visited by members of the staff of the Center.[2]

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[2]The schools included are the Modesto Junior College at Modesto, California; Forsyth Technical Institute at Winston-Salem, N. C.; Reidland High School, Paducah, Kentucky; Alexandria Area Technical School at Alexandria, Minnesota; and Rockland County Center of Technology and Education at West Nyack, New York.

Proceed with Caution - But Proceed

Although we have delayed too long in providing vocational and technical education in agriculture for off-farm occupations, we must not rush carelessly into this field.[3] Many problems arise in providing it which have not been encountered in providing education for farming. Few teachers of vocational agriculture are prepared to undertake it without special training. Unplanned and careless efforts at this stage could result in more failures than successes or even the abandonment of efforts to provide this needed type of education. This is an area in which an unusual amount of state participation, state leadership, and even state control should be exerted. A state should determine the number and locations of pilot programs to be financed. It has an obligation to assist pilot schools in providing special financing, supervision, and curriculum development; assisting in recruiting and training teachers; and by cooperating in evaluation and replanning.

State-level functions may be shared in various ways by state departments of education and universities, but a clear understanding of the responsibilities of each participating state agency is required.

Developing Programs in Cooperation with Employers and Their Organizations

Experience, in providing education for off-farm agricultural occupations, indicates the necessity for working closely with both prospective individual employers of trainees and with organizations of employers. Many area, state,

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[3]See the publication in this series entitled Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations, for more detailed suggestions of practices and precautions to be observed.

and national trade associations have indicated that they need trained workers. In many instances, they have helped both to initiate and guide programs and to recruit and finance students. Employer organizations have assisted in surveying community and area training needs, in providing locations for occupational experience, and in evaluating on-going programs.

The best possible approach to employers by the institution may be to provide short courses useful to the employees which will increase employers' confidence in the value of one- or two year programs for prospective employees. The cooperation of employers is required in providing work experience for students. This experience frequently leads to permanent employment with the same employers.

Working With Organized Labor and the Employment Security Agency

Many persons conducting responsible for conducting these programs will be having their first contacts with organized labor. Where organized labor is represented, cooperation with this group is imperative. It will be necessary to know the requirements for admission to applicable unions. Arrangements can sometimes be made whereby school training can be substituted in part for apprenticeship. There is only disappointment awaiting those persons who are trained for a unionized occupation but cannot gain admission into a union.

The employment service agency can be used in developing these new programs. Persons in agricultural education need to establish closer contacts with this agency in providing education for off-farm agricultural occupations. This agency will be found highly cooperative and able to aid programs in a variety of ways. It may be used to help in

recruiting, testing, and counseling prospective students; to aid in planning training programs; to secure part-time occupational experience for students in training; and to assist in placement when training is completed. The goodwill and support of this agency is invaluable. Cooperation with this agency is mandatory for states receiving federal funds for vocational education.

Working with Other Governmental Agencies

Employment in off-farm occupations is governed by complex legal requirements with which those conducting training programs must become familiar. Several of the occupations require licensing of practicioners by a state. Training must be conducted so that graduates can qualify for licensing. The employment of younger workers is regulated by law and these regulations must be observed. This is important when providing part-time occupational experience while students are in training.

Laws and rulings to be observed vary from state to state. They are so complex and varied that no attempt will be made to summarize them. Attention is called to the publication in this series entitled, Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture, which deals in some detail with laws and rulings affecting this type of education.

Government (federal, state, and local) is one of the large employers of workers in off-farm agricultural occupations. Contacts with its many divisions will yield important information about jobs available and training needed and, in addition, may lead to the placement of many graduates. Some studies reported in the publication cited earlier have overlooked this outlet for graduates.

Involving the Various Vocational Education Services

The contribution made by agricultural educators in providing training for off-farm occupations requiring some knowledge of agriculture may vary from 1 to 100 percent of the total training program. Distributive, industrial, business, and technical educators are providing some training for some of these occupations. The emphasis in this publication is upon sharing the training for these occupations with each service contributing as it is able. Agricultural educators will be seriously handicapped if they undertake to provide programs without engaging the assistance of their colleagues in other vocational education services.

Involving "General Educators"

Essential contributions to these programs are made by persons not considered to be vocational educators. Employers in most off-farm agricultural occupations included in the studies reported have often ranked personality, ability to work with people, and communication skills among the chief requirements of the jobs they have to offer. Those who teach English, speech, mathematics, science and other related subjects are an integral part of the comprehensive staff required for successful training programs.

Providing Adequate Funds and Facilities

Education for off-farm agricultural occupations is not cheap education. The costs per student in typical programs in one state range from $600 to $1,200 per year, although most of these programs have operated with inadequate funds.

The costs are high because classes are typically small; equipment is expensive; teachers must be well paid since they must be competent to hold responsible positions in the industries or businesses for which they are training students; and other expenditures (for operating costs, library, and visual aids) are greater than those in many traditional programs of vocational education. If programs for full-time students are undertaken, the costs per year will approximate those in providing good collegiate education and will be higher than the costs in the first two years of a four-year college.

A larger portion of the funds used in the future will have to be state and national funds. Most local school districts, accustomed to the costs of the programs in vocational agriculture they now have, will be unable or unwilling to assume the substantially greater costs the new programs would involve.

The temptations to use substandard, cramped housing and discarded equipment, to reduce teaching time below that required to obtain competence, and to omit expenditures for adequate teaching aids will be strong in launching these programs. Some programs may succeed although facilities are limited, but the risks involved are great. A small investment may result in waste of the funds expended. It is possible to influence public perception of the importance of a program by the type and condition of the building and other facilities provided.

Student housing may be necessary since enough students to begin a program may come from a wide area. In some cases use is being made of dormitories and federal funds may be had to assist in building them.

Securing Program Directors and Teachers

It is to be expected that most of the people who will direct programs preparing for off-farm agricultural occupations will be recruited from agricultural business and industry or will have had experience in these fields. Most teachers of vocational agriculture undertaking to fill the role will need to possess experience supplementing the farming experience they have had and special training, preferably extensive. Some of the many agriculture teachers pursuing master's degrees might well major in fields which will provide this training. In multiple-teacher departments, it may be possible to release one teacher at a time for advanced training and/or business and industrial experience. Resource personnel from agricultural businesses may be used advantageously.

New types of training programs will have to be developed for these teachers and they will vary with the specialties to be taught. Extension classes pertaining to some of their common needs can be provided, but specialized programs for particular groups of teachers are needed. These can be offered during the summers. Often there will not be enough teachers of any one specialty to warrant a summer training program in each state; regional cooperation will be required. Some universities should develop extensive programs at the undergraduate or graduate level to prepare particular kinds of teachers. The nature of those programs will vary greatly; there should be no attempt to train all kinds of those teachers through one curriculum.

Since qualifications are high and those having them are few, the salaries paid must be high. If qualified teachers cannot be secured, a program should not be attempted.

Part-time teachers from business and industry may often be used to assist full-time teachers.

Recruiting, Screening, and Counseling Students

Securing enough students so that training costs per person will be reasonable and selecting students likely to succeed in a training program and on the job are problems seldom faced seriously in providing the older types of vocational education in agriculture.

However, recruitment in these newer programs may be difficult because a program is new. It becomes easier as individuals are trained and placed satisfactorily. Recruitment is aided if:

1. The program is supported by a related trade or business association.
2. There is adequate vocational counseling.
3. An area school has a representative who works with the local schools of the area.
4. Part-time employment in the industry is provided so that a student has "a foot in the door" and some earnings to assist in meeting his expenses.
5. The school has a program of financial aid for needy students. There are new opportunities to provide this aid with funds available under the 1963 Vocational Education Act or the National Economic Opportunity Act. Employers' associations frequently provide scholarships.

Many who show interest in training for off-farm agricultural occupations

will be considerably older than the high school students to whom agriculture teachers are accustomed. Some will have had considerable experience since leaving school, much of it unsuccessful. The average age of an entering group of full-time students in a post-high school program is likely to be 25 or 30 or more. Their school records shed light on their capabilities, but they may not be conclusive. Tests of various kinds, employment records, and intensive personal interviews are needed in choosing those who will be trained. High school students admitted to 11th and 12th grade programs in agricultural machinery, agricultural business, and other fields should be those who are seriously preparing for work in these fields on graduation or for further study in them in area schools or colleges of agriculture. Even though careful selection is practiced, some tryouts in two or three programs may be necessary before one is found in which a student can succeed. Those without aptitude in a specific program should be guided into other programs where they can succeed.

Developing Outlets for Graduates

One of the serious handicaps in providing education for some off-farm agricultural occupations is the low rate of entry pay in some of these occupations in some localities. Another is the limited opportunity in many situations to advance in earnings. However, it should be recognized that employers themselves say this will improve with the availability of trained personnel.

It should be understood at the outset that the first obligation of a school offering these programs is to the individual trained, who should be prepared for the best opportunity available to him. Some will prefer to

remain in the areas where they are trained in spite of financial inducements to move, but no one should be trained in ignorance of opportunities elsewhere. A training center should establish relationships with employers offering the best opportunities, wherever they are. The state employment service will be of assistance in locating employment opportunities.

It is likely that a high percentage of the costs of a training program will be paid by the nation and a state. A school is under no obligation to keep its graduates in its own area or to prepare students for local employers who pay less than a standard wage.

There are so few schools in the country preparing students well for these occupations that it can be expected that paths will be beaten to the doors of these schools that prepare them well. Extensive migration has become normal even in those occupations for which relatively uniform provisions for education and training are provided across the country.

It is not to be expected that graduates will always want to work for local businesses and industries however great their need for employees or however good their pay scales. The major way in which many local or area estblishments are likely to profit from the training provided in their nearby schools is by upgrading educational qualifications of those already employed.

Enrollment of Full-Time and Part-Time Students to be Anticipated

Frequently vocational-technical programs have been established with the expectation that they will enroll only, or mainly, full-time, day students. When enrollments are also open to adults attending part-time and a varied program for these adults suited to their needs and convenience

is provided, the total enrollment of adults attending on a part-time basis may be two or three times or more the enrollment of full-time students.

In the area schools of North Carolina in the winter of 1963, 90 percent of the total enrollment was made up of adults attending part-time. The number of adults engaged in an occupation is always several times the number of persons preparing for an occupation. Often the best way to initiate a training program is to convince adult practicioners that a school has something to offer them.

Removing Deficiencies in Basic Education

Many of the prospective students will be lacking in basic education but may have aptitudes and interests conducive to success in these programs. There is accumulating evidence that many students will quickly remove the most serious deficiencies in their basic education if strongly motivated to pursue a vocational objective. Age alone should not be considered a deterrent to providing education that should have been secured in the elementary schools.

Extending the General Education of Vocational Students

Every opportunity should be used to extend the general education of students enrolled in vocational-technical programs in areas such as the social sciences, political science, health sciences, literature, music, and art. A program preparing for a particular agricultural occupation requiring one year of specialized education may well be incorporated in a two-year program in a junior or community college providing equal amounts of vocational and general education.

Planning Programs to be Offered

The Center for Vocational and Technical Education, The Ohio State University, has available comprehensive course outlines for agricultural mechanics, agricultural business, agricultural chemical technology, and ornamental horticulture. Its library includes copies of many courses of study designed to prepare for these and other off-farm occupations. The United States Office of Education has other course suggestions available. Several states have prepared suggested courses.

Even with these aids, those planning programs in local and area schools must make many adaptations and fill many gaps. Staff time is required which can be devoted to course and program planning. Several teachers may be involved in planning any one program. Teachers of agriculture must avoid attempting to plan them alone.

Arranging for Related Work Experience

Schools cannot usually provide the practical experience required in preparing a student for an off-farm occupation. But, it cannot be neglected if trainees are to become employable. The amount of practical experience that can be provided at a school varies with the facilities available, but adequate experience can seldom be provided at a school.

On-the-job experiences must be planned as carefully as those in school. Training stations must be arranged Employers and those responsible for the direct supervision of trainees must understand the nature and value of both the contribution that on-the-job training and the supplementary contribution of the school is to make. Written agreements among students, their parents,

the school, and employers must be made. Time must be provided for adequate supervision by the school of employed trainees.

Arrangements for work experience for students in agricultural occupations sometimes cannot be fitted into patterns that have become standard in distributive and industrial education, patterns which provide for a student to spend a part of each school day at a training station. Work experience in an area school must be arranged differently from that in a local school; it may not be feasible to use daily training stations scattered over a 50-mile radius.

Special arrangements for work experience have been developed which are adapted to training for off-farm agricultural occupations. Sometimes it is scheduled on Saturdays and during vacations in the school year and during the summer. Some schools have students spend one or two quarters in school followed by one or two quarters on the job.

The amount and nature of on-the-job training will depend upon a student's previous practical experience, the kind of work for which he is preparing, and the facilities a school has for providing practical experience. There is a minimum amount of on-the-job experience which each student requires regardless of these factors. The amount required will vary greatly with individuals; work experience provides one of the best opportunities to individualize instruction.

It is recognized that many difficulties exist in providing work experience. The number of employers willing and able to provide it to the satisfaction of the school is often small. Good trainees often become permanent employees of the firms that have given them training and training

stations dry up. Some believe that short exploratory experiences in several businesses or industries are preferable to a prolonged experience in one establishment.

Stimulating Further Education

No program mentioned in this publication is intended to be a terminal program. Any one of the programs suggested might have students in it who will enroll in more extended programs in community colleges, transfer to senior colleges, or continue their education throughout life in less formal ways.

Systematic Evaluation Required

Only limited experience has been obtained from the programs suggested in this publication. Present programs are far from perfect. Programs can only be improved as they are rigorously and regularly evaluated. Evaluation cannot be left entirely to those responsible for conducting the programs but continuous evaluation on their part is required. Outside evaluators are needed including representatives of employers and labor, vocational and general educators, and representatives of the public. Data, rather than opinions, should provide the principal bases for evaluation.

Use of Advisory Committees

Almost everyone who has been involved in training for off-farm agricultural occupations testifies to the necessity of using advisory committees. Many of these committees have been misused. An advisory committee is not a substitute for a board of education; a board should delegate none of its

policy-making functions to such a committee. Neither is it a curriculum-making body; no professional educators should allow a committee to take over his professional responsibilities. Such a committee is properly a lay committee that consults with and recommends to a governing board regarding policy and works with the professional staff of a school in ways in which the staff is willing to work with it. A board or a professional staff should never be obligated to do what an advisory committee recommends.

In many situations a committee advisory to the board of education regarding an entire school system is needed. Where such a committee is lacking, there should at least be a committee on occupational education which is concerned with the balanced development of all phases of such education. In addition, there may well be special committees for clusters of occupations. Even the craft committee for one training program should be representative of the public as well as employers and employees.

Advisory committees can be helpful in many ways. They can:

1. Indicate the kinds of training needed
2. Enlist support in a community or area
3. Assist in recruiting students and locating opportunities for graduates
4. React to curriculum proposals
5. Reflect public reactions to programs offered

Not all advisory committee members must come from a school's attendance area. Employers in other areas or other states may well be included where definite migration patterns are established or can be established.

Developing Policy for Education in Off-Farm Agricultural Occupations

Ideally, a local or area school or a college would have and would operate under a general policy which would encourage the development of education for off-farm agricultural occupations and provide guidelines for its development.[5] Unfortunately, most educational institutions do not have adequate policies covering this field. Basic policy has to be revised or new policies have to be developed. To proceed without adequate official policy that is understood by all who are affected by it may be fatal to a new and promising program.

Planning Programs and Procedures

Once there is governing policy, programs and procedures can be planned which conform to it. Other publications in this series spell out suggested programs and procedures. Many persons may be involved in developing both programs and procedures. Teachers of agriculture, other vocational subjects, and general "academic" subjects may be involved with curriculum directors or principals in shaping programs. Administrators will have to approve procedures in recruiting, selecting, and scheduling students, governing student behavior, providing transportation, making purchases, and many other matters of school routine. The procedures agreed upon should be known to all affected and should be observed scrupulously.

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[5]See more detailed discussion of policy and policy-making in the publication in this series entitled, Policy and Administrative Decisions in Introductory Vocational and Technical Education in Agriculture for Off-Farm Occupations.

Anticipated Benefits from Good Programs

Benefits of good programs are many and important, even though the hurdles in establishing vocational-technical programs in agriculture for off-farm occupations are many and the costs are high.

Schools with such programs would be providing services to a clientele now largely unserved by specialized vocational-technical education. Included would be many with special aptitudes for these occupations. Employers, now often search almost frantically for competent workers, would have a supply of them available.

The entire agricultural industry would be strengthened by providing more competent workers to serve the farmers' varied needs and by attracting into agriculture persons of ability who might otherwise be lost to it.

Training costs to businesses and industries employing workers in these fields would be reduced as the public institutions made their contributions.

High school programs in agriculture could be reorganized to provide programs appealing to those students with specialized interests in various agricultural businesses and industries who are not adapted to or interested in preparation for farming.

The cooperation of various vocational education services in preparing these workers might well lead to other forms of needed cooperation between services.

If the plans proposed are followed, a whole school system becomes involved in preparing for these occupations with due credit given to the contributions of the elementary schools and the high schools as well as to the area schools and colleges which put on "the finishing touches."

What Can YOU Do to Promote These Programs?

If you are a prospective employer of workers trained in these programs or otherwise interested as a member of the lay public, you can:

1. Ask boards of education, administrators, and teachers to investigate them.
2. Visit programs now in operation and inform others about them.
3. Influence your friends and associates.
4. Encourage trade associations to support and assist in the development of these programs.
5. Serve on an advisory committee if requested.
6. Assist in providing work experience for students in training.
7. Indicate the employment opportunities you have and offer to hire trained graduates.

If you are a member of a local, area, or state board of education, or an administrator in one of these schools, you can:

1. Become familiar with established programs.
2. Authorize studies of the need for these programs.
3. See that adequate policies and the required finances are provided.
4. Authorize carefully planned pilot programs.
5. Provide for the use of all needed resources to insure that these programs succeed.
6. Request assistance of state departments of education, community colleges, four-year colleges, and universities.
7. Insist on careful, systematic evaluation of the results of these programs.

If you are a member of a teacher-education department in a university or a member of a state supervisory staff, you can:

1. Work toward establishing preservice programs for preparing qualified teachers in these areas.
2. Help establish in-service programs of teacher "up-grading" and preparation in these areas.
3. Assist in the development of means of systematically evaluating these programs.

APPENDIX

FIVE EXAMPLES OF DEVELOPING PROGRAMS

Comprehensive Program at Modesto, California

Agricultural education at Modesto Junior College exemplifies the complete program of a truly "community" college. Extended day adult level programs, programs for the post-high school "drop-out", programs for the "hard-core unemployed", programs for the preparation of technicians, and programs for transfer to four-year institutions are in operation or are being developed. Agricultural education was first included in the curriculum of the college in 1950. A lay advisory committee had assisted in defining the need of the area and the direction the program should take a year before.

The area served by the college is diversified, including fertile flat lands, foothills, and mountains. Major enterprises include vegetable and field crops, vineyards, livestock, dairying, forestry, and recreation.

An enrollment of 538 in agricultural curricula existed in 1965; 340 came from 15 high schools within the district, 165 from 50 or more high schools in other parts of California, 15 came from other states, and 18 came from foreign countries. These students are served by 15 full-time instructors and by some part-time instructors under the chairmanship of Mr. Ernest Tarone.

Programs offered vary according to the need for which they were established. Preparatory programs for both production and off-farm agriculture are in operation. Fifty-five separate course offerings are available to students. Programs are aimed at both management and operation. A short course being planned for training dairy herd milkers is an example of the latter. Illustrative of the interest in serving

the total needs of agriculture is the training program in operation for supervisors of farm labor which was designed for persons such as owner-operators, harvest crew pushers, and foremen in agricultural businesses such as packing houses and concrete pipe companies.

Five technical programs in agriculture are offered, namely, (1) artificial insemination, (2) quality control, (3) fluid power, (4) laboratory techniques, and (5) park maintenance. Three other curricula are being developed in agricultural supply systems, dairy industry, and resource management.

The professional staff in the Agriculture Department actively engage many lay people and outside agencies in conducting the programs in operation. As one instructor said, "Our program would never have ever gotten off the ground if we had not involved many interested lay, business, and industry people in planning and evaluating our programs." Examples of lay, professional, trade association, business, and industrial involvement are use of people with the Department of Employment, The Agricultural Extension Service, the California Farm Bureau, the California Council of Growers, fertilizer and insecticide distributors, nurseries, and the University of California.

The procedure followed when developing new technical offerings is indicative of the planned manner in which new programs are developed.

1. Six to ten leaders in an industry meet to select members of an advisory committee from all strata of agriculture concerned with the area being developed.

2. This advisory committee holds one to four meetings. Findings of studies of program needs are presented. The committee verifies or denies the findings and reviews curriculum and course proposals.

3. A curriculum and courses are developed by the professional staff utilizing advisory committee assistance.

4. Commitments are secured from the industry for assistance in recruitment, instruction, providing equipment, and in placement.

Length of preparation in the different programs varies from one or two special courses, to that of a vocational or skilled worker level involving the equivalent of four semesters, to that of a technician level involving four to six semesters depending on student aptitude, previous training and education, and level of difficulty of the training. Technician programs are believed to belong above the high school level, but high school courses in vocational agriculture are useful in recruiting and screening students for these courses. The related industries assist in structuring, implementing, and evaluating programs. Courses are offered to upgrade employees as well as to prepare new employees at all levels of occupational difficulty.

When selecting professional staff members for the department, teachers are sought who meet the following criteria:

1. They are outstanding teachers of vocational agriculture.

2. They have developed respect and status in related industries because of their work.

3. They possess demonstrated abilities.

One of the outstanding features of the program is the comprehensive systematic evaluation of the preceding year's work conducted by the total instructional staff each summer. Another sound feature of the program is the attempt to coordinate the total offerings in agricultural education by the Modesto city schools, other schools within the junior college district, and the Modesto Junior College.

Two-way, effective channels of communications exist between the Agriculture Department of the college and other schools offering vocational agriculture within the district.

All full-time students take some prescribed and some elective courses in departments other than agriculture including English, business, science, and social science. Remedial courses in English and mathematics are available if needed.

Fewer than one-third of the students enrolled in agriculture transfer to senior colleges. Most of the others enter the agricultural industry within the service area of the college after one to six semesters of work.

Agricultural Business

There are three types of area schools in the North Carolina Community College System. Industrial education centers offer trade programs. Technical institutes offer trade and technical programs. Community colleges provide college-parallel programs in addition to trade and technical programs. All three types have programs in adult education, both general and vocational.

Agricultural Business at Winston-Salem, North Carolina

Forsyth Technical Institute is one of 30 area schools in the North Carolina "Community College System." It was established in 1960. The total enrollment in the institute in the winter quarter, 1965, was 2,669; 267 were full-time students, 376 were part-time, and 2,026 were extension students.

The first member of the staff in agriculture was employed in 1962. His first year was devoted to surveying needs, course planning, arranging

for equipment and teaching aids, contacting prospective employers and their organizations, visiting feeder schools, recruiting students, and conducting a few short courses in agriculture.

Two two-year programs in agriculture are now offered: Agricultural Business and Poultry and Livestock Services. A third program, in Horticulture, will be added in 1965-66. In addition, the Institute provides a variety of agricultural short courses.

Ten students were enrolled in the first year of the program in Agricultural Business. An enrollment of 60 to 80 was anticipated for 1965-66.

During 1962-63 the agricultural technology coordinator surveyed 128 agricultural businesses and industries in his area of 17 counties to determine employment opportunities and the educational opportunities and the educational needs of prospective students. The survey findings were discussed with city and county superintendents, personnel in vocational agriculture, extension personnel, and various civic and educational organizations.

The program in agriculture at Forsyth Technical Institute was one of eight in the area schools of the state in 1964-65. Eleven of these schools will have agricultural programs in 1965-66. The initiative in planning and developing these programs has been at the state level. State funds for them were first provided in 1961. They cover salaries, equipment, library, and teaching aids. The sites and most of the costs of the buildings have been provided by the people of the areas served, but federal funds are being used increasingly for buildings.

The library of Forsyth Technical Institute includes 4,047 volumes, 300 of them dealing with agriculture. Equipment for the program in

agricultural business, provided by the State, cost $2,327.

Students admitted to the program in agricultural business must be 18 years of age and are expected to score 85 to 100 on the various sections of the GATB (General Aptitude Test Battery) examination.

The two-year program in agricultural business is designed to prepare for employment in marketing, sales, processing, management, and distribution. Positions to which the program might lead include farm supply store manager, agricultural products salesman, field serviceman, feed company plant manager, and farm business manager.

A student has two majors, one in business and one in agriculture. The work in business is believed to be equivalent to that in a business college.

The current curriculum in agricultural business includes the following subjects:

First Quarter - English, Introduction to Business, Office Machines, Business Mathematics, Introduction to Agricultural Economics.

Second Quarter - Plant Science, Report Writing, Accounting, General Chemistry.

Third Quarter - Interpreting Accounting Records, Sales Development, Agricultural Marketing, Animal Science.

Fourth Quarter - Business Finance, Budget and Record-Keeping, Farm Business Management, Horticulture 1.

Fifth Quarter - Speech, Applied Psychology, Horticulture 2, Farm Chemicals.

Sixth Quarter - Taxes, Principles of Supervision, Livestock Diseases and Parasites, Farm Mechanization, Soil Science and Fertilizers.

All students are encouraged to get related work experience during the summers and approximately half of them do.

The agriculture department has a classroom, a laboratory, and a greenhouse. Plans call for space more than double that which is now available. A science laboratory available to all departments is used in the agricultural business program. Furniture, equipment, and supplies for this laboratory cost about $20,000.

The first students in agricultural business were graduated in May, 1965. All have been employed. Their minimum weekly wage is $80. All are employed in the area served by the Institute. Employers include the Reynolds Tobacco Company, Curtis Packing Company, and Morgan Poultry Company.

About 40 persons were graduated in agricultural business from North Carolina area schools in 1965, the largest group from any agricultural curriculum in these schools.

Four major factors seem to have made for success in the agricultural business program at Forsyth Technical Institute:

1. Planning and organization preceded the venture.
2. Strong state-level support was given.
3. Competent teachers and adequate facilities were provided.
4. The program had the benefit of a comprehensive institution with facilities unlikely to be available in a high school and with related courses taught by a number of staff members.

The Forsyth experience shows that, even under favorable circumstances, the development of a high quality program in agricultural business is a slow and difficult process. It suggests, however, that good outcomes may be expected when the groundwork is well laid.

Agricultural Merchandising at Reidland High School, Paducah, Kentucky

Reidland High School is a part of the county system which does not include Paducah. Paducah itself has its own school system, a junior college, and an area vocational school.

Reidland is in an area of declining farm population, but several important agricultural businesses are located in its service area. Prior to the establishment of the program in agricultural merchandising in January, 1963, enrollment in vocational agriculture had been declining and the department was in jeopardy.

Impetus for the establishment of pilot programs in agricultural merchandising came from the state supervisor of agricultural education. Two teacher educators and two supervisors drew up criteria and procedures for pilot programs. Agricultural businesses across the state were studied to determine job opportunities, abilities needed by employees, and training provisions then available. Four pilot programs, including that at Reidland, were set up. Materials for use in these programs and close supervision of pilot programs were provided by the Department of Vocational Education of the University of Kentucky.

An advisory committee was set up atReidland including the president of the county Farm Bureau, a representative from Employment Security, the farm director of a local TV station, three businessmen, a representative of a rural electric concern, and two farmers. The committee has assisted in locating training stations and job opportunities and in establishing the wages paid trainees.

There has been strong support of the program by the superintendent and assistant superintendent of the county schools and by the high school principal.

Only senior boys were admitted in the first year. Their I.Q.'s ranged from 84 to 115. Kuder Interest Test scores, the attitudes of the applicants, and their willingness to work were considered in selecting trainees. Those admitted were required to have adequate time available for occupational experience. Parental consent was required for participation. Students taking the course had completed three years of vocational agriculture.

The teacher has had three years of agricultural sales experience. The state supervisor doubts that anyone without sales experience and training in merchandising could conduct this type of program successfully.

The program is intended to prepare for sales and service jobs in the following areas: feeds, fertilizers, farm and garden seeds, miscellaneous farm supplies and small equipment, agricultural chemicals, grain, and petroleum products.

There are 15 modules in the one-year course. Some deal with the merchandising of the products listed. Others cut across commodities: Orientation to the Training Program, Career Opportunities, Relations Between Persons, Agricultural Salesmanship, Organization and Functions of Retail and Wholesale Agri-Merchandising Establishments, Business Procedures in Agri-Merchandising, Management in Merchandising, and Providing Agricultural Services.

There is a requirement of 200 hours of work experience related to the course. There has been no difficulty in providing adequate out-of school occupational experiences. Employers of students in the program are supporting it enthusiastically. The proprietor of one large

establishment that employed six boys has said: "I'd take 16 more tomorrow if I could get them." On-the-job experiences start with menial tasks: sweeping out, stocking shelves, toting feed and fertilizer. Later there is inventory work; waiting on customers; making feed, seed, and fertilizer recommendations; and accounting for a day's receipts.

State and federal financing of the program is the same as that provided for other programs of vocational agriculture in the state. The state has provided two sets of textbooks, a tape recorder, and $50 for a part-time typist to assist with reports the state has requested. The county provides $200 to $300 annually for equipment and two or three sets of reference books. The students pay an annual fee of $4.50 for supplies.

A classroom has been set aside for this program. A shop is available. There is an office for the instructor. A greenhouse is being built with funds earned by the students in vocational agriculture. The cost of the program has been low, yet the instructor believes that he has had the resources needed.

Seven high school graduates had completed one semester of the program in 1963-64. Four are attending college and are enrolled in agriculture; one is in a vocational school; and two are working in farm supply centers.

Only 12 students have been enrolled in this program in each term, but the new program has stimulated enrollment in the total program in vocational agriculture. In 1963-64, 38 boys were enrolled; in 1964-65, 76; and 110 to 120 are expected in 1965-66. A second teacher was added in 1964 and a third teacher will be added in 1965. No students

enrolled in the course in agricultural merchandising have dropped it.

Our interviewers found students, instructor, administrators, and employers enthusiastic about the new program. It is expected that two other high schools in the county system will introduce programs in agriculture preparing for off-farm occupations in 1965-66, one in agricultural mechanics and one in ornamental horticulture.

Unusually careful methods of evaluating the program are being employed by staff members from the University of Kentucky. Pretests and post-tests are given to those enrolled and to control groups in other schools.

The arrangements for establishing the Reidland program have in many respects been almost ideal. Guides were written and a 30-hour training program for participating teachers was conducted at the University. Few teachers of vocational agriculture have the special qualifications for this program possessed by Mr. Riley, the Reidland teacher.

The rapid growth of enrollment in vocational agriculture in Reidland High School, apparently spurred by the new program, and the introduction of programs preparing for off-farm occupations in two other high schools in the county system raise problems which will have to be faced. Will there be satisfactory training stations for all who wish to enroll? Will local employment opportunities in these fields be exhausted? Will these programs prove primarily valuable for the work experience and vocational guidance they provide and will the graduates go to college or into types of employment for which they have not been specially trained, much in the pattern of other high school graduates?

The staff at the Center would not suggest that a teacher be allowed only the time available for a "regular" course in vocational agriculture to organize and conduct this new program although Mr. Riley has been successful under these conditions. An unusual amount of time is required, particularly at the outset, to introduce such a program. Fortunately, enrollment at Reidland has been limited to 12, apparently a reasonable number under the circumstances.

The requirement of three years of vocational agriculture for admission to the program is subject to serious question.

Not all senior boys and not all of their parents approve of taking time out of school for employment. Reidland has minimized this difficulty by providing much of the on-job experience during weekends and vacation periods.

The Reidland program illustrates a typical difficulty in training for off-farm occupations in the high school. Only one program is offered. The market for its graduates could easily be flooded. Students interested in agriculture may choose only between education for farming and education for agricultural merchandising.

The area vocational school at nearby Paducah offers no agriculture. Opportunity to specialize further is provided in the higher institutions of the state.

Reidland has given us an inspiring example. It has also placed in clear focus some of the toughest problems to be faced in developing vocational education in agriculture for off-farm occupations at the high school level.

Farm Equipment Mechanics at the Alexandria Area Technical School, Alexandria, Minnesota

Training in agricultural mechanics was begun in 1962, using the facilities of the Department of Vocational Agriculture of the Alexandria High School. A special building for "technical education" costing $284,000 and including 22,000 square feet of floor space became available in the fall of 1964. The program for farm machinery partsmen is still conducted in the high school building.

Eleven vocational curricula are provided at the area school: Carpentry, Clerical Training and Data Processing, Farm Equipment Mechanics, Industrial Drafting Technology, Junior Accounting, Machine Shop, Medical Laboratory Assistants Training, Partsmen Training, Practical Nursing, Secretarial Training, and Welding.

The school has a director, 14 instructors, a secretary, and two custodians. Three of the instructors are in Agricultural Mechanics.

Only high school graduates under 21 years of age were enrolled in 1964-65. Admission to the school and to particular programs is based on high school transcripts, individual aptitudes, physical characteristics, and personal interests. The school had 200 students in 1964-65. Sixty of these were in programs in Agricultural Mechanics, 40 of these in the Farm Equipment Mechanics program and 20 in Partsman Training. Eleven of the 60 left school before the end of the year.

All of the teachers of Agricultural Mechanics had been recruited from the farm equipment industry. Their years of schooling ranged from eight to twelve. The instructor in the partsman course had served as a partsman for several dealers in agricultural machinery; had held an automobile dealership; and had worked as a partsman for a marine

equipment company. The instructor in the first year of Farm Equipment Mechanics had worked as a blacksmith and a farm machinery repairman. The instructor in the second year of Farm Equipment Mechanics had participated in a number of company training schools. Each teacher is required to complete 140 hours of class work to become fully qualified. All have been taking courses offered at Alexandria by the University of Minnesota.

All of the teaching of the 60 students enrolled is done by the three special teachers. Their instruction includes mathematics, spelling, writing, and speaking.

The program in Farm Equipment Mechanics is a 20-months program. It is expected that the students will be employed in work related to their training during the summer between the two years spent in school. The principal divisions of the two-year program and the time assigned to each are as follows:

First Year	Hours
New Machinery Setup and Predelivery Service	150
Used Machinery Repair	390
Related Study	100
Interpretation of Parts and Service Manuals	60
Shop Safety and Use of Tools	50
Personal Development	40
Welding	120
Basic Electricity and Test Equipment	30
Small Gasoline Engines	60
Basic Hydraulics	80
	1,080

Second Year	Hours
Gasoline Tractors and Engines	300
Diesel Tractors and Engines	300
L. P. Gas Engines and Carburetion	20
Hydraulic Systems and Equipment	160
Electrical Systems, Trouble-Shooting, and Repair	100
Related Study	100
Lectures and Clinics	40
Shop Supervision	60
	1,080

The 12-months course for partsmen provides instruction in the interpretation of parts books, assembly and disassembly of machines, salesmanship, buying, advertising, inventory control, accounting, and clerical work. The course is taught from 4:00 p.m. to 8:30 p.m. five days a week.

The courses in Farm Equipment Mechanics are taught in two 40' x 60' shops and a 20' x 40' welding room. About $25,000 has been invested in equipment for this program. A meager library is maintained.

All graduates have been placed in jobs related to their training. Calls for them have come from many states and from outside the United States. The average beginning wage of mechancis and partsmen has been $2 per hour. Many of the graduates in the first class have become supervisors or assistant supervisors of their departments. Placement is handled by the school's director.

Residents of the Alexandria school district under 21 years of age are admitted tuition-free. Persons under 21 from other Minnesota

school districts have their tuition paid by their home school districts. Persons over 21 and those who come from outside the state would be required to pay tuition of $30 a month. About two-thirds of the public funds used come from the state and federal governments and one-third is supplied by the local district.

The Minnesota and South Dakota Farm Equipment Dealers Association has provided a great deal of help and encouragement for the program at Alexandria and similar programs in Minnesota. It has been a principal resource in placing graduates.

The Alexandria program illustrates an intensive and successful approach to training two kinds of specialized workers. Graduates are meeting the acid test of employability.

Ornamental Horticulture at the Rockland County Center of Technology and Education, West Nyack, New York

A program in ornamental horticulture, one of 19 vocational programs provided at the school, is offered for high school students from seven feeder schools in Rockland County. The school is one of several provided under a state law enacted in 1937. The programs in agriculture are supervised as other high school programs in agriculture in the state are supervised.

Mr. Ernest J. Stedge has been the teacher of ornamental horticulture for 21 years. He is assisted by welding and drafting instructors from other departments. Use is made of state horticultural inspectors, representatives of chemical companies, college professors, and landscape architects in providing instruction.

An advisory committee including landscape contractors, nurserymen,

arborists, plant breeders, and school officials is used. This committee advises about equipment and supplies, employment of students and graduates, the arboretum, and field trips.

The program is provided for two years and is intended for 11th and 12th grade students. It is limited to landscaping and nursery operation and the mechanics related to them. Two sections are taught. Students are assigned to sections on the basis of ability and interest in college attendance. There are very few dropouts.

Second-year students may be released four days a week from April 1 to the end of the school year for work on approved jobs. A student, his parents, and a representative of the school sign the release. Employers submit reports to the teacher regarding absences from work, progress, and attitudes. Students are required to work in the school nursery for a specified number of hours each summer, the school district providing their transportation.

The following units are included in the course of study:

Landscape Principles, Plans, and Models

Identification, Selection, and Care of Plant Materials

Plant Propagation and Nursery Management

Insect and Disease Control

Soil Testing and Fertilizers

Lawn Construction and Maintenance

Tree Surgery - Pruning

Sales and Business Management

Selection, Use, and Repair of Landscaping Equipment

Welding

Small Gas Engine and Tractor Repair

Safety

There are 540 hours per year (three hours per day) of class, laboratory, and shop instruction. Each class is limited to 14 students. Each student must be employed under approved conditions in landscaping-nursery or allied work for 400 hours each year or must participate in a planned work experience program at the school nursery for 22 days. Each student employed or self-employed is visited weekly by the instructor.

Bus transportation to and from the feeder high schools is provided. Students transferring to the county school may complete the requirements for high school graduation there. Some of the students have not been well adjusted in their home high schools and would have been unlikely to meet graduation requirements in them. Counselors in the feeder schools help in interesting and selecting students.

Land available includes a 40,000 square foot lawn demonstration plot, a 25,000 square foot nursery, and 2,500 square feet devoted to ground-cover plots. Additional land for nursery and demonstration plots is available "without limit." A classroom, a 55' x 36' shop, and a storeroom 32' x 24' for landscaping equipment are available. There are two tractors, a garden tractor, a rototiller, five lawn mowers, and a complete stock of hand tools for student use. A bus and driver are available for field trips. There is an arboretum on the school grounds and a 64' x 22' aluminum frame, plastic greenhouse.

Expenditures for operation are limited to $900 per student per year. Products of the school farm are auctioned or are sold to the

trade but only on a wholesale basis. Commercial work can be done only for non-profit institutions and with prior approval by the advisory committee. The school is operated to provide education, not to make money. The teacher commented: "When a school is working to make money, something must give."

The program has been in operation long enough to demonstrate that there is continuing need for it. Only 28 students can now be accommodated, but there are plans for 80 students and three instructors. Many of the former students are self-employed. Employment has been found in garden centers, nurseries, and landscaping. Some graduates are working part-time and attending college part-time.

The Rockland County program illustrates the possiblity of grouping students recruited from several high schools in a specialized program that would not be possible in any one high school.

A variety of purposes are served by the program. Students not well adjusted in their high schools find a more acceptable environment and complete their high school education. Some find employment on school-leaving in which their training can be used. Some use their saleable skills to finance their college education. All have found and cultivated a field of interest which will be rewarding regardless of the occupations they enter. Those who will specialize in horticulture in an area school or college are provided a fine background for their special studies. All of the varied benefits which Rockland County students are deriving from this high school program are paralleled in every other program in off-farm agricultural occupations offered in the high school.

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PLANNING AND CONDUCTING COOPERATIVE OCCUPATIONAL EXPERIENCE IN OFF-FARM AGRICULTURE

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in Vocational and Technical Education

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Publications on Off-Farm Agricultural Occupations
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This publication is one of a series relating to Off-Farm Agricultural Occupations developed at the Center for Vocational and Technical Education under a grant from the Division of Adult and Vocational Research, U. S. Office of Education. Each of these publications was designed for a specific purpose. However, they are designed to complement and reinforce each other. It is suggested that persons using any of these materials will want to familiarize themselves with the other publications in this series. Following is a complete listing of this series.

1. Policy and Administrative Decisions in Introducing Vocational and Technical Education in Agriculture for Off-Farm Occupations

2. Vocational and Technical Education in Agriculture for Off-Farm Occupations

3. Summary of Research Findings in Off-Farm Agricultural Occupations

4. Planning and Conducting Cooperative Occupational Experience for Off-Farm Agriculture

5. Occupational Guidance for Off-Farm Agriculture

6. Horticulture - Service Occupations
(Course outline and twelve modules)

7. Agricultural Supply - Sales and Service Occupations
(Course outline and twelve modules)

8. Agricultural Machinery - Service Occupations
(Course outline and sixteen modules)

9. Agricultural Chemical Technology
(Course outline and nine modules)

PREFACE

The implementation of the provisions of the Vocational Education Act of 1963 has rapidly increased the number of schools providing training for off-farm agricultural occupations. Programs are being developed for several levels of preparation by local schools, area schools, and community colleges. In most of these institutions, occupational experience can best be provided by a cooperative occupational experience program.

This publication has as its major objective the orientation of vocational teachers to the fundamental concepts of planning and conducting a cooperative occupational experience program for off-farm agriculture. Because the primary emphasis is given to the procedures associated with the operation of the occupational experience phase of the program, many factors, such as class schedules and methods and procedures of providing classroom instruction, are not included in this publication even though they have a direct bearing upon the success of the occupational experience program. Nevertheless, the concepts and procedures outlined herein should provide a valuable resource for teachers initiating programs in this area.

The development of a sound cooperative occupational experience program requires the expenditure of considerable time and effort on the part of the teacher-coordinator. No part of a comprehensive program in agricultural education should be slighted to develop this type of occupational experience. If a school wishes to develop a cooperative occupational experience program for off-farm agricultural occupations, the teacher-coordinator must have a schedule which will enable him to devote the time and effort needed. In many instances relationships can be developed whereby teachers from several vocational education services may share in the actual teaching and coordinating of a program in off-farm agriculture. For instance, a student placed in retail selling in a farm store could logically be placed in a distributive education class for some of this related instruction.

The sections of this publication are in the sequence that would normally be encountered in the development of the program. A number of sample forms and other information are included in the various sections and the Appendix to enable teachers to understand the standards, objectives, and procedures associated with each phase of planning and conducing cooperative occupational experience. The local teacher should not rely on this publication alone. If he is interested in utilizing cooperative occupational experience, it is recommended that the teacher attend special classes and workshops to become better acquainted with recommended procedures and consult with local administrators and state supervisory personnel before initiating a program. The list of references in the bibliography will provide additional information and assistance.

Mr. Harold Anderson provided the leadership for developing this publication. It is a compilation of information secured from materials written for cooperative education in distributive education, business education, trade and industrial education, and agricultural education. Mr. Anderson has also drawn on his experience with pilot programs in off-farm agriculture, his consultations with teachers, administrators, and supervisors in many states and his research on Cooperative Work Experience in Vocational Education.

Although the final responsibility for the content rests with Mr. Anderson and members of the Project Task Force, grateful acknowledgement is made of the assistance of the following persons who reviewed drafts of the publication and made many valuable comments: Mr. Donald Brock, Vocational Agriculture Teacher-Coordinator, Highland Park High School, Topeka, Kansas; Mr. E. M. Chinnock, Vocational Coordinator, Cloquet High School, Cloquet, Minnesota; Dr. Raymond Clark, Agricultural Education Department, Michigan State University, East Lansing, Michigan; Mr. Mike Cullen, Director, Willmar Area Vocational Technical School, Willmar, Minnesota; Mr. Stan Lancaster, Assistant State Supervisor, Agricultural Education, Denver, Colorado; Dr. William B. Logan, Professor of Distributive Education, The Ohio State University, Columbus, Ohio; Dr. Gordon McMahon, Director, Division of Vocational-Technical Education, State University College, Oswego, New York; Mr. Bernard Nye, State Supervisor of Distributive Education, Columbus, Ohio; Mr. Clayton Riley, Vocational Agriculture Instructor, Reidland High School, Paducah, Kentucky; Mr. Paul Shoemaker, Distributive Education Coordinator, Chillicothe High School, Chillicothe, Ohio; and Mr. Darrel Way, Livestock Specialist, Agriculture Education, State Department of Education, Little Rock, Arkansas.

The reader's attention is directed to the other publications developed by the project and designed to complement these materials.

We hope this material will be of assistance to teachers and administrators in developing needed programs in this area. We solicit your reactions and suggestions for its improvement.

ROBERT E. TAYLOR
Director
The Center for Research
and Leadership Development
in Vocational and
Technical Education

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PLANNING AND CONDUCTING COOPERATIVE OCCUPATIONAL EXPERIENCE IN OFF-FARM AGRICULTURE

INTRODUCTION

Agricultural educators have long recognized the need and value of adequate occupational experience. Students enrolled in vocational agriculture have completed production projects on their home farms or have been placed on other farms or ranches to gain occupational experience. The recognition of the need for training in off-farm agricultural occupations as expressed in The Vocational Education Act of 1963 has resulted in the extension of the placement-for-experience phase of the program to include the placement of students in agricultural businesses and industries. As the number of programs in the high schools and area schools designed to offer training in off-farm agricultural occupations increases, the problems associated with providing adequate occupational experience is also likely to increase. In many of these schools, the occupational experience can best be provided through a cooperative occupational experience program. The philosophy and concepts of cooperative occupational experience are quite similar to those of the traditional "placement for farm experience." However, the placement of students in agricultural businesses and industries involves some facets which are not common to the placement of students on farms or ranches. The primary purpose of this publication is to serve as a guide for local teachers and administrators in planning and conducting cooperative occupational experience in off-farm agricultural occupations.

What is Cooperative Occupational Experience?

Cooperative occupational experience refers to a system whereby students receive their occupational experience under actual on-the-job situations in cooperation with an employer. The program is cooperative in nature, since the employer recognizes his role in making the experience educational. It is his responsibility to help provide experiences and on-the-job instruction directly related to the occupation for which the student is being trained. In most cases, students spend part of the regular school day working in the "training station." The remainder of the school day is spent completing the requirements for graduation and attending the vocational agriculture class where instruction related to the occupation is provided.

Cooperative occupational experience differs from the mere employment of students in that the experience program is planned and coordinated so that students receive related instruction at the school, and on-the-job supervision and instruction at the "training station." The vocational agriculture teacher-coordinator has the responsibility for providing the classroom instruction and coordinating the program. The student, employer, and parents also have specific responsibilities to insure that the occupational experience program is truly educational in nature and will lead to the gainful employment of the student.

An ideal way to attain job competence is by supplementing classroom and laboratory experience and instruction at the school with the learning opportunities of an actual job. Cooperative occupational experience not only gives students an opportunity to learn by practice, but it also makes learning a pleasant experience. Many of the problems encountered on the job becomes the basis for classroom and discussion and study. It enables students to develop personal initiative, responsibility, and confidence. As they work in realistic situations they more readily recognize the importance of developing desirable attitudes and skills necessary to become successfully employed.

Once employers in agricultural business and industry are familiar with the program, they generally are eager to cooperate with the school to prepare students for their life work. While cooperative occupational experience has been utilized to some extent in the past, more schools should consider the possibility of utilizing this method to provide occupational experience in off-farm agricultural occupations.

Definition of Terms

It is recognized that there are a variety of terms in use throughout the country to identify and describe the different phases of a cooperative occupational experience program. No doubt different terms are used in the various states, and therefore the following definitions are presented to help clarify the terms used in this publication.

Agricultural Occupation is an occupation in which the worker needs competency in one or more of the primary areas of plant science, animal science, agricultural mechanization, and agricultural business management.

Area Schools are junior and community colleges, vocational schools, technical institutes, and branches of universities serving areas usually larger than local school districts.

Completion Certificate is a certificate stating that a student has satisfactorily completed one or two years of cooperative occupational experience.

Consulting Committee is a group of persons, usually outside the education profession, appointed by the school board for the purpose of offering counsel to the school regarding the vocational program, with particular attention toward keeping the program practical and attuned to community needs. Members are representatives of the local community who are interested in the activities with which the program is concerned.

Cooperative Occupational Experience is a program to provide supervised training for gainful employment in agricultural occupations. The program is accomplished by establishing a cooperative arrangement between the school and the agricultural businesses or industries in the community.

Follow-up Study is a survey to determine what occupations the graduates of agricultural occupations courses enter and how effective their training was in relationship to actual needs of the job.

Hazardous Occupation is an occupation considered dangerous and injurious to the health and well being of minors up to 18 years of age as designated by The Secretary of Labor.

Recognition Certificate is a certificate presented to employers or persons designated by him to recognize their part in the training program by serving as on-the-job instructors.

Related Instruction is classroom and laboratory instruction designed to increase knowledge and understanding, to enable a student to solve technical and theoretical problems concerned with a particular occupation.

Student Information Sheet is a form kept by the teacher-coordinator, listing specific information concerning each student enrolled in cooperative occupational experience.

Student-Learner is a student enrolled in a vocational cooperative occupational experience program.

Student-Learner Certificate is a certificate which will enable students enrolled for cooperative occupational experience to be exempt from certain provisions of the Fair Labor Standards Act. The student must meet certain requirements before being eligible for the certificate.

Study Guide is a guide designed to enable students to study the related instructional material on an individual basis. Each study guide should correspond to the individual training plan of the student for a specific occupation.

Teacher-Coordinator is the vocational agriculture instructor who has the responsibility for teaching the related instruction and for coordinating the cooperative occupational experience.

Training Agreement is a document listing the terms of employment of a trainee in an approved Training Station. This is sometimes called a "training memorandum" or "memorandum of agreement."

Training Plan refers to a listing of the activities in which the student will be engaged at the training station. In addition, there appears a listing of the information that should be taught in the related instruction class. It is also referred to as the "training outline" or "course outline."

Training Station is the agriculture business or firm in which the student will work while participating in the cooperative occupational experience program. This sometimes is referred to as a "training center."

Work Permit refers to a certificate generally issued by the local school which certifies the age of students who desire employment while enrolled in school. It is sometimes referred to as an "age certificate."

Questions to Consider before Adopting Cooperative Occupational Experience

Cooperative occupational experience can be successful only when certain basic conditions exist in the school and community. If these conditions are not present when the program is organized, there must be positive assurance that they will be attained within a reasonable amount of time.

Since determining these factors requires considerable study and appraisal of the local school and community conditions, it is suggested that the vocational agriculture teacher-coordinator and school administrators begin evaluating the strengths and weaknesses of the situation long before the final decision is made to utilize cooperative occupational experience.

Some basic questions to consider are:

1. Does the philosophy of the school recognize the value of cooperative occupational experience?

   Not only the school administrator but the entire school staff should understand and appreciate the values to be derived from cooperative occupational experience. Often certain administrative personnel and faculty members believe cooperative experience tends to disrupt school activities which to them seem more valuable. In most cases this is due to a failure to inform these persons of the values and objectives of the program. If the teacher-coordinator with the help of the local administrator develops with the entire staff a positive working philosophy toward cooperative occupational experience at the time the program is being initiated, one of the most disturbing obstacles to the success of the program will be eliminated.

2. Will there be a sufficient number of interested students to utilize cooperative occupational experience?

   Although cooperative occupational experience is adaptable to a smaller number of students than would be enrolled in a normal class, there should be a sufficient number of students to justify the time and effort needed to plan and conduct properly this phase of the program. In some smaller schools, it is conceivable that a program would be initiated with only five students. However, most schools should have a potential enrollment of 12 to 15 students to be placed in cooperative occupational experience before the final decision to provide this type of occupational experience is made.

3. Is the community suited to a program of this type?

   Much of the success of this type of program hinges on the quality of experience that is given at the training station. The following questions should be answered relative to the community:

   a. Does the community have a sufficient number of agricultural businesses or firms that can provide training stations?

   b. Can the potential employers be interested in the program and persuaded to give it adequate support?

   c. Are the conditions at available training stations such that the students can be employed throughout the year or of sufficient duration of time to obtain experience in all phases of the business?

   d. Will the available training stations provide the students with the experience that is closely related to the instruction provided at school?

Cooperative occupational experience can function successfully in schools located in small communities, but the task of locating desirable training stations is much easier if the population center where the school is located is at least 2,500. It must be realized that many of the students will not be permanently employed in the local community, so the lack of opportunities for permanent employment in the immediate community should not be considered detrimental.

Objectives and Advantages of Cooperative Occupational Experience

Before considering the utilization of cooperative occupational experience, all persons involved with this phase of the program should become familiar with its objectives. Some suggested objectives are to:

1. Prepare each student for gainful employment in an occupation in his field of interest.

2. Provide students the opportunity to explore agriculturally related jobs in order to increase this knowledge and vocational competence.

3. Provide students an opportunity to gain a sense of responsibility toward a job.

4. Provide students an opportunity to develop positive on-the-job personality traits.

5. Provide students the opportunity to apply in practice the theory and knowledges gained in the classroom.

6. Provide students the opportunity to learn to cooperate and work with fellow employees.

7. Provide students an opportunity to gain knowledge and experience in aspects of the job not available at the school.

The above objectives indicate some of the many advantages accruing to students through a cooperative occupational experience program. The program also benefits employers in that they have the opportunity to share in the educational growth of the students. An employer has the opportunity to discover promising candidates for permanent positions and to enjoy the advantage of a better trained worker. Some employers will permanently employ students after graduation if it means closing a training station. This is important when training stations are limited in number.

Other inherent values in cooperative occupational experience benefit the school. For instance, the facilities and counsel of the agricultural businesses and firms are placed at its disposal and the program provides an opportunity to develop mutual understandings and improved relations.

The vocational agriculture teacher-coordinator also profits from a program of this type. As he supervises the students placed in the various agricultural businesses or firms, he sees and learns new techniques and procedures as they are introduced. As he evaluates the abilities and shortcomings of the students in his classes, he can adjust the course content and teaching procedures to keep up to date with the newly developed procedures.

Steps in Initiating Cooperative Occupational Experience

The following steps are suggested as an orderly means of inaugurating a program of cooperative occupational experience. It is recognized that conditions will vary in each location and that it may be desirable in some communities to follow a different sequence than is suggested. Only under unusual conditions, however, should any one of the steps be eliminated. (A more complete discussion of the listed steps is found in the remaining sections of this publication.)

1. The vocational agriculture instructor and appropriate school administrators (including the superintendent) should discuss the program and agree on the organizational procedures which should be carried out.

2. A local survey should be made to determine the number and kinds of agricultural businesses or firms that are in the community.

3. The vocational agriculture instructor should make a preliminary survey of the high school student body to determine the number of prospective students.

4. The state vocational agriculture division should be contacted for any assistance they may be able to offer.

5. A consulting committee should be appointed.

6. The program should be promoted.

7. The school should develop and adopt a policy statement to serve as an operational guide for the administration of the program.

8. Arrangements for the necessary facilities and equipment should be made.

9. Students should be selected.

10. Training stations should be selected.

11. Students should be placed in training stations.

12. The training plan and agreement should be developed.

13. The necessary forms and certificates should be completed.

14. Arrangements should be made with the school administration concerning class schedules, travel allowance, instructional materials and other factors so that an adequate job of coordination can be accomplished.

15. The necessary records and reports should be maintained.

16. Students should be "followed-up" upon graduation.

17. The program should be evaluated.

DEVELOPING LOCAL POLICIES CONCERNING OCCUPATIONAL EXPERIENCE

A written local policy statement should be developed to help in administering the off-farm agricultural occupational experience phase of the vocational agriculture program. Many existing programs have some type of written policy concerning the total program, but the specific policies dealing with occupational experience, particularly those in off-farm agricultural occupations, are quite limited. This section is to serve as a guide for local teachers and administrators in the development of policies and procedures concerning cooperative occupational experience in off-farm agricultural occupations. It should be understood that these policies are a part of those governing the total vocational agriculture program, which in turn is a part of the total school policy.

Need and Value of Local Policies

Past experiences have shown that the time and effort spent in the development of local policies pay big dividends. Some of the specific advantages of a written local policy statement are:

1. It maintains operational stability--policy does not change when there is an administrative or board membership change.
2. It provides a sense of security to all those involved in the program.
3. It provides for more efficient use of time, money, and effort in the administration of the program.
4. It facilitates decision-making.
5. It minimizes inconsistency in decisions by different administrative agents on similar problems.
6. It provides a basis for evaluation.
7. Makes known the intent of the school board toward the program.

The following points should be kept in mind when developing local policies for cooperative occupational experience in off-farm agricultural occupations:

1. Policies should meet the minimum standards specified in the state plan. (This applies to such areas as length of classroom instruction, length of training period, size of classes, etc.)

2. Policies should be in compliance with existing school policies.

3. Policies should comply with local, state, and federal labor regulations. (This is of extreme importance concerning working hours, age of students, wages, standards of supervision, and provisions for student safety and liability.)

4. Policies should be developed cooperatively by the teacher, administrator, and school board.

5. Final approval of all policies must be made by the Board of Education. Make sure there is written evidence of the official board action (board minutes, special resolution, etc.)

6. Copies of the approved policies should be made available to those affected by the program.

What To Include

One characteristic of local policy statement is that it considers local conditions and needs. For this reason, it is impossible to list all areas that should be included in all local policy statements. However, there are certain items that apply to most of the programs providing cooperative occupational experience in off-farm agricultural occupations. The items discussed below are common to most vocational agricultural programs providing this experience. This list is not meant to imply that all schools should develop policies for each item, but rather it is intended to serve as a guide for the local teacher and administrator in developing policies and procedures. It is also quite possible that policies will need to be developed in areas not presented here. It must be remembered that many of the policies and procedures developed for cooperative occupational experience will be determined by the state plan. The teacher-coordinator and administration should become familiar with the state plan before policies or procedures for the operation of a local program are developed.

The following items should be considered when developing local policies or procedures:

Time Provided for On-The-Job Instruction: Policies and procedures in this area deal with the amount of school time provided for on-the-job instruction and the total number of hours per week students spend in the training station. Students employed in occupations governed by the U. S. Fair Labor Standards Act may spend as many hours at the training station as approved, providing these hours, plus the hours spent in

regular classes in school do not exceed 40 hours per week. Students employed in occupations which do not fall under the jurisdiction of the U. S. Fair Labor Standards Act are under the jurisdiction of state and local labor laws. If these restrictions are stricter, they take precedence over the Fair Labor Standards Act.

If possible, some amount of school time should be provided for on-the-job instruction at the training station. The amount of time provided will vary with the situation. If adequate experience can be gained after school hours and during the summer, no school time needs to be provided. However, it appears for most occupations, some amount of regular school time (generally one to three hours) should be available.

Age of Students Enrolled: Since most students will be employed in occupations with established minimum age limits, definite policies and procedures concerning the age limit of students to be enrolled should be developed. In most states, the legal employment age is 16, and most schools set this as a minimum age. Certain jobs directly related to farm work have lower limits in most states, and in some cases exceptions are made in farm related occupations.

Selection Standards for Students: Careful selection of students is a must because of the specialized nature of the instruction, and the direct involvement of the school, represented by the student, with the community, represented by the employer. Employers desire students with certain attributes and skills. Unless the student interested in preparing for an occupation has the ability and aptitude for it, the time of the teacher, employer, and student will be wasted. Policies and procedures dealing with qualifications of students and selection procedures are essential.

Student Wages: Experience has shown that students should be paid for their work on the job at about the same rate as other employees of the same age and/or experience. Many students will be working in occupations governed by minimum wage laws, however, local policies should be developed to insure that all students enrolled in the program will be compensated for their work.

Length of Training Period: The total hours spent on the job and the length of the training period needed will vary considerably with the type of occupation. Some occupations may require 12 to 18 months of on-the-job experience totaling well over 1000 hours, while others may develop the needed proficiency in three months' time with under 500 hours of actual on-the-job experience. Local policies should reflect the standards needed to adequately prepare students in the occupations for which training is provided.

Responsibility for Student Safety and Liability: Students enrolled in cooperative work experience programs are involved in experiences and activities not generally associated with regular high school students. For this reason, definite policies should be developed spelling out specific responsibilities and liabilities of all those involved for items such astravel to the training station, and working after school hours.

Student Training Plans: The value of written training plans for each student is quite apparent. Written policies or procedures should be developed to guide the development of these plans in regard to, when to develop, what to include, and who shall receive them.

Length of Classroom Instruction Periods: The policies or procedures should reflect the standards required to adequately offer the related instruction necessary to progress in the occupations for which training is offered.

Content of Related Classroom Instruction: Policies and procedures developed in this area should deal with the methods to be used to insure that both instruction basic to all students, and specific instruction applicable to the individual student's job is provided.

Minimum and Maximum Size of Classes: The type of instruction offered in courses providing training in off-farm agricultural occupations differs from that provided in regular academic classes. Therefore, local policies should be developed which take the special nature of this type of instruction into account. As a rule, classes should be smaller than the normal academic class. Most teachers prefer a maximum of 15, or in some cases 20 students per class. The minimum class load will normally be governed by existing school policy and the mimimum class load eligible for reimbursement.

Facilities and Instructional Materials: Policies and procedures should be developed to insure that the classroom facilities and instructional materials provided are adequate to meet the needs of the program. This would include provisions for items such as satisfactory classroom, office, conference room, budget for classroom equipment, and reference books and material. In some cases policies and procedures can be developed concerning the use of materials and equipment to be furnished by the training stations where students are employed.

Supervision by Employers: The employer plays a definite role in the training of the student. Policies and procedures should be developed that will specify the type of person responsible for on-the-job training, type of instruction to be offered by employers, method of offering instruction, and responsibility for rating students.

Supervision by Teachers: These policies and procedures should reflect the responsibility of the vocational agriculture teacher in regard to his role in supervising the student while at the training station. Items such as time of visits, and working with the employer, should be included.

Time and Travel Allowances for the Teacher: Considerable travel on the part of the teacher is necessary to supervise and coordinate the program adequately. In most cases this will necessitate the arrangement of the teacher's schedule to provide school time for on-the-job supervision and coordination. Policies and procedures should be developed which make provisions for the time the teacher will have available for supervision and coordination, and also the means by which the teacher will be reimbursed for his travel expenses.

Administrative Relationships

To aid in the administration of the program and to enable the teacher to function in the proper administrative framework, policies and procedures should be developed that specify the relationships and responsibilities of those involved. These policies should enable anyone from the superintendent of schools to on-the-job instructors at the training station to determine relationships to other staff and administrative members.

Financing the Program

Policies and procedures in financing should reflect the intent of the school to provide adequate financial support to the program. This would include provisions for yearly expenditures for books and references, equipment, supplies, teachers' travel, and miscellaneous costs associated with the program.

Organizing and Using a Consulting Committee

The value of a consulting committee is well known. Local policies and procedures should be developed which make provisions for organizing and utilizing such a committee. Items such as selection of members, term of appointment, number of meetings, relation to other committees of the school and areas of responsibility may be included.

Others

Policies and procedures in other areas such as conducting community surveys, promotional activities, selection of training stations, assignment of students to training stations, student evaluation, records and reports, student follow-up and program evaluation should also be established. An indication of the nature of the policies and procedures that may be developed in these areas can be gained from reviewing the sample policy statement located in the Appendix and by referring to the specific sections on each of these items found elsewhere in this publication.

UTILIZING A CONSULTING COMMITTEE

A local consulting committee can be of much assistance in planning and conducting cooperative occupational experience in off-farm agricultural occupations. Few vocational agriculture teachers have the background to conduct an effective training program without the knowledge and assistance that is available from personnel directly associated with these agricultural occupations. Activities may be coordinated effectively through a consulting committee which provides a vital link between the school and the community.

Purposes of a Consulting Committee

In every community, the needs and objectives of the vocational agriculture program will vary. It is the main purpose of an consulting committee to assist the vocational agriculture teacher-coordinator in developing a program that will meet local needs. More specific purposes are:

1. To provide a link between the school and community.
2. To give prestige to the school, community, and vocational program.
3. To give the school an opportunity to explain the objectives of the education program.
4. To bring about a close relationship between management and labor.
5. To provide an opportunity to study the educational needs in the community.
6. To provide a sounding-board for new policies and procedures.
7. To help gain support for the program.

Organizing a Consulting Committee

In schools where an agricultural consulting committee is already established, the existing committee may be utilized to work with the off-farm occupational experience phase of the program. A special committee may need to be appointed with responsibility in this area in some instances.

Schools with no existing consulting committee should organize one to help study the feasibility of offering training in off-farm agricultural occupations.

The following discussion is presented as suggestions to follow in organizing a new consulting committee or reorganizing existing committees so they may be of utmost value in giving guidance and direction to the off-farm cooperative occupational experience phase of the program. Further information concerning the use of consulting committees can be obtained by referring to the publication entitled Policy and Administrative Decisions in Introducing Vocational and Techincal Education In Agriculture for Off-Farm Occupations which is available from The Center.

Policy Authorizing Committee

The first step in organizing consulting committees is the adoption by the school board of the policies under which the committee will be set up and operated. Later rules should be adopted by the committee for carrying on its work consistent with board policies.

Qualification of Members

1. Members should be well-known leaders in their particular businesses.

2. They should be genuinely interested in the problems of the school system.

3. They should be representative of management, labor, agriculture, and the general public.

4. They should have the necessary time to devote to committee work.

5. They should possess desirable personal characteristics such as integrity, responsibility, mature thought and action, open-mindedness and constructive attitude.

Size of Committee

A good working committee should consist of approximately five to nine members.

Appointment of Members

Recommendations for membership to the committee should be made by a selection committee which is thoroughly acquainted with the work the consulting committee would do. This committee should consider the above

mentioned qualifications and/or other criteria specified by the school board. The approval of committee members should be made by the school board. After the superintendent has informed members of this appointment, the teacher-coordinator should visit them and explain the purpose of the committee and inform them of the date of the first meeting.

Term of Appointment

Members should be appointed for a definite term (usually from one to three years.) It is advantageous to stagger the terms of appointment so that there is always an experienced member on the committee. This also has the distinct advantage of bringing in new members with new ideas and enthusiasm into the committee each year. When the committee is first organized, one-third of the members can be appointed for one year, one-third for two years, and one-third for a full three-year term. A very successful way to determine the length of appointment is to hold a drawing for the various terms after the members have been determined and before their appointment is made. Many boards adopt policies to provide that members cannot be reappointed until after a year's absence from the committee.

Working with Consulting Committees

In working with consulting committees, it is necessary to keep certain guiding principles and methods in mind for a successful committee. Some of these are:

1. The members serve on a voluntary basis; therefore, they should not be expected to carry out long, detailed work assignments.

2. School officials should acquaint committee members with the total offerings of the school.

3. Informational material should be put into the hands of committee members. This material should include pertinent releases and publications of the local board of education, state department of education and the U. S. Office of Education.

4. Meetings should be scheduled regularly. Most successful committees meet monthly. Some committees adopt a policy whereby at the request of school authorities, chairman of the committee, or any three members of the committee, special meetings may be called.

5. If possible, committee meetings should be conducted in the same building in which the training program is held.

6. The director of the vocational division of the local school system should be in attendance at all the meetings possible for him to attend.

7. The vocational agriculture teacher-coordinator should be present at all meetings.

8. Complete information on the financing of the vocational agriculture program should be given to all members.

9. All members should be advised on existing and pending vocational legislation.

10. Copies of minutes of meetings should be given to all committee members. School officials should have a complete file of the minutes of committee meetings.

11. All members should understand that they are serving in an advisory capacity and have no policy-making authority. They may recommend policy but never make a policy.

The skill with which the organization and work of the consulting committee is managed by local school authorities will, in a large measure, determine the benefits that may be derived from it. In this connection, it may be well to keep in mind possible pitfalls that may be encountered.

School authorities <u>should not</u>:

1. Become members of the committee as they are the recipients of the committee's counsel

2. Permit the committee to become administrative in its function

3. Conceal facts pertaining to a program from the members

4. Enter into labor-management controversies

5. Fail to keep a copy of the minutes of each meeting on file

6. Take action within the realm of the committee's advisory function without first consulting with the committee

7. Fail to recognize publicly the value of the consulting committee through news releases and other means

8. Permit the committee to function outside the policies for its operation developed by the school board

Committee Meetings

Consulting committees organized for the first time will normally meet several times during the first year. This will be determined by the regular meeting schedule and the need for special meetings. The committee should never be called together unless there is a definite purpose that justifies the meeting.

It is important that the committee meetings be well organized and conducted in a business-like fashion. The local vocational agriculture teacher-coordinator should record items to be included on the agenda as they become apparent during the performance of his regular duties between committee meetings. Committee members may also wish to suggest items to be discussed at regular or special meetings.

The vocational agriculture teacher-coordinator should take the initiative in planning the agenda for the first meeting. Below is a sample of an agenda for the first meeting.

1. Introduction of all members
2. Appointment of a temporary chairman
3. Election of a permanent chairman (never the vocational agriculture teacher-coordinator)
4. Election of a secretary. (The local vocational agriculture teacher-coordinator may serve in this capacity.)
5. Explanation of the program and the need for consulting committee
6. Functions of the committee
7. Responsibilities of the committee
8. Terms of appointment
9. Selection of time and place of meetings
10. Other business
11. Adjournment
12. Refreshments

Other meetings should also have a planned agenda. A written announcement listing the main items to be taken up at the next meeting should be sent to each member one week before the meeting date. This will enable members to be prepared to discuss the items on the agenda. It will also help insure good attendance. Regardless of whether this method is used or not, all members should be notified of committee meetings one week in advance. A telephone call on the day of the meeting would also be beneficial.

In determining the items that should be included on a consulting committee's agenda, the following tests should be met:

1. Is this a real problem?

2. Is this a problem which the school earnestly desires to solve?

3. Will the school use the committee's recommendations?

4. Is this question one in which the committee is interested or one in which it can become interested?

5. Is the committee competent to discuss and make recommendations on this type of problem?

6. Do members have sufficient knowledge of facts and background information to make worthwhile suggestions?

Duties and Functions of the Committee

The following list indicates some of the areas in which a consulting committee may be of help in planning and conducting cooperative occupational experience in off-farm agricultural occupations:

1. Locating training stations

2. Determining course content

3. Determining community situations and needs

4. Publicizing and promoting the program

5. Evaluation of the program

6. Developing employment opportunities

7. Providing guidance in wage and hour problems

8. Setting standards for student selection
9. Selection of classroom equipment
10. Setting local training standards
11. Selecting and developing instructional materials
12. Conducting a community business survey
13. Securing resource personnel for classroom instruction
14. Assist in adapting the program to new and changing conditions

CONDUCTING A COMMUNITY SURVEY

A survey of the agricultural businesses in the community is of prime importance in establishing an effective cooperative occupational experience program. This survey will determine the number and the nature of the training stations available which is one of the most important criteria in determining whether to provide this type of occupational experience.

Most vocational agriculture instructors located in small communities can compile a list of the agricultural businesses or firms; however, in larger communities, it would be impossible to list all of them without assistance. There are numerous ways to get assistance in locating these businesses or firms. Most of them will be listed in the yellow pages of the telephone book. A directory to the yellow page titles relating to agriculture is found below. Other sources such as the Census of Businesses, the local chamber of commerce, local labor office, civic clubs, and other professional organizations can be a valuable aid in completing the list.

Telephone Directory Yellow Pages Titles Relating to Agriculture

Accountants
Adjusters
Advertising Agencies
Agricultural Chemicals
Ammonia
Appraisers
Artificial Insemination
Associations
Auctioning
Bacteriologists
Banks
Beans
Beef
Bees
Blacksmiths
Bookkeeping Service
Canners
Certified Seed
Cooperatives
Custom work
Dairies
DHIA Testing
Eggs
Electric Light and Power
Grain
Hatcheries
Horses
Insecticides
Insurance--Agriculture
Irrigation Companies
Landscape Gardeners and Contractors
Lawn Mowers
Livestock Breeders, Feeders, Hauling
Meat
Meat Packers
Milk
Milking Equipment and Supplies
Newspaper
Processing
Produce--Brokers, Shippers, Wholesale
Property Management
Publication, Research Supplies

Engineers (soil)
Farm Equipment
Farm Managers
Feed
Fertilizers
Florists
Flour Mills
Food Processing
Forest Products
Frozen Foods
Fruit
Garden Equipment
Gardeners
Golf Courses
Government
Pumps
Radio
Real Estate
Railroads
Resorts
Schools
Sheep
Spraying Equipment and Supplies
Spraying Horticulture
Tillage
Tree Service
Turkeys
Vegetables
Veterinarians
Wool

The above list may not include all firms, businesses and companies in communities having positions in which employees need competencies in agriculture.

The Business Survey

Once a complete list is compiled, a more detailed picture of the business must be obtained. This will necessitate a survey of each business or firm to obtain detailed information about it. In some instances the local teacher will be familiar enough with the business or firm to provide the necessary information, but for the most part it will require conducting a personal interview in each firm. Before this is done, the vocational agriculture teacher-coordinator should construct a form providing for the information needed. Following is a list of some of the more important items that may be included in a survey of an agricultural business or firm:

1. Willingness of firm to cooperate by providing training students
2. Minimum wage available for student workers
3. Existence of labor unions or company policies prohibiting the hiring of student workers.
4. Main function of the firm
5. Total number of employees
6. Classification of employees (professional, skilled, etc.)
7. Number of jobs available.

8. Number of new positions available five years from now

9. Workmen's compensation and other benefits available to student workers

10. Willingness of a representative of the firm to serve on an consulting committee.

11. Maximum wage student workers can receive

12. Names of personnel capable of serving as on-the-job instructors

13. Name of person to contact for future meetings

Conducting Personal Interviews

If there are a number of agricultural firms or businesses in the community, it may be difficult for the vocational agriculture teacher-coordinator to conduct all the interviews without help from others. When several interviewers are working, it is important to eliminate differences in the results obtained by various persons. To a large extent, differences can be attributed to a lack of preparation by the interviewer as to the basic techniques and procedures of interviewing.

The points listed below are intended to serve as guides to prepare an individual for interviewing persons in managerial or personnel positions of firms, businesses, industries, agencies, or organizations employing agricultural workers:

1. The desired data necessary to complete survey forms can best be obtained from persons in a position to be thoroughly familiar with the characteristics and requirements of all positions. The interview should be obtained from a person in a managerial position. It is best to obtain an appointment in advance in order to interview the person who could provide the desired information.

2. The interview should begin by:

   a. Introduce yourself, briefly stating why you are there. Mention the school and other organizations that have approved the survey. Some coordinators have found a calling card is very beneficial. This puts your name before the person and helps you to become acquainted.

b. Explain the purpose and objectives of the survey.

An example of an introductory statement is:

"I am _____, teacher-coordinator of vocational agriculture at _____ High School. The local high school has plans for initiating a cooperative occupational experience program in agricultural occupations. We feel a program like this will enable your firm to play a definite role in educating the boys and girls of our community and in return, will be of potential benefit to you. Before beginning this program we need to secure factual information from the people who may be directly involved in it."

c. Note about how much time you would like. If the size of the task later becomes more time-consuming, the person being interviewed will be acquainted with the task and in most cases in sympathy with the need for more time.

d. Give a general idea of what use will be made of the data collected. Develop a brief recognition of the need for vocational training of our youth. Try to develop a sympathetic attitude toward this survey effort.

3. An interview should be conducted in a location which is conductive to effective interviewing. An office away from distractions of the business is very desirable.

4. Rapport is essential for effective interviewing. Good interviewing relations exist when both the interviewer and the interviewee feel relaxed and at ease.

5. It is desirable to "keep out" of the interview as much as possible. It is natural to "want to help" in determining the responses to some questions, but remember that the validity of the results depends on the information provided by the employers.

6. It is best to follow the interview form from top to bottom as closely as possible.

7. It will be necessary to define the meaning of some of the questions on the form, so it is imperative that you become thoroughly familiar with all points of the instrument. As the interview progresses, a description of the program can be presented.

8. Responses should be recorded as clearly and concisely as possible.

9. The interview should be terminated by thanking the interviewee for his time and information, assuring him of the usefulness of the date supplied.

Ask the interviewee for his cooperation at a future date if it should be necessary to get additional information.

The Survey Form

The form used by the interviewer should be designed to obtain all the information that is needed in the least possible time and with the least possible confusion. After the vocational agriculture teacher-coordinator has determined the information that should be gathered from the survey, he should construct a preliminary form. This form should be administered on a trial basis to determine if revisions need to be made before duplication in its final form.

A sample form for surveying the agricultural businesses in the community is found on the following page. Other forms designed for the same purpose are located in The Appendix.

_____ High School
Vocational Agriculture Department

OCCUPATIONS SURVEY OF JOB OPPORTUNITIES AND TRAINING POSSIBILITIES*

Interviewer_____Date_____

1. Official name of establishment_____
2. Address_____
3. Name and title of person interviewed_____
4. Estimated percent of gross income that is agriculturally oriented_____
   Number of years company has been in business_____
5. In reference to company policy, can this firm hire high school age personnel
   _____Do you have a minimum wage?_____If so, what?_____
6. Is there a labor union in the firm?_____
7. Would your firm cooperate as a training station for high school students?
   Yes___No___ post-high school students? Yes___No___. If yes, what specific jobs?

Job	Approximate number of weeks student could be employed

8. Main function(s) of this company:
   Manufacturing_____ Specialized Agriculture_____
   Processing_____ Recreational Activities_____
   Sales_____ Professional Services_____
   Service_____ Other_____
9. Total number of employees: Male_____ Female_____
10. Classification of employees:

Type of Job	Number employed Now	Number employed Next 5 years	Level*

11. Does company plan an expansion program within the next 5 years? Yes___No___
    If yes, what new jobs will be created?_____
12. Would you be willing to serve on a consulting committee for this program?__
13. Would a student employee be insured by your company?_____
14. What background training is needed for student employees?_____
15. Could this school offer classes to help your employees?_____
    What classes specifically?_____

*Level--1. Professional, 2. Technical, 3. Agricultural Service, 4. Managerial, 5. Supervisory, 6. Sales, 7. Clerical, 8. Skilled, 9. Semi-skilled.

*Adapted from the Handbook for Developing and Operating Agricultural Occupations Programs. Colorado State Board for Vocational Education

PROMOTING COOPERATIVE OCCUPATIONAL EXPERIENCE IN AGRICULTURAL OCCUPATIONS

Informing the public regarding cooperative occupational experience in agriculture is as much a part of the teacher-coordinator's job as selecting training stations, counseling with students, and classroom teaching. Well-planned promotional activities increases interest and secures the cooperation of students and the public in helping make the program a success.

Advertising and promoting the program is the first phase the teacher-coordinator will handle. School personnel, students, parents, and businessmen must understand the objectives, advantages, and operation of the program. The teacher-coordinator is the logical person to supply this information. After the program is in operation, he should also keep the public informed to keep their interest and cooperation at a maximum level.

In order to reach the maximum number of people, it is recommended that the vocational agriculture teacher-coordinator use all the news media available. These can include radio, television, newspapers, school publications, personal letters, assembly programs, talks, speeches, exhibits, banquets, and other media.

Newspaper, Radio, and Television

All teacher-coordinators should use the newspapers, radio, and television stations, serving their areas. Several times during the year the teacher-coordinator should release announcements, news items, and interest stories about the program. In some cases, the copy will have to be prepared by the teacher-coordinator. After the copy has been prepared, it should be shown to the proper administrative personnel for approval. The following are suggestions for the teacher-coordinator in preparing copy:

1. There are two types of articles: news stories and feature stories. The feature story differs from the news story in that it usually emphasizes the "human interest" element. Both types of articles are necessary to properly inform the public of school activities.

2. Both types of stories on vocational programs should be factual. Let the facts speak for themselves. The writer should never attempt to "color" the story by injecting his own opinions.

3. If the teacher-coordinator feels that an article requires a certain amount of "editorializing," he should make sure that the comments come from some person of authority other than himself, and he should use "quotes" in all cases. For example, the following statement in a newspaper article has far more weight than any number of editorial comments made by the coordinator: "In discussing training for off-farm agricultural occupations before the Businessmen's Luncheon Club, Superintendent Brown said, 'We feel that this program does much to bridge the wide gap that separates the school and agricultural business and industry.' "

4. A good news story seldom starts at the beginning and works toward the climax as is done in fiction writing. The opening paragraph is the most important, and should contain the meat of the story.

5. The opening sentence--or at least the first paragraph--should answer the following questions: Why? What? When? Where?

6. Sentences, paragraphs, and even words must be short for easy reading or listening.

7. Use action verbs. The active voice is more forceful than the passive voice. "Students receive training certificates" is better than "training certificates are received by students."

8. There should be a "follow-up" story for most news items released about the program. The announcement that the school has inaugurated a training program in off-farm agricultural occupations should be followed within a reasonable length of time by a story on enrollment, placements, and other data about the program. Likewise, an item such as the "Agricultural Occupations Students Plan Employer Banquet" should be followed by "Students Honor Employers at Banquet" when the function takes place.

9. Too much publicity is worse than none at all. Avoid the use of "ballyhoo" and publicity stunts. Do not mislead the public into expecting more of your program than can possibly be accomplished.

10. Clear all publicity releases through the proper channels. Learn the school policy regarding publicity and adhere to it.

11. Miscellaneous suggestions on preparing copy:

    Use a typewriter
    Double-space
    Do not write the headlines
    Indicate who prepared the copy--it will assist the editors.

In addition to news stories and announcements, there are many opportunities for stories which may be used at various times throughout the school year and which may be classed roughly as feature stories. This type of article is much more difficult to compose than "spot" news and should not be attempted by the teacher-coordinator unless he possesses an ability to write and is experienced. However, material on suitable subject matter may be prepared by him to be rewritten by writers on the local paper.

Some subjects for feature stories are:

1. Student interviews, including photographs of the students at work
2. Employers' views on agricultural occupations training
3. Unusual or outstanding training situations
4. Guidance values of agricultural occupations training
5. Awarding of annual training certificates
6. Student views and reactions on working in an agricultural occupation
7. The place of the FFA in preparing for agricultural occupations
8. Work experience as a high school requirement
9. How agricultural occupations students invest their money
10. Interesting follow-up data
11. Presentation of recognition certificates to cooperating employers
12. On-the-job instructors enrolled in special class

By-and-large, news media are anxious to obtain copy on subjects like those listed above and usually have at least one staff member who specializes in this type of writing. The public is interested in its schools and enjoys reading or hearing about them, especially if the stories contain a liberal sprinkling of familiar names and places, and emphasizes or features the achievements of the youth of the community.

Sample News Stories

The following skeleton news stories show how stories of this nature may be constructed. These are only presented as guides and in some cases they will have to be changed to meet the local situation.

Introductory Article

Agricultural Occupations Program
Mr. John Doe
Vocational Agriculture Instructor
March 15

FOR IMMEDIATE RELEASE

According to _____, Superintendent of Schools, a new on-the-job training program for high school students will be launched this fall at _____ High School. An "Off-Farm Agricultural Occupations" curriculum has been developed by _____, Agricultural Occupations Teacher-Coordinator in cooperating with the vocational agriculture consulting committee and school officials.

This program will give students an opportunity to spend part of their school time in on-the-job training with local agricultural business and industrial firms. Students participating will enroll in regular high school courses, including one period of related agricultural instruction, during which time they will study information related to their on-the-job training. They will spend three hours each weekday on the job, learning the skills and management practices involved, under the guidance of a skilled instructor selected from the firm in which the student is working.

This phase of the vocational agriculture program is designed to offer training to all high school students who have an interest in an agricultural occupation. This training can lead to in-school employment and

immediate employment after completion of the high school program, or serve as a background for post-high school study.

A survey conducted recently indicates _____ ag-related businesses
number
in the _____ area. _____ of these firms are interested
Town Number
in employing a student trainee. Further information concerning the program may be obtained by contacting Mr. _____, Vo-Ag. Instructor, or Mr. _____, high school principal.

Consulting Committee

A picture of the committee members is recommended here

The nine community leaders in business, labor, education, and agriculture named to the _____ High School Vocational Agricultural Consulting Committee are: (Pictured above L to R)

_____, _____.
(Name) (Occupation or business name)

_____,_____; _____, _____; _____,_____;

_____,_____; _____, _____; _____,_____;

_____,_____; and _____, _____; local _____,_____;

These men will advise Mr._____, Vo-Ag teacher-coordinator in planning and conducting the off-farm agricultural occupations program. They were approved by the _____School Board at its meeting _____ evening, and will serve from one to three-year terms.
(day)

Student at Work

Picture of Trainee on the Job

_____ _____, Student Trainee, on the left, performs a part of his job as _____ while _____, (job or position) on-the-job instructor, supervises. _____ is one of the (boy's first name) trainees from the _____ High School Agricultural Occupations (School) class. He and his classmates spend one-half of the school day in regular academic study, including vocational agriculture. Each students spends three hours during the school day at the training station. _____ _____, Vo-Ag instructor at _____ High School, is coordinator of the program which is designed to offer training for gainful employment in off-farm agricultural occupations.

Speeches

The presentation of short talks or speeches to civic clubs and other groups is an excellent way to promote the program. This enables the public to get personally acquainted with the teacher-coordinator and it also gives the teacher-coordinator a chance to answer questions which may evolve from the group. The teacher-coordinator should be prepared to present a talk concerning the program whenever the occasion arises. Most groups are happy to have representatives of the school speak to them concerning educational problems in the community.

In order to do this job adequately, the presentation should be well organized and prepared. Charts, graphs and figures can be incorporated into the presentation to help illustrate and carry the program to its conclusion. Vary the material and its presentation to fit the group.

The following is a sample outline of a speech that is for presentation to civic groups, etc. This is presented as a sample and should be adapted to the local situation.

I. Introduction

a. My relationship to school, position, etc.
b. Statement about the increased emphasis and need for vocational education

II. Status of high school students

a. Enrollment in various programs in school
b. Enrollment in our school, state programs, etc.
c. College-bound students
d. Drop-outs in our high school
e. What are we doing for these students?

III. Explanation of program under the provisions of the Vocational Education Act of 1963.

a. Type of program
b. Objectives of the program
c. Explanation of how the program operates

IV. Possibilities of the program in our community

a. Job opportunities in the community, state, and nation
b. The number of businesses in the area related to agriculture
c. Number of possible training centers
d. Cost of such a program
e. Additional facilities needed for such a program

V. Explain the values of the program

a. To the community
b. To the school
c. For the employer and,
d. Most of all to the student.

VI. Ask for their support and cooperation in helping develop this phase of the vocational agriculture program in our community.

VII. Summary

VIII. Question period

Recognition Certificates

An excellent way to increase interest and enthusiasm on the part of students and employers is by issuing recognition certificates. Certificates of completion may be presented to students who have successfully completed the course requirements and also a special recognition certificate may be presented to the cooperating employers and on-the-job instructors. An event such as an employer-employee banquet is an excellent place to award these certificates. Examples of these certificates are found on the following pages.

Other Promotional Activities

Numerous other activities can be utilized to help promote cooperative occupational experience in off-farm agricultural occupations. Some of the other items that may be used are:

1. School publications or special brochures
2. School assembly programs
3. School exhibits, tours and projects
4. Reports at faculty meetings
5. Employer's newspaper ads
6. A section in the school yearbook
7. Letters to students and parents
8. Individual contacts with students and parents
9. Employer-employee banquets
10. Letters of appreciation to employers and parents
11. School public address system
12. Special FFA awards for outstanding achievement in off-farm agricultural occupations work.

FARMVILLE HIGH SCHOOL

VOCATIONAL AGRICULTURE DEPARTMENT

BE IT KNOWN THAT

_____
(Name of Instructor)

has been designated as an on-the-job instructor, and is qualified to

offer instruction in _____
(Type of Job in Which Training is Given)

in conjunction with the Agricultural Occupations Program at

_____ High School.

Dated this_____day of_____19____

At _____

_____ _____
(Superintendent of Schools) (Chairman Consulting Committee)

_____
(Teacher-Coordinator)

FARMVILLE HIGH SCHOOL

VOCATIONAL AGRICULTURE DEPARTMENT

CERTIFICATE OF COMPLETION OF AGRICULTURAL OCCUPATIONS TRAINING

BE IT KNOWN THAT

_____
(Student)

has satisfactorily completed _____ year(s) of training as _____
(Occupation trained for)

including related classroom instruction and on-the-job instruction supervised cooperatively by the school and the employer.

Dated this_____day of_____19___

At_____

_____
(Superintendent of Schools)

_____
(President of School Board)

_____
(Cooperating Employer)

_____
(Teacher-Coordinator)

Planning the Promotional Program

Needless to say, the teacher-coordinator should carefully plan his promotional campaign rather than conduct it in a haphazard manner. Planning inlcudes timing, which is an essential element in effectively promoting a program. Following is a suggested schedule which a teacher-coordinator may use in making plans for publicizing and promoting this program. Of course, he may not (and probably should not) use all the media listed. He should, however, consider the most feasible in his particular community. The teacher should plan far enough in advance to allow himself sufficient time to carry out his campaign in a creditable manner. A suggested schedule is found below:

MEDIA	Before opening of school	At opening of school	During each Semester	Once during year	At end of School
News stories	X	X	X		X
Newspaper features			X		
School publications			X		
School assembly programs				X	
Talks to civic clubs and other groups	X		X		
FFA activities	X		X		
Talk to Parent-Teacher Association				X	
School exhibits and projects		X	X		
School placards and posters			X		
School public address system		X	X		
Employers' newspaper "ads"				X	
Free radio and television time	X		X		
Section in school yearbook				X	
Letters to students and parents	X				
Employer-employee banquet				X	
Letters of appreciation to employers and parents				X	
Recognition certificates				X	

SELECTING TRAINING STATIONS

One of the most important factors in determining the success of the program is the adequacy of the training station at which a student is placed for on-the-job instruction and experience. It is imperative, therefore, that definite consideration be given to the selection of training stations before students are placed for occupational experience. The survey of the agricultural businesses and firms in the community, explained earlier, should provide a good list of possible training stations. Information gained from the personal interviews or knowledge already possessed by the vocational agriculture teacher-coordinator and consulting committee members should provide sufficient basis for determining whether possible training stations meet the desired criteria.

Criteria for Selecting Training Stations

The following items should be used as criteria in selecting training stations:

1. Type of occupation The training station should provide experience in an occupation that requires some knowledge, understanding, and skill in agriculture.

2. Opportunities for rotation The training station should provide a wide variety of experiences associated with the occupation. It should not be just a routine work experience of a repetitive nature.

3. On-the-job supervision The training station should provide someone capable of serving as an on-the-job instructor. This should be someone who is thoroughly competent in the skills and technical aspects of the occupation. He should be someone who is interested in the program and who will enjoy cooperating in the training program. A discussion concerning on-the-job instructors is found later in this section.

4. Working conditions The working conditions of training stations should be safe and clean, with a good record of accident prevention. It should also present few, if any, conditions that might impair the health of the workers.

5. Reputation The training station should have a good reputation and be respected by the community as a reliable business establishment. It should be one that the community is glad to have within its boundaries.

6. Business Climate The training station should use ethical business practices and leave a favorable impression with the student. The firm should have a record of participation in civic affairs, and a favorable attitude toward the welfare of its employees.

7. Stability of employment The training station should have a reputation of continuous operation. It should have a record of few or no lay-offs, lock-outs, close-downs, or extensive periods of curtailment.

8. Hours of employment The training station should be able to provide a sufficient number of training hours at a time which is conducive to the employment of student workers.

9. Facilities and equipment In order to provide adequate training, the training station should possess adequate facilities and equipment and use up-to-date methods.

10. Employer-employee relationship The training station should maintain a good employer-employee relationship. Firms that make it a policy to train and promote their own personnel score high on this point.

11. Accessibility Training stations should be within a reasonable distance from the school or accessible to the trainee. In some cases, the training station may be outside the normal limits if the student has adequate transportation to and from work, and the training station rates high on other factors. In some cases where students are attending area schools, they can be placed in their local community for occupational experience.

12. Wages The training station should be able to pay a minimum wage for student workers based on that paid other employees of similar experience and training. Wages of regular employees should be at least comparable to those paid in similar occupations in the community.

Training Station Check Sheet

The final selection of training stations can be facilitated by the use of a check sheet. The purpose of this sheet is to obtain a comparative rating of possible training stations. This sheet should list criteria to be considered when making the selection. The consulting committee can be very helpful in completing the check sheets on the different firms.

Careful consideration should be given to each item on the check sheet. Any unusual situations should be listed at the bottom of the sheet under "Remarks." If a prospective training station is not selected, the reasons may be listed in this space and then relayed to the employer. This may help correct deficiencies in the prospective training station so that it may be used in the future.

(An example of a training station check sheet is found on the following page.)

_____ High School
Vocational Agriculture Department

CHECK SHEET FOR SELECTING TRAINING STATIONS

Establishment_____ Address_____

Date_____ Phone No._____

FACTORS	Poor	Fair	Good	Very Good	Outstanding
Type of occupation	___	___	___	_____	_____
Opportunities for rotation	___	___	___	_____	_____
On-the-job supervision	___	___	___	_____	_____
Working conditions	___	___	___	_____	_____
Reputation	___	___	___	_____	_____
Business climate	___	___	___	_____	_____
Hours of employment	___	___	___	_____	_____
Facilities and equipment	___	___	___	_____	_____
Employer-employee relationships	___	___	___	_____	_____
Acessibility	___	___	___	_____	_____
Wages	___	___	___	_____	_____

Remarks:_____

_____

_____

_____

_____

Overall Rating: Outstanding_____ Very Good_____ Good_____

Fair_____ Poor_____

Evaluating Cooperating Employers and On-the-job Instructors

In a sense, cooperating employers and on-the-job instructors become a part of the school faculty since they are directly involved in the education of students. To properly function in this role, it is imperative that they possess a professional attitude and other desirable characteristics. It may be desirable to consider their qualifications in regard to some pre-determined criteria. This will serve as a basis for improving their weak areas through individual conferences and special classes.

An example of an evaluation form that can be utilized to determine the desirability of cooperating employers and on-the-job instructors is found on the following page.

Classes for Employers and On-the-Job Instructors

One means by which on-the-job instructors and employers can be better prepared for their responsibilities is to offer special classes for them. These classes can be conducted by the regular vocational agriculture teacher-coordinator. Specific topics such as working with students, methods of giving demonstrations, and objectives and purposes of the program can be covered. Upon completion of these classes, a special certificate can be presented. Experience has shown that efforts expended in this area pay big dividends. On-the-job instruction is improved, and more interest and enthusiasm is gained by all participants.

An example of a certificate that can be presented upon the completion of these courses is found on page 43.

_____ High School
Vocational Agriculture Department

COOPERATING EMPLOYER APPRAISAL

Name_____Date_____

Criteria	Rating
1. Interested in helping students	4 3 2 1
2. Successful in agri-business	4 3 2 1
3. Able to get along with students	4 3 2 1
4. Willing to cooperate with school	4 3 2 1
5. Uses proper English	4 3 2 1
6. Of good character	4 3 2 1
7. Emotionally stable	4 3 2 1
8. Able to explain ideas and concepts to students	4 3 2 1
9. Familiar with vocational agriculture	4 3 2 1
10. Familiar with the off-farm agricultural occupational experience program	4 3 2 1
11. A member of agricultural, civic, or community organizations	4 3 2 1
12. Motivated by high ideals	4 3 2 1
13. Eager and hard-working	4 3 2 1
14. Patient	4 3 2 1
15. Tactful	4 3 2 1
16. Open-minded	4 3 2 1
17. Willing to take time to work with students	4 3 2 1
OVER-ALL RATING	4 3 2 1

4 - Outstanding
3 - Good
2 - Fair
1 - Poor

FARMVILLE HIGH SCHOOL

VOCATIONAL AGRICULTURE DEPARTMENT

BE IT KNOWN THAT

_____
(Name of Person)

has satisfactorily completed a special course designed to train cooperating instructors in agricultural occupations in conjunction with the vocational agricultural department at _____ High School.

Dated this ____ /day of _____ 19____

At _____

_____ (Teacher-Coordinator)

_____ (Superintendent of Schools)

SELECTION OF STUDENTS

It must be realized that the student is the most important element in a cooperative occupational experience program. Much of the success of the program will depend upon the calibre of the students enrolled. Students termed "of high calibre" do not necessarily mean those with outstanding grades, but refers to those students who possess the aptitude and qualifications required for success in a given occupation. The objectives of this program can be attained only when the student is capable and desires to receive training. There may be a tendency among some educators to gear the program toward students with low academic and occupational abilities, while the training for many occupations requires students to have desirable personal traits and above-average aptitudes.

With the above considerations in mind, the need for a sound system for screening and selecting students becomes evident. The vocational agriculture teacher-coordinator should plan a system that utilizes numerous activities and procedures in selecting students.

Procedures for Selecting Students

The following steps are suggested as a guide to follow in the selection of students:

1. Make a general announcement concerning the program to all eligible students at least two months before pre-registration for courses.

2. Have all interested students complete an "application for enrollment form." A sample form is found on page 47 . Another form which is designed with the same purpose in mind is located in the Appendix.

3. Make arrangement with the school counselor to obtain various tests scores and other confidential information that is not reported on the application form.

4. If sufficient tests have not been administered, the teacher-coordinator may wish to administer commercial tests or in some cases special interest surveys. These can determine the students interest and abilities in specialized areas such as sales and mechanics. A sample form that can be utilized to determine a student's interest in sales is located in the Appendix.

5. In most cases the teacher-coordinator will be familiar with the personal characteristics of possible students, since he would most likely have had them in previous vocational agriculture classes. In some cases, however, the teacher-coordinator may have had very little contact with interested students. If this be the case, it may be advantageous to have other teachers more familiar with the student evaluate the personal characteristics of the student. A sample teacher's rating form is found on page 48 .

6. Record the information obtained from the previous steps on a "Student Information Sheet." (See example in a later part of this section.)

7. Interview each candidate personally. This will help obtain information that has not been obtained in any of the previous steps.

Criteria for Selecting Students

After the above steps have been completed, sufficient information should be available to make a final selection. The following criteria are suggested as possible points to be kept in mind when selecting students.

Occupational objective Students selected should have an interest in agricultural occupations for which the training program is designed, and in which adequate training stations will be available.

Parents' approval Students selected should have their parents' approval to participate in the program.

Ability and willingness to work Students selected should have demonstrated that they are able and willing to work.

Age Most states have minimum age laws (usually 16) and therefore this must be considered when students are selected. Students selected should be able to meet the age requirements specified by local, state, and federal labor laws.

Scholarship Students selected should have done well in school subjects related to the occupation in which they will be trained.

Attendance records Students selected should have a minimum number of absences and tardinesses on their school records.

Hours available for work Students selected should be able to work the minimum required hours per week for the total training period.

Transportation Students selected should be able to have transportation to and from their training station.

Handicaps Students selected should not possess any handicap which would prevent them from being hired by employers in the available training stations.

Personal characteristics Students selected should have desirable personal characteristics. This would include such items as character, loyalty, initiative, attitude, and personality.

_____ High School
Vocational Agriculture Department

APPLICATION FOR ENROLLMENT IN VOCATIONAL AGRICULTURAL OCCUPATIONS*

Date_____

Name_____Parent's or Guardian's Name_____

Address_____Phone No._____

Age_____Sex_____Height_____Weight_____Social Security No._____

Location from School_____

Grade in School_____ Do you plan to go to college? Yes_____No_____

List the high school credits you have earned in Math_____English_____Science__
Social Science_____Agriculture_____Commercial_____Other_____

Parents' Occupations - Father_____Mother_____

What type of curriculum are you enrolled in? College Prep____Vocational_____
General_____

What hobbies do you enjoy?_____

List the clubs and organizations to which you belong_____

_____

Do you wear glasses? Yes___No___ Will you have transportation to work? Yes_____
No____ Do you have any physical handicaps? Yes___ No___ If the answer is "Yes"
please explain_____

List the name of employer and previous jobs you have held and the length of time spent on the job.

Name of Employer	Job	Number of Months

In what occupations do you prefer to receive training? First Preference_____
_____Second Preference_____

What types of work to you dislike?_____

Will you be available for work: after school?_____on Saturdays?_____

What subjects to you need to graduate? _____ _____ _____ _____
_____ _____ _____ _____ _____ _____ _____

(Have your parents complete the following:)
_____has my permission to participate in the agricultural occupations program.

Signed by Parent or Guardian_____

*Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

_____ High School
Vocational Agriculture Department

TEACHER'S RATING OF STUDENTS INTERESTED IN AGRICULTURAL OCCUPATIONS

Date_____

Student's Name_____ Course_____

Please rate the student on the following traits:

	Excellent	Good	Fair	Poor
Character	_____	_____	_____	_____
Loyalty	_____	_____	_____	_____
Initiative	_____	_____	_____	_____
Attitude	_____	_____	_____	_____
Resourcefulness	_____	_____	_____	_____
Dependability	_____	_____	_____	_____
Personality	_____	_____	_____	_____
Achievement in your course	_____	_____	_____	_____

Do you feel this student is qualified to represent our school on a job?
Yes _____ No_____

List any outstanding abilities or talents this student possesses._____

_____

_____

For what vocation do you feel this student is best suited?_____

_____

Does this student take orders and criticism well? Yes_____ No_____

Which does this student prefer: Mental activities_____ Physical activities_____

Other remarks:_____

_____

_____

_____

_____
Teacher

_____ High School
Vocational Agriculture Department

STUDENT INFORMATION FOR AGRICULTURAL OCCUPATIONS*
(To be completed by teacher-coordinator and kept in permanent record file)

Date_____

Name_____Parent's Name_____

Address_____Phone No._____

Age_____Sex_____Height_____Weight_____Social Security No._____

Grade in school_____Parent's occupation: Father_____Mother_____

Location from school_____Plan to go to college Yes_____No_____

Credits earned - Math_____English_____Social Science_____Science_____Ag_____
Commercial_____Other_____

Type of program enrolled in: College prep_____Vocational_____General_____

Hobbies_____Grade average_____

Days absent last year_____ Transportation to work? Yes_____ No_____

Clubs and Organizations_____

Physical handicaps_____Glasses?_____

Previous work experience and name of employer	Job	Months

Student's Interests_____

Student's Dislikes_____

Occupational Objective_____

I. Q. Tests (List each)_____

Other tests	Test	Result

Parents approve of participation in Agricultural Occupations program? Yes___No__
Availability for work after school_____Saturdays_____

Subjects needed to graduate_____

Miscellaneous information_____

*Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

LEGAL REQUIREMENTS FOR STUDENT WORKERS

The employment of students in cooperative occupational experience must conform to state and federal laws. The vocational agriculture teacher-coordinator must be familiar with the local, state, and national employment laws which restrict the occupational experience in which students may participate. It is particularly important that he be familiar with the provisions of these laws which pertain to minimum wage and child labor. He should also be familiar with social security and other forms of insurance, responsibilities of the local school, hazardous occupations, and other employment requirements.

State Regulations

Each state has child-labor laws and several states have minimum wage laws. It must be remembered that whenever standards and requirements of a state law differ from federal regulations, the higher standard must be observed. Most states have pamphlets or brochures explaining the provisions of the employment laws for that state. The vocational agriculture teacher-coordinator can become familiar with the state employment regulations by securing the material published by the state concerning these laws or by personally contacting a representative of the state department associated with state employment regulations.

Age Certificates

Age or employment certificates, sometimes called work permits or working papers, are issued under state child labor laws. They are used to certify that a person under 18 years of age is legally employed. Age certificates are generally obtained from the local school or someone designated by the board of education. The vocational agriculture teacher-coordinator should see that age certificates are obtained and on file for each student under 18 years of age employed as a student learner, in those states where they are required. In some states, age certificates are only required for minors 14 and 15 years old who wish to work on school days during school hours. Age or employment certificates are available in every state except Idaho, Mississippi, South Carolina, and Texas.

Federal Laws

The Fair Labor Standards Act of 1938, as amended, establishes minimum wage, maximum hours, overtime pay, and child labor standards for employment which is subject to the provisions of the Act. The Fair Labor Standards Act applies to employees (including student-learners) engaged in interstate or foreign commerce or in the production of goods for interstate or foreign commerce, including any closely related process or occupation directly essential to the production of goods for interstate or foreign commerce. The Act also applies to employees (including student-learners) who are not themselves engaged in or producing goods for commerce. Some business enterprises, and employees of these enterprises, which are agricultural in nature, are exempt from certain provisions of the Act. It is important to note that the exemptions pertain, in most cases, to the minimum wage and overtime provisions of the Act and not to the child labor provisions of the Act.

Minimum Wage, Overtime Pay, Maximum Hours, and Equal Pay

Employees, whose work places them under the provisions of the Fair Labor Standards Act, must be paid a minimum wage of at least $1.25 an hour and overtime compensation at a rate of not less than $1\frac{1}{2}$ times their regular rate of pay for hours worked over forty in any work week. The law applies equally to men and women and to all enterprises engaged in interstate commerce regardless of the number of employees. The law does not set a limit on the number of hours of work per week for persons sixteen years of age or over unless they are covered by a student-learner certificate. An amendment to the Fair Labor Standards Act, effective in 1964, prohibits employers from discriminating on the basis of sex in the payment of wages for equal work. An employer may not pay employees of one sex at rates lower than he pays employees of the opposite sex for doing equal work on jobs requiring equal skill, effort, and responsibility which are performed under similar working conditions.

Exemptions from the minimum wage and overtime provisions of the Fair Labor Standards Act are allowed for certain workers. The two groups of workers for whom exemptions are made, which are applicable to cooperative occupational experience in vocational agriculture, are agricultural and related workers and students who complete student-learner certificates and are employed on a part-time basis as a part of a bonafide vocational training program.

Exemptions for Agricultural and Related Workers

Certain workers who do farm work or who handle or process farm products are exempt from the minimum wage and overtime requirements of the Fair Labor Standards Act. The workers exempt under this provision include the following:

1. Farm workers who cultivate the soil or grow or harvest crops, or who raise livestock, bees, fur-bearing animals or poultry. Workers who do such work in greenhouses, nurseries, and hatcheries are included. Also included in this category are workers employed by a farmer on work incidental to their employer's own farming operation and workers who do work on a farm incidental to the farming operations conducted with that farm whether the person is employed by a farmer or by an independent contractor.

2. Agricultural workers who are shade-grown tobacco workers and are employed in the growing and harvesting of shade-grown tobacco during the current crop season

3. Livestock auction workers employed by a farmer for the major part of their work week and employed in connection with such farmer's livestock auction operations for the rest of the week

4. Home workers who are engaged in the making of wreaths composed principally of natural holly, pine, cedar, or other evergreens

5. Transportation employees who are engaged in transporting fruits and vegetables, or preparing fruits and vegetables for transportation from the farm to a place of first processing or first marketing within the state. Also included are transportation employees who transport fruit and vegetable harvestors between the farm and any point within the state.

6. Cotton gin employees who are engaged in the ginning of cotton for market.

7. Workers within the "area of production" who handle, park, store, compress, pasteurize , dry, prepare products in their raw or natural state, or who can agricultural or horticultural commodities for market, or who make cheese or butter or other dairy products. A worker is employed within an "area of production" if the establishment where he is employed meets the "population tests" and the "distance tests."

8. Country elevator employees who are employed within the "area of production" by country elevators having not more than five employees. The exemption applies to the employees of country elevators who sell products and services used in the operation of a farm.

Certain agricultural workers are exempt from the overtime regulations, only, not the minimum wage requirements. These workers are:

1. Workers in certain processing operations--first-processing milk, buttermilk, whey, skimmed milk or cream into dairy products; ginning or compressing cotton or processing cotton-seed; processing sugar beets, sugarcane, or maple sap into sugar or syrup.

2. Workers in other processing and handling operations--first-processing, canning, or packing fresh fruits or vegetables; first-processing within the "area of production" any agricultural or horticultural commodity during seasonal operations; handling, slaughtering, or dressing poultry, or livestock.

3. Outside buyers of poultry eggs, cream or milk in their raw or natural state. Outside buyers are individuals who work away from their employer's place of business.

Other exemptions from the minimum wage and overtime provisions (applicable to agricultural businesses) include:

1. Employees of retail or service establishments which are primarily engaged in selling farm implements.

2. Employees of other retail or service establishments which have less than $250,000 in annual sales, if the enterprise of which they are a part has less than $1,000,000 in gross annual sales or procures less than $250,000 annually in goods for resale that move or have moved across state lines.

Exemptions for Student-Learners

Students enrolled in cooperative occupational experience are eligible to work for seventy-five percent of the minimum wage if they complete a Student-Learner Certificate. Certain provisions must be met in order to obtain a Student-Learner Certificate. A detailed discussion on the standards and provisions that must be met is found in the Appendix.

Application Form for a Certificate to Employ a Student-Learner

The form on the following page is a copy of the official form required for a certificate to employ a student-learner.

Questions Pertaining To The Application For And Certification Of Student Learners

Note: The reference in parenthesis refers to the section of Title 29 part 520 of the code of Federal Regulation--"Employment of Student-learners"

1. In the average situation, for what period of time is a student-learner certificate issued?

   Ans. - for one school year only. (Section 520.8.) This is an appropriate 36 week period, consisting of 15 to 25-hour work-weeks.

2. What rate of pay is applicable to the student learner's employment?

   Ans. - 75 percent of the applicable minimum wage, i.e., $1.25 per hour= $.94 (Section 520.6 (b)).

3. Does the application for the certificate constitute a temporary certificate?

   Ans. - Yes, if the application is correctly filed. The temporary authorization becomes effective the date the application is postmarked. Section 520.6 (c) (2)

4. Can a student learner under 18 years of age work in some of the occupations declared as particularly hazardous for minors?

   Ans. - Yes. (Section 520.5 (d)). If a written agreement is on file as described in the Child Labor Bulletin No. 101, Page 9.

5. May student learners work in any of the Hazardous Occupations without the exemption being granted?

   Ans. - No. There is no provision for this.

U. S. Department of Labor
Wage and Hour and Public Contracts Division

APPLICATION FOR A CERTIFICATE TO EMPLOY A STUDENT-LEARNER

The certification of the appropriate school official on the reverse side of this application shall constitute a temporary authorization for the employment of the named student-learner at less than the statutory minimum wage applicable under Hazardous Occupations Orders of the Fair Labor Standards Act of 1938, as amended, or at wages below the applicable Walsh-Healey Public Contracts Act minimum wage determination, effective from the date this application is forwarded to the Divisions until a student-learner certificate is issued or denied by the Administrator or his authorized respresentative, provided the conditions specified in Section 520.6 (c) (2) of the Student-Learner Regulation (29 CFR 520) are satisfied.

PLEASE READ CAREFULLY THE INSTRUCTIONS FOR COMPLETING THIS FORM
PRINT OR TYPE ALL ANSWERS

1. Name and address of establishment making application:	3. Name and address of student-learner:
2. Type of business and products manufactured, sold, or services rendered	4. Name and address of school in which student-learner is enrolled:

INFORMATION ON SCHOOL INSTRUCTION

5. Number of weeks in school year		11. Are Smith-Hughes Act of George-Barden Act funds being used for this program? (Yes or No)	
6. Total hours of school instruction per week			
7. Number of such hours directly related to employment training		12. Was this program authorized by the State Board for vocational education?	
8. Proposed beginning date of employment		13. If the answer to item 12 is "No", give the name of the recognized body which has approved this vocational training program:	
9. Proposed ending date of employment			
10. Proposed graduation date of student-learner			

14. Outline the school instruction directly related to the employment training. (List courses, etc.)

S A M P L E F O R M

Form WH-205 (10/63) ATTACH SEPARATE PAGES IF NECESSARY

Continued from preceding page

Information on employment training at special minimum wages:

15. How is employment training scheduled (weekly, alternate weeks, etc.)?	19. Title of Student-learner occupation:
16. Number of weeks of employment training at special minimum wage	20. Number of employees in this establishment
17. Number of hours of employment training a week	21. Number of experienced employees in student-learner's occupation shown in question 19
18. Special minimum wage(s) to be paid student-learner (if a progressive wage scale is proposed, enter each rate and specify the period during which it will be paid):	22. Minimum hourly wage rate of experienced workers in 21
	23. Is an age or employment certificate on file in this establishment for this student-learner? (If not, see instructions)
	24. Is it anticipated that the student-learner will be employed in the performance of a Government contract subject to the Walsh-Healey Public Contracts Act?

25. Outline training on-the-job (describe briefly the work process in which the student-learner will be trained and list the types of any machines used).

26. Signature of student-learner:
I have read the statements made above and ask that the requested certificate, authorizing my employment training at special minimum wages and under the conditions stated, be granted by the Administrator or his authorized representative.

(Signature of Student) (Date)

27. Certification by school official: I certify that the student named herein will be receiving instruction in an accredited school and will be employed pursuant to a bona fide vocational training program as defined in section 520.2 of Student-Learner Regulations.	28. Certification by employer or authorized representative: I certify, in applying for this special certificate, that all of the foregoing statements are, to the best of my knowledge and belief, true and correct.
(Signature of School Official) (Date) Title	(Signature of employer or representative) (Date) Title

6. Who does the Wage and Hour Division hold responsible for compliance with the Hazardous Occupations Orders and the terms of the certificate?

   Ans. - the employer.

7. When school is not in session, how many hours may a student work, under the provisions of a certificate?

   Ans. - When school is not in session, the student may work a number of hours in addition to the weekly hours granted by the certificate: provided, the total hours do not exceed 8 hours in any one day or 40 hours in any week. (Section 520.6 (d) and (3)).

8. How many copies of the application are necessary and who gets them?

   Ans. - Four copies are made. One is given to the student, one is given to the employer, one is given to the school, and the original is sent to the regional labor office.

9. How many hours may a student-learner work at his occupation?

   Ans. - The number of hours at work plus the number of hours spent in class at school must not exceed 40 per week.

10. May a student-learner work under the provisions of a certificate during the summer months?

    Ans. - Yes. For example: if a student learner begins his employment at the beginning of the spring semester (approximately January 1), his training may continue through the summer months, provided he has not graduated and provided the summer work is under the auspices of the teacher-coordinator.

11. May a student-learner ride as a passenger in a vehicle getting from job site to job site?

    Ans. - Yes. If the student is not primarily engaged in loading or unloading the vehicle or as a driver or driver's helper, he may ride the vehicle.

12. Is a student-learner under 18 subject to the Hazardous Occupations Orders, whether or not the employer is paying the minimum wage?

Ans. - Yes--and if a student-learner is to be employed in a hazardous occupation that carries an exemption (i. e. Hazardous Occupations Orders No. 5, 8, 10, 12, 14, 16 and 17) there must be a written agreement on file as described in "II" under the heading "Student-Learner" of the Child Labor Bulletin No. 101 pp. 7-8.

Child Labor Provisions

Sixteen years is the minimum age for most employment covered by the Fair Labor Standards Act. This requirement includes employment in agriculture (farming) during school hours. Eighteen years is the minimum age for employment in an occupation declared hazardous by the Secretary of Labor. Employment of 14 and 15-year-old youths is limited to certain occupations outisde school hours only and under specified conditions. The child labor provisions of the Act do not apply to children employed in farming outside of school hours nor to children under 16 years of age who are employed by their parents in occupations other than manufacturing, mining or hazardous occupations.

Child labor provisions applicable to farming

The child labor provisions of the Fair Labor Standards Act apply generally to farmers whose crops or products go either directly or indirectly into interstate or foreign commerce. A farmer is engaged in interstate commerce if he sends his products outside the state or delivers his products to a canner, processor, or dealer whom he knows or has reason to believe will send it outside the state (in its original form or as an ingredient in another product.) Farmers may not employ children under 16 years of age during school hours. This requirement does not apply to the employment of a farmer's own children on his farm. There is no minimum age of employment in farming outside school hours.

Hazardous Occupations

The Fair Labor Standards Act states that a minimum age of 18 is necessary for employment in any occupation which the Secretary of Labor defines as particularly hazardous or detrimental to the health or well being of 16 and 17 year olds. There are 17 hazardous occupation orders now in effect which apply either on an industry basis, specifying the occupations in the industries that are not covered, or on an occupational basis irrespective of

the industry in which found. The orders in effect do not apply to employment in farming. The occupations declared to be hazardous by the Secretary of Labor follow:

1. Occupations in or about plants or establishments manufacturing or storing explosives or articles containing explosives components

2. Occupations of motor-vehicle drivers and helpers

3. Coal mine occupations

4. Logging occupations and occupations in the operation of any sawmill, lath mill, shingle mill, or cooperage stock mill

5. Occupations involved in the operation of power-driven woodworking machines

6. Occupations involving exposure to radioactive substances and to ionizing radiations

7. Occupations involved in the operation of elevators and other power-driven hoisting apparatus

8. Occupations involved in the operation of power-driven metal framing, punching, and shearing machines

9. Occupations in connection with mining, other than coal

10. Occupations in or about slaughtering, and meat-packing establishments and rendering plants

11. Occupations involved in the operation of certain power-driven bakery machinery

12. Occupations involved in the operation of certain power-driven paper product machines

13. Occupations involved in the manufacture of brick, tile, and kindred products

14. Occupations involved in the operation of circular saws, hand saws, and guillotine shears

15. Occupations involved in wrecking, demolition, and ship-breaking operations

16. Occupations involved in roofing operations

17. Occupations in excavation operations

For complete discussion on the above orders consult Child Labor Bulletin No. 101.

Hazardous occupations orders numbers 5, 8, 10, 12, 14, 16, and 17 contain exemptions for student-learners provided they are employed under the following conditions:

1. The student-learner must be enrolled in a course of study in a cooperative vocational training program under a recognized state or local educational authority.

2. The student-learner must be employed under a written agreement which provides:

   a. That the work of the student-learner in the hazardous occupation is incidental to his training.

   b. That such work shall be intermittent and for short periods of time, and under the direct and close supervision of a qualified and experienced person.

   c. That safety instructions shall be given by the school and correlated by the employer with on-the-job training.

   d. That a schedule of organized and progressive work processes to be performed on the job shall have been prepared.

Each written agreement for an exemption from the hazardous occupation order must be signed by the employer and the teacher-coordinator or principal. Copies of the agreement must be kept on file b. both the school and the employer. A sample letter agreement is found on page 61 .

_____ High School
Vocational Agriculture Department

Mr. John McAhee, Manager
Brown's Farm Implement Company
340 Main Street
Farmville, U. S. A.

Dear Mr. McAhee:

We recognize that John Jones enrolled as a vocational agriculture student and placed in your firm for occupational experience may, during the course of his employment with you, be called upon to learn to operate machines that the Secretary of Labor has declared particularly hazardous for minors under 18 years of age.

This letter stands as an agreement that you as the employer, and I, as a representative of the school, understand that the work of the student in those occupations declared particularly hazardous shall be incidental to his training; that such work shall be intermittent and for short periods of time, and under the direct and close supervision of a qualified and experienced person; that safety instructions shall be given by the school and correlated by the employer with on-the-job training; and that a schedule of organized and progressive work process to be performed on the job shall be prepared.

As an indication of your concurrence with this agreement, please sign this letter in the space provided below. Please retain the duplicate copy for your files and return the original copy to me.

Sincerely,

Gilbert Andrews,
Vocational Agriculture
Teacher-Coordinator

_____
(Name and address of employer)

_____
(Date)

Walsh-Healey Public Contracts Act

This Act applies to contracts entered into by the U. S. Government for the manufacture or furnishing of materials, supplies, articles or equipment in any amount in excess of $10,000. The Act requires (1) the payment to employees engaged in the performance of such contracts of not less than the minimum wage. (2) That no boy under 16 and no girl under 18 years shall be employed in any work performed under the contract. The teacher-coordinator should know the provisions of this Act which apply to student-learners.

Social Security

Students who do not have a Social Security number must obtain one before they can be paid for any work performed. Most student workers are entitled to benefits under the provisions of the Social Security Act. Among those not covered at present are certain professional people, some government employees, and employees of certain non-profit organizations. The Social Security Act does not provide coverage for children employed by either parent.

Unemployment Insurance

Students are generally not eligible for unemployment insurance since they are not employed full-time. Information may be obtained from the nearest office of the State Employment Service or from the Bureau of Employment Security, U. S. Department of Labor, Washington, D. C., 20225.

Workmen's Compensation

Students should not be placed in a firm where the employer does not carry workmen's compensation. Workmen's compensation provides payment for necessary medical care and benefits to an employee disabled by injury or illness caused by his work. It is based upon the principle that an employer is responsible for physical injury that befalls any of his employees because of working conditions or the work assigned to him.

Workmen's compensation available for student-learners should always be checked when determining possible training stations. There are no national laws or regulations which require an employer to carry workmen's compensation for all of his employees.

Taxes

Student workers' incomes are subject to the same taxes as regular workers. This includes both federal and state taxes. Students should be informed that since they are wage earners, a percentage of their income will be withheld by their employer in accordance with tax regulations.

Occupations Requiring Licensing

In order to safeguard the well-being of the citizenry, the federal, state, and local governments may require licenses of certain workers. The vocational agriculture teacher-coordinator should determine if any of the occupations in which students will be placed for cooperative occupational experience require licensing by the town, city, county, or state. The cooperating employer will know where the license can be obtained or where the necessary information can be secured to determine if student-learners can be placed in these occupations.

Field and Regional Labor Offices

The Department of Labor maintains field and regional offices which may be contacted to answer questions concerning Federal labor regulations. A list of these offices is located in the Appendix.

Publications on Labor Regulations

Most states have pamphlets on the state labor regulations. These can be obtained from a district or state office. Numberous publications covering federal labor regulations are available from the field or regional offices. The vocational agriculture teacher-coordinator should take note of those marked with an asterisk (*) since he will undoubtedly want to refer to them for specific questions. Some of the publications available are:

1. *Handy Reference Guide to the Fair Labor Standards Act
2. Information on the Equal Pay Act of 1963
3. Services to the Public
4. "Our Town"

5. Retail and Service Enterprises and Establishments

6. "White Collar" Exemptions

7. *Agriculture and Related Exemptions

8. Highlights on Computing Overtime Pay

9. A Quick Look at Hours Worked

10. How to Keep Time and Pay Records

11. *A Guide to Child-Labor Provisions (Child Labor Bulletin No. 101)

12. *Agriculture and the Child Labor Requirements (Child Labor Bulletin No. 102)

13. What Crew Leaders and Contractors of Farm Workers Should Know About Child Labor in Agriculture

14. A Message to Young Workers

15. *Handy Guide to the Walsh-Healey Public Contracts Act

16. Wage-Hour Coverage--Part 776

17. Overtime Compensation--Part 778

18. Hours Worked--Part 785

19. Executive, Administrative, Professional, and Outside Salesmen--Part 54; (and Explanatory Bulletin)

20. Motor Carriers--Part 782

21. Records--Part 516:
    Subpart A, General Requirements
    Subpart B, Miscellaneous Exemptions and Others

22. Area of Production--Part 536

23. The Fair Labor Standards Act

24. Equal Pay for Equal Work--Part 800

PLACEMENT OF STUDENTS IN TRAINING STATIONS

A concerted effort should be exerted by the vocational agriculture teacher-coordinator to insure that the interest of both the student and the employer is considered when placing a student in a training station.

One mistake the teacher-coordinator should guard against is arbitrarily assigning a student to a training station without involving the employer. Past experiences have shown that this may lead to an undesirable situation. First of all, students do not receive the actual experience of applying for a job under realistic circumstances and secondly, if for some reason the student does not do well at the training station the teacher-coordinator must assume full responsibility.

When Should Students be Placed?

Due to the variety of programs which offer training in off-farm agricultural occupations, it is difficult to say when students should be placed in cooperative occupational experience. Some students will need to be placed in the summer before entering a class where related instruction is to be offered, while others will need to be in the class for a considerable period of time before they are placed in on-the-job training.

Although it is sometimes difficult to accomplish, students should receive formal instruction in certain areas before they are placed for cooperative occupational experience. The type of employment will determine to some extent the previous instruction needed. For most occupations it is desirable for students to be acquainted with the procedures of applying for a job, employer-employee relations, and a general knowledge of the nature and scope of the occupation for which they are preparing before they begin their on-the-job experience.

How Should Students be Placed?

Although there are no definite procedures in placing students in training stations, there are certain practices that should be followed. The following practices are recommended as desirable procedures for the teacher-coordinator to use:

1. Have more than one student apply for a job at a training station. This will enable the employer to have a choice and it will enable students to encounter a more realistic situation in that he knows that he is competing for a position.

2. Have the student write a letter of application. This gives practical experience to the student and at the same time enables the employer to determine if he wants to give the student's application further consideration by having him complete an application form or attend a personal interview. An example of a student's letter of application is found on page 67 .

3. Help the student complete the application forms that the employer requires. If the employer does not require application forms, the teacher-coordinator may construct a sample form which students may complete for practical experience. These forms plus a personal data sheet may be given to an employer if he requires information in addition to that obtained during an interview. An example of an application form is found on page 68 . An example of a personal data form is found on page 70 .

4. Ask the employer to conduct a personal interview with those students that meet his minimum requirements. This is excellent experience for the student and it enables the employer to determine which student he feels best suited for the position available. Some specific helps concerning student-employer interviews are found on pages 71 and 72 .

5. The final selection of the student to be placed in the training station should be made by the employer. This will enable the employer to have the same freedom and responsibility in the hiring of student-learners as for a regular employee. In many cases the employer works directly with the teacher-coordinator in that the teacher-coordinator will supply information concerning the students if the employer so desires.

6. If a student is not selected for a job in one training station, he should then apply at another approved station which can provide training in an occupation that is available.

The module, Human Relations in Agricultural Occupations, developed as a part of this project presents material dealing with the procedures in placing students on jobs. If at all possible, the material in this module should be taught before the students are placed for occupational experience.

_____ High School
Vocational Agriculture Department

(Sample Letter of Application)

Box 100
Farmville, U. S. A.
September 20, 1965

Mr. John McAhee, Manager
Browns Farm Implement Co.
340 Main Street
Farmville, U. S. A.

Dear Mr. McAhee:

Mr. Andrews, vocational agriculture teacher-coordinator at Farmville High School, has informed me of a vacancy in the tractor and machinery parts department of your firm. I would like to submit my name for consideration for this position.

At present, I am a student enrolled in the agricultural occupations program at Farmville High School and therefore, will be available for employment after 2:00 p. m. on school days, and the entire day on Saturdays and during the summer. I do not plan to go to college, and I plan to seek full-time employment in an agricultural firm when I graduate.

I have lived and worked on a farm all my life. Last summer I worked in the parts division of the Farmville Tractor and Equipment Co. I have served as secretary of the local F F A Chapter and scholastically, I rank in the upper fourth of my high school class.

I am interested in a career in agricultural machinery sales and recognize the value of being associated with a firm of your reputation. I would appreciate a personal interview with you at your earliest convenience so you may become better acquainted with my qualifications. I will be available for an interview after 2:00 p. m. on school days and any time on Saturdays.

I may be contacted at the above address or through Mr. Andrews at the high school. I am looking forward to your reply.

Sincerely,

John Jones

_____ High School
Vocational Agriculture Department

APPLICATION FOR EMPLOYMENT*

Trainee Practice Form
Vocational Agriculture Occupations Training Program

PERSONAL INFORMATION

Name_____
(Last) (First) (Middle)

Address_____Telephone_____
(Street) (City) (State)

Social Security Number_____Date of Birth_____

Height_____Weight_____ List physical handicaps if any:_____

_____

Have you ever been seriously injured on a job?_____Explain_____

_____

Did you receive compensation for the injury?_____

Have you ever been convicted in a court of law for any violation other than traffic?_____ If so, explain?_____

EDUCATIONAL BACKGROUND

Public School Attended: Name of School_____City_____State_____

1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12
(Circle number indicating highest grade completed.)

Leadership Activities:_____

_____

SPECIAL SKILLS YOU POSSESS

List your fields of training_____

_____

Machines you can operate_____

_____

*Adapted from the 1965 Workshop Report of the Agricultural Occupation Institute held at Oklahoma State University.

Continued from preceding page

OCCUPATIONAL EXPERIENCE

(Start with your last position and work to the first)

1. _____
Exact title of position Name and address of employer

_____
Reason for leaving

Dates of Employment From: _____ To: _____

2. _____
Exact title of position Name and address of employer

_____
Reason for leaving

Dates of Employment From: _____ To: _____

3. _____
Exact title of position Name and address of employer

_____
Reason for leaving

Dates of Employment From: _____ To: _____

REFERENCES

(Name)	(Title)	(Business)	(Address)

Employer's comment _____

_____

_____

_____

_____ High School
Vocational Agriculture Department

(Sample Personal Data Sheet)

John Jones
Box 100
Farmville, U. S. A.

Personal Information

Age: 17
Height: 5'9"
Weight: 160
Health: Excellent
Telephone: 262-9038

Job Objective

I wish to secure a position in retail selling of agricultural products. My first preference is farm machinery and equipment sales. My second preference is in the area of agricultural chemical sales.

NOTE: State the kind of position you desire or the specific interests you have. Clearness of objective and clarity of expression are both important. State your interest fully but be as brief as possible.

Education

High School: Senior at Farmville High School
Major: Vocational Agriculture
Technical Skill: Three years vocational agriculture, with specific instruction in repair and adjustment of farm equipment and machinery, farm welding, public speaking, parliamentary procedure, animal science, and crop science.
Leadership Activities: Secretary of FFA, Treasurer of Sophomore class, member of Student Council.

Work Experience

Farmville Tractor & Equipment, Main Street, Farmville.
Worked in the parts department during the summer of 1965.
Jones Farm, Box 100, Farmville.
Worked as a general farm worker on my father's farm after school and during the summers from 1960 to 1964.

NOTE: Briefly list all the jobs or positions you have held giving the employer's name, address, title of job, and length of service. Begin with your most recent job first.

References

Mr. Neal Groves, Manager, Farmville Tractor & Equipment Co., Main Street, Farmville.
Mr. Gilbert Andrews, vocational agriculture instructor, Farmville High School, Farmville.
Mr. Claude Rolloff, Box 101, Farmville.

NOTE: Obtain permission to use names. The following is acceptable if references are not listed: "Appropriate business and personal references will be furnished upon request."

Some Helps Regarding Interviews *

The following is a sample of the type of information the teacher can use to help prepare students for interviews.

The interview

Planning for a successful interview usually begins long before the interview. After you know the firm where you are to get your work experience, you are in a position to do a little research. Find out where the company is located, who the manager is, what the company sells (including "brand name" products), its policies and organization. Ask yourself how you can fit into the firm best.

Before you leave for the interview, check your personal appearance. Dress smartly and neatly. Above all, be clean. Carry with you a portfolio of references and your personal data sheet.

When you enter the interview office, smile, and act naturally. The interviewer is interested in the real you. He will usually be an experienced person and will take the initiative throughout the interview. If he gives you a chance, offer special information about your interests and desires and your interest in the firm. Ask questions. Show interest!

Before the interview

The following questions should be answered before the interview:

1. What kind of training do you really want?
2. Where can you go to find such training?
3. What qualifications are necessary to obtain such training?
4. Does the firm hire persons without experience for the kind of job you desire?
5. How can you best get the kind of experience you need?
6. What do you know about the firm?
7. Who is the one who does the employing?
8. Are you positive on the training you want?
9. What kind of clothes should you wear for the interview?

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* Adapted from the material for conducting pilot programs in off-farm agricultural occupations in Kentucky.

10. What references should you carry with you to the interview?

11. Why is it important to arrive on time for your interview?

12. Where is the exact location interview will take place?

During the interview

The following questions should be kept in mind when the interview takes place:

1. Should you shake hands with the interviewer?

2. Should you smile?

3. If you are introduced to the interviewer, what should you say?

4. Should you sit down immediately?

5. How should you sit?

6. Where should you put materials that you have carried with you?

7. If the interviewer sits waiting for you to speak, what should you say?

8. If the interviewer asks questions, how should you reply?

9. If the interviewer makes no offer of a training position, what should you do?

10. If the interviewer makes an offer of a training position, what questions should you ask?

After the interview

Every interview should be followed with a letter of appreciation, thanking the interviewer for his consideration and reaffirming your desire to have the training position. The follow-up letter may express your interest in the company, its products, or the kind of work involved. Remember that a prospective employer has more to decide than whether or not the applicant will fit in with his firm; he must decide who will fit the job best.

YOU MUST STAND OUT FROM THE REST. This fact alone should be enough to convince you that you must be "on your toes" and sell yourself every minute of the time you spend with a prospective employer. Remember that you are not only competing with other applicants, but you are also competing with the standards of quality that every firm establishes.

COOPERATING WITH OTHER GROUPS OR AGENCIES

The development of cooperative occupational experience programs in vocational agriculture demands the close cooperation of prospective employees, state and national trade associations, organized labor and govermental agencies. It is especially important to have the cooperation of the various vocational education services.

Cooperating with Employers and Their Organizations

Most employers and the trade associations with which they are affiliated are anxious to secure better trained workers. They can be of great assistance in helping initiate and guide programs that include cooperative occupational experience. The teacher-coordinator should make every effort to inform employers of the program and solicite their help and cooperation. Without the cooperation of employers, one cannot expect to secure adequate training stations. Also, if employers have been involved in the program and have cooperated with the school, the possibility of their placing students in permanent positions when they have completed the course is greatly enhanced.

Organized Labor

Many of the students may be placed in training stations that have organized unions. In some cases, students may become members of unions and substitute in part the training and experience received in school for apprenticeship. The vocational agriculture teacher-coordinator should be familiar with the various unions in the community and the requirements for admission into the relevant unions. It is imperative that the cooperation of the unions be secured if students are to be placed in training stations with organized unions or if students are to be permanently employed in occupations which are unionized.

Governmental Agencies

Numerous governmental agencies have an effect upon cooperative occupational experience programs. For instance, some are concerned with employment of young workers, wages, hours, and factors affecting working conditions. Some occupations require licenses and care must be taken to insure that student learners or graduates of the program will qualify for

licensing. Cooperation with the Employment Security Agency can be very beneficial. This agency can be of help in securing permanent positions for graduates, in testing and counseling students, and in giving guidance and direction to the program.

Other Vocational Education Services

There is a great need for vocational educators in agriculture to utilize the experience of other vocational services, and to develop new ways of cooperation for the benefit of everyone. Opportunities for cooperation between vocational agriculture departments and other vocational services are numerous. Each school situation will determine those activities in which cooperation among services is feasible. The following list will provide an indication of activities which can involve cooperation between the vocational services.

1. Planning, conducting, and utilizing community surveys
2. Planning long range course offerings
3. Selecting students
4. Locating training stations
5. Securing and working with consulting committee members
6. Teaching specialized subject matter
7. Coordinating on-the-job instruction
8. Determining student grades
9. Issuing student certificates of completion
10. Issuing certificates for recognition of the contribution of employers
11. Planning and conducting employer-employee banquets.

This list is only an indication of the numerous areas in which cooperation among the services is possible. Cooperation will save time and duplication of effort as well as provide a stronger program by involving broader participation in the planning and conducting of individual programs. Since most of the cooperative occupational experience programs in agriculture will be developed in schools served by other vocational services, the need for an understanding of their purposes as well as formulating definite plans and procedures for achieving common goals is imperative.

DEVELOPING TRAINING PLANS

The employment of a student in a job does not necessarily insure that the student will receive training and that the experience will be educational in nature. A desirable cooperative occupational experience program consists of deliberate efforts to prepare a student for job competence. It includes a direct progression of jobs, experiences, operations, or processes. The vocational agriculture teacher-coordinator has the responsibility to see that the work accomplished by students placed in cooperative occupational experience is educational in nature and not mere work experience. To insure that the student's on-the-job experience will be truly educational, a training plan must be developed.

The training plan consists of a listing of the activities in which the student should be engaged while working at the training station. Opposite this there should be a listing of the subject matter that should be dealt with in the related instruction at school. Space is provided so that a record of progress can be kept of the on-the-job experiences and a grade or completion mark can be recorded for the related instruction. All activities considered essential to the occupational training should be included in the training plan.

Purpose and value of training plans

The primary purpose in developing a training plan is to determine in advance what activities the student is to participate in while on the job. This then serves as a guide to those involved in the training to see that these experiences are provided. The vocational agriculture teacher-coordinator and employer should refer to the training plan frequently making certain that the student-learner is receiving the experiences previously agreed upon.

The training plan also is valuable to the teacher-coordinator. It enables him to understand job requirements and specifications, to determine the value of a training station, to help select students for specific occupations, and to compare the proposed on-the-job experiences with those actually being practiced.

Through the training plan the student knows what will be expected of him. He can then better understand the objectives and scope of his chosen occupation.

Training plans remind employers of the breadth and depth of training that is to be provided the students. It is also most valuable to an employer to know what related instruction is being provided at the school.

Developing Individual Training Plans

A training plan should be developed for each student placed in cooperative occupational experience. This plan should be based upon the ability of the student, the type of occupation, the conditions at the training station, and the length of the occupational experience period.

Training plans should be developed cooperatively between the teacher-coordinator and the employer. In some cases, experience may be gained by students in occupations which are not completely familiar to the teacher-coordinator. The necessary information should be obtained through personal interviews with the employer or the person responsible for the on-the-job instruction. When developing training plans, the following procedures should be kept in mind:

1. Thoroughly explain the need and value of training plans before involving the employer in their development.

2. Let the employer look at samples of training plans which have been completed.

3. Do not expect the employer to prepare the actual plan. The teacher-coordinator should assume the responsibility for the preparation of the final plan after suggestions and recommendations have been made by the employer.

Sample Training Plan

On the following page is an example of one part of a training plan developed for a student training to be a landscape gardner.

SAMPLE TRAINING PLAN
Ornamental Horticulture

Part 5 - Establishing a Lawn

On-the-Job Training--What the student-learner should do	Progress	Related Instruction--What the student-learner should know	Completed or Grade
1. Develop plan for establishing a lawn		1. Steps and procedures in planning for a lawn	
2. Rough grade the area			
3. Test soil		3. Procedures in testing soil	
4. Add topsoil		4. Types and characteristics of top soil	
5. Apply organic matter		5. Types and characteristics of organic matter	
6. Apply fertilizer		6. Types and characteristics of lawn fertilizers	
7. Adjust pH		7. Methods and procedures in adjusting pH of soils	
8. Operate rototiller		8. Characteristics of good seed beds for lawns	
9. Rake to finish grade			
10. Seed grass		10. Methods and procedures in planting a lawn	
11. Plant stolons			
12. Place sod			
13. Water newly established lawns		13. Methods and procedures in watering lawns	

O = observes, S = performed under close supervision

P = performed without close supervision

DEVELOPING TRAINING AGREEMENTS

Since students, employers, parents, school administrators, and teacher-coordinators all have important roles to play to insure that cooperative occupational experience is successful, each should be familar with his responsibilities. These responsibilities can best be understood and agreed upon by developing a written training agreement. This agreement should be completed as soon as the student is placed in the training station.

What to Include

The following items should be included in a training agreement:

1. Name of employer or person in charge of student while working at the training station.
2. Duration of the training period.
3. Number of hours to be worked per week
4. Hours of the day occupational experience is to be provided.
5. Beginning wage
6. Responsibilities of the student
7. Responsibilities of the parent
8. Responsibilities of the teacher-coordinator and the school
9. Responsibilities of the employer

Sample Training Agreements

A sample training agreement is found on the following page. Another sample of a slightly different nature is located in the Appendix.

An example of a training agreement that also can be very easily adapted to cooperative occupational experience is found in Records of Supervised Occupational Experience and Training in Vocational Agriculture, French-Bray Printing Co. p7.

_____ High School
Vocational Agriculture Department

TRAINING AGREEMENT*

Student Trainee_____Date of Birth_____

Soc. Sec. No._____Grade_____Available Work Hours_____

Occupational Objective_____Training Period_____mos. or weeks

Training Agency_____Date_____

Address_____Telephone No._____

Department in which Employed_____Sponsor_____

Parent or Guardian_____Telephone No.: Res._____Bus.___

Address: Residence_____Business_____

1. THE STUDENT AGREES TO:

__Do an honest day's work, understand that the employer must profit from his labor in order to justify hiring him and providing him with cooperative training experience.
__Do all jobs assigned to the best of his ability.
__Be punctual, dependable and loyal.
__Follow instructions, avoid unsafe acts, and be alert to unsafe conditions.
__Be courteous and considerate of the employer, his family, customers and others.
__Keep the records of cooperative training program and make the reports the teacher and the employer require.
__Be alert to perform unassigned tasks which promote the welfare of the business.

2. THE PARENT AGREES TO:

__The cooperative training program in the place of business.
__Allow student to work in the store during hours and days shown in Section 5.
__Provide a method of getting to and from work according to the work schedule.
__Assist in promoting the value of the student's experience by cooperating with the employer and teacher when needed.
__Assume full responsibility for any action or happening pertaining to student trainee from the time he leaves school until he reports to his training station.

3. THE TEACHER, IN BEHALF OF THE SCHOOL AGREES TO:

__Give systematic instruction at the school enabling the student to better understant and carry out his duties and responsibilities in the training station.
__Visit the student on the job for the purpose of supervising him to insure that he gets the most out of his cooperative training experience.
__Work with the employer, student, and parents to provide the best possible training for the student.
__Use discretion on the time and circumstances chosen for visits.

* Adapted from the 1965 Workshop Report of The Agricultural Occupations Institute held at Oklahoma State University.

Continued from preceding page

4. THE EMPLOYER AGREES TO:

__Provide the student with opportunities to learn how to do well many jobs in the business.
__Assign the student new responsibilities only when he is judged able to handle them.
__Train the student, when and where possible, in the ways which he has found desirable in doing his work.
__Assist the teacher on making an honest appraisal of the student's performance.
__Avoid subjecting the student to unnecessary hazards.

---

5. ALL PARTIES AGREE TO:

__A period of the cooperative training program which will:

Start in _____
(month)

End in _____
(month)

__Working hours during the cooperative training program will include:

Days during week_____
Hours during week days_____to_____
Hours on weekend_____to_____

__Discuss misunderstandings or termination of employment before ending employment.
__A beginning wage of _____ per hour.

We, the undersigned, indicate by the affixing of our signatures that we have read and understand the purpose and intent of this training agreement.

Student_____ Employer_____
signature signature

Address_____ Address_____

Parent_____ Teacher_____
signature signature

Address_____ Address_____

COORDINATION

The objectives of coordination in a cooperative occupational experience program is to correlate all the helpful agencies and factors that contribute to the successful training of students. Many people are confused concerning the actual duties of coordination. Some suppose that it only involves the visitation of training stations to see if the student-learners are working. An adequate job at coordination involves many duties. Some of the duties of the teacher-coordinator associated with coordination are:

1. Placement of students in satisfactory jobs
2. Follow-up of trainees after placement
3. Contacts with employers to establish cooperative relationships
4. Assistance in making analysis of various occupations
5. Assistance in developing training plans
6. Conferences with students
7. Contacts with consulting committees
8. Checking student-learner rotation on the job
9. Evaluating student progress
10. Contacts with employers, labor groups and school administrators regarding the functioning of the overall program
11. Relationships with vocational counselors

Coordinator's schedule

The amount of time a teacher-coordinator would devote to the coordination of cooperative occupational experience during the regular school day depends upon many factors. Sufficient time must be allotted during regular school hours for coordination. Since the teacher-coordinator has a vital role in student guidance, at least one period per day should be free for student conferences.

In order that the greatest benefit can be derived from the teacher-coordinator's activities, he should budget his time in such a manner that he will not be apt to overlook or neglect any one of his many duties. The teacher-coordinator can generally utilize his time most efficiently by planning a weekly schedule. This will not only enable him to discharge his duties in a more efficient manner, but will also establish a routine which will enable students, parents, school officials, teachers, and employers to contact him with a minimum of delay.

It is realized that the schedule will vary according to the time of year. For instance, at the beginning of the school year most of the time will be consumed conferring with employers, committee members, students and parents. Whereas, at the close of the year much more time will be spent at school completing student grades, records and reports.

Visiting Students at the Training Station

Periodic visits to training stations are necessary for the operation of an efficient program. They are valuable in correlating classroom instruction with on-the-job training, in making comparisons between actual work accomplished with the training plan content, and in evaluating student progress on the job.

Since each training situation differs, it is not practical to specify an exact number of visits to each training establishment. It is necessary to make more frequent visits some place of employment than to others. On the average, however, the teacher-coordinator should visit each training station every seven to ten days.

Following is a list of information to gather when a coordinator makes a supervisory visit.

1. Is the employer satisfied with the student?
2. What is the student's attitude toward his job, employer, fellow workers?
3. Is the student's progress in accord with the training plan?
4. Is adequate instruction being given on the job?
5. Is the student satisfied with his training?
6. What related instruction is urgently needed?

When supervising the student at the training station, the teacher-coordinator will undoubtedly be confronted with problems. Most of the problems arise due to a misunderstanding of the student's or employer's responsibilities. The coordinator can not eliminate the possibility of problems arising but he can reduce their numbers by making sure those concerned understand the objectives and procedures of the program.

The following is a list of difficulties which may arise:

1. The employer expects too much of a beginner.

2. Student-learners may claim the rate of pay is too low for work being performed.

3. Student-learners do not know what their duties or responsibilities are.

4. The students have friends visit them while on the job; thus, causing inattention to business.

5. The employer fails to provide adequate training.

6. The employer expects work from the student at irregular hours.

When supervising students, it is appropriate that the employer be made aware of the visit. It is a simple courtesy to clear the visit through the person in charge. If the employer wishes to discuss something personal about the student, it is best to hold the conference away from the student's work area.

The following is a list of "Do's" and "Don'ts" to follow when visiting training stations.

DO

1. Be alert. Observe what is going on without appearing to "snoop."

2. Be friendly with everyone without fraternizing.

3. Show an interest in the work in progress. Be curious and ask questions if the opportunity presents itself.

4. Make notes on items which may be used for a conference with the student or for study assignments.

5. Be quick to sense the employer's desire to terminate a conference.

DON'T

1. Don't call attention to errors, bad practices, unsafe conditions, and the like while visiting the student. Do so in private conference.

2. Don't try to demonstrate to a student how to do a job to which he is assigned.

3. Don't pose as an expert or authority on any matter concerning the work going on.

4. Don't request a conference with the employer when he is obviously too busy.

5. Don't engage in so-called "friendly" arguments on controversial questions.

6. Don't interrupt or interfere with the student's work.

7. Don't permit a visit to degenerate into a "bull" session with the employer or employees.

8. Don't appear to be loafing or just "passing the time of day."

9. Don't handle tools, machines, or equipment unless invited to do so.

Visitation Record

It is impossible to remember all the things observed while visiting students without recording them. This can be accomplished by recording specific points in a "little black book" or better yet by constructing a visitation record sheet. A visitation record sheet has the advantage that it can be placed in the students folder kept by the teacher-coordinator. This sheet should be filled out immediately after making the visit. If at all possible, avoid making written comments during the actual visit. An example of a teacher-coordinator's visitation record sheet is found on the following page.

_____High School
Vocational Agriculture Department

TEACHER-COORDINATOR'S VISITATION RECORD

Training Station_____Official Contact_____

Student_____

Date_____Time of Visit_____

Points to Observe	Comments
1. Conditions of the establishment	
2. Attitude of workers toward teacher-coordinator and trainee	
3. Specific operations in which trainee is engaged	
4. Immediate related subject matter needed	
5. Personal appearance of the trainee	
6. Apparent interest of trainee in work	
7. Apparent interest of employer in trainee	
8. On-the-job instruction being given	
9. Other Comments	

EVALUATION OF STUDENT PROGRESS

Evaluation of student progress is the joint responsibility of the teacher-coordinator and the employer. Since the on-the-job experience of students enrolled in cooperative occupational programs is a definite part of the total program, a means should be developed enabling the employer to rate the student-learner. The teacher-coordinator should have little trouble in determining the progress made by students in the related instruction at school; however, the rating of the on-the-job performance should involve the employer.

To help measure a student's progress on the job, it will be necessary to devise a rating form. In most instances, employers have had no experience in completing ratings of this type. They are not familar with the grading system used at school and therefore the form should be constructed so that the employer can easily understand it. Forms constructed enabling the employer to check selected traits or characteristics are the most accurate. It should be pointed out here that employers are frequently prone to rate students higher than their actual progress warrants. The teacher-coordinator should reconcile his own rating of the student for the purpose of arriving at an equitable grade consistent with local school policy.

There is no prescribed method for distributing and collecting rating forms. However, there is a definite advantage in taking the chart to the employer in person and, if possible, having him make his rating while the coordinator is present. This affords an opportunity for the two to discuss the strong and weak points of the student.

The sample rating form on the following page gives an indication of the way a form of this type can be constructed and the various items that may be used. Two forms constructed in a different manner are included in the Appendix. The teacher-coordinator should select those characteristics that are most applicable to his situation and then construct a rating form which is designed for the type of program he has in operation. A teacher-coordinator may get valuable advice from the consulting committee or from one of the employers in the formulation of a good rating scale.

_____High School
Vocational Agriculture Department

Trainee_____Date_____

Training Station_____

EVALUATION_____

EMPLOYER-TEACHER EVALUATION*

Instructions: Please rate the trainee on each of the competencies (abilities) listed below. Rate by placing a check mark in the appropriate column to the right of each item. Use the following key for ratings.

x -- No chance to observe
1 -- Below average
2 -- Average
3 -- Above average
4 -- Excellent
5 -- Superior

GENERAL COMPETENCIES (Abilities)	x	1	2	3	4	5
Accepts and carries out responsibilities						
Attitude toward work; use of work time						
Adaptability; ability to work under pressure						
Speed and accuracy of work						
Attentiveness to work being done						
Promptness in reporting for work						
Care of work space						
Care of materials and equipment						
Observing, imagination						
Attitude toward customers						
Attitude toward fellow workers, supervisors						
Personal appearance, grooming, fitness						
Initative						
Enthusiasm						
Cheerfulness, friendliness						
Courtesy, tact, diplomacy, manners						
Helpfulness						
Honesty, fairness, loyalty						
Maturity, poise, self-confidence						
Patience, self-control						
Sense of humor						
Selling ability, personality for selling						
Total						

* Adapted from the material for conducting pilot programs in Kentucky.

Continued from preceding page

JOB SKILLS	x	1	2	3	4	5
Knowledge of merchandise						
Mathematical ability						
Penmanship						
Speech, ability to convey ideas						
Stockkeeping ability, orderliness						
Use of good English						
Desire to serve farm people						
Like people, not afraid of people						
Fill orders						
Check incoming freight						
Mark merchandise for sale						
Use adding machine						
Writing sales slips						
Making sales						
TOTAL						

Rating for liabilities:

x -- No opportunity to observe
1 -- Not noticeable
2 -- Seldom noticed
3 -- Frequently noticed
4 -- Highly noticed
5 -- Pronounced

LIABILITIES	x	1	2	3	4	5
Annoying mannerisms						
Familiarity						
Making excuses						
Tendency to argue						
Tendency to bluff or "know it all"						
Tendency to complain						
TOTAL						

PLEASE FEEL FREE TO WRITE COMMENTS BELOW

Evaluated by_____

Position_____

INSTRUCTOR AND STUDENT RECORDS

Certain records are essential for any sound educational program. The need for the maintenance of adequate records is especially important in cooperative occupational experience programs. It is also important that a reporting system be developed that will keep local and state officials appraised of the program accomplishments.

Instructor Records

It is recommended that the teacher-coordinator keep the following records:

1. A permanent record for each student enrolled. See the example on pages 90 and 91.
2. Employers' ratings of students
3. Visitation reports
4. Copies of individual training plan
5. Copies of individual training agreement
6. Completed student records
7. Evaluation forms

Student Records

It is essential for students to keep a record of hours worked and wages earned. The publication entitled Records of Supervised Occupational Experience and Training in Vocational Agriculture published by the French-Bray Printing Company is designed so that it is applicable to students enrolled in cooperative occupational experience programs. Some teacher-coordinators may wish to construct their own individual record system. This would include a form for the weekly record of the students' activities and a form which records the hours worked and wages received by students during the training period. An example of a weekly student record form is found on page 92. An example of the student record of hours worked and wages received for the entire training period is found on page 93.

_____ High School
Vocational Agriculture Department

RECORD IN VOCATIONAL AGRICULTURE*
(Training in Off-Farm Agricultural Occupations)

Name_____
Last First Middle

Year (entering training)_____Age then_____Date of birth_____Address_____

Parent or Guardian_____Size of Family_____Owner/ Renter_____Acres in Farm_____Distance from school_____

Farming Programs Completed in Vocational Agriculture

First Year, 19___	Second Year, 19___	Third Year, 19___
Total labor earnings $_____	$_____	$_____

School Record

A. Subjects taken: Indicate by asterisk (*) subjects taken after enrolling in courses in agricultural occupations.

Freshman

Subject	C	GR

Days absent_____

Sophomore

Subject	C	GR

Days absent_____

Junior

Subject	C	GR

Days absent_____

Senior

Subject	C	GR

Days absent_____

* Adapted from the material for conducting pilot programs in off-farm agriculture in Kentucky.

Continued from preceding page

B. Scores on Regular School Test

1. IQ - - - - - _____
2. Reading - - - _____
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. _____ _____

C. Departmental Evaluations in Agricultural Occupations

AREA	At Beginning of Training Program		At End of Training Program	
	Date	Score or Evaluation	Date	Score or Evaluation
1. Employer Evaluation				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

Placement for Training

Year	Name & Address of Firm	Name of Supervisor	Total Hrs. Worked	Salary	Evaluation of Performance

Record After Leaving School

Year	Firm Employed by, Address	Job in Firm	Continued Education	Evaluation
19___				
19___				
19___				
19___				
19___				

_____ High School
Vocational Agriculture Department

WEEKLY ON-THE-JOB EXPERIENCE RECORD

Student_____Week # _____

Occupation_____Employer_____

Work Schedule

	M	T	W	Th	F	S
From						
To						

DATE (mo. and day)	TOTAL HOURS Hours	Min.	TYPE OF WORK DONE	ON-THE-JOB Instruction Received
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Total hours worked this week			Total hours worked to date_____ Total salary this week $_____ Total salary to date $_____	

COMMENTS:_____

_____

_____

_____

_____

_____ High School
Vocational Agriculture Department

RECORD OF EARNINGS AND HOURS EMPLOYED*

_____ Student

_____ School

_____ Agricultural Occupation

_____ Training Station

_____ Person Responsible for Training

_____ Length of Training Period (Weeks)

HOURS:	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
In School						
Training Center						

Beginning Wages: $_____per hour

Week and Mon. Date	Hours Em-ployed	Rate Per Hour	Total Wages	Week and Mon. Date	Hours Em-ployed	Rate Per Hour	Total Wages	Week and Mon. Date	Hours Em-ployed
				S A M	P L E				

NOTE: This form should be attached to the student's copy of the training plan and should be filled out at the end of each week.

* Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs

FOLLOW-UP OF STUDENTS UPON GRADUATION

Schools providing cooperative occupational experience programs should maintain an organized system of "following-up" students after graduation. This would include such activities as helping students locate permanent positions, keeping a record of students employment, and other pertinent information on all former students. One of the most important ways to evaluate the success of a vocational program is to determine the number of students who have entered the field of work for which they have been trained.

One of the easiest ways to maintain a record of former students is to construct a Follow-up Report. This form can become a part of the permanent record of each student. Many times the teacher-coordinator will be asked to give a recommendation for a student who was enrolled in the program. The Follow-up Report enables the teacher-coordinator to give a much more accurate recommendation than if he had to rely on his memory alone.

An example of a Follow-up Report is found on pages 96 and 97.

_____ High School
Vocational Agriculture Department

FOLLOW-UP REPORT*

Name_____
Last First Middle

Year (Entered Vo.Ag.)_____ Date of Birth_____ Place of Birth_____

Address_____ Parents or Guardian_____

Size of Farm_____ Owner/Renter_____ Direction and Distance from School_____

Brother or Sister_____ Address_____ Ph._____

Uncle or Aunt_____ Address_____ Ph._____

Close Friend (same age or older)_____ Address_____ Ph._____

Photo

Record of Vocational Agriculture Training

School Year	Name of Enterprise or Job Title	Scope	Hours of Labor	Total Receipts	Total Expenses	Profit or Loss or Payment for Labor	Leadership Activities	Responsibility or Participation	Scope Number Amount

* Adapted from the 1965 Workshop REport of the Agriculture Occupations Institute held at Oklahoma State University.

Continued from preceding page

Year	Earnings from Supervised Farm Training	Earnings from Other Supervised Training	Total Earnings from Supervised Training Programs	Investment in Farming Jan. 1	Net Worth Jan.1
New Student 19___19___					
Freshman 19___19___					
Sophomore 19___19___					
Junior 19___19___					
Senior 19___19___					

Record After Leaving High School

Year	Occupation	Type of Job	Continued Education			Leadership Activities	Responsibilities or Participation	Scope Amount Number
			Adult or Young Farmer	College Field	Other			

EVALUATION OF COOPERATIVE OCCUPATIONAL EXPERIENCE

All sound educational programs should be evaluated periodically. This will help determine whether or not the objectives of the program are being met and will also service as a basis for making adjustments in the program.

Who to Involve

Evaluation of cooperative occupational experience should involve those affected by the program. The following list indicates some of the personnel that should be involved in evaluating the program:

1. Present students. (See the sample appraisal form on page 100.)
2. Former students. (See the sample appraisal form on page 102.)
3. Employers. (See the sample appraisal form on page 104.)
4. Consulting committee members
5. School administrators
6. Local business men
7. State Vocational Supervisors

Items to Consider

The evaluation of cooperative occupation experience should include items considered in the evaluation of any educational program. The following specific questions can be asked to help the teacher-coordinator decide how successful his efforts have been:

1. Has a written local policy statement been developed to help administer the program?
2. Does the consulting committee meet regularly and make concrete contributions to the program?
3. Has a survey of the appropriate agricultural businesses and industries been conducted?

4. Have systematic and comprehensive efforts been made to promote the program to students, school personnel, and the public?

5. Has there been a well-planned and systematic method utilized in selecting training stations?

6. Has a definite plan for screening and selecting students that conforms to local school policy, satisfies cooperating employers and meets students needs been utilized?

7. Has a concerted effort been exerted by the teacher-coordinator to insure that the interest of both the student and the employer are considered when a student is placed for employment in a training station?

8. Has a written training plan which lists the learning activities the student should engage in at the training station been developed and has it served as a guide to the employer in offering on-the-job instruction and to the teacher-coordinator in planning and teaching related instruction?

9. Has a written agreement between the school and the employer been developed and does it list the specific responsibilities of the parties or individuals involved?

10. Have adequate and appropriate facilities and equipment been available?

11. Has sufficient instructional material been provided the teacher-coordinator and has reference material related to the occupations in which students are being trained been provided?

12. Has the teacher-coordinator used an organized and systematic plan for visiting students at their training stations?

13. Have employers provided the students with adequate instruction and supervision?

14. Have adequate records and reports been maintained?

15. Has achievement in both the classroom and on the job been considered in evaluating the students?

16. Has the school maintained an organized system for following-up students after graduation?

_____ High School
Vocational Agriculture Department

STUDENT APPRAISAL*

Your name_____Age_____Sex_____Grade_____Date_____

1. List the firm and occupation in which you received on-the-job training.

Name of Firm	Occupation	Months of Service
a._____	_____	_____
b._____	_____	_____
c._____	_____	_____
d._____	_____	_____

2. What are your plans for next year? (check one)
   a. High School_____
   b. Trade School_____
   c. College_____
   d. Employment_____
   e. Farming_____
   f. Others (list)_____

3. How valuable was the on-the-job training to you? Very valuable_____ Some value_____ Little value_____. How could it be improved?_____
   _____

4. How valuable was your related classroom instruction to the work you did? Very valuable_____Some value_____Little value_____. How could it be improved?_____

5. How important was the opportunity to earn money while you were still in school? Very important_____Some importance_____ Not important_____.

6. How could the on-the-job training have been made more valuable to you?_____
   _____

7. What topics covered in the related classroom instruction helped you the most?
   _____

8. What non-agricultural school subjects were of most benefit to you? _____
   _____

9. Did you receive enough assistance from your teacher-coordinator? Yes_____ No_____. How could he have helped more?_____

10. Did you receive enough assistance from your on-the-job employer-instructor? Yes_____ No ____. How could he have helped more?_____
    _____

* Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

Continued from preceding page

11. Could your other teachers at school have helped you prepare for the job or jobs in which you were employed? Yes_____ No_____ If yes, explain._____

_____

_____

12. Would you have continued high school without participating in this program? Yes_____ Probably_____ Probably not_____ No _____.

13. For which students would you recommend this program?

All students_____ Undecided students_____
College bound_____ Possible dropouts_____
Non-college bound_____ Others (list)_____

14. How would you recommend that students be selected for this program?

15. What changes would you make in the overall agricultural occupations program?

16. List ways the agricultural occupations training program has benefited you.

a._____
b._____
c._____
d._____
e._____
f._____

17. In what ways do you feel that agricultural occupations training program may help you in the future?

a._____
b._____
c._____
d._____
e._____
f._____

_____ High School
Vocational Agriculture Department

FORMER STUDENT APPRAISAL*

Name_____ Date_____

1. List the occupations in which you received training during your participation in the agricultural occupations program.

Name of Occupation	Name of Firm	Duration of On-the-Job Instruction (months)

2. List the jobs you have held since graduation from high school. (Include months of military service and unemployment)

Job Title	Name of Firm	Length of time (months)

3. Did agricultural occupational training help you to obtain a position or advance in any of the items listed below? Yes___No___ If yes, check those that apply.

( ) a full-time job
( ) a part-time job
( ) a military service rating
( ) further education

4. Did your agricultural occupations training help you in any of the educational advancements listed below? Yes___ No___ If yes, check those that apply.

( ) high school
( ) trade school
( ) junior college
( ) four-year college
( ) other (specify_____

5. Please rate your agricultural occupations on-the-job training experience:

	Excellent	Very Good	Good	Fair	Poor
a. On-the Job supervision					
b. Help received from on-the-job instruction					
c. Help received from other employees					
d. Variety of job experiences					
e. Opportunity for advancement					
f. Wages					
g. Working conditions					

* Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

Continued from preceding page

6. Please rate the value of your classroom-related instruction:

	Excellent	Very Good	Good	Fair	Poor
a. Value of textbook work					
b. Value of coordinator's counseling					
c. Value of other teachers' counseling					
d. Value of films					
e. Value of field trips					
f. Value of guest speakers					
g. Value of resource material					

7. Did on-the-job training interfer with other school activities? Yes___ No___
If yes, designate activities.

( ) Athletics ( ) Music
( ) Dramatics ( ) FFA
( ) Other _____

8. Would you recommend this type of agricultural occupations training to others?
Yes____ No____ No opinion____.

9. Are you now employed in the occupation for which you were trained? Yes___No___
If no, give your main reason for changing occupations. (check only one)

( ) No job available in my occupational field
( ) Developed new interest
( ) Disliked job
( ) Advanced to another level
( ) Never intended to work in they agri-related occupation
( ) Earn more money elsewhere
( ) Other reason (explain)_____

10. Please write any comments which you feel would help improve the agricultural occupations training program. _____

_____ High School
Vocational Agriculture Department

EMPLOYER APPRAISAL*

Date_____Firm_____

Name_____Name of Student Trainee_____

Length of training period given trainee_____.
(months)

1. Rate the agricultural occupations program, based on your own association with it. Outstanding_____ Good_____ Average_____ Poor_____

2. What do you believe to be the greatest stength of the agricultural occupations training program?_____
_____

3. What do you believe to be the greatest weakness of the program?_____
_____

4. Rate the total performance of your trainee in comparison with other beginning workers. Above average_____ Average_____ Below average_____

5. Did you have sufficient school cooperation? Yes_____ No_____.

6. Did you have sufficient contact with the teacher-coordinator? Yes____ No____

7. Do you feel the agricultural occupations program should remain a part of the school program? Yes_____ No_____

8. Do you plan to continue to participate in the agricultural occupations program? Yes_____ No_____

9. Has this program provided the experience you desire of an employee? Yes_____ No _____

10. Has the trainee received sufficient training to be hired full time by your firm if an opening existed? Yes_____ No_____

11. For what level of employment is this trainee now competent?_____
_____
(Job title or description)
_____

*Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

APPENDIX

APPENDIX A

SAMPLE POLICY STATEMENT

The following policies and procedures are an example of those that could be developed for the off-farm agricultural occupational experience phase of a vocational agriculture program. They were developed for a specific program in a specific community, and therefore they should be reviewed with this in mind.

Vocational Agriculture

OFF-FARM COOPERATIVE OCCUPATIONAL EXPERIENCE

1. Time for on-the-job instruction.

   a. Students will be permitted to work in training stations during regular school hours. Students will be released from classes to work in training stations a maximum of three regular school periods per day.

   b. The time spent in regular school classes and working at the training station will not exceed 40 hours per week.

   c. No students may work more than eight hours in any one given day, school time included.

2. Student age

   a. Students must be 16 years of age to enroll in the program.

   b. Students who will be 16 by the end of the first six weeks period may enroll upon recommendation of the vocational agriculture teacher and approval of the principal.

3. Student Selection

   a. Final selection of students will be made by the vocational agriculture teacher.

   b. Students must have completed one year of vocational agriculture prior to enrolling in off-farm occupational experience.

   c. Exception to the above policy will be made upon recommendation of the vocational agriculture teacher and approval of the principal.

d. All students interested in enrolling must complete all forms and tests as required by the guidance counselor and vocational-agriculture teacher.

4. Student Wages

a. All students enrolled in the program must receive compensation for their work while at the training stations.

b. The minimum wage any student may receive will be 65¢ per hour.

c. Students employed in occupations controlled by minimum wage laws must receive 75 percent of the federal minimum wage.

d. All students employed in firms covered by minimum wage laws must complete student-learner certificates.

5. Length of On-The-Job Instruction

a. All students must complete 350 hours of on-the-job instruction.

b. The length of the on-the-job instruction period shall be at least six months in duration.

6. Student Safety and Liability

a. All students enrolled in the program will be required to purchase school insurance.

b. Students are responsible for providing their own travel to the training station.

c. Training stations will be selected so as to provide maximum safety of the students.

d. All students will be covered by workmen's compensation and disability insurance.

7. Training Plans and Agreements

a. An individual training plan will be developed cooperatively by the teacher and the person responsible for training each student.

b. Training plans will list the on-the-job experiences to be gained at the training station and the related classroom instruction to be given.

c. A written agreement between the school and the employer, which lists specific responsbilities of the parties or individuals involved, will be developed for each student placed in a training station.

8. Length of Class Instruction

a. A minimum of 55 minutes per day will be provided for related classroom instruction.

9. Content or Related Instruction

a. Instruction applicable to all agricultural occupations will be provided.

b. Instruction applicable to each student's occupation will be provided in individual study or small group procedures.

c. Approximately 50 percent of the classroom instruction will be applicable to the individual student's occupation in which he is engaged.

10. Class Size

a. A separate class will be provided for related instruction when there are five or more students placed in cooperative occupational experience.

b. The maximum number of students to be enrolled in each class will be fifteen.

c. The maximum number of students placed in cooperative occupational experience under the direction of one full-time teacher will be 25.

11. Facilities and Instructional Materials

a. A separate classroom will be provided for offering related classroom instruction.

b. The vocational agriculture teacher-coordinator will be provided a separate office with telephone and adequate files for storage of records and teaching materials.

c. The school will provide students with individual study guides and other material required in the related classroom instruction.

d. Students must purchase materials that are required by individual employers and are not required of all the students in the class.

12. Supervision by the Employer

a. The employer or person designated by him will be responsible for training the student at his firm.

b. The employer will be responsible for providing the on-the-job experiences listed in the training plan.

c. The employer will provide the necessary instruction to enable the student to perform the skills indicated on the training plan.

13. Supervision by the Vocational Agriculture Teacher

a. The vocational agriculture teacher will make periodic visits to the training station to confer with the employer and observe the progress of the student.

b. The vocational agriculture teacher will work closely with the employer and/or person responsible for the student's training to determine the needed adjustments in the training plan and the related classroom instruction needed by the student.

14. Time and Travel Allowances for the Teacher

a. The vocational agriculture teacher-coordinator will be provided one-half of each school day for supervision and coordination.

b. All travel incurred in the performance of the teacher-coordinator's regular duties will be reimbursed at the rate of nine cents per mile.

c. The teacher-coordinator will be provided the regular school per diem rate for authorized trips outside the school district.

d. The teacher will file a monthly report, with the high school principal, of travel expenses.

15. Administrative Relationships

a. The vocational agriculture teacher-coordinator will make all requests to the high school principal. Upon approval by the high school principal, he may confer with the assistant superintendent or superintendent.

b. On-the-job instructors will report to the vocational agriculture teacher-coordinator.

16. Financing the Program

a. The school district will provide adequate financial support to the program.

b. The following will be budgeted annually for this phase of the program:

Books and references	$ 200.00
Equipment	500.00
Supplies	150.00
Teacher-coordinator's travel	300.00
Miscellaneous costs	100.00

17. Consulting Committee

a. A consulting committee will be organized for the off-farm agricultural occupations program.

b. The consulting committee will be equally representated by management and labor.

c. The committee will coordinate their activities with the vocational consulting committee.

18. Community Survey

a. A comprehensive survey of the agricultural firms and businesses in the community will be conducted every three years.

b. The vocational agriculture teacher-coordinator will conduct annual surveys to locate new training stations.

19. Promotion

a. PIanned and continuous efforts will be made to promote the program to students, school personnel, employers and the public.

b. The vocational agriculture teacher-coordinator will have the main responsibility for promotion of the program.

20. Selection of Training Stations

a. A well-planned and systematic method of selecting training station will be employed.

b. The vocational agriculture teacher-coordinator will have the responsibility for locating and selecting training stations.

21. Placement of Students in Training Stations

a. A concerted effort will be exerted by the vocational agricultural teacher-coordinator to insure that the interest of both students and employers is considered when a student is placed for employment in a training station.

b. Employers will interview students before placement.

22. School Credit for On-The-Job Experience

a. Students may earn a maximum of three units of credit toward graduation depending upon the extent and duration of the on-the-job experience.

b. Achievement and progress on both related classroom work and on-the-job experiences will be considered when grading students.

23. Records and Reports

a. In addition to the regular school records and reports, the vocational agriculture teacher-coordinator will maintain the following:

---Reports of supervisory visits to training stations.

---Placement records of former students.

---Individual students' earnings and hours worked while enrolled in the program.

---Individual training plans and agreements.

24. Student Follow-Up After Graduation

a. The school will maintain an organized system of following up students upon graduation from this program.

b. The vocational agriculture teacher-coordinator in cooperation with the guidance counselor will assume the responsibility for following up students.

25. Program Evaluation

a. A comprehensive evaluation of the off-farm agricultural occupational experience program will be conducted every three years.

APPENDIX B

_____ High School
Vocational Agriculture Department

AGRICULTURAL OCCUPATIONS SURVEY OF JOB OPPORTUNITIES AND TRAINING POSSIBILITIES*

Date_____Interviewer_____

School_____

I. Name of company_____Town (1)_____

Name of person interviewed_____

Position in the company (check one) (2)

___1. Owner ___3. Manager (hired) ___5. Sales Manager
___2. Owner-manager ___4. Personnel director ___6. Office Manager

II. Total number of employees (3) (Write in number)_____

III. Main business of the company (check one) (4)

___1. Retail sales only ___4. Service only ___7. Pruchasing-sales
___2. Wholesale-retail sales ___5. Sales-service ___8. Purchasing-service
___3. Wholesale sales only ___6. Purchasing only

IV. Years company has been in business (check one) (5)

___1. 1 - 3 years ___3. 7 - 9 years ___5. 13 - 15 years
___2. 4 - 6 years ___4. 10 - 12 years ___6. Over 15 years

V. Main products sold (or purchased) or major service rendered by the company (check the <u>most appropriate one</u>) (6)

___1. Sales only -- seed - feed - fertilizer - agricultural chemicals

___2. Sales only -- hardware - seed - fertilizer - agricultural chemicals

___3. Sales only -- seed - feed - hardware

___4. Sales and service -- seed - feed - fertilizer - chemicals - custom service

___5. Sales and service -- seed - fertilizer - horticulture plants - trimming - spraying

___6. Sales and service -- tractors - machinery - repair - custom service

___7. Sales and service -- tractors - machinery - repair - hardware - farm supplies

___8. Sales and purchasing -- seed - feed

___9. Sales, service, and purchasing -- seed - feed - seed cleaning - hardware

*Adapted from the material for conducting pilot programs in off-farm agricultural occupations in Kentucky.

Continued from preceding page

VI. Information on present jobs in the company - Job opportunities - Source of employees

INSTRUCTIONS: Use lines A and B for jobs requiring college degree; lines C and D for jobs requiring some college plus some special or technical education; lines E, F, G, and H for jobs requiring a high school education; and line I for jobs requiring eighth-grade education or less.

Information on Present Jobs

	Title of Job	Educational Requirements for Job Entry	Number of Employees	Level of Employment	Educational and Agricultural Background	Number of Job Opportunities (openings) Last Two Years	Number of Job Opportunities (openings) Next Two Years	Source of Employees
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
A.		6						
B.		6						
C.								
D.								
E.		3						
F.		3						
G.		3						
H.		3						
I.		2						

8. Code for Educational Requirements for Job Entry
1. None
2. Eighth grade
3. High school diploma
4. Technical or special education
5. Some college
6. College degree
7. Other

10. Code of Level of Employment
1. Professional
2. Technical
3. Proprietors and managers
4. Sales
5. Clerical
6. Skilled
7. Semi-skilled
8. Unskilled

11. Code of Educational and Agricultural Background
1. Farm background
2. High school graduate
3. HS graduate with vo-ag training
4. College graduate of agriculture
5. High school and college graduate in agriculture
6. Farm-reared and college graduate in agriculture
7. College graduate in agriculture and professional experience in agriculture

14. Code of Source of Employees
1. State employment service
2. College employment service
3. Contacting teacher of agriculture
4. Contacting county agent
5. Contacting high school principal
6. Advertising in newspaper
7. Recommendation of friend
8. Recommendation of present employee
9. Other

Continued from preceding page

VII. Extent employer of the business is willing to participate in a cooperative-training program for certain jobs in the firm.

	Title of Job		Number of Agriculture Students Willing to Help Train 196__ - 6__	196__ - 6__
A.	- Omit -	(6)		
B.	- Omit -	(6)		
C.		(4 or 5)		
D.		(4 or 5)		
E.		(3)		
F.		(3)		
G.		(3)		
H.		(3)		
I.	- Omit -	(2)		

APPENDIX C

_____ High School
Vocational Agriculture Department

COOPERATOR INTERVIEW FORM*

Name of Business_____

Address_____Phone Number_____

Type of Business_____

Manager's or Owner's Name_____

Type of jobs involved in conducting the business

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Training areas in which the student could be involved while employed

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

* Adapted from the Workshop Report for Preparing Students for Non-Farm Agricultural Occupations - Ohio State University.

Continued from preceding page

Number of students that could be placed in a cooperative training program

Title of Job	Number of Agriculture Students You are Willing to Help Train 196__-196__	196__-196__
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Job opportunities for high school graduates trained in agriculture

Title of Job	Number of Job Openings: Last Year	This Year	Next Two Years
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

APPENDIX D

_____ High School
Vocational Agriculture Department

APPLICATION FOR TRAINING IN
AN AGRICULTURAL OCCUPATION*

Date_____

Name_____Address_____Age_____

Name of father_____Occupation_____

If occupation is farming, size of farm_____. Owner-renter_____
(acres)

Years of vocational agriculture completed, including present semester_____

Present farming program in vocational agriculture_____

_____

List farm equipment you can operate_____

_____

What are you interested in doing after you complete high school (farming, attending college, working in agri-business, working in a city)?_____

_____

I hereby apply for training in an agricultural occupation other than farming during my last year in high school. I understand that the training program includes, in addition to the classroom work, a minimum of 100 hours of work experience in a retail farm business which sells or renders service to farmers.

Signed_____
(Student)

Parent Approval for Training

I approve of my son's receiving training in his last year of high school, in an agricultural occupation other than farming. I understand that his training, in addition to his classroom work, will include placement for work experience in a retail farm business.

Signed_____
(Parent)

* Adapted from the material for conducting pilot programs in off-farm agricultural occupations in Kentucky.

APPENDIX E

_____ High School

Vocational Agriculture Department

Name _____

Date _____

Score _____

SELF-ANALYSIS OF INTEREST IN SALES WORK*

Which of these statements describes you? If the answer is "yes," draw a circle around the "Y." If the answer is "no," draw a circle around the "N." It is in your own interest to be as fair and accurate as possible in your answers.

1. I'd rather deal with things than with people.....Y N
2. I think mathematics is a very interesting subject.....Y N
3. I like talking to strangers.....Y N
4. I dislike group activities.....Y N
5. People find it easy to approach me.....Y N
6. I would like to do research in science.....Y N
7. I'd enjoy raising money for a worthy cause.....Y N
8. I prefer to be by myself.....Y N
9. I've more than average desire to own things.....Y N
10. I would like to design farm implements.....Y N
11. I would like to attend conventions.....Y N
12. I've more than average mechanical ingenuity.....Y N

---

*Adapted from the material for conducting pilot programs in off-farm agricultural occupations in Kentucky.

13. I dislike people who borrow things.....Y N

14. I would like to be a mechanical engineer.....Y N

15. I like people of all nationalities in my community.....Y N

16. I'd like to work a 40-hour week.....Y N

17. I would enjoy making speeches.....Y N

18. I'd like to be head of a research department.....Y N

19. I like to keep meeting new people.....Y N

20. I enjoy bargaining when I'm buying something.....Y N

21. I'd like to develop some new scientific theories.....Y N

22. I'd like a straight salary in my life work.....Y N

23. I prefer only a few really intimate friends.....Y N

24. I'm better than average at judging values.....Y N

25. I like to get other people's viewpoints.....Y N

KEY FOR SELF-EVALUATION IN SALES WORK

Your answers indicate interests or characteristics favorable to success in sales work. To find your total score, add up the number of your answers that agree with those below. If your score is 16 or above, your chances of success in the selling field are favorable. A score below 16 indicates that you probably would have better chances of success in some other field.

1. ____ N
2. ____ N
3. Y ____
4. ____ N
5. Y ____
6. ____ N
7. Y ____
8. ____ N
9. Y ____
10. ____ N
11. Y ____
12. ____ N
13. Y ____
14. ____ N
15. Y ____
16. ____ N
17. Y ____
18. ____ N
19. Y ____

20. Y ____

21. ____ N

22. ____ N

23. ____ N

24. Y ____

25. Y ____

APPENDIX F

STANDARDS AND PROVISIONS FOR STUDENT-LEARNER CERTIFICATES*

The following section is taken from the information guide and instructions for completing applications for student-learner certificates and from title 29, part 520-Employment of Student-Learners.

Under regulations established pursuant to both the Fair Labor Standards Act and the Walsh-Healey Public Contracts Act, student-learners may be employed at wages below the minimum wages established under those acts in accordance with certificates issued by the Wage and Hour and Public Contracts Divisions of the U. S. Department of Labor. The employment of student-learners at special minimum wages is subject to Regulations, part 520, issued under authority of section 14 of the Fair Labor Standards Act. Section 50-201.1102 of the general regulations under the Walsh-Healey Public Contracts Act recognizes the standards and procedures of Regulations, part 520, as applicable to the issuance of certificates permitting employment of student-learners at special minimum wages in the performance of government contracts.

1. Coverage

The Fair Labor Standards Act applies to all employees (including student-learners) engaged in interstate commerce or in the production of goods for interstate commerce, including any closely related process or occupation directly essential to such production, unless specifically exempt by some provisions of the act. The act also applies to employees (including student-learners) who are not themselves engaged in or producing goods for commerce but who are employed in certain large enterprises engaged in commerce or in the production of goods for commerce. Popularly known as the Federal Wage and Hour Law, this act establishes minimum wage, child-labor, and maximum hours and overtime standards for employment subject to its provisions.

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*Adapted from the Arkansas Manual on Supervised Training for Agricultural Employment.

The Walsh-Healey Public Contracts Act applies in general to all contracts entered into by the government for the manufacture or furnishing of materials, supplies, articles or equipment in any amount in excess of $10,000. This act requires the payment to employees engaged in the performance of such contracts of not less than the minimum wage determined by the Secretary of Labor to be prevailing for the industry. In addition, the Public Contracts Act contains special provisions for safety and health standards, restrictions against the use of child labor and convict labor, and special provisions for the payment of overtime for work subject to the act.

Special situations which may arise under these two acts are explained in Section 2 of "On Completing Student-Learner Certificates. The Wage and Hour and Public Contracts Divisions have available upon request bulletins on the coverage of these acts. If in doubt as to whether either or both of these acts apply to a particular type of employment, a letter explaining your situation should be sent to the regional office of the division serving your area.

2. Who Is A Student-Learner?

As defined in the regulation, a student-learner is a student who is receiving instruction in an accredited school, college or university, and who is employed on a part-time basis pursuant to a bonafide vocational training program administered by his school. A bonafide vocational training program is one authorized and approved by a State Board of Vocational Education or another recognized educational body. These programs must provide for part-time employment training supplemented by and integrated with a definitely organized plan of instruction designed to teach technical knowledge and related industrial information which is given as a regular part of the student-learner's course of study in the educational institution he attends. Such programs may be either retail and service occupations or in trade and industrial skills.

3. Who May File?

Whenever it is believed necessary in order to prevent curtailment of employment opportunities, application may be made for a certificate authorizing an employer to pay student-learners special minimum wages below the applicable statutory (or wage order) minimum wage under the Fair Labor Standards Act or below a minimum wage determination under the Walsh-Healey Public Contracts Act. A separate application on official forms furnished for the purpose must be filed by the employer for each

such student-learner. Parts of this application are best completed by a school official, other parts by the employer. The appropriate school official, the employer, and the student-learner must sign the application. Before a certificate can be issued, the conditions specified in section 520.5 of the regulation must be met. (See Section 4 on "Completing Student-Learner Certificates" for these conditions.)

4. Where to File

Applications must be made on official forms supplied by the Divisions. The original of the completed application must be filed with the regional office of these Divisions serving your area. A list of the regional offices serving the various states is found in the Appendix. A copy must be retained in the employer's files. Additional copies may be made available to school officials and to the student-learner.

5. When To File

Applications should be filed 15 to 30 days in advance of the date the student-learner begins his employment so that the Divisions can take action on the application before employment begins. Certificates Cannot Be Issued Retroactively.

When the student's employment opportunity might be lost by delay in obtaining a certificate, section 520.6 (c) (2) of the regulation establishes a procedure for a temporary authorization. A description of this procedure appears at the top of the face of the application.

6. Age and Proof of Age

Minors under 16 years of age are not eligible for student-learner certificates. Furthermore, in occupations declared to be hazardous by the Secretary of Labor, the student-learner must be at least 18 years of age. (Hazardous Occupations Nos. 5, 8, 10, 12, 14, 16, and 17, permit student-learner employment at 16 and 17 years of age under certain specified conditions.) For information concerning child-labor provisions of the Fair Labor Standards Act, see Child-Labor Bulletin No. 101.

For employment subject to the Walsh-Healey Public Contracts Act, male employees must be at least 16 years old and female employees must be at least 18 years old.

In addition to entering the student-learner's birthdate in item 3 of the application, the employer should obtain and keep on file an employment or age certificate showing the student-learner to be at least the minimum age for the occupation in which he is employed. In 45 states, the District of Columbia, and Puerto Rico, state employment and age certificates are accepted as proof of age under the child-labor provisions of the Fair Labor Standards Act. (Such certificates also provide assurance that the employment is in compliance with the requirements of the state child-labor law.) In four states, Idaho, Mississippi, South Carolina, and Texas, where state age and employment certificates are not available, federal certificates of age may be obtained within the state from the Wage and Hour and Public Contracts Divisions. Special arrangements have been made in Guam and Alaska. For information concerning proof of age in these areas consult the nearest office of the Wage and Hour and Public Contracts Division.

7. Period of Employment Training at Special Minimum Wages

A certificate may be issued only for that portion of the employment training period for which special minimum wages below the minimum wages under the Fair Labor Standards Act or the Walsh-Healey Public Contracts Act are necessary. This period may not exceed the length of one school year unless a longer period is found to be justified by extraordinary circumstances which must be explained in detail at the time of the application. No certificate shall authorize employment training beyond the date of graduation of the student-learner.

Employment training at special minimum wage rates during the summer vacation period will not generally be authorized. However, in exceptional cases summer employment training may be authorized when it is an integral part of the vocational training program. Requests for summer vacation employment must be accompanied by a statement explaining the extraordinary circumstances justifying this employment, including the number of hours per week for which special minimum wages are requested.

In item 16 of the application, show only the number of weeks of employment during which special minimum wages will be paid. The beginning and ending dates of employment shown in items 8 and 9 should coincide with this period.

8. Hours of Work and School Instruction

The term "hours of school instruction" applies to all hours spent by the student-learner in actual classes of school instruction and does not include school hours spent in study hall, homeroom, and activity periods for which no academic credit is given.

The combined hours of school instruction and employment training authorized under a certificate may not exceed 40 hours a week unless justified by extraordinary circumstances. Such extraordinary circumstances must be explained in detail in a statement submitted with the application. Hours at special minimum wages in addition to those authorized on a certificate may be worked provided that the total hours worked do not exceed:

(a) 8 hours on any school day when school is not in session;

(b) 40 hours in any week during the school term when school is not in session for the entire week.

The employer shall note in his records the number of such additional hours and that they were worked because school was not in session. A Student-Learner May Not Be Employed In Any Week At Special Minimum Wage Rates For Hours In Addition To Those Authorized In The Paragraph Above.

In item 17 of the application, show only those hours of employment during a week for which you intend to pay wages below the wage determination minimum applicable under the Public Contracts Act.

9. Wage Rates

The hourly wage rate shall be not less than 75 percent of the applicable statutory minimum wage under the Fair Labor Standards Act. It is suggested that consideration be given to the payment of a progressive wage schedule, particularly if a full school year of employment training at special minimum wages is requested. If a progressive wage schedule is proposed, the special minimum starting rate must be not less than 75 percent of the applicable statutory minimum. In item 18, show only those wages which are below the applicable minimum wage under the Fair Labor Standards Act. (This paragraph also applies to work subject to Public Contracts Act wage determinations.) See Section 2 below.

Completing Student-Learner Certificates

1. Certificates

The original copy of the student-learner certificate will be mailed directly to the employer. Two copies will be mailed to the appropriate school official, one to be retained for his records and the other to be presented to the student-learner. Applications Which Do Not Contain All Requested Information May Be Returned For Completion Before Action Is Taken. Student-learner certificates can be issued with a minimum of delay where the application provides the details requested. For additional information or application forms, communicate with the regional office of these Divisions which serves your area.

2. Special Situations Under The Walsh-Healey Public Contracts Act

The general provisions of this act are explained in the introduction to this guide. The general regulations under the Public Contracts Act permit the employment of student-learners at wages below prevailing minimum wage determinations made under this act in accordance with the same standards and procedures as are prescribed for their employment at wages below the minimum wage applicable under the Fair Labor Standards Act. The provisions of Regulations, part 520 and the instructions in this guide apply to student-learners employed in the performance of government contracts subject to the Public Contracts Act.

An employer who holds or who obtains a student-learner certificate issued in order to prevent curtailment of opportunities for employment under the Fair Labor Standards Act may employ the named student-learner in the performance of a government contract subject to a minimum wage determination under the Public Contracts Act may, upon proper application be issued a certificate authorizing a special minimum wage rate not less than 75 percent of the minimum wage determination applicable to the contract being performed. Employment under such certificates is subject to the standards and procedures of Regulations, part 520.

3. Compliance

Certificates may not be issued if there are serious outstanding violations of a student-learner certificate previously issued to the employer, or if there are serious violations of other provisions of the Fair Labor Standards Act by the employer which provide reasonable grounds to conclude that the terms of the certificate would not be complied with, if issued. Moreover, no certificate permitting a wage lower than the statutory minimum under the Fair Labor Standards Act or a Public Contracts Act

minimum wage determination will excuse non-compliance with the child-labor, overtime, or other provisions of these acts or the regulations issued thereunder.

A certificate may be withdrawn if it is no longer necessary to prevent curtailment of opportunities for employment or if the employer fails to comply with the limitations in the certificate or otherwise violates the act.

4. Conditions Governing Issuance of Special Student-Learner Certificates

The following conditions must be satisfied before a special certificate may be issued authorizing the employment of a student-learner at subminimum wages:

(a) Any training program under which the student-learner will be employed must be a bonafide vocational training program;

(b) The employment of the student-learner at subminimum wages authorized by the special certificate must be necessary to prevent curtailment of opportunities for employment;

(c) The student-learner must be at least 16 years of age (or older as may be required pursuant to paragraph (d) of this sub-section);

(d) The student-learner must be at least 18 years of age if he is to be employed in any activity prohibited by virtue of a hazardous occupation order of the Secretary of Labor; (See Hazardous Occupations.)

(e) The occupation for which the student-learner is receiving preparatory training must require a sufficient degree of skill to necessitate a substantial learning period;

(f) The training must not be for the purpose of acquiring manual dexterity and high production speed in repetitive operations;

(g) The employment of a student-learner must not have the effect of displacing a worker employed in the establishment;

(h) The employment of the student-learners at subminimum wages must not tend to impair or depress the wage rates or working standards established for experienced workers for work of a like or comparable character;

(i) The occupational needs of the community or industry warrant the training of student-learners;

(j) There are no serious outstanding violations of the provisions of a student-learner certificate previously issued to the employer, or serious violations of any other provisions of the Fair Labor Standards Act of 1938, as amended, by the employer which provide reasonable grounds to conclude that the terms of the certificate would not be complied with, if issued;

(k) The issuance of such a certificate would not tend to prevent the development of apprenticeship in accordance with the regulations applicable thereto or would not impair established apprenticeship standards in the occupation or industry involved;

(l) The number of student-learners to be employed in one establishment must not be more than a small proportion of its working force;

(m) The special minimum wage rate shall be not less than 75 percent of the applicable minimum under section 6 of the Act;

(n) No special student-learner certificate may be issued retroactively.

5. Employment Records To Be Kept

In addition to any other records required under the record-keeping regulations, the employer shall keep the following records specifically relating to student-learners employed at subminimum wage rates:

(a) Any worker employed as a student-learner shall be identified as such on the pay roll records, with each student-learner's occupation and rate of pay being shown;

(b) The employer's copy of the application, which is serving as a temporary authorization must be available at all times for inspection for a period of 3 years from the last date of employment of the student-learner;

(c) Notations should be made in the employer's records when additional hours are worked by reason of school not being in session.

6. Duration of Certificates

A special student-learner certificate may be issued for a period not to exceed the length of one school year unless a longer period is found to be justified by extraordinary circumstances. No certificate shall authorize employment training beyond the date of graduation.

APPENDIX G

LOCATION OF DEPARTMENT OF LABOR REGIONAL AND FIELD OFFICES

STATE	REGIONAL OFFICE	FIELD OFFICE
Alabama	Birmingham	Birmingham, Mobile, Montgomery
Alaska	San Francisco, Calif.	Anchorage*
Arizona	San Francisco, Calif.	Salt Lake City, Utah
Arkansas	Birmingham, Ala.	Little Rock
California	San Francisco	Hollywood, Long Beach, Los Angeles, Oakland, San Francisco, Whittier
Colorado	Kansas City, Mo.	Denver
Connecticut	Boston, Mass.	Hartford
Delaware	Chambersburg, Pa.	Philadelphia, Pa.
District of Columbia	Chambersburg, Pa.	College Park, Md.
Florida	Atlanta, Ga.	Jacksonville, Miami, Tampa
Georgia	Atlanta	Atlanta, Columbus, Hapeville, Savannah
Hawaii	San Francisco, Calif.	Honolulu
Idaho	San Francisco, Calif.	Portland, Oregon
Illinois	Chicago	Chicago, Springfield
Indiana	Chicago, Ill.	Indianapolis, South Bend
Iowa	Kansas City, Mo.	Des Moines
Kansas	Kansas City, Mo.	Wichita
Kentucky	Nashville, Tenn.	Lexington, Louisville

State	Regional Office	Field Office
Louisiana	Birmingham, Ala.	Baton Rouge, New Orleans, Shreveport
Maine	Boston, Mass.	Portland
Maryland	Chambersburg, Pa.	Baltimore, College Park
Massachusetts	Boston	Boston, Springfield
Michigan	Cleveland, Ohio	Detroit, Grand Rapids
Minnesota	Chicago, Ill.	Minneapolis
Mississippi	Birmingham, Ala.	Jackson
Missouri	Kansas City	Kansas City, St. Louis
Montana	San Francisco, Calif.	Oakland, Calif.
Nebraska	Kansas City, Mo.	Omaha
Nevada	San Francisco, Calif.	Oakland, Calif.
New Hampshire	Boston, Mass.	Manchester
New Jersey	New York, N. Y.	Newark, Paterson, Trenton
New Mexico	Dallas, Tex.	Albuquerque
New York	New York	Bronx, Brooklyn, Buffalo, Jamaica, New York, Syracuse
North Carolina	Atlanta, Ga.	Raleigh
North Dakota	Kansas City, Mo.	Sioux Falls, S. Dak.
Ohio	Cleveland	Cincinnati, Cleveland, Columbus
Oklahoma	Dallas, Tex.	Oklahoma City, Tulsa
Oregon	San Francisco, Calif.	Portland
Pennsylvania	Chambersburg	Harrisburg, McKeesport, Philadelphia, Pittsburgh, Wilkes-Barre

Rhode Island	Boston, Mass.	Providence
South Carolina	Atlanta, Ga.	Columbia
South Dakota	Kansas City, Mo.	Sioux Falls
Tennessee	Nashville	Knoxville, Memphis, Nashville
Texas	Dallas	Corpus Christi, Dallas, El Paso, Fort Worth, Waco, Houston, San Antonio
Utah	San Francisco, Calif.	Salt Lake City
Vermont	Boston, Mass.	Springfield, Mass.
Virginia	Nashville, Tenn.	Richmond, Roanoke
Washington	San Francisco, Calif.	Seattle
West Virginia	Nashville, Tenn.	Charleston, Clarksburg
Wisconsin	Chicago, Ill.	Madison, Milwaukee
Wyoming	Kansas City, Mo.	Denver, Colo.

APPENDIX H

_____High School
Vocational Agriculture Department

TRAINING AGREEMENT FOR AGRICULTURAL OCCUPATIONS

This establishes an agreement between _____
(School)
and _____ regarding the employment of
(Training Station)
_____in_____
(Student) (Occupation)

The provisions of this agreement are:

1. The on-the-job training will be in charge of_____
(on-the-job)
_____ for a period of _____ weeks.
instructor)
2. The student will begin training on _____ at the
(date)
beginning wage of _____.
3. The student will work at least _____ hours per week in the Training Station.
4. The school shall be responsible for providing technical and related instruction.
5. The student shall progress from job to job in order to gain experience in all phases of the occupation listed in the Training Plan.
6. The schedule of compensation shall be fixed by the training station and shall be paid the salary of others with the same experience and ability.
7. The agricultural occupations teacher-coordinator will assist with the adjustment of any problems.
8. The student agrees to perform his duties at the training station and in school diligently and faithfully.
9. The student shall have the same status as other employees of the training station. The student's training may be terminated for the same reason as that any other employee's job may be terminated.
10. No regular employee shall be laid off to make place for a trainee.
11. If the student drops out of school, he will not be employed by the training station for a period of at least 90 days.

We the undersigned are familiar with, and agree to the above provisions.

_____	_____
(Student)	(Employer)
_____	_____
(Parent or Guardian)	(Agricultural Occupations Teacher-Coordinator)
_____	_____
(School Administrator)	(Chairman, Advisory Committee)

* Adapted from the Colorado Handbook for Developing and Operating Agricultural Occupations Programs.

APPENDIX I

_____ High School
Vocational Agriculture Department

EMPLOYER EVALUATION*

TRAINEE_____Date_____

Training Station_____

Basis for rating:

0 -- Unsatisfactory
1 -- Below Average
2 -- Average
3 -- Above Average
4 -- Superior
X -- No chance to observe

PERSONAL QUALITIES:	0	1	2	3	4	X
Ability to get along with others						
Adaptability, ability to work under pressure						
Aggressiveness, forcefulness						
Attitude, enthusiasm, interest						
Cheerfulness, friendliness						
Courtesty, manners						
Dependability, punctuality, reliability						
Determination, persistence, following through						
Efficiency, thoroughness						
Following instructions, cooperation, judgment						
Helpfulness, thoughtfulness						
Honesty, fairness, loyalty						
Industriousness, using time wisely						
Initiative, observing, imaginative						
Maturity, poise, self-confidence						
Patience, self-control, sense of humor						
Personal appearance, grooming, fitness						
Selling ability, personality for selling						

JOB SKILLS:						
Knowledge of merchandise and jobs performed						
Mathematical ability						
Penmanship						
Speech, ability to convey ideas						
Use of good English						

Rating for liabilities:

0 -- Does not possess
1 -- Not noticeable
2 -- Seldom notices
3 -- Frequently noticed
4 -- Highly noticed

LIABILITIES:	0	1	2	3	4
Annoying mannerisms					
Familiarity					
Giving excuses					
Tendency to argue					
Tendency to complain					

PLEASE FEEL FREE TO WRITE ANY COMMENTS ON THE BACK OF THIS SHEET.

Rated by_____

Position_____

* Adapted from the form used by James McMullen, Vocational Agriculture teacher, Indiana, Pennsylvania.

APPENDIX J

EMPLOYER'S PERIODIC RATING FOR STUDENTS IN AGRICULTURAL OCCUPATIONS*

Student_____ Date_____

Training Station_____ Rated by_____

DIRECTIONS: Please circle one of the numbers (1 through 10) opposite each of the five factors in the left-hand column which you think most nearly indicates the trainees rating for the past six-weeks school period.

FACTORS	UNSATISFACTORY	BELOW AVERAGE	AVERAGE	ABOVE AVERAGE	EXCELLENT
Progress	1 2	3 4	5 6	7 8	9 10
Has he advanced in skill and knowledge during the past six weeks?	Has made almost no progress.	Has progressed in only a few phases of his training.	Has made average progress in his training.	Has advanced beyond expectations.	Exceptional progress made in skills and knowledge
Initiative	1 2	3 4	5 6	7 8	9 10
Can he originate and carry out his ideas?	Has to be told everything to do.	Seldom goes ahead on his own.	Goes ahead on routine matters.	Frequently looks for additional work to do.	Always finding jobs that need to be done.
Reliability	1 2	3 4	5 6	7 8	9 10
Can the students be depended upon in his work?	Can seldom be relied upon.	Frequently fails to come through.	Can be relied upon in most cases.	Only occasionally fails to come through.	Can be relied upon implicitly in all matters.
Work Attitude	1 2	3 4	5 6	7 8	9 10
Does he have a good attitude toward his work?	Bored; shows little enthusiasm.	Rationalizes his shortcomings and mistakes.	Normally enthusiastic about his work.	Tries to improve his work in most cases.	Is always alert to findings ways of improving.
Cooperation	1 2	3 4	5 6	7 8	9 10
Does he work well with others?	Always wants his own way: is hard-headed.	Hard for others to work with.	Usually congenial and easy to work with.	Works well with his associates.	Cooperates fully in all matters.

Additional Remarks

* Adapted from the form used by Don Brock, Teacher-Coordinator, Topeka, Kansas.

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Personnel Needs And Supply In Vocational Technical Education Above Local Teacher Level

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Personnel Needs And Supply In Vocational Technical Education Above Local Teacher Level

As vocational education programs expand and as other programs are initiated, the need for personnel in supervisory, research, teacher training, and subject matter positions expands concomitantly. Many are predicting that the supply of trained personnel at all levels may be the most critical limiting factor in meeting the new demands now facing vocational education. If this phase of our educational program is to meet the needs of the future, we must have men and women with the education and background in occupational training so essential to successful teaching.

The Vocational Research Coordinating Unit of Oklahoma has attempted to determine these personnel needs at the state and district level and the potential supply of graduates above the baccalaureate level. Questionnaires were sent to each state department of vocational education and to teacher training departments in the various colleges and universities. The instrument covering present and immediate future personnel needs (September 1, 1966) was sent to both state departments and teacher training departments on the theory that each department might be aware of different needs at the level of supervisor, researcher, teacher trainer, and subject matter specialist. An additional instrument was sent to teacher training departments to ascertain the number of graduates at the Masters and Doctorate levels.

Twenty-nine state departments of vocational education (54 percent) and 179 teacher training departments (36 percent) representing 111 institutions responded to the request for information. Replies from within each state were matched in order that no duplication of numbers would be reported. (A list of these departments will be found at the end of this

TABLE I

Vocational Technical Education Personnel Needs Excluding Teachers As Indicated by 29 State Departments and 179 Teacher Training Departments

	Supervisor	Researcher	Teacher Trainer	Subject Matter Specialist	Total
Agricultural Education	26	17	35	25	103
Distributive Education	22	6	23	20	71
Distributive Occupations	9	4	4	14	31
Cooperative Office Education	84	16	68	49	217
Trade & Industrial Education	70	14	57	78	219
Vocational Home Economics	42	20	67	51	180
Technical Education	32	11	21	32	96
Health Occupations	27	4	11	36	78
Vocational Counselors	46	7	40	27	120
Directors, Area Vocational Schools	—	—	—	—	54
Local or County Vocational Directors	—	—	—	—	78
Others	17	5	4	3	29
Total	375	104	330	335	1276

report.) The figures reported in this publication reflect the personnel needs as seen by the responding departments and no attempt was made to infer what the national situation is.

This study shows that in general the supply of graduates above the baccalaureate level would fill 50 percent of the demand for vocational educational personnel at the state and district levels, if all were available for these vacancies. When we consider that many of those receiving Masters degrees will go back into or remain in teaching, the situation becomes even more acute.

PERSONNEL NEEDS

Summarization of the information pertaining to personnel needs (Table I) received from 54 percent of the state departments of vocational education and 36 percent of the teacher training departments indicates a total of 1,276 individuals will be needed as supervisors, researchers, teacher trainers, and subject matter specialists. One hundred thirty-two of these will be directors of area vocational technical schools or local or county vocational directors. The large number of subject matter specialists needed would indicate that the states are making a major effort to supply teachers with the information they need to keep current in their teaching. The need for researchers is probably influenced somewhat by the fact that many teacher training personnel will be assigned research work for a portion of their time.

PERSONNEL SUPPLY

The 179 Vocational Teacher Training Departments which responded to the questionnaire on potential employees indicated that they will graduate 538 masters candidates and 64 doctoral candidates in the spring and summer of 1966 (Table II). The staffs of the institutions reporting these figures were careful to point out that many of these graduates, especially those receiving the masters degree, were either presently teaching in secondary school vocational programs or would return to such a position upon completion of their degree. This means, of course, that they will not be available to alleviate the shortage which exists at the state level in state departments of vocational education and colleges and universities. No service area of vocational education is preparing personnel in numbers which the study indicates they will be needed; however, the most severe shortage seems to be in areas of Cooperative Office Education, Trade and Industrial Education, and Technical Education where the total number of graduates would supply less than one-third of the personnel needed.

TABLE II

Vocational Technical Education Graduates Above Baccalaureate As Indicated By 179 Teacher Training Departments

	No. Teacher Ed. Depts. Reporting	Masters Degree Graduates	Doctoral Degree Graduates
Agricultural Education	33	139	22
Distributive Education	16	57	3
Distributive Occupations	7	6	0
Cooperative Office Education	15	62	1
Trade & Industrial Education	23	73	8
Vocational Home Economics	68	180	23
Technical Education	11	21	7
Health Occupations	6	0	0
Total	179	538	64

SOME CONCLUSIONS AND OBSERVATIONS

From the figures presented in this report it can be concluded that:

1. **There is presently an extreme shortage of qualified personnel for positions of leadership in vocational education.**
2. **This shortage will become more severe as present programs are expanded and new programs are added.**
3. **Some program of leadership development and training must be initiated if vocational education is to fulfill the commitment of the Vocational Education Act of 1963.**

While not a part of the research for this report, the author would like to make the following observations:

1. **The greatest potential source of leadership personnel for vocational education is in the pool of well-qualified, experienced teachers of vocational education.**
2. **A greatly expanded program of assistance to masters and doctoral degree candidates would help to move our better teachers into roles of greater responsibility on the state and national level.**
3. **An intensified recruitment program by colleges and universities and by state departments of vocational education should be initiated to increase the supply of trainees for vocational education positions at the local and state level.**

State Departments of Vocational Education included in the study of "Personnel Needs and Supply in Vocational Technical Education Above Local Teacher Level"

Arizona
Connecticut
Georgia
Idaho
Indiana
Iowa
Louisiana
Maine
Michigan
Missouri
Mississippi
Nebraska
Nevada
New Hampshire
New Mexico
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Puerto Rico
Rhode Island
Tennessee
Utah
Virginia
West Virginia
Wisconsin
Wyoming

Teacher Training Departments in the following colleges and universities included in the study of "Personnel Needs and Supply in Vocational Technical Education Above Local Teacher Level"

Alabama
- Auburn University
- Tuskegee Institute
- University of Alabama

Alaska
- University of Alaska

Arizona
- University of Arizona

Arkansas
- Arkansas A & M College
- Arkansas State Teachers College
- Henderson State Teachers College
- Ouachita Baptist College

California
- Pepperdine College
- University of California
- Whittier College

Colorado
- Colorado State University

Delaware
- University of Delaware

Florida
- Florida A & M University
- Florida State University
- University of Miami

Georgia
- Georgia Southern College
- University of Georgia

Idaho
- University of Idaho

Illinois
- Eastern Illinois University
- Illinois State University
- Northern Illinois University
- Southern Illinois University
- University of Illinois

Indiana
- Ball State Teachers College
- Indiana University
- Purdue University

Iowa
- Iowa State University

Kansas
- Kansas State College of Pittsburg
- Kansas State Teachers College
- Kansas State University
- University of Kansas

Kentucky
- Eastern Kentucky State College
- University of Kentucky

Louisiana
- Louisiana State University
- Southern University of Louisiana

Maryland
- Hood College
- University of Maryland

Massachusetts
- University of Massachusetts

Michigan
- Eastern Michigan University
- Michigan State University
- Northern Michigan University
- University of Michigan
- Western Michigan University

Minnesota
- Augsburg College
- Concordia College
- Mankato State College
- Saint Olaf College
- University of Minnesota

Mississippi
- Alcorn A & M College
- Jackson State College
- Mississippi State University
- University of Southern Mississippi

Missouri
- University of Missouri

Montana
- Montana State University

Nebraska
- Kearney State College
- University of Nebraska

New Jersey
- Montclair State College
- Rutgers State University

New Mexico
- Eastern New Mexico University
- New Mexico Highlands University
- New Mexico State University
- University of New Mexico

New York
- Columbia University
- Cornell University
- State University College at Oswego
- State University of New York at Albany

North Carolina
- North Carolina State University
- University of North Carolina

North Dakota
- North Dakota State University
- State School of Science

Ohio
- Ohio State University

Oklahoma
- Oklahoma College of Liberal Arts
- Oklahoma State University

Oregon
- Oregon State University

Pennsylvania
- Albright College
- Carnegie Institute of Technology
- Mansfield State College
- Mercyhurst College
- Pennsylvania State University
- Temple University

Rhode Island
- University of Rhode Island

South Carolina
- Clemson University
- South Carolina State College
- Winthrop College

South Dakota
- South Dakota State University

Tennessee
- A & I State University
- Middle Tennessee State University
- University of Tennessee

Texas
- Baylor University
- East Texas State University
- Sam Houston State Teachers College
- Stephen F. Austin State College
- Texas A & M University
- University of Texas

Virginia
- Longwood College
- Virginia Polytechnic Institute
- Virginia State College

Washington
- Washington State University

West Virginia
- West Virginia University

Wisconsin
- Stout State University
- University of Wisconsin

Wyoming
- University of Wyoming

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OCCUPATIONS IN COLORADO

Part II
Outlook By Denver Area Occupations

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June, 1966

VT 00859

Denver Metropolitan Area Occupations

This report is intended to provide specific information about the current and projected occupational patterns in the Denver area. This was accomplished by drawing together existing sources of occupational information. While this report does not include every occupation in the Denver area, it does represent a wide range of job levels that are important indicators of the overall job structure. Current National information on occupations is also included in the study. This National data was incorporated to compare the local Denver occupations outlook with the Nation's job structure.

Another purpose of this review was to provide information for specific occupations in the Denver area that might reflect the broader picture of the State's occupational framework. However, inferring the State's occupational framework from the Denver Metropolitan area information must be cautioned by the obvious lack of parallel occupations throughout the State. By recognizing the fact that there is a lack of parallel jobs, useful information can be gathered among broad occupational categories rather than information concerned with specific occupations.

Following is the occupational information this report provides.

(1) Job Titles: General job titles found to be important to the Denver area job outlook from a study "Jobs and the Future", by Robert Vaughan, Mountain States Telephone Co., 1962.

(2) Denver Area Wage Rates: When applicable, wage rates are provided from the Denver Area Wage Survey, Department of Labor, December, 1965.

(3) Male and Female Employment: Data from the 1962 Robert Vaughan study.

(4) Employment in Industry Groups: Information from the 1962 Vaughan study.

(5) National Employment Outlook and Earnings: Data from the 1966-67 edition, Occupational Outlook Handbook, Department of Labor.

Note: The "Additional Workers Needed by 1970" category is not always the result of the difference between 1960 and 1970 est. employment. Generally, additional workers are also needed because of replacement due to retirement, transfer, and death.

PROFESSIONAL AND

TECHNICAL OCCUPATIONS

Accountants and Auditors

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	3,400	3,600	5,500	2,600
Total Female Employment	800	900	1,400	700

Industrial Groups That Are Expected To Employ The Largest Number of Male Accountants & Auditors In The Denver Area by 1970

	Industry	Number Employed by 1970
1.	Construction	300
2.	Utilities	200
3.	Food & Dairy Product Stores	100
4.	Wholesale Trade	300
5.	Finance, Insurance, & Real Estate	400
6.	Public Administration	700
7.	Other Industries	300

A general increase in employment in the Denver area is reflected in the expected 300 needed workers in the other industries category. The 3,300 additional workers needed by 1970 place this job in a top rank of expected workers among other professional-technical workers.

Nationally, the employment opportunities for accountants were very good in 1965 and are expected to remain so into the mid-1970's. Provided no business setback occurs, at least 10,000 accountants and auditors will be needed annually. The demand for college-trained accountants will rise faster than demand for persons with a less broad educational background.

Throughout the U.S., starting salaries for new college graduates hired as accountants averaged $6,400 in 1964. Small firms pay somewhat lower rates. Federal civil service beginning rates go up to $6,050 per year.

Architects

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	300	300	500	200

Industrial Groups That Are Expected To Employ The Largest Number Of Architects In The Denver Area By 1970.

	Industry	Number Employed by 1970
1.	Construction	100
2.	Professional and Related Services	300
3.	Other Industries	100

In the Denver area by 1970, employment of architects is not expected to increase rapidly. In terms of actual numbers employed, architects are not expected to occupy a large sector of total employment. Professional and related services are expected to employ the largest number of architects.

On a National basis employment of architects is expected to continue at a rapid growth rate. The expected growth in nonresidential construction is cited as a major factor for the expected growth of this occupation.

Chemists & Natural Scientists

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	2,100	2,300	3,500	1,500
Total Female Employment	200	200	300	100

Industrial Groups That Are Expected To Employ The Largest Number Of Male Chemists And Natural Scientists In The Denver Area By 1970.

	Industry	Number Employed by 1970
1.	Mining	600
2.	Fabricated Metals Manufacturing	200
3.	Professional And Related Services	300
4.	Public Administration	700
5.	Other Industries	900

The 1,600 additional male and female natural scientists needed in the Denver area by 1970 places this job high among needed workers in the professional-technical field. The largest increase in employment is expected in the manufacturing and public administration sectors of the economy.

Nationally, employment in the natural sciences had grown rapidly in recent years, and the outlook is for continued expansion through the mid-1970's. A most important factor underlying this expected increase in employment is the likely growth of funds for research and development.

The growth within this occupation on a National scale is reflected in the expected employment for the Denver area. Expansion of industry and technology in the metropolitan area seems to relate to the growth rate of this occupation.

Designers & Draftsmen

1965 Average Denver Wage Rates
Men: $105-173 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	2,000	2,200	3,300	1,400
Total Female Employment	200	200	400	200

Industrial Groups That Are Expected To Employ The Largest Number of Male Designers & Draftsmen In The Denver Metropolitan Area By 1970.

Industry	Number Employed by 1970
1. Construction	300
2. Fabricated Metals Manufacturing	300
3. Machinery Manufacturing	200
4. Professional And Related Services	500
5. Public Administration	400
6. Other Industries	900

In the Denver metropolitan area the expected increase of 1,600 designers and draftsmen by 1970 places this occupation high in terms of additional workers needed in the professional-technical occupations. Professional and related services and public administration is expected to employ the largest number of workers.

On a National basis employment opportunities for draftsmen is expected to be favorable through the mid-1970's. Prospects will be best for those with post high school drafting training. The rapid rise in employment of draftsmen is seen as a result of the increasingly complex design problems of modern products.

As the engineering and scientific occupations grow, more draftsmen will be needed as supporting personnel.

Wages at beginning levels averaged $350 per month in early 1964. Senior draftsmen were averaging $565 a month during the same period.

Engineers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	7,500	8,000	11,000	4,100

Industrial Groups That Are Expected To Employ The Largest Number Of Male Engineers In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	800
2.	Fabricated Metals Manufacturing	2,100
3.	Machinery Manufacturing	600
4.	Electrical Machinery Manufacturing	600
5.	Aircraft Manufacturing	300
6.	Rubber & Plastics Manufacturing	300
7.	Communications	400
8.	Utilities	400
9.	Professional & Related Services	1,000
10.	Public Administration	1,000
11.	Other Industry	1,800

The 4,100 additional engineers needed by 1970 in the Denver metropolitan area reflects an increasing growth rate for this occupation. The spread of this occupation is seen by the fact that over 1,800 engineers are expected to be employed in those industries not elsewhere reported.

Employment opportunities on a National basis are expected to be very good through the mid-1970's. Demand will be especially strong for new engineering graduates with training in the most recently developed engineering principles. The growth of population and expansion of industry are cited as major reasons for the anticipated increase in demand for engineers.

Engineers with bachelor's degrees started at about $7,425 in mid-1964. Engineers with 21-25 years experience were earning about $14,500 in 1964.

Lawyers and Judges

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,700	1,800	2,600	1,200

Industrial Groups That Are Expected To Employ The Largest Number of Male Lawyers & Judges In The Denver Area By 1970

Industry	Number Employed By 1970
1. Professional and Related Services	1,400
2. Public Administration	300
3. Other Industries	600

The 1,200 additional lawyers needed in the Denver area by 1970 place this occupation high among needed professional jobs. A majority of the lawyers in the Denver area are expected to be employed in private practice as reflected in the 1,400 additional workers in professional and related services category.

On a National basis, graduates from widely recognized law schools and those that rank high in their classes will have very good employment prospects through the mid-1970's. The recent trend of lawyers in independent practice is expected to remain stable or decline somewhat. Most of the growth will result from expansion of business and population.

Beginning positions for lawyers started at $7,200 in early 1964 for private business and industry.

Public Relations Men

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	200	200	400	200

Industrial Groups That Are Expected to Employ The Largest Number Of Public Relations Men In The Denver Area By 1970

Industry	Number Employed by 1970
1. Nondurable Goods Manufacturing	100
2. Finance, Insurance And Real Estate	100
3. Other Industries	200

The 400 estimated public relations men needed by 1970 in the Denver area rank this occupation low among other professional jobs. Approximately half of the public relations men needed by 1970 will be in the other industries not reported category, thus showing the wide distribution of workers in this field.

Employment Nationally in this occupation is expected to expand rapidly through the mid-1970's. As population and general level of business activity rises, public relations workers will be more in demand.

Personnel Workers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	600	700	1,100	500

Industrial Groups That Are Expected To Employ
The Largest Number Of Male Personnel Workers
In The Denver Area By 1970

Industry	Number Employed by 1970
1. Fabricated Metal Manufacturing	200
2. Public Administration	300
3. Other Industry	400

The 1,100 personnel workers expected in the Denver area by 1970 place this job in the middle range of expected total employment in professional and related occupations. A large per cent of the employment in the field is expected in many industry groups not classified in our report.

Nationally, college graduates are expected to find many opportunities to enter personnel work through the mid-1970's. However, competition for beginning professional positions is likely to be great. As the Nations' employment rises, more personnel workers will be needed to carry on recruiting, interviewing, and related activities.

In early 1964 the beginning wage rate was about $6,600 for job analyst trainees.

Social Scientists

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	400	500	700	300
Total Female Employment	100	200	300	200

Industrial Groups That Are Expected To Employ
The Largest Number Of Male Social Scientists
In The Denver Area By 1970

Industry	Number Employed by 1970
1. Finance, Insurance, & Real Estate	100
2. Medical and Health Service	100
3. Professional and Related Services	100
$. Public Administration	100
5. Other Industries	200

The 500 needed social scientists places this job in a low rank of additional professional workers in the Denver area by 1970. The distribution of employment in this field is well distributed among four industrial categories.

Nationally, employment in the social sciences has been increasing and is expected to grow rapidly through the mid-1970's. An increase in the number of needed college and university teachers is the primary reason for the expected increase in employment. A moderate rise in employment in government also is expected.

Earnings for beginning positions in colleges and universities averaged $7,800 per year depending upon an individual's major field of interest.

Social & Welfare Workers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	500	600	900	500

Industrial Groups That Are Expected To Employ The Largest Number Of Female Social & Welfare Workers In The Denver Area By 1970.

	Industry	Number Employed by 1970
1.	Medical & Health Services	200
2.	Educational Services	100
3.	Welfare & Religious Groups	300
4.	Public Administration	300

Estimated female employment of 900 workers in the Denver area by 1970 ranks this job as average among other professional occupations. Male employment of social and welfare workers in the Denver area is negligible. Employment is well distributed among the welfare industries.

Employment opportunities for trained social workers on a National basis were excellent in 1965. Over the next 10 year period, as many as 15,000 additional workers will be needed annually. Higher birth rates, housing, minority group problems, and education are all problems of growing importance in America. Social workers will be needed to assist in solving these problems.

In mid-1964 the average starting wage was $4,700 in State agencies.

Surveyors

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	200	200	300	100

Industrial Groups That Are Expected To Employ The Largest Number Of Male Surveyors In The Denver Area By 1970

Industry	Number Employed By 1970
1. Construction	100
2. Educational Services	100
3. Public Administration	100

The 100 additional surveyors needed in the Denver area by 1970 places this job low for needed workers in professional-technical occupations. Employment is evenly spread out among 3 major industry groups.

National employment opportunities for surveyors are expected to be favorable through the 1970's. Rapid growth is predicted not only by new positions opening but replacement of those who transfer to other occupations. Prospects will be best for those with a post secondary education.

Government workers started at about $415 monthly in early 1965.

Electrical Technicians

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	700	800	1,600	800

Industrial Groups That Are Expected To Employ The Largest Number of Electrical Technicians In The Denver Area By 1970.

	Industry	Number Employed by 1970
1.	Fabricated Metals Manufacturing	400
2.	Electrical Machinery Manufacturing	300
3.	Public Administration	200
4.	Other Industries	600

Employment of electrical technicians in the Denver area is expected to increase rapidly until 1970. Employment is expected to be spread out among 3 industry groups and a large number of workers will be employed in other industries not given in this report.

On a National basis, opportunities for engineering and science technicians are expected to be good through the mid-1970's. In recent years, technician jobs have been among the fastest growing occupations and it is estimated that this growth rate will continue. The demand will be greatest for graduates of post-secondary school training programs.

The expected good growth rate for this occupation is related to the anticipated expansion of industry and increasing modern technology.

In 1964, graduates of post-high school technical schools began at $5,000 in private industry on a nationwide basis. In the Federal Government agencies, salaries began at $4,005 to $5,000 depending upon the applicants qualifications.

Medical & Dental Technicians

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	400	400	600	200
Total Female Employment	700	700	1,100	400

Industrial Groups That Are Expected To Employ
The Largest Number of Medical & Dental Technicians
In The Denver Area By 1970

Industry	Number Employed by 1970
1. Manufacturing	200
2. Medical and Health Services	1,300
3. Educational Services	100

In the Denver Area by 1970 an increase of 600 workers is expected in the medical-dental technicians field. Employment of women in the Denver area is expected by 1970 to exceed men by 2 to 1. The largest numbers of workers are to be employed in the medical and health services.

On a National basis, medical technologists are expected to increase rapidly through the mid-1970's. The four year college graduate is expected to have the better job opportunities. An increasing dependence on laboratory tests by doctors is expected to be a determining factor in the expanding numbers of medical technologists.

The average annual salary for registered medical technologists was $5,190 in 1963. Government workers started at $5,000 per year in early 1965.

CLERICAL AND SALES

OCCUPATIONS

Bookkeepers

1965 Average Denver Wage Rates:
Men: $76--$123 per week
Women: $72--$107 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,200	1,300	1,300	300
Total Female Employment	5,100	5,400	6,400	1,700

Industrial Groups That Are Expected To Employ The Largest Number Of Bookkeepers In The Denver Area By 1970

Industry	Number Employed by 1970
1. Construction	400
2. Food & Kindred Products Manufacturing	300
3. Printing & Publishing	200
4. Wholesale Trade	700
5. General Merchandise Stores	200
6. General Retail Trade	1,000
7. Finance, Insurance, and Real Estate	1,500
8. Business Services	200
9. Repair Services	200
10. Medical & Health Services	200
11. Professional & Related Services	400
12. Public Administration	500

The 7,700 bookkeepers expecting to be employed by 1970 in the Denver area places this job high among expected clerical and kindred occupations. Employment is expected to be moderate to heavy among 12 industrial groups. Female employment is expected to exceed male employment by about 6 to 1.

The number of bookkeepers is expected to increase rapidly through the mid-1970's. The annual employment is expected to exceed 75,000 each year on the National level. Employees who are qualified to assume responsibility for a complete set of books are expected to be in great demand over the next decade.

Wages for bookkeeping workers in 1963064 at beginning levels ranged from $74.50 weekly for female workers to $91.00 weekly for male employees.

Cashiers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	700	800	900	300
Total Female Employment	2,300	2,500	3,300	1,200

Industrial Groups That Are Expected To Employ The Largest Number Of Cashiers In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Food Product Stores	1,200
2.	General Merchandise Stores	300
3.	Eating & Drinking Places	400
4.	Other Retail Trade	500
5.	Finance, Insurance, & Real Estate	300
6.	Entertainment Services	200

The 4,200 cashiers needed in the Denver area by 1970 place this job in the middle range of needed clerical and kindred workers. The largest per cent of employment is expected in the food product retail stores. Female employment is expected to rate about 3 to 1 over male cashiers in the Denver area.

Nationally, employment is expected to increase rapidly during the period 1965-75. Over 75,000 workers will be needed annually to fill new cashier positions. Employment is expected to increase primarily because of the expected expansion in business. The addition of more retail stores, and the adoption of more self-service operations will create new jobs for cashiers.

The salaries paid for beginning cashiers are often near the minimum wage, or $1.25 per hour. Some cashiers, such as those who work in grocery stores earn more than $2.00 per hour.

Shipping, Receiving and Stock Clerks

1965 Average Denver Wage Rates
$2.33 - $2.92 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	2,800	3,000	3,600	1,200

Industrial Groups That Are Expected To Employ
The Largest Number Of Male Stock Clerks In
The Denver Area By 1970

Industry	Number Employed by 1970
1. Rubber and Plastic Manufacturing	200
2. Wholesale Trade	500
3. General Merchandise Stores	200
4. Public Administration	200
5. Other Industries	900

The 1,200 additional shipping clerks needed in the Denver Area by 1970 place this job in an advanced level of needed clerical and kindred occupations. Employment in this occupation is expected to be well distributed among four industrial groups.

On a National basis, 10,000 job openings annually are expected during the period 1965-75. Openings will result from replacements of older workers and workers who transfer to other jobs. As the quantity of goods distributed increases with expanding population and business, the number of shipping and receiving clerks is likely to rise moderately through 1975.

Men employed as shipping and receiving clerks in urban areas averaged $2.50 an hour for the period 1963-64. Salaries tended to be slightly higher in wholesale firms and public utilities companies.

Office Machine Operators

1965 Average Denver Wage Rates
$63-$89 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	2,400	2,600	4,600	2,300

Industrial Groups That Are Expected To Employ
The Largest Number Of Office Machine Operators
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Fabricated Metal Manufacturing	200
2.	Food Products Manufacturing	200
3.	Communications	200
4.	Wholesale Trade	300
5.	Food Product Stores	200
6.	General Merchandise Stores	200
7.	Other Retail Trade	200
8.	Finance, Insurance & Real Estate	600
9.	Public Administration	600
10.	Other Industries	900

In the Denver area by 1970, 2,300 additional office machine operators will be needed. Rapid expansion is predicted for the period 1960-70. Employment in this occupation is expected to spread to many sectors of the economy as reflected in the number of anticipated workers in the other industries category.

On a National basis, the number of office machine operators is expected to increase rapidly during the 1965-70 period. Over 50,000 job openings are expected annually. Growth in this occupation is expected to parallel the growth of business activity. The development of new machines will be another factor for expansion in this area of employment.

Average weekly salaries for the period 1963-64 ranged from $73.00 to $88.00.

Stenographers & Secretaries

1965 Average Denver Wage Rates
$72-$125 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	13,000	13,900	18,400	6,300

Industrial Groups That Are Expected To Employ
The Largest Number Of Stenographers & Secretaries
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Mining	500
2.	Construction	400
3.	Fabricated Metal Manufacturing	1,000
4.	Food Products Manufacturing	400
5.	Wholesale Trade	1,400
6.	Other Retail Trade	500
7.	Finance, Insurance, & Real Estate	2,500
8.	Business Services	500
9.	Medical Services	1,300
10.	Government Educational Services	1,100
11.	Welfare and Religious Services	900
12.	Other Professional Services	1,400
13.	Public Administration	1,500

The additional 6,300 stenographers and secretaries needed by 1970 in the Denver area places this occupation high among needed clerical and related workers. The distribuition of employment in this occupation is expected to be largely distributed among 13 major industrial groups. High employment is expected in the finance and wholesale trade areas.

The National outlook is good for workers with stenographic skills through the early 1970's. A very rapid increase in employment is expected. More than 200,000 openings annually during the next ten years is anticipated. Since turnover is high among secretaries, many of the openings will result from replacements of other workers.

Weekly salary for secretaries in 1963-64 ranged from $79.50 to $99.50 in large metropolitan areas.

Telephone Operators

1965 Average Denver Wage Rates
$53 - $95 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	2,300	2,400	2,800	700

Industrial Groups That Are Expected To Employ
The Largest Number Of Telephone Operators In
The Denver Area By 1970

Industry	Number Employed by 1970
1. Communications	1,300
2. Medical Services	200

Employment of telephone operators is not expected to increase greatly in the Denver area by 1970. With only 700 additional workers expected, this occupation does not rank high among other clerical and related jobs. As expected the largest employment will be in the communications area.

The National outlook for telephone operators is expected to show a low rate of increase during the 1965-75 period. The innovation of direct dialing and other changes have produced a marked decline in central office operator employment. The number of PBX operators is expected to rise, however, over the next decade.

Central office operators in training averaged $1.74 an hour in late 1964. Experienced operators were averaging $2.11 an hour.

Typists

1965 Average Denver Wage Rates
$63 - $88 per week

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	3,800	4,000	5,200	1,600

Industrial Groups That Are Expected To Employ The Largest Number Of Typists In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Fabricated Metal Manufacturing	200
2.	Communications	200
3.	Wholesale Trade	300
4.	Other Retail Trade	200
5.	Finance, Insurance, & Real Estate	800
6.	Business Services	300
7.	Medical Services	200
8.	Government Educational Services	200
9.	Public Administration	1,200
10.	Other Industries	200

In the Denver Metropolitan area by 1970 over 1,600 additional typists will be needed. This number of additional workers ranks this job high among needed clerical occupations. Employment is expected to be heaviest in the public administration area, but the largest per cent of employment is expected to be well distributed among nine major industrial groups.

Nationally, over 50,000 openings are predicted each year until the early 1970's. Openings, for the most part, will be for workers to replace typists who stop working for various reasons. As the volume of paper work grows, the number of typists is expected to increase rapidly.

Salaries at beginning levels ranged from $53.50 to $76.50 a week in 1963-64.

Sales Workers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	19,700	21,100	25,600	9,400
Total Female Employment	9,300	9,900	12,600	4,500

Industrial Groups That Are Expected To Employ The Largest Number Of Sales Workers In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	600
2.	Fabricated Metal Manufacturing	400
3.	Electrical Machinery Manufacturing	400
4.	Food Products Manufacturing	900
5.	Printing & Publishing	1,600
6.	Chemicals Manufacturing	400
7.	Wholesale Trade	4,700
8.	Food Products Retailing	2,200
9.	General Merchandise Stores	7,100
10.	Other Retail Stores	9,500
11.	Finance, Insurance, & Real Estate	6,200
12.	Business Services	500

In the Denver Metropolitan area the total employment of sales workers as an occupational group was high in 1960, and it is expected to remain high in 1970. The additional 9,400 male workers and 4,500 female workers by 1970 ranks this occupation high for needed employees.

According to National information, the number of sales workers has increased rapidly since 1950. In certain fields, however, the rate of increase has been greater than in others. Industrial groups that have experienced the largest increase in sales workers include: real estate, insurance, manufacturing, and wholesaling. These national estimates of industrial groups increasing employment of sales workers conforms with the Denver area's expected employment. Retail sales employ the largest per cent of the salesworkers, but it is also one of the industries with a low rate of increase of number of sales workers employed.

Wages and earning among sales personnel varies widely between business firms and industrial groups.

SKILLED AND

SEMISKILLED

OCCUPATIONS

Boilermakers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	100	100	100	-----

Industrial Groups That Are Expected To Employ The Largest Number Of Boilermakers In The Denver Area By 1970

Industry	Number Employed by 1970
1. Durable Goods Manufacturing	100

The number of boilermakers in the Denver area is expected to remain about the same through 1970. The 100 presently employed workers has little effect on the total craftsmen's employment outlook.

Nationally, employment of boilermakers and layout men is expected to increase moderately until the mid-1970's. This projection assumes relatively full employment and continued high levels of business activity. Growth of those industries that use boiler products is the major reason for the moderate expansion of this occupation.

As of June, 1964, boilermaker's minimum hourly wage was $4.72 in 56 major cities.

Carpenters & Cabinetmakers

1965 Average Denver Wage Rates
$3.00 - $3.44 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	5,000	5,500	6,100	2,200

Industrial Groups That Are Expected To Employ
The Largest Number Of Carpenters & Cabinetmakers
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	4,800
2.	Furniture and Wood Products Manufacturing	300
3.	Other Retail Trade	200
4.	Other Industries	200

In the Denver area over 2,200 additional carpenters and cabinetmakers are expected by 1970. The 6,100 total employed by 1970 places this job high among other craftsmen occupations. The construction industry is expected to employ over 2/3 of the workers in this occupation.

The National outlook for carpenters is moderately good. Their number is expected to increase slowly through 1975. Of the more than 800,000 carpenters employed in 1964, several thousand each year will leave because of transfers, retirement, or death. The large rise in construction is a primary factor for the increasing need of carpenters. In addition, more carpenters will be needed in maintenance departments of factories. However, automation and the use of prefabricated materials will somewhat limit the rate of growth in this occupation.

Union minimum hourly wage rates for carpenters averaged $4.36 as of July, 1964.

Blacksmiths, Forgemen & Hammermen

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	100	----	----	----

The employment outlook for blacksmiths in the Denver area by 1970 is not good. An actual decline in employment is projected.

On a National basis, the number of blacksmiths is expected to decline moderately through mid-1970. However, several hundren jobs will arise each year from replacements. The expected decline in employment is related to the number of forge shops that are producing small metal articles that once were produced by blacksmiths.

Cranemen, Hoistmen, & Construction Machine Operators

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	200	300	400	200

Industrial Groups That Are Expected To Employ The Largest Numbers Of Construction Machine Operators In The Denver Area By 1970

Industry	Number Employed by 1970
1. Construction	200
2. Fabricated Metal Manufacturing	100
3. Nondurable Goods Manufacturing	100

In the Denver area by 1970, employment of construction machine operators is expected to number 400. Approximately half of the employment will be in the construction industry itself.

Nationally, employment of construction machine operators is expected to increase rapidly through 1975. Many thousands of additional jobs will result from the need to replace experienced workers who transfer or terminate. Due to the anticipated growth in construction activity, employment in this field is expected to maintain its rapid increase. The trend toward the increasing use of construction machinery shows every sign of continuing. More specialized and complex machinery is expected to be put into use.

The wage structure for construction machine operators is more complicated than any other construction trade. Union minimum wages in July, 1964, ranged from $3.45 to $6.20 per hour.

Electricians

1965 Average Denver Wage Rates
$3.20-$3.58 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,700	1,800	2,200	800

Industrial Groups That Are Expected To Employ The Largest Numbers Of Electricians In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	1,200
2.	Fabricated Metal Manufacturing	200
3.	Public Administration	100
4.	Other Industries	300

Employment of electricians in the Denver area is expected to increase moderately until 1970. The construction industry is expected to employ about 2/3 of the total workers by 1970, although it can be seen that employment of electricians in other industries is expected to be substantial.

On a national basis, employment of construction electricians is expected to increase rapidly through the mid-1970's. This increase in employment is expected mainly because of the anticipated large expansion in the construction business. Greater requirements for electrical outlets and wiring systems for data-processing equipment will contribute to increased employment of electricians.

Union minimum hourly wages as of July, 1964, averaged $4.68 for journeymen.

Machinists & Job Setters

1965 Average Denver Wage Rate
$3.15-$3.45 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	2,100	2,300	2,800	1,100

Industrial Groups That Are Expected To Employ The Largest Numbers Of Machinists In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Fabricated Metal Manufacturing	600
2.	Machinery Manufacturing	700
3.	Electrical Machinery Manufacturing	300
4.	Aircraft Manufacturing	200
5.	Rubber Products Manufacturing	200
6.	Public Administration	100
7.	Other Industries	300

Employment of machinists in the Denver area by 1970 is expected to increase rather rapidly. Over 1,100 new employees are expected to be employed by 1970. Fabricated metals and machinery manufacturing are expected to employ the largest number of machinists and job setters.

On a national basis, a moderate increase is expected in the number of machinists during the 1965-75 decade as a result of the anticipated expansion of metalworking activities. In maintenance shops, the employment of machinists is expected to increase as a result of expanded industrial use of complex machinery and equipment.

Maintenance machinists averaged $2.15 to $3.60 per hour during the 1964-65 period. Wages varied from city to city.

Mechanics & Repairmen

1965 Average Denver Wage Rates
$3.00-$3.55 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	12,100	12,900	15,800	5,800

Industrial Groups That Are Expected To Employ
The Largest Numbers Of Mechanics And Repairmen
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	600
2.	Fabricated Metal Manufacturing	700
3.	Machinery Manufacturing	400
4.	Electrical Machinery Manufacturing	300
5.	Other Durable Goods Manufacturing	300
6.	Food Products Manufacturing	500
7.	Rubber Products Manufacturing	300
8.	Trucking Service	700
9.	Utilities & Sanitary Services	700
10.	Wholesale Trade	800
11.	Other Retail Trade	2,400
12.	Finance, Insurance & Real Estate	300
13.	Repair Services	2,700
14.	Government Educational Services	300
15.	Public Administration	800
16.	Other Industries	700

The number of mechanics and repairmen employed in the Denver area is high among other skilled craftsmen trades. A moderate increase in employment is predicted by 1970, but in terms of actual numbers this occupation will add over 5,000 workers to the Denver labor force. Repair services and other retail trade are expected to hire the largest number of mechanics by 1970, but employment will be spread out over 16 industrial groups.

Nationally, the employment outlook for mechanics and repairmen as a whole is very favorable through the mid-1970's. Excellent employment opportunities are expected for several occupations: vending machine mechanics, business machine servicemen, instrument repairmen, and appliance servicemen. The anticipated rise in expenditures for new plant and equipment will result in more mechanization and the use of more complex machines.

Wage rates for beginning levels varied greatly depending on area and type of job. Average rates ranged from $1.60 to $2.00 per hour at beginning levels.

Millwrights	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	100	100	100	---

Industrial Groups That Are Expected To Employ The Largest Number Of Millwrights In The Denver Area By 1970

Industry	Number Employed by 1970
1. Durable Goods Manufacturing	100

Employment of millwrights in the Denver area is expected to remain small until 1970. No increase in employment is predicted for this occupation. Durable goods manufacturing will be the only major source of employment.

Nationally, employment of millwrights is expected to increase moderately through 1975. The building of new plants, the addition of new machinery, and changes in plant layouts are factors expected to increase employment of millwrights.

Average straight time hourly earnings of millwrights employed in manufacturing industries surveyed in 1964-65, ranged from $2.66 to $3.63. More than 80% of these workers earned $3.00 an hour or more.

Plumbers & Pipefitters

1965 Average Denver Wage Rates
$3.19-$3.47 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,800	2,000	2,400	900

Industrial Groups That Are Expected To Employ
The Largest Number Of Plumbers & Pipefitters
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	1,600
2.	Total Manufacturing	400
3.	Utilities Services	100
4.	Public Administration	100
5.	Other Industries	100

The employment of plumbers and pipefitters is expected to be moderately high in the Denver area by 1970. A moderate increase in employment is predicted for 1970. The construction industry is expected to employ over 2/3 of the workers in this occupation.

On a national basis, employment of plumbers and pipefitters is expected to rise rapidly through 1975. Additional thousands of job opportunities will arise as a result of the need to replace experienced plumbers who retire, transfer, or die. Over 7,000 jobs annually are expected from retirements and deaths alone. The large rise in construction activity is to be the most important contributing factor to increasing employment.

Union minimum hourly wage rates for plumbers averaged $4.62 to $4.70 as of July, 1964.

Printing Craftsmen

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,800	1,900	2,400	800

Industrial Groups That Are Expected To Employ
The Largest Number Of Printing Craftsmen In
The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Printing & Publishing	2,000
2.	Medical & Health Services	100
3.	Public Administration	100
4.	Other Industries	100

In the Denver area by 1970, employment of printing craftsmen is expected to be moderately high. The 800 additional workers needed by 1970 gives this occupation an average rank among other skilled craftsmen. Naturally, employment in the printing and publishing industry will occupy the largest per cent of printing craftsmen.

Nationally, there will be many opportunities for younger people to enter the skilled printing trades during the 1965-75 decade. Aside from replacement of retiring or terminating workers, a continued rise in the volume of printed material will contribute to a high growth rate in this occupation. More printed matter is expected as a result of population growth, increasingly higher levels of education, expansion of industry, and the trend toward greater use of printed matter.

Earnings of printing craftsmen are among the highest in all manufacturing industries. In 1964, production workers averaged $2.97 an hour.

Stationary Engineers

1965 Average Denver Wage Rates:
$3.07--$3.78 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	2,000	2,200	2,400	800

Industrial Groups That Are Expected To Employ
The Largest Number of Stationary Engineers
In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Mining	100
2.	Fabricated Metals Manufacturing	800
3.	Food & Kindred Products Manufacturing	200
4.	Utilities Services	100
5.	Wholesale Trade	100
6.	Public Administration	200
7.	Other Industries	200

In the Denver Metropolitan area by 1970, employment of stationary engineers is expected to be moderate. The addition of 800 new workers into this occupation places this job at an average level for skilled craftsmen occupations. Fabricated metals manufacturing is expected to employ the largest number of workers. However, public administration and other industries are expected to have increases from the 1960 period.

The national outlook for stationary engineers is good through the mid-1970's. A few thousand workers each year are expected as a result of retirement and transfer. The continued use of large stationary boilers and refrigeration equipment is expected to contribute to the increase in employment.

An average hourly wage rate for 62 cities during the 1964-65 period ranged from $2.19 to $3.86.

Tinsmiths, Coppersmiths, & Sheet Metal Workers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	700	800	900	300

Industrial Groups That Are Expected To Employ The Largest Number Of Tinsmiths, Coppersmiths, And Sheet Metal Workers In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Mining	400
2.	Fabricated Metals Manufacturing	200
3.	Machinery Manufacturing	100
4.	Durable Goods Manufacturing	100
5.	Food Products Manufacturing	100

Employment of tinsmiths, coppersmiths, and sheet metal workers in the Denver area by 1970 is expected to be low as compared with other craftsmen's occupations. Mining and fabricated metals manufacturing are expected to employ about 2/3 of the Denver area workers in this occupation.

According to national information, employment of sheet metal workers is expected to increase rapidly through 1975. Due to the anticipated expansion in residential, commercial, and industrial construction, larger numbers of sheetmetal workers will be needed. Another growth factor is the increasing number of air-conditioning systems that are being installed in new and older buildings. Prefabrication is not expected to affect the growth rate in this occupation, since much of sheet metal work is custom made.

Union minimum hourly wage rates for sheetmetal workers averaged $4.50, as of July, 1964. The hourly wage ranged from $3.50 to $5.25.

Apprentices

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	700	800	1,800	1,800

Industrial Groups That Are Expected To Employ The Largest Number Of Apprentices In The Denver Area By 1970

Industry	Number Employed by 1970
1. Construction	500
2. Printing and Publishing	200
3. Utilities	200
4. Other Retail Trade	200

Employment of apprentice workers in the Denver area by 1970 is expected to be moderately high. However, the rate of growth within this category of workers is expected to be extremely high. More than a 100% increase is predicted. Most of the new workers will be employed in the construction industry where apprentice trades are more abundant. There is no national information concerning apprentice workers as a specific group.

Assemblers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	600	700	800	300
Total Female Employment	400	500	600	200

Industrial Groups That Are Expected To Employ The Largest Number Of Assemblers In The Denver Area By 1970

Industry	Number Employed by 1970
1. Furniture & Wood Products Manufacturing	100
2. Fabricated Metal Manufacturing	200
3. Machinery Manufacturing	300
4. Electrical Machinery Manufacturing	200
5. Motor Equipment Manufacturing	100
6. Nondurable Goods Manufacturing	300

In the Denver area by 1970, over 1,400 male and female assemblers are expected to be employed. Female employment is expected to be almost half of the total number of assemblers. The industrial groups that are expected to employ almost all assemblers are in the manufacturing sector of the economy.

Nationally, many openings for semiskilled assemblers are expected during the next decade. The largest number of job openings are expected to result from replacement of retiring and transfered workers. The electrical machinery industry is expected to increase employment during the 1965-75 decade. However, technological changes are expected to hold down the growth of this occupation.

Wage rates of assemblers in 20 large cities ranged from $2.13 to $3.06 hourly.

Metal Filers, Grinders & Polishers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	300	300	400	100

Industrial Groups That Are Expected To Employ
The Largest Number Of Metal Filers, Grinders,
& Polishers In The Denver Area By 1970

Industry	Number Employed by 1970
1. Fabricated Metals Manufacturing	100
2. Machinery Manufacturing	100
3. Electrical Machinery Manufacturing	100
4. Aircraft Parts Manufacturing	100

Predicted employment of 400 metal workers in the Denver area by 1970 will be low as compared with other skilled craftsmen's occupations. Employment of metal workers is expected to be evenly distributed among four major manufacturing industries.

Many thousands will be hired on a national basis, to replace retiring or transfering metal workers in the next decade. Little to no employment growth is predicted despite the expected rise of metal working occupations. Automation and technological advancement will have a most profound effect in holding down the growth rate of this occupation. Workers with thorough backgrounds in machining, mathematics, blueprint reading, and good working knowledge of metals will have the better chance to adjust to the changing job requirements.

Hourly wage rates in the middle of 1965 ranged from $2.66 to $3.61 in 21 major urban centers.

Toolmakers & Die Makers

1965 Average Denver Wage Rates
$3.36-$3.75 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	400	400	600	300

Industrial Groups That Are Expected To Employ
The Largest Number Of Toolmakers And Die Makers
In The Denver Area By 1970

Industry	Number Employed by 1970
1. Fabricated Metals Manufacturing	200
2. Machinery Manufacturing	200
3. Electrical Machinery Manufacturing	200

Employment of tool and die makers in the Denver Metropolitan area by 1970 is expected to be low as compared with other skilled craftsmen occupations. The manufacturing industries of fabricated metals, machinery, and electrical machinery will equally employ 1/3 of the total workers.

On a national basis, employment of tool and die makers is expected to increase moderately through 1975. Most of this growth will be as a result of the anticipated expansion of metal working activities. The skills of the workers will be needed to make the tools and dies used to produce the large numbers of identical metal parts used in industry. They will also be needed to help put many technological developments into effect.

Tool and die makers are among the highest paid machining occupations. In April 1965, wage rates varied from $3.23 to $3.88 per hour for 13 major production areas.

Furnacemen, Smeltermen, & Heaters

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	100	----	----	----

It is anticipated that in the Denver area by 1970 there will be little to no employment for furnacemen and smeltermen. The 100 craftsmen employed in 1960 made up only a small portion of the skilled occupations.

Nationally, the foundry industry is expected to hire thousands of workers annually during the next decade. Openings in these occupations will result from the expected moderate growth in foundry jobs and the substantial increase in foundry production. However, foundry employment is expected to rise at a much slower rate than production. Advances in casting and other procedures will cut back on the growth rate.

Average hourly wage rate in 1965 was about $2.89.

Painters Except Construction

1965 Average Denver Wage Rates
$3.34-$3.36 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	500	500	500	100

Industrial Groups That Are Expected To Employ The Largest Number Of Painters In The Denver Area By 1970.

Industry	Number Employed by 1970
1. Furniture and Wood Products Manufacturing	100
2. Other Durable Goods Manufacturing	100
3. Other Nondurable Goods Manufacturing	100
4. Retail Stores	100
5. Repair Services	100

Employment of painters in the Denver area by 1970 is expected to be moderately low. No noticeable growth rate is predicted for this occupation. Five major industry groups are expected to employ equally almost all Denver painters.

Employment opportunities on a national basis for production painters is expected to remain relatively stable during the 1965-75 decade. This will be primarily due to the increasing development and use of mechanized and automatic painting equipment. Several thousand job opeinings are expected as result of replacement needs.

Wage rates in 1964 for production painters ranged from $2.00 to $3.00 per hour depending on location and type of work.

Stationary Firemen

1965 Average Denver Wage Rates
$2.92--$3.24 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	300	300	200	-100

Industrial Groups That Are Expected To Employ
The Largest Number Of Stationary Firemen In
The Denver Area By 1970

Industry	Number Employed by 1970
1. Durable Goods Manufacturing	100
2. Other Industries	100

In the Denver Metropolitan Area by 1970, employment of stationary firemen is expected to decline by 100 workers. This is one of very few jobs that is predicted to have an actual decline in employment.

According to national information, employment of stationary firemen in manufacturing is also expected to decline during the next decade. The use of automatic and more powerful equipment is expected to offset the increase in the use of stationary boilers during the next 10 to 15 years.

In 1964-65, earnings of stationary firemen located in 82 cities ranged from $1.44 to $3.40 per hour.

Truck Drivers

1965 Average Denver Wage Rate
$2.03--$3.53 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	10,600	11,300	15,600	5,600

Industrial Groups That Are Expected To Employ The Largest Number of Truck drivers in the Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	900
2.	Fabricated Metals Manufacturing	300
3.	Other Durable Goods Manufacturing	600
4.	Food Products Manufacturing	1,600
5.	Trucking Services	3,700
6.	Utilities	600
7.	Wholesale Trade	1,500
8.	Food Product Retailing	500
9.	Other Retailing	1,300
10.	Personal Services	400
11.	Public Administration	400
12.	Other Industries	1,100

Employment of truck drivers in the Denver area by 1970 is expected to increase by at least 1/3. The more than 15,000 workers expected by 1970 places this occupation among the top occupations among skilled and semi-skilled workers. Twelve major industry groups are expected to employ the majority of truck drivers and the trucking service group will have the largest amount for any one industry.

Nationally, a rapid increase in employment of local truck drivers is anticipated through the mid-1970's. Much of this increase will be attributed to the expected increase in the volume of freight. The rise in total business activity is a primary cause for the anticipated increase in transportation needs. The continued growth of suburban areas will contribute to increased employment.

On the average, hourly wage rates were $3.14 for local drivers and $2.79 for helpers as of July 1964.

Welders

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,400	1,500	1,900	600

Industrial Groups That Are Expected To Employ The Largest Number Of Welders In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Construction	300
2.	Fabricated Metals Manufacturing	500
3.	Machinery Manufacturing	300
4.	Other Industries	100

Employment of welders in the Denver area by 1970 is expected to increase moderately. The more than 1,900 workers expected by 1970 will not be a large employment factor among other skill craftsmen's occupations. Construction, fabricated metals, and machinery manufacturing are expected to employ the largest number of welders.

The national outlook for welding occupations is moderately good. The number of welding jobs is expected to increase by several thousand each year through 1975 as a result of the general increase in production of metal working industries and a broader use of the welding process. More and more welders will be needed for maintenance and repair work in the expanding metal working industries. Increased use of the machine resistance welding process in manufacturing autos and aircraft will contribute to the growth of this occupation.

Average hourly wage rates for 21 cities in mid-1965 ranged from $2.51 to $3.51.

Sewers & Stitchers

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	600	700	800	300

Industrial Groups That Are Expected To Employ The Largest Number of Sewers & Stitchers In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Durable Goods Manufacturing	100
2.	Textile Mills Manufacturing	100
3.	Apparel Products Manufacturing	500
4.	Other Non-Durable Goods Manufacturing	100

Employment of sewers and stitchers in the Denver area by 1970 is expected to be low as compared with other semi-skilled occupations. The rate of growth in the occupations is expected to be good even though total employment is low. The apparel products manufacturing industry is expected to employ over half of the sewers and stitchers.

The national outlook for apparel industry employment is moderate growth during the next decade. A large number of jobs will result from the nearly 75% of all needle trades workers who leave annually to get married or to raise a family. The demand for apparel in the next 10 years should increase considerably and will be a major reason for increased employment. The increasing use of labor-saving devices will tend to modify the need for increased employment.

The average hourly wage rate in mid-1965 was $1.82.

Guards & Watchman

1965 Average Denver Wage Rates
$1.90--$2.85 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	1,200	1,300	1,500	500

Industrial Groups That Are Expected To Employ The Largest Number Of Guards & Watchmen In The Denver Area By 1970

Industry	Number Employed by 1970
1. Fabricated Metal Manufacturing	300
2. Finance, Insurance, & Real Estate	200
3. Public Administration	400
4. Other Industries	200

In the Denver area by 1970, over 1,500 guards and watchmen will be employed. This represents a moderate amount of the total semi-skilled employment in Denver. The rate of growth of this occupation is expected to be moderately good. Employment among industry groups is expected mostly in fabricated metal manufacturing and public administration.

On a national basis, employment opportunities for protective service workers is expected to increase rapidly during the next decade. One of the major reasons for the increase of protective workers is the ever expanding population and economy. These factors will bring with them an increasing need to protect life and property. Openings for women are also expected in the next decade.

The average wage for medium sized cities was $5,000 per year in 1965.

Charwomen & Janitors

1965 Average Denver Wage Rates
Men: $1.63--$2.25 per hour
Women: $1.81--$1.89 per hour

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Male Employment	4,500	4,800	5,600	2,800
Total Female Employment	800	900	1,200	500

Industrial Groups That Are Expected To Employ The Largest Number Of Charwomen & Janitors In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Food Products Manufacturing	200
2.	Eating and Drinking Retailing	200
3.	Other Retail Trade	400
4.	Finance, Insurance, & Real Estate	700
5.	Business Services	400
6.	Hotels	300
7.	Entertainmnet and Recreation	200
8.	Medical Services	500
9.	Educational Services	1,500
10.	Welfare, Religious, & Non-Profit	400
11.	Public Administration	400

Nationally, several hundred openings for hotel housekeepers and assistants are expected on an annual basis through 1975. Aside from the need to replace present jobs many openings will result from the building of new motels and hotels. Experienced housekeepers will also find employment in hospitals, clubs, dormitories, and welfare institutions.

Wage rates vary widely for housekeepers and chambermaids. Hourly wages ranged from $.51 to $1.70 in a survey of 23 cities.

Checkers, Examiners, Graders, & Sorters

	1960	1965 est.	1970 est.	Additional Workers Needed by 1970
Total Female Employment	400	400	600	200

Industrial Groups That Are Expected To Employ The Largest Number Of Checkers, Examiners, Graders, & Sorters In The Denver Area By 1970

	Industry	Number Employed by 1970
1.	Electrical Machinery Manufacturing	100
2.	Other Durable Goods Manufacturing	100
3.	Food Products Manufacturing	200
4.	Rubber Products Manufacturing	100
5.	Other Non-Durable Goods Manufacturing	100

Employment of checkers and graders in the Denver area by 1970 is expected to be low as compared with other semi-skilled occupations. The rate of growth for this job will be low since only 200 new employees will be needed by 1970. Food products manufacturing will have the largest employment of checkers and graders among industrial groups.

Nationally, the employment of semi-skilled inspectors is expected to increase rapidly through 1975. Most industries that employ these workers are expected to increase their employment, especially in the electrical machinery industry. The prediction for rising employment needs will be partially offset by the increasing use of automated equipment.

Wage rates for 18 cities in mid-1965 ranged from $1.90 to $3.00 per hour.

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A COMPARISON OF MAIL-TECHNIQUES FOR STIMULATING INTEREST IN OCCUPATIONAL EDUCATION RESEARCH

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and
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A COMPARISON OF MAIL-TECHNIQUES FOR STIMULATING INTEREST IN OCCUPATIONAL EDUCATION RESEARCH

by
Willard F. Bailey, Jr.
and
Jerome Moss, Jr.

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FOREWORD

A major purpose of state research coordination units is to stimulate research. In order to make progress toward this goal with some degree of efficiency, the Minnesota Research Coordination Unit in Occupational Education has, thus far, conducted a series of three studies. The first study, done in the Fall and Winter of 1965, assessed the human resources for occupational education research in the State by determining a) those educators teaching in fields related to occupational education who were interested in conducting, or in receiving further training for, research, and b) the general level of research competence possessed by interested persons. Since the actual availability of school personnel to conduct research or to receive research training is at least partially dependent upon their administrators, the second study, done during the Winter and Spring of 1965-66, was designed to identify a) the attitudes of school administrators toward the conduct of research in occupational education by their staffs, and b) some specific factors which might inhibit the conduct of research in their schools. The results of these two studies will soon be published in one report, entitled "Estimating the Human Resources for Research in Occupational Education in Minnesota." The information gained from both studies has already been very helpful to the Unit in its dissemination activities and in identifying and recruiting personnel for special research training programs.

The study reported herein, the third in the series, directly utilized the results of the first two studies as it compared the effectiveness of three mail-techniques to increase interest in the conduct of occupational education research among those persons previously identified as uninterested.

Thus, the Unit is attempting to carry out its own functions, and in the process, learn how it can do so more effectively.

Jerome Moss, Jr.
Co-director,
Minnesota Research Coordination
Unit in Occupational Education

I. INTRODUCTION

Statement of the Problem

This study was designed to stimulate interest in conducting occupational educational research among persons who had previously been identified as uninterested. It compared the relative effectiveness of three mail-techniques of stimulation, and attempted to determine whether differences in type of school and the research atmosphere in a school were related to change in interest in research.

It can be hypothesized that there are at least two logical "reasons" why an individual might decide to become interested in research. On the one hand, he might be attracted by the current aura of prestige surrounding the activity and the resultant professional and financial rewards. On the other hand, he might become involved because of his intellectual concern about a specific problem. In many instances, of course, both "reasons" might operate concurrently.

The first "reason", prestige and professional advancement, can best be described within a social psychological framework. That is, interest-disinterest in research may be regarded as the property of a role, with changes in role perception due to the interpreted expectations of "significant others". Thus, a treatment designed to change interest level based on this framework would attempt to show the desirable professional role to be a "research oriented educator". Role conflicts and the position of the professional role in the total role hierarchy of the individual will mediate the success of this technique.

The second "reason", intellectual concern, can best be understood within a psychological framework. Since research is an endeavor directed toward solving problems by those who are concerned about them, changing interest in research may be partially a matter of making researchable problems more salient, visible, tangible, and significant in the mind of the individual.

Definitions of the Variables

The Treatments: The three treatments in the study were representative of each of the above two perspectives and a combination of them. The social psychological frame involves communications about or from other professionals that enable the person to reinterpret the other's expectations, and in turn, redefine his own role. The communication about the other's role in this study was presented through a bibliography of 115 studies in occupational education currently in progress, proposed, or completed since 1963 by researchers in Minnesota. Since many of the authors of the studies included in the bibliography are professional educators in positions comparable to those in the sample, it was assumed that the sample members would reinterpret the role of the professional educator to

include a research orientation. The bibliography, a cover letter that included a short description of the bibliography with a section on the need for and the professional advantages stemming from research, and a printed post-card questionnaire (see Appendix A) were mailed to the members of one of the treatment groups.

The psychological perspective on changing research interests involves increasing the sample member's intellectual concern about researchable problems by making them appear more tangible and significant. In the study, a list of twenty one problems and problem areas in occupational education, developed by seven educational leaders in the State[1], was used as the second treatment. Hopefully, the list would serve to relate and focus the individual's own professional concerns upon generalizable research problems, and further enhance their perceived value. A cover letter accompanied the problem list to explain its origin and the importance of the problems, to prompt the individual to relate his concerns to them, and to encourage the return of the enclosed post-card questionnaire.

The third treatment consisted of mailing both the bibliography and the problems list, together with an appropriate cover letter and the post-card questionnaire.

Type of School: The types of institutions in which the sample was employed were classified as follows: Junior High Schools, Senior High Schools, Colleges, and Vocational-Technical Schools. Both public and private institutions were included in each category.

Research Atmosphere: Based on the results of a prior study, each institution employing sample members was classified as having a "positive" or "indifferent" atmosphere for research. Institutions with a positive atmosphere were those in which both of two levels of administrators, e.g. principal and superintendent of schools, director and superintendent of schools, department head and dean, etc., indicated that research in occupational education was an appropriate activity for their staff members. Institutions with an indifferent atmosphere were those in which the attitudes of one or both levels of administrators toward the conduct of occupational education research by their staff was unknown.[2] In this classification it has been assumed that, since all administrators

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[1]Executive Director, State College Board; Executive Director, State Junior College Board; Commissioner of Education, State of Minnesota; Director, Vocational Section, Minnesota Department of Education; Dean, College of Education, University of Minnesota; Vice President for Educational Relationships and Development, University of Minnesota; Research Director, Minnesota Department of Employment Security.

[2]The 12 institutions in which one or both levels of administrators indicated that occupational education research was not an appropriate activity for their staff were not included in the study.

had an equal chance to make their views known, those that took the opportunity were less apathetic or indifferent toward research than those that did not, and that this more positive attitude was reflected in a more favorable research atmosphere and a greater degree of positive communication about research in the school. Further, since administrators are usually among teachers' "significant others", the administrators' attitudes toward research will ordinarily influence the teachers' perceptions of their own roles.

Change of Interest in Research: The effectiveness of the stimulation was measured by whether or not the sample members responded to the treatment by returning a completed post card questionnaire. A return was assumed to indicate a positive change in interest since the same persons were not sufficiently interested in the conduct of research to respond to an identical post card questionnaire when it was mailed to them six months earlier. While the validity of this assumption, as well as the factors that may have influenced the sample during the intervening six months, may raise doubts about the absolute success of the treatments employed, the relative effectiveness of the treatments should not be affected due to the design of the study.

Objectives

The following four major questions were posed for the study:

1. Is there a relationship between response rate to the post card questionnaire and the three treatments when the potential respondents are employed in schools with (a) positive, and (b) indifferent research atmospheres?

2. Is there a relationship between the research atmosphere in schools and (a) the total response rate to all three treatments, and (b) the response rate to each of the three treatments?

3. Is there a relationship between response rate to the post card questionnaire and types of schools with a positive research atmosphere?

4. Is there a relationship between response rate to the post card questionnaire and the three treatments when the potential respondents are employed in each of various groupings of types of positive research atmosphere schools?

II. METHOD

Sample

The sample (and population) for the study consisted of all the teachers in Minnesota during the 1965-66 school year instructing in fields related to occupational education (the practical arts, vocational and technical education, and counseling and guidance) who (a) did not respond to a post card questionnaire, mailed in October, 1965 designed to assess their interest in occupational education research, and (b) were employed in institutions in which the research atmosphere could be classified as either positive or indifferent. There were 4222 individuals in the sample.

Procedures

Sample members were first grouped according to the individual schools in which they were employed, and then each school was classified as having a positive or indifferent research atmosphere.

Schools with a positive research atmosphere were then organized by type of school (junior high school, senior high school, college, and vocational-technical school), and schools within each type were randomly assigned to the three treatments. Thus, all the sample members employed by a single school received the same treatment.

The schools with an indifferent research atmosphere were also organized by type of school, however, in this instance, individuals employed in each type of school were randomly assigned to the three treatments. Thus, individuals employed in the same school received different treatments.

The three treatments, mailed to the sample in April 1966, consisted of (a) a bibliography of occupational education studies being proposed, in progress, or completed since 1963 by researchers in Minnesota, (b) a list of occupational education problems and problem areas considered significant by a group of prominent educational leaders in Minnesota, and (c) both the bibliography and the problem list. In each case, an appropriate cover letter and a printed return postage guaranteed post card questionnaire accompanied the bibliography and/or problem list. These materials were sent to sample members at their school addresses. No follow-up was attempted.

Table 1 summarizes the distribution of the sample by treatment and research atmosphere.

Table 1

DISTRIBUTION OF THE SAMPLE BY TREATMENT AND RESEARCH ATMOSPHERE

Treatment	Positive Atmosphere	Indifferent Atmosphere	Total
Bibliography (I)	1131	418	1549
Problem List (II)	1043	219	1262
Combined (III)	1158	253	1411
TOTALS	3332	890	4222

Analysis

Numbers of persons returning the post card questionnaire and percent of returns were used to describe the results of the treatments. The data were examined for relationships among treatments, research atmospheres, and types of school (in terms of frequencies of response) using the chi-square statistic. The .05 level of significance was used throughout for accepting the existence of a relationship greater than zero.

III. RESULTS

One hundred fifty six persons (3.7%) completed and returned the post card questionnaire. When it is recognized that the original (October) mailing yielded only 8.2% return, and that the present study dealt only with non-respondents of the original mailing, the small return becomes understandable.

Objective 1

Table 2 presents the frequencies and percents of responses and non-responses by treatment for individuals in schools with a positive research atmosphere.

Table 2

RESPONSE FREQUENCIES AND PERCENTS BY TREATMENT FOR POSITIVE RESEARCH ATMOSPHERE SCHOOLS

(N=3332)

Response	Bibliography (I)		Problem List (II)		Combined (III)	
	No.	%	No.	%	No.	%
Did Respond	40	3.5	52	4.8	33	2.8
Did Not Respond	1091	96.4	991	94.9	1125	96.8

The chi-square test of independence yielded a value of 7.13, which was significant at the .05 level. Those who received the problem list responded more frequently than would be expected by chance.

Table 3 gives the frequencies and percents of responses and non-responses by treatment for individuals in schools with an indifferent research atmosphere.

Table 3

RESPONSE FREQUENCIES AND PERCENTS BY TREATMENT FOR INDIFFERENT RESEARCH ATMOSPHERE SCHOOLS

(N=890)

Response	Bibliography (I)		Problem List (II)		Combined (III)	
	No.	%	No.	%	No.	%
Did Respond	16	3.8	8	3.6	17	6.7
Did Not Respond	402	96.1	211	96.4	236	93.1

The chi-square test of independence yielded a value of 3.45, which was not significant at the .05 level (P=.20). Although those receiving the combined treatment responded most frequently, this relationship could well have occurred by chance.

Objective 2

Table 4 shows the numbers and percents of individual responses and non-responses by positive and indifferent research atmosphere schools.

Table 4

RESPONSE FREQUENCIES AND PERCENTS BY SCHOOLS WITH POSITIVE AND INDIFFERENT RESEARCH ATMOSPHERES

(N=4222)

	Positive Atmosphere		Indifferent Atmosphere	
	No.	%	No.	%
Did Respond	125	3.7	41	4.6
Did Not Respond	3207	96.2	849	95.4

The chi-square test of independence yielded a value of 1.40, which was not significant at the .05 level (P=.30). There was no difference in the response rate that could not readily be attributed to chance.

Since Tables 2 and 3 indicate that the treatments may be differentially effective within positive and indifferent research atmosphere schools, Table 5 shows frequencies of responses between schools with positive and indifferent research atmospheres for each of the three separate treatments.

Table 5

RESPONSE FREQUENCIES BY RESEARCH ATMOSPHERE WITHIN SEPARATE TREATMENTS

(N=4222)

Response	Bibliography (I)		Problem List (II)		Combination (III)	
	Positive	Indiff.	Positive	Indiff.	Positive	Indiff.
Did Respond	40	16	52	8	33	17
Did Not Respond	1091	402	991	221	1125	236

The chi-square values found for the bibliography, problem list and combination treatments were respectively, .08 (P=.80), .70 (P=.50), and 9.25 (P=.01). Thus, the only significant difference, at the .05 level, between the response rates of individuals employed at schools with a positive research atmosphere and those employed at schools with an indifferent atmosphere was in the combination treatment. Apparently, the combination treatment was more effective for those in schools with indifferent research atmospheres.

Objective 3

Because of possible communication among individuals in those schools whose personnel received different treatments, data on frequency and percent of responses by type of school were obtained only for schools with a positive research atmosphere. Table 6 gives those frequencies and percents.

Table 6

RESPONSE FREQUENCIES AND PERCENTS BY TYPE OF SCHOOL FOR SCHOOLS WITH A POSITIVE RESEARCH ATMOSPHERE

(N=3332)

Response	Senior High		Junior High		Colleges		Vocational-Technical	
	No.	%	No.	%	No.	%	No.	%
Did Respond	101	4.2	11	2.5	5	1.9	8	3.2
Did Not Respond	2286	95.6	430	97.5	248	97.9	243	96.7

The chi-square test of independence yielded a value of 5.87, which was not significant at the .05 level (P=.20). There was no relationship between response rates and types of schools.

Objective 4

Since the expected frequencies of responses from junior high schools, colleges, and vocational-technical schools with positive research atmospheres were too small to permit treating those types of schools separately, Table 7 compares the response frequencies by treatments from various combinations of types of schools. Unfortunately, these combinations are not independent of each other; they do represent the only feasible groupings possible under the circumstances.

Table 7

RESPONSE FREQUENCIES BY TREATMENTS FOR GROUPINGS OF TYPES OF SCHOOLS WITH A POSITIVE RESEARCH ATMOSPHERE

Response	Junior & Senior High			Jr. High, Colleges, Voc.-Tech. Schools			Sr. High, Colleges, Voc.-Tech. Schools		
	I	II	III	I	II	III	I	II	III
Did Respond	38	46	30	6	14	4	37	46	32
Did Not Respond	945	823	946	296	308	319	942	849	985

The chi-square values among treatments for a) the junior and senior high schools, b) the junior high, colleges and vocational-technical schools, and c) the senior high, colleges, and vocational-technical schools were, respectively, 5.95 (P=.10), 6.80 (P=.05), and 5.12 (P=.10). Thus, while only the junior high, colleges, and vocational-technical school combination had a significant relationship between treatments and response rate, the trend within every combination of types of schools consistently indicates the problem list as the most favorable and the combination as the least favorable treatment. This is compatible with the results reported in Table 2.

IV. CONCLUSIONS AND DISCUSSION

Conclusions

Within the limitations imposed by the sample, the characteristics of the particular treatments, and the methodology employed, the following conclusions to the four objectives of the study appear warranted:

> Objective 1: Is there a relationship between response rate to the post card questionnaire and the three treatments when potential respondents are employed in schools with (a) positive, and (b) indifferent research atmosphere?

For persons employed in positive research atmosphere schools, there is a relationship between response rate and treatments. The problem list treatment yields the greatest rate of returns and is therefore considered the most effective of the three mail techniques for increasing interest in the conduct of occupational education research.

On the other hand, for persons employed in schools with an indifferent research atmosphere, there is no relationship between response rate and treatment. There was, however, in the sample, a tendency for the combination bibliography-problem list treatment to result in the highest return rate. The lack of a significant relationship may be partially attributed to communication among teachers in the same school who received different treatments; in effect, this communication would act to reduce the differences among treatments.

> Objective 2: Is there a relationship between the research atmosphere in schools and (a) the total response rate to all three treatments, and (b) the response rate to each of the three treatments?

There is no relationship between the research atmosphere in schools and (a) the total response rate to all three treatments, (b) the response rate to the bibliography treatment, or (c) the response rate to the problem list treatment. There is a significant relationship between research atmosphere and the response rate to the combination bibliography-problem list treatment. Persons employed in schools with an indifferent research atmosphere respond at a higher rate to the combination treatment than do persons employed in schools with a positive research atmosphere. The conclusions drawn for objectives one and two are therefore compatible.

> Objective 3: Is there a relationship between response rate to the post card questionnaire and types of schools with a positive research atmosphere?

There is no relationship between response rate to the post card questionnaire and persons employed in positive research atmosphere junior high schools, senior high schools, colleges, and vocational-technical schools. Approximately the same overall rate of return can be expected from all types of research supportive schools.

> Objective 4: Is there a relationship between response rate to the post card questionnaire and the three treatments when the potential respondents are employed in each of various groupings of type of positive research atmosphere schools?

There is a consistent trend in response rates among various combinations of types of positive research atmosphere schools which indicates the problem list as the most effective and the combination as the least effective treatment. This relationship between response rate and treatments was significant for the junior high, college and vocational-technical school grouping, and approached significance (P=.10) for other combinations of types of schools.

Discussion

The staff employed in schools with an indifferent research atmosphere tend to need both social support for playing the "research role", and intellectual stimulation to focus attention upon researchable problems.

In those schools with research supportive administrators, the staff probably already has professional role perceptions which include the "educator as a researcher". The most effective research stimulant in their case, therefore, is focusing attention on relevant, significant problems in order to capture intellectual attention, curiosity, and concern, e.g. the list of problems. Moreover, these individuals did not seem to perceive the bibliography, when sent with the problem list, as role supportive. Rather, since they already assume the support of significant others, the bibliography represents a report of the research already conducted in relation to the problems to be solved. Many might therefore tend to be discouraged from ready identification of a "new and significant" problem. Thus, the bibliography could interfere with or act as a dampener for the stimulation of the problem list.

Appendix A

POST CARD QUESTIONNAIRE

Name_____ Institution_____

Address_____ Field of Specialization_____

Check the appropriate boxes:

I. Interested in:

☐ Conducting research ☐ Acquiring research training ☐ Both

II. Preparation: Check all your formal educational experiences and attainments:

☐ Descriptive Statistics ☐ Inferential Statistics
☐ Research Assistant ☐ Research Methods Course
☐ No Degree ☐ Bachelors Degree ☐ Bachelor Plus
☐ Masters ☐ Masters Plus ☐ Doctorate

Institution providing majority of research related experience_____

Recency of preparation:

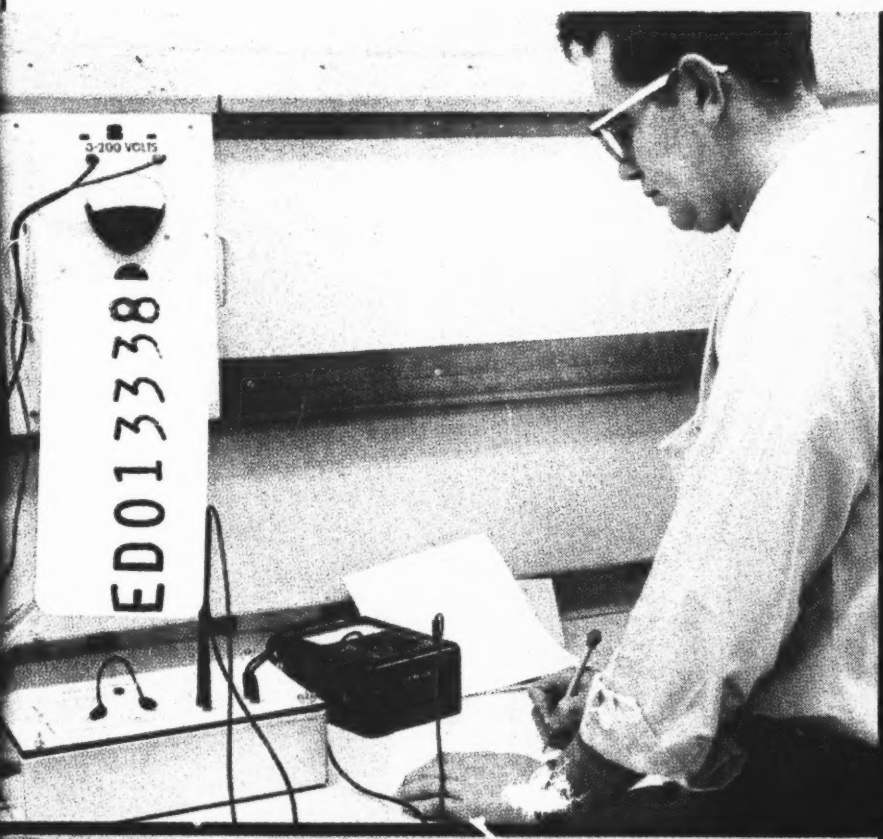
☐ Before 1955 ☐ 1956-60 ☐ 1961-65

III. Experience: Total number of research studies completed or in progress requiring the collection of original data (including degree fulfilling studies)

☐ None ☐ One ☐ 2-4 ☐ 5 or more

Recency of last study:

☐ Before 1955 ☐ 1956-60 ☐ 1961-65



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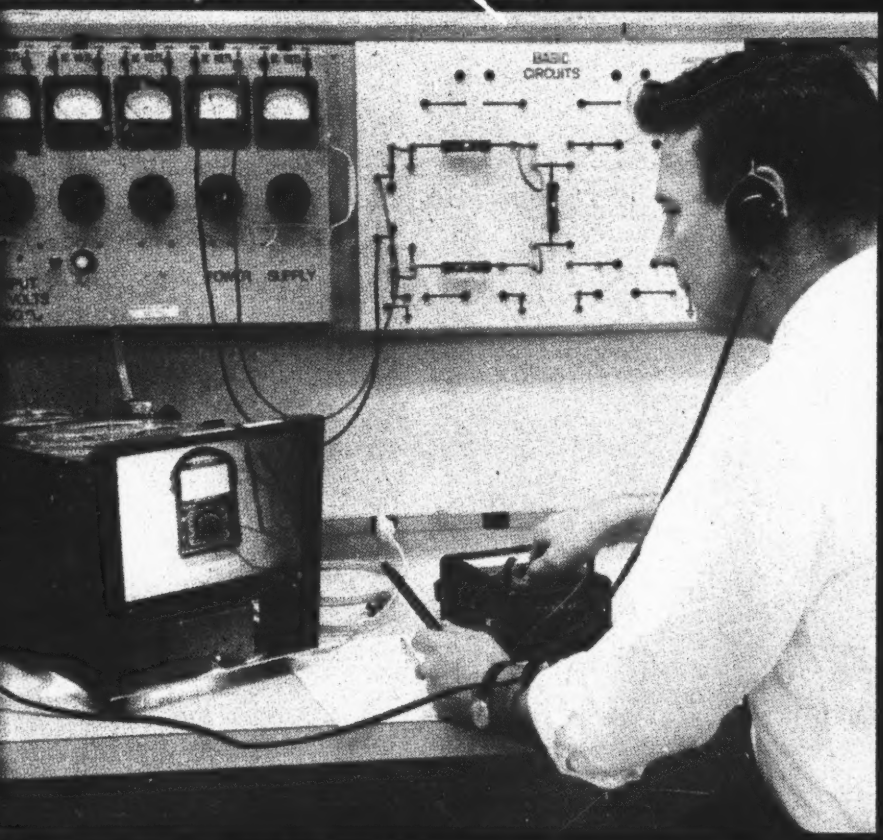

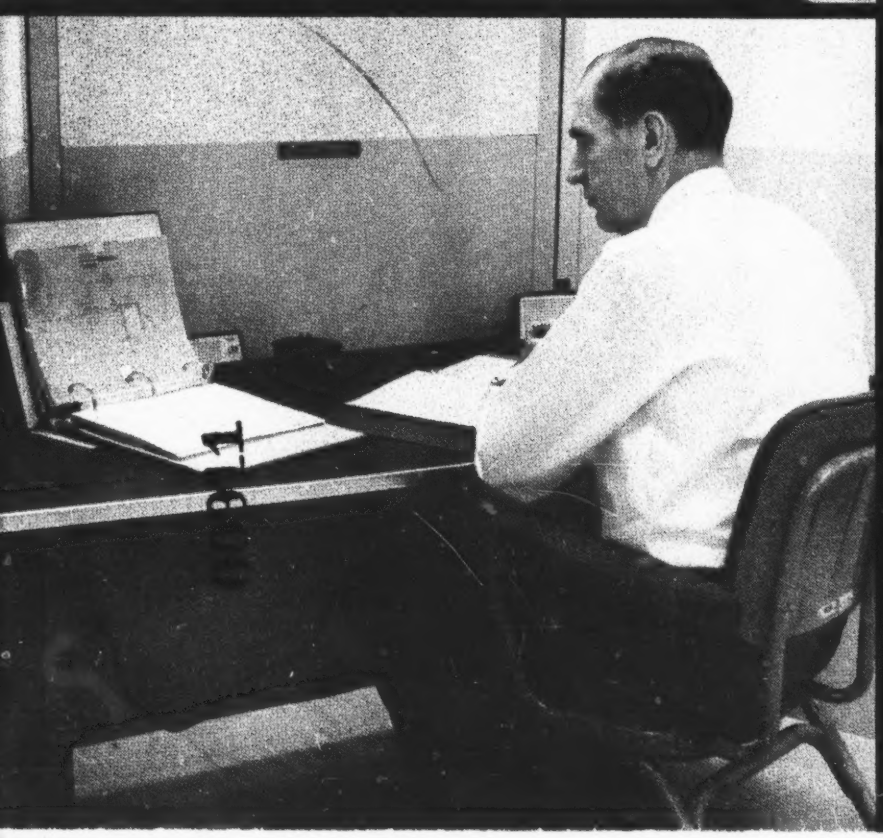

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A PROGRAMMED COURSE IN GENERAL ELECTRONICS

A report of the . . . .

- design and development of a completely programmed approach for teaching basic electronics skills, both verbal and performance, to the communications craftsman;
- the development, analysis, and validation of the performance tests used in the program to determine the trainee's progress and his grade upon completion of the training.

C. Glenn Valentine
General Staff Assistant-Training
Michigan Bell Telephone Company
General Plant Personnel
May 5, 1965

PREFACE

During the period 1956 through 1958, Mr. Glenn Valentine developed for the Michigan Company, under the supervision of Mr. Robert DeHaan, a very excellent instructor's outline for General Electronics training. This included the development of a complete set of overhead projector and work panel demonstration aids. With this background of achievement, Glenn was selected and loaned to the Bell Telephone Laboratories as the resource talent for an exploratory study on the use of programmed learning for a training project in Basic Electricity. This has subsequently, been published and stocked by the Western Electric Company for Bell System use as *A Programmed Learning Course in Basic Electricity*.

Glenn worked with Dr. Myron Woolman who was the training psychologist engaged for this project, under the direction of Dr. H. O. Holt, then Director of Communications Social Science Research at the Bell Telephone Laboratories. The 2½-year project revealed very strong evidence as to possible training accomplishments that could be done with a learner-centered approach.

Upon Glenn's return to the Michigan Company in the fall of 1961, he applied these techniques to the General Electronics course. He was assisted by a number of instructors and staff assistants in the implementation of the program. In addition, counsel was sought and contributed by: Dr. Joseph Hammock, formerly of the Bell Telephone Laboratories and currently of the University of Georgia; Dr. H. O. Holt, A.T. & T. Company; Dr. Paul Dressel, Michigan State University; and Dr. Ira Cisin of George Washington University, Washington, D.C. Since February of 1963, we have processed several hundred employees through this learner-centered program that contains many unique and creative applications of the learning process. National recognition was given to the quality of this program when Glenn was selected to make a presentation of it at the 1965 Philadelphia convention of the National Society for Programmed Instruction (NSPI).

One of the outstanding features of this course is the ten performance tests spaced through the program. Glenn designed these to permit the trainee to demonstrate his ability to apply his learned skills and concepts to a situation representative of some of the requirements of a knowledgeable electronics employee in the telephone business. These tests have proved effective in the measurement of an employee's electronic knowledge and they have been used independently as a 3½-hour test to measure this ability in employees identified by work interest surveys and in new hires. They have also become the model for similar performance tests in other training and evaluation programs. Dr. Cisin directed the study of the development of the tests and the ensuing validation. The report of that study is an appendix to this report.

F. J. Howell
General Staff Supervisor-Training

Project Approved for Publishing:
(August, 1966)

R. C. Barron

R. C. Barron
General Plant Personnel Supervisor
Michigan Bell Telephone Company

DESIGN AND DEVELOPMENT

OF A PROGRAMMED

GENERAL ELECTRONICS COURSE

In early 1959, an exploratory study on programmed instruction began at the Bell Telephone Laboratories, Inc. in Murray Hill, New Jersey. The results of that study have caused considerable discussion and in some cases changes in Bell System training methods. At the Michigan Bell Plant School for instance, a unique classroom was developed for training telephone technicians in the fundamentals of electronics.

The report on the Bell Laboratories study on programmed instruction[1] presented results showing the feasibility of using programmed materials for teaching conceptual areas such as electricity and electronics. Although the results of the study showed that the program on Basic Electricity was effective, there were some problems in using the program for Bell System training. In particular, the findings on fatigue indicated that learners could not work on this program for more than two or three hours at one time without seriously decreasing their learning effectiveness. In Bell System training, most learners are in class for eight hours per day and five days per week. Thus, use of the program which had been produced for the study[2] was limited to sessions of no more than two or three hours per day without losing much of the program's effectiveness. When the programmed instruction described herein was developed, considerable effort was made to offset this disadvantage of a long verbal program.

Another serious problem with the use of this Basic Electricity Program existed in the objectives of most of our electricity and electronics training classes. The Bell Labs program was all verbal with constructed written response requirements. The objectives of most electronics courses in the Bell System included a considerable amount of skill in manipulating test equipment and actual electrical components. Thus, in order to use this program to meet these objectives, some modifications were needed to change the Basic Electricity program so that skills would be learned in the training. The program developed for the Michigan Bell Plant School utilized new techniques for teaching skills with programming methods. The change of pace and physical activity created by the interlacing of the laboratory or skill units of learning with the verbal units has also overcome the fatigue situation to the point that the trainees see it as no problem.

The electronics training program described here incorporates the features described before—both verbal and skill programs are used. The course objectives were based on the conventional lecture course on General Electronics that had been in use for some five years at the Detroit Plant School. Many of the techniques and training devices utilized in these programs were used by instructors on a group basis in the conventional classes. We were pleased with our training in electronics at the time we began this program. In fact, we felt that our training in this area was as good as any available. However, the extra values to be gained in a training program that was individually paced, incorporating skill training, and with good performance evaluation, promised such rewards that we moved ahead with the project.

[1] Holt, H. O. and Valentine, C. G., An Exploratory Study of the Use of A Self-Instruction Program in Basic Electricity Instruction, Bell Telephone Laboratories, Inc., Murray Hill, New Jersey, 1961.

[2] Woolman, Myron, Programming for Conceptual Understanding, Report to Bell Telephone Laboratories, Murray Hill, New Jersey, 1961.

GENERAL ELECTRONICS PROGRAMMED INSTRUCTION COURSE

18 PROGRAM UNITS

L1. STATIC ELECTRICITY
2. CURRENT AND EMF
3. RESISTANCE, CONDUCTANCE AND OHM'S LAW
4. R COMBINATIONS, DC POWER
L5. MAGNETISM
6. A.C.
L7. R CIRCUITS
L8. METERS
L9. INDUCTANCE
L10. CAPACITANCE
L11. AC CIRCUITS (RCL)
L12. RELAYS, TRANSFORMERS
L13. ELECTRON TUBES (DIODE, TRIODE)
L14. ELECTRON TUBES, (PENTODE)
L15. GAS FILLED TUBES
L16. VARISTORS AND TRANSISTORS
L17. TRANSMISSION
18. REVIEW

13 LABORATORY EXERCISES

Completely Programmed

18 CHECKOUT QUIZZES

One Per Program Unit

Learner must pass in order to move to next unit.

CRITERION SCORES

1. Time to Complete Course
2. Score on Written Test
3. 10-Part Performance Test

FIGURE 1 - Description of contents and features of the General Electronics Programmed Course at Michigan Bell Plant School.

Figure 1 shows the content of the Michigan Bell General Electronics Course. As you can see, the material begins with elementary static electricity in Program Unit 1 and moves through DC and AC theory, relays, transformers, electron tube circuits, semi-conductor and transistor circuits and finally transmission fundamentals. The average time to complete this training was 144 hours with a range of 72 to 240 hours. The technicians who take this course are usually high school graduates with an IQ range of 90 to 130 with most trainees having an IQ well above 100. The ages of the trainees range from the early twenties to those in their fifties. Men are selected for this training by their field supervisors. For most of these men, this training provides increased knowledge and skill to meet the growing complexity of modern equipment. Normally, no upgrading occurs as a result of this training. Men are not scheduled for this training in terms of classes. Each week there are from four to six new trainees scheduled to begin the training. The starting times of these men are staggered, with one or two starting Monday, then another one or two starting Tuesday and finally, one or two starting Wednesday. On some occasions, other trainees may enter the program on any day of the week and any hour of the day between 8 A.M. and 5 P.M. Thus, the trainees are spaced throughout the program.

Notice in Figure 1 that certain program units have an L at the left of the unit number. This indicates a laboratory session. As shown in one of the small rectangles of Figure 1, there are thirteen of these lab sessions. Each laboratory exercise is completely programmed. That is, the learner works at his own pace on pre-prepared materials. The lab exercise consists of frames requiring responses with or on real objects and confirmation is given either verbally or with visuals. These lab exercises are spaced between the other programs in order to change the learner's environment after no more than a few hours on an all verbal program.

Check-out quizzes are given after each program unit. These quizzes are not used in the final rating, but a learner must meet a minimum score on each of these quizzes in order to progress through the course. The final criterion scores consist of time to complete, score on a written test, and score on a 10-part performance test. The written test and the performance test will be described later.

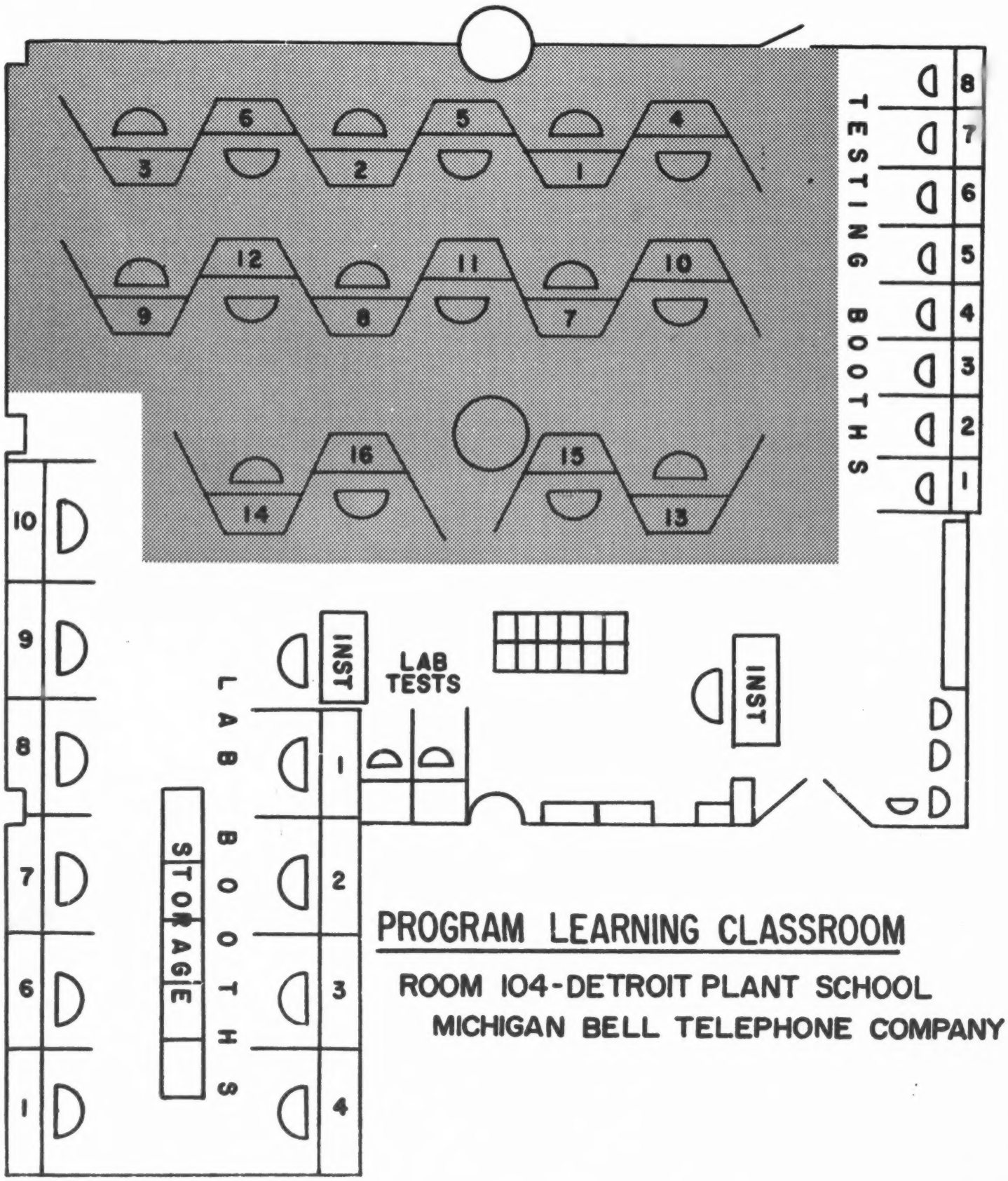


FIGURE 2

Figure 2 shows the training center's programmed classroom layout. The shaded central area contains the program booths where the trainees use the verbal sections of the program. Trainees work in this area on linear programs with written responses that are mostly completion type. The booths along the right wall are used for testing. One instructor (two instructors are used in this training area) is located at the desk in the lower right corner of Figure 2. He is able to monitor the testing booths. This instructor has the main control over student activities. He keeps all records which includes continuous record of the progress of each trainee. A magnet board is used to keep track of each trainee location in the classroom.

The second instructor controls activities in the lab area which consists of the 10 lab booths and the two lab testing booths at the lower left of Figure 2. This instructor is free of most record keeping and is therefore able to move among the lab booths to assist the trainees during their lab exercises.

These facilities are capable of handling up to 22 trainees at one time provided the trainees' entrances are spaced throughout the program. Some delays will occur if as many as 22 trainees are in the classroom for any length of time. We try to average about 18 trainees with peak loads of 22 and a minimum of about 15.

Let us follow a trainee through some of the more important phases of this programmed course. When a trainee enters the classroom on his first day, he is given a set of four pre-tests in arithmetic. If these pre-tests are passed, then the trainee begins the program with Program Unit 1. If a trainee fails any of the four arithmetic pre-tests, he is given refresher programs covering the areas of his weakness. On completion of these refresher programs, the trainee again takes arithmetic tests in those areas he previously failed. If a trainee cannot meet the minimum scores on the arithmetic tests even after taking the refresher arithmetic programs, then he would probably return to his work location without attempting to take the program. As of this writing, no trainee has been returned to work because of failing the arithmetic tests.

The trainee works through Program Unit 1 in a booth such as the one pictured in Figure 3. These booths are designed to permit maximum work space in a relatively open area with a minimum of distractions. The walls open outward behind the trainee to give the feeling of being in an open room yet movement outside the booth is normally out of vision to the trainee. The booths are acoustically treated to minimize sound reflection. In addition, background music is fed to each booth through a 760A loud speaker unit to raise the ambient sound level. The speaker unit is modified with a volume control to permit the trainee to turn off or adjust to a level suitable to him. The music also minimizes distractions caused by other sounds in the room.

The programs are linear and are printed three frames to the page. The frames are vertical down the page. A special notebook which has a sliding mask is used to cover the answers while a response is being made. Many learners use a piece of paper or cardboard and simply slide this cover down the page rather than use the sliding mask. The trainee refers to a panel book which consists of drawings, charts, and photographs. Acetate overlays in color are used to build from simple ideas toward the more complex presentations. The program directs the trainee to the visuals. Sometimes a visual is used to confirm a response, especially when simple drawings are asked for by the program.

If a trainee needs help during this portion of the course, he may signal the instructor by depressing the "on" button of the 666A transmitter unit shown at the left rear corner of his desk (see Figure 3). This turns on a numbered lamp over the trainee's booth. It also operates a buzzer and a flashing light on a Call Director at the instructor's desk (see Figure 4). If the instructor is at the desk he will depress the associated key and talk to the trainee over the hand telephone set. The trainee hears the instructor over the same speaker from which the background music was fed. The background music is off during the instructor-trainee conversation. The speakerphone system was used to permit a trainee to have contact with his instructor "hands free" while manipulating his work books.

Figure 4 shows the instructor's desk with the Call Director intercom. Notice that above and to the right of the Call Director a magnet board displays the room layout with trainees' names on small magnets indicating the booth which they are using. Thus, with a glance, the instructor knows the name of the trainee requesting help. Just out of view in Figure 4 and to the left of the Call Director, there is a complete set of all the program units and the panel books (visuals used with each program unit). This allows the instructor to have access to the exact page of the program and panel book to which the trainee is referring.

Should the instructor be in the booth area when the buzzer sounds indicating a call for help, he simply notes which booth lamp is lit and proceeds directly to the trainee's booth to give assistance. The call for assistance may be cancelled at the booth by simply pressing an "off" button on the transmitter unit.

This intercom system allows each trainee to obtain assistance quickly and at the same time prevents the confusion and distraction that would occur if trainees had to go to the instructor's desk with their questions. Trainees waiting for new assignments and those waiting for tests or test results may wait in the area in front of the instructor's desk. Storage facilities near both instructors' desks allow for quick access to all materials used in the course. In the lab area, the trainees select and return most of the lab components and test equipment which they use.

Classes begin at 8 A.M. and stop at 5 P.M. A trainee will work continuously on the course for about 7½ hours with lunch and a few short breaks the only time away from the program. This long period is broken up by changing the trainee's environment at specific points in the program. This is done by keeping each learning sequence to a relatively small number of frames between 200 and 300. After working in a verbal section of the course for several hours, the trainee is sent to the lab section of the classroom (shown in the lower, left area of Figure 2). In the lab area the trainee again uses a program, but this

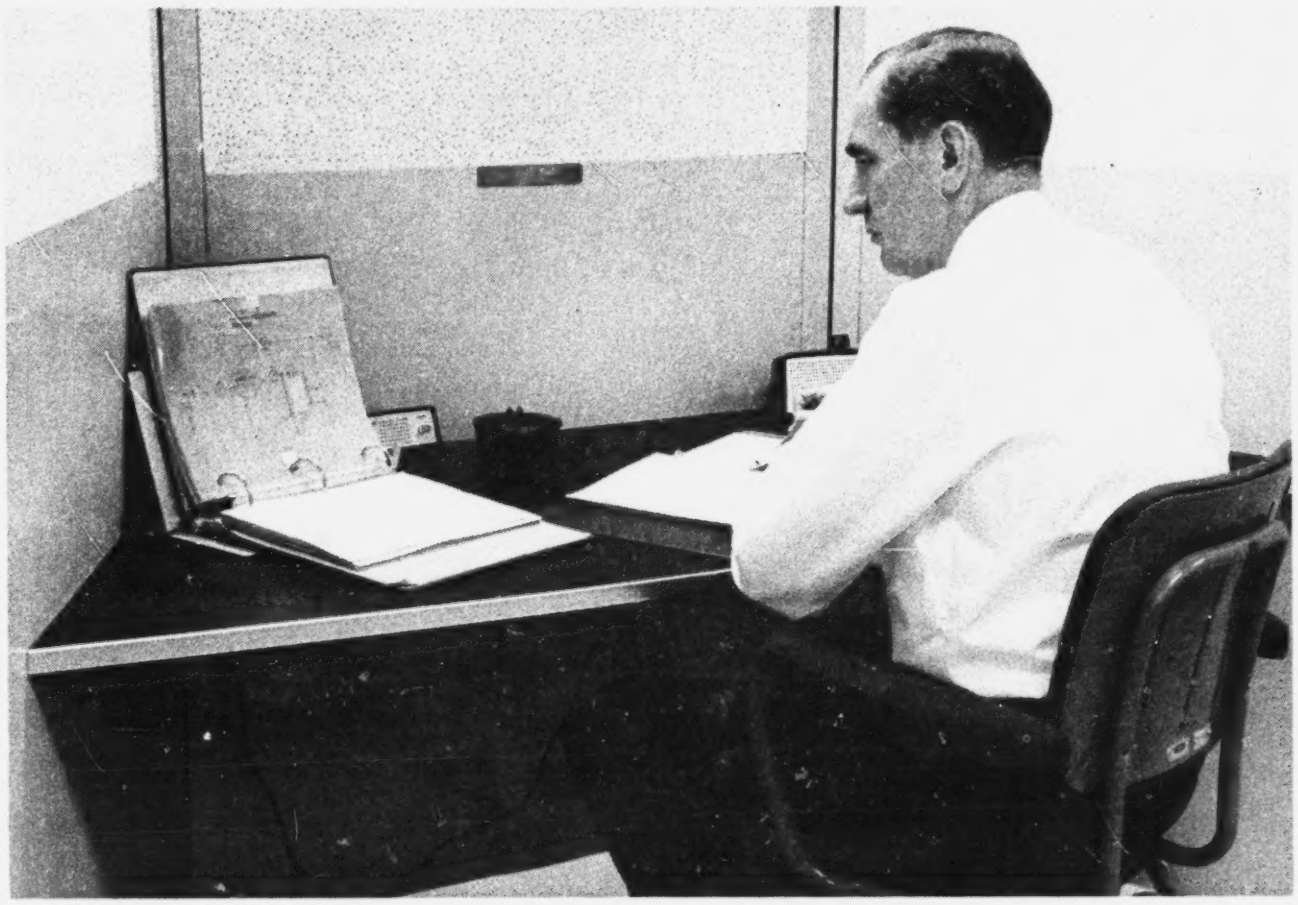


FIGURE 3 - A trainee at work on a verbal program unit in the General Electronics Course.

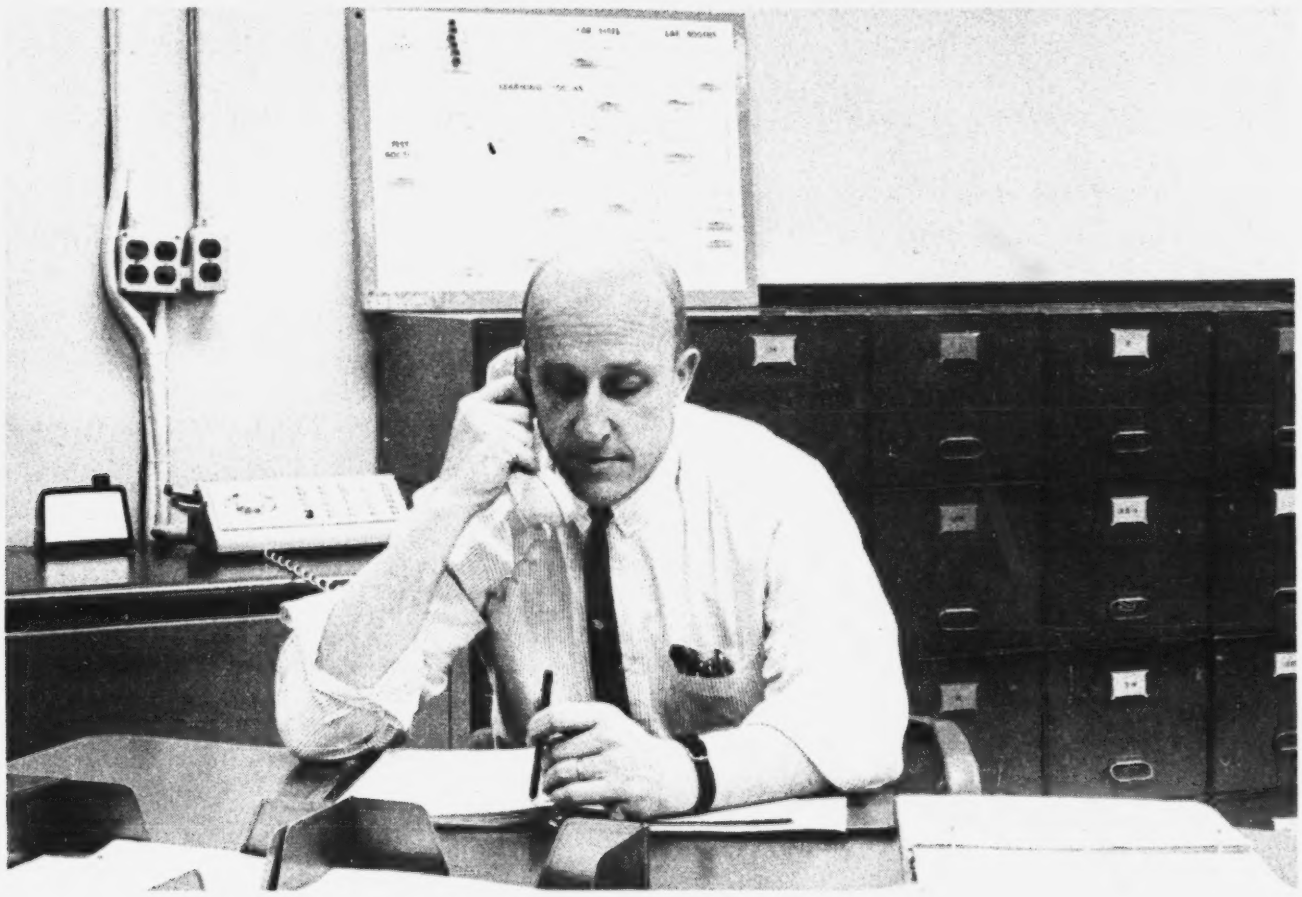


FIGURE 4 - Instructor's control desk showing intercom and magnet board.

program will be quite different from the previous verbal program. About half of the lab programs are typed materials similar to the programs used in the all verbal booth. The remaining lab programs are on audio tape so that the trainee will hear the instruction and questions. Thus, trainees will respond to spoken and written questions. The lab programs are designed to present information in the form of actual components, visuals, and typed materials. The response requirements are given either by printed programs or from audio on magnetic tape. The visuals are usually actual photographs, either black and white prints or 35mm color slides.

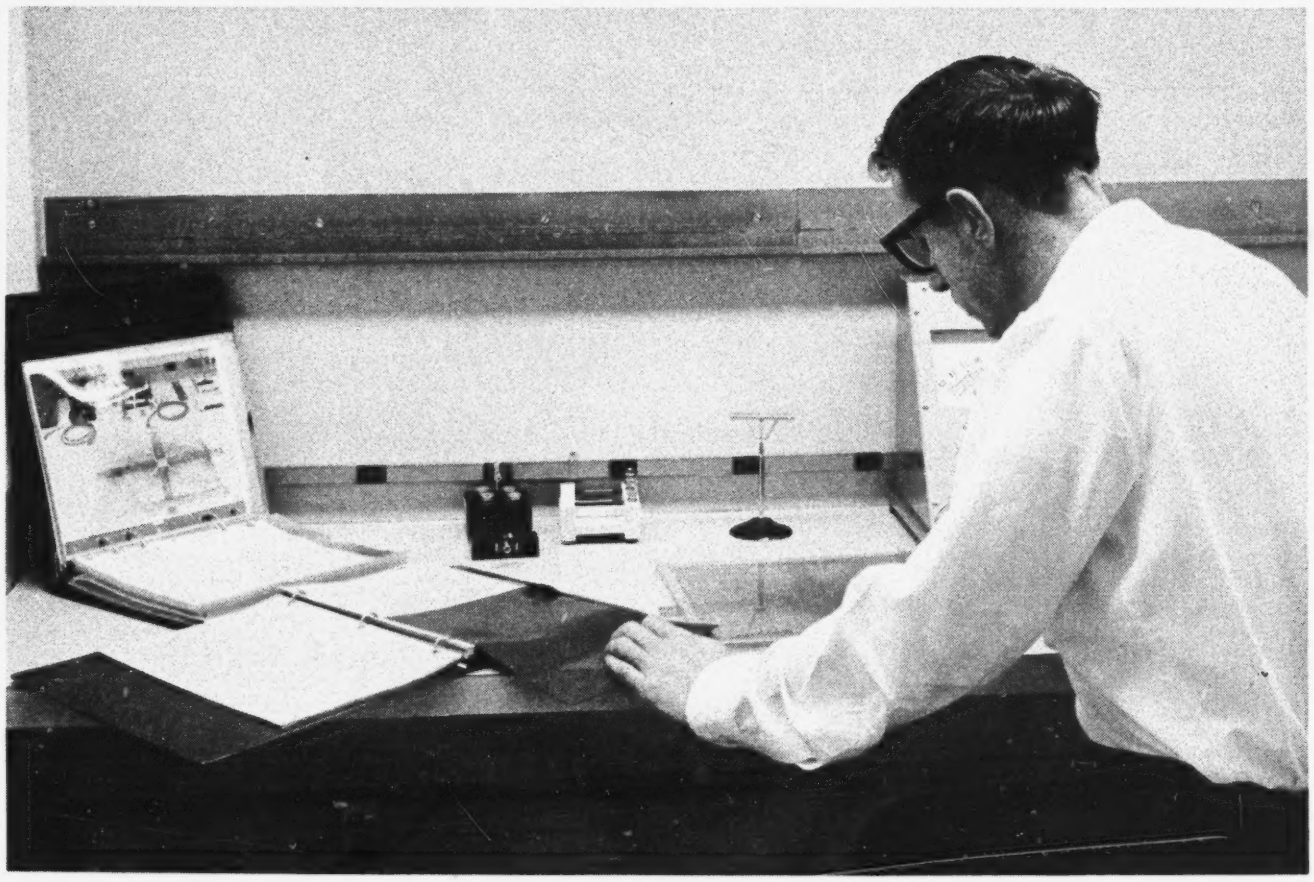


FIGURE 5 - Lab booth with trainee taking a *programmed* lab exercise on Magnetism.

Figure 5 shows a lab booth with a trainee working in the program unit on magnetism. The response requirements are presented in a linear program. The program is a book with three frames per page. The sequence of frames is vertical down the page. The response confirmation is presented both by answers just below each frame and by photographs in the panel book at the left of the trainee. Photographs are also used as prompts to the trainee to assist the trainee's performance on some of the tricky component manipulations.

In this lab booth the trainee manipulates real objects under the direction of printed instructions. This lab exercise follows an all verbal program in which all the responses were written. This booth provides a completely different environment from the preceeding program booth. The lab booths are larger (six feet wide) with bench-high working surface and a stool instead of a chair. The learner usually stands a portion of the time he is in the lab booth. The lab exercises are not verifications of or supplements to the all verbal programs. Each lab session presents all the relevant theory for the area covered. For example, this lab session on magnetism teaches the basic theory of magnetism while the learner checks and discovers many of these theories by manipulating real objects.

These lab sessions are sequenced into the total program in order to break up the long sessions on the all verbal programs. This minimizes the loss of effectiveness of the program which occurs when trainees work for long periods on one type of program.

Another problem with programmed training in this area is the lack of audio input to the trainee. If the trainee reads the entire program, then he has serious problems in listening and speaking about the material. Therefore, it is important that a large portion of the program provides an opportunity for the trainee to hear the terms, phrases, and devices pronounced.

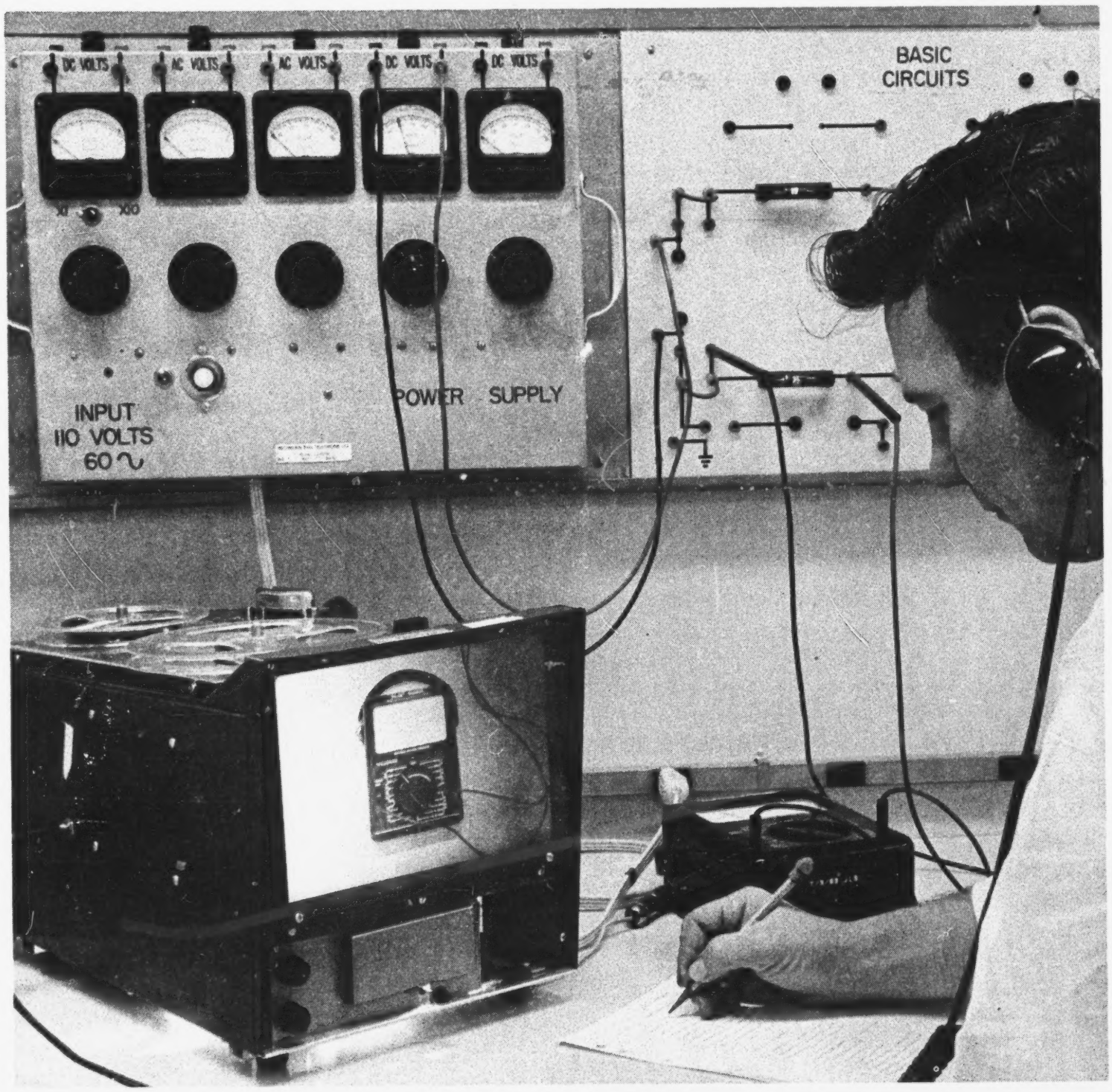


FIGURE 6 - Lab booth with program on audio-visual "teaching machine."

Figure 6 shows a trainee in a lab section where the program is recorded on tape. The response confirmation is given by audio from the tape and by 35mm slides which are synchronized to the tape. Slides are also used to provide cues and to assist trainees in the manipulation of the actual equipment. The tape has special signals on a separate channel so that slides can be changed at any point in the program. Also, signals are used to stop the tape automatically at any point. The tape is then restarted by the trainee. The trainee is allowed to move at his own pace by stopping the tape for each response requirement.

This lab program, then, provides the audio needed to aid the trainee in listening and speaking about the materials taught. One other advantage is realized from the audio-visual programs. Since the technician must respond to both written and spoken instructions on the job, it is expected that the use of audio programs will aid in the transfer of the learning to performance on the job.

FIGURE 7 - Trainee learning the use of a *multimeter.*

A few scenes of one of the lab programs will help to show how the audio-visual machine can teach. In Figure 7, the trainee is learning how to use a multimeter. This piece of test equipment is a multi-purpose meter which can be used to measure four different types of electrical quantities (DC volts, AC amps, AC volts, and ohms). At this point in the program, the trainee is adjusting the meter in preparation to taking a DC voltage measurement. The response requirement is being given by voice instructions from the tape. The slide portion of the machine is providing a "visual prompt" to assist the trainee in making the response.

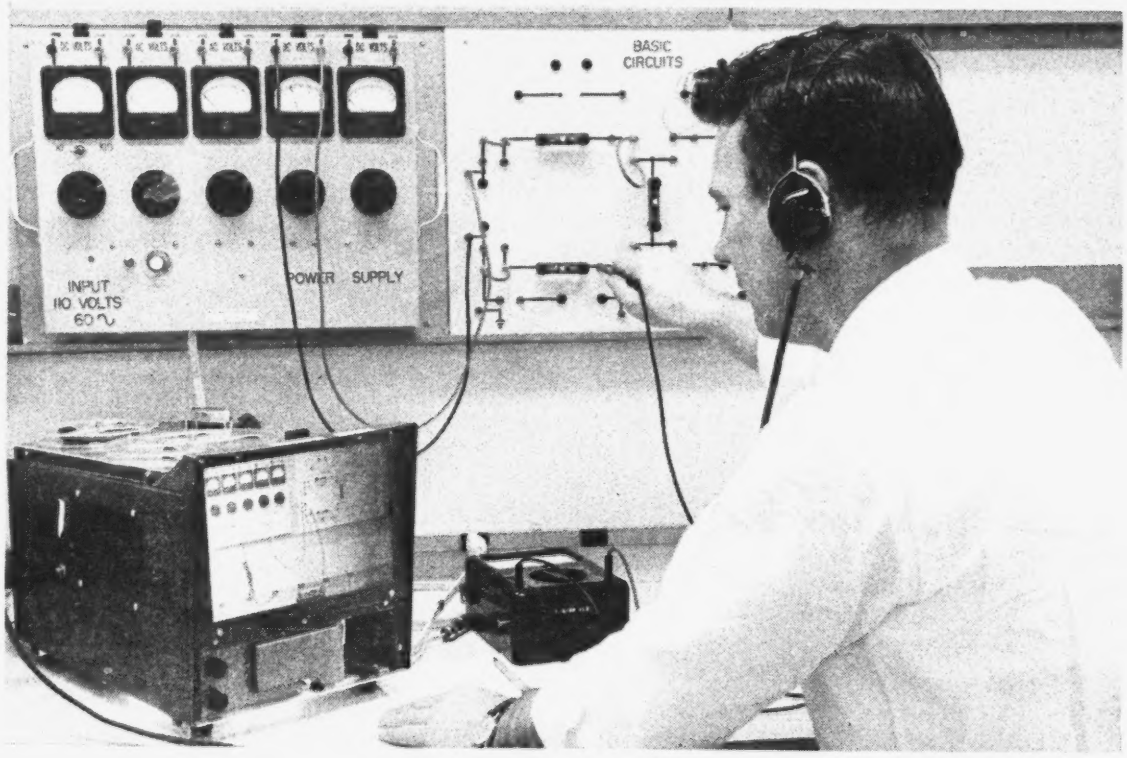


FIGURE 8 - Trainee connecting a meter to a live circuit while taking a lab program.

In Figure 8 the trainee is being asked to connect the meter to a "live" circuit in order to take a measurement. Again the 35mm slide is used to assist or "prompt" the trainee. Using this technique minimizes the possibility of the trainee making a mistake. These trainees do not "learn from mistakes." Rather, they proceed through the program with relatively few errors. A welcome but unexpected advantage of these lab "programs" is the low number of damaged meters. Due to the controlled manner in which trainees are taught to use the meters and the fact that they seldom make mistakes, the meters are rarely damaged even though the trainees work with no direct supervision.

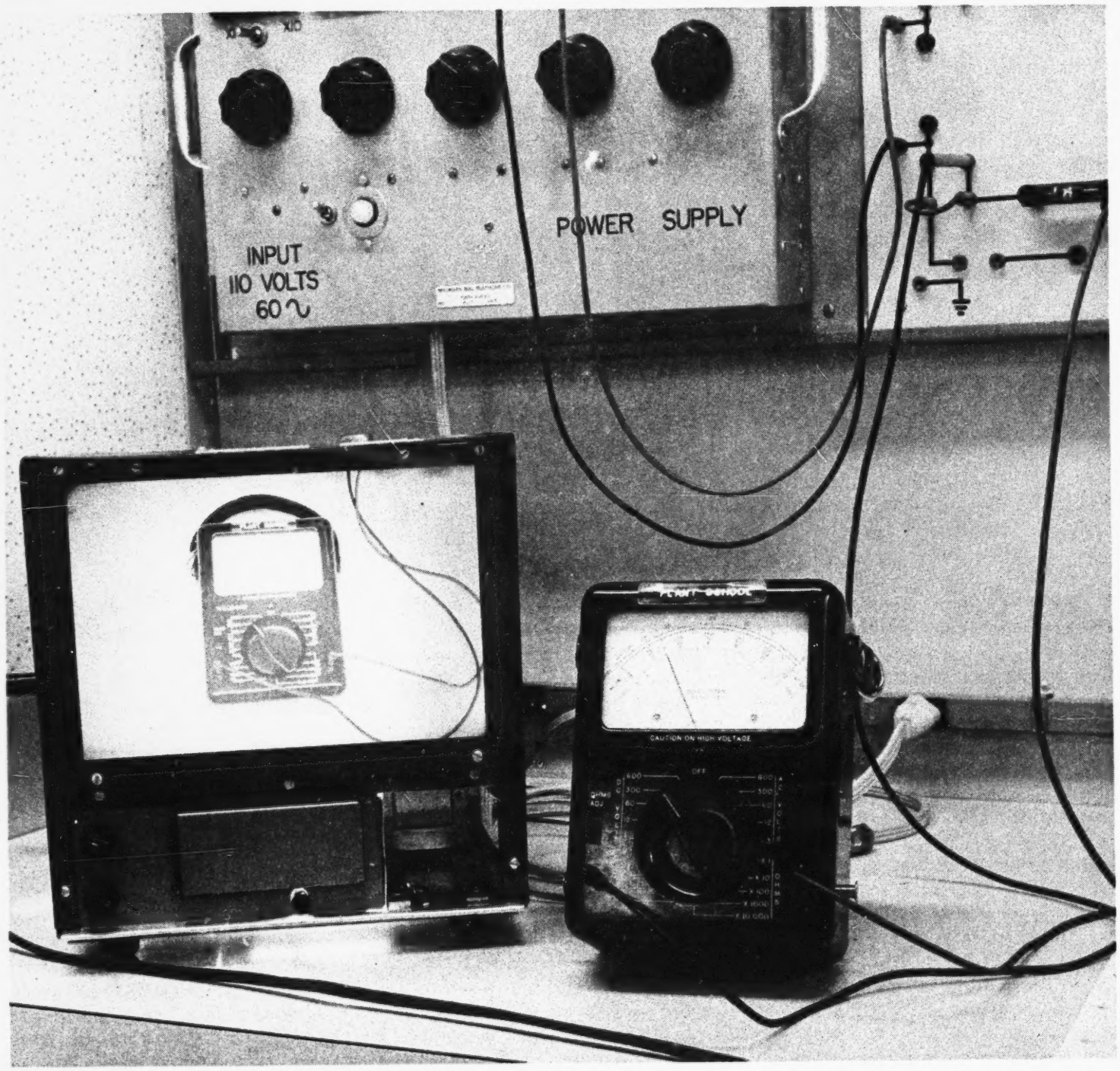


FIGURE 9 - A scene from lab program showing visual confirmation of correct measurement. (Meter tipped up for photograph. Normally used lying flat.)

Figure 9 presents another use of the slides in the audio-visual machine. In this picture the slide is used to "confirm" a response. The trainee has connected the meter in the circuit and recorded the measurement on a worksheet. After making the response, the trainee restarts the tape and the slide shown is automatically presented while the voice on the tape gives the correct measurement. Thus, the trainee hears the correct response and also is able to compare the face of this meter with the one on the screen. The feedback allows the trainee to correct his meter settings if he erred in taking the measurement.

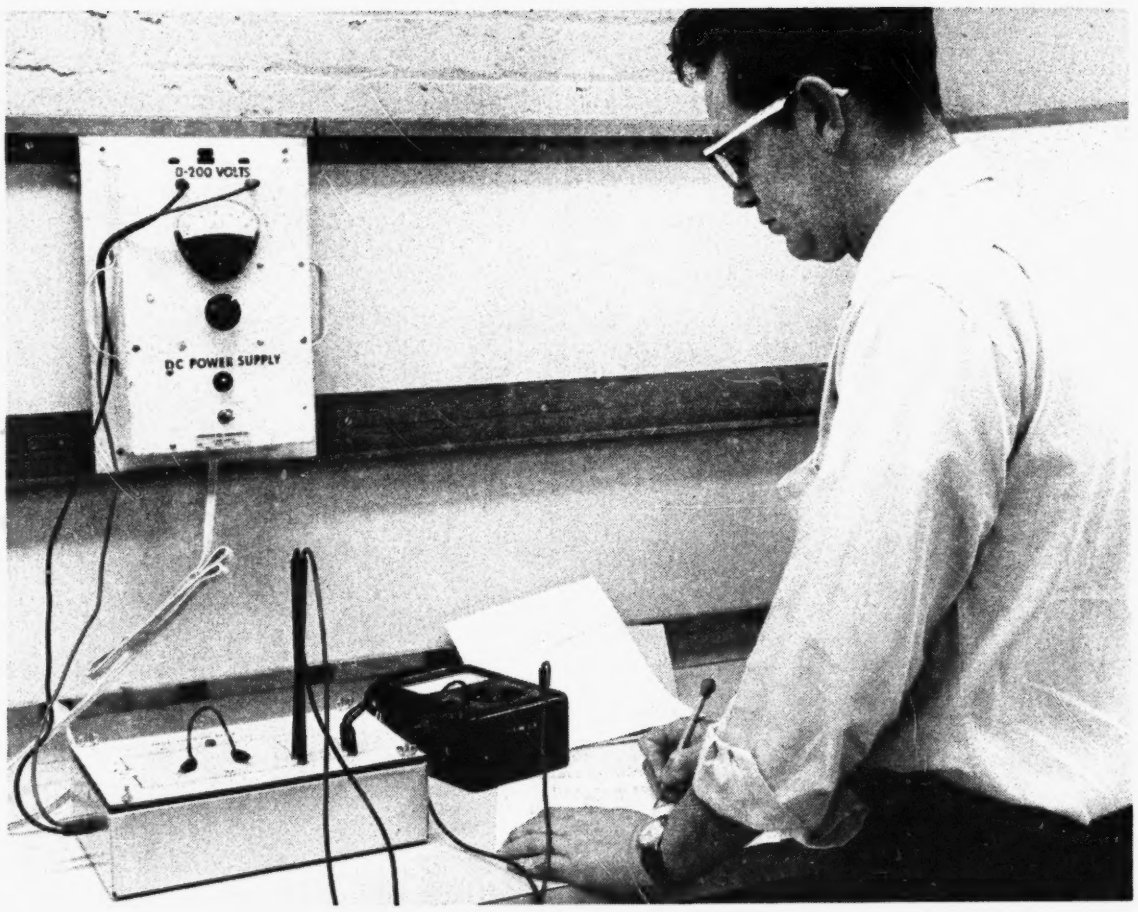


FIGURE 10 - Trainee taking one part of the Electronics Performance Examination.

A special performance test was developed to test for ability to perform on live equipment with actual test equipment. Figure 10 shows a trainee taking one part of this 10-part *Electronics Performance Test* (See appendix for description and validation data on this test.). The 10 parts of this test are given in pairs at five points in the program. In order to proceed to the succeeding units of the program, a minimum score must be achieved on each of these 10 parts. Even though the test parts are given in pairs, the minimum score must be attained on each test. If a trainee fails to meet the minimum criteria on one of these test parts, he will repeat the appropriate unit or units and then take an alternate form of the test. After several failures on a given test, the trainee is counseled and usually returns to his work location. These "incompletes" represent the only failing trainees since no trainee has failed to meet final passing score after completing all of the units and after passing the check-out quizzes and performance tests.

If we compare scores on the programmed electronics trainees with scores on former "conventional" trainees as well as scores for persons holding commercial radio operator licenses, we can get some measure of the effectiveness of the program. The bars at the left in Figure 11 show the distribution of written exam scores for 36 trainees who took the last four classes of conventional electronics training in the fall of 1962. These trainees were sent in for training by field supervisors. The field supervisors were filling their normal training requirements and knew nothing about our study. The bars to the right in Figure 11 give the distribution of scores on the same exam for the 59 trainees who "completed" the programmed course from January, 1964, through November, 1964. We consider 60% a passing score. This passing score was selected somewhat arbitrarily and was based on the expected score of a trainee who is just able to pass all the check-out quizzes.

Using this 60% mark as a passing score, 47% of the "conventional" trainees "failed" to meet this score. In the programmed course, 30% of the trainees "failed" to complete the course.

Figure 12 compares the time of the conventional classes with the time to complete the programmed course. The conventional course took 120 hours while the mean time of the trainees who completed the programmed course was 140 hours. Most of the incompletes in the programmed course spent less than 80 hours before returning to their work location. Those trainees who took more than 200 hours in the programmed course were allowed to complete because they were passing the check-out quizzes and their supervisor felt that they critically needed this electronic knowledge and skill in order to perform their particular job.

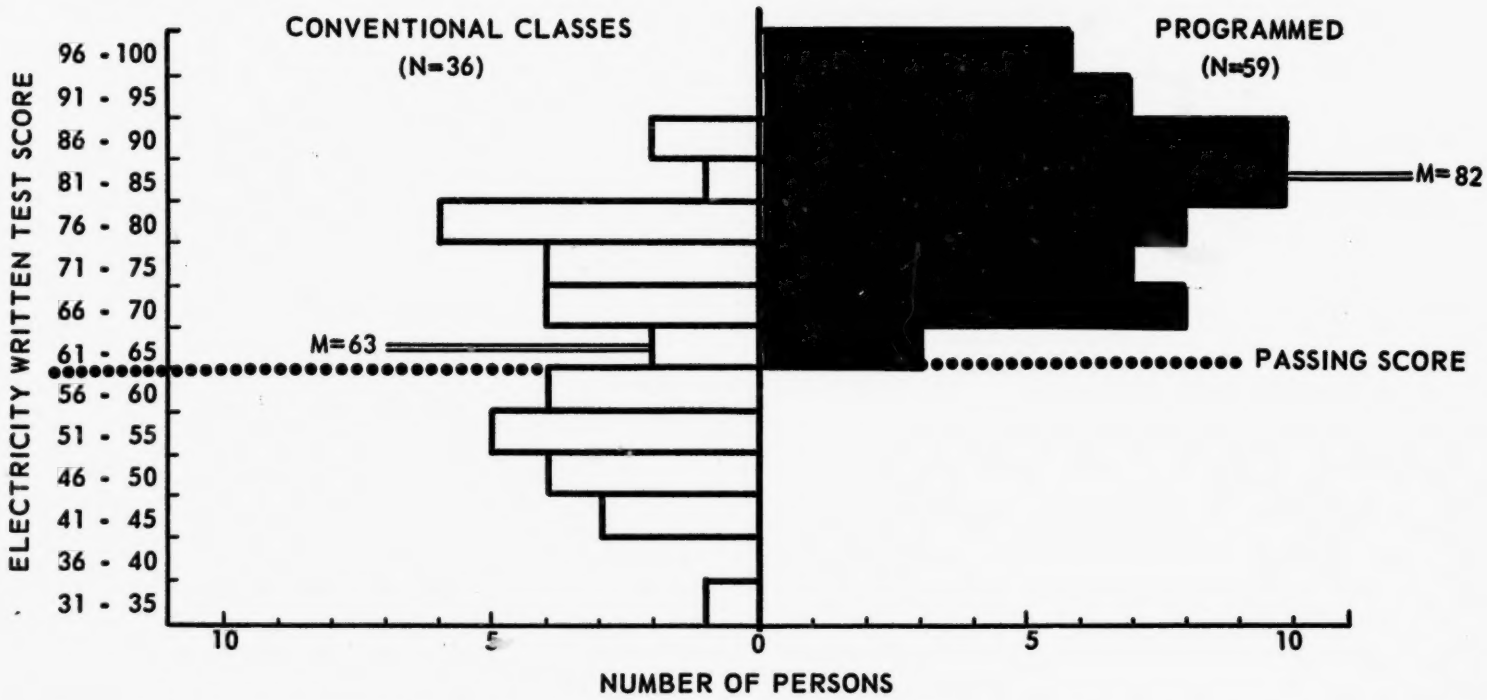


FIGURE 11 - Comparison of written test scores for trainees from lecture-discussion classes and students taking the programmed course in General Electronics

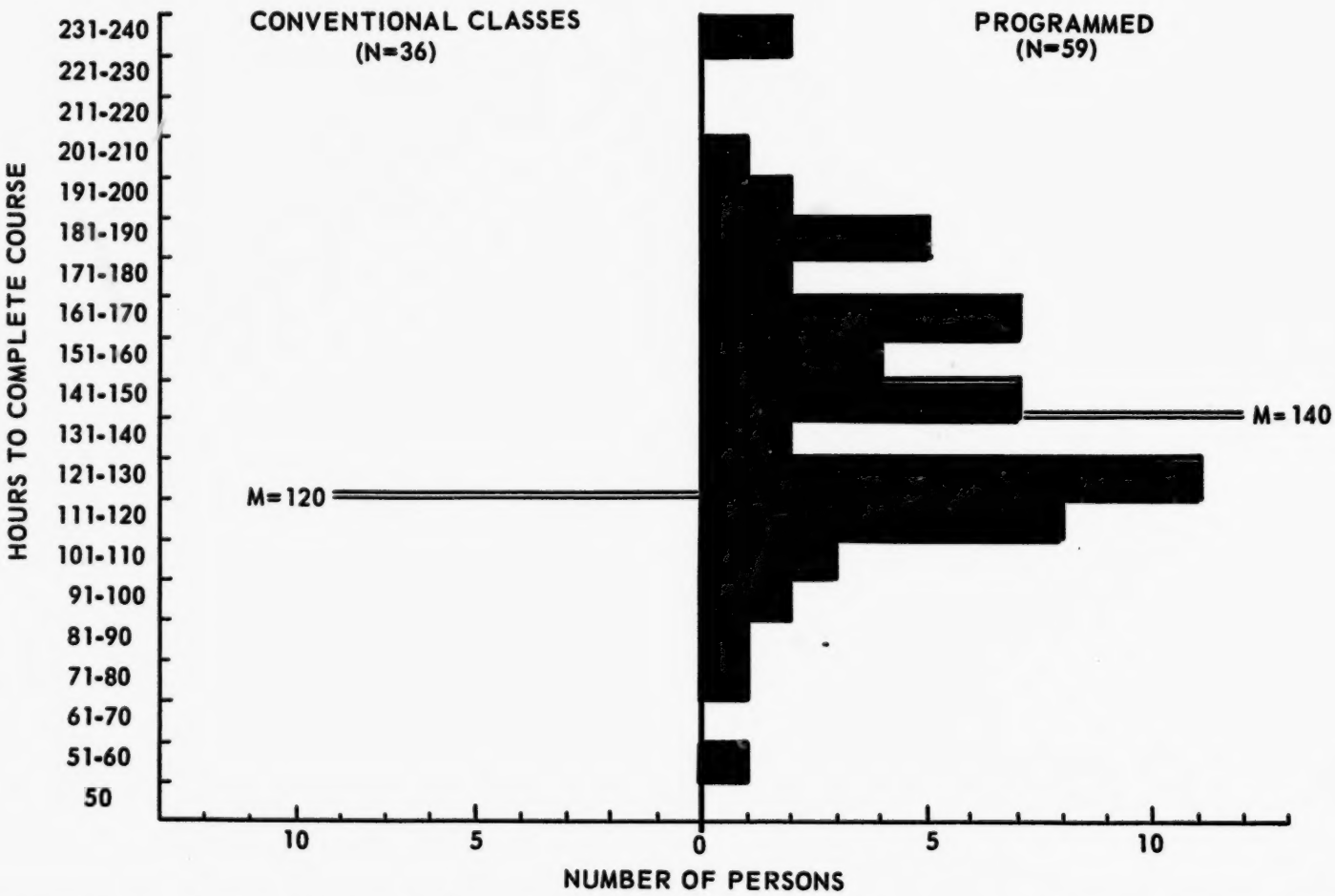


FIGURE 12 - Chart showing distribution of times to complete for trainee taking the programmed course in General Electronics. Conventional classes used a fixed time of 120 hours or 15 days to complete.

The wide range in time to complete provided both advantages and disadvantages. The greatest disadvantage was the slower trainees who were unable to return to their job location by the end of the fourth week (160 hours or more). The field supervisor was forced to schedule other men into the job which these trainees should have filled. Although this caused the field supervisor some problems, he was usually pleased to know that his man was progressing and would be qualified in electronics after completing the course.

Those trainees who finished early or took less than 120 hours, were usually the high scorers and showed greatest amount of skill on performance tests. The shorter time to complete for these men meant they were back on production jobs sooner than if they had taken the conventional 15-day course. This shorter time to complete by the more capable men provided a real incentive to send these better men in for training.

In general, the wide range of times to complete caused some initial problems in scheduling work loads for the field supervisors. However, the advantages of their best men returning sooner and their slower men learning additional skills seemed to more than compensate for the scheduling difficulties.

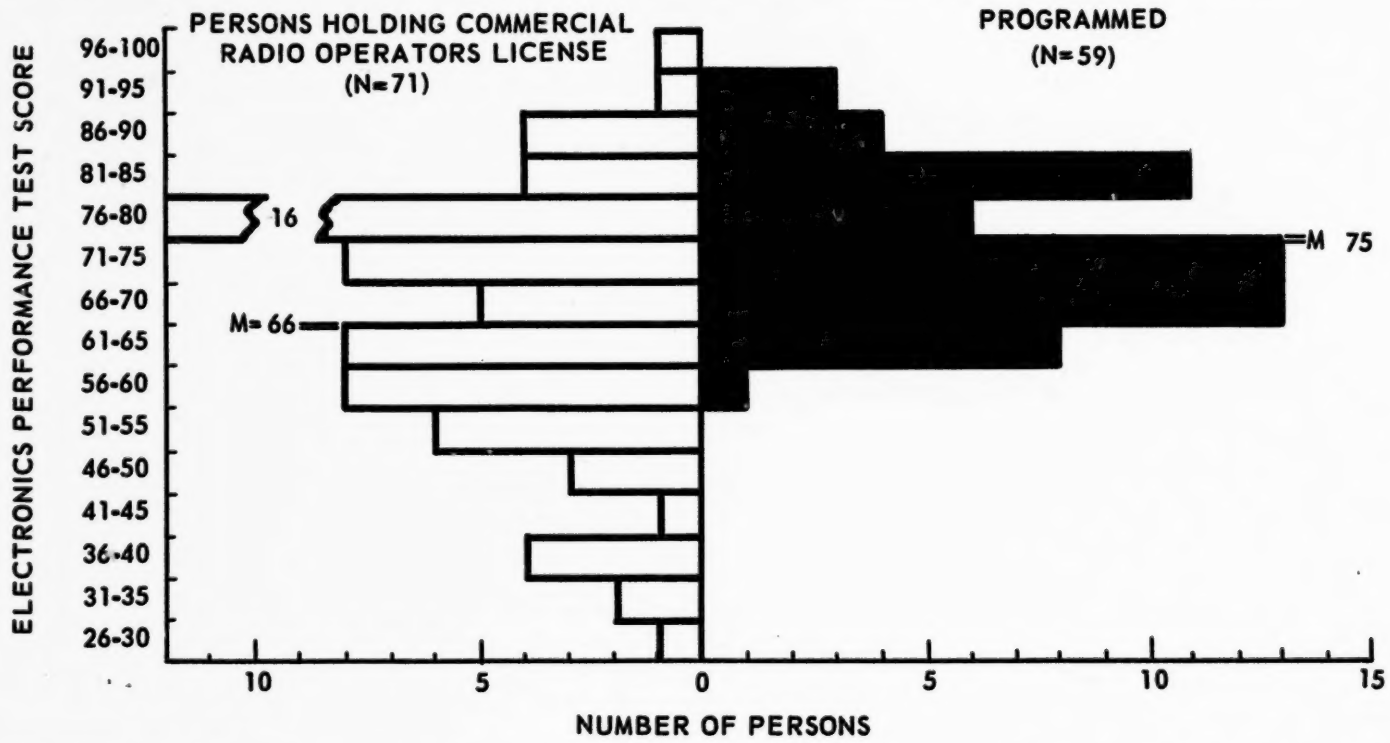


FIGURE 13 - Distributions of scores on the Electronics Performance Test for trainees completing the programmed course and technicians now holding FCC Radio Operators Licenses.

The appendix to this report provides a validation study on the performance examination. As a preliminary check on the test validity, we asked a number of technicians now holding second class FCC Radio Licenses to take this test. Figure 13 presents the distribution and mean score of these tests. The bars to the left show that these technicians, who have had some experience plus their FCC license, had a mean score of 66% and a range of 26% to 100%. The bars to the right show that the trainees completing the programmed course had a mean score of 75% with a range of 56% to 95%. This comparison indicates that trainees completing this course on the average have superior skills on this test than do experienced men who hold FCC radio licenses. A very interesting result is that no low scores occur in the programmed group. This is due to the fact that each of these 10 tests must be passed with a score of five or better in order to continue through the course. As was mentioned earlier, about 30% of those who began this training failed to finish. However, it is important to note that those who completed the programmed training were near or above the average score of the group of 71 holders of FCC licenses.

This course represents an attempt to use programmed instruction techniques to teach a wide range of objectives. The objectives used were somewhat arbitrary and based on the experience of instructors and field supervisors. This report does not describe a research study on programming nor does it present an optimal or recommended set of techniques and devices. Rather, this report describes some possible methods and the type of results that can be achieved when some ingenuity is applied to known methods and theories. Not all of the methods used in developing this course have been studied. Many ideas were used simply because our staff felt them to be proper, based on intuition and many years of training experience. It is hoped that the experience and associated study provided in the application of this program will provide the incentive and threshold for the development of other training programs and continued research in the use of programmed instruction.

APPENDIX

DEVELOPMENT AND ANALYSIS OF THE PERFORMANCE TESTS USED IN THE GENERAL ELECTRONICS COURSE

I. INTRODUCTION

The General Electronics Course of the Michigan Bell Telephone Company is a basic course designed to train existing management and craft employees in the fundamental skills and knowledge required to take advanced electronics training. The course is completely self-paced. The average time to complete the course is 18 days, with some trainees spending as little as eight days, while the slower trainees take up to 25 days to complete. About one-half of the course consists of programmed lab exercises in which the trainee uses job related test equipment to take measurements and make tests on live circuits. Thus, the course teaches a considerable number of skills as well as the usual amount of knowledge about electronics. These skills and this knowledge will be needed by these craftsmen when they attend advanced courses on many types of specific electronic equipment. Prior to 1962, this course was a lecture-discussion-demonstration course utilizing overhead projector transparencies and a large number of demonstrations by the instructor. Since there was little trainee participation in these demonstrations, it was presumed that very few skills were learned by the trainees. The final tests were usually written tests which were constructed by the instructor. With the completion of the programmed course in 1962, the use of written tests did not cover the full range of objectives although the course was intended for skill training. The test described in this report was developed to supplement or possibly replace the use of a written final test.

The general electronics test described here was essentially designed to grade those trainees who completed the General Electronics Course. Other and perhaps more important uses of this test became apparent as the test was being constructed. Since the test would measure the ability of employees to use the pieces of actual test equipment on live circuits, then those who could demonstrate these skills without training could be exempted from the basic training course. This made considerable savings in training costs possible and allowed these men to go directly into advanced training courses. In addition, the test would identify those employees who were unable to master these basic skills, insuring that only qualified employees were sent to advanced courses. These two additional but very important uses of the test meant that the test could be used to do much more than just determine whether or not those that had completed the training had met the course objectives. The grades on the test must be meaningful in terms job related tasks and preparation for advanced courses. The report tells how the test was developed and analyzed to insure that it would grade the graduates of the course, exempt capable men from training, and reject unsuitable candidates from advanced training.

II. INITIAL TEST DEVELOPMENT

A. Analysis of Objectives . . . . The objectives for this test were taken completely from those developed for the programmed General Electronics Course. These objectives were developed over a period of several years using primarily the consensus of experts as a source. In 1956, a group of eight Michigan Bell supervisors drafted the first set of objectives for this course. These were not stated in behavioral terms, but rather were written in outline form as titles which appeared in an instructor's outline. These objectives were revised in 1961 based on a field survey of tasks performed by some of the craftsmen using this training. In addition, other experts such as electronics instructors and field supervisors were interviewed and their views were used to further update the objectives. In 1962, the programmed General Electronics course was developed using the now revised objectives. During the final revision stage of the programmed course development, construction of this test began. The objectives were summarized and grouped into 10 major areas as shown in Figure 1. The 10 areas are primarily the skill objectives of the course, although a considerable number of the knowledge objectives were used in building the tests. None of the areas of sub-objectives, such as static electricity and fundamentals of magnetism were included in these 10 areas. Only terminal objectives which could be identified as necessary to advanced course requirement or on-the-job performance were included in this list.

B. The Nature of the Test . . . . This test was designed to measure skills and associated knowledge necessary to perform in advanced classes and finally with real equipment on the job. This meant the test situation should be as similar to on-the-job conditions as possible, and yet the tests had to be given in a simulated situation. On the job, the employees use test equipment which is quite standard. Therefore, these tests were designed to use the same types of test equipment as used at job locations. Since the types of equipment where measurements are made are continually changing at work locations, it was decided that the tests would consist of taking measurements on a somewhat different circuit than was used in the training program. Finally, it was known that each employee has access to printed instructions and procedures which aid him in performing his tasks on the job. This printed material is supplied in the form of Bell System Practices which are available to him. These practices cover every piece of equipment

which he is required to service. The tests were designed to use live circuit panels which differed in form from the circuit panels with which they had been trained. They would use standard pieces of test equipment and printed material aids would be provided in the form of prompts or clues.

OBJECTIVES FOR GENERAL ELECTRONICS PERFORMANCE EXAMINATION

Sub-Test 1. Use meters and measure unknown values of E, I, and R.

Sub-Test 2. Measure and calculate unknown values of E, I, and R in a complex R circuit.

Sub-Test 3. Connect series and parallel RLC circuits. Determine resonant F and Z of an RLC circuit.

Sub-Test 4. Determine the power factor and phase angle between E and I in a series RLC circuit using voltage measurements only.

Sub-Test 5. Connect relay to lock-up on its own contacts. Determine operate and release current of a relay and locate faulty contacts.

Sub-Test 6. Measure primary and secondary voltage and current and determine turns ratio of a transformer.

Sub-Test 7. Measure resistance of a varistor for at least two current values. Determine forward and reverse resistance of a junction diode. Identify faulty junction diode. Connect diode as a rectifier with a given polarity.

Sub-Test 8. Connect a transistor as common emitter and common base voltage amplifier. Measure the voltage gain of a transistor amplifier.

Sub-Test 9. Determine breakdown and regulating E of a VR diode. Connect a thyratron to rectify an AC source so that load current may be varied through a fixed load resistance.

Sub-Test 10. Connect a pentode electron tube as a voltage amplifier. Measure Ep, Esg, and Eg of a pentode amplifier. Measure voltage gain of a pentode voltage amplifier.

FIGURE 1

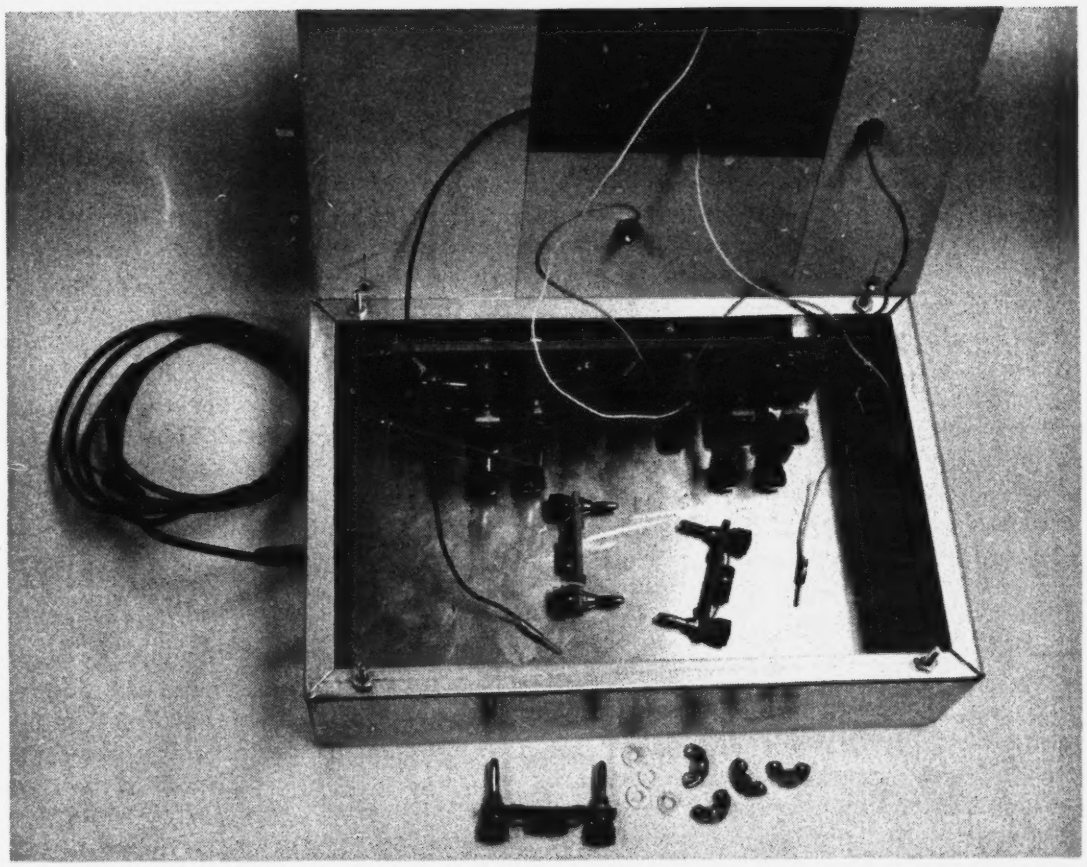


FIGURE 2 - Photograph of Opened Chassis for Sub-Test 2.

C. Initial Preparation of the Test . . . . The live circuits to be used were designed to require measurement, analysis, and computation to match the skills described in the 10 areas of objectives. These circuits were placed in small, 3" deep, 8" x 10" chasis. The components were placed on small, plug-in strips so they could be changed quickly and frequently whenever the test administrator found it necessary to maintain the security of the test. Figure 2 shows the chassis and the plug-in parts for test chassis No. 1. Each chassis has certain jacks which allow measurements to be taken in the circuits. Only limited numbers of these points were made available, allowing the test to require some measurements plus analysis and calculations. Figure 3 gives the chassis face drawings for all 10 sub-tests.

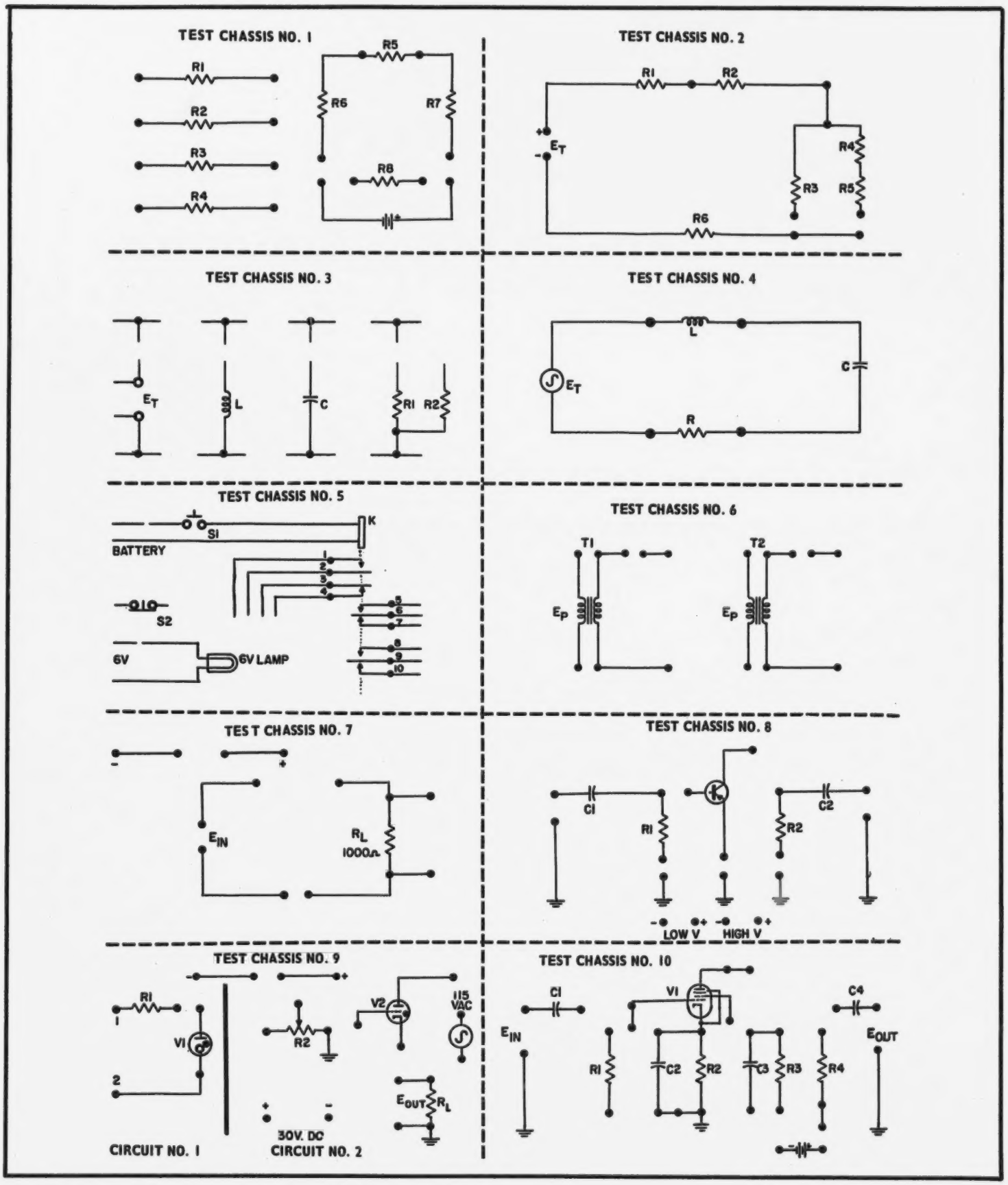


FIGURE 3 - Face Drawings for all Sub-Test Chassis.

GENERAL ELECTRONICS PERFORMANCE EXAM

Test Item 2

Clues Needed:

1. _____
2. _____
3. _____
4. _____
5. _____

Equipment:

1. Test Chassis No. 2
2. KS14510 Multimeter

This test is designed to determine your knowledge and skill at measuring voltage and current in complex R circuits. For those who have difficulty in making these measurements, five clues are provided. If you are reasonably sure that you can obtain the answer to an item, by all means do not use a clue and you will get extra credit. On the other hand, if an item baffles you, or if you have a real doubt about your answer, please use the appropriate clues.

This test is timed. You will have 20 minutes to complete this test, therefore, do not waste time. If you do not know immediately what to do, then open the appropriate clues while you still have time to make use of them.

In the circuit of Test Chassis No. 2, determine the following items:

(2) 1. I_T = _____ (Clue 1)

(2) 2. R_2 = _____ (DO NOT USE OHMMETER) (Clue 2)

(3) 3. E across R3 = _____ (Clue 3)

(3) 4. E across R5 = _____ (Clues 4, 5)
(R4 = 100Ω)

FIGURE 4 - Copy of Sub-Test 2.

The sub-tests were printed on one or two pages and contained several types of information. See Figure 4 for a copy of Sub-Test No. 2. At the top of the first page of each sub-test was its name. Immediately below this was a list of equipment needed including the test chassis number. Following the list of equipment was a brief paragraph describing the test form and the given time limit, as well as instructions on when and how to use the printed material aids called "clues." This paragraph also contained the scoring procedure for the responses and the use of clues.

A list of clue numbers was located in the upper right corner of the first page of the sub-test and the instructor (or test administrator) was to check the clues used when he picked up the sub-test. At the beginning of each sub-test the clues were sealed in envelopes and they were to be used only if they were needed. Therefore, the score on a sub-test would be derived from both the accuracy of the responses and the amount of aid (number of opened clues) required to obtain the answers. Most of the clues were independent. That is, the trainee could open any particular clue which he felt would aid him. However, some pairs of clues (see Clues 4 and 5 in Figure 4) were sequenced so the second clue elaborated or gave more detail than the first clue.

The clues were written to provide about equal amounts of information and a point was scored for each unopened clue (in other words a point lost for each opened clue). The clue numbers were placed in the right margin of the sub-tests to let the trainee know which clue or clues would apply to each response requirement (see Figure 4). The total points available for each response was placed in parentheses (see Figure 4) to the left of the response requirement. If the clue was opened, then a one point loss would occur if that response was made correctly. Opening a clue would deduct a point only for the response for which it gave help.

In addition to showing the clue number opposite its corresponding response, each clue was sealed in an envelope which carried a brief description of the contents of the clue. This allowed the trainee to judge whether or not he needed a clue before he opened it. Figure 5 shows the envelope face and the contents of clue number 4 from Sub-Test 2 (Figure 4). The trainees were thus given some information with which to make a decision about using a clue. They were also told that adequate performance could be achieved by making the responses with the aid of the clues so they were encouraged to use the clues if they needed them (Figure 4).

TEST ITEM 2

Clue No. 4

To determine the voltage across R5, you must use Kirchoff's voltage law. First measure the voltage across both R4 and R5. (Same as the E across R3). Then determine the E across R4 by Ohm's law. By Kirchoff's voltage law, $E_4 + E_5$ must equal the voltage across both R4 and R5.

Then E_5 = (E across R4 and R5) - E_4.

Note: E_4 must be calculated

TEST ITEM 2

Clue No. 4

This clue will provide
assistance in determining
the E across R5.

FIGURE 5 - Envelope and Clue for Sub-Test 2, Clue No. 4.

A preliminary description of the test was given to each student before he started the first sub-test. That description appears below.

GENERAL ELECTRONICS PERFORMANCE EXAMS

General Instructions

You are about to take the first in a series of ten (10) electronics performance exams. These tests are designed to determine your ability to use electronic fundamentals in live circuits. You will be required to use ohmmeters, voltmeters, milliammeters, audio generators, and vacuum tube voltmeters.

For each test five clues are provided, each in a sealed envelope. On the outside of each envelope is a brief description of the area in which this clue provides help. If you are reasonably sure that you can obtain the answer to an item, by all means do not use a clue and you will get extra credit. On the other hand, if an item baffles you, or if you have a real doubt about your answer, please use the appropriate clues. Don't waste time trying to fight through an item which gives you trouble. If you cannot solve an item on the first try, then use the clue.

This test is timed. You will have 20 minutes to complete each test, therefore, do not waste time. If you do not know immediately what to do, then open the appropriate clues while you still have time to make use of them. Finishing the test early will not add to your score so take your readings carefully and think out each of your actions.

The initial draft of the test was completed early in 1963. It consisted of the 10 test chassis, 10 printed sub-tests giving the response requirements, five clues for each sub-test with envelopes bearing a brief description of its clue, and a printed set of instructions to the person being tested. The test equipment was available from the programmed lab sections of the General Electronics Course and it was decided that the sub-tests would be given in the booths used for the programmed lab sections of the course. The first pilot testing was done in spring of 1963.

III. TRIALS AND REVISIONS

A. Pilot Trial . . . . The test was given first to 20 men who had completed the General Electronics Programmed Course. This pilot trial served to shake down the test chassis and to point out glaring errors in the response requirements. Items such as power supplies, component tolerances, and ambiguous directions were noted and then, following this pilot trial, the test was revised to correct these errors. This pilot trial took place in February, 1963.

B. Second Trial and Revisions . . . . This trial was needed to determine item difficulty level and internal consistency of the test, that is, correlation coefficients were computed between each sub-test and the total score less that sub-test score. The Michigan Bell Telephone Company had conducted an employee survey called the *Work Interest Survey*. By questionnaires and on-the-job written tests, this survey had identified almost 200 employees with considerable electronic knowledge. These men were asked to come to the Detroit Plant School and take this General Electronics Test. 194 men took the test during June and July, 1963. These 194 men made up the second trial on this test. The data from this trial was analyzed for two major features; difficulty level and internal consistency.[1] Following the trial test of the 194 men, the items were revised to compensate for their weaknesses. These revisions involved modifications in the test chassis, rewriting the test response requirements, rewriting the clues, and sometimes in changing the scoring method. Each change was made with the goal of improving either difficulty level or correlation with the total test score. Several smaller trials using 15 to 50 employees were conducted in order to check the effect of these changes. By early 1964, the test had been developed to an acceptable point in terms of difficulty level of the items and internal consistency.

DISTRIBUTION OF SUB-TEST SCORES
FINAL TRIAL (N=182)·SPRING & SUMMER·1964

FIGURE 6

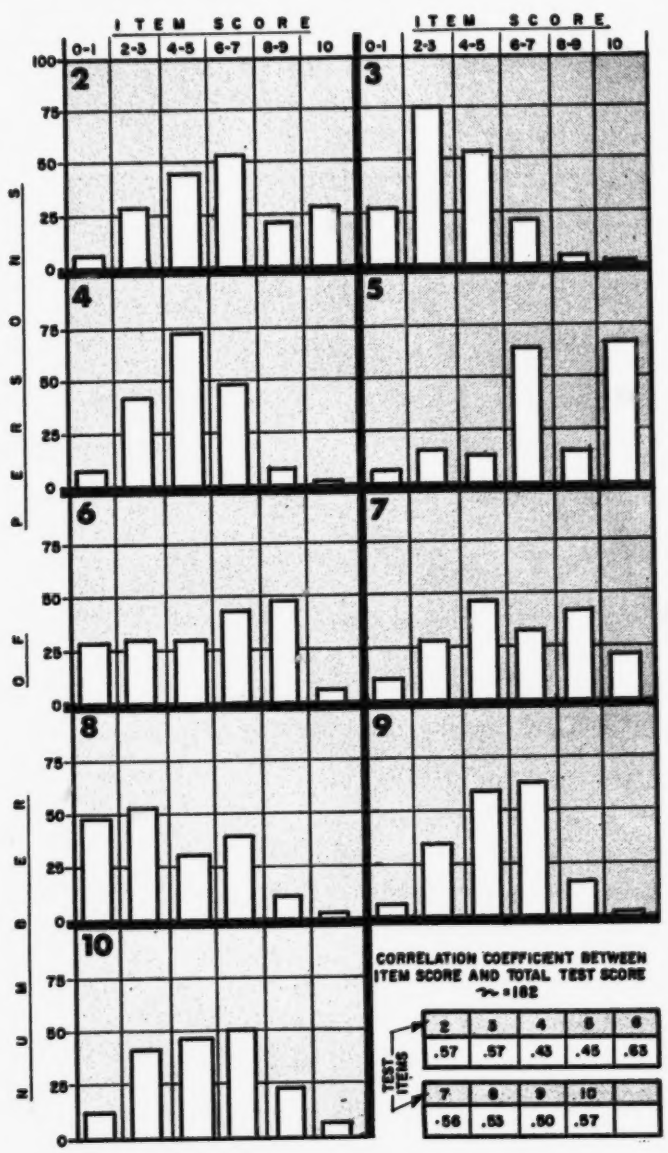
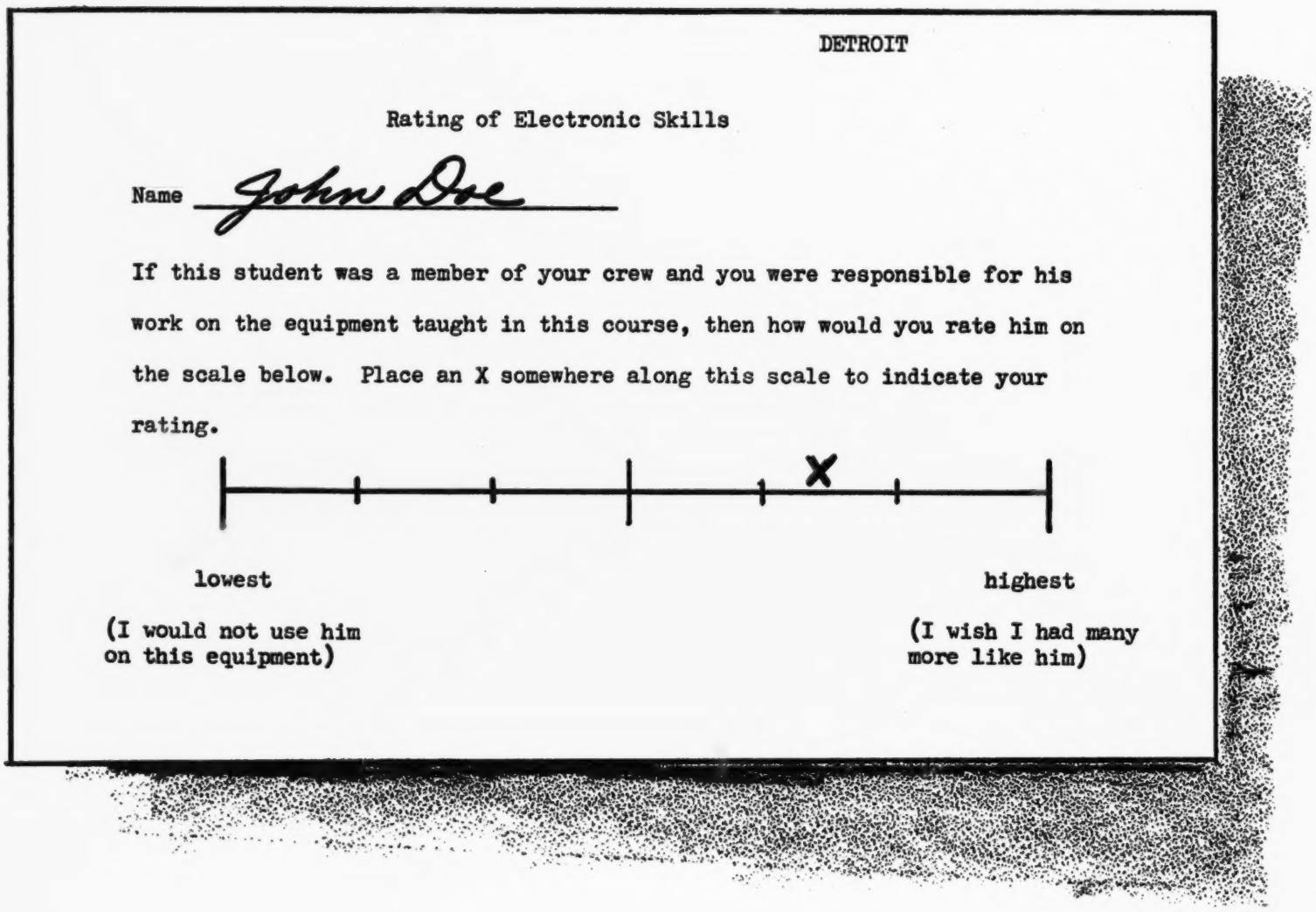


Figure 6 gives the frequency distribution of the nine sub-tests used for scoring (Sub-Test 1 was used as practice, see footnote 1, below) and a chart of correlation coefficients for the last trial test with 182

[1] Sub-Test 1 was not scored on any of the trials or in the final validation testing. Sub-Test 1 was used to orient each man to the test procedure and the response requirements of the novel format of the test. It was decided that Sub-Test 1 would be used to explain the manner of taking the test.

employees. The 182 employees were identified by the *Work Interest Survey* being potentially qualified in electronics because of reasonably high scores on written tests. This trial and the analysis was completed during the summer of 1964. Therefore, by early fall of 1964, the test was ready for the final validation testing.



DETROIT

Rating of Electronic Skills

Name John Doe

If this student was a member of your crew and you were responsible for his work on the equipment taught in this course, then how would you rate him on the scale below. Place an X somewhere along this scale to indicate your rating.

X

lowest

(I would not use him on this equipment)

highest

(I wish I had many more like him)

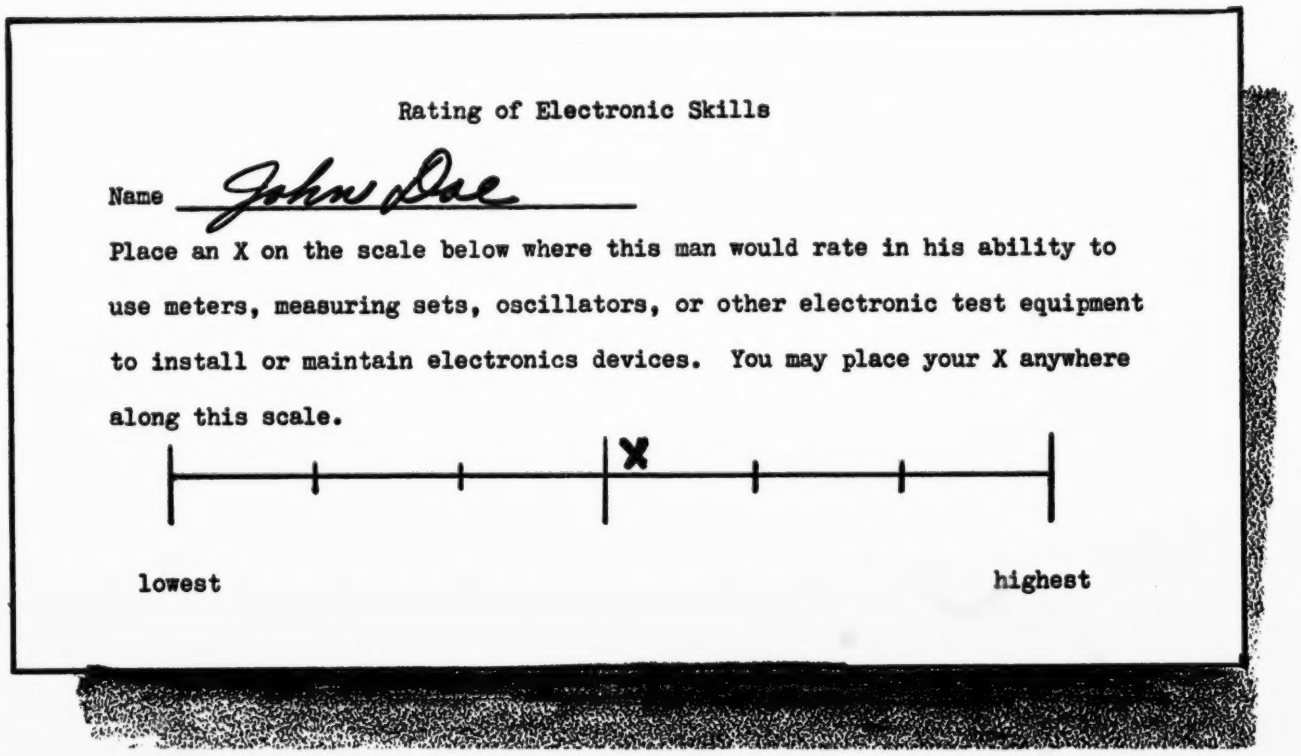
FIGURE 7 - Ranking and Rating Card for Instructors

IV. VALIDATION

A. Population and Sampling . . . . This test was developed to identify employees who would be able to continue in advanced courses in electronic equipment, and finally to perform maintenance and installation tasks on the equipment. Therefore, to validate this test, in the fall of 1964 we selected a sample of employees who had completed one or more advanced courses and had worked for some time in a field crew servicing electronic equipment. A sample of 78 men was selected from those employees who had taken advanced courses sometime during the two-year period just prior to this study.

B. Ranking and Rating . . . . The 78 men selected for this sample were identified by a ranking and rating technique in which both instructors and field supervisors provided the ranking and rating of each man. The first step was to have the instructor of each advanced electronics class conducted during the past two years, rank and rate the trainees. This ranking-rating procedure was basically a two-step technique. Figure 7 shows the card used to obtain these ratings by the instructor. For each class he had taught, the instructor first ranked the trainees from highest to lowest. After this, the instructor would take each card and rate the trainee by placing an "X" on the scale, as shown in Figure 7. The cards for each class were then split into thirds. All those trainees who were ranked in the top third of their class *and* were rated above the middle line were labeled as *possible* "high" performers. All those trainees ranked in the bottom third of their class *and* rated below the middle line were labeled as possible "low" performers. All others were labeled as *possible* "middle" or medium performers.

The next step required getting field supervisors' rankings and ratings. All the crews of those men identified as possible high, medium, or low performers by instructors were then canvassed. A similar card to the ones used by the instructors was made up for *all* members of each crew in which one of the earlier identified men worked. Figure 8 shows the card used by the field supervisor. The technique the supervisors used to rank-rate was the same as was used by the instructors. The supervisor first ranked his crew; then rated each crew member by placing an "X" on the scale, as shown in Figure 8. Again each crew was sorted into three groups representing top, middle, and low thirds of the crew. Those ranked in the top third and rated above the middle line were labeled *possible* "high" performers. Those crewmen ranking in the bottom third and rated below the middle line were labeled *possible* "low" performers, and all others were labeled *possible* "medium" performers.


Rating of Electronic Skills

Name John Doe

Place an X on the scale below where this man would rate in his ability to use meters, measuring sets, oscillators, or other electronic test equipment to install or maintain electronics devices. You may place your X anywhere along this scale.

X

lowest highest

FIGURE 8 - Ranking and Rating Card for Supervisors

These two groups (one based on instructors' ranking-rating and the other based on field supervisors' ranking-rating) of possible "high", "medium", and "low" performers were now collated. Where a man was labeled "high" by both an instructor and a field supervisor, he was called a "high" performer; where he was labeled "medium" by both an instructor and a field supervisor, he was called a "medium" performer. We were unable to identify 25 men labeled "low" by both an instructor and a field supervisor, therefore, those men labeled "low" by *either* an instructor or a field supervisor, or both, were placed in the "low" performer group. 26 names were in the "high" group. 27 names were in the "medium" group, and 25 names were in the "low" group at the completion of the ranking and rating process. (The 25 men in the "low" group was our entire sample. The 26 men in the "high" group and 27 men in the "medium" group were a sample chosen for participation in the study. We randomly picked 30 in each group, but some men were unable to take the test.) This provided 78 names containing 26 "high" performers, 27 "medium" performers, and 25 "low" performers. These employees were used for this validation study.

C. Procedures . . . . During the first three months of 1965, the sample of high, medium, and low performers were scheduled to take the test. This was done in three phases. First, 21 men (seven of each group) were given the nine sub-tests (Sub-Test 1 was used as practice). These men took the test two at a time. The test was administered by the same person to all 78 men. The test administrator did not know the performance group of the men being tested, nor did the administrator participate in the test development, analysis or revision. The test data was then tabulated for all three groups of seven each, and a check was made for discrimination among groups, and again for internal sub-test consistency. The results looked promising, so Phase Two was given. Phase Two involved testing nine more craftsmen from each performance group. After Phase Two, the data was again given a rough check for discrimination and internal sub-test consistency. Finally, Phase Three was entered and all the data was then tabulated for final analysis. The three phases of the study allowed us to distribute the load on field forces. That is, we did not draw too heavily from field crews for an extended time period. Secondly, if the Phase One or Phase Two results had been too bad, we could have returned to developmental revision without spending the entire cost of testing all 78 men in the study.

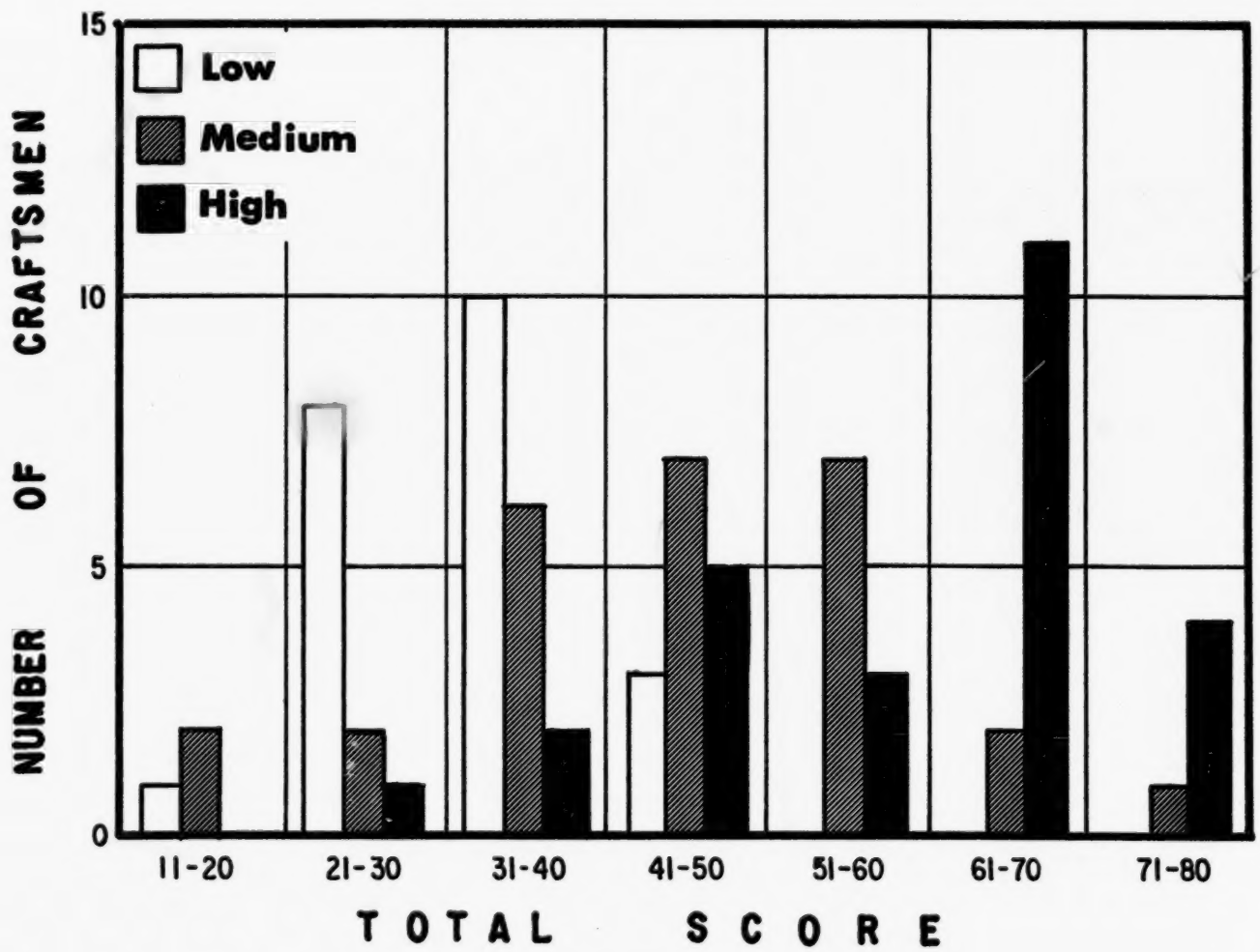
D. Results . . . . *Discrimination of total scores between high, medium and low groups.* Figure 9 gives the total score distribution for all three performance groups. These distributions show the discriminations between the groups. The chart below gives a break down of the means and standard errors of the mean for the total test scores in each group.

Performance Group	Mean	Standard error of the Mean
high*	57.4	2.7
medium	44.7	2.8
low	32.8	1.6

*In the high group test scores were computed without Sub-Test 4 score for the first seven of the 26 men. (Sub-Test 4 was revised after these seven men took the test).

DISTRIBUTION OF TOTAL SCORES

FOR HIGH, MEDIUM, AND LOW PERFORMANCE GROUPS



Discrimination of each sub-test between high, medium and low groups. Figure 10 a, b, and c gives sub-test discriminations for Sub-Tests 2 through 10 and for all three performance groups. This discrimination of each sub-test gives the test a modular construction. That is, each sub-test is separately capable of discrimination and may be deleted at any time without seriously changing the discrimination of the total test.

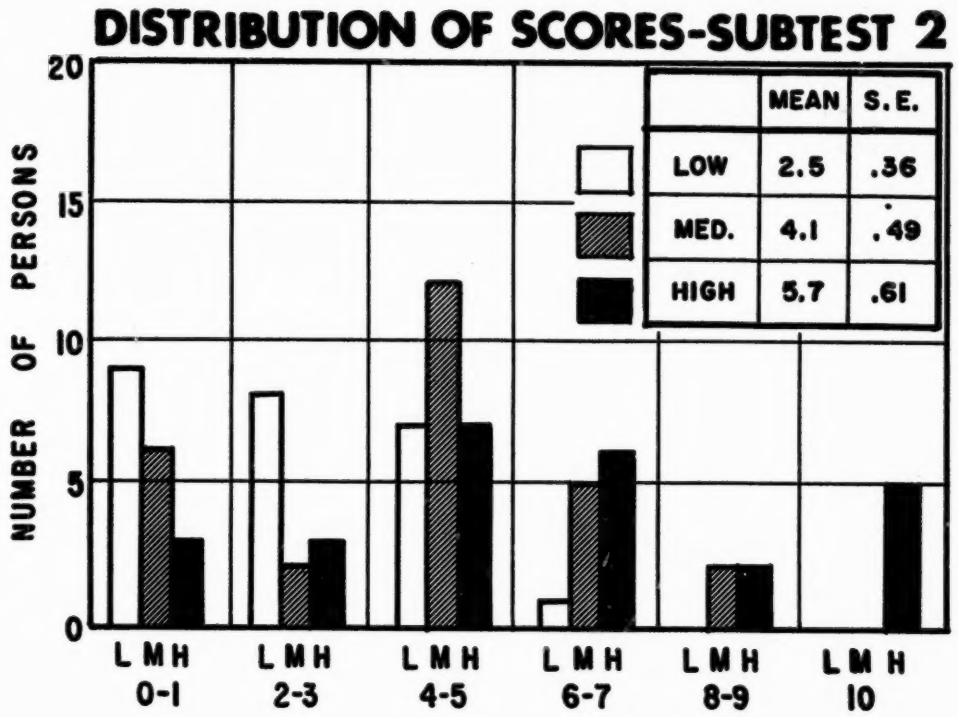
Internal consistency of the sub-tests. The chart below gives the correlation coefficients of each sub-test with the total score for each of the three groups. This indicates the internal consistency of the sub-tests for each performance group.

Correlation Coefficients between each sub-test and the total score of the remaining sub-tests.

Sub-Tests	High (n=26)	Medium (n=27)	Low (n=25)
II	.48	.48	.10
III	.49	.60	.44
IV	.65*	.64	.16
V	.32	.61	.11
VI	.72	.58	.29
VII	.56	.57	.40
VIII	.52	.71	.23
IX	.52	.51	.25
X	.61	.59	.40

Performance Groups

*The correlation coefficient for Sub-Test 4 was computed using only 19 subjects since there was a revision in the sub-test after the first seven men took the test.


DISTRIBUTION OF SCORES-SUBTEST 2
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 2.5 .36
MED. 4.1 .49
HIGH 5.7 .61
L M H 0-1
L M H 2-3
L M H 4-5
L M H 6-7
L M H 8-9
L M H 10

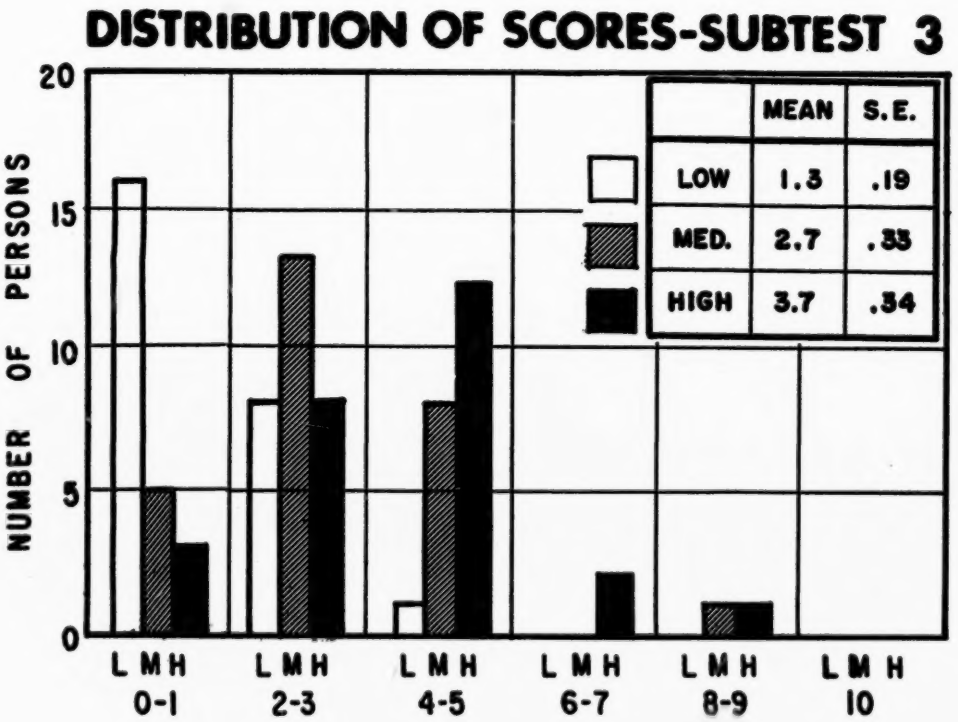
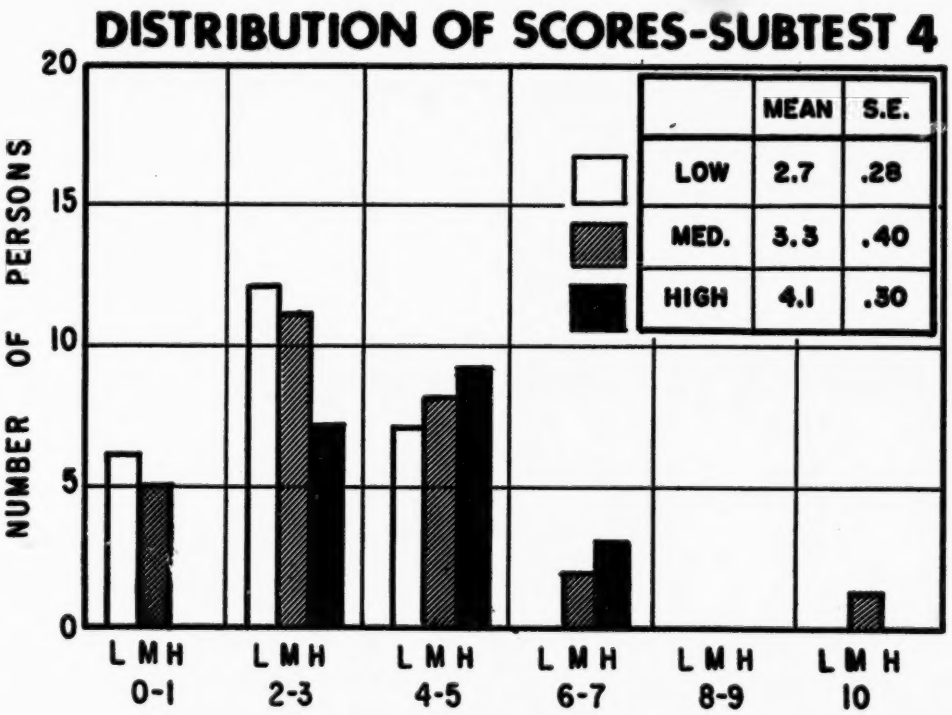
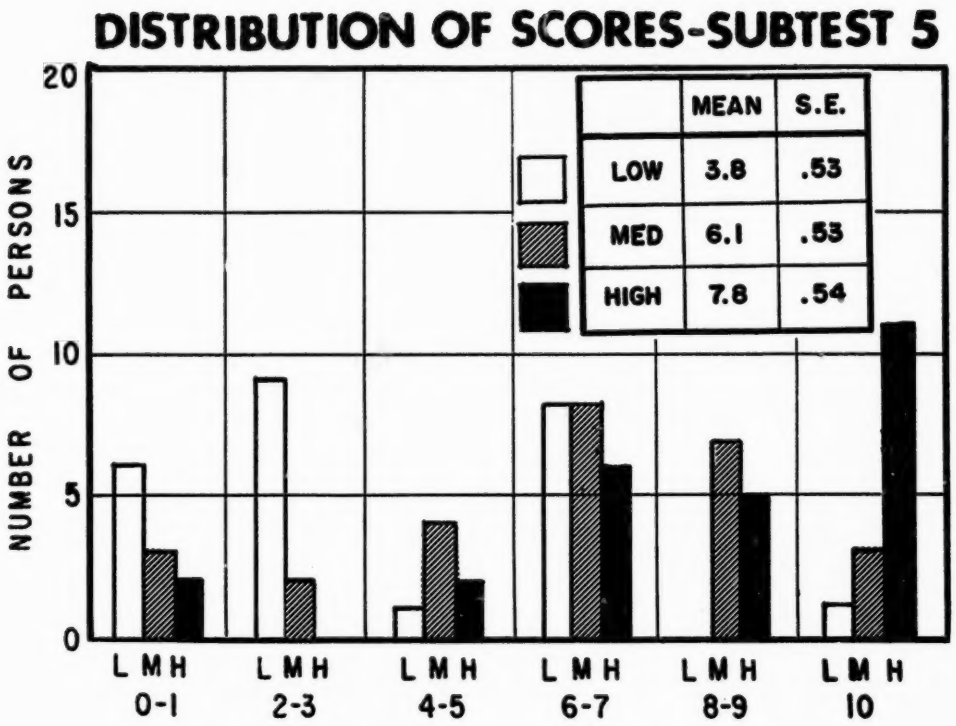

DISTRIBUTION OF SCORES-SUBTEST 3
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 1.3 .19
MED. 2.7 .33
HIGH 3.7 .34
L M H 0-1
L M H 2-3
L M H 4-5
L M H 6-7
L M H 8-9
L M H 10

FIGURE 10a


DISTRIBUTION OF SCORES-SUBTEST 4
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 2.7 .28
MED. 3.3 .40
HIGH 4.1 .30
L M H 0-1
L M H 2-3
L M H 4-5
L M H 6-7
L M H 8-9
L M H 10


DISTRIBUTION OF SCORES-SUBTEST 5
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 3.8 .53
MED 6.1 .53
HIGH 7.8 .54
L M H
0-1
2-3
4-5
6-7
8-9
10

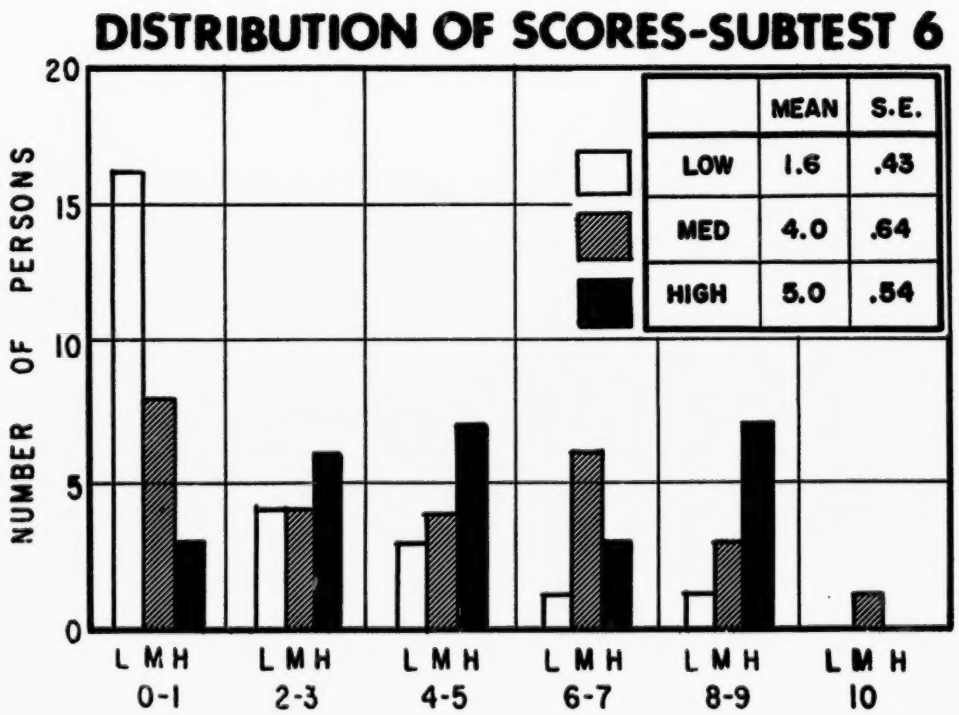
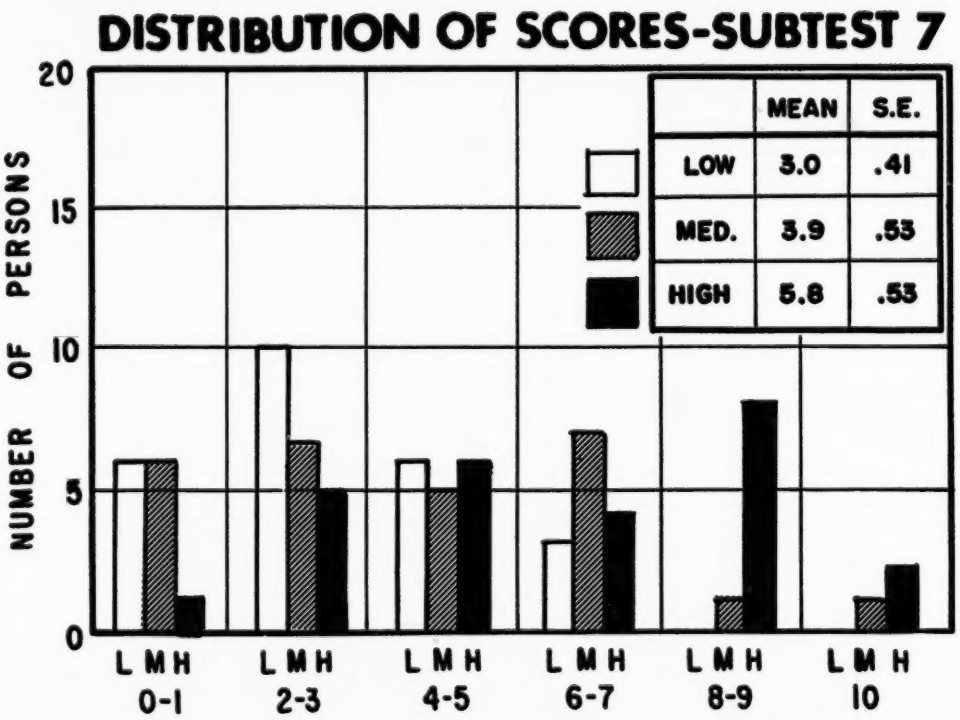
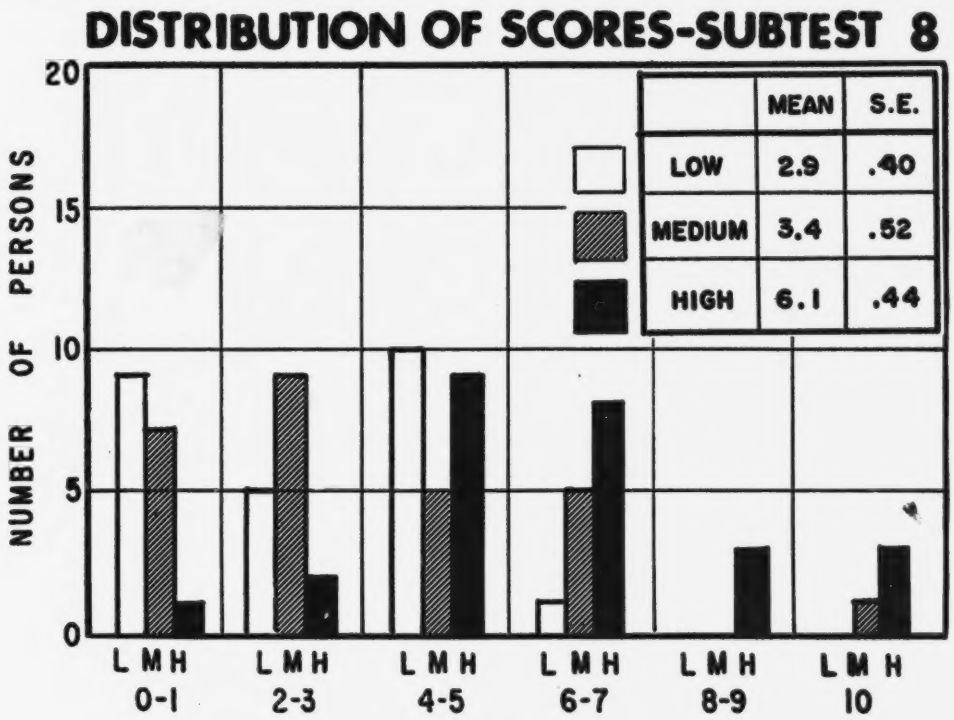

DISTRIBUTION OF SCORES-SUBTEST 6
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 1.6 .43
MED 4.0 .64
HIGH 5.0 .54
L M H
0-1
2-3
4-5
6-7
8-9
10

FIGURE 10b


DISTRIBUTION OF SCORES-SUBTEST 7
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 3.0 .41
MED. 3.9 .53
HIGH 5.8 .53
L M H
0-1
2-3
4-5
6-7
8-9
10


DISTRIBUTION OF SCORES-SUBTEST 8
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 2.9 .40
MEDIUM 3.4 .52
HIGH 6.1 .44
L M H
0-1
2-3
4-5
6-7
8-9
10

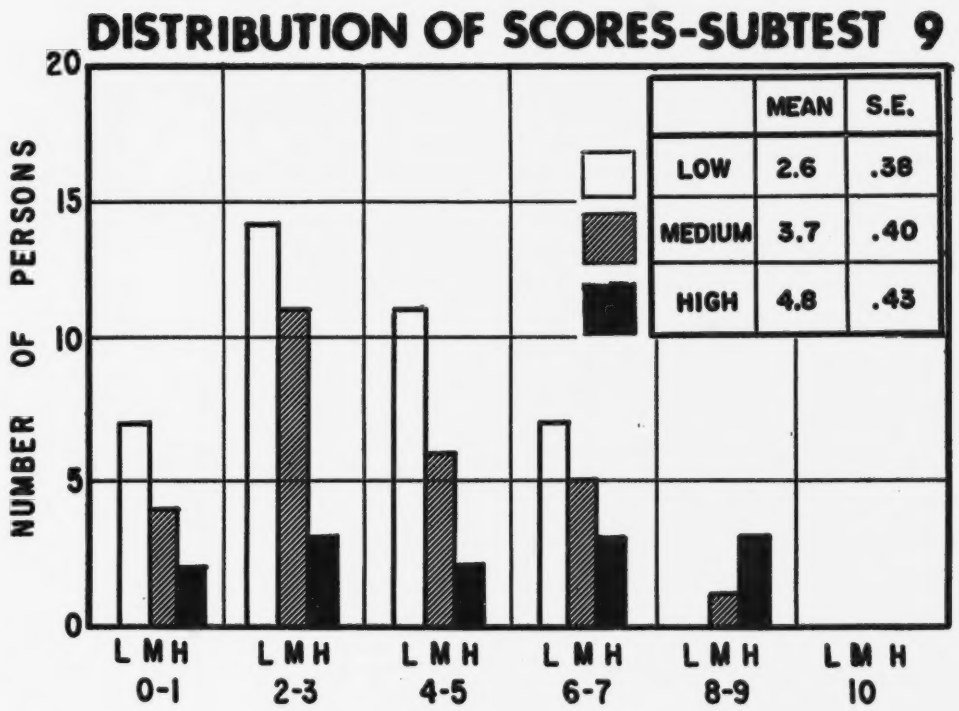
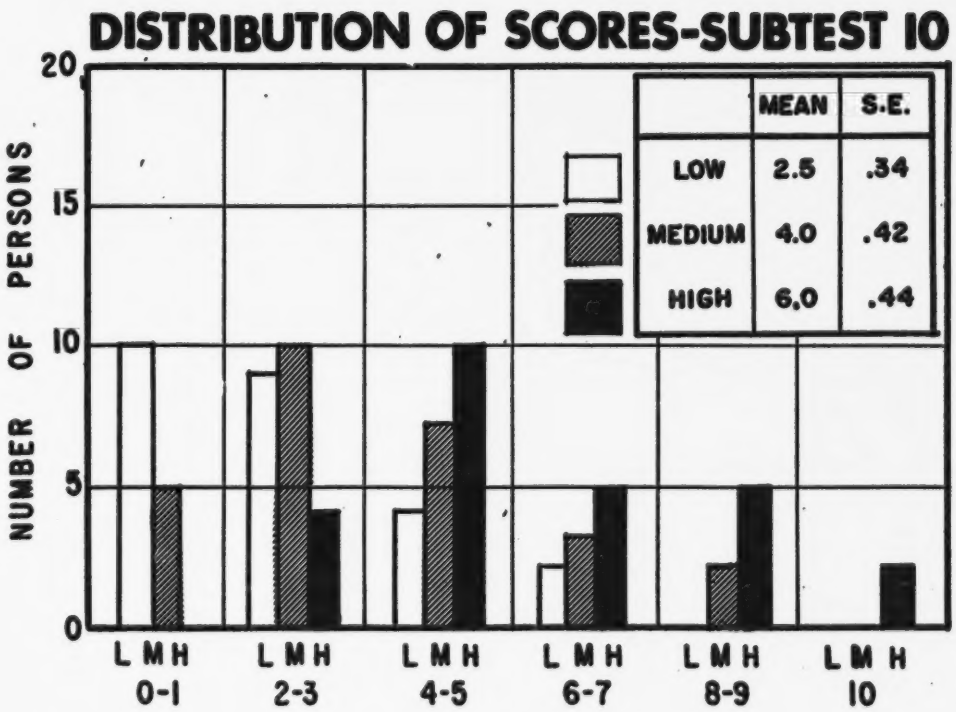

DISTRIBUTION OF SCORES-SUBTEST 9
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 2.6 .38
MEDIUM 3.7 .40
HIGH 4.8 .43
L M H
0-1
2-3
4-5
6-7
8-9
10

FIGURE 10c


DISTRIBUTION OF SCORES-SUBTEST 10
NUMBER OF PERSONS
20
15
10
5
0
MEAN S.E.
LOW 2.5 .34
MEDIUM 4.0 .42
HIGH 6.0 .44
L M H
0-1
2-3
4-5
6-7
8-9
10

V. SUMMARY

A. Test Development . . . . Using the objectives developed for the programmed General Electronics Course, the General Electronics Test was designed as a final test for the course. The test consisted of 10 sub-tests, each part covering a specific area of skills and knowledge from the course objectives. Each of these 10 sub-tests required the trainee to take measurements, make connections or changes on live circuits, analyze circuit operation, and sometimes make computations using the measured values.

B. Trials . . . . In a series of developmental trials, over 400 craftsmen were tested. The results of these trials were analyzed so that each sub-test could be adjusted to an appropriate level of difficulty, to a fairly continuous frequency distribution and to a reasonably high correlation with the total score.

C. Validation of Final Form . . . . Validation of the test involved checking its relevance against the actual skills required in advanced courses and on-the-job performance. In other words, the test was required to discriminate clearly among men at various levels of job success. A technique of identifying high, medium, and low performers was designed and a sample of about 25 men from each of these three categories was selected. These three groups were tested using the final form of the test. The result of testing these groups was then analyzed and the final validation data are recorded in this report. The analysis and computations on the data were completed by fall 1965.

D. Discussion of Results . . . . The test described in this report provides a satisfactory instrument for use in evaluating students who complete the General Electronics Course. The objectives of this study have been met in that the total test as well as each individual sub-test successfully discriminates among men who are rated as variably successful in advanced training and on the job. Because it is reasonably valid for end of course grading, this test is now being used as a mechanism for waiving the training requirement. An employee who demonstrates reasonable skill and knowledge on this test prior to training is moved directly into advanced training, thus saving a substantial number of man-hours of training.

This wide utilization of the test as a pre-training screen introduces the need for alternate forms. To the extent that the sub-tests involve numerical measurements, equivalent test forms can be generated rather easily by simply changing the numerical values in the circuits without changing the actual tasks.

Should future changes in course objectives indicate a need for adding or deleting sub-tests, the overall validity of the test will not be seriously affected because of its modular construction, in that each individual sub-test was required to discriminate among various levels of job performance. Deletion of a sub-test will not cripple the test. Addition of a sub-test will require only that the new sub-test be validated.

1127

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SMALLER COMMUNITIES PROGRAM

OCCUPATIONAL POTENTIAL REPORT for MENOMINEE COUNTY

WISCONSIN STATE EMPLOYMENT SERVICE

A Division of the Industrial Commission

Hill Farms State Office Building

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OCCUPATIONAL POTENTIAL OF MENOMINEE COUNTY
WISCONSIN
1966

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REPORT OF
SMALLER COMMUNITY PROGRAM
of the
Wisconsin State Employment Service
A Division of the Industrial Commission

In Cooperation With
RURAL AREA DEVELOPMENT PROGRAM
of the
Agricultural Extension Service
College of Agriculture, University of Wisconsin

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I

FOREWORD

OBJECTIVES:

The study of the manpower resources of Menominee County was undertaken and accomplished under the Department of Labor's program of expanded services to smaller communities. The operation of this program in Wisconsin is designed to extend temporary employment office services to remote, rural low-income areas which are not contiguous to a major labor market area and are not now receiving the full measure of easily accessible service from a permanent local employment service office. The objective of this temporary, but full-time service, is to promote both the economic welfare of the area and the vocational goals of individual residents. This is facilitated in cooperation with the Department of Agriculture's program of Rural Areas Development. The immediate objectives are:

1. To provide employment counseling and placement assistance to individuals for jobs within or outside the area being served.

2. To determine the current and potential manpower resources.

3. To assist local planning groups in evaluating the over-all economic resources of the area in relation to the manpower resources.

4. To encourage and assist those groups in planning a program of economic development.

SERVICES:

To achieve these objectives, the Wisconsin State Employment Service established a "Smaller Community Temporary Office" at Keshena, Wisconsin. The mobile crew, a staff of experienced employment service counselors, was assigned five basic tasks:

1. To provide the full range of employment service facilities and service to residents and employers of the county.

2. To register and interview all applicants interested in employment and to assist them in locating suitable jobs.

3. To test and counsel all interested applicants in evaluating their occupational potential for specific fields of work.

4. To survey the employers of the county to determine both current and anticipated employment requirements of existing business and industry.

5. To cooperate with various federal, state, and local agencies and quasi-public organizations in the development of plans designed to improve and stabilize the economic welfare of the county and its residents.

REASONS FOR SELECTION:

The Menominee County Board officially requested the Manpower Resources Survey at its meeting of March 25th, 1965. The U.W. Agricultural Extension Division communicated this request to the Wisconsin State Employment Service and at a meeting in August 1965 it was determined that the survey would begin as soon as operations in another county were completed. Menominee County was selected for participation in the Smaller Communities Program in view of these requests and its declining population, labor force and high unemployment, as well as its status as a rural nonindustrial county with a very low median family income.

BACKGROUND:

This study represents a part of the total continuing effort by WSES personnel to widen their scope of service and assist the county in its total resource development effort. Employment service personnel are anxious to know of any value this contribution may make in the total resource effort. Employers and businessmen contemplating expansions or new plant locations are urged to critically evaluate this study as to its value to them in terms of manpower resources, and to communicate their comments to the Wisconsin State Employment Service.

This report differs from previous county reports in that historical data regarding population and labor force trends and wage information has not been included. This data for Menominee County is limited because of its status as a reservation at the time of the 1960 census. Other data concerning the low income and high unemployment have been made available in other publications. This report therefore, has attempted to present the factors which relate to industrial development.

ACKNOWLEDGEMENTS:

We wish to thank the local employers for their assistance in providing certain data for this study. We thank the service groups and individuals who assisted in organizing and promoting the program and we thank the individual participants for their active participation and interest. Most important, we earnestly hope that the services rendered to individual applicants proves to be of value to them in their search for economic security.

Conclusions:

Menominee County due to its small population and limited tax base as well as its recent establishment as a county has not been in a position to develop economically. The single industry of the county does not offer employment opportunities for women nor does it offer much diversity for men. Many people seek employment outside the county for this reason. This situation has led to the out-migration of many of the better educated and more skilled persons creating a shortage of capable people to operate business, industry and government. Lack of private capital has resulted in an almost complete lack of business enterprises.

Recommendations:

It is very important that Menominee County develop an active county organization to plan and promote economic development by encouraging growth of commercial enterprises; more training and retraining; improvement of community services and facilities; development of natural resources and utilization of Federal and State programs which benefit the county.

Every effort should be made to assist the present industry to prosper and expand as well as encouraging new industry to locate in the area. Utilization of the female labor force should be of prime consideration.

The development of a recreation and tourist industry to take advantage of the scenic beauty of the area would broaden the tax base as well as provide increased employment. The resulting demand for supporting services would also provide opportunities for local business development.

Outside capital investment as well as State and Federal assistance should be sought to provide for industrial and recreational expansion.

PART ONE

APPLICANT SURVEY

Part one presents the information obtained from the applicants who registered with the Mobile Survey Team of the Employment Service. This data is arranged under four general headings:

Characteristics of the Applicants

Availability of the Applicants

Mobility of the Applicants

Job Potential of the Applicants

The Smaller Communities Mobile Survey Team of the Wisconsin State Employment Service started survey operations in Menominee County on December 14, 1965. The team, composed of one Manager and five Interviewer - Counselors maintained an office in Keshena, with an itinerant office open for several weeks in Neopit. Team members also contacted applicants through group meetings held in private homes. All area residents, unemployed or employed less than full-time, were encouraged to register with the team. The team concluded operations April 29, 1966 with a total of 467 applications of which 68 were high school seniors due to graduate in June 1966.

Some followup activity has taken place in the county since April and has resulted in 62 additional applicants. The breakdown of these are as follows:

Total Applicants	62	Male	17	Female	45
Total Under 22	14	Male	8	Female	6

Further details on these persons were not available to be included in this report.

Highlights of the Applicant Survey

A total of 399 applicants or 55 percent of the 1965 estimated work force registered during the survey and an additional 68 high school students were registered in the High School program.

Two-thirds of the applicants were men and 79 percent were under 44 years of age.

Just over 55 percent of the Nonstudents were unemployed.

Seventy-five percent of the applicants had at least some high school education.

Eighty percent of the applicants had worked in the past year but two out of five had worked less than 13 weeks and two out of three earned less than $3,000 in the past year.

Fifty percent or 235 persons were available now or after high school graduation in June 1966, for Unlimited or Full-Time work.

Most of the 235 available applicants were Semiskilled, Unskilled or Entry workers and also Unemployed, Underemployed or Students.

Eighty-three percent of the applicants would commute for work but only 14 percent would travel over 30 miles one-way and only 58 percent would travel over 10 miles one-way.

Over 54 percent of the applicants were experienced in an occupation and represent potential for industrial expansion

Ninety-one men and sixty-one women were administered the General Aptitude Test to provide job potential data and to assist the counselors.

Characteristics of the Applicants

Total Applicants by Sex and Age Group

A total of 399 applicants or 55 percent of the 1965 estimated work force of Menominee County registered with the team during the regular survey. Another 68 applications were obtained in the High School registration program. These students are for the most part currently on the labor market, so will be included in all the Tables. Nearly 79 percent of the total applicants were under are age 45 and 27 percent of the applicants were women under age 45. Two-thirds of all the applicants were men and one-half of these were between 20 and 44 years of age.

Table 1

Total Applicants by Sex and Age Group

Age Group	Number			Percent		
	Total	Male	Female	Total	Male	Female
Total	467	311	156	100.0	66.6	33.4
14-19	134	86	48	28.7	18.4	10.3
20-44	229	150	79	49.0	32.1	16.9
45-54	58	43	15	12.4	9.2	3.2
55-64	37	27	10	7.9	5.8	2.1
65 +	9	5	4	2.0	1.1	0.9

Employment Status of the Applicants

Since availability for work is to a large extent dependent upon employment status, the survey team determined the current employment status of all applicants. Over 55 percent of the nonstudent applicants were either unemployed or underemployed. There were 110 of the 129 women who were unemployed or underemployed as compared to 112 of the 270 men. The high school students that were employed at the time of the survey were engaged in part-time work and in nearly all cases desired full-time employment after graduation. Thus, based on employment status there were 290 persons available for work in Menominee County.

Table 2

Employment Status of All Applicants

Age & Sex	Employed	Unemployed	Underemployed		Students	
			Skill	Hours	Emp.	Unemp.
Total	177	206	8	8	27	41
Male	158	98	7	7	19	22
14-19	14	27		4	19	22
20-44	99	44	5	2	--	--
45-54	25	16	1	1	--	--
55-64	20	7	--	--	--	--
65 +	--	4	1	--	--	--
Female	19	108	1	1	8	19
14-19	5	16	--	--	8	19
20-44	10	67	--	--	--	--
44-54	1	14	--	--	--	--
55-64	3	7	--	--	--	--
65 +	--	4	--	--	--	--

Marital Status of the Applicants

The marital status of the applicants to some extent influences their need for employment. There were 153 married men and 51 widows, divorcees, etc., who must have the opportunity to earn living wages in order to support families. There also were 195 single persons, of whom 149 were under age 20, who need to have the opportunity to become self-supporting. Many of the 68 married women want work that will provide supplemental family income. Some form of industrial development must occur that will provide employment for the young people and the women as well as more diversified employment for the men.

Table 3

Marital Status by Sex and Age Group

Age Group	Married	Single	Other
Total	221	195	51
Male	153	129	29
14-19	3	83	
20-44	97	38	15
45-54	31	3	9
55-64	19	3	5
65 +	3	2	
Female	68	66	22
14-19	2	46	
20-44	45	19	15
45-54	12		3
55-64	6	1	3
65 +	3		1

Educational Level of Attainment of the Applicants

The over-all educational level of the applicants was good, with nearly 75 percent having at least attended some high school. This compares favorably with other counties surveyed by the Wisconsin Smaller Communities Team. As would be expected, the applicants with the lower levels of educational attainment for the most part were semiskilled or unskilled workers. Table 4 clearly indicates the trend toward more education that has occurred in recent generations. The percentage of persons with at least some high school is much higher in the younger age groups and since these groups also make up the largest portion of applicants, the available labor force should have a good capacity for training.

Table 4

Educational Level of Attainment by Occupation and Age Groups

Occupational Group	Total Number	Educational Level						
		Under 6 Grade	6-7-8 Grade	8th Grad.	Some H.S.	H.S. Grad.	Some College	College Grad.
Total Applicants	467	19	22	78	162	170(2)	14	2
Percent of Total	100.0	4.1	4.7	16.7	34.7	36.4	3.0	0.4
Prof. & Mgr'l	4	----	----	1	----	1	1	1
Clerical & Sales	32	----	----	1	5	20	6	---
Service	18	----	2	6	6	4	----	---
Agri.& Forest.(1)	----	----	----	----	----	----	----	---
Skilled	44	4	1	8	22	8	1	---
Semiskilled	83	8	4	24	33	14	----	---
Unskilled	72	5	10	15	27	14	1	---
Entry	214	2	5	23	69	109(2)	5	1
Age Group								
14-19	134	1	1	7	32	88(2)	5	---
20-44	229	10	8	41	98	65	6	1
45-54	58	2	1	14	22	15	3	1
55-64	37	2	11	13	9	2	----	---
65 +	9	4	1	3	1	----	----	---

(1) All wood occupations are classified as skilled, semiskilled or unskilled

(2) Includes 68 High School Seniors

Income Earned and Weeks Worked the Past Year

The number of weeks worked and the income earned in the past year are a good measure of the economic needs of the applicants. As shown in Table 5 about 38 percent of the applicants worked less than 14 weeks, and earned less than 500 dollars in the past year. Almost two-thirds of the applicants earned less than 3000 dollars, so it is obvious that a need for regular employment exists. On the other hand, 80 percent of the applicants had some work history in the past year, so they are not completely inexperienced. Most of the 183 applicants that were employed over 40 weeks in the past year were also currently employed and thus would not be a part of the available work force for new industry.

Table 5

Income Earned and Weeks Worked Past Year

Weeks Worked	Total	Dollar Earnings							
		0 - 499	500-999	1000-1999	2000-2999	3000-3999	4000-4999	5000-5999	6000 and Up
Total	467	175	36	43	56	66	46	30	15
Percent of Total	100.0	37.5	7.7	9.2	12.0	14.1	9.9	6.4	3.2
None	94	94	---	---	----	----	---	---	---
1-13	85	67	15	2	----	----	1	---	---
14-26	59	10	15	23	8	2	1	---	---
27-39	46	3	5	7	19	7	2	2	1
40-49	54	1	1	6	17	20	5	2	2
50 +	129	--	--	5	12	37	37	26	12

Place-of-Residence of the Applicants

Table 6 indicates the place of residence of the applicants. This table becomes significant when combined with the data on mobility of the applicants. The fact that almost one-half the applicants live in the Neopit area, which is more or less centrally located should give some indications of appropriate industrial site location.

Table 6

Place-of-Residence of All Applicants

Place-of-Residence	Number of Applicants
Keshena	164
Neopit	223
Zoar Settlement	3
South Branch	2
Other Menominee Co.	4
Other Counties	71

Availability of the Applicants

Availability of the Applicants

The number of applicants that is available for Unlimited and Full-Time Only work plus the student's Available Later is a good measure of the labor force available for industrial development. Table 7 below shows that 235 persons or 50 percent of the total applicants are in these categories. This breaks down to 105 women and 130 men. There were 124 applicants Not Available for work, most of whom were employed full-time. Only 11 applicants wanted Seasonal work and 24 Part-Time work.

Table 7

Availability of All Applicants

Availability	Total	Nonstudents			Students		
		Total	Male	Female	Total	Male	Female
Total	467	399	270	129	68	41	27
Unlimited	46	46	22	24			
Full-Time Only	121	121	67	54			
Later Date	141	73	55	18	68	41	27
Seasonal	11	11	2	9			
Part-Time	24	24	7	17			
Not Available	124	124	117	7			

Seasonal Work Availability

There were only 11 applicants of the 467 registered that indicated a preference for seasonal work. As indicated in Table 8 one man preferred winter employment and one summer employment while seven women wanted summer work and two had no preference.

Table 8

Season of Availability

Season	Total	Male	Female
Winter	1	1	-
Spring	-	-	-
Summer	8	1	7
Fall	-	-	-
Any	2	-	2

Availability for Farm Work

Since Agricultural employment accounts for so small a part of the total employment in Menominee County, it is not surprising that only two applicants would even consider Farm Work. The rather poor image of farm work, in general, plus the lack of local opportunity is reflected in this negative response. Table 9 depicts the responses to the question on Farm Work Availability.

Table 9

Availability for Farm Work

Sex	Not Interested	Would Consider					Actively Seeking			
		Year Round		Seasonal		Any	Year Round		Seasonal	
		Local	Non-Local	Local	Non-Local		Local	Non-Local	Local	Non-Local
Total	465	--	--	1	--	1	--	--	--	--
Male	310	--	--	--	--	1	--	--	--	--
Female	155	--	--	1	--	--	--	--	--	--

Availability by Applicant Characteristics

Table 10 indicates the availability of the applicants for work based upon characteristic groups. It is of special note that of the 235 persons previously mentioned as being available for work, 203 of them are Semi-skilled, Unskilled or Entry workers and 213 were either Unemployed, Under-employed or Students. Most of the applicants that were available for work had some work experience, but the number of weeks worked in the past year was not a significant factor in Availability. Place-of-Residence also had little or no bearing on Availability. The conclusion that can be drawn from the above data is that the available applicant is probably unemployed or underemployed, has worked some in the past year but does not have a skill or a profession.

Table 10

Availability of Applicants by Selected Characteristics

Group			Availability						
			Total	Un-limited	Full-Time	Later Date	Sea-sonal	Part-Time	Not Available
		Total	467	46	121	141	11	24	124
Occupational Group		Prof.&Mgr'l	4	--	1	1	--	--	2
		Clerical & Sales	32	1	9	4	1	4	13
		Service	18	5	7	4	--	2	--
		Agri. & Forest	0	--	--	--	--	--	--
		Skilled	44	1	8	5	--	--	30
		Semiskilled	83	11	29	11	1	3	28
		Unskilled	72	10	7	5	3	4	43
		Entry	214	18	60	111	6	11	8
Employment Status		Employed	203	2	20	61	2	4	114
		Unemployed	247	43	90	75	9	20	10
		Underemployed	17	1	11	5	--	--	--
Weeks Worked	Past Year	None	93	19	32	19	2	16	5
		1 - 13	86	7	22	49	3	5	--
		14 - 26	59	6	17	24	3	1	8
		27 - 39	46	6	16	18	2	--	4
		40 - 49	54	4	19	13	1	1	16
		50 +	129	4	15	18	--	1	91
Place of Residence		Keshena	164	26	38	46	9	11	34
		Neopit	223	18	69	46	2	13	75
		Zoar	3	--	--	2	--	--	1
		South Branch	2	--	1	1	--	--	--
		Menominee Co.	4	--	4	--	--	--	--
		Other Counties	71	2	9	46	--	--	14

Mobility of the Applicants

Mobility as used in this report refers to the geographic concept and is reflected in three ways.

1. The willingness of an applicant to Move Permanently for work.
2. The willingness of an applicant to Commute by the Day, Week or Month for work.
3. The distance an applicant will Commute One-Way Daily for work.

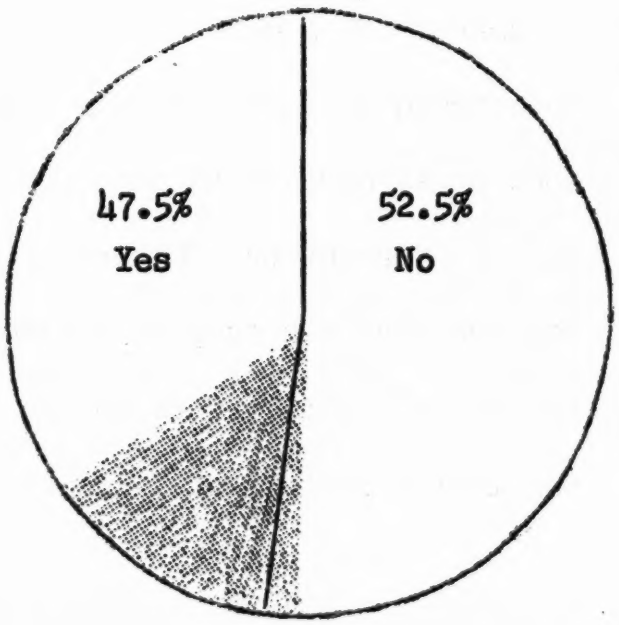
Mobility is influenced by several factors such as home ownership, marital status, age of children, educational attainment, employment status, occupational skill level, age, sex, ties to family and friends and lack of knowledge of the job opportunities out of the immediate area. Six of these factors (age, employment status, educational attainment, occupation, marital status and place-of-residence) were studied for this report. The results of this study are shown in tables, charts and graphs on the following pages and in the appendix.

Mobility of the Applicants

The over-all mobility of the applicants was low but not as low as expected. Prior to the survey all indications were that most of the applicants would not move nor would they commute for work. The survey indicated that about 40 percent of the nonstudents would move permanently for work while 88 percent of the students would move. Willingness to move is indicated in Chart A at the right.

Chart A

Willingness to Move Permanently out of the Area



Shaded Portion Indicates High School Seniors

The survey has also shown that 65 percent or 303 applicants would commute on a daily basis, 17 percent or 78 persons on weekly basis and one percent or eight persons by the month. This means that a grand total of 83 percent of the applicants or 389 persons would commute for work.

Chart B

Willingness to Commute

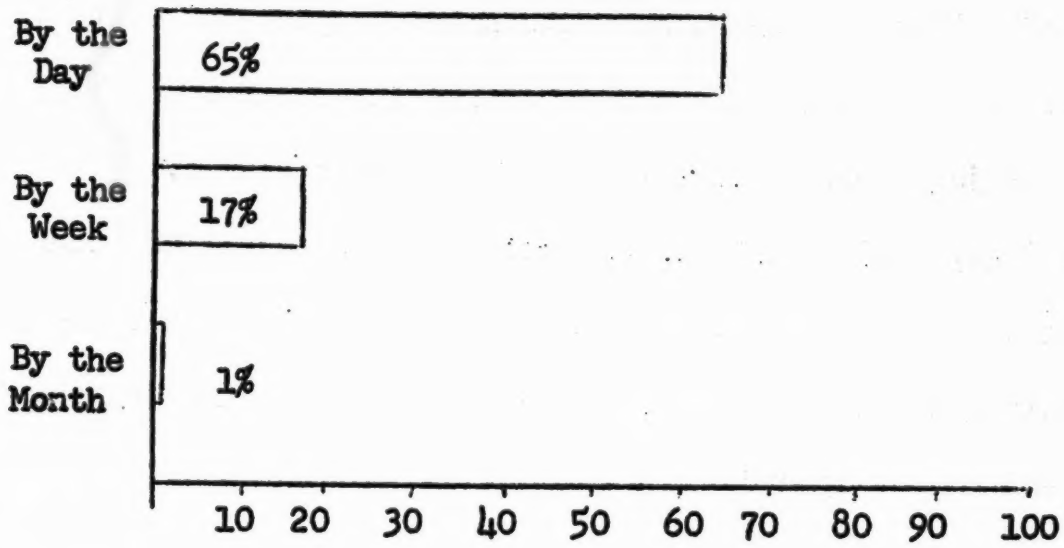
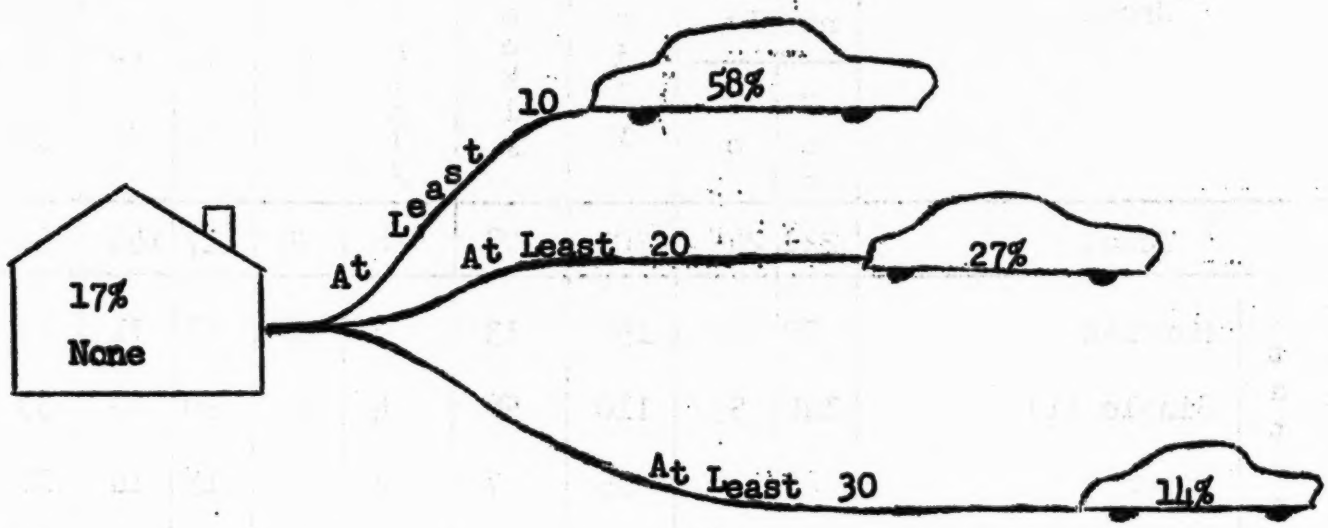


Chart C on the next page indicates the distances that the applicants are willing to travel one-way for work. The number of persons willing to travel 30 or more miles one-way for work was very small as most persons would move rather than commute long diatances. Seventy-eight persons or 17 percent of the applicants would not or could not commute. Only 27 percent or 124 persons would commute at least twenty miles one-way for work and only 58 percent or 272 persons would commute at least ten miles. This points up the need for industrial development near the population centers of Keshena or Neopit.

Chart C

Miles Willing to Travel One-Way for Work



MOBILITY BY APPLICANT CHARACTERISTICS

The mobility of the applicants by characteristic groups appears in Table 11 on the next page. Some of these characteristics are significant factors in determining mobility while others have little or no affect. The charts on pages 17 and 18 demonstrate the effect some of the applicant characteristics have on willingness to move and distance willing to commute one-way for work.

Table 11

Mobility of Applicants by Selected Characteristics

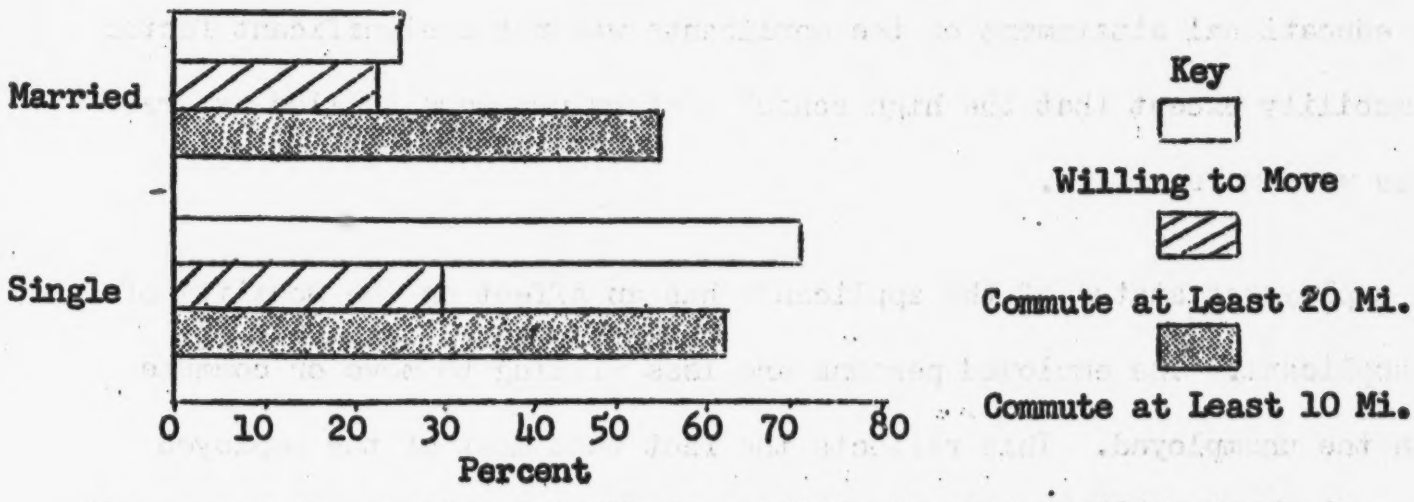
Group		Willing to Move Permanently		Willing to Commute				Miles Willing to Travel One-Way			
		Yes	No	Daily	Weekly	Monthly	No	1 to 10	11 to 20	21 to 30	30 Plus
Total		222	245	303	78	8	78	117	148	60	64
Marital Status	Married	59	162	158	13	2	48	52	71	17	33
	Single (1)	140	55	110	58	4	23	50	63	33	26
	Other	23	28	35	7	2	7	15	14	10	5
Occupational Group	Prof. & Mgr'l	2	2	3	0	1	0	2	0	0	2
	Clerical & Sales	7	25	26	1	0	5	8	16	3	0
	Service	7	11	13	3	1	1	5	5	3	4
	Agri. & Forest	0	0	0	0	0	0	0	0	0	0
	Skilled	13	31	26	5	0	13	8	17	2	4
	Semiskilled	24	59	56	11	0	16	20	31	6	10
	Unskilled	25	47	42	7	0	23	20	13	8	8
	Entry	144	70	137	51	6	20	54	66	38	36
Educational Attainment	Under 6 Grade	2	17	10	0	0	9	2	5	2	1
	6 - 7 - 8 Grade	8	14	13	4	0	5	5	6	3	3
	8th Graduate	27	51	51	9	1	17	19	21	6	15
	Some H.S.	72	90	105	27	4	26	48	49	20	19
	H.S. Graduate (1)	105	65	111	37	3	19	40	60	28	23
	Some College	7	7	12	0	0	2	3	6	1	2
	College Graduate	1	1	1	1	0	0	0	1	0	1
Age Group	14 - 19 (1)	103	31	80	38	4	12	32	42	27	21
	20 - 44	104	125	153	35	2	39	55	76	29	30
	45 - 54	10	48	39	0	2	17	21	10	2	8
	55 - 64	4	33	25	5	0	7	7	17	2	4
	65 +	1	8	6	0	0	3	2	3	0	1
Employment Status	Employed	83	121	129	26	3	46	43	71	20	24
	Unemployed	128	119	164	49	5	29	71	70	39	38
	Underemployed	11	5	10	3	0	3	3	7	1	2

(1) Includes 68 High School Seniors

As would be expected the single applicants show a much greater willingness to move than do the married applicants and somewhat greater willingness to commute especially over 30 miles one-way for work.

Chart D

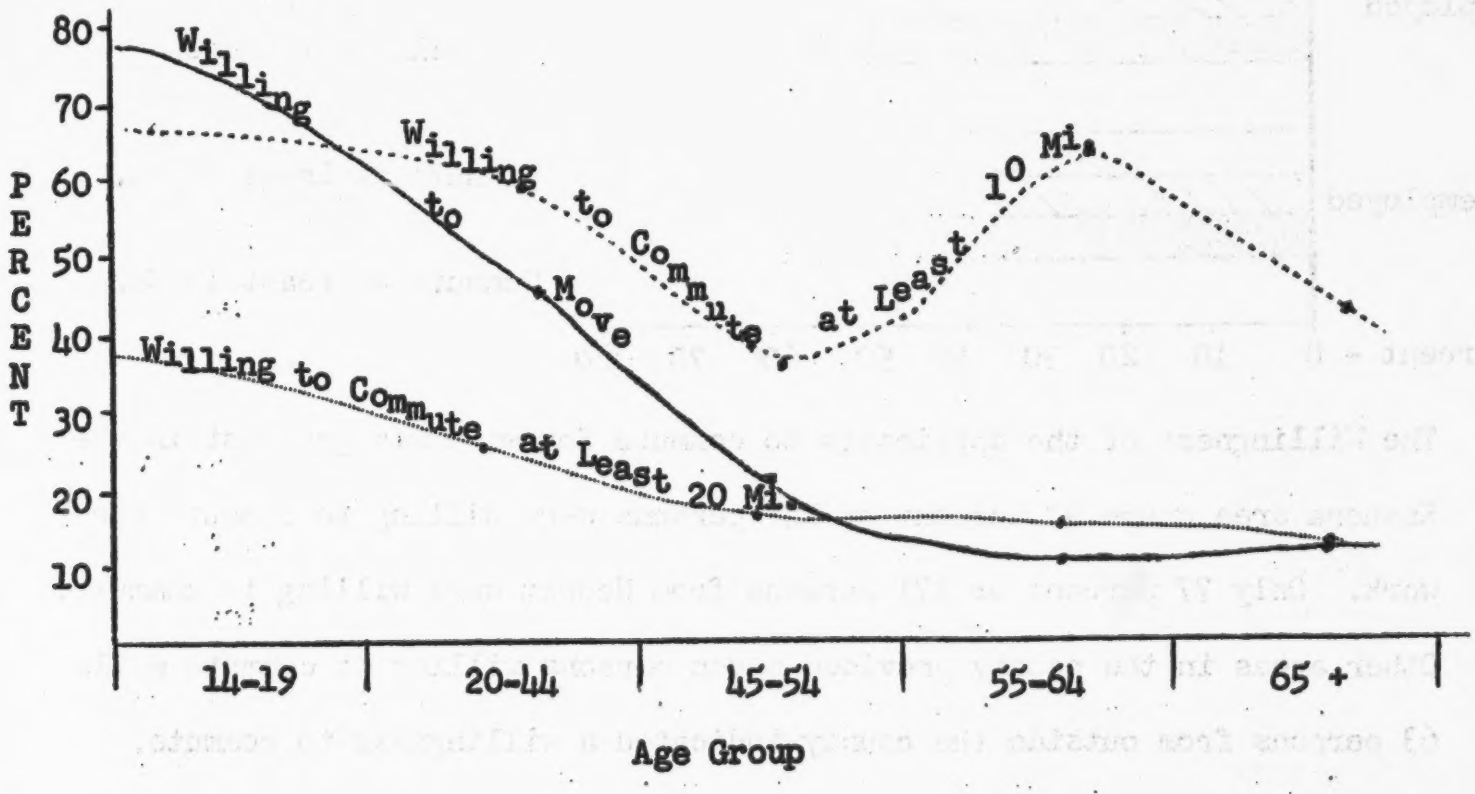
Mobility by Marital Status



The age of the applicants affects mobility in that mobility tends to decline with increasing age. This is particularily true in regards to willingness to move and willingness to commute over 20 miles one-way.

Chart E

Mobility by Age Group



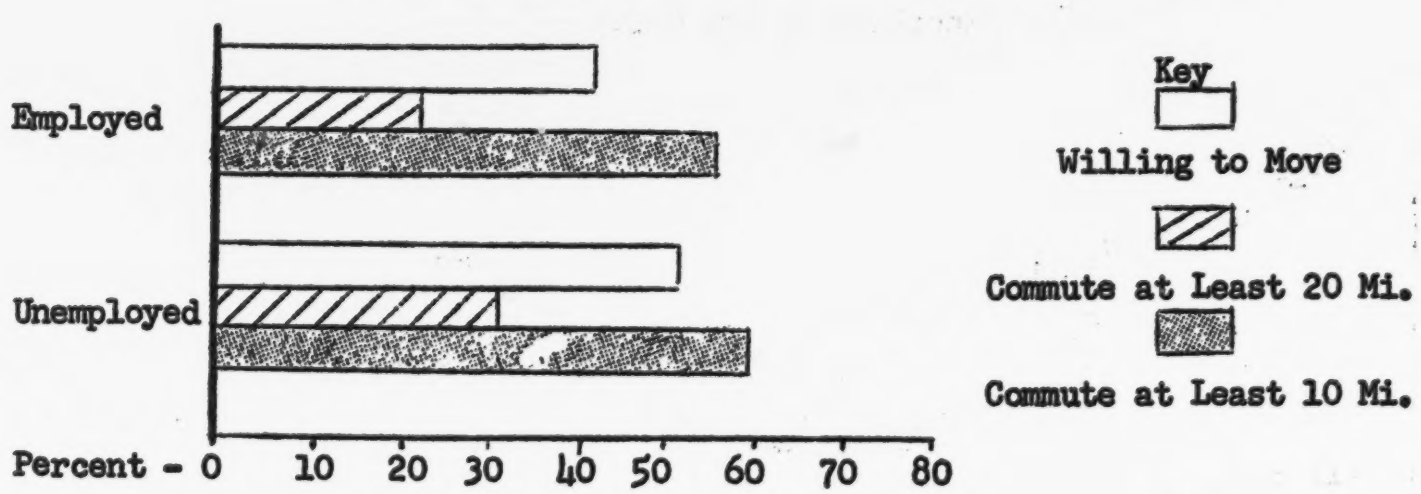
Only the Entry occupational group showed any great willingness to move out of the area for work. The Clerical and Sales and the Skilled groups were not willing to travel any distance for work but would commute the shorter distances of less than 20 miles one-way. This situation is caused by the wages generally paid in these occupations.

The educational attainment of the applicants was not a significant factor in mobility except that the high school seniors who were tallied as graduates were more mobile.

The employment status of the applicants has an affect on the mobility of an applicant. The employed persons are less willing to move or commute than the unemployed. This reflects the fact that most of the employed persons surveyed were currently employed in local industry and were content to remain there.

Chart F

Mobility by Employment Status



The Willingness of the applicants to commute for work was greatest in the Keshena area where 90 percent or 148 persons were willing to commute for work. Only 77 percent or 171 persons from Neopit were willing to commute. Other areas in the county provided seven persons willing to commute while 63 persons from outside the county indicated a willingness to commute.

JOB POTENTIAL OF THE APPLICANTS

All applicants were classified by Primary Occupation, occupations for which they have potential and on the basis of the results of the General Aptitude Test Battery (GATB). The Tables and Charts in this section depict the manpower potential for industry in Menominee County. All applicants without skills or recent work history were classified as Entry applicants and were encouraged to take the United States Employment Service General Aptitude Test Battery (GATB) to assist counselors in their evaluation of each individual's occupational potential.

Primary Occupation of the Applicants

The 467 applicants were classified by their primary occupation. Table 12 shows these applicants in the major occupational groups by age and sex. Two hundred and fifty-three persons were fully qualified on the basis of experience while 214 were Entry workers. One hundred and twenty-seven persons were skilled or semiskilled workers, thirty-two were Clerical and Sales workers and eighteen had experience in Service occupations. The 253 experienced applicants represent potential for immediate plant staffing while the Entry applicants represent potential trainees.

Table 12

Primary Occupations of the Applicants by Age and Sex

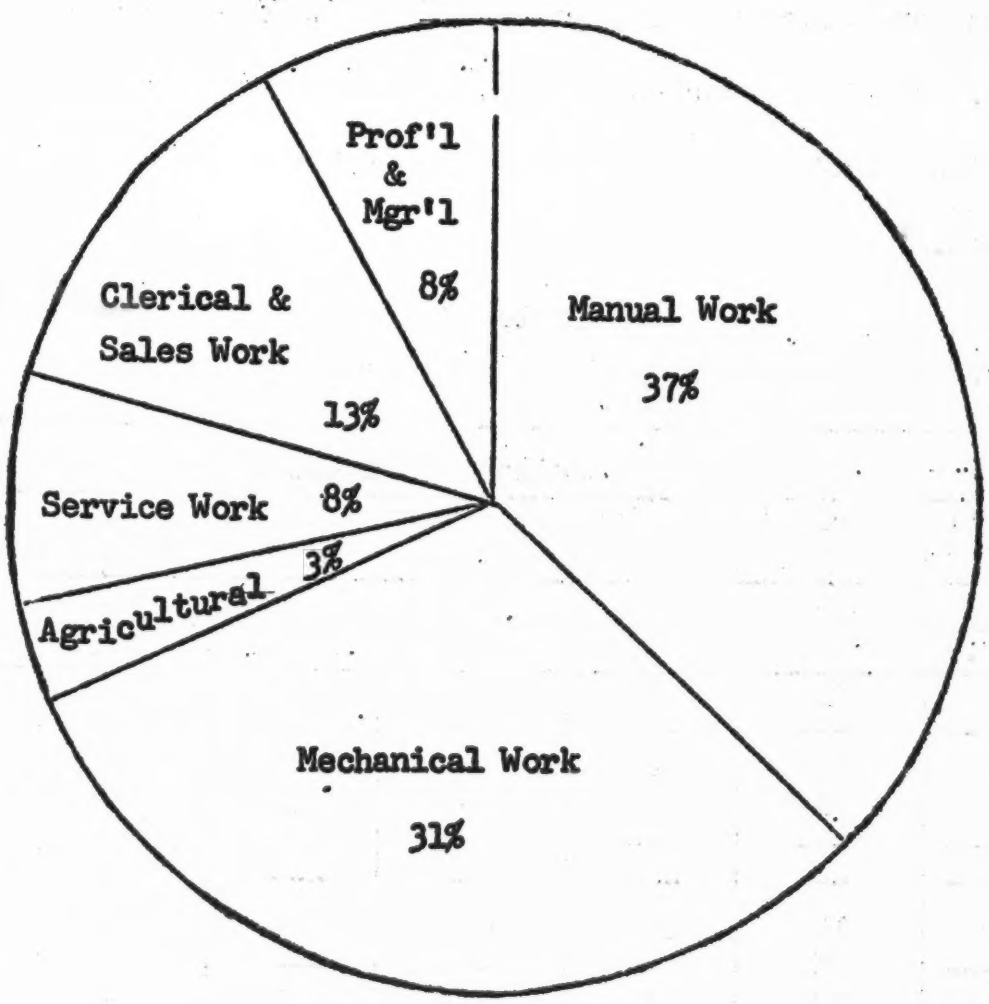
Age and Sex	Primary Occupation							
	Prof'l Mgr'l	Clerical & Sales	Service	Forestry	Skilled	Semi-Skilled	Un-Skilled	Entry
Total	4	32	18	0	44	83	72	214
Percent	0.9	6.9	3.8	0.0	9.4	17.8	15.4	45.8
Male	4	13	3	0	43	70	60	118
14 - 19	---	---	---	---	1	6	4	75
20 - 44	1	11	2	---	23	38	36	39
45 - 54	3	2	1	---	11	15	9	2
55 - 64	---	---	---	---	8	10	9	---
65 +	---	---	---	---	---	1	2	2
Female	0	19	15	0	1	13	12	96
14 - 19	---	5	1	---	---	1	---	41
20 - 44	---	10	7	---	1	9	11	40
45 - 54	---	2	2	---	---	2	1	8
55 - 64	---	2	3	---	---	1	---	4
65 +	---	---	2	---	---	---	---	3

Occupational Potential of the Applicants

Every applicant was given an occupational code or codes that reflected their present occupation, occupation for which they possessed some skill and/or occupation for which they possessed potential and interest. As a result many of the applicants received more than one occupational code. The 467 applicants were assigned a total of 685 codes or an average of about 1½ codes per person. Chart G below shows percentage distribution of the applicants in the six major occupational groups and Table II of the appendix gives a complete breakdown by age and sex.

Chart G

Occupational Potential of the Applicants



Job Potential Inventory

In addition to using the General Aptitude Test Battery (GATB) as an aid in counseling and to determine occupational potential it is also useful in determining specific job potential of the applicants. The GATB consists of twelve tests designed to measure nine aptitudes. The aptitudes are defined as follows:

G - (Intelligence)General learning ability.

V - (Verbal Aptitude) Ability to understand meanings of words and ideas associated with them and to use them effectively.

N - (Numerical Aptitude) Ability to perform arithmetic operations quickly and accurately.

S - (Spatial Aptitude) Ability to comprehend forms in space and understand relationships of plane and solid objects - often described as the ability to visualize.

P - (Form Perception) Ability to perceive pertinent detail in objects or in pictorial or graphic material - to make visual comparisons and discriminations, and to see slight differences in shapes and shadings of figures, etc.

Q - (Clerical Perception) Ability to perceive pertinent detail in verbal or tabular material.

K - (Motor Coordination) Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed.

F - (Finger Dexterity) - Ability to move the fingers, and manipulate small objects with the fingers, rapidly or accurately.

M - (Manual Dexterity) Ability to move the hands easily and skillfully - to work with the hands in placing and turning motions.

A total of 152 applicants were administered the GATB and their scores have been compared with the Specific Aptitude Test Battery (SATB) scores listed in the U. S. Department of Labor catalogue of test scores for various specific jobs. These SATB's are frequently used by the Employment Service as a tool to screen applicants for jobs or training. All applicants whose test scores were above the minimum SATB scores for selected jobs are tabulated in Table 13. Since 91 men and 61 women were given the entire GATB, Table 13 does indicate persons with ability to learn a given job regardless of any sex requirements. This table can provide an industry with the numbers of possible Entry applicants or trainees that would be available for plant staffing. Since 118 of the applicants tested were Entry applicants this means that a total of 371 persons are either qualified workers (as shown in Appendix Table I) or were tested and appear in Table 13. The names and addresses of all the applicants will be supplied to the district WSES office for use in screening and selection, upon the request of any employer.

Table 13

Specific Job Potential of All the Applicants Tested

Specific Jobs	Total	Male	Female
Total Applicants Tested	152	91	61
Aircraft Assembler	115	69	46
Airplane Mechanic	84	52	32
Assembler Communications Equipment	29	15	14
Auto-Body Repairman	94	59	35
Auto Mechanic	86	48	38
Baker	113	61	52
Bookkeeper	40	26	14
Bookkeeping Machine Operator	25	12	13
Beauty Operator	89	50	39
Clicking Machine Operator (Boot & Shoe)	131	84	47
Cabinetmaker	62	39	23
Carpenter, Construction	91	58	33
Cheese Wrapper	75	39	36
Clerk, General Office	34	18	16
Compression Molding Machine Operator	95	53	42
Cook	86	58	28
Core Plane Wirer	45	20	25
Drill Press - Punch Press Operator	134	83	51
Electrician	62	39	23
Electronic Assembler	88	52	36
Electronic Resistance Spot Welder	92	54	38
Electronic Technician	14	9	5
Electronic Unit Assembler	41	18	23
Farm Equipment Mechanic	56	32	24
Forming Press Operator	122	76	46
Guard, Institution	50	31	19
Key Punch Operator	55	27	28
Knitting Machine Operator	82	44	38
Loader (Canning & Preserving)	98	52	46
Machine Operator, General	112	64	48
Machinist	84	52	32
Meat Cutter	85	53	32
Module Assembler (Electronics)	45	27	18
Nurse Aide	95	56	39
Packing, Sorting, Canning	127	75	52
Sewer, Hand	104	63	41
Sewing Machine Operator	104	57	47
Sewing Machine Repairman	119	70	49
Sheet Metal Worker	88	54	34
Stitcher Machine Operator	86	42	44
Stenographer - Typist	43	23	20
Tool & Die Maker	58	39	19
Turret Lathe Operator	104	62	42
Welder, Inert Gas	121	72	49
Welder, Spot	93	50	43
Welder, Combination	90	53	37
Woodworking Machine Operator	108	62	46

PART TWO

SURVEY OF OUT-OF-AREA FORMER RESIDENTS

Survey of Former Residents

During the applicant survey in Menominee County a mail survey was conducted with former residents of the county who are now living outside the area. A total of 131 responses was received from all areas of the United States. The results of this survey appear in Table 14. Just over 46 percent of those responding indicated some interest of returning to Menominee County for work. This interest was qualified however, by the desire of many to earn as much as they were currently earning.

A close look at Table 14 indicates that 25 of the 61 who expressed a desire to return were earning in excess of $6,000 annual salary and another 18 were married women who could not move unless the husband found suitable local employment. This means that only about 18 would be readily available to return to Menominee County. Of special note however, should be the relatively high educational level of the former residents. This education could be of great service in future industrial or resort development to provide the managerial and advisory talent so desperately needed in the county.

Table 14

Survey of Former Residents

	Group	Willing to Return to Menominee County			Not willing to Return to Menominee County		
		Total	Male	Female	Total	Male	Female
	Total	61	36	25	70	21	49
Marital Status	Married	51	33	18	57	20	37
	Single	7	3	4	5	1	4
	Other	3	0	3	8	0	8
Income Past Twelve Months	I.N.A.	14	4	10	8	2	6
	0 - 1999	8	1	7	36	0	36
	2000 - 3999	9	3	6	1	0	1
	4000 - 5999	5	3	2	9	4	5
	6000 - 7999	11	11	0	6	5	1
	8000 +	14	14	0	10	10	0
Employment Status	Employed	48	33	15	35	18	17
	Unemployed	8	2	6	6	1	5
	Not In Labor Force	5	1	4	29	2	27
Educational Level	0 thru 8	9	5	4	10	2	8
	9 - 10 - 11	19	11	8	11	4	7
	H. S. Graduate	25	16	9	25	8	17
	Some College	6	3	3	12	2	10
	College Graduate	2	1	1	12	5	7

I.N.A. - Information not provided by the Respondent

PART THREE

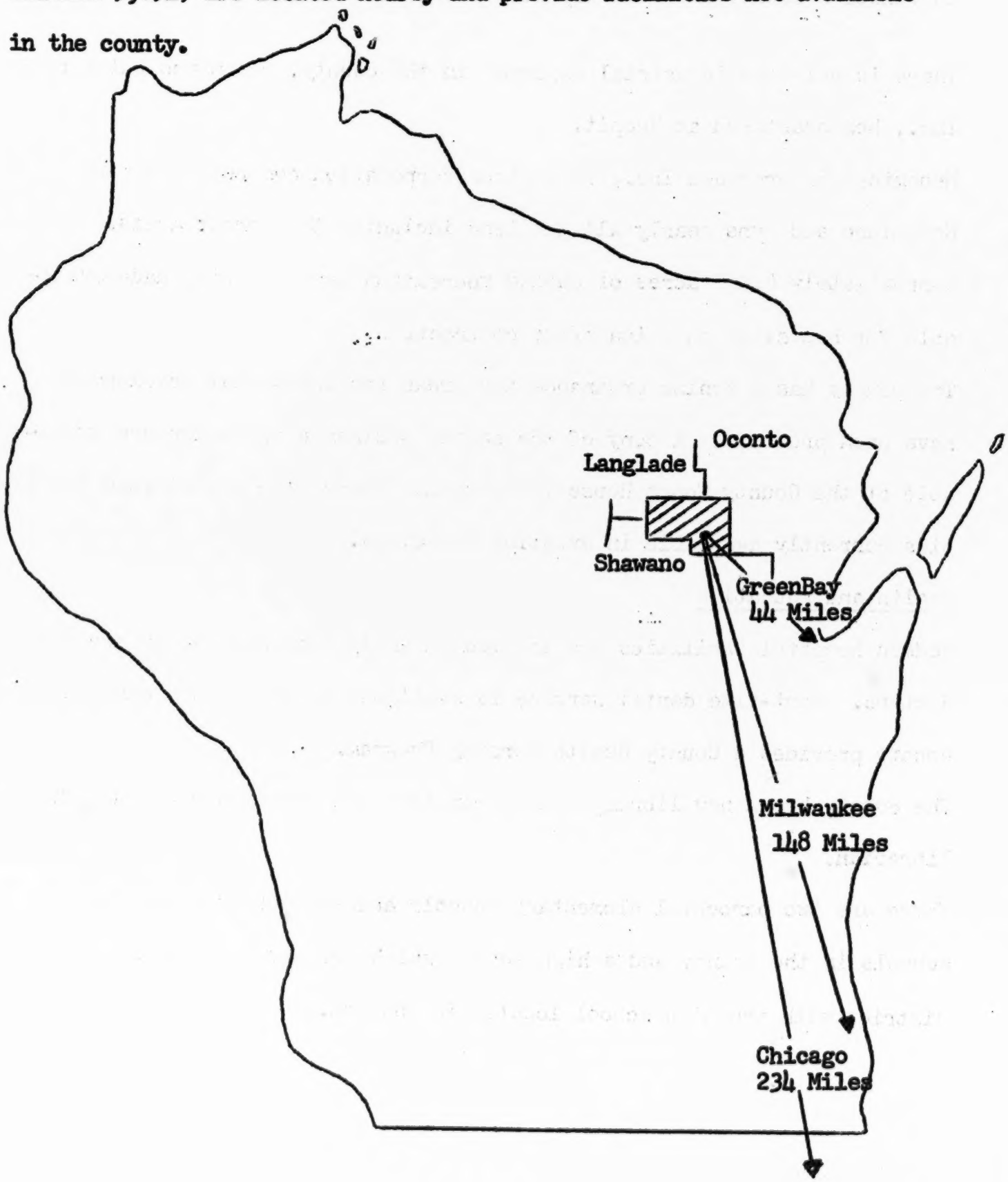
Industrial Potential

Part three presents information about the area which should be of interest to any firm contemplating industrial expansion into Menominee County

Location of Menominee County Relative to Population and Trade Centers

Location of Menominee County

Menominee County is located in Northeastern Wisconsin 44 miles from Green Bay, 148 miles from Milwaukee, 234 miles from Chicago and is less then 50 miles from four lane U.S. highway 41, which connects to these points. The cities of Shawano (population 6,103) and Antigo (population 9,691) are located nearby and provide facilities not available in the county.



Description of Menominee County

Menominee County is comprised of nearly 234,000 acres of which 221,000 are forested. Lakes and streams account for another 4,000 acres with about 1,500 acres in residential and industrial use.

The county had an estimated 1965 population of 2,500, with a per capita income of $586 which was the lowest in the state. The government is a combination county and township with offices and functions combined.

There is only one industrial employer in the county, Menominee Enterprises Inc., headquartered at Neopit.

Menominee Enterprises Inc., is a stock corporation controlled by the Menominee and owns nearly all the land including the forest areas.

Approximately 6,000 acres of choice recreation land is being made available for homesites on a lease/buy contract.

The county has a zoning ordinance and areas for industrial development have been provided. A copy of the zoning ordinance and a map are available at the County Court House in Keshena. There also are limited facilities currently available in existing buildings.

Health and Education

Modern hospital facilities are located in Antigo and Shawano as are the doctors. Part-time dental service is available in the county and the county provides a County Health Nursing Program.

The county has a new library founded in 1965 and operated by a qualified librarian.

There are two parochial elementary schools and two public elementary schools in the county and a high school which are part of the Shawano district with the high school located in Shawano.

Vocational school training is available as an extension of the Antigo Vocational school.

Transportation

The Soo line railroad provides freight service to Neopit on a twice daily basis. Passenger service by the C & NW is provided at Shawano on a daily basis.

Passenger and Air Freight facilities are located at Green Bay with 30 flights daily via North Central Airlines.

Two motor carriers, Fore-Way Express, Inc., and Spector Freight System, Inc., provide overnight service to Milwaukee and Chicago.

Bus service is available at Shawano on a twice daily basis.

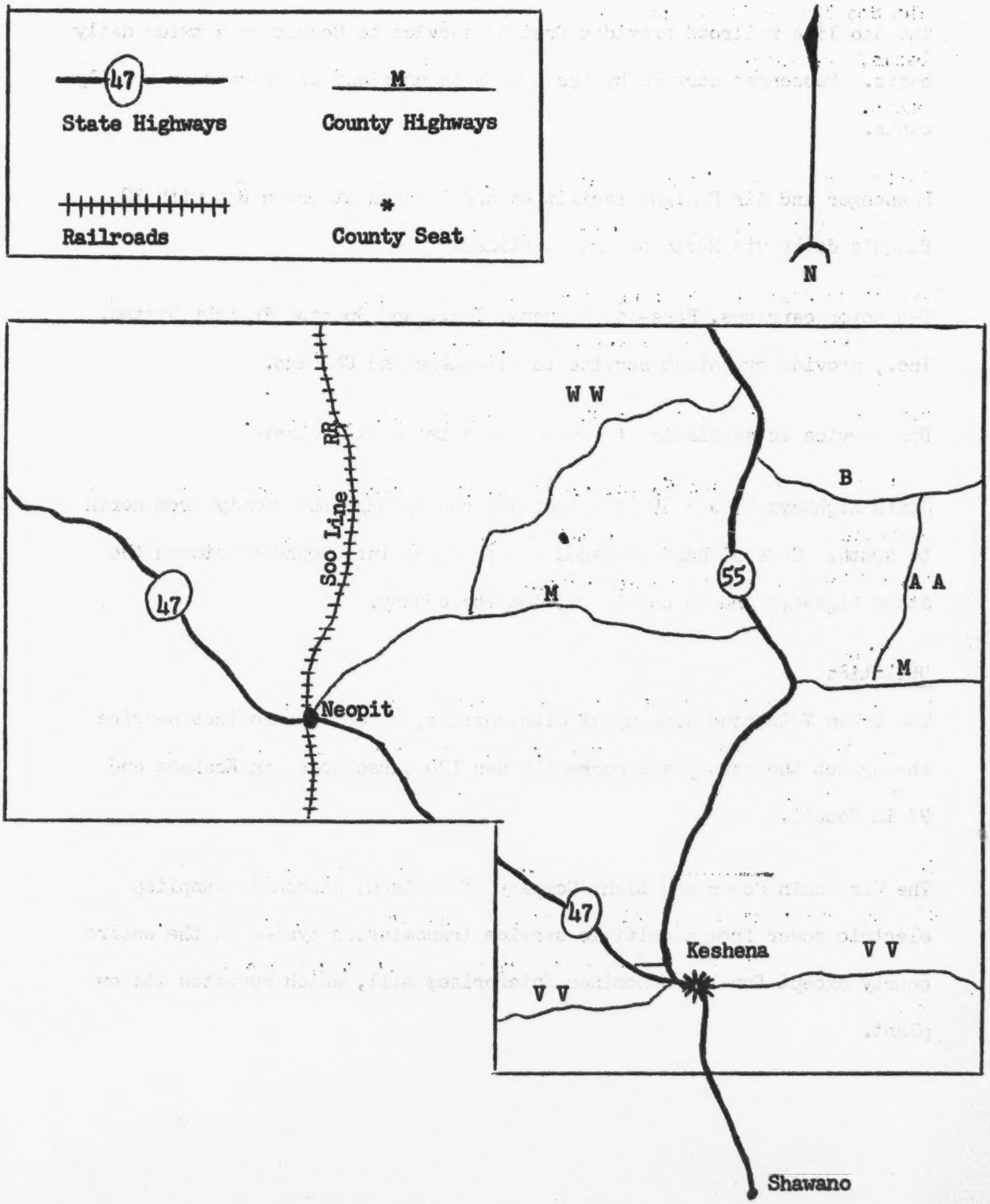
State highways 47 and 55 intersect and run through the county from north to south. Several hard surfaced county roads interconnect between the state highways and to points outside the county.

Utilities

The Urban Telephone Company of Clintonville, Wisconsin provides service throughout the county and currently has 120 subscribers in Keshena and 97 in Neopit.

The Wisconsin Power and Light Company of Madison, Wisconsin supplies electric power from a multiple service transmission system to the entire county except for the Menominee Enterprises mill, which operates its own plant.

Menominee County



Natural Gas is available in Shawano and a pipeline could be extended into Menominee County for a large volume user.

Water and Sewer facilities in Keshena and Neopit have been improved and are adquate to handle some industrial development. Lateral connections to all homes in the villages are not complete but attempts are being made to secure EDA funding for completion. Private wells throughout the county provide clean water and the sandy soil facilitates waste disposals.

The two villages each have a volunteer fire department and in addition the State Conservation Department has a radio equipped Forest Ranger Station at Keshena.

Finance

Menominee County is without the service of a local banking institution although several are located in Shawano and Antigo. Lack of capital on the part of the county or individuals in the county has been a limiting factor in industrial, resort and in fact all business enterprises.

Present Employment

Employment in Menominee County at the present is limited to roughly three types, lumber mill workers, logging and pulp cutting and county employees (mostly highway department labor). Employment in these fields is limited to mostly men except for a few office positions. Menominee Enterprises, Inc., currently employs 235 persons in its mill operations with average earnings of production workers of $1.73 per hour.

Logging operations by private contractors employs about 100 men during the logging season of about 9 months. Pulp cutting operations by private contractors employs about 35 men usually on a year round basis. Earnings in these occupations usually equal or exceed mill earnings.

The Menominee County and Town government employs about 100 persons at rates from $1.00 up to $1.88 per hour. There is a very limited amount of employment in small business and agriculture.

As mentioned above there is a very obvious lack of employment for women and any employer could find a readily available supply of women. There also is a noticable lack of diversity in employment for men, which has led to an out-migration of men.

Taxes

The effective tax rate per $1,000(full value) assessed valuation for 1965 was $29.42. This rate may fluctuate depending on state or federal tax programs pending in Congress. Average rate for Wisconsin in 1964 was $27.84.

PART FOUR

APPENDIX

Part Four or the Appendix consists of a set of Tables providing detailed data on the primary occupations and total occupational potential of all applicants. These Tables provided the background for the charts and graphs in Part One.

APPENDIX

Following is an explanation which delineates the major occupational groups for entry classifications as used in Tables one and two of the appendix.

PROFESSIONAL, TECHNICAL AND MANAGERIAL WORK:

Persons having the qualifications necessary for entry into work requiring the capacity to acquire and apply special knowledges involved in artistic creation, entertainment, social service work, teaching, scientific study, research, engineering, law, business relations or management.

CLERICAL AND SALES WORK:

Persons having the qualifications necessary for entry into work involving recording, transcribing, composing, compiling, transmitting and systematizing written communications and records, computing or compiling mathematical or statistical data, or dealing with the public in business situations to effect sales, give information, or perform other commercial or administrative services.

SERVICE WORK:

Persons having the qualifications necessary for entry into work that involves ministering to the needs of others in preparing food, serving meals, caring for children and in other types of personal services activities.

AGRICULTURAL, MARINE AND FORESTRY WORK:

Persons having the qualifications necessary for entry into work involving the raising and harvesting of crops; the breeding, care, catching and hunting of fish and other animals; the handling of boats; the preservation of forest; the gathering of forest products and other related outdoor activities.

MECHANICAL WORK:

Persons having the qualifications necessary for entry into work in which the independent judgement of the worker determines the machine and manual operations to be performed in obtaining the proper form and quantity of material to be produced. Workers may be required to lay out work; to estimate quality, suitability, and needed quantities of materials; to make precise measurements; to read blueprints or other specifications; and to make necessary computations or mechanical adjustments to control or regulate processes.

MANUAL WORK:

Persons having the qualifications necessary for entry into work in which the form, quality and quantity of the work depend primarily on prescribed methods and on the performance of machines or equipment or on the use of hands or hand tools. Workers may be required to observe the operation of machines, feed machines and to perform other repetitive and physical tasks.

Table I

Primary Occupations of All Applicants

Occupational Group	Male						Female					
	Total	Age Group					Total	Age Group				
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Total All Applicants	311	86	150	43	27	5	156	48	79	15	10	4
Fully Qualified Applicants	193	11	111	41	27	3	60	7	38	7	6	2
Prof'l and Mgr'l	4	--	1	3	--	--	--	--	--	--	--	--
Accountant	1	--	--	1	--	--	--	--	--	--	--	--
Semiprofessional Occupa.	1	--	1	--	--	--	--	--	--	--	--	--
Manager	1	--	--	1	--	--	--	--	--	--	--	--
Official	1	--	--	1	--	--	--	--	--	--	--	--
Clerical and Sales	13	--	11	2	--	--	19	5	10	2	2	--
Bookkeeper	2	--	2	--	--	--	2	1	--	--	1	--
Bookkeeping Mach. Opr.	1	--	1	--	--	--	1	--	1	--	--	--
Checkers	4	--	3	1	--	--	--	--	--	--	--	--
Clerks, General	1	--	--	1	--	--	1	--	1	--	--	--
Clerks, General Office	--	--	--	--	--	--	6	--	5	1	--	--
General Industry Clerks	1	--	1	--	--	--	--	--	--	--	--	--
Secretary	--	--	--	--	--	--	1	--	--	1	--	--
Stenographers & Typists	--	--	--	--	--	--	4	4	--	--	--	--
Stock Clerks	3	--	3	--	--	--	--	--	--	--	--	--
Demonstrator	--	--	--	--	--	--	1	--	1	--	--	--
Salesman, Insurance	1	--	1	--	--	--	--	--	--	--	--	--
Sales Clerks	--	--	--	--	--	--	3	--	2	--	1	--
Service	3	--	2	1	--	--	15	1	7	2	3	2
Cooks, Domestic	--	--	--	--	--	--	1	1	--	--	--	--
Housekeeper, Private Family	--	--	--	--	--	--	1	--	1	--	--	--
Nursemaids	--	--	--	--	--	--	2	--	--	1	1	--
Misc. Private Servants	--	--	--	--	--	--	1	--	--	--	--	1
Maids, Hotel & Rest.	--	--	--	--	--	--	1	--	--	--	1	--
Cooks	1	--	1	--	--	--	--	--	--	--	--	--
Waitresses	--	--	--	--	--	--	2	--	2	--	--	--
Practical Nurses	--	--	--	--	--	--	2	--	1	--	--	1
Hospital Attendents	--	--	--	--	--	--	5	--	3	1	1	--
Charwomen & Cleaners	1	--	1	--	--	--	--	--	--	--	--	--
Janitor	1	--	--	1	--	--	--	--	--	--	--	--
Agricultural	--	--	--	--	--	--	--	--	--	--	--	--

(cont'd)

(Continuing)

Table I

Occupational Group	Male						Female					
	Total	Age Group					Total	Age Group				
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Skilled	43	1	23	11	8	--	1	--	1	--	--	--
Baker	1	1	--	--	--	--	--	--	--	--	--	--
Log Scaler	8	--	5	1	2	--	--	--	--	--	--	--
Sawmill Occupations	3	--	2	1	--	--	--	--	--	--	--	--
Woodworking Occupations	1	--	--	--	1	--	--	--	--	--	--	--
Printing & Publishing Occupa.	--	--	--	--	--	--	1	--	1	--	--	--
Machinists	2	--	1	1	--	--	--	--	--	--	--	--
Welders	6	--	5	1	--	--	--	--	--	--	--	--
Forging-Pressing Occupa.	1	--	1	--	--	--	--	--	--	--	--	--
Fabricated Plastics Occupa.	1	--	--	1	--	--	--	--	--	--	--	--
Carpenters	2	--	--	--	2	--	--	--	--	--	--	--
Plumbers	1	--	--	--	1	--	--	--	--	--	--	--
Stationary Engineers	2	--	1	1	--	--	--	--	--	--	--	--
Cranemen-Hoistmen-Shovelmen	4	--	4	--	--	--	--	--	--	--	--	--
Automobile Mechanic	3	--	1	2	--	--	--	--	--	--	--	--
Appliance Repairmen	4	--	2	--	2	--	--	--	--	--	--	--
Manufacturing Foremen	4	--	1	3	--	--	--	--	--	--	--	--
Semiskilled	70	6	38	15	10	1	13	1	9	2	1	--
Food Preserving Occupations	--	--	--	--	--	--	2	1	--	1	--	--
Dairy Products Processing	1	1	--	--	--	--	--	--	--	--	--	--
Textile Fabrication Occupa.	--	--	--	--	--	--	2	--	--	1	1	--
Log & Lumber Sealers & Graders	3	--	1	1	1	--	--	--	--	--	--	--
Lumberman	12	1	6	3	2	--	--	--	--	--	--	--
Sawmill Occupations N.E.C.	9	2	5	1	--	1	--	--	--	--	--	--
Occupations in Shoe Manufacture	--	--	--	--	--	--	1	--	1	--	--	--
Occupations in Prod.ofClay Prod.	--	--	--	--	--	--	1	--	1	--	--	--
Machine Shop Occupa.	1	1	--	--	--	--	--	--	--	--	--	--
Forging & Pressing Occupa.	2	--	2	--	--	--	--	--	--	--	--	--
Solderers	--	--	--	--	--	--	1	--	1	--	--	--
Radio Manufacturing	--	--	--	--	--	--	4	--	4	--	--	--
Electrical Equip. Manufact.	--	--	--	--	--	--	1	--	1	--	--	--
Cement Finishers	1	--	1	--	--	--	--	--	--	--	--	--
Truck & Tractor Drivers	24	1	12	9	2	--	--	--	--	--	--	--
Teamster	1	--	--	--	1	--	--	--	--	--	--	--
Laundry Occupations	--	--	--	--	--	--	1	--	1	--	--	--
Firemen & Builder Tenders	3	--	3	--	--	--	--	--	--	--	--	--
Tool Sharpener	2	--	--	--	2	--	--	--	--	--	--	--
Chainmen, Rodmen, Surveying	1	--	--	--	1	--	--	--	--	--	--	--
Warehousing, Storekeeping	9	--	8	1	--	--	--	--	--	--	--	--
Apprentices	1	--	--	--	1	--	--	--	--	--	--	--

(cont'd)

Table I

Occupational Group	Male						Female					
	Total	Age Group					Total	Age Group				
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Unskilled	60	4	36	9	9	2	12	--	11	1	--	--
Laborer Food	3	--	2	1	--	--	6	--	5	1	--	--
Laborer Lumber	53	4	30	8	9	2	--	--	--	--	--	--
Laborer Paper	1	--	1	--	--	--	1	--	1	--	--	--
Laborer Metal Working	2	--	2	--	--	--	2	--	2	--	--	--
Laborer, Packing & Filling	--	--	--	--	--	--	3	--	3	--	--	--
Laborer, Material Handling	1	--	1	--	--	--	--	--	--	--	--	--
Entry Applicants	118	75	39	2	--	2	96	41	41	8	4	2
Prof'l & Mgr'l	24	14	10	--	--	--	8	7	--	1	--	--
Artistic Drawing & Related	--	--	--	--	--	--	1	1	--	--	--	--
Musical Work	1	1	--	--	--	--	--	--	--	--	--	--
Instructive Service Work	--	--	--	--	--	--	4	4	--	--	--	--
Social Service Work	1	1	--	--	--	--	1	1	--	--	--	--
Protective Service Work	1	1	--	--	--	--	--	--	--	--	--	--
Laboratory Science Work	2	1	1	--	--	--	2	1	--	1	--	--
Business Relations Work	5	2	3	--	--	--	--	--	--	--	--	--
Geographical Science Work	8	4	4	--	--	--	--	--	--	--	--	--
Engineering	2	1	1	--	--	--	--	--	--	--	--	--
Drafting	4	3	1	--	--	--	--	--	--	--	--	--
Clerical & Sales	8	7	1	--	--	--	26	17	8	1	--	--
Computing Work	--	--	--	--	--	--	1	--	1	--	--	--
General Recording Work	2	1	1	--	--	--	7	2	4	1	--	--
Typing	1	1	--	--	--	--	8	7	1	--	--	--
Stenographic Work	--	--	--	--	--	--	3	3	--	--	--	--
Routine Recording Work	2	2	--	--	--	--	--	--	--	--	--	--
Classifying and Related	--	--	--	--	--	--	1	--	1	--	--	--
General Public Contact	1	1	--	--	--	--	5	4	1	--	--	--
Selling	2	2	--	--	--	--	--	--	--	--	--	--
Customer Service Work	--	--	--	--	--	--	1	1	--	--	--	--
Service Work	7	5	2	--	--	--	15	8	4	1	--	2
Quantity Cooking	3	3	--	--	--	--	--	--	--	--	--	--
Child Care	--	--	--	--	--	--	1	--	1	--	--	--
Food Serving	1	--	1	--	--	--	--	--	--	--	--	--
Adult Care	2	1	1	--	--	--	12	8	3	1	--	--
Misc. Personal Service	1	1	--	--	--	--	2	--	--	--	--	2

(cont'd)

(Continuing)

Table I

Occupational Group	Male						Female					
	Total	Age Group					Total	Age Group				
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Agri. & Forest Work	1	--	--	--	--	1	--	--	--	--	--	--
Forest Work	1	--	--	--	--	1	--	--	--	--	--	--
Mechanical Work	60	38	20	1	--	1	6	2	2	2	--	--
Machining	15	9	5	1	--	--	--	--	--	--	--	--
Mechanical Repairing	15	10	4	--	--	1	--	--	--	--	--	--
Complex Machine Operating	3	2	1	--	--	--	1	1	--	--	--	--
Electrical Repairing	2	1	1	--	--	--	--	--	--	--	--	--
Structural Crafts	19	13	6	--	--	--	--	--	--	--	--	--
Bench Crafts	4	2	2	--	--	--	5	1	2	2	--	--
Graphic Art Work	1	1	--	--	--	--	--	--	--	--	--	--
Processing	1	--	1	--	--	--	--	--	--	--	--	--
Manual Work	18	11	6	1	--	--	41	7	27	3	4	--
Machine Tending	3	1	2	--	--	--	--	--	--	--	--	--
Processing Equip.Tending	2	2	--	--	--	--	--	--	--	--	--	--
Structural Work	1	--	1	--	--	--	--	--	--	--	--	--
Bench Work	--	--	--	--	--	--	25	2	20	1	2	--
Machine Operative	2	1	1	--	--	--	1	--	--	1	--	--
Processing	--	--	--	--	--	--	1	--	1	--	--	--
Elemental Work	--	--	--	--	--	--	1	1	--	--	--	--
Elemental Work, Light	4	2	1	1	--	--	9	2	5	--	2	--
Elemental Farm Work	--	--	--	--	--	--	1	1	--	--	--	--
Elemental Work, Heavy	6	5	1	--	--	--	3	1	1	1	--	--

Table II

Total Occupational Potential of the Applicants

Occupational Group	Total	Male	Female
Total Potential of All Applicants	685	457	228
Professional & Managerial Work	53	36	17
Artistic Work	5	1	4
Musical Work	2	1	1
Instructive Service Work	10	4	6
Laboratory Science Work	6	3	3
Business Relations Work	7	6	1
Geographical Science Work	8	8	0
Engineering and Related	3	3	0
Drafting and Related	5	5	0
Managerial Work CAFS	1	0	1
Managerial Work, Personal Service	1	0	1
Managerial Work, Geographical	2	2	0
Managerial Work, Industrial	3	3	0
Clerical and Sales Work	88	27	61
Computing Work	6	1	5
Recording Work	23	7	16
Typing	15	2	13
Stenographic Work	6	0	6
Equipment & Material Checking	8	8	0
Routine Recording Work	5	3	2
General Clerical Work	5	1	4
Clerical Machine Operating	1	0	1
General Public Contact Work	12	1	11
Selling	6	4	2
Customer Service Work	1	0	1
Service Work	57	13	44
Quantity Cooking	7	6	1
Child Care	4	1	3
Food Serving	6	1	5
Adult Care	33	4	29
Misc. Personal Care	7	1	6
Agricultural, Marine, Forestry Work	19	19	0
Animal Care	2	2	0
Crop Farming	2	2	0
Forest Work	15	15	0
Mechanical Work	210	192	18

(cont'd)

Table II

Occupational Group	Total	Male	Female
Machine Trades	22	22	0
Metal Machining	10	10	0
Wood Machining	1	1	0
Mechanical Repairing	40	40	0
Complex Machine Operating	6	5	1
Power Press Forming	2	2	0
Hauling, Hoisting and Drilling	31	31	0
Electrical Repairing	7	7	0
Structural Crafts	10	10	0
Metal Structural Work	1	1	0
Wood Structural Work	6	6	0
Stone or Glass Structural Work	1	1	0
Welding	31	31	0
Bench Crafts	11	3	8
Metal Bench Work	4	3	1
Wood Bench Work	1	1	0
Bench Work, Plastic Materials	1	1	0
Bench Work, Fabric and Leather	1	0	1
Bench Work, Paper Products	1	0	1
Bench Work, Foods	1	1	0
Inspecting and Testing	10	9	1
Graphic Art Work	1	1	0
Typesetting	1	1	0
Processing Assorted Materials	1	0	1
Metal Processing	2	2	0
Processing Plastic Materials	1	1	0
Processing Foods and Related	6	2	4
Manual Work	250	166	84
Inspecting and Testing	2	2	0
Machine Tending Assorted Materials	8	7	1
Hauling Hoisting and Drilling	23	23	0
Processing Equipment Tending	6	6	0
Metal Process Equipment Tending	1	1	0
Manipulative Work	1	0	1
Structural Work, Assorted Materials	1	1	0
Metal Structural Work	3	3	0
Wood Structural Work	1	0	1
Bench Work Assorted Materials	45	3	42
Metal Bench Work	3	3	0
Wood Bench Work	1	1	0
Bench Work, Plastic Materials	3	2	1
Bench Work, Fabric and Leather	6	0	6
Machine Operating	9	6	3
Metal Working, Machine Operating	1	1	0
Woodworking, Machine Operating	7	7	0
Fabric or Leather Working Mach.Opr.	2	0	2
Processing	3	0	3
Elemental Work	124	100	24

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MANPOWER RESOURCES

OF

TAYLOR COUNTY
WISCONSIN

VT 01144

WSES-3079

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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MANPOWER RESOURCES OF TAYLOR COUNTY
WISCONSIN
May 1965

Presented by:
WISCONSIN STATE EMPLOYMENT SERVICE
527½ Washington Street
Wausau, Wisconsin
Walter G. Winn, Manager

REPORT OF
SMALLER COMMUNITY PROGRAM
of the
Wisconsin State Employment Service
A Division of the Industrial Commission

In Cooperation With:
RURAL AREA DEVELOPMENT PROGRAM
of the
Agricultural Extension Service
College of Agriculture, University of Wisconsin

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FOREWORD

OBJECTIVES:

The study of the manpower resources of Taylor County was undertaken and accomplished under the Department of Labor's program of expanded services to smaller communities. The operation of this program in Wisconsin is designed to extend temporary employment-office services to remote, rural low-income areas which are not contiguous to a major labor market area and are not now receiving the full-measure of easily accessible service from a permanent local employment service office. The objective of this temporary, but full-time service, is to promote both the economic welfare of the area and the vocational goals of individual residents. This is facilitated in co-operation with the Department of Agriculture's program of Rural Areas Development. The immediate objectives are:

1. To provide employment counseling and placement assistance to individuals for jobs within or outside the area being served.

2. To determine the current and potential manpower resources.

3. To assist local planning groups in evaluating the over-all economic resources of the area in relation to the manpower resources.

4. To encourage and assist those groups in planning a program of economic development.

SERVICES:

To achieve these objectives, the Wisconsin State Employment Service established a "Smaller Community Temporary Office" at Medford, Wisconsin. The mobile crew, a staff of experienced employment service counselors, was assigned five basic tasks:

1. To provide the full range of employment service facilities and service to residents and employers of the county.

2. To register and interview all applicants interested in employment and to assist them in locating suitable jobs.

3. To test and counsel all interested applicants in evaluating their occupational potential for specific fields of work.

4. To survey the employers of the county to determine both current and anticipated employment requirements of existing business and industry.

5. To co-operate with various federal, state, and local agencies and quasi-public organizations in the development of plans designed to improve and stabilize the economic welfare of the county and its residents.

REASONS FOR SELECTION:

Taylor County was selected for early participation in the Smaller Community Program in view of its declining population, labor force, total employment and its status as a designated ARA County and in consideration of the requests of the Taylor County Board and Agricultural Agent, and the Taylor County RAD Committee.

BACKGROUND:

This study represents a part of the total continuing effort by WSES personnel to widen their scope of service and assist the county in its total resource development effort. Employment service personnel are anxious to know of any value this contribution may make in the total resource effort. Employers and businessmen contemplating expansions or new plant locations are urged to critically evaluate this study as to its value to them in terms of manpower resources, and to communicate their comments to the Wisconsin State Employment Service.

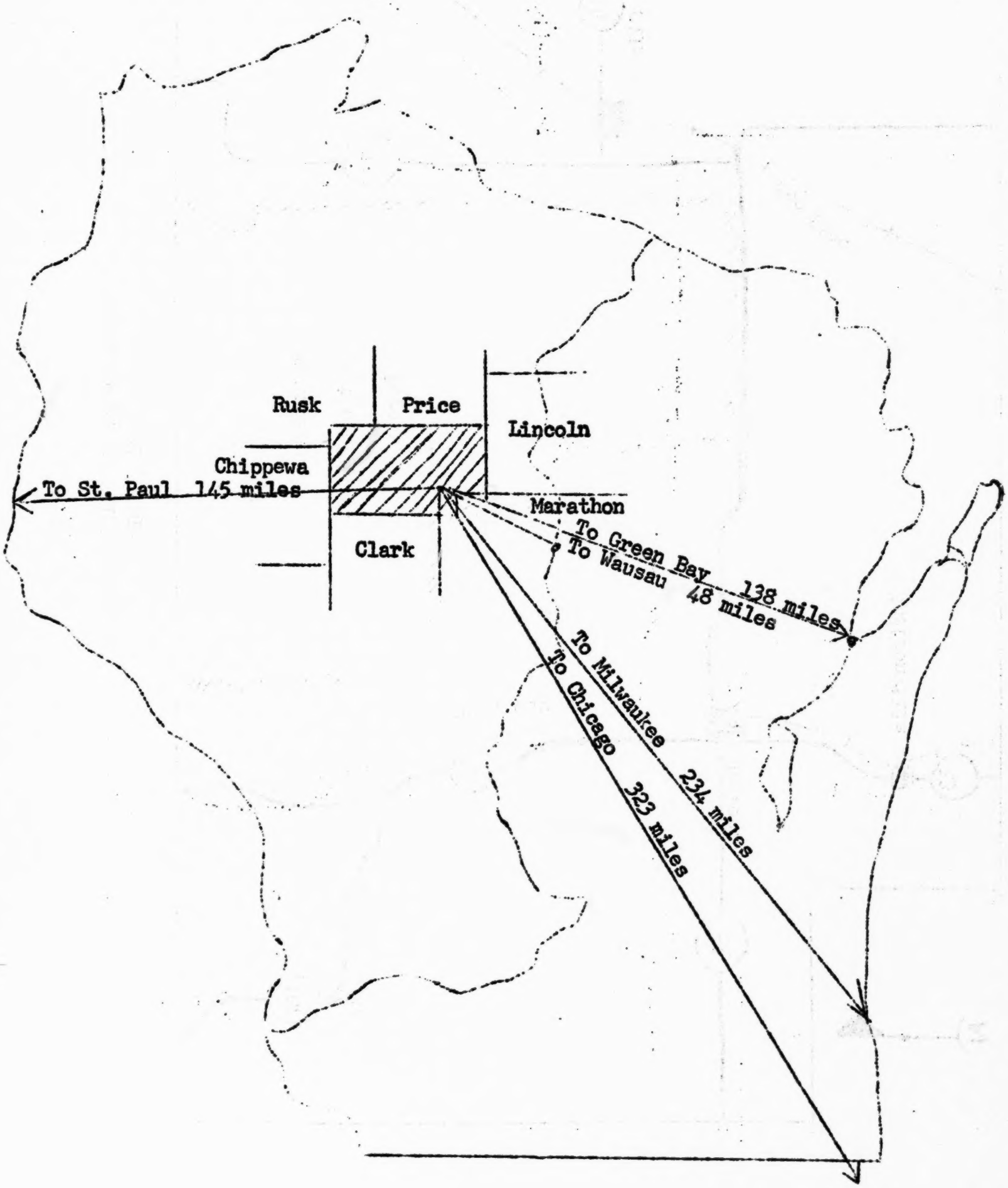
This material should also be of interest to other groups sincerely interested in the welfare and future of Taylor County, since much of the detail here actually reflects upon the adequacy of services of local institutions in terms of the needs, desires and ambitions of the people. Groups and agencies who are unselfishly concerned with employment opportunity, vocational training, education, taxes, and welfare should find some items of use and interest in this publication.

ACKNOWLEDGEMENTS:

We wish to thank the local employers for their assistance in providing certain data for this study. We thank the service groups and individuals who assisted in organizing and promoting the program and we thank the individual participants for their active participation and interest. Most important, we earnestly hope that the services rendered to individual applicants proves to be of value to them in their search for economic security.

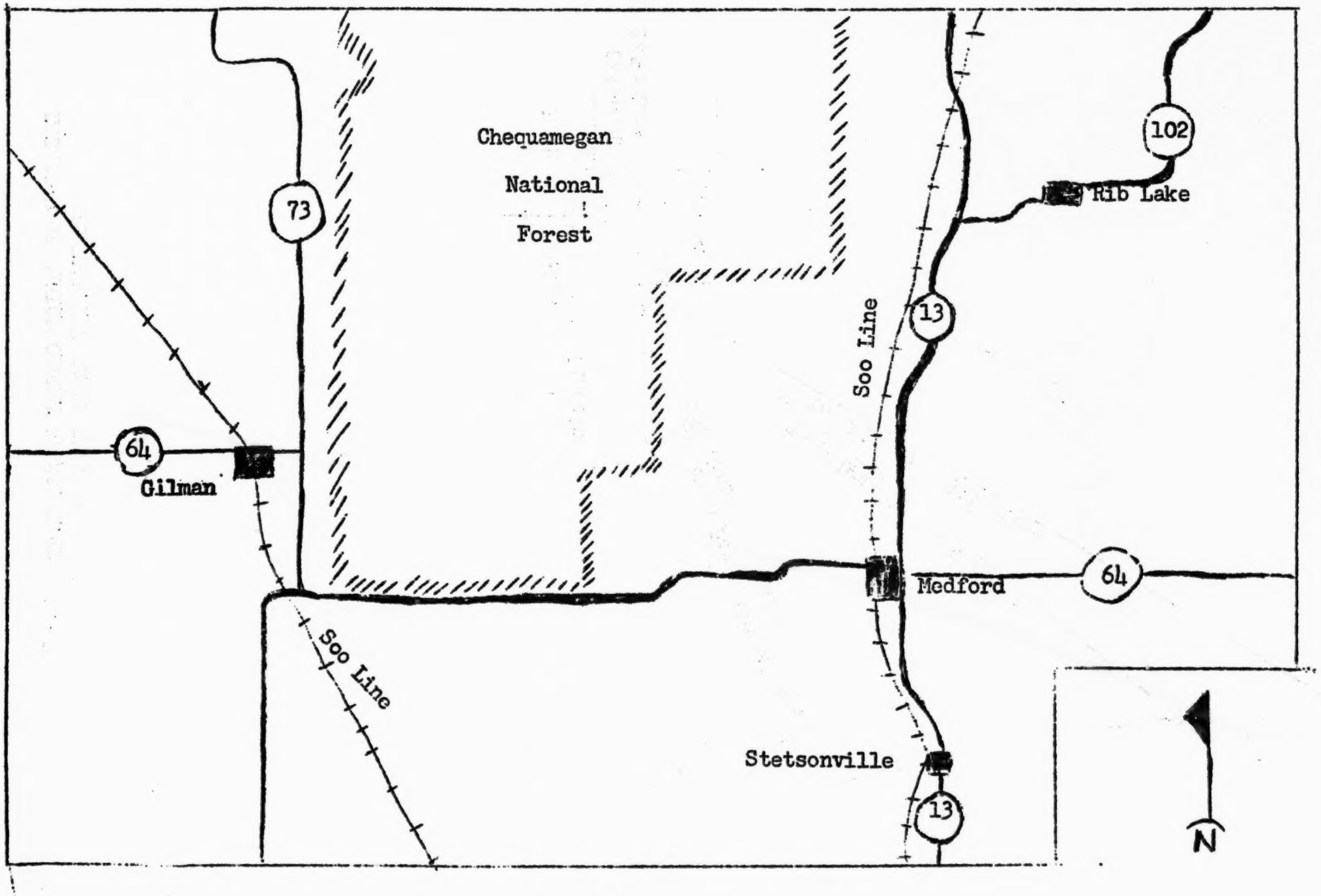
III

LOCATION OF TAYLOR COUNTY RELATIVE TO
POPULATION AND TRADE CENTERS



IV

MAJOR ROUTES OF TRANSPORTATION
IN TAYLOR COUNTY



V

SUGGESTIONS

It is most important that Taylor County maintain the RAD organization to promote economic growth by encouraging, growth of commercial enterprises, better farming and marketing procedures, more training and retraining facilities, improvement of community services and facilities, development of natural resources and utilization of federal and state programs which benefit the county.

Taylor County as a part of the PRI-RU-TA resource conservation and development project is doing considerable work in flowage development and soil conservation projects. This will provide additional recreation facilities but will not improve the overall employment picture to any great extent. Recreation industries, retail trade and service industries affected by increased recreation facilities are for the most part, seasonal, of low skill level, and low remuneration, therefore the cream of the youth and the skilled workers will still out-migrate.

The county must consider encouragement of existing industry and creation of new industry through it's Industrial Development Committee. There is an ample supply of labor (over 200) available for full time work. Added to these are over 100 young people graduating from high school each year and entering the labor market. If their people are to be retained in the county labor force, wage rates and job opportunities, must be increased. The increase in manufacturing industries in recent years with the attendant growth in the male labor force points out the increasing need for more industrial development.

Some thought should be given to vocational training in the local area even if provided on a part time basis as an extension of a nearby existing facility.

The increased use of local forest products and the encouragement of industrial facilities to utilize their products should be given much consideration.

Part I

Historical Data

Part I consists of a set of summary-type population, labor force and wage statistics. These tables, charts and graphs are designed to illustrate population and labor force changes which should significantly affect county planning.

Highlights:

The total population decline of Taylor County since 1940 has been 2,262 persons (11.3%). The decline, predominantly males, has been primarily in the field of agriculture. The decrease has been at the rate of 7 males to 2 females. Greatest changes in the age distribution of Taylor County's population were in the 55+ group where an increase of 446 persons (14.9%) is noted and in the 20-24 age group where a decline of 843 (51.1%) occurred. Of the 2,096 who were in the under 5 age group in 1940 only 808 remained in 1960, a decline of 61.5%.

In 1950, 58% of Taylor County's labor force was engaged in agricultural work, however, ten years later it had declined to 43.6%; 1,620 persons had abandoned agriculture. All other industrial groups have shown increases in the same period. Manufacturing made the most notable advance, increasing 120 workers. The labor force has declined 1,357 or 19% below the 1950 total, an amount strikingly similar to the agricultural decline.

In 1950 females made up 23.8% of the labor force increasing to 27.9% by 1960. Meanwhile the female population in the county decreased 2.3% to a total of 8,613 as compared to a 5.1% decrease in males.

Taylor County's older workers (45+) comprise 43% of the total labor force representing the greatest concentration in any one age group, 2.6 percentage points above the 40.4% state average. In direct contrast the workers in the 18-34 group (30% of the labor force) were almost exactly the same number of percentage points below the state average of 33.4%.

About 12% of the county's labor force is composed of persons who are under 18 or over 65 years of age. The county's non-labor force population is also excessively high, averaging 47.9% as compared to the state average of 42.7%.

With only two exceptions (Clark County 1961 and 1962) the average weekly wages of employees of county firms has been consistently lower than those received by workers in the six adjacent counties. From late 1960 to late 1963 the Taylor County average weekly earnings have increased 10.4%. Only Lincoln County had a lower percentage increase (10.2%). State average increase in weekly earnings for the same time was 10.6%.

POPULATION TRENDS

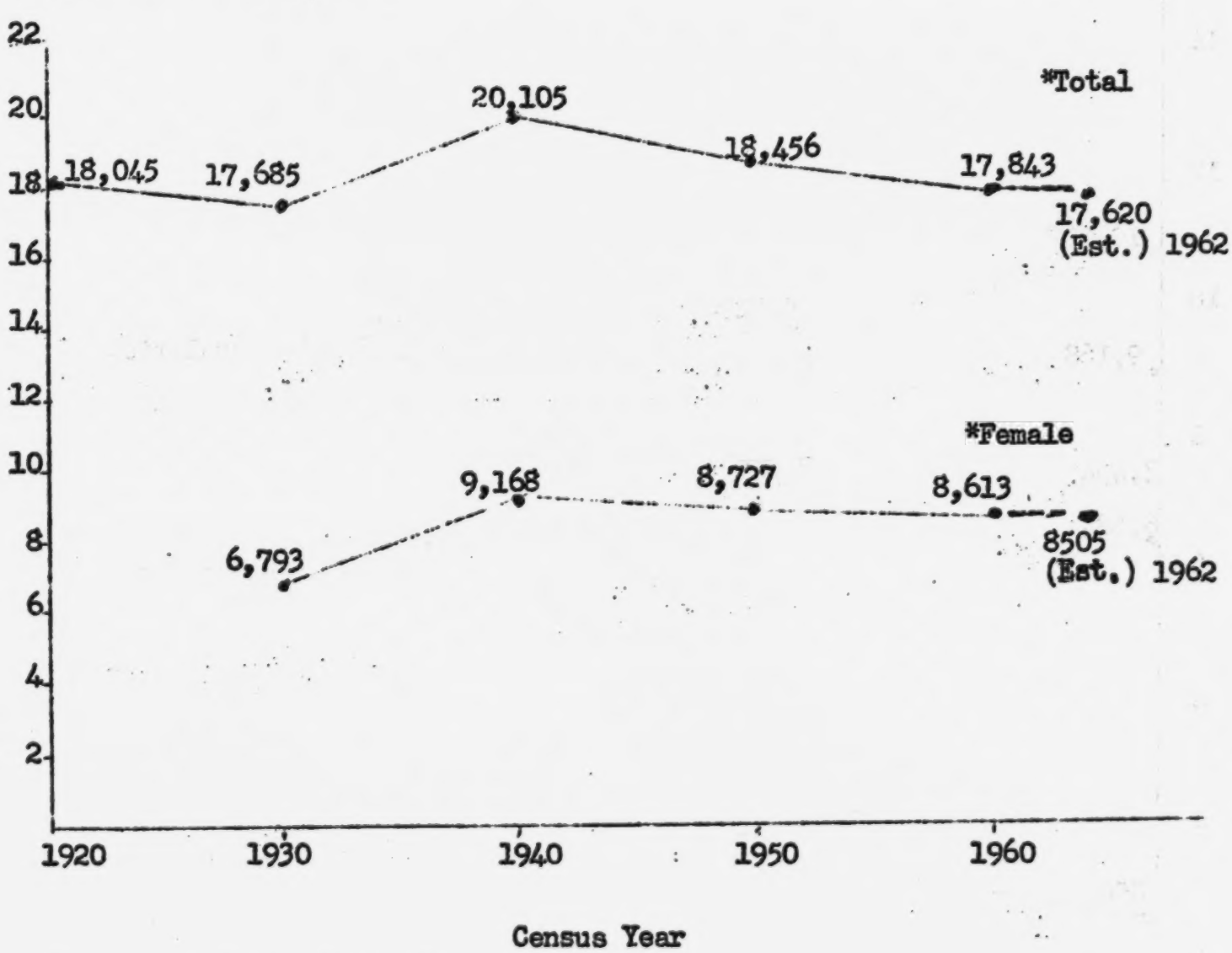
In 1962 Taylor County population reached the lowest total in 40 years. This trend very closely follows that of most rural Wisconsin Counties of the past several decades. As late as this year (1965) over half of the state's rural counties were still experiencing general declines in population. The reasons for the diminishing population of Taylor County are the decline of agricultural employment and the lack of new job opportunities in other fields, thus leading to out-migration.

Population data reflects a decrease of 2,262 persons since 1940 (11.3%). Seven out of nine people leaving the county are males. A total of 1,707 males and 555 females left Taylor County in the decades between 1940 and 1960.

Graph A

Population Trend

1920 - 1962



*Bureau of Vital Statistics

Graph B

Trend of Population and Labor Force

1940 - 1960 Census

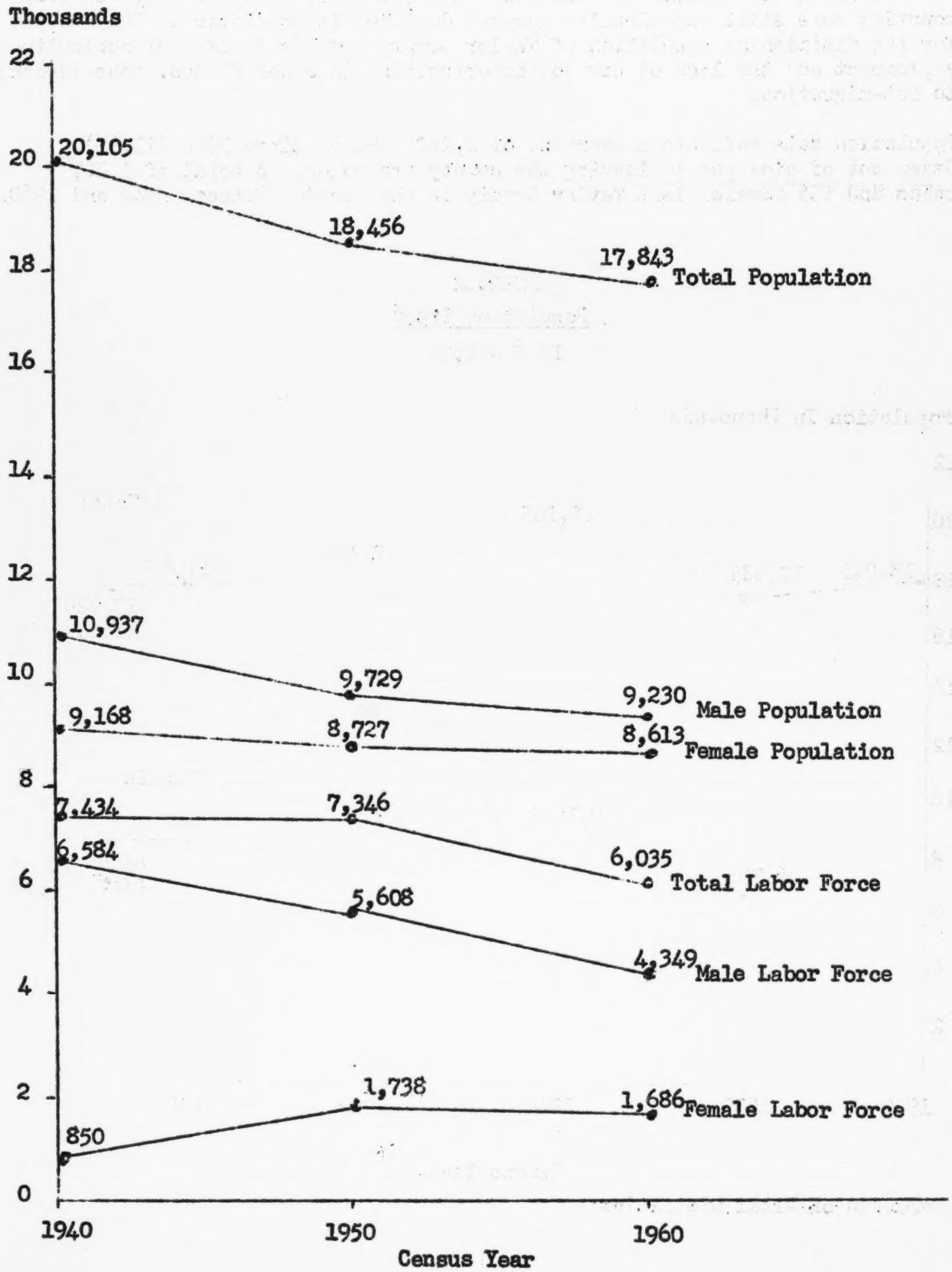


Table 1

Population by Age and Sex
1960, 1950, 1940 Census

Total Population

Age Group	1960		1950		1940	
	Number	% of Total	Number	% of Total	Number	% of Total
Under 5 yrs.	2,378	13.3	2,345	12.7	2,096	10.5
5-9	2,141	12.0	1,941	10.5	2,044	10.2
10-14	1,991	11.2	1,858	10.1	2,231	11.1
15-19	1,435	8.0	1,496	8.1	2,059	10.3
20-24	808	4.5	1,152	6.3	1,651	8.3
25-44	3,762	21.1	4,494	24.3	4,759	23.7
45-54	1,889	10.6	1,796	9.8	2,272	11.4
55+	3,439	19.3	3,374	18.3	2,993	14.5
Total	17,843	100.0	18,456	100.0	20,105	100.0

Male

Age Group	1960		1950		1940	
	Number	% of Total	Number	% of Total	Number	% of Total
Under 5 yrs	1,250	7.0	1,188	6.4	1,070	5.3
5-9	1,062	6.0	977	5.3	1,047	5.2
10-14	1,028	5.8	951	5.1	1,157	5.8
15-19	758	4.2	783	4.2	1,129	5.6
20-24	372	2.1	597	3.2	967	4.8
25-44	1,871	10.5	2,371	12.8	2,576	12.8
45-54	1,016	5.7	933	5.1	1,267	6.3
55+	1,873	10.5	1,929	10.5	1,724	8.6
Total	9,230	51.7	9,729	52.6	10,937	54.4

Female

Age Group	1960		1950		1940	
	Number	% of Total	Number	% of Total	Number	% of Total
Under 5 yrs.	1,128	6.3	1,157	6.3	1,026	5.1
5-9	1,079	6.0	964	5.2	997	5.0
10-14	963	5.4	907	5.0	1,074	5.3
15-19	677	3.8	713	3.9	930	4.6
20-24	436	2.4	555	3.0	684	3.4
25-44	1,891	10.6	2,123	11.5	2,183	10.9
45-54	873	4.9	863	4.7	1,005	5.0
55+	1,566	8.8	1,445	7.8	1,269	6.3
Total	8,613	48.3	8,727	47.4	9,168	45.6

Graph C

Loss of Population By Sex and Selected Age Group

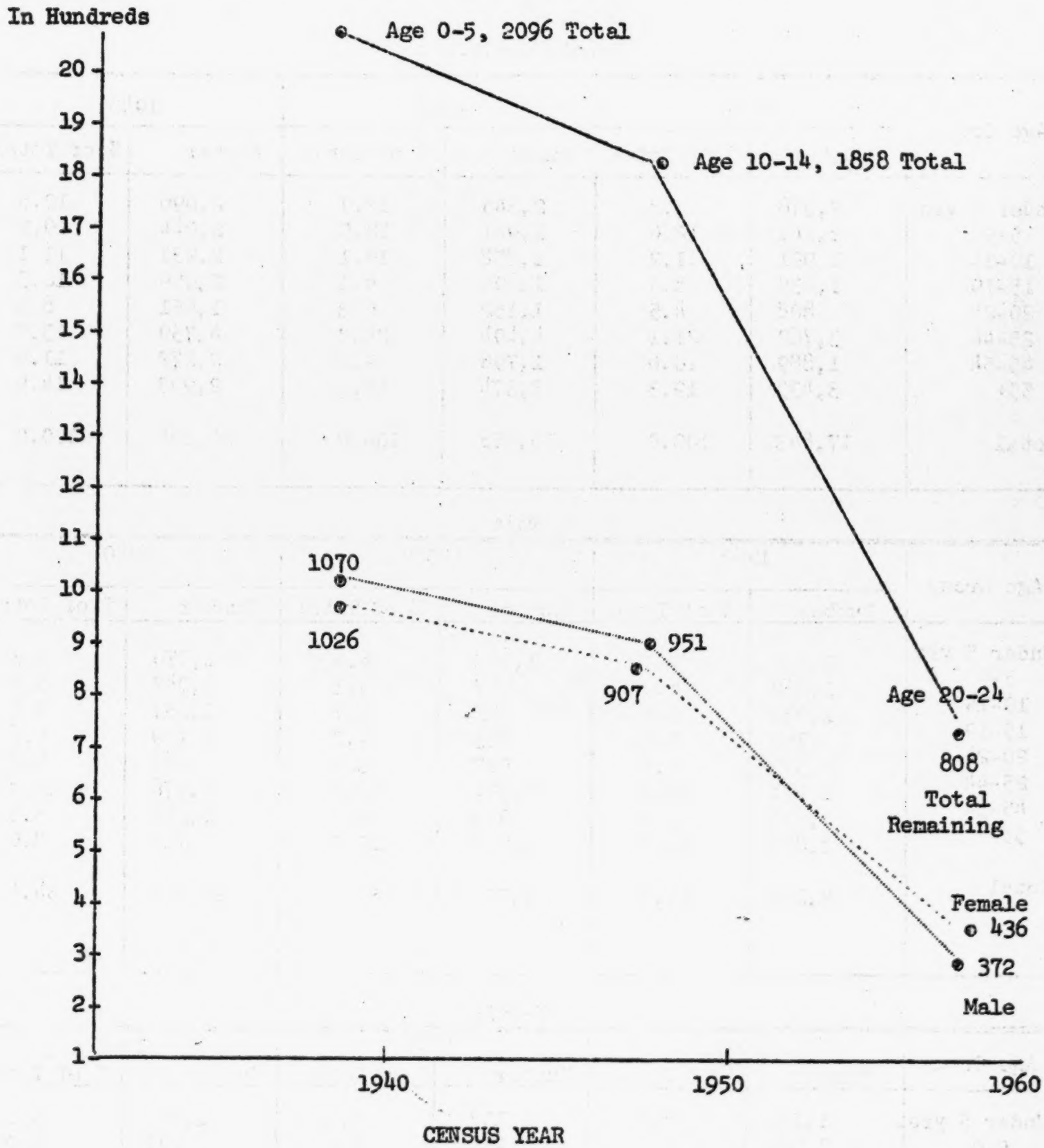


Table 2

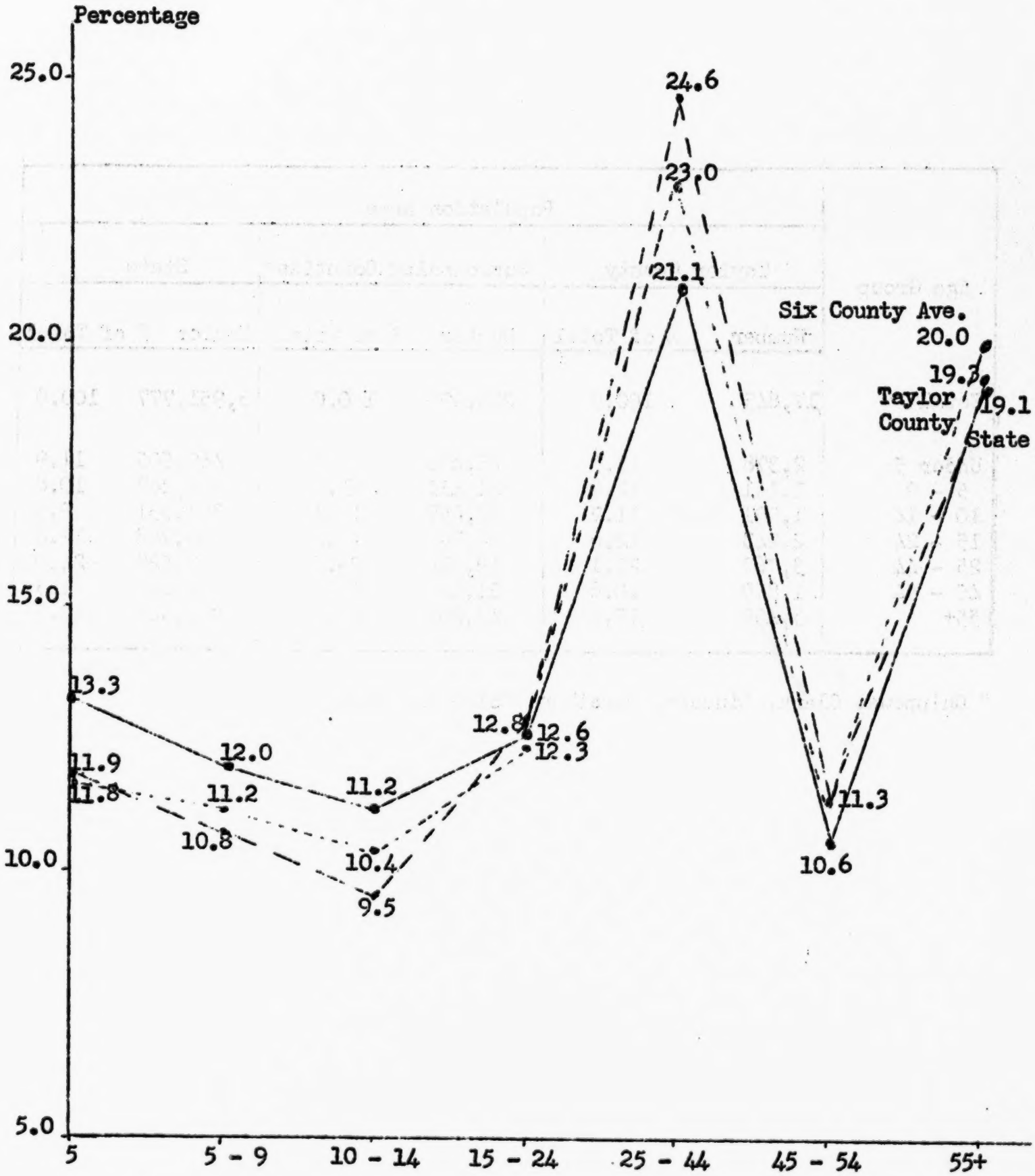
Comparative Age Breakdown by Numbers and Percentage of Total. 1960 Census

Age Group	Population Area					
	Taylor County		Surrounding Counties*		State	
	Number	% of Total	Number	% of Total	Number	% of Total
Total	17,843	100.0	216,999	100.0	3,951,777	100.0
Under 5	2,378	13.3	25,670	11.8	469,505	11.9
5 - 9	2,141	12.0	24,411	11.2	428,267	10.8
10 - 14	1,991	11.2	22,657	10.4	371,331	9.5
15 - 24	2,243	12.6	26,741	12.3	506,708	12.8
25 - 44	3,762	21.1	49,618	23.0	967,528	24.6
45 - 54	1,889	10.6	24,615	11.3	444,852	11.3
55+	3,439	19.3	43,287	20.0	763,586	19.1

* Chippewa, Clark, Lincoln, Marathon, Price and Rusk.

Graph D

Comparison of Age Groups by Percentage of Population in State, Taylor County and Six Surrounding Counties*. 1960 Census.



* Chippewa, Clark, Lincoln, Marathon, Price and Rusk.

POPULATION BY AGE AND SEX

The preceding Tables 1 and 2 and Graphs C and D were prepared from figures obtained from the 1940, 1950 and 1960 censuses. In each of the census years the concentrations of Taylor County's population remained in the Under 10, 25-44 and 55+ age groups. More important is the fact that while age concentrations have remained the same, the percentages of total population in the Under 10 and 55+ groups have increased quite sharply during the 20 years from 1940 to 1960. In contrast the 25-44 age group is on the decline percentage-wise and nearly 1,000 fewer in numbers. The loss of 22% has had and will continue to have drastic repercussions on the county's economy unless something is done toward stopping the emigration of this prime labor force age group.

On Graph C, the same age group was traced through three censuses and the exceedingly large loss of potential workers is readily seen (61.5%). For the first 10 year period the loss of males and females parallel one another and then from 1950 to 1960 the loss of males accelerates and surpasses the declining female total.

The median age for the county in 1960 was 26.0 years as compared to 29.4 for the state. Only four other counties have a younger median age. The youngest and oldest respectively are Manitowoc (24.8) and Marquette (37.2) counties. Explaining the low median age in Taylor County is not easily done. All the counties surrounding it and geographically within a radius of relatively short distance have median ages ranging from 27.7 to 34.3. The county is decidedly atypical to that area of the state. A common characteristic of rural counties, as revealed by the census, is that as an area, community or county becomes more rural, the division of the population regarding age becomes increasingly heavy at both extreme age limits. This is due to three things (a) out-migration of the central age groups, (b) increased longevity of the rural population and (c) rural families are usually larger than urban families. The 1960 census figures for Taylor County show that nearly twice as many persons were tabulated in the young age groups as were recorded in the 55+ group, thus bringing the median age down to the fifth lowest in the state. Table 2 and Graph D provide both tabular and pictorial data to illustrate the youthfulness of Taylor County's population.

NON-SUPPORTING POPULATION

The following table depicts that part of the population of Taylor County which is under 15 years and over 65 years. County percentages exceeded state percentages by 5.7% in 1940, 5.5% in 1950 and 5.2% in 1960. The extreme rurality of the county and out-migration of the central age groups influenced these percentages upward.

These totals include <u>all</u> persons in those selected age groups although <u>many may be self-supporting and independent</u>.

The older group poses a potential burden upon the active labor force as well as county welfare agencies should their means of support fail. Those persons under 15 are rarely self-supporting because of educational demands therefore, they are a continuing burden upon the economy of the county.

Table 3

Non-Supporting Population
Ages 0-15 and 65+

	1940	1950	1960
Wisconsin Population	3,137,587	3,434,575	3,951,777
Selected Age Group	1,024,414	1,236,490	1,671,839
Percent of Total	32.7	36.6	42.7
Taylor County Population	20,105	18,456	17,843
Selected Age Group	7,719	7,774	8,538
Percentage of Total	38.4	42.1	47.9

AGE AND SEX DISTRIBUTION OF LABOR FORCE

In Table 4, the distribution of the labor force of Taylor County is compared to that of the State and shows only slight variances indicating the largest percentage difference in the 18 - 24 age group (2.4%). At this young age a large part of the group, having just finished high school, are entering the job market for the first time and finding no employment opportunities in Taylor County, they travel elsewhere. The Armed Forces also further deplete the young male labor supply.

Table 4

Age and Sex Distribution of Labor Force, 1960 Census

	Taylor County				State	
Age	Male	Female	Total	% of Labor Force	Total	% of Labor Force
14 - 17	247	65	312	5.2	64,028	4.2
18 - 24	452	219	671	11.1	206,615	13.5
25 - 34	863	329	1,192	19.8	304,978	19,9
35 - 44	890	375	1,265	21.0	337,181	22.0
45 - 54	1,577	607	2,184	36.1	542,355	35.4
65 +	320	91	411	6.8	77,804	5.0
Total	4,349	1,686	6,035	100.0	1,532,961	100.0

In the ten year period from 1950 - 1960 marked changes occurred in the labor force. A total of 1,259 males were gone from the work force while the females decreased by 52. In all, 17.8% of the workers present in 1950 had disappeared. From 1960 - 1963 the labor force had continued its decline experiencing a slight seasonal upswing each year during the peak employment month of June. The estimated annual average for 1963 was 6,295 based on Employment Service figures.

Table 5

Distribution of Labor Force by Sex
Comparison of 1950 and 1960

	Number			Percent	
Census Year	Total	Male	Female	Male	Female
1950	7,346	5,608	1,738	76.2	23.8
1960	6,035	4,349	1,686	72.1	27.9
1963 (Estimates)	6,295	4,539	1,756	72.1	27.9
% Change 1950 - 1963	-14.3	-19.1	+1.0	-	-

Chart 1

Labor Force Comparison for Census Years 1940, 1950, 1960

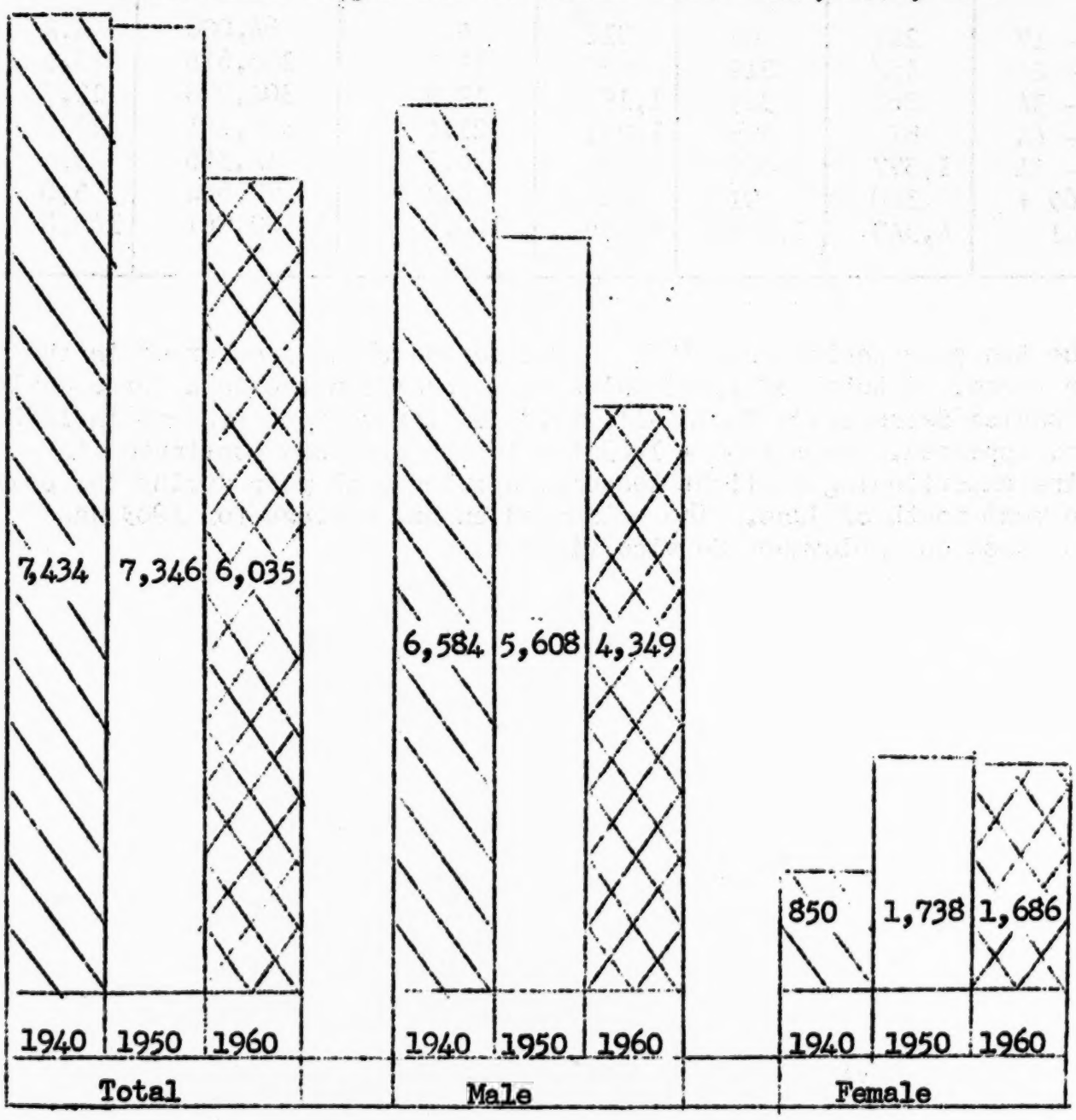


Table 6

Labor Force Changes

Area	Labor Force			Percentage Change		
	1940	1950	1960	1940-50	1950-60	1940-60
Wisconsin	1,227,552	1,394,848	1,525,024	+13.6	+9.4	+24.2
Taylor County	7,434	7,346	6,035	-1.2	-17.8	-18.9

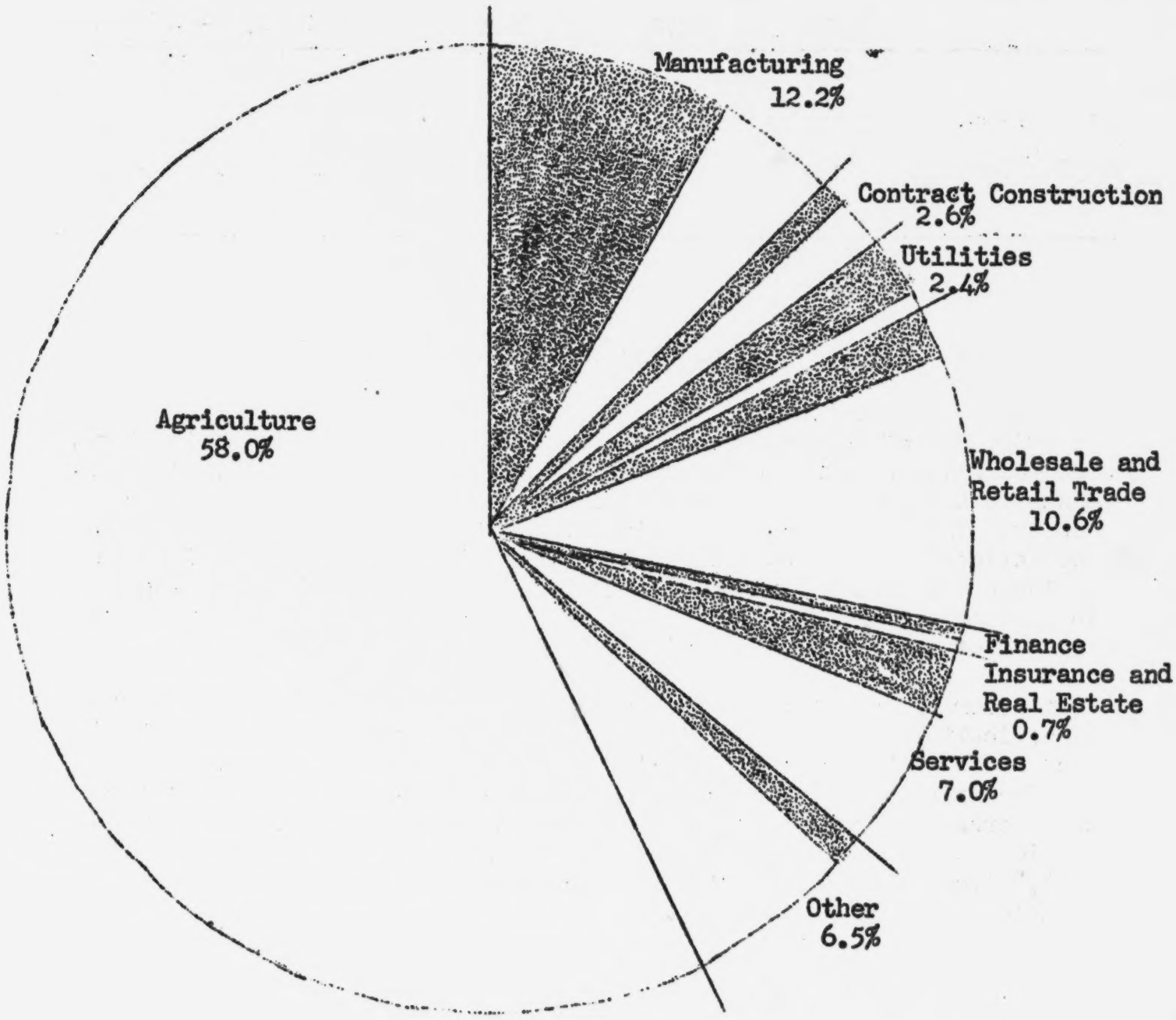
Industrial Make-up of the Labor Force

In 1950, 58% of Taylor County's labor force was engaged in agriculture. Ten years later the figure had dropped 43.6%. Over 1,600 farmers, farm managers and laborers had changed occupations or emigrated from the county. This trend toward urbainzation follows closely both the state and national pattern as workers lose their jobs through mechanization or leave the farm voluntarily to seek shorter hours and higher wages in industrial centers. It remains the problem of Taylor County to create new job opportunities which will attract and hold workers.

From a comparison of the charts one can determine the lessening influence of agriculture on the county's economy and the over-all increases in each of the other major industrial divisions, most notable of which is manufacturing. This increase in manufacturing has been the reason for the increase in males in the labor force from 1960 - 1963. The shaded portions on each chart represent the "insured" or "U.C. covered employment," i.e., that portion of the employees covered under Wisconsin Unemployment Compensation Law.

Chart 2

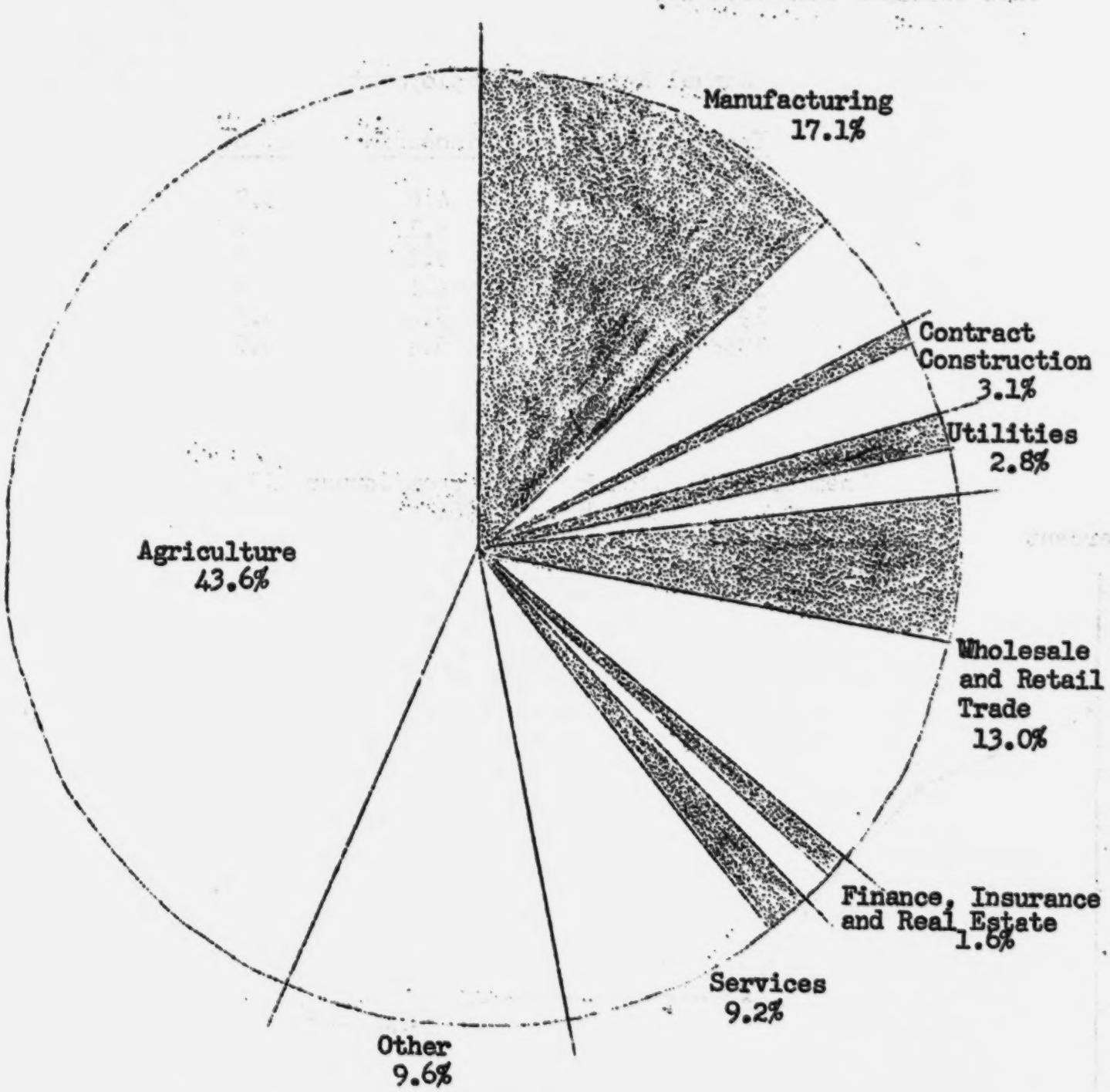
Industrial Make-up of Labor Force
1950 Census.



Shaded areas represent U. C. covered employment.

Chart 3

Industrial Make-up of Labor Force
1960 Census.



Shaded areas represent U. C. covered employment.

UNEMPLOYMENT RATES

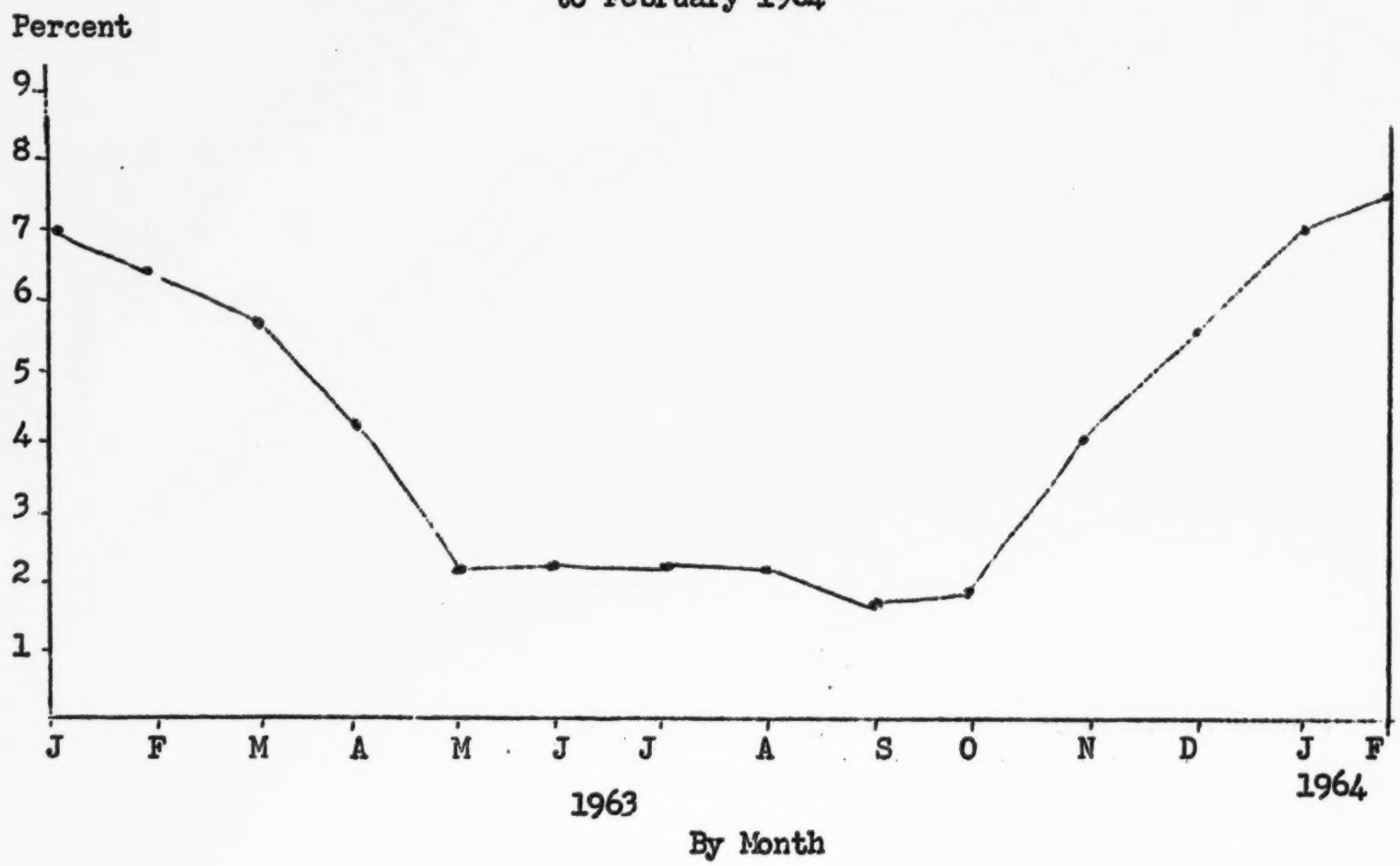
The Annual unemployment rates for Taylor County are lower than both the state and U. S. rates. However, the unemployment rate in Taylor County varied from a low 1.7 in September 1963 to a high of 7.4% in February 1964. This seasonal variation occurs to a large degree every year and is due to the agricultural nature of the labor force and the exceptionally large number of construction workers that reside in the area. The presence of a resort industry also brings about this seasonal unemployment.

Annual Rates of Unemployment

Year	Taylor	Wisconsin	U. S.
1963	3.8	4.0	5.7
1962	3.4	4.1	5.6
1961	4.2	5.2	6.7
1960	4.0	4.1	5.6
1959	3.3	3.4	5.5
1958	2.8	5.4	6.8

Graph E

Unemployment Rates by Month from January 1963 to February 1964



EMPLOYMENT AND UNEMPLOYMENT BY OCCUPATIONAL GROUP

Notable in the Table below is the large increase in Professional Technical workers and Private household workers from 1950 to 1960. Also the tremendous decline of Farm Laborers and Farm Foremen in the same period. Noteworthy also is the fact the total employed fell by 1,357 workers or 19% from 1950 to 1960.

Table 7
Employment and Unemployment by Occupational Group
1950 - 1960 Census.

Occupation	1960 Total	1960 Female	1950 Total	Percent Change 1950 - 1960
Employer - Total	5,787	1,642	7,144	-19.0
Prof., Tech. and Kindred Workers	424	211	304	39.5
Farmers and Farm Managers	2,153	475	2,388	- 9.9
Managers, Office and Prop., Exc. Farm	301	32	317	- 5.1
Clerical and Kindred Workers	295	215	239	23.4
Sales Workers	264	95	221	19.5
Craftsmen, Foremen and Kindred Workers	372	11	339	- 6.8
Operatives and Kindred Workers	837	157	735	13.9
Private Household Workers	124	124	88	40.9
Service Workers, Exc. Private House	346	180	310	11.6
Farm Laborers and Farm Foremen	350	69	1,736	-79.8
Laborers, Exc. Farm and Mine	204	24	272	-25.0
Occupations not Reported	117	49	135	-13.3
Experienced Unemployed - Total	248	44	200	24.0
Prof., Tech. and Kindred Workers	3	3	2	50.0
Farmers and Farm Managers	8	0	7	14.3
Managers, Office and Prop,, Exc. Farm	4	0	1	300.0
Clerical and Kindred Workers	4	4	0	-
Sales Workers	4	4	4	No change
Craftsmen, Foremen and Kindred Workers	47	0	12	291.7
Operatives and Kindred Workers	86	8	18	377.8
Private Household Workers	8	8	7	14.3
Service Workers, Exc. Private House	4	4	2	100.0
Farm Laborers and Farm Foremen	19	5	9	111.1
Laborers, Exc. Farm and Mine	45	0	11	309.1
Occupations not Reported	16	8	127	-87.4

U. C. COVERED EMPLOYMENT BY INDUSTRY

The following Table 8 illustrates the changes in covered employment at various intervals since 1950.

Table 8

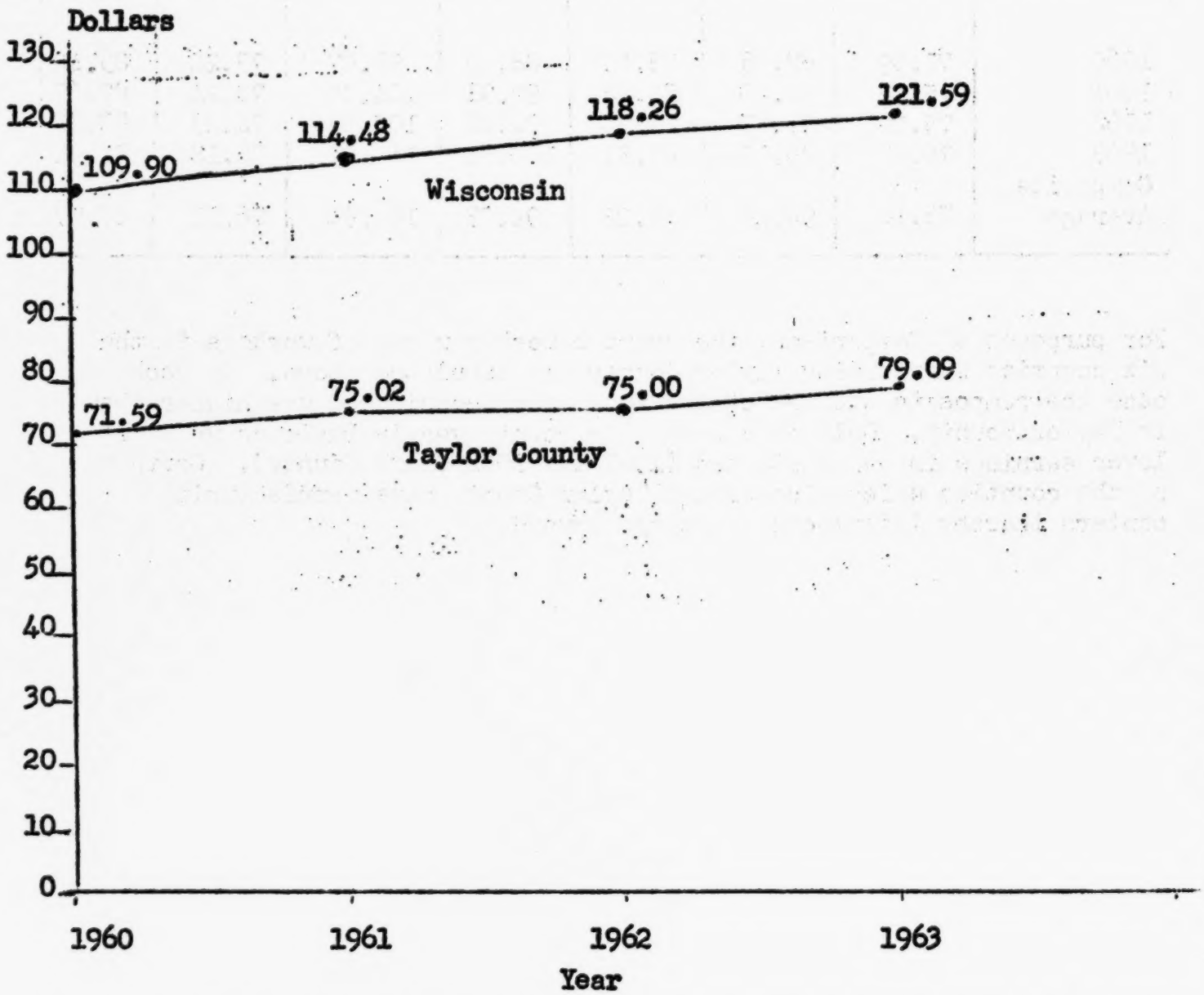
U. C. Covered Employment by Industry

Industry Group	1950	1955	1960	1961	1962	1963
Total	1,033	1,194	1,217	1,244	1,304	1,340
Manufacturing	566	741	730	769	794	807
Mining	0	0	0	1	0	0
Agriculture	0	0	0	0	0	5
Contract Construction	44	9	21	24	41	27
Utilities and Transportation	84	143	73	61	51	82
Wholesale Trade	7	12	33	35	34	34
Retail Trade	125	164	249	249	274	293
Finance, Insurance and Real Estate	16	18	30	30	29	31
Services	132	107	75	75	81	61
Government	59	0	0	0	0	0

From: "Employment and Wages Covered by Wisconsin's U. C. Law." Industrial Commission of Wisconsin - U. C. Department

Graph F

Average Weekly U. C. Covered Wages
Earned in Taylor County and Wisconsin



Average weekly earnings of wage earners in the county have been consistently lower than the state average for a number of years. As a group, county workers take home over $40 less per week.

Table 9

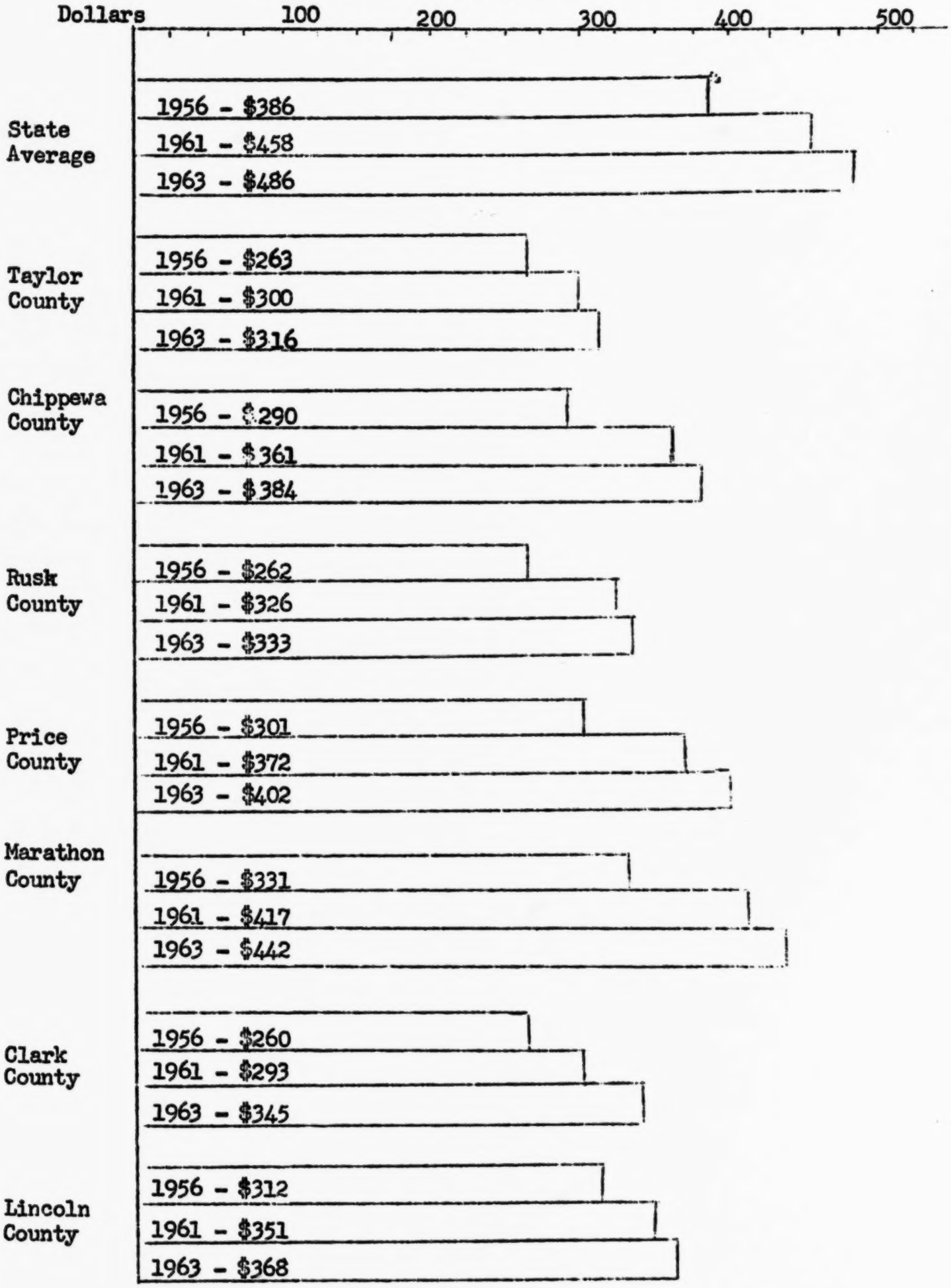
Comparison of Weekly Earnings Covered by U. C.
in Taylor County and Surrounding Counties

Fourth Quarter of:	Taylor	Chippewa	Rusk	Price	Marathon	Clark	Lincoln
1960	71.59	82.93	73.59	88.42	98.07	73.20	83.40
1961	75.02	90.20	81.42	92.91	104.20	73.24	87.67
1962	75.00	91.77	77.76	94.28	107.05	74.23	88.89
1963	79.09	95.91	83.31	100.51	110.45	86.18	91.91
Composite Average	75.18	90.20	79.02	94.03	104.94	76.71	87.97

For purposes of Comparison, the average weekly wages of workers in the six counties surrounding Taylor County are tabulated above. In each case the composite average of the four years considered was higher than in Taylor County. Only on a county to county yearly basis do we find lower earnings in two instances (1961 and 1962 Clark County). Certain of the counties which ring around Taylor County have manufacturing centers thereby influencing earnings upward.

Chart 4

Average Monthly Wages for U. C. Covered Workers
Taylor County and Surrounding Counties
Fourth Quarter of Given Year



Part II

APPLICANT SURVEY

Part II is a general summarization of the applicant survey phase of the data-gathering performed by the mobile crew during the period of operation in Taylor County from February 3, to May 14, 1964.

The mobile crew consisted of a staff of one supervisor and six interviewer-counselors. The headquarters office was located in the county seat of Medford and was open daily during the period of the survey. Itinerant registration points were operated in smaller communities throughout the county for periods of from one to three days each. In addition the seniors in the high schools throughout the county were registered. An average of 8.4 new applicants registered per day. Two hundred and eighty-five were tested and two hundred and fifty-seven received employment counseling. Sixty-eight received additional counseling interviews. Five handicapped applicants were referred to Vocational Rehabilitation for assistance in education and training to improve their employability.

Highlights

Six hundred and eleven applicants registered for the survey.
Sixty-three percent of the applicants were male.
Ten percent of the applicants were veterans.
Eighty-seven percent of the applicants were unemployed.
Only forty-two persons were judged to be underemployed.
Sixty-one percent of the applicants were single.
Eighty-five percent of the applicants were less than 45 years of age.
Sixty-five percent indicated high school education.
Over half of the applicants indicated a willingness to change residence permanently.
Eighty-eight percent of the applicants would commute for work.
Only one out of every five applicants reported an income of more than $3,000 for the past 12 months.
Seventy-two percent of the applicants had worked less than 30 weeks in the past 12 months.
Fifty-six percent of the applicants were available for work immediately.
Less than 5% were interested in farm work on a year round basis.
Over half of the applicants indicated no work experience beyond the entry level.
Over 83% of the applicants scored average or above in every aptitude measured by the General Aptitude Test Battery except finger dexterity
Over 35% of the applicants or 216 were high school seniors who graduated June 1964 after the survey was completed.

RESPONSE TO APPLICANT SURVEY

From February to May 1964, the Employment Service mobile crew functioned as a full-time Employment Service office in Taylor County. During this time 611 persons completed applications for work. This number represents approximately 10% of the estimated 1964 labor force.

Table 10

Total Applicants by Sex and Age Group

Age Group	Number			Percent		
	Total	Male	Female	Total	Male	Female
Total	611	383	228	100.0	62.7	37.3
14 - 19	314	160	154	51.4	26.2	25.2
20 - 44	207	161	46	33.9	26.4	7.6
45 - 54	59	37	22	9.7	6.1	3.6
55 - 64	29	23	6	4.7	3.7	1.0
65+	2	2	0	.3	.3	0.0

Table 11

Employment Status of Applicants by Sex and Age Group

Age Group	Employed	Under Employed		Unemployed
		Skill	Hours	
Total	35	4	38	534
14 - 19	9	0	3	302
20 - 44	17	3	30	157
45 - 54	6	1	4	48
55 - 64	3	0	1	25
65+	0	0	0	2
Male	25	4	37	317
14 - 19	7	0	3	150
20 - 44	13	3	29	116
45 - 54	2	1	4	30
55 - 64	3	0	1	19
65+	0	0	0	2
Female	10	0	1	217
14 - 19	2	0	0	152
20 - 44	4	0	1	41
45 - 54	4	0	0	18
55 - 64	0	0	0	6
65+	0	0	0	0

SUMMARY OF PRIMARY OCCUPATIONS

Each applicant reporting to the temporary office of the Employment Service mobile team was given the closest scrutiny as to employment potential. Every aspect of their background was checked and evaluated in terms of his or her occupational potential. Assignment of occupational codes from the Dictionary of Occupational Titles was made based on previous work history and training and highest occupational potential. A secondary code was also given for a second potential occupation. Thus, many applicants were given a minimum of three avenues through which a job might be obtained.

Two basic types of occupational codes exist. Those based on work experience (fully qualified workers) and those based on training or the aptitude to learn a given job's duties (entry). In either instance, an evaluation of the "resources" that the individual could bring to the job determined the code assigned. Occasional exceptions do occur as in the case of individuals whose training alone testifies their ability to perform. Examples are engineers, accountants, stenographers and typists.

In Table 12, a summarization of 611 applicants has been made based on age, and primary occupation.

Chart 5 presents the same data, but in graphic form. It should be noted that over 57% of all registering applicants received an entry occupational code indicating a lack of necessary experience on the job, an absence from the labor force for an extended period of time (skills had become "rusty"), or the presence of skills no longer marketable due to obsolescence and the changing industrial economy of the area. Over 46% of all males were given entry occupational codes as compared to 77% females. 83% of all applicants receiving entry codes were under 19 years of age. Entry codes assigned to older persons were almost equally distributed between males and females.

Primary occupations above the entry, unskilled and semi-skilled level were at a minimum representing only 16.9% of the total registering. This points up the fact that unemployed workers with a profession, a trade or a good marketable skill are far less in numbers and probably less likely to be unemployed for an extended period of time.

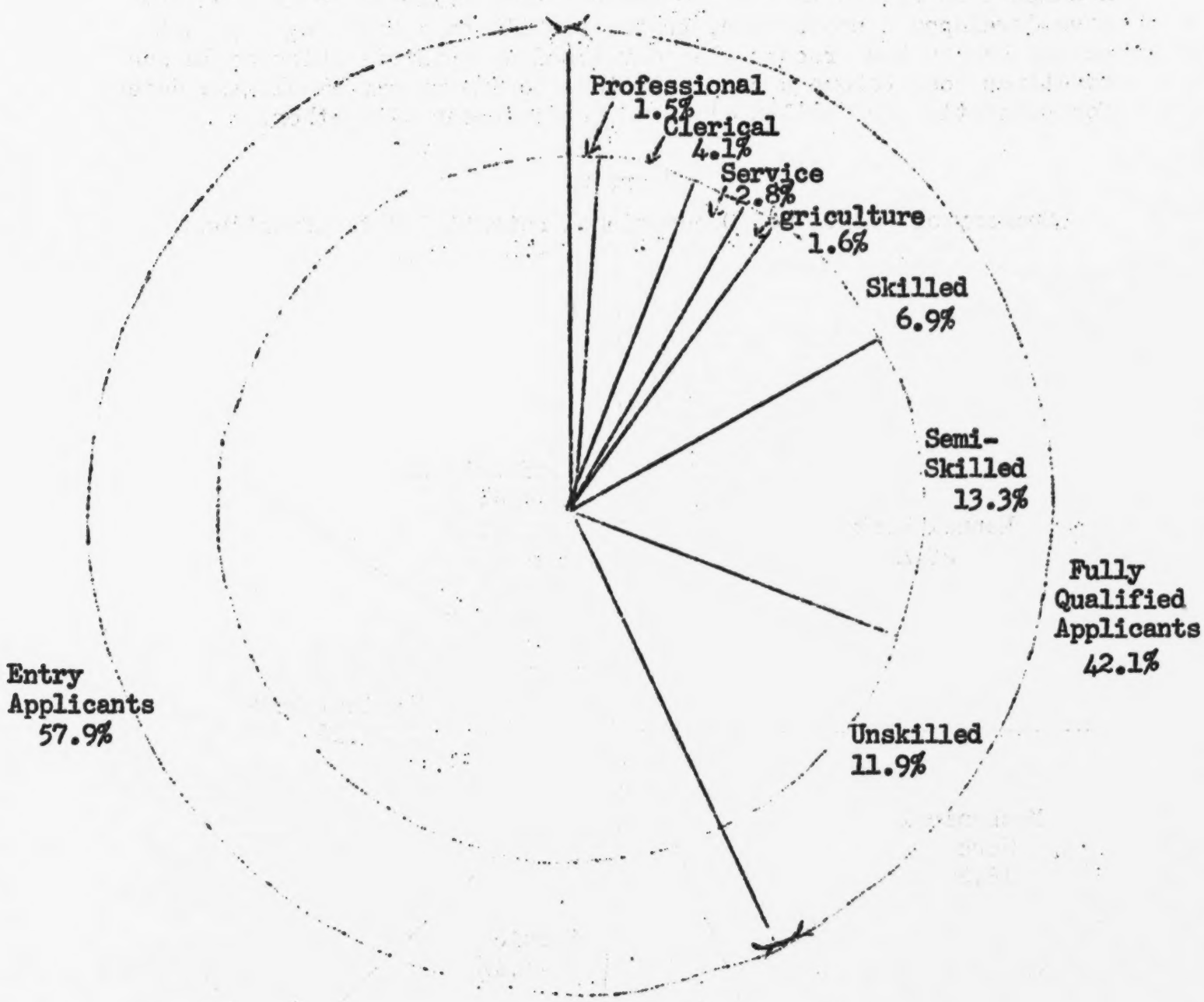
Table 12

Summary Primary Occupations by Age and Sex

	Major Occupation							
Age Group	Prof. and Mgr.	Clerical and Sales	Service	Ag.-Forest Fisheries	Skilled	Semi-skilled	Unskilled	Entry
Total	9	25	17	10	43	80	73	354
14 - 19	0	4	1	4	0	1	11	293
20 - 44	5	16	11	4	29	59	44	39
45 - 54	2	4	2	2	6	14	13	16
55 - 64	2	1	2	0	8	5	5	6
65+	0	0	1	0	0	1	0	0
Male	7	4	5	10	43	76	61	177
14 - 19	0	1	0	4	0	1	10	144
20 - 44	5	2	4	4	29	55	37	25
45 - 54	0	1	0	2	6	14	10	4
55 - 64	2	0	0	0	8	5	4	4
65+	0	0	1	0	0	1	0	0
Female	2	21	12	0	0	4	12	177
14 - 19	0	3	1	0	0	0	1	149
20 - 44	0	14	7	0	0	4	7	14
45 - 54	2	3	2	0	0	0	3	12
55 - 64	0	1	2	0	0	0	1	2
65+	0	0	0	0	0	0	0	0

Chart 5

Summary of Primary Occupations



SUMMARY OF ADDITIONAL OCCUPATIONAL POTENTIAL

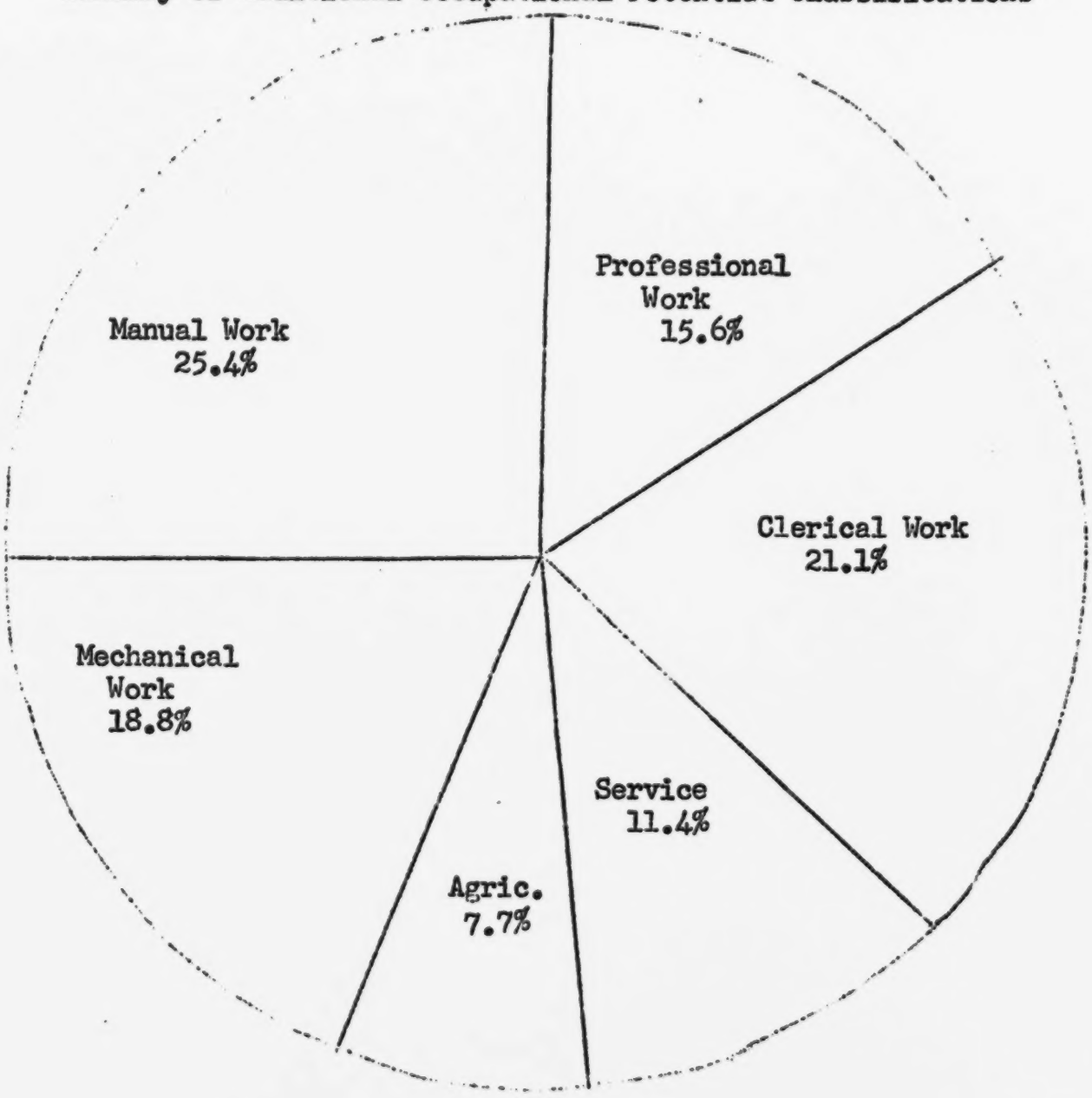
Chart 6 presents a graphic picture of the latent or potential skills of the applicants registered. Nearly 1,000 such classifications were given to the registrants vividly illustrating the diversity of work background that most persons have. Entry codes were used to indicate this potential, classifying the individual applicants into major fields of work rather than specific jobs.

The diversity of Taylor County's industry can also be seen in an analysis of the occupations represented since it is reasonable to assume that most of the registrants would have received their training, job knowledge etc. within the county itself.

A comparison of Charts 5 and 6 reveals that while an individual may have developed a profession, trade or skill to a high degree, that person has in the process also developed an aptitude which could and sometimes does become a stepping stone to employment should the demand for presently used skills diminish or disappear altogether.

Chart 6

Summary of Additional Occupational Potential Classifications

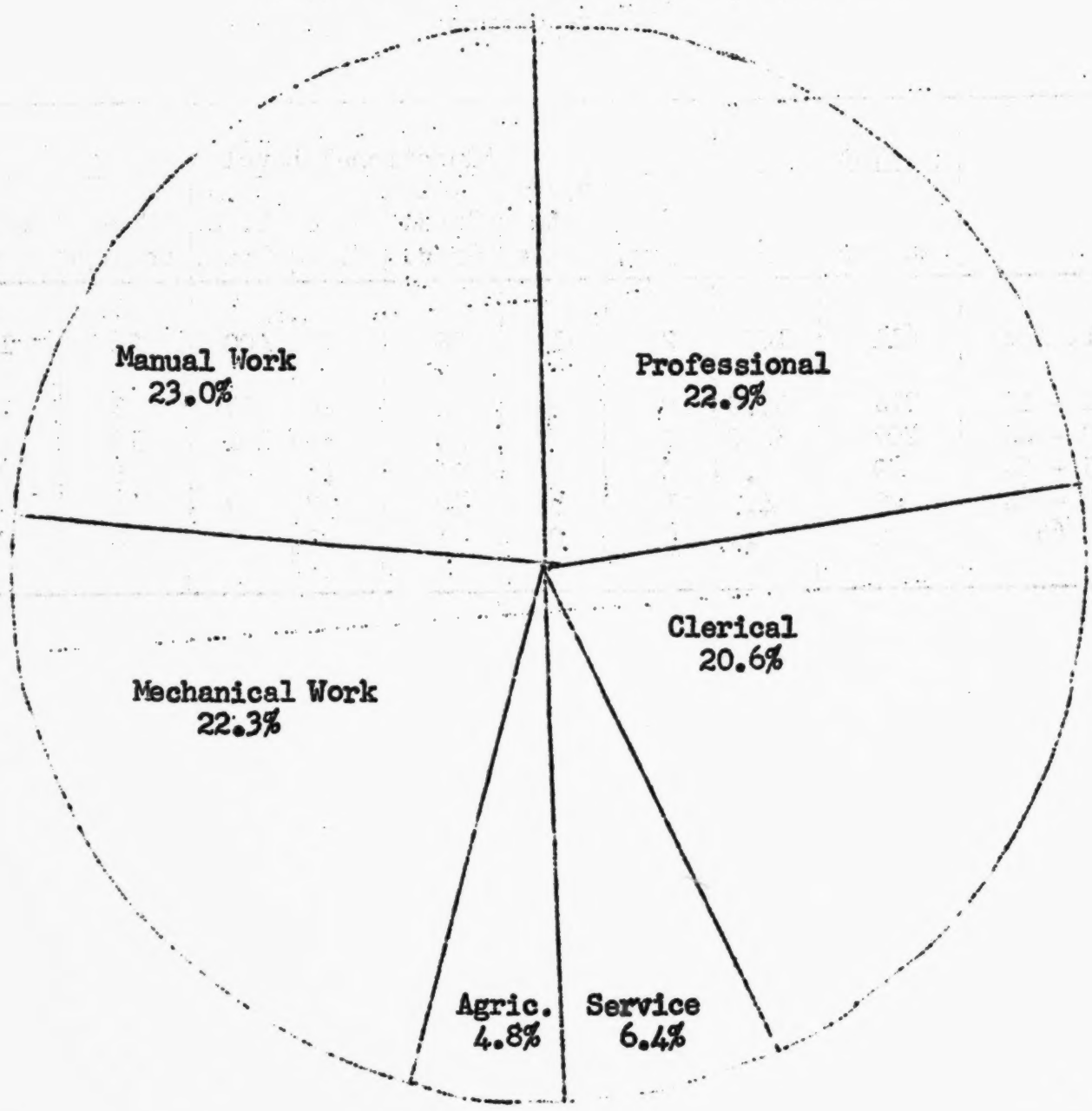


SUMMARY OF HIGHEST OCCUPATIONAL POTENTIAL

Classifications made for highest potential of each registering applicant were made by considering each individual background of experience, training, aptitudes, and latent skills. No consideration was given to local job opportunities. Entry codes were used to indicate fields of work rather than specific occupations. It is presumed that there is a hierarchy of occupational fields of work. For example Manual work is considered as the lowest level with a progression upward to Professional at the top. Chart 7 summarizes the 611 highest occupational Potential classifications into the six major fields of work.

Chart 7

Summary of Classifications by Highest Occupational Potential



EDUCATIONAL LEVEL OF ATTAINMENT BY AGE GROUP

The educational level of the Taylor County applicants was very high for its location in the state and its agricultural background. Nearly 70% of the applicants surveyed were high school graduates or higher. An additional 12% had some high school. Only about 3.5% had less than an eighth grade education. 74% of the 14 - 44 age group were high school graduates or higher while only 24% of those over 44 had attained that level. These figures are again influenced to some extent by the inclusion of over 200 high school seniors tabulated as high school graduates.

Table 13

Educational Level of Attainment Applicants
by Age Groups

	Total		Educational Level						
	Number	%	Under 6 yrs.	6,7& 8th Grade	8th Grade Grad.	Some H. S.	H. S. Grad.	Some College	College Grad.
All Ages	611	100	2	21	88	73	400	26	1
14 - 19	314	51.3	0	2	2	20	287	3	0
20 - 44	207	34.0	1	7	49	35	101	13	1
45 - 54	59	9.7	0	9	24	11	9	6	0
55 - 64	29	4.7	1	3	12	7	2	4	0
65+	2	.3	0	0	1	0	1	0	0

AVAILABILITY OF APPLICANTS

Since the size of the available labor force is so very important a series of questions were asked each applicant to determine their precise availability. The questions were designed to determine:

1. Their general availability for work:

2. The seasons in which they were available for work:

3. Their availability for farm work on a:

   a. year-round
   b. seasonal basis

      1) in local area
      2) outside local area

4. Their past connections with the labor force - That is, the number of weeks they worked in the past 12 months prior to registration and income earned.

Summaries of the applicant responses by age groups, sex, and occupation follows:

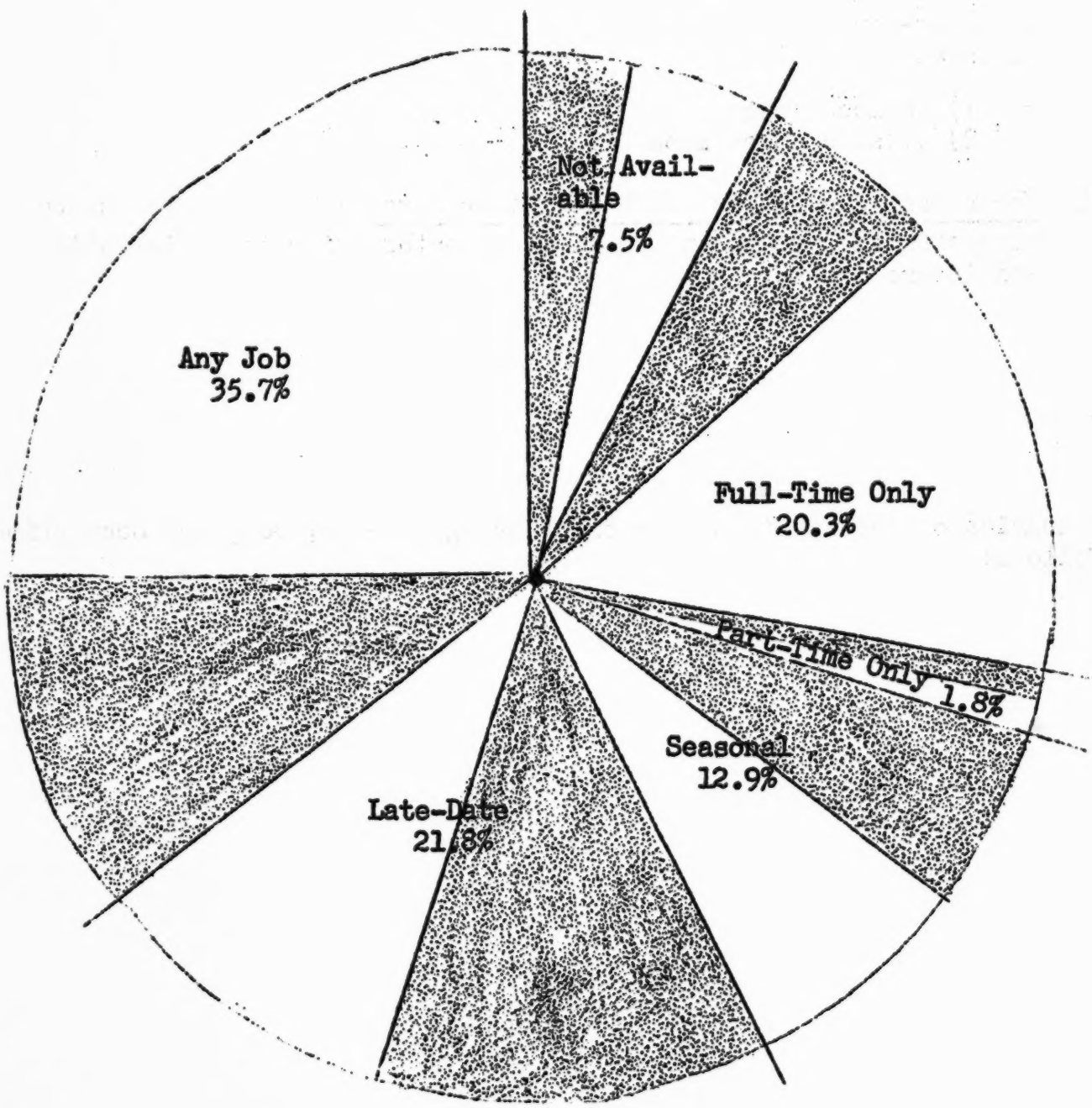
AVAILABILITY FOR WORK

Chart 8 indicates that about 56% of all applicants were available for work any time or full-time. About 2/3 of this group was composed of males, which indicates, a high availability for work among the male applicants surveyed. In fact 52% of all male applicants indicated availability for work anytime or full-time.

Nearly 22% of the applicants indicated availability at a later date. This was undoubtedly influenced by the over 200 high school students not available until the survey team had left the area.

Chart 8

Availability for Work



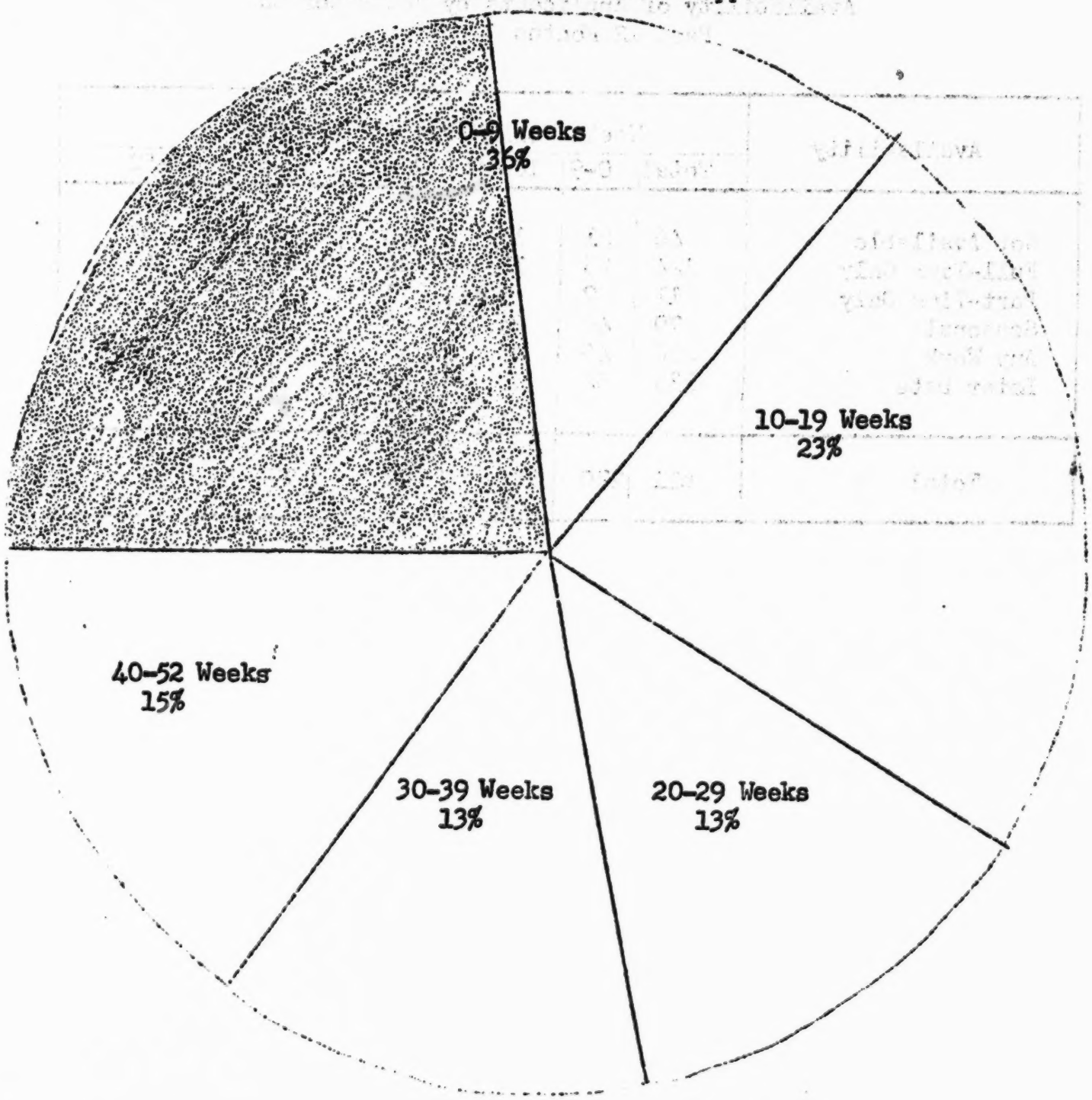
Shaded portion in each segment represents females

AVAILABILITY FOR WORK BY NUMBER OF WEEKS WORKED PAST 12 MONTHS

Upon examination of availability for work based on the number of weeks worked the past 12 months it becomes evident that a large percentage (36%) of the applicants had from 0-9 weeks work. Of this group over 60% had no work experience. Over one-half of the applicants had less than 19 weeks of work in the past year. Only one-sixth of the applicants reported working from 40-52 weeks. These facts point out that the large number of unemployed applicants tallied in the survey are people who are unemployed a large portion of the year. It should be pointed out at this time that 56% of these applicants would take full-time or any work. Many of the applicants that show little work experience the past year are undoubtedly high school seniors that are also not available until a later date.

Chart 9

Weeks Worked Past Year All Applicants



Shaded portion indicates no work experience past year.

Table 14

Availability of Applicants by Weeks Worked
Past 12 Months

Availability	Weeks Worked Past 12 Months					
	Total	0-9	10-19	20-29	30-39	40-52
Not Available	46	21	15	0	4	6
Full-Time Only	124	25	12	26	27	34
Part-Time Only	11	7	2	1	0	1
Seasonal	79	40	24	5	7	3
Any Work	218	45	49	42	38	44
Later Date	133	82	40	3	3	5
Total	611	220	142	77	79	93

AVAILABILITY FOR WORK BY OCCUPATIONAL GROUP

A close look at the table on availability by occupational group points up the fact that a large percent (22%) of the applicants seeking any work or full-time work were semi-skilled or unskilled. An additional 20% were entry applicants. This compares to less than 1% for professional and about 5% for the skilled groups. There were 187 entry applicants or 30% which indicated work at a later date or seasonal. This again reflects the high school students seeking summer work or work after the team was to leave the area. The obvious indication of the above facts is that for the most part the availability decreases greatly with the increase in skill level.

Table 15

Availability of Applicants by Occupational Group

Major Occupational Group	Total	Not Available	Full-Time Only	Part-Time Only	Seasonal	Any Work	Later Date
Total	611	46	124	11	79	218	133
Percent	100	7.5	20.3	1.8	12.9	35.7	21.8
Professional and Managerial	9	1	3			3	2
Clerical and Sales	25	1	10	2	1	9	2
Service	17		7	2		8	
Agric., Forestry and Fisheries	10	1	1			8	
Skilled	43	1	13	1	7	19	2
Semi-Skilled	80	3	27	1	3	45	1
Unskilled	73	2	26	1	6	37	1
Entry	354	37	37	4	62	89	125

AVAILABILITY OF ALL APPLICANTS BY SEX

It should be noted in Table 16 that about 40% of the male applicants want any work as compared to 27% for female applicants. The percentage not available for work is about the same for both sexes (8%). Only 36 of the females as compared to 88 of the males are seeking part-time work while the number are about equal for full-time only.

The high percentage (66%) of all applicants that will be available any season is equally true of both males and females. Again as was previously mentioned the high school students reflect much of the available later and summer season availability (23%) as well as a portion of part-time only work.

Table 16

Availability of All Applicants by Sex

		Total	Female	Male
Total		611	228	383
Availability For Work	Not Available	46	18	28
	Part-Time Only	124	36	88
	Seasonal	11	5	6
	Full-Time Only	79	35	44
	Any Work	218	62	156
	Later Date	133	72	61
Seasonal Availability	None	65	25	40
	Winter	9	2	7
	Spring	1	1	0
	Summer	126	53	73
	Fall	6	2	4
	Any	404	145	259

Table 17

Availability of Applicants by Place of Residence

Place of Residence	Availability for Work						
	Total	Any	Full-Time	Part-Time	Seasonal	Later Date	Not Available
Total	611	46	124	11	79	218	133
Township							
Aurora	34	1	6	1	4	15	7
Browning	19	1	4	0	3	7	4
Chelsea	24	0	6	1	3	8	6
Cleveland	17	0	2	0	6	2	7
Deer Creek	33	4	6	1	2	14	6
Ford	8	0	3	0	1	2	2
Goodrich	30	3	7	1	4	15	0
Greenwood	22	1	6	0	1	6	8
Grover	8	0	0	0	2	5	1
Hammel	21	2	2	0	2	12	3
Holway	14	3	1	0	3	3	4
Jump River	10	0	3	0	0	6	1
Little Black	39	8	8	1	3	14	5
McKinley	7	0	1	0	2	0	4
Maplehurst	12	1	1	0	1	8	4
Medford	174	14	35	5	30	63	27
Molitor	7	1	0	0	1	5	0
Pershing	6	0	0	0	2	3	1
Rib Lake	44	3	6	1	6	7	21
Roosevelt	17	0	4	0	1	9	3
Taft	8	0	2	0	1	1	4
Westboro	55	4	19	0	1	13	18
Other County	2	0	2	0	0	0	0

AVAILABILITY FOR FARM WORK

Table 18

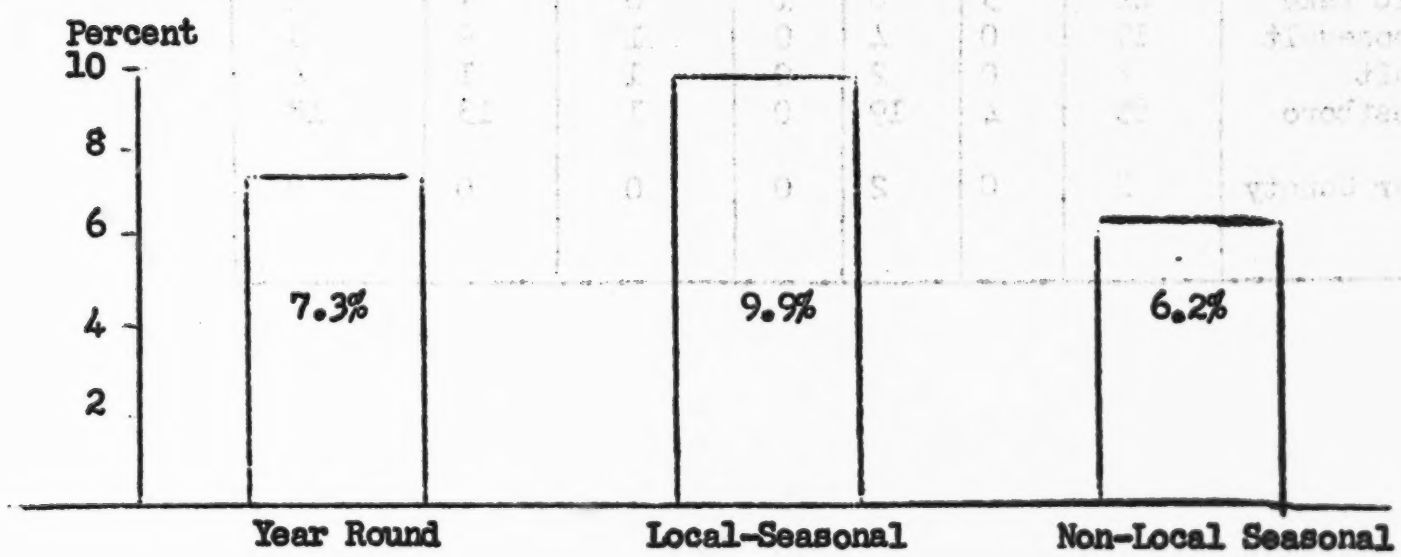
Availability For Farm Work

		Year Round		Seasonal			
				Local		Non-Local	
	Total	Yes	No	Yes	No	Yes	No
Total	611	29	582	39	572	25	586
Percent	100	4.7	95.3	6.4	93.6	4.1	95.9
Female	228	1	227	1	227	1	227
Male	383	28	355	38	345	24	359

There was a great lack of interest in farm work as shown in Table 18. Only about 6% of the applicants indicated any availability for farm work. Of the male applicants surveyed about 10% indicated some interest in farm work. The most interest was in local seasonal farm work with about 6.5% of all applicants showing an interest. Much of the interest in farm work can be traced to farm people who would work on the home farm or as tenant farmers. The low wages, little job prestige, long hours, hard work and poor opportunity outlook for the future accounts for the lack of interest in working as hired hands. As might be expected virtually no female interest in farm work exists.

Chart 10

Availability of Males for Farm Work



INDUSTRIAL EXPERIENCE OF APPLICANTS

The industrial experience of each applicant was determined by ascertaining the industrial affiliation of their most recent job or longest job if several were involved.

Two hundred fifty-seven or 42% of the applicants were in goods producing industries. Of this number 47% or nearly one-half were construction workers. This large number of construction workers greatly influenced availability and mobility as they generally work less than 52 weeks per year and frequently work outside the local area. The large number of applicants in the non-applicable group reflects the over 200 high school seniors plus the many housewives with no recent work history.

Chart 11

Industrial Experience of Applicants

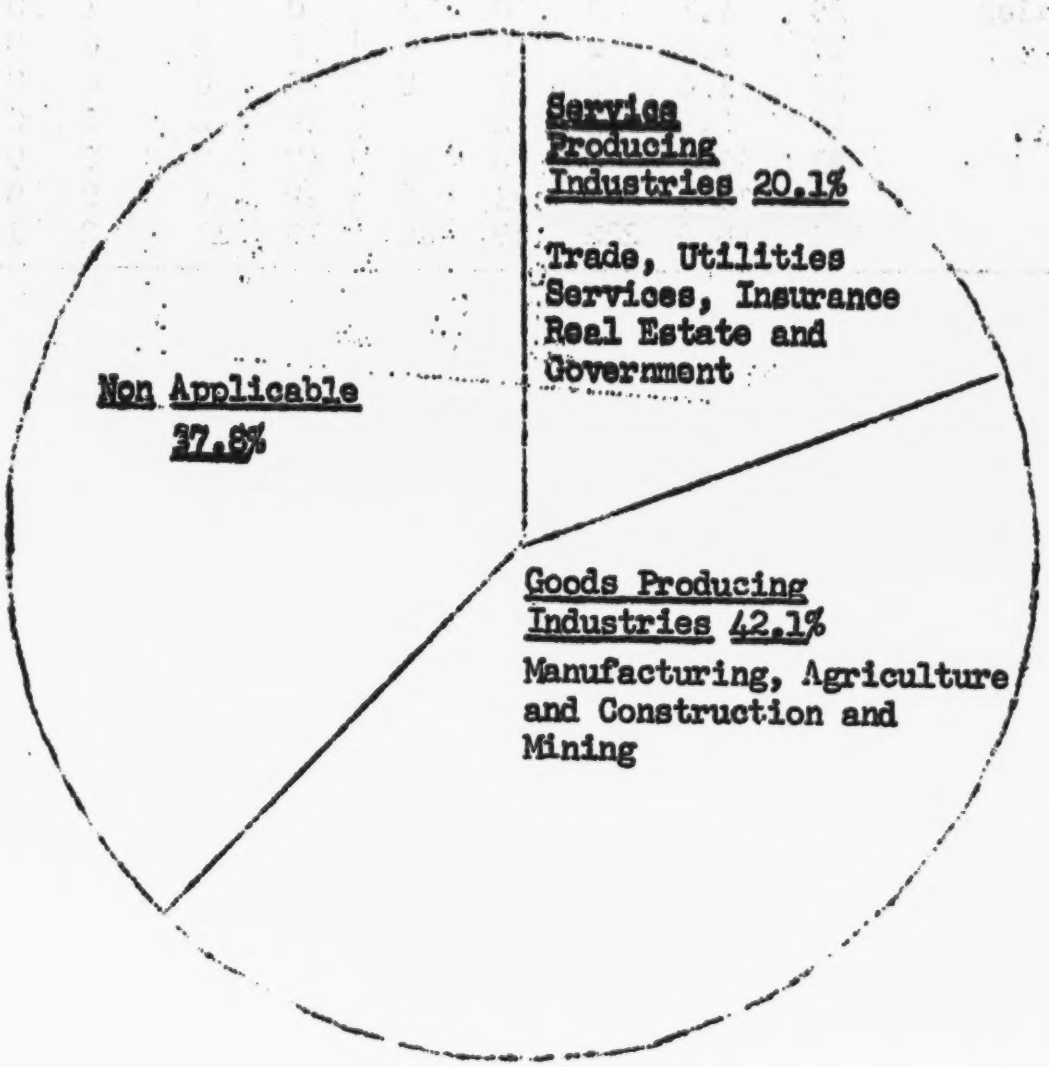


Table 19

Industrial Experience of Applicants by Occupational Group

Major Occupational Group	Total	Percent of Total	Industry Group								
			None Applicable	Manufacturing	Agriculture	Construction & Mining	Trade	Utilities	Finance Insurance and real estate	Services	Government
Total	611	100	231	52	84	121	33	3	11	54	22
Percent of Total	100	XXX	37.8	8.5	13.7	19.9	5.4	.5	1.8	8.8	3.6
Prof. and Mgr.	9	1.5	1	0	0	1	1	0	0	2	4
Clerical and Sales	25	4.1	3	0	3	0	2	1	10	5	1
Service	17	2.8	2	0	0	0	4	0	0	10	1
Agriculture	10	1.6	0	1	8	0	0	0	0	0	1
Skilled	42	6.9	1	2	4	29	2	0	0	3	1
Semi Skilled	81	13.1	0	8	13	49	7	0	0	3	1
Unskilled	73	12.0	2	24	8	29	6	0	0	2	2
Entry	354	58.0	222	17	48	13	11	2	1	29	11

WEEKS WORKED PAST 12 MONTHS BY SEX

Of the applicants surveyed 23% had no work experience in the past 12 months while nearly 36% had worked from 1 to 18 weeks. Over 91% of the female applicants had less than 18 weeks of work experience while only 38% of the males had less than 18 weeks of work.

It is reasonable to assume that many of the 152 males with less than 18 weeks work were high school students while only about 50% of the females were students.

		Total	Female	Male
Weeks Worked in past 12 months	None	141	101	40
	1-18	219	107	112
	19-35	130	6	124
	36-52	121	14	107
Totals		611	228	383

INCOME EARNED AND WEEKS WORKED PAST YEAR

The large numbers of entry applicants with 0-9 weeks of work in the past year results in the high percentage (56%) of earnings under $500. The 30-39 weeks worked group probably represents the construction workers as one-third of this group earned $5,000 or more. Another group with construction worker representation is the 40-52 weeks worked, with $3,000-$4,999 income. This group represents the unskilled construction workers and many local area manufacturing plant workers who were relatively unskilled.

Table 20

Income Earned and Weeks Worked by
All Applicants In last 12 months

Weeks Worked	Total	Dollars in Earnings						
		0-499	500-999	1000-1999	2000-2999	3000-4999	5000-5999	6000 +
Total	611	340	36	45	54	93	24	19
Percent of Total	100	56	6	7	9	15	4	3
0-9	220	219	0	0	0	1	0	0
10-19	142	115	22	5	0	0	0	0
20-29	77	3	9	15	23	23	3	1
30-39	79	0	1	12	13	27	15	11
40-52	93	3	4	13	18	42	6	7

MOBILITY OF ALL APPLICANTS

Mobility, as used in this study is a geographic concept and is reflected in the following three ways:

1. The desire or willingness of the applicants to move permanently that is, to change place of residence in order to secure work.

2. The willingness of applicants to change their place of residence temporarily in order to secure work.

3. The distance these applicants would travel one way or commute without changing residence in order to secure work.

Many factors influence mobility, among them are: home ownership, age of children, emotional ties to relatives or community, lack of knowledge of out-of-area job opportunities, sex, age, marital status, educational level, skill level and current employment status. Five of these factors were studied for this report. They include occupational skill level, educational attainment, marital status, place of residence and age.

In Taylor County, about 56% of the applicants surveyed indicated they would move permanently to secure work. Nearly 63% indicated a willingness to move temporarily in order to secure work. These figures represent a higher than average mobility for counties surveyed to date. Over 87% of the applicants indicated some degree of willingness to commute for work, however, over 60% of the applicants would not commute over 20 miles one way for work. Of this percentage only 12% would not or could not commute while 25% indicated they would travel over 30 miles for work.

Chart 11

Per Cent
Mobility of all Applicants

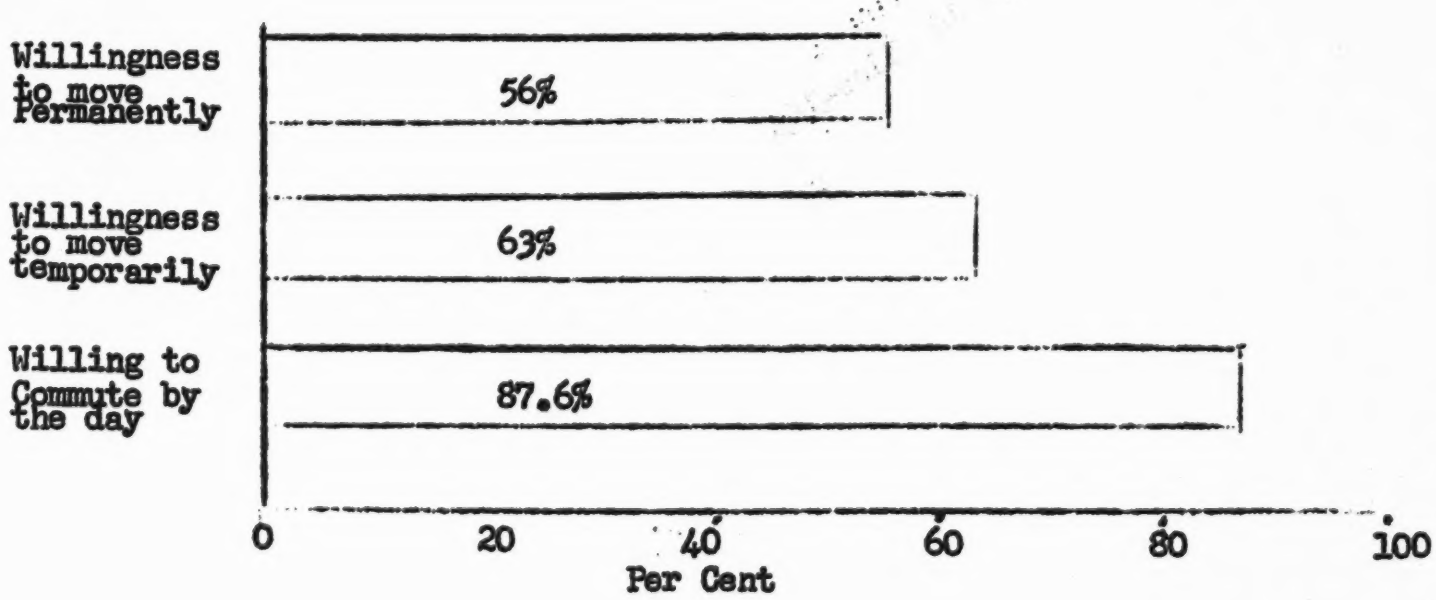
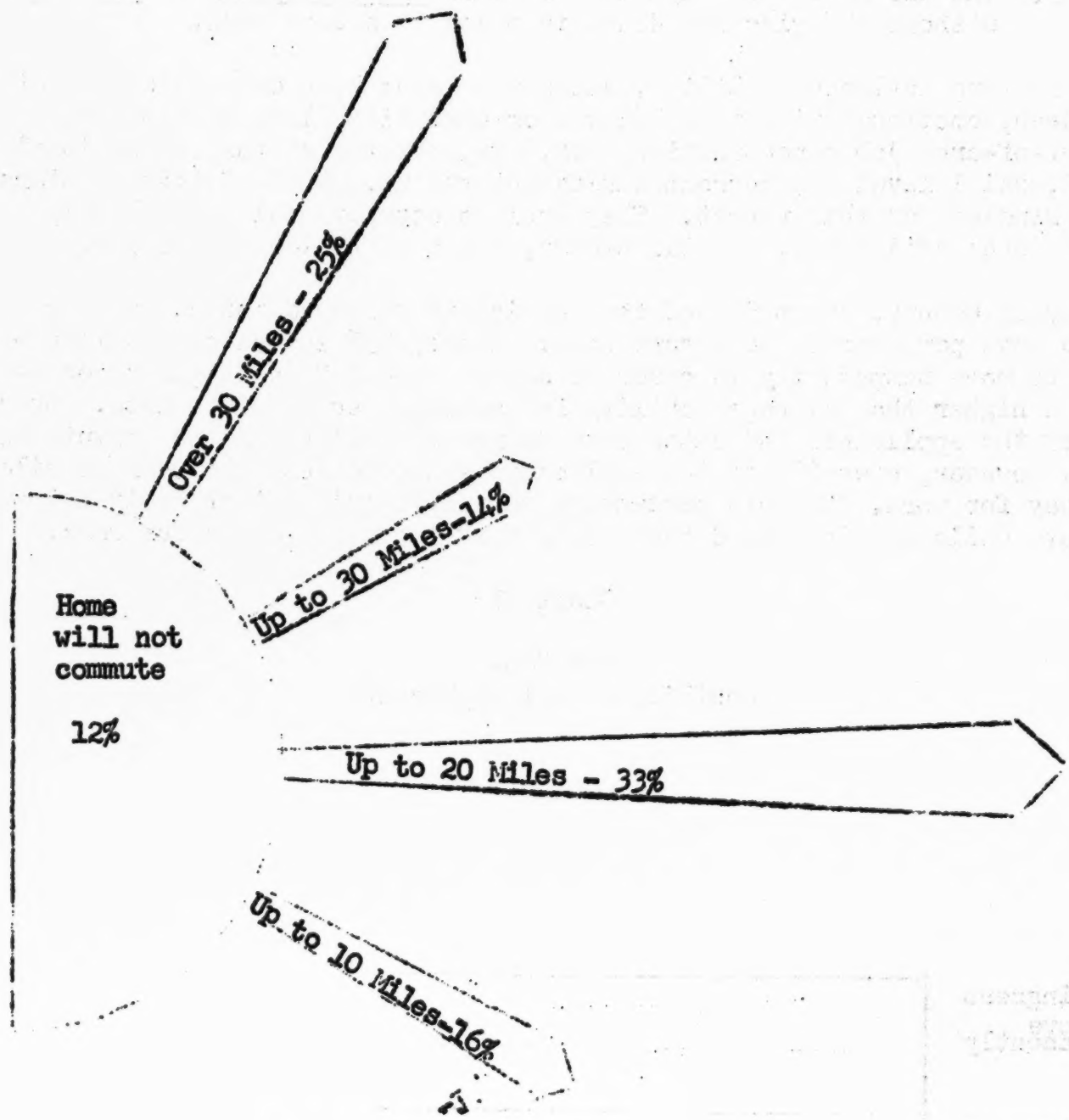


Chart 12

Percent of Applicants by Miles Willing
To Travel one-way for Work

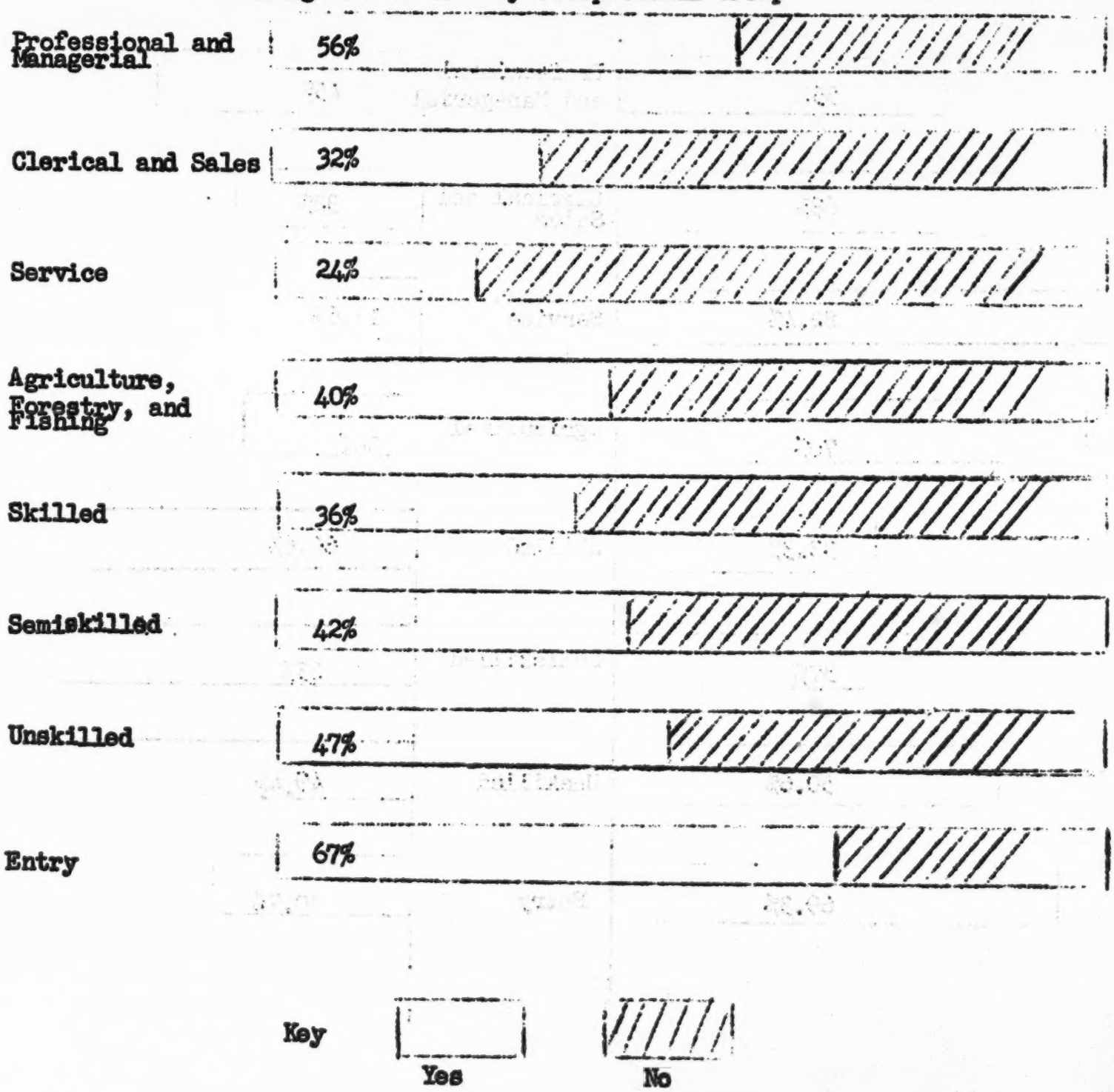


MOBILITY OF APPLICANTS BY OCCUPATIONAL GROUP

In Taylor County both the Professional-Managerial and the Entry groups showed a majority willing to move permanently for work. Almost one-half the unskilled groups would also move for work. This represents a higher than average mobility for this group. In general, because of the numbers of high school students included in the survey, the entry groups show a great willingness to move both permanently and temporarily.

Chart 13

Willingness to Move by Occupational Group

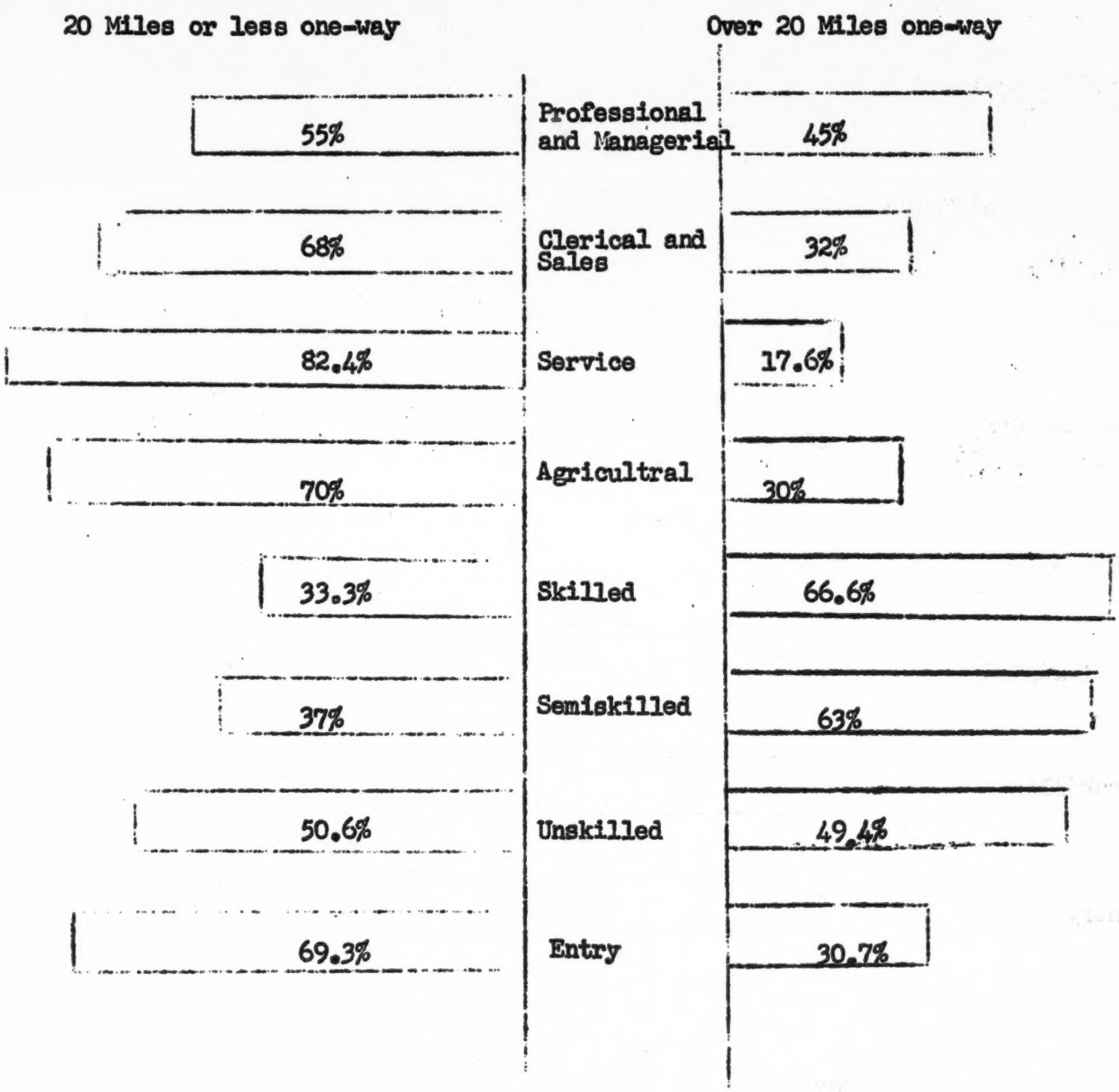


WILLINGNESS TO COMMUTE BY OCCUPATIONAL GROUP

It should be noted that the Clerical and Sales, Service, Agricultural and Entry occupational groups show less than one-third willing to commute over 20 miles one way for work. Over 50% of the skilled, and semi-skilled would commute over 20 miles for work.

Chart 14

Willingness to Commute by Occupational Group



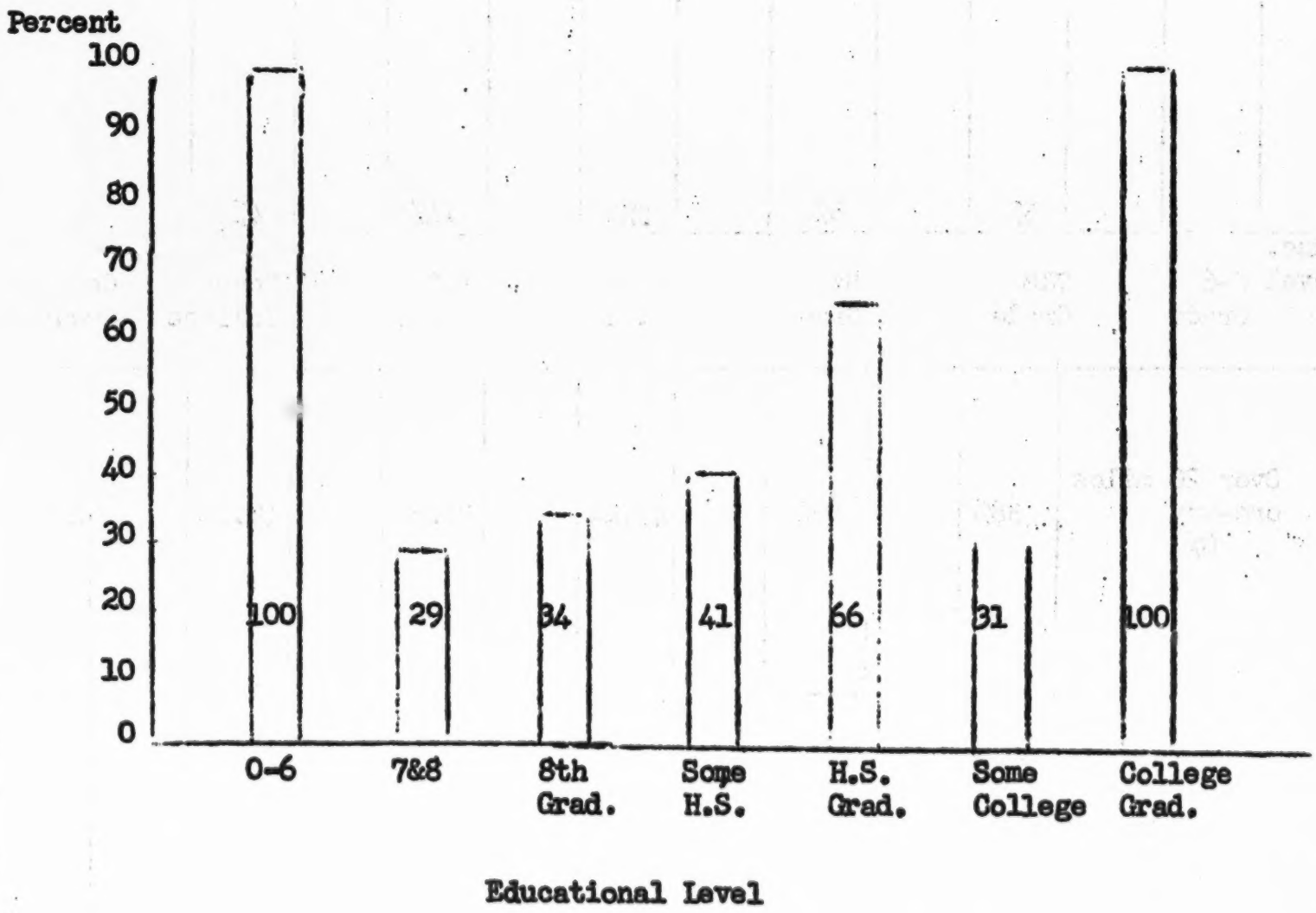
MOBILITY OF APPLICANTS BY EDUCATIONAL ATTAINMENT

The degree of mobility as a rule increases with educational attainment. The exception to this rule applies to the college drop out which probably represents those persons who have returned home from college because of a low initial mobility factor.

In Taylor County over 66% of the high school graduates showed a willingness to move. The college drop-out percentage that showed a willingness to move was only 31%. The 100% mobility of the 0-6th grade group represents only two applicants and therefore is not relevant in this county.

Chart 15

Willingness to Move by Educational Attainment

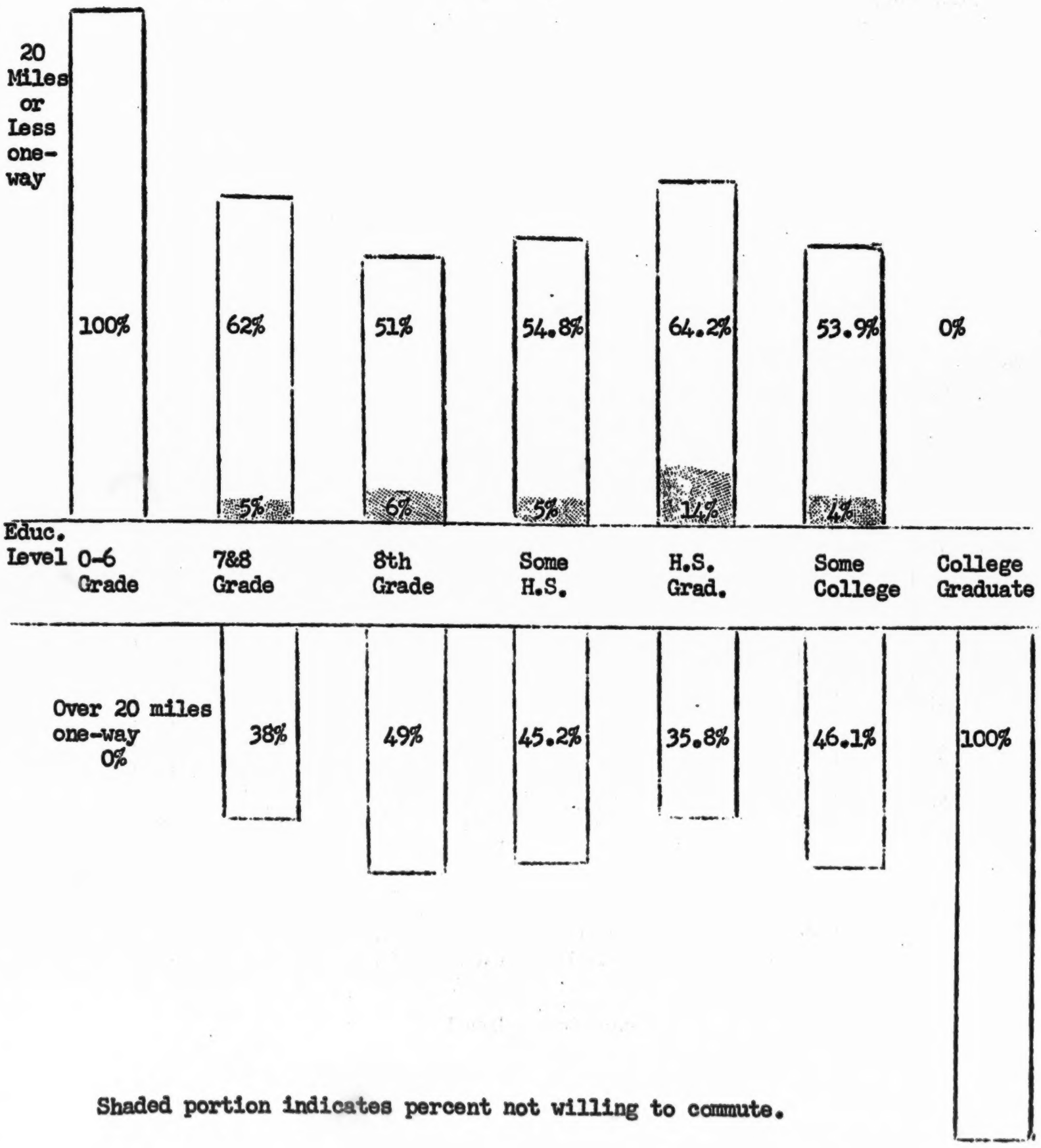


WILLINGNESS TO COMMUTE BY EDUCATIONAL ATTAINMENT

It is interesting to note on the graph that only the college graduate group shows more than a 50% willingness to commute over 20 miles for work. The less than 6th grade group shows no willingness to commute over 20 miles while all other groups are about equally divided.

Chart 16

Willingness to Commute by Educational Attainment



Shaded portion indicates percent not willing to commute.

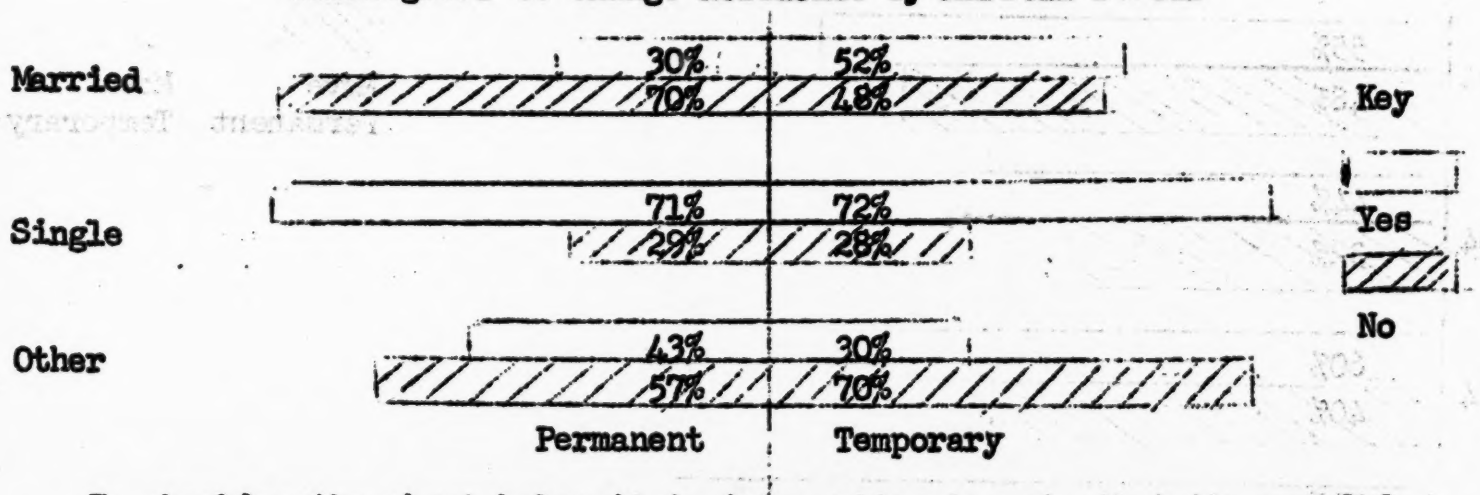
MOBILITY OF ALL APPLICANTS BY MARITAL STATUS

In general married applicants show much less interest in moving permanently than either the single or the other groups. For the purpose of this survey Other refers to widows divorcees etc. 70% of the married applicants did not want to move permanently while 71% of the single applicants would move. However, in regards to a temporary move 52% of the married group would move as compared to 72% of the single group.

People classified in the other group expressed a stronger feeling against a temporary move than either of the other groups. They also showed a better than 57% unwillingness to move permanently.

Chart 17

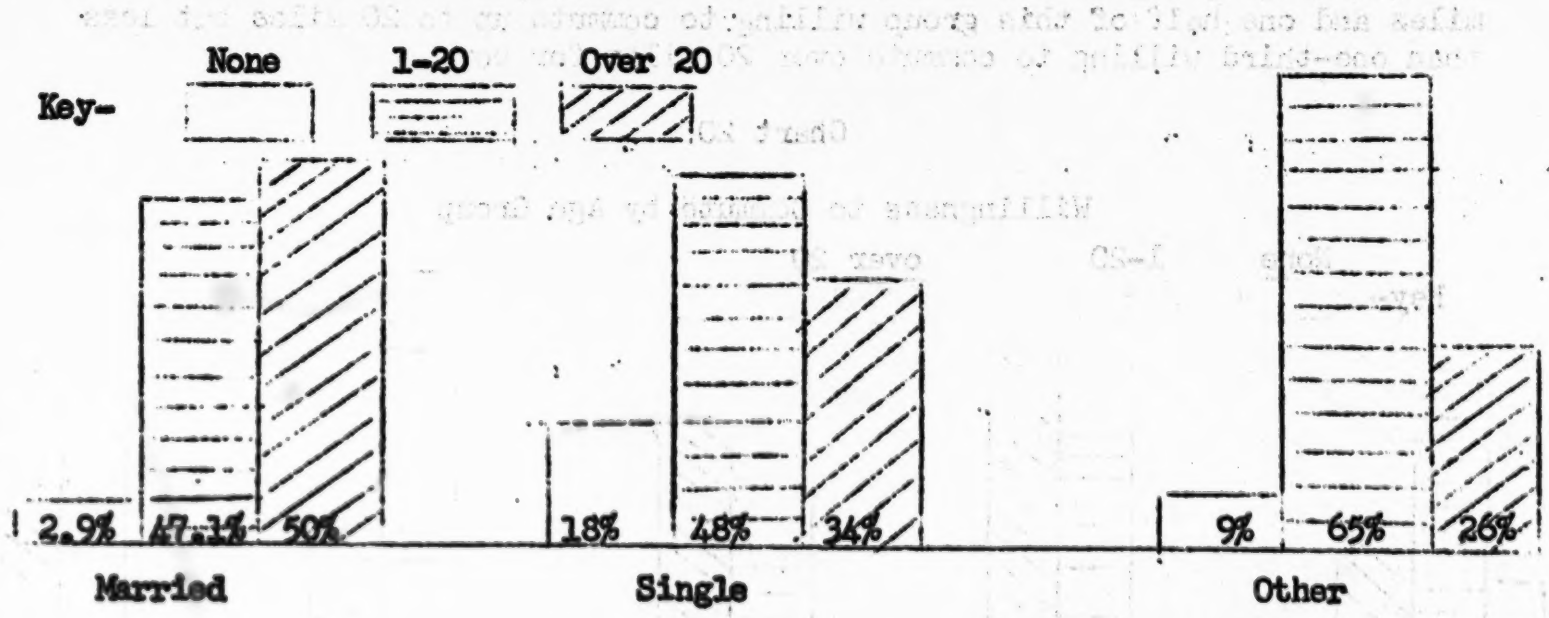
Willingness to Change Residence by Marital Status



In checking the chart below it is interesting to note that the married group shows the most willingness to commute over 20 miles. The single group corresponds closely with the High School graduate and entry groups.

Chart 18

Willingness to Commute by Marital Status

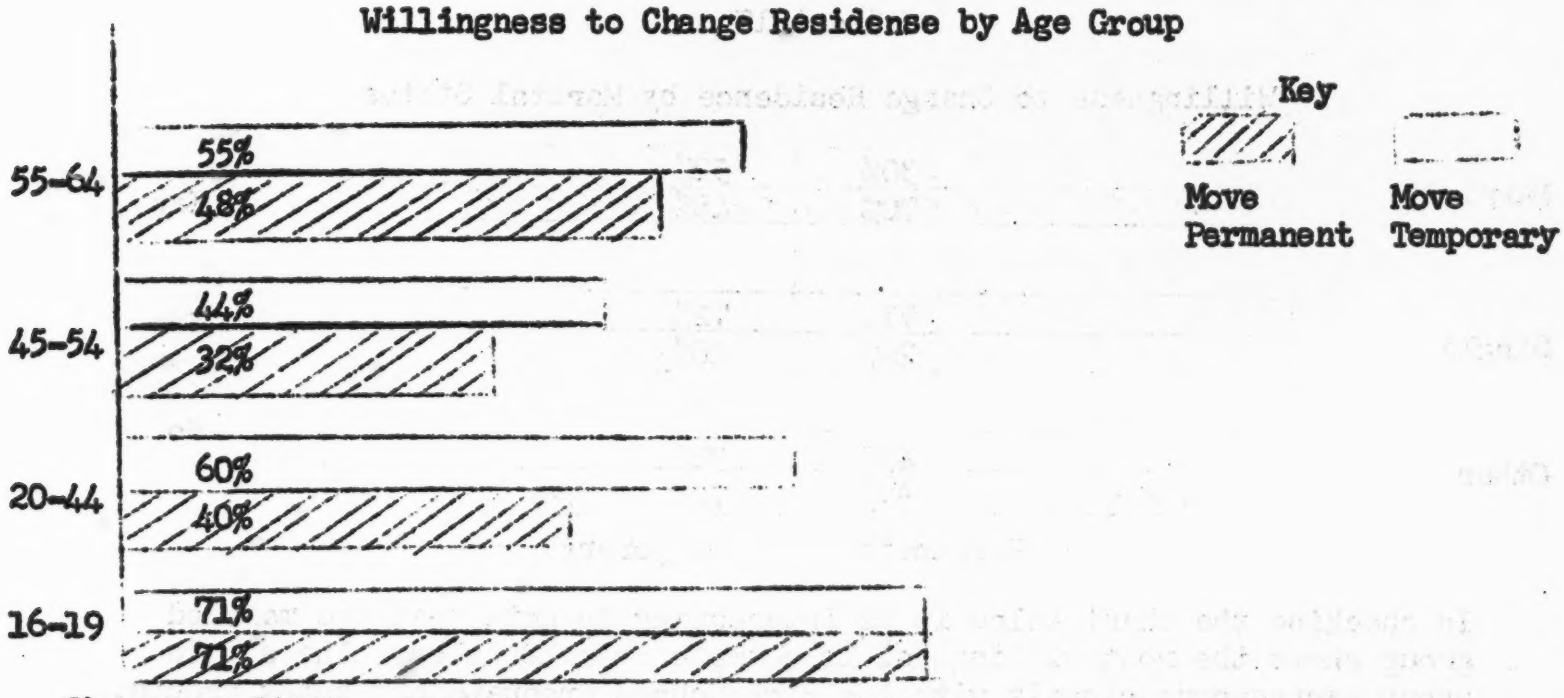


MOBILITY OF ALL APPLICANTS BY AGE GROUP

Willingness to move for work, in general, decreases with the corresponding age increase. It was found that over 71% of the 14-19 age group would move for work while none of the 65 and over would move. The 55-64 age group in Taylor County indicated a strong willingness to leave the area temporarily for work and a unusually high willingness to move permanently. All age groups from 20-64 showed a high willingness to move temporarily for work. This probably reflects the fact that nearly 20% of applicants surveyed were construction workers who normally leave the area during the summer months for work.

Chart 19

Willingness to Change Residense by Age Group

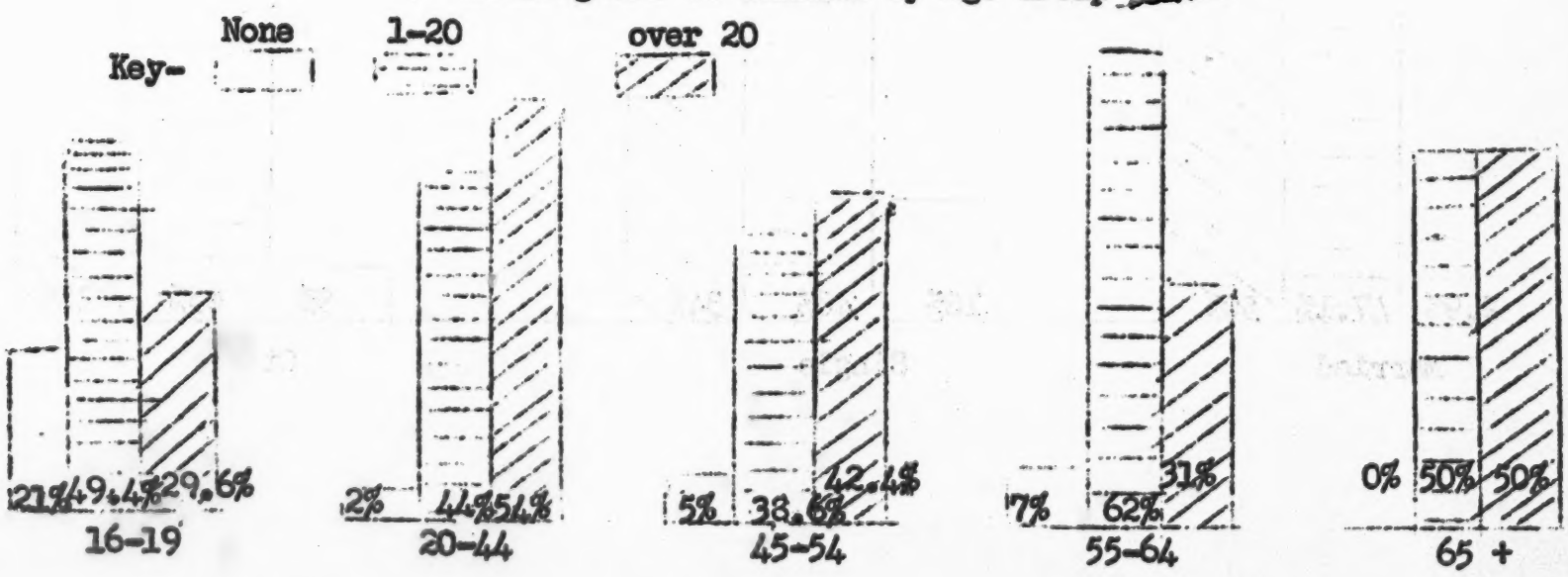


There was little willingness to commute any distance by any age group with the exception of the 20-44 age group. This group showed over one-half willing to commute over 20 miles one way for work and over one-third willing to commute over 30 miles. The 65 + group was represented by only two persons which was too small a number to be of significant value.

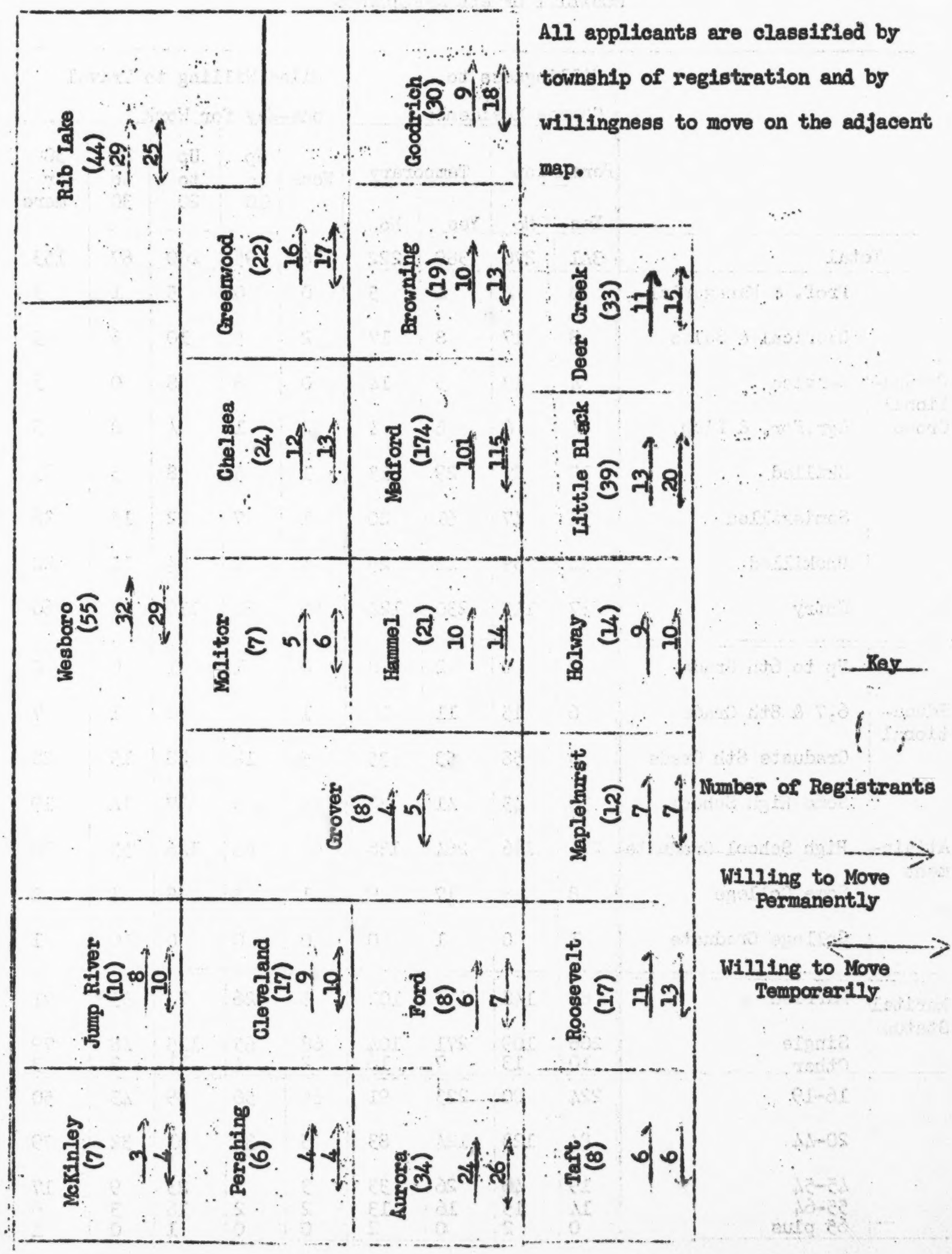
The 55-64 age group showed nearly two-thirds willing to commute from 1-20 miles and one half of this group willing to commute up to 20 miles but less than one-third willing to commute over 20 miles for work.

Chart 20

Willingness to Commute by Age Group



MOBILITY OF APPLICANTS BY TOWNSHIP OF RESIDENCE



All applicants are classified by township of registration and by willingness to move on the adjacent map.

Table 15

MOBILITY OF ALL APPLICANTS

		Willingness to Change Residence				Miles Willing to Travel one-Way for Work				
		Permanent		Temporary		None	Up to 10	Up to 20	Up to 30	30 or more
		Yes	No	Yes	No					
Total		341	270	389	222	76	95	200	87	153
Occupational Group	Prof. & Managerial	5	4	4	5	0	0	5	1	3
	Clerical & Sales	8	17	8	17	2	5	10	5	3
	Service	4	13	3	14	0	6	8	0	3
	Agr.For. & Fish.	4	6	6	4	2	1	4	0	3
	Skilled	15	27	29	13	1	5	8	5	23
	Semiskilled	34	47	61	20	1	7	22	15	36
	Unskilled	34	39	48	25	4	9	24	14	22
	Entry	237	117	230	124	66	64	119	47	60
Educational Attainment	Up to 6th Grade	2	0	2	0	0	1	1	0	0
	6,7 & 8th Grade	6	15	11	10	1	2	10	1	7
	Graduate 8th Grade	30	58	53	35	5	12	28	15	28
	Some High School	30	43	41	32	4	9	27	14	19
	High School Graduate	264	136	264	136	65	66	126	53	90
	Some College	8	18	17	9	1	5	8	4	8
	College Graduate	1	0	1	0	0	0	0	0	1
Marital Status	Married	64	148	110	102	6	26	74	35	71
	Single	266	109	271	104	68	65	115	48	79
	Other	10	13	7	16	2	4	11	3	3
	16-19	224	90	223	91	66	56	99	43	50
	20-44	84	123	124	83	5	30	61	32	79
	45-54	19	40	26	33	3	7	23	9	17
	55-64	14	15	16	13	2	2	16	3	6
	65 plus	0	2	0	2	0	0	1	0	1

APTITUDE TESTING

The United States Employment Service General Aptitude Test Battery (GATB) was offered to all applicants to assist the counselors in their evaluation of each individuals occupational potential. Slightly less than 47% or 285 of the 611 applicants were tested.

The General Aptitude Test Battery (GATB) consists of twelve tests designed to measure nine aptitudes. The aptitudes are defined as follows:

G - (Intelligence) General learning ability.
V - (Verbal Aptitude) Ability to understand meanings of words and ideas associated with them and to use them effectively.
N - (Numerical Aptitude) Ability to perform arithmetic operations quickly and accurately.
S - (Spatial Aptitude) Ability to comprehend forms in space and understand relationships of plane and solid objects - often described as the ability to visualize.
P - (Form Perception) Ability to perceive pertinent detail in objects or in pictorial or graphic material - to make visual comparison and discrimanations, and to see slight differences in shapes and shadings of figures, etc.
Q - (Clerical Perception) Ability to perceive pertinent detail in verbal or tabular material.
K - (Motor Co-ordination) Ability to co-ordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed.
F - (Finger Dexterity) - Ability to move the fingers, and manipulate small objects with the fingers, rapidly or accurately.
M - (Manual Dexterity) Ability to move the hands easily and skillfully - to work with the hands in placing and turning motions.

The scores, converted into rough ratings, ranging from low to very high, and the number of those scoring within those ratings, by each battery are tabulated below. The chart on the next page indicates the percentages that scored below average and better than average. In all aptitudes over one-half the tested applicants scored average or above. In all aptitudes except finger dexterity over 81% of those tested scored average or better while only 61.4% of them scored average or better in finger dexterity. This is characteristic of all counties surveyed to date and appears to be a result of the large number of unskilled rural applicants that are tested that have not had an opportunity, due to the nature of their work, to maintain finger dexterity.

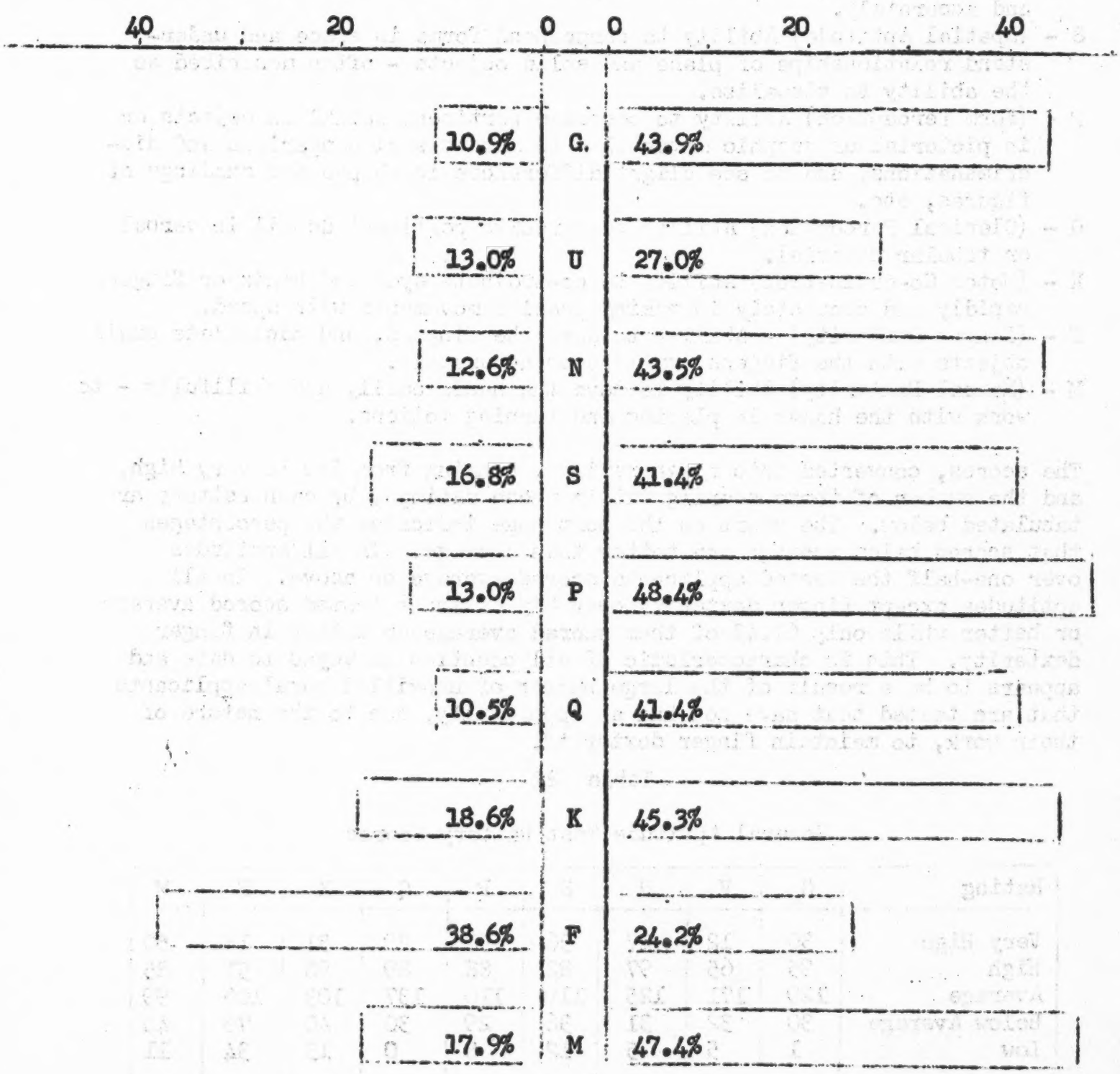
Table 22

General Aptitude Test Battery Scores

Rating	G	V	N	S	P	Q	K	F	M
Very High	30	12	27	36	50	29	31	18	50
High	95	65	97	82	88	89	98	51	85
Average	129	171	125	119	110	137	103	106	99
Below Average	30	32	31	36	29	30	40	76	40
Low	1	5	5	12	8	0	13	34	11

Chart 21

Aptitude Testing



JOB POTENTIAL OF APPLICANTS TESTED

Various combination of scores from different aptitudes form the basis for estimating the probability of success for hundreds of specific jobs. The Employment Service utilizes many of these Specific Aptitude Batteries (SATB's) in screening applicants for specific jobs. Some specific jobs and number of tested applicants that meet minumum required scores follow:

Table 18

Number of Tested Applicants Passing Minimum Scores for Selected Jobs

Job	Aptitudes Measured	Number Applicants Passed	Per Cent Passed
Automotive Mechanic	G-S-F	170	60
Clerk, General Office	G-V-Q	118	41
Cook	G-S-M	234	82
Electronic Unit Assembler	P-Q-K	140	50
Injection Molding Machine Tender (Plastics)	P-Q-K	200	69
Machine Operator, General	G-F-M	251	88
Punch Press-Drill Press, Operator	G-K-M	251	88
Sewing Machine Operator	P-K-F-M	230	80
Solderer	P-F-M	230	80
Welder, Combination	S-F-M	211	74
Woodworking Machine Operator	G-N-F-M	251	88
Stitcher, Machine (Shoes)	Q-K-F	202	70

PART III

EMPLOYER SURVEY

Part three consists of a summarization and analysis of the data gathered by the mobile crew during the employer survey phase of the program which was conducted concurrently with the applicant survey. A specially prepared questionnaire was used to secure information from all employers in Taylor County. The questionnaire asked the following items from the employers:

1. Do you have any job vacancy?
2. Have you difficulty obtaining qualified workers?
3. List occupations you feel local training is needed:
4. Do you employ anyone outside Taylor County?
5. What new Industry would best help you?
6. Why is your firm located here?
7. List all your employees by occupation, age, sex and wage rate:
8. List anticipated employment for 1965 and 1968:

Highlights of The Employer Survey

69 employers responded to the survey to varying degrees. Estimated employment to increase 6.3% by 1965 and 12.2% by 1968.

Unskilled occupations to increase the highest percentage (14.7%) by 1968.

Nearly 60% of the employed workers were under 45 years of age.

Insufficient training mentioned most frequently as an employment problem.

Mechanic training listed most frequently as a need.

32 Local job openings were received by the team during the survey.

3.6% of the employed workers surveyed were non-county residents.

Industrial Development Committee assistance listed by two employers as a reason for location in Taylor County.

"Any industry" listed most often in answer to the question of what industry would most supplement your activities.

Wage rates for most occupations begin at or near the minimum legal wage and are generally low in the semi-skilled occupations.

CURRENT AND ANTICIPATED EMPLOYMENT BY INDUSTRY

A total of 69 employers were surveyed, in Taylor County, employing 1,159 persons or 19% of the estimated labor force. 687 or 59% of these employees were employed in manufacturing industries and 601 or 87% of those employed in manufacturing were males. As might be expected females accounted for the largest percentage of those employed in service industries. An overall increase of 6.3% in employment was expected by 1965 and a 12.2% increase by 1968. Construction accounts for the largest anticipated increase with manufacturing being second. No increase was expected in the finance and insurance industry.

Table 24

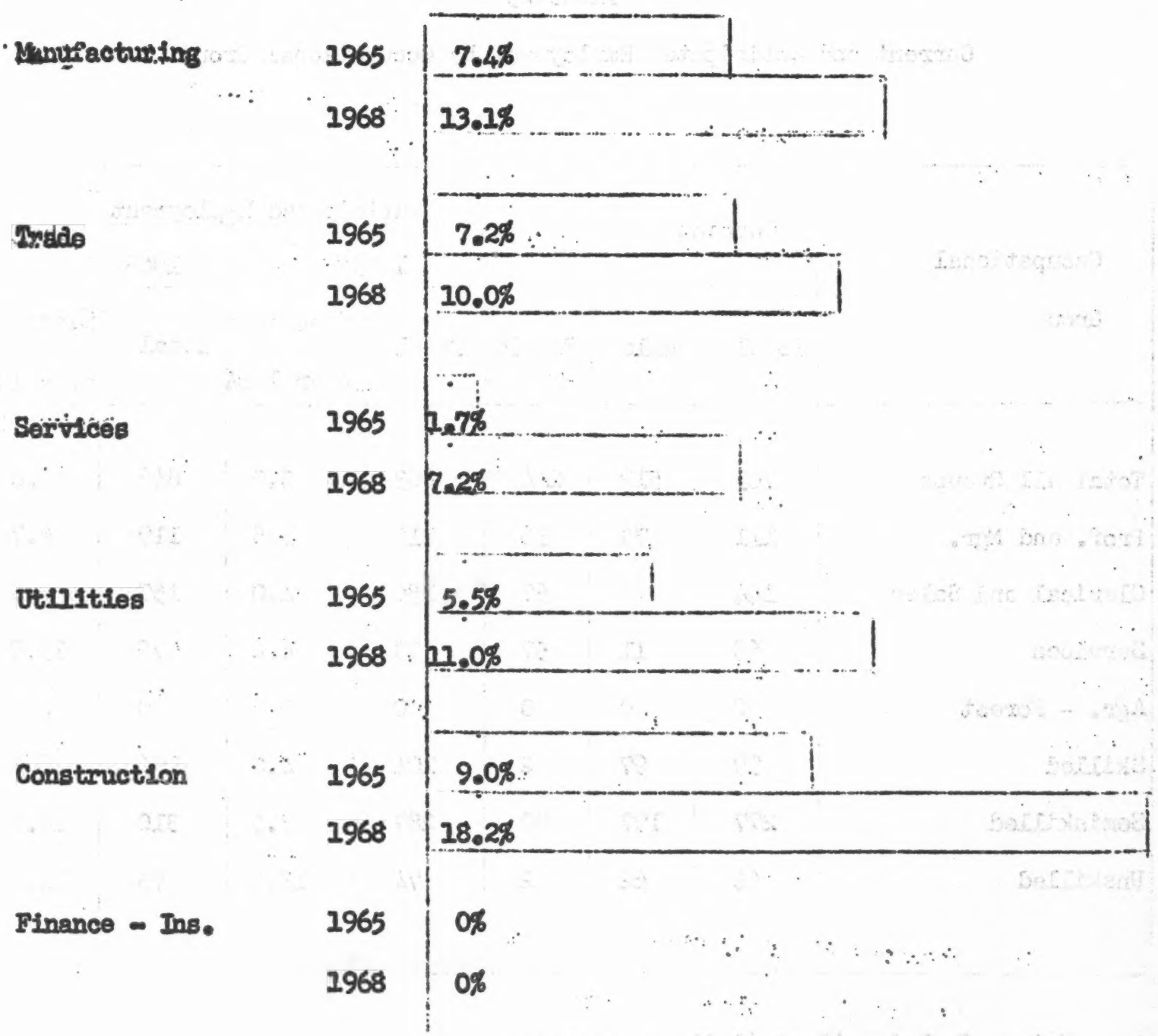
Current and Anticipated Employment by Industry

Industrial Group	Current			Anticipated Employment			
				1965		1968	
	Total	Male	Female	Total	% Income over 1964	Total	% Increase over 1964
Total-All Industries	1159	897	262	1232	6.3	1301	12.2
Manufacturing	687	601	86	738	7.4	777	13.1
Nonmanufacturing	472	296	176	494	4.6	524	10.0
Trades	206	171	35	221	7.2	227	10.0
Services	178	58	120	181	1.7	191	7.2
Utilities-Transport	36	31	5	38	5.5	40	11.0
*Construction	22	22	0	24	9.0	26	18.2
Finance, In., and Real Estate	30	14	16	30	——	30	——

* The employment figures represent off season employment levels. In In season would be about 64 higher.

Chart 22

Anticipated Increase in Employment, by Industry, in 1965 and 1968, over current Employment



CURRENT AND ANTICIPATED EMPLOYMENT BY OCCUPATIONAL GROUP

The current and anticipated employment by occupation reflects only 763 employees and 67 employers of the 1,159 employees of 69 employers surveyed. Data obtained from the balance of the employers was not complete enough to permit an occupational breakdown of their employees.

Although incomplete, the figures do show that the unskilled and service occupations anticipate the largest increase in employment both by 1965 and by 1968. Since the two employers untabulated were both employers of large numbers of unskilled and semi-skilled workers it is logical to assume most of their increase would also be in these groups. They anticipated an overall increase of 2% by 1965 and 8% by 1968.

Table 25

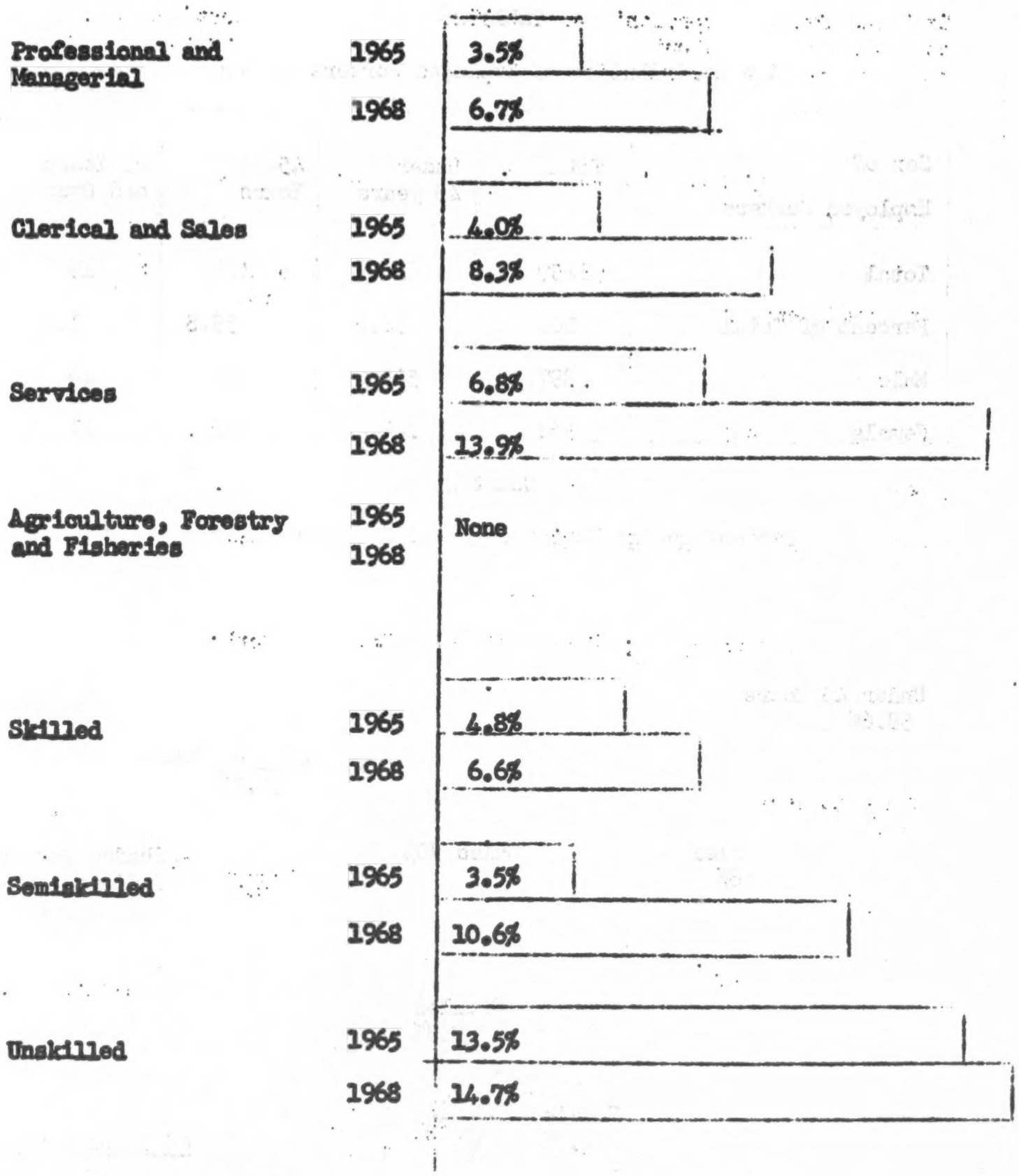
Current and Anticipated Employment by Occupational Group

Occupational Group	Current			Anticipated Employment			
				1965		1968	
	Total	Male	Female	Total	%Increase over 1964	Total	%Increase over 1964
Total all Groups	763	519	244	803	5.0	846	9.8
Prof. and Mgr.	111	75	36	115	3.5	119	6.7
Clerical and Sales	144	77	67	150	4.0	157	8.3
Services	68	11	57	73	6.8	79	13.9
Agr. - Forest	0	0	0	0	0	0	0
Skilled	99	97	2	104	4.8	106	6.6
Semiskilled	277	197	80	287	3.5	310	10.6
Unskilled	64	62	2	74	13.5	75	14.7

Note: Includes 67 of 69 firms reporting
or
763 of 1159 employees reported

Chart 23

Anticipated Increase in Employment by Occupational Group in 1965 and 1968, Over Current Employment



Note: See Previous Chart

AGE DISTRIBUTION OF EMPLOYED WORKERS BY SEX

An analysis of the ages of employed workers show a higher than usual percentage (58.6%) under 45 years of age.

Employed females represent only 22.5% of the total employed workers surveyed and were about equally divided between the under 45 age groups and the 45-64 age group.

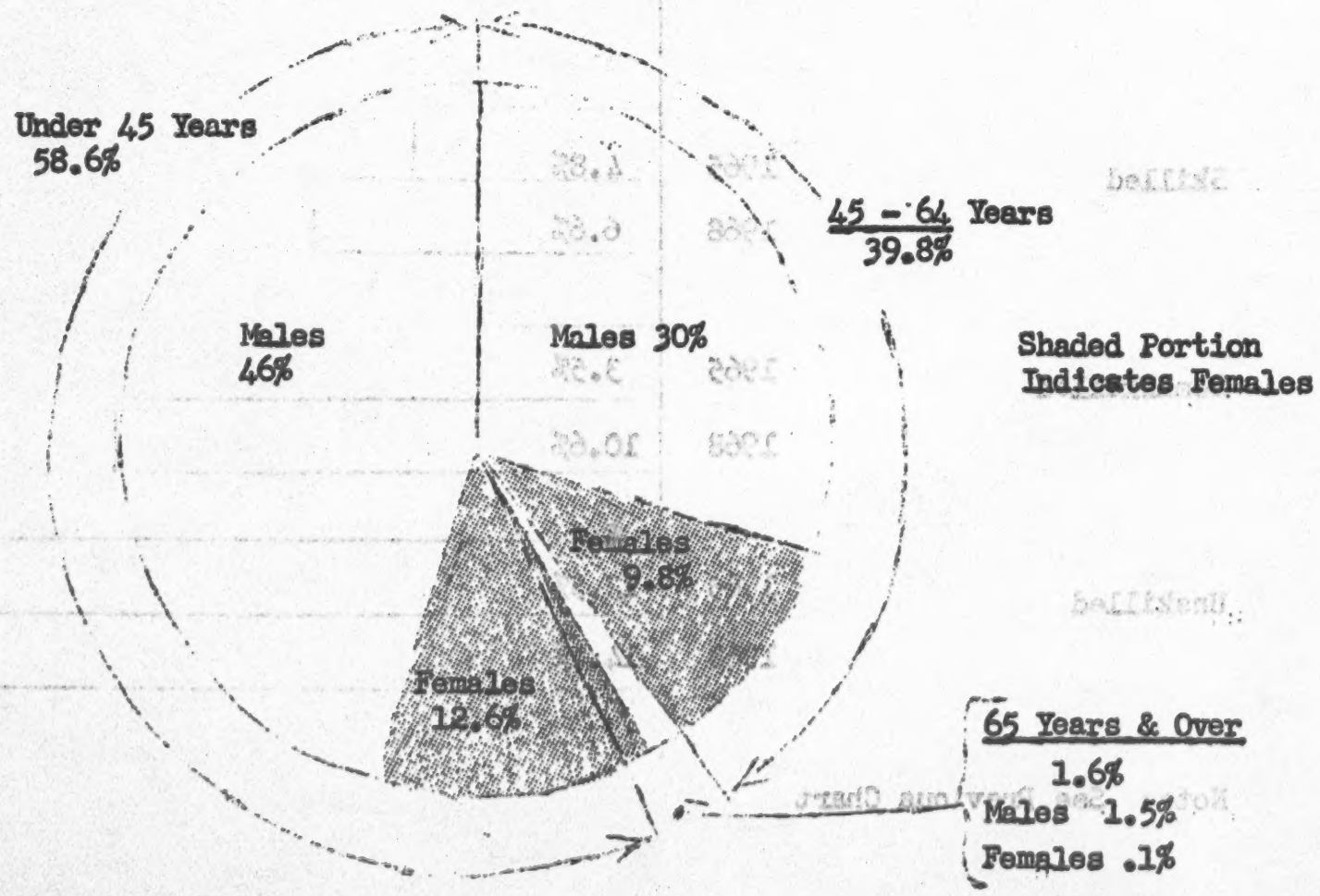
Table 26

Age Distribution of Employed Workers by Sex

Sex of Employed Workers	Total	Under 45 years	45-64 Years	65 Years and Over
Total	1159	680	460	19
Percent of Total	100	58.6	39.8	1.6
Male	897	533	346	18
Female	262	147	114	1

Chart 24

Percentage Age Distribution of Employed Workers



OCCUPATIONS OF EMPLOYED WORKERS 65 AND OVER

The 65 and over age group, (19 workers) represented less than 2% of the employed workers. Of these 19 workers 18 were males. Over 25% represented clerical and sales occupation and another 25% the unskilled while about 16% represented the professional occupations and 16% the semiskilled. No employees over 65 were represented in the service occupations. The small number of, over 65, employees in the skilled and clerical occupations mean there is little replacement potential for younger persons in these fields. Since most professional people over 65 were business owners there is virtually no replacement potential in that group. The unskilled and semiskilled occupations do not offer much in remunerative value to the younger employees so do not represent a replacement opportunity to be considered.

Table 27

Occupations of Employed Workers 65 and over

Occupation	Total	Male	Female
Professional	3	3	0
Clerical and Sales	6	5	1
Service	0	0	0
Skilled	2	2	0
Semiskilled	3	3	0
Unskilled	5	5	0
Totals	19	18	1

CURRENT AND ANTICIPATED EMPLOYMENT BY SPECIFIC OCCUPATION

Twenty-two of the 69 employers surveyed indicated they would be increasing their employment in 1965 and 1968. Two employers anticipated a reduction of employees mostly due to technological advances in their business. Sixteen of the twenty-two employers gave a complete occupational breakdown of their anticipated employment for 1965 and 1968 which is given in the table below along with the current employment of these 16 firms.

Occupation	Present	1965	1968
Pharmacist	1	1	2
X-Ray Technician	1	1	2
Registered Nurse	17	20	22
Nurses Aide	24	28	30
General Office Clerk	14	15	18
Sales Clerk	19	21	22
Stock Clerk	8	10	12
Cook	9	10	11
Maid	4	4	5
Waitress	3	4	4
Laborer Laundry	5	6	6
Auto Mechanic	12	15	15
Telephone Repairman	2	3	3
Cheesemaker	1	2	2
Auto Body Repairman	3	4	4
Laborer, Leather Products	109	116	131
Laborer, Feed Mill	2	2	3
Appliance Serviceman	1	2	2
Lineman	6	6	7
Laborer Lumber	5	8	8
Salesman	11	12	13
Bookkeeper	10	10	11

EMPLOYMENT PROBLEMS

Fifteen of the sixty-nine employers surveyed indicated they had difficulty hiring qualified workers. Nearly all occupations involved were of a skilled or professional level and included: Registered Nurse, Draftsman, Carpenter, Welder, Cheesemaker, Machinist, Truckdriver, Parts Man, Machine Operator, Waitress, Serviceman, Lumber Grader, and mechanic. The reasons given for the difficulty in hiring qualified workers in these occupations are listed below: More than fifteen reasons are given because some employers gave more than one reason:

Number of Times Mentioned	Reason
13	Insufficient Training
7	Insufficient Skill or Experience
1	Dissatisfaction with Wages
1	Dissatisfaction with Type of Work
1	Unreliable Workers
1	Shortage Occupation

Job Opportunities

During the time that the survey team was in Taylor County they received 32 local area job openings as well as making referrals to out of area jobs for qualified applicants:
Some of the local area job openings included:

Waitress	Mechanic
Machinist	Salesman
Draftsman	Laborer
Welder	Cheesemaker

Most employers stated that they had a backlog of applications on file for any openings that might occur in the next several months. Some out-of-area job openings on which referrals were made included:

Stenographer	Laborer Food
Typist	Farm Hand
Clerical Machine Operator	Resort and Camp Work

Local Training Needs

Most of the employers surveyed indicated Vocational training for up to two years should be provided in the following fields:

Nurse Aide Techniques	Basic Electronics
Engine Repair	Appliance Troubleshooting and Repair
Welding	Public Relations and Salesmanship

Secretarial Science (Typing, Shorthand, Spelling, Grammar, Penmanship)

TRAINING NEEDS

Twenty-six of the sixty-nine employers surveyed mentioned fifteen occupations for which they felt training should be provided. This training varied from additional high school training to two or more years of Technical Institute type training. The occupations and the number of times mentioned are as follows:

Number of Times Mentioned	Occupation
11	Mechanic
1	Machinist
1	Electronic Equipment Repairman
2	Appliance Serviceman
1	Machine Operator
1	Draftsman
1	Welder
2	Clerk, General Office
1	Woodworking Machine Operator
1	Cook
2	Waitress
2	Sales Clerk
2	Carpenter
1	Lumber Grader
1	Nurses Aide

The nearest vocational school is located in Wausau, sixty miles or more from most of Taylor County. Many of the young people who leave the area for training secure jobs in the area near the school and do not return to Taylor County. If some type of local vocational training were provided many of these people probably would remain in area. Three of the employers indicated they train their own employees or provide training through their wholesale suppliers. These programs resemble on-the-job type training.

EMPLOYMENT OF OUT-OF-COUNTY RESIDENTS

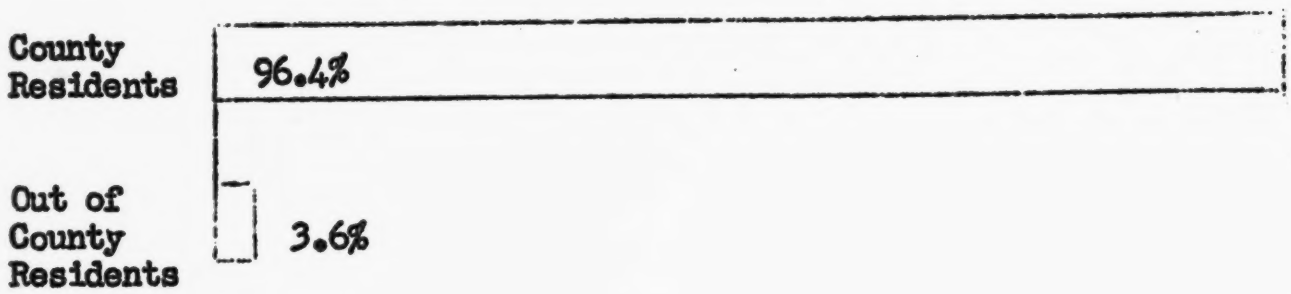
Each employer was asked if he employed anyone from outside Taylor County. Sixteen of 69 employers surveyed said they hired employees from outside Taylor County. The number of such employees and the county of residence is as follows:

County of Residence	No. Employees
Clark	24
Price	8
Marathon	4
Chippewa	6
Rusk	1
	42

The above total represents 3.6% of the total labor force surveyed. No estimate could be made of the number of Taylor County residents employed outside Taylor County but the general opinion was that more people commute to work outside Taylor County than commute into the county from outside areas.

Chart 26

Percent Out-of-County Residents Employed in Taylor County



REASONS FOR LOCATIONS IN TAYLOR COUNTY

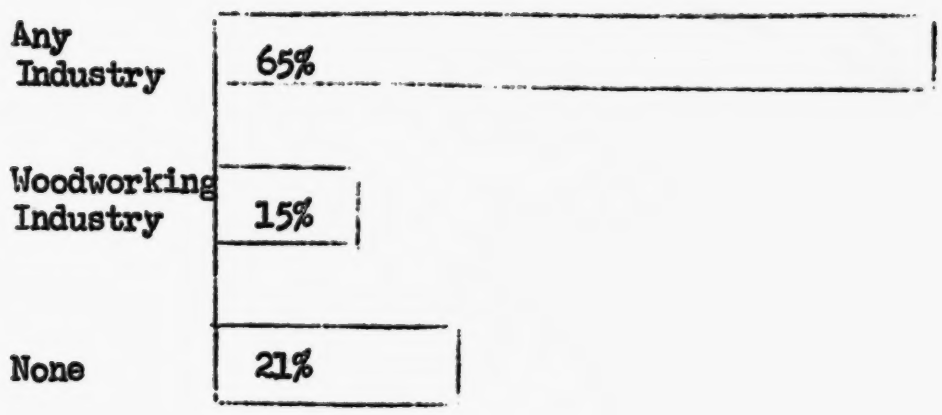
Thirty-one employers listed reasons for locating their business in Taylor County. The reasons and number of times mentioned follows:

Number Times Mentioned	Reason
2	Industrial Development Committee Assist.
8	Native Resident of the Area
7	Good Retail Potential
2	Available Labor Supply
4	Near Source of Raw Materials
1	Near Source of Supplies
1	Growth of Small Local Industry
6	Utility or Medical Service Industry

It is interesting to note that two employers were aided by the local industrial development committee. Fourteen of the employers were native residents of the area and utility or medical service employers. Only three answers were given to the question of what new industry would best compliment or suppliment your activities. The answer "any industry" was given by 15 employers while 5 said "none" and 3 said any "woodworking industry".

Chart 25

Type of New Industry Favored by Employers



GENERAL WAGE RATES OF SURVEYED EMPLOYERS

Listed below are a number of occupations and the going wage minimums and maximums for all employers surveyed.

Occupation	Hourly Wage Rate	
	Low	High
Sales Clerk	.95	1.87
Office Clerk	.85	1.75
Stenographer	1.35	1.75
Bookkeeper	1.00	2.25
Cook	.95	1.50
Waitress	.95	1.00
Maid	1.00	1.15
Registered Nurse	1.60	2.50
Nurse Aide	.85	1.65
X-Ray Technician	1.80	1.90
Laboratory Technician	1.60	2.20
Routeman	1.60	2.10
Appliance Serviceman	1.50	2.47
Auto Mechanic	1.25	2.00
Auto Bodyman	1.25	1.75
Machinist	1.25	2.00
Welder	1.25	1.65
Punch Press Operator	1.25	1.55
Machine Operator	1.25	2.00
Construction Labor	1.25	2.75
Factory Labor Male	1.25	1.92
Factory Labor Female	1.25	1.40
General Labor	1.25	----

From the above list it can be readily seen that most semiskilled occupations pay at or near the minimum wage rate. Only a few of the Professional and skilled occupations pay wages in line with other areas in the state. In general male factory laborers have a low wage rate while female factory laborers are about average for this section of the state.

PART 4

APPENDIX

Part 4 or the Appendix consists of a set of tables containing highly detailed data on the primary occupational classifications assigned to individuals. Additional detailed data is tabulated for the total occupational fields for which applicants possess varying degrees of qualifications. Another table is provided which lists the highest single classification for each person.

APPENDIX

Following is an explanation which delineates the major occupational groups for entry classifications as used in Tables 1, 2, and 3 of this appendix.

PROFESSIONAL, TECHNICAL AND MANAGERIAL WORK:

Persons having the qualifications necessary for entry into work requiring the capacity to acquire and apply special knowledges involved in artistic creation, entertainment, social service work, teaching, scientific study, research, engineering, law, business relations or management.

CLERICAL AND SALES WORK:

Persons having the qualifications necessary for entry into work involving recording transcribing, composing, compiling, transmitting and systematizing written communications and records, computing or compiling mathematical or statistical data, or dealing with the public in business situations to effect sales, give information, or perform other commercial or administrative services.

SERVICE WORK:

Persons having the qualifications necessary for entry into work that involves ministering to the needs of others in preparing food, serving meals, caring for children and in other types of personal service activities.

AGRICULTURAL, MARINE AND FORESTRY WORK:

Persons having the qualifications necessary for entry into work involving the raising and harvesting of crops; the breeding, care, catching and hunting of fish and other animals; the handling of boats; the preservation of forest; the gathering of forest products and other related outdoor activities.

MECHANICAL WORK:

Persons having the qualifications necessary for entry into work in which the independent judgement of the worker determines the machine and manual operations to be performed in obtaining the proper form, quantity of material to be produced. Workers may be required to lay out work; to estimate quality, suitability, and needed quantities of materials; to make precise measurements; to read blueprints or other specifications; and to make necessary computations or mechanical adjustments to control or regulate processes.

MANUAL WORK:

Persons having the qualifications necessary for entry into work in which the form, quality and quantity of the work depend primarily on prescribed methods and on the performance of machines or equipment or on the use of hands or hand tools. Workers may be required to observe the operation of machines, feed machines and to perform other repetitive and physical tasks.

APPENDIX
Table 1

Primary Occupations of All Applicants Registered for Work
By Sex and Age Group

Occupational Group	MALE TOTAL	MALE Age Group 14 to 19	MALE Age Group 20 to 44	MALE Age Group 45 to 54	MALE Age Group 55 to 64	MALE Age Group 65 +	FEMALE TOTAL	FEMALE Age Group 14 to 19	FEMALE Age Group 20 to 44	FEMALE Age Group 45 to 54	FEMALE Age Group 55 to 64	FEMALE Age Group 65 +
Total - All Applicants	383	160	161	37	23	2	228	154	46	22	6	
Fully Qualified Applicants	206	16	136	33	19	2	51	5	32	10	4	
Professional & Managerial	7		5		2		2			2		
Agricultural Agent	1		1									
Teacher	1		1				2			2		
Dairy Tester	1		1									
Fire Lookout	2		1		1							
Manager Retail Food	1		1									
Construction Inspector	1				1							
Clerical & Sales	4	1	2	1			21	3	14	3	1	
Bookkeeper							4		3	1		
Clerk, General							1		1			
Clerk, General Office	1		1				7		6	1		
Teller	1		1									
Secretary							1		1			
Shipping Clerk	1			1								
Statistical Clerk	1	1										
Stenographer							2	1		1		
Typist							1		1			
Telegraphic-Typewriter							1		1			
Telephone Operator							1	1				
Sales Clerks							2	1	1			
Salesman							1				1	
Service	5		4		1		12	1	7	2	2	
Maid							2	1		1		
Child Monitor							1		1			
Bartender							1		1			
Cook	1		1									
Waitress							2		1		1	
Soda Dispenser	1		1									
Special Diet Worker							1		1			
Kitchen Helper							1		1			
Beauty Operator							1		1			
Nurse Aide							3		1	1	1	
Police Officer	1		1									
Policeman	1		1									
Porter	1					1						

Table 1 Cont.

Occupational Group	Male						Female					
	TOTAL	Age Group 0 to 19	20 to 44	45 to 54	55 to 64	65 +	TOTAL	Age Group 0 to 19	20 to 44	45 to 54	55 to 64	65 +
Agricultural	10	4	4	2								
Dairyman	2		2									
Farmers, General	1		1									
Farm Hand, Dairy	2	2										
Farm Hand, General	2	1	1									
Farm Hand, Animal	1	1										
Farm Couple	1			1								
Agricultural Technician	1			1								
Skilled	43		29	6	8							
Molder	1			1								
Welder, Arc	1		1									
Welder, Combination	2		1		1							
Piano Tuner	1		1									
Construction Machinery Operators	3		1	1	1							
Operating Engineer	1		1									
Bricklayer	3		2		1							
Shop Carpenters	4		4									
Construction Carpenter, Finish	3		1		2							
Construction Carpenter, Rough	8		5	2	1							
Maintenance Carpenter	1		1									
Cement Finisher	4		3		1							
Butcher	1		1									
Caterpillar-Crane Operator	1		1									
Drag-line Operator	1		1									
Automobile Mechanic	1		1									
Truck Mechanic	1			1								
Maintenance Man, Building	1			1								
Maintenance Man, Factory	1		1									
Foreman, Manufacturing	1		1									
Foreman, Construction	3		2		1							
Semiskilled	76	1	55	14	5	1	4		4			
Ice Cream Bar Cutter	1		1									
Cheese Wrapper							2		2			
Condenser Man (Dairy)	1				1							
Separator Man (Dairy)	1		1									
Pulpwood Cutter	9	1	5	3								
Woodworking	1		1									
Wood Scaler	1				1							
Punch Press Operator							1		1			
Spray Painter	1		1									
Construction Machinery Operators	21		15	5	1							
Roofer	1		1									

Table 1 Cont.

Occupational Group	Male TOTAL	Male 14 to 19	Male 20 to 44	Male 45 to 54	Male 55 to 64	Male 65 +	Female TOTAL	Female 14 to 19	Female 20 to 44	Female 45 to 54	Female 55 to 64	Female 65 +
Semiskilled (cont.)												
Routemen	1						1					
Truckdriver	32		26	5	1							
Laundry Worker							1		1			
Service Station Attendant	1		1									
Boiler Tanders	1				1							
Crane Operator	1			1								
Automobile Mechanic Helper	1		1									
Forklift Operator	2		2									
Unskilled	61	10	37	10	4		12	1	7	3	1	
Laborer Food	5	1	2	2			3			2	1	
Laborer Lumber	17	4	8	3	2							
Laborer Printing							1		1			
Laborer Leather	1		1				2		2			
Laborer Ceramics	1				1							
Laborer Metal Working	6		6				2	1		1		
Laborer Painting	1			1								
Laborer Construction	28	3	20	4	1							
Laborer Packing & Filling	1	1					4		4			
Laborer Material Handling	1	1										
Entry Applicants	177	144	25	4	4		177	149	14	12	2	
Professional & Managerial	48	44	3	1			57	56	1			
Artist Work	2	2					4	4				
Musical Work							1		1			
Journalism							1	1				
Entertainment	2	2										
Instructive Work	15	14		1			34	34				
Social Service Work	2	2					6	6				
Protective Service Work	2		2									
Nursing & Medical Work	4	4					9	9				
Accounting & Related Work	6	5	1									
Purchase & Sales Work							1	1				
Geographical Science Work	2	2										
Engineering & Related Work	8	8										
Drafting & Related Work	3	3					1	1				
Managerial Work	2	2										
Clerical & Sales Work	16	12	1		3		75	65	6	3	1	
Computing Work							2	2				
General Recording Work	6	5			1		30	25	2	3		

Table 1 Cont.

Occupational Group	Male						Female					
	TOTAL	Age Group					TOTAL	Age Group				
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Clerical & Sales Work (cont.)												
Typing							9	7	2			
Stengraphic Work							16	15	1			
Equipment and Material Checking	4	4										
Routine Recording Work							2	1				1
Clerical Work	1		1				4	4				
Public Contact Work							7	7				
Selling	1	1					3	3				
Customer Service Work	4	2				2	2	1	1			
Service Work	5	5					38	24	6	7	1	
Cooking	1	1										
Personal Service							1	1				
Food Serving							5	4		1		
Adult Care	4	4					32	19	6	6	1	
Agricultural & Forestry	19	18	1									
General Farming	3	3										
Dairy Farming	10	9	1									
Gardening	1	1										
Navigation Work	1	1										
Forest Work	2	2										
Logging & Related Work	2	2										
Mechanical Work	54	41	12	1								
Machining Work	8	4	3	1								
Mechanical Repairing	21	19	2									
Complex Machine Operation	3	3										
Electrical Repairing	7	4	3									
Structural Work	3	3										
Wood Structural Work	2	2										
Welding	3	2	1									
Bench Work	4	2	2									
Meat Dressing	1	1										
Processing Foods	2	1	1									
Manual Work	35	24	8	2		1	7	4	1	2		
Machine Tending	3	2	1				1	1				
Structural Work	10	4	4	2			2	1		1		
Bench Work	3	3					1	1				
Machine Operating	8	6	2				1	1				
Elemental Work	11	9	1			1	2		1	1		

APPENDIX
Table 2

Additional Occupational Fields for which Applicants Show Potential by Sex

Occupational Group	Total	Male	Female
Total all applicants	992	603	389
Professional, Technical & Managerial Work	154	79	75
Artistic Work	9	3	6
Musical Work	1		1
Journalism	2		2
Entertainment Work	2	2	
Instructive Service Work	64	22	42
Social Service Work	11	2	9
Protective Service Work	9	7	2
Laboratory Science Work	15	5	10
Business Relations Work	15	13	2
Geographical Science Work	3	3	
Engineering & Related Work	9	9	
Drafting and Related Work	4	3	1
Managerial (CAFS)	2	2	
Managerial Work, Personal Service	1	1	
Managerial Work, Industrial	7	7	
Clerical and Sales Work	209	44	165
Computing Work	2		2
General Recording Work	66	12	54
Typing	22	1	21
Stenographic	25		25
Equipment and Material Checking	11	9	2
Routine Recording Work	2		2
General Clerical Work	4		4
Clerical Machine Operating	5	1	4
General Public Contact	14	2	12
Selling	49	12	37
Customer Service Work	11	9	2
Misc. Public Contact Work	1		1
Service Work	113	19	94
Cooking	7	4	3
Child Care	6		6
Personal Service	1		1
Food Serving	27	4	23
Adult Care	59	7	52
Misc. Personal Service Work	13	4	9
Agricultural, Marine and Forestry Work	76	75	1
General Farming	13	12	1
Animal Care	31	31	
Crop Farming	6	6	
Navigation Work	1	1	
Forest Work	25	25	

Table 2 cont.

Occupational Group	Total	Male	Female
Mechanical Work	187	185	2
Machining	17	16	1
Mechanical Repairing	37	37	
Complex Machine Operating	48	48	
Electrical Repairing	13	12	1
Structural Crafts	51	51	
Bench Crafts	13	13	
Graphic Art Work	3	3	
Processing, Metal	1	1	
Processing, Foods	4	4	
Manual Work	253	201	52
Structural Equipment Tending	2	2	
Inspecting and Testing	4	1	3
Machine Tending	55	52	3
Processing Equipment Tending	5	5	
Structural Work	46	37	9
Bench Work (Assembling and Related)	26	7	19
Machine Operating	17	11	6
Processing, Assorted Materials	3	1	2
Processing, Paper and Related	2		2
Processing, Foods and Related	2	1	1
Elemental Work, Light	63	56	7
Elemental Work, Medium and Heavy	28	28	

APPENDIX
Table 3

Highest Occupational Potential of All Applicants
By Age and Sex

Occupational Group	Male						Female				
	TOTAL	Age Group					TOTAL	Age Group			
		14 to 19	20 to 44	45 to 54	55 to 64	65 +		14 to 19	20 to 44	45 to 54	55 to 64	65 +
Total All Applicants	383	161	160	37	23	2	228	154	46	22	6	
Professional and Managerial	72	50	18	2	2		68	66	1	1		
Artistic Work	3	3					6	6				
Musical Work							1		1			
Journalism							2	2				
Entertainment Work	2	2										
Instructive Service Work	21	17	3	1			40	39		1		
Social Service Work	2	2					7	7				
Protective Service Work	7	1	6									
Laboratory Science Work	5	4	1				10	10				
Business Relations Work	9	6	3				1	1				
Geographical Science Work	2	2										
Engineering & Related Work	8	8										
Drafting & Related Work	3	3					1	1				
Managerial Work CAFS	2	1	1									
Managerial Work, Personal Service	1				1							
Managerial Work, Industrial	7	1	4	1	1							
Clerical & Sales Work	29	19	7	1	2		97	70	18	7	2	
Computing Work							2	2				
Recording Work	8	6	2				42	26	11	5		
Typing	1	1					11	8	3			
Stenographic Work							16	13	2	1		
Equipment & Material checking	8	6	1	1								
Routine Recording Work							2	1			1	
General Clerical Work							1	1				
Clerical Machine Operating	1		1				3	3				
General Public Contact Work							6	6				
Selling	5	3	2				13	10	1	1	1	
Customer Service Work	6	3	1		2		1		1			
Service Work	1	1					38	13	14	8	3	
Cooking							2		2			
Child Care							1		1			
Personal Service							1	1				
Food Serving							4		3		1	
Adult Care	1	1					28	11	8	7	2	
Misc. Personal Service							2	1		1		

Table 3 Cont.

Occupational Group	Male						Female				
	TOTAL	Age Group 14 to 19	20 to 44	45 to 54	55 to 64	65 +	TOTAL	Age Group 14 to 19	20 to 44	45 to 54	55 to 64	65 +
Agricultural & Forestry Work	29	15	7	5	2							
General Farming	2		1	1								
Animal Care	13	11	2									
Gardening	1	1										
Forest Work	13	3	4	4	2							
Mechanical Work	134	51	65	9	9		2		2			
Machining	5	3	1	1			1		1			
Mechanical Repairing	28	21	6	1								
Complex Machine Operating	39	8	28	3								
Electrical Repairing	9	4	5				1		1			
Structural Crafts	37	9	19	2	7							
Bench Crafts	11	4	4	2	1							
Graphic Art Work	1	1										
Food Processing	4	1	2		1							
Manual Work	118	25	63	20	8	2	23	5	11	6	1	
Structural Equipment Tending	1		1									
Inspecting and Testing	1			1								
Machine Tending	31	1	20	7	2	1						
Processing Equipment Tending	4		2	1	1							
Structural Work	18	6	10	2			6	2	2	2		
Bench Work	1		1				8	1	3	4		
Machine Operative	5	4	1				3	1	2			
Processing	2	1	1				2		2			
Elemental Work	55	13	27	9	5	1	4	1	2		1	

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PROBLEMS OF IMPLEMENTING AGRICULTURAL OCCUPATIONS PROGRAMS IN TWENTY-EIGHT SELECTED VOCATIONAL AGRICULTURE DEPARTMENTS

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PROBLEMS OF IMPLEMENTING AGRICULTURAL OCCUPATIONS PROGRAMS IN TWENTY-EIGHT SELECTED VOCATIONAL AGRICULTURE DEPARTMENTS

By Cleo A. Dupy and William L. Hull

Introduction

A mass migration of rural people from the farm to the city has characterized this past century. This steadily increasing shift from a rural to an urban society has placed vocational education in agriculture in the position of preparing youth not only for a return to the farm, but in many cases for occupations in business and industry which require an agricultural background.

Congress wrote the 1963 Vocational Education Act to meet the challenge of changing demands on educational systems. The Act authorizes agricultural education for any occupation "involving knowledge and skills in agricultural subjects." Frequently, these occupations distribute, process, or service agricultural commodities.

Compared with the Smith-Hughes Act of 1917, the 1963 Act broadens the objectives of vocational agriculture. This is reflected in the recently revised Office of Education Objectives Bulletin (OE-81011). This new responsibility challenges teachers of vocational agriculture to innovate useful methods of preparing students for employment in agricultural businesses.

Traditionally, educational innovation occurs infrequently. Adoption of successful practices may take as long as a half-century. To reduce this time-lag and encourage innovation, devices are needed to inform vocational agriculture teachers of practical methods of education for off-farm agricultural occupations.

The summer institute is a device for short-cutting the time lag ordinarily associated with adoption of practices. In the summer of 1965, the Agricultural Education Department of Oklahoma State University conducted a six-weeks' Agricultural Occupations Institute. It was financed by federal funds under the provisions of Section 4(c) of the Vocational Education Act of 1963[1]. A guidance counselor with a distributive education background and a distributive education coordinator from a large high school taught thirty vocational agriculture teachers in the training institute. It had the following objectives[2]:

1. To upgrade teachers of vocational agriculture in the distributive phases of vocational education.

2. To acquaint teachers of vocational agriculture with methods of conducting supervised training in agricultural businesses.

3. To help rural area high schools to have vocational teachers qualified to conduct broader vocational programs in distributive education.

4. To adopt existing teaching materials in distributive education to meet the needs of training programs in off-farm agricultural occupations.

The vocational agriculture teachers participated in the training program by giving seminar reports, doing committee assignments, preparing merchandise manuals, and by taking field trips to various agricultural businesses. Educating teachers to supervise students working in agricultural businesses rather than on their home farm involved the teacher with different clientele -- the businessman. Such involvement created problems and concerns for the participating teachers. This study looks at teacher problems of selecting students for the part-time cooperative occupational experience program, developing training stations in agricultural businesses, and securing the cooperation of school administrators.

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1 Vocational Act of 1963 (P.L. 88-210).

2 Oklahoma State University Research Project No. OE-5-85-077

Objectives of the Study

The purpose of this study is to identify and document problems encontered by the Institute teachers in establishing a vocational agriculture occupations training program. More specifically, the study attempted to:

1. Compare departments that set up separate vocational agriculture occupations training classes with those that integrated the occupational-experience students into traditional classes of vocational agriculture.

2. Identify and document vocational agriculture occupations program implementation difficulties in three areas: securing students, securing training stations, and securing administrative approval.

Procedure

The teachers who had attended the Institute were interviewed at their vocational agriculture departments. The interviews took place during the months of October, November, and December of 1965. The teachers responded to questions with constructed responses as well as the open-ended type. The population of this study consisted of the thirty teachers who attended the Agricultural Occupations Institute. Two teachers were not included in the study. One became a supervisor of agricultural education soon after the close of the Institute. The other had not been interviewed at the time this investigation was summarized. Oklahoma vocational agriculture departments whose teachers participated in the 1965 summer institute are as follows:

Name of Department	Approximate Size of Community
Altus	21,000
Broken Arrow	9,000
Collinsville	3,000
Durant	13,000
El Reno	14,012
Guthrie	10,000
Hobart	6,000
Hooker	2,000

Name of Department	Approximate Size of Community
Latta	Less than 1,000
Leedey	Less than 1,000
Madill	3,000
Minco	1,200
Norman	44,000
Ponca City	28,000
Poteau	6,100
Purcell	5,000
Roland	Less than 1,000
Vinita	7,000
Watonga	3,400

Out-of-state vocational agriculture departments whose teachers participated in the 1965 summer institute were as follows:

Allegan, Michigan	6,000
Bald Knob, Arkansas	2,096
Cleveland, Tennessee	17,000
Wytheville, Virginia	6,000
Kimberly, Idaho	1,250
Louisiana, Missouri	5,400
Waco, Texas	100,000
Benton, Tennessee	1,000
Yuma, Colorado	2,100

The median test was used for testing whether two independent groups differ in central tendencies. The *t* test was used to test differences between two groups that were unequal in size.

Definition of Terms

Administration: The people that make up the school personnel such as the board of education, superintendent, principal, and counselor of the Institute schools.

Farm boy: A student whose father owns or manages a farm regardless of size.

Separate class agricultural occupations: Schools that set up a separate class in agricultural occupations or converted a total class into an agricultural occupations class but still called it Vocational Agriculture IV.

Traditional class: Regular vocational agriculture classes with agricultural occupations units integrated as a part of the course of study.

Training stations: Businesses where students are placed for cooperative occupational training.

Factors Associated with the Population

As discussed previously, this study includes vocational agriculture departments from many different sized communities. Geographically, the school districts range from over 1,000 square miles in a rural district to less than 44 square miles in an urban center.

The teachers in this study averaged almost twelve years of total experience. Eleven of them held master's degrees. The average age was 34 years.

Placement of students in agricultural businesses for cooperative educational experiences appears to be a major criteria for determining the success of this program. Admittedly, this study took place early in the school year. Perhaps more students will be placed in occupations later in the year. Table I shows that the number of agricultural businesses in the community had little effect on the number of students placed.

Table I shows the number of agricultural businesses in a community and the number of students placed per department. One teacher located no agricultural businesses; of course, he had no students placed for occupational training. The teachers identified from none to a high of seventy-five businesses in their respective communities. The three departments which located more than thirty businesses had only a mean of 2.7 students placed. Two of these departments were in or near large cities and one was located in a state which de-emphasized placement of students in agricultural businesses for vocational agriculture occupational training.

TABLE I

MEAN NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES COMPARED TO THE NUMBER OF AGRICULTURAL BUSINESSES LOCATED IN THE COMMUNITY BY THE TEACHERS

Number of Agricultural Businesses in Community	Number of Departments	Mean Number Students Placed
Under 10	7	1.9
11-20	14	4.9
21-30	4	5.5
Over 30	3	2.7

TABLE II

MEAN NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES PER TEACHER COMPARED TO THE TOTAL NUMBER OF STUDENTS ENROLLED IN VOCATIONAL AGRICULTURE

Total Students Per Teacher	Number of Schools	Mean Number Students Placed
Under 30	4	2.0
30-60	17	3.8
61-90	5	4.0
Over 90	2	8.0

The enrollment per department varied in number of students per teacher as shown in Table II. They varied from a high of 117 to a low of 22 students. The higher mean number of students placed were in departments with the larger number of students. Some of the smaller departments were in small agricultural communities with limited opportunities or in schools that were very selective in students that enrolled in vocational agriculture. One of the departments with over ninety students per teacher had more than one teacher and had placed eleven students.

Table III shows that the teachers had a total of 1,498 students in their departments. The non-farm total was 574, which was 38 percent of the enrollment. The off-farm placement did not increase with the greater total non-farm students. The non-farm students were apparently in vocational agriculture for reasons other than agriculture occupational training.

Organization of the Classes

Some of the departments set up a separate class in vocational agriculture occupations training or converted a senior class into their program, while other departments maintained the traditional program of vocational agriculture. In Table IV a comparison was made between these two types of programs and the tenure of the teacher in the system. The tenure ranged from a low of no years to a high of fifteen years in the present system. Eleven departments had separate or converted classes with a mean number of 6.2 students placed for occupational training. The seventeen departments with traditional programs had a mean number of 2.4 students placed for occupational training.

One out-of-state teacher had a tenure of more than ten years and he had a separate class. No out-of-state teacher had tenure from five to nine years.

TABLE III

MEAN NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES BY PERCENTAGE OF NON-FARM STUDENTS

Percent Non-Farm Students	Number of Departments	Mean Number Students	Mean Number Non-Farm Students	Mean Number Students Placed
Under 25	8	68	8	4.6
25-50	11	45	18	3.8
51-75	7	50	32	2.9
Over 75	2	58	51	4.5

TABLE IV

MEAN NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES BY TYPE OF PROGRAM AND TENURE OF THE VOCATIONAL AGRICULTURE PROGRAM IN THE PRESENT SYSTEM

Tenure of Teacher	Separate Class Agricultural Occupations		Traditional Class Agricultural Occupations Integrated	
	Number of Departments	Mean Number Students Placed	Number of Departments	Mean Number Students Placed
10 or More	4	4.5	2	0.0
5 to 9	3	10.6	6	1.0
0 to 4	4	4.5	9	3.8
Totals	11	6.2*	17	2.4*

*The difference between 6.2 and 2.4 students placed was significant at the five percent level using the median test.

Teachers from eight out-of-state schools were included in the none-to-four year tenure range. Two of these teachers organized separate classes.

Table V shows a comparison between separate classes and the integrated classes in relationship to the size of the community. The community size varied from a high of 100,000 to a low of 500 population. The mean number of students placed decreased as the size of the community increased in departments with separate classes. In departments with traditional classes, the mean number of students placed varied slightly in reverse of the separate classes.

Data in Table VI reveals that teachers of vocational agriculture tend to seek training stations in family-owned businesses. This may be due to the fact that more of this type existed in their communities. The number of employees per business did not vary greatly in all types of businesses indicating no large businesses either participated or were contacted.

The Business Community

The totals in Table VII show that ninety-four businesses are participating with the twenty-eight departments. They have 108 students working an average of sixteen hours per week at the average rate of $1.03 per hour.

The average amount received by the student was above the minimum wage that could be paid for student labor in the community, thus indicating that employers thought the student should earn more than the minimum wage. The variation in wages paid in different types of businesses was slight.

The student of vocational agriculture working the average number of hours per week at the average wage would receive an annual gross labor income of $856.96 in occupational training.

Data presented in Table VIII shows that of the 108 students placed, 68 are placed in family-owned businesses. The eleven students placed for farm employment were all family-owned farms. Corporations accounted for the placement of twenty-seven students with the lowest placement with governmental agencies.

TABLE V

MEAN NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES BY TYPE OF PROGRAM AND SIZE OF COMMUNITY

Size of Community (Population)	Separate Class Agricultural Occupations		Traditional Class Agricultural Occupations Integrated	
	Number of Departments	Mean Number Students Placed	Number of Departments	Mean Number Students Placed
10,000 or More	3	4.0	5	2.6
6,000 to 9,999	3	5.7	3	2.7
Less than 6,000	5	7.8	9	2.1
Totals	11	6.2*	17	2.4*

*The difference between 6.2 and 2.4 students placed was significant at the five percent level using the median test.

TABLE VI

NUMBER OF AGRICULTURAL BUSINESSES AND MEAN NUMBER OF EMPLOYEES WHICH WERE CONTACTED AND PARTICIPATING AS TRAINING STATIONS BY TYPE OF BYSINESS OWNERSHIP

Type of Ownership	Number of Businesses			Mean number Employees in Business	
	Contacted N	Participating N	Participating %	Contacted	Participating
Family-Owned	177	61	34	8.8	6.3
Partnership	35	5	14	6.0	6.9
Governmental	16	3	19	4.6	4.4
Corporation	81	20	25	13.4	1.8
Cooperatives	16	5	31	6.6	7.3
Totals	325	94	29	9.3	8.8

TABLE VII

NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES, MEAN WAGE EARNED, AND NUMBER OF HOURS EMPLOYED BY TYPE OF BUSINESS

Type of Business	Number of Businesses Participating	Number of Students Placed	Mean Wage Earned Per Hour	Mean Number Hrs. worked Per Week
Farm Employment (Production Agric.)	8	11	$0.87	16
Agricultural Supply (Feed, Seed, & Fertilizer)	17	19	1.12	15
Farm Machinery Dealers	13	14	0.91	18
Horticulture Businesses	7	9	1.15	19
Other Types	49	55	1.05	16
Totals	94	108	1.03	16

TABLE VIII

NUMBER OF STUDENTS PLACED IN AGRICULTURAL BUSINESSES BY TYPE OF BUSINESS AND TYPE OF OWNERSHIP

Type of Ownership	Kinds of Businesses					
	Farm Empl.	Agri. Supply; Feed, Seed, & Fertilizer	Farm Imple.	Horti-culture	Others	Totals[a]
Family Ownership	11	10	11	7	29	68
Partnership	0	1	0	0	4	5
Governmental	0	0	0	0	3	3
Corporation	0	3	3	2	19	27
Cooperatives	0	5	0	0	0	5
Totals	11	19	14	9	55	108

[a]Total number of students placed by type of business ownership does not agree with the number of businesses listed in Table VI because more than one student worked in a business.

The smallest number of students are working in horticulture with the largest number working in businesses classified as "others." Businesses classified as "others" include all businesses not included in those listed in the above table. Some of them are as follows: hardware stores, rendering plants, filling stations, wholesale dairies, electric supply stores, training stables, governmental jobs were in city government rather than United States Department of Agriculture work. Some of the businesses employing students may not need employees with agricultural competencies, but the teachers felt justifed in placing the students in these businesses for work experience.

Student Placement in Businesses

Table IX presents data showing that twenty-two students received released time from school for occupational experience. This is 20.4 percent of the total 108 students placed for training in agricultural businesses. The greatest number of students were working after school and on weekends. The time of day students could work shows up as a problem for all teachers in securing training stations. If the students had more released school time, time of day to work might not be a problem. The teacher either did not ask or was not granted released time from school for more students to work

In Table X several factors were considered to see if these factors influenced the placement of students. Student placement being the major criteria for measuring the degree of acceptance of the agricultural occupations training program, the mean numbers placed were given as a comparison. In comparing different factors it was found that the number of teachers per department and the size of enrollment per teacher are the major factors studied that influenced student placement.

The comparison of other extreme factors, number of businesses, type of student, size of community, other programs, and selection of advisory committee had less

TABLE IX

NUMBER OF STUDENTS WORKING AT DIFFERENT TIMES IN AGRICULTURAL BUSINESSES BY TYPE OF BUSINESS

Time Worked	Production Agriculture	Agricultural Supply	Farm Mach.	Horti-culture	Other	Total
With Released School Time	0	1	6	1	14	22
No Released School Time	11	18	8	8	41	86
Totals	11	19	14	9	55	108

TABLE X

FACTORS AFFECTING STUDENT PLACEMENT IN BUSINESSES

Factors	Number of Departments	Mean Number Students Placed Per Department
Number of Agriculture Teachers		
Multiple	8	6.6*
Single	20	2.8*
Number of Agriculture Related Businesses		
Largest	5	3.4
Smallest	5	1.8
Size of Enrollment in Vocational Agriculture Per Teacher		
Largest	5	6.0
Smallest	5	1.6
Type of Agriculture Students		
Schools (Highest % of Farm Students)	5	4.6
Schools (Highest % of Non-Farm Students)	5	2.8
Size of Community		
Largest	5	4.4
Smallest	5	5.2
Distributive Education		
With	11	4.5
Without	17	3.4
Advisory Committee		
With	8	3.1
Without	20	4.1

*The difference between 6.6 and 2.8 students placed was significant at the five percent level using the *t* test.

effect on number of students placed. It is obvious that teachers have partial control over factors listed in Table X.

Implementation Difficulties

Table XI compares the perceived problems of the teachers in establishing training stations. The teachers were asked to rank in order of importance the five problems which they considered most difficult to overcome in establishing the training stations. A mean ranking of the problems is shown in this table making a comparison between departments that had placed four or more students with those that had placed less than four students. In the group of teachers placing zero to three students, seven of the seventeen teachers placed no students.

Teachers placing less than four students ranked the problem areas in the following order: (1) Seasonal business, (2) Extra help not needed, (3) Time of day students could work, (4) Wages too high, and (5) Ability of students. Teachers placing four or more students ranked the problem areas in the following order: (1) Extra help not needed, (2) Seasonal business, (3) Time of day students could work, (4) Labor laws for students, and (5) Ability of students. The problems of both groups were basically the same. The greatest problems and problems of little or no importance were perceived as being equal by both groups. It appears that problems perceived by the teacher in securing training stations could be overcome if he wanted this program to become a part of his total vocational agriculture program. The data indicates that the success in securing training stations is determined by the initiative of the individual teacher.

Tables XII, XIII, and XIV were set up to show information found in one question of the questionnaire. Both groups of teachers rated the scheduling of the teacher's time for the additional class as the greatest problem. The problem

TABLE XI

MEAN RANKING OF PROBLEM AREAS IN SECURING TRAINING STATIONS AS PERCEIVED BY THE INSTITUTE TEACHERS

Problem Area	Placement of Students in Business	
	Less Than Four Placed	Four or More Placed
	17 Departments	11 Departments
	Mean Rank of Problem Areas	
Wages too high	1.7	1.0
Seasonal business	3.6	3.5
Insurance on students	1.2	0.9
Reports on students	0.2	0.1
Ability of students	1.4	1.2
Labor laws for students	1.2	1.6
Extra help not needed	2.6	3.7
Employer could not understand	0.1	0.2
Resentment of employees	0.0	0.1
Students too young	0.5	0.4
Time of day students could work	2.4	2.2
Failure of students to secure Social Security number	0.0	0.0

0-No Problem, 5-Greatest Problem

TABLE XII

MEAN RANKING OF OTHER PERSONS' ATTITUDES TOWARD THE PROGRAM AS PERCEIVED BY THE INSTITUTE TEACHERS

Problem Areas	Placement of Students in Business	
	Less Than Four Placed	Four or More Placed
	17 Departments	11 Departments
	Mean Rank of Problem Areas	
Parents do not see the value of the program	0.2	0.5
Guidance counselor's attitude toward the program	0.1	0.5
Scheduling teachers' time for the additional class	2.0	3.3
Teacher cannot work the new program into his present program of vo. ag.	1.8	1.3

0-No Problem, 5-Greatest Problem

of the teacher working the new program into his present program of vocational agriculture was the second most difficult problem. The guidance counselor's attitude and the parents' attitude were rated as their least problem.

Table XIII shows the ranking of problems in securing students for placement as perceived by the teachers. Other school activities interfering with the student's time was rated to be the greatest single problem. Schools which placed four or more students revealed that the student's being busy at home was a greater problem than those placing less than four students.

As shown by Table XIV, again the greatest problem was the same for both groups. The problem, "The school's schedule could not be arranged to allow time for work or class," was found to be the most difficult problem. The fact that teachers returned to their communities after the school schedules were already made out could have had some bearing on the problem. However, some of the teachers seemed to overcome this problem. The board of education policy proved to be the least problem for both groups.

From data shown on Tables XII, XIII, and XIV, the five most difficult problems as perceived by the teachers placing less than four students were found to be as follows: (1) Other school activities interfere with student's time, (2) Scheduling teacher's time for the additional class, (3) Teacher cannot work the new program into his present program of vocational agriculture, (4) School's schedule could not be arranged to allow time for work or class, and (5) Student's supervised farming programs are too large to allow time for work, and outside school activities interfere with the student's time. Those teachers placing four or more students perceived the problems in this order: (1) Scheduling teacher's time for the additional class, (2) School's schedule could not be arranged to allow time for work or class, (3) Other school activities interfere with student's time, (4) Students are busy at home, and (5) Money is not available for books or supplies.

TABLE XIII

MEAN RANKING OF PROBLEMS IN SECURING STUDENTS AS PERCEIVED BY THE INSTITUTE TEACHERS

Problem Area	Placement of Students in Businesses	
	Less Than Four Placed	Four or More Placed
	17 Departments	11 Departments
	Mean Rank of Problem Areas	
Other school activities interfere with student's time	3.2	2.4
Student's supervised farming programs are too large to allow time for work	1.2	0.8
Outside school activities interfere with student's time	1.2	0.8
Students are busy at home	1.0	1.8

0-No Problem, 5-Greatest Problem

TABLE XIV

MEAN RANKING OF PROBLEMS IN SECURING ADMINISTRATIVE APPROVAL AS PERCEIVED BY THE INSTITUTE TEACHERS

Problem Area	Placement of Students in Businesses	
	Less Than Four Placed	Four or More Placed
	17 Departments	11 Departments
	Mean Rank of Problem Areas	
Board of Education policy	0.3	0.0
The administration does not see the need for the agricultural occupations program	0.5	0.7
School's schedule could not be arranged to allow time for work or class	1.6	2.5
Money is not available for books or supplies	0.6	1.4

0-No Problem, 5-Greatest Problem

Table XV shows a mean ranking of the three major problem areas in the different kinds of departments. The number of teachers in a department, the existence of other cooperative placement programs, and the number of students placed had no effect on the ranking. They all ranked the problems in the same order. The number one problem was securing training stations, with this problem having a mean rank of 1.6 in all departments. Second ranked problem was the securing of students, with a mean rank of 1.8. The third ranked problem was securing administrative approval, with a mean ranking of 2.6.

Summary of Findings

The placement of students for occupational training in business is the number one criteria for evaluation in this study. For the vocational agriculture occupations training to remain vocational it is imperative that some form of placement for occupational experience takes place. No attempt was made in this study to try to evaluate the curriculum being taught due to the short length of time teachers had been working with this type of program.

Some of the teachers who had placed no students were waiting until later in the school year to do so. Some of the other teachers who were classified in the group placing between zero and four students had not really gone into the program in depth and their placements for training were merely incidental.

The conclusions drawn from the study as being of greatest importance are as follows:

1. The problems as perceived by the teacher in setting up the program in order of their difficulty are: (1) Securing training stations, (2) Securing students, and (3) Securing administrative approval.
2. In securing training stations, it appears that to a great extent the success is determined by the initiative of the individual teacher.

TABLE XV

MEAN RANK OF PROBLEM AREA GROUPS AS PERCEIVED BY TEACHERS OF THE INSTITUTE BY KIND OF DEPARTMENTS

Kind of Department	Number of Departments	Problem Area		
		Securing Training Stations	Securing Administrative Approval	Securing Students
		Number of Teachers		
Multiple Teacher	8	1.4	2.7	1.9
Single Teacher	20	1.6	2.6	1.8
		Existence of Other Cooperative Placement Programs		
Other Cooperative Placement Programs	11	1.4	2.6	2.0
No Other Programs	17	1.6	2.6	1.8
		Student Placement		
Students Placed (Four or more)	11	1.5	2.9	1.6
Students Placed (Three or less)	17	1.6	2.5	1.9
Mean Rank ALL Departments	28	1.6	2.6	1.8

1-Greatest Problem, 3-Least Problem

3. In securing students the greatest problem was found to be that of other school activities interfering with the student's time.
4. In securing administrative approval, the arranging of the school's schedule to allow time for the student's participation in the program was the greatest problem.
5. The multiple teacher departments placed a mean of 6.6 students per department as compared to a mean of 2.8 students for single teacher department. This would indicate that the multiple teacher departments have more time to add new programs to the curriculum of vocational agriculture than single teacher departments.
6. In this study the teachers placed 55 out of 108 students in businesses other than farm machinery, horticulture, and agricultural supply, which have been shown by other studies to need the greatest number of employees. These businesses were either not available in the community or were not recognized by the teacher.

Implications

1. That a greater number of multiple teacher departments need to be established to carry out effectively the vocational agriculture occupational training program.
2. That teachers of vocational agriculture need additional training in working with business people.
3. That teachers need to be more aware of employment opportunities in off-farm agricultural occupations in order to select more appropriate training stations.
4. That in most situations, problems, regardless of difficulty, can be overcome and students placed for training.

5. That the teacher of vocational agriculture, if properly motivated and trained, will embark upon an innovative venture.

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CURRICULA IMPLICATIONS FOR *Connecticut*

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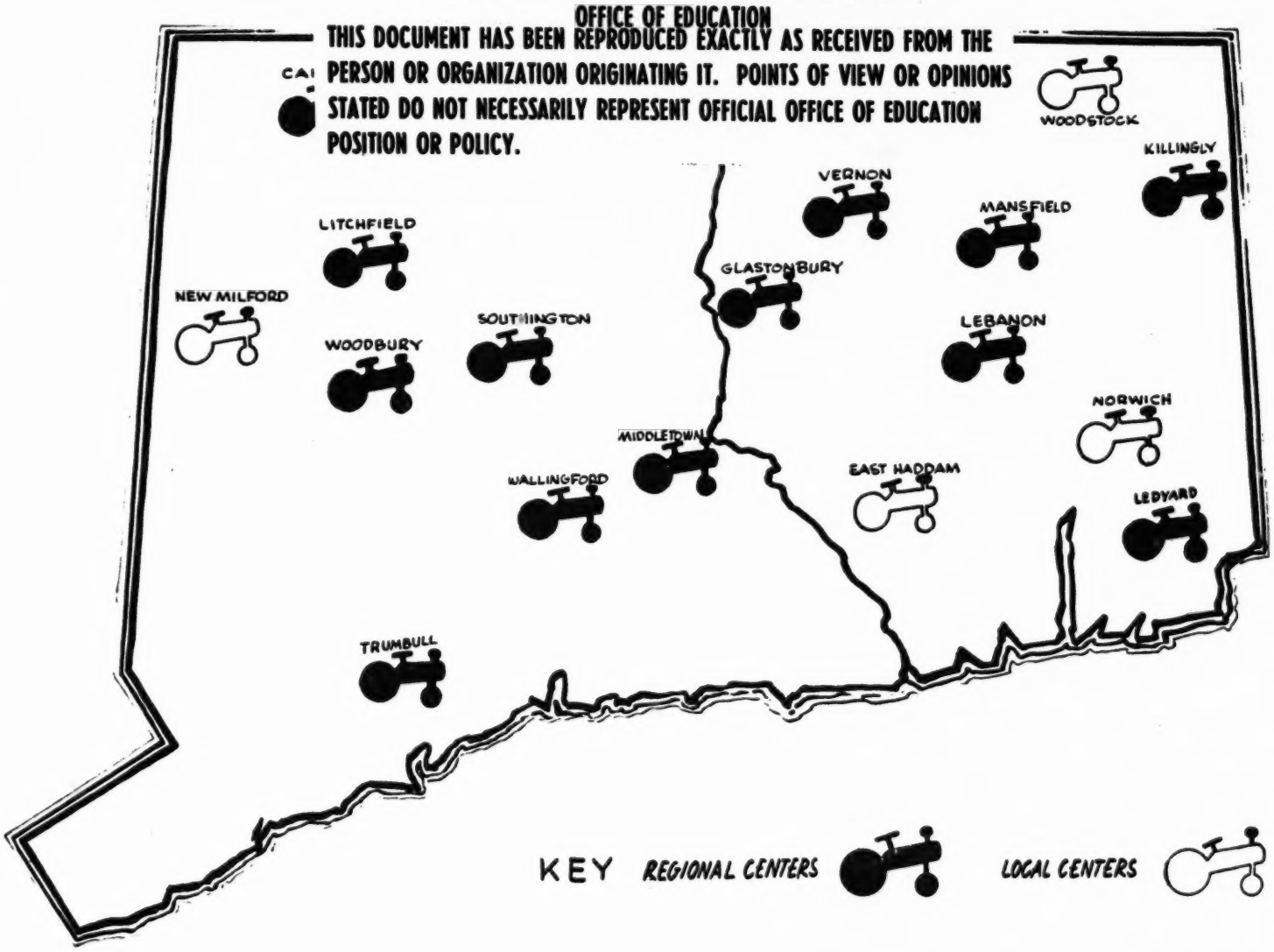

NON-FARM AGRICULTURAL EMPLOYMENT

DIVISION OF VOCATIONAL EDUCATION
CONNECTICUT STATE DEPARTMENT OF EDUCATION
HARTFORD, CONNECTICUT

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FOREWORD

More than ten years ago, the Connecticut State Department of Education realized that any agricultural education program limited solely to training for farming was no longer adequate; that 'Agriculture' is involved not only with production but also in the allied fields where agricultural competencies, skills, and knowledges are either necessary or highly desirable.

In 1955, Connecticut, through legislation, provided for the establishment of Regional Vocational Agriculture Centers based on this broadened concept of what agricultural education should be. With the passage of the Vocational Education Act of 1963, an exciting new pattern for Vocational Agriculture was emerging.

If Connecticut's program in agricultural education were to be realistic in terms of competencies needed and employment opportunities available in the fields allied to agriculture, it was necessary that a detailed study be made which would provide this needed information.

This summary of a doctoral dissertation by Dr. Philip Masley does point out that in this highly industrialized State of Connecticut there are more than 17,000 full-time jobs, plus an additional 5,000 projected over the next five years in fields closely allied to agriculture. Many of these jobs are on the semi-skilled and skilled levels requiring agricultural competencies as well as abilities in such areas as Merchandising, Business Organization, and Management.

In making use of these findings, we in Agricultural Education have the tremendous responsibility in bringing about change in our programs to meet the challenge of the seventies for preparing students for employment in the allied fields of Agriculture.

Llewellyn L. Turner
Consultant
Agricultural Education

CURRICULA IMPLICATIONS

FOR NON-FARM AGRICULTURAL

EMPLOYMENT IN CONNECTICUT

by

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September, 1966

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DEFINITION OF TERMS

The following definitions are necessary to clarify some of the basic concepts as they relate to the study:

1. Agricultural occupation. An agricultural occupation is one in which the worker needs some competency in one or more of the primary areas of plant science, animal science, soil science, agricultural mechanization and agricultural business management.

2. Non-farm agricultural occupations. Non-farm agricultural occupations are limited to those which in the opinion of the employer require the employee to possess agricultural competence, but are occupations other than farming or ranching.

3. Job Cluster. A job cluster is formed by grouping job titles for each of eight occupational families in one of nine levels of employment. (See Pages 30-45)

4. Competency Cluster. A competency cluster is composed of from two to seven competencies commonly regarded as closely related. (See Pages 46-47)

INTRODUCTION

In February 1961 the late John F. Kennedy directed the Secretary of Health, Education and Welfare to appoint an advisory body drawn primarily from the education profession, labor, industry and agriculture. This advisory body, commonly known as the Panel of Consultants on Vocational Education, was charged with the responsibilities of reviewing and evaluating the current National Vocational Education Acts and making recommendations for improving and redirecting the programs set forth by the Acts.

A recommendation included in the Panel's summary report pertaining to some areas of non-farm agricultural occupations was that vocational agriculture under Federal reimbursement should broaden its program to include instruction and increased emphasis on management, finance, farm mechanization, conservation, forestry, transportation, marketing products of the farm, and other similar topics.

As a result of the Panel's recommendation, the National Vocational Education Act of 1963 amended the Smith-Hughes and George-Barden Acts to permit Federal funds to be expended in agricultural training programs for non-farm agricultural occupations for which knowledge and skill of agricultural subjects are involved.

STATEMENT OF THE PROBLEM

The purpose of this study was to ascertain non-farm agricultural employment opportunities in Connecticut and to identify distributions of those occupations or job clusters which have potential with regard to curriculum developments in vocational agriculture. More specifically the purposes of this study were:

1. To determine the occupational data pertaining to non-farm agricultural occupations in Connecticut:
   a. Job titles, present employment numbers, trends of annual entries into non-farm agricultural occupations.
   b. Competencies needed for entry and advancement into these agricultural occupations.
   c. Job characteristics, age, labor laws, union restrictions, educational requirements and experience, certification and licensing.
   d. Relationship of non-farm agricultural occupations in an area and density of populations.
2. To derive a basis for the development of new instructional programs in non-farm agricultural occupations.
   a. Analysis of common elements in agricultural occupations as a basis for instruction.
   b. Projection of the needs for number and levels of programs in Connecticut.
   c. Identification of occupational areas for which pilot programs of instructions should be developed.
   d. Recommendation for guidelines and principles for development of instructional programs.

SUMMARY OF RESULTS

A total of 1170 firms were identified in the sample area of forty-three towns in Connecticut. Of these 1170 firms, 685 were contacted with 480 useable responses obtained which represented fifty-nine percent of the sample.

Sixty-nine percent of the firms reporting were in operation for ten years or more. The majority of the firms were located in urban communities with populations of 25,000 or more. These firms employed fifty-nine percent of the employees in non-farm agricultural occupations.

Employers and paid interviewers classified job titles in one of nine levels of employment in eight occupational families. The occupational families included in this study were: (1) Agricultural and Farm Service, (2) Crops, Forestry and Soil Conservation, (3) Farm Machinery Sales and Service, (4) Farm Supplies and Equipment, (5) Food Handling and Processing, (6) Livestock Industry, (7) Ornamental Horticulture, and (8) Wildlife and Recreation.

There was a total of 290 job titles identified in the study. The largest number of employees per job title were included at the semi-skilled and sales levels of employment in the Food Handling and Processing, Ornamental Horticulture, and Livestock Industry families.

Projections as to the need for employees in non-farm agricultural occupations for the next five years indicated that seventy-two percent would be hired at the semi-skilled level of employment. Likewise, over eighty percent of the part-time employees would be hired at the semi-skilled level.

Projections of the number of full-time employees in Connecticut indicated that over 17,000 (Table 1) needed some knowledge and competency in agriculture. Estimates of the number of full-time employees needed by 1970 requiring competencies in agriculture exceeded ten times the number of annual graduates in Connecticut Programs in 1965.

Employers showed preference in hiring employees with a high school education between seventeen and twenty-four years of age and with some occupational experience. There were indications that farm background, although important in some instances, was not necessary for most employment opportunities in non-farm agricultural jobs. However, seventy-four percent of the employers responding, indicated that proficiency in agriculture was either essential, highly desirable, or useful for gaintul employment. Legal and union restrictions were the largest barriers to employment opportunities.

With regard to offerings in vocational agriculture, most agricultural education departments in Connecticut may consider offerings oriented to the occupational families of Livestock Industry, Ornamental Horticulture, and Food Handling and Processing. Some departments may consider special programs in other areas. Curricula which focus on agri-business, with secondary stress on Agricultural and Mechanical competencies seem indicated (Figure 1).

TABLE I

ESTIMATED CURRENT EMPLOYMENT AND FUTURE DEMAND FOR FULL-TIME AND PART-TIME EMPLOYEES WITH COMPETENCIES IN AGRICULTURE FOR OCCUPATIONAL FAMILIES

Occupational Families	Current Employment		Number of Employees to be Hired by 1970	
	Full-Time	Part-Time	Full-Time	Part-Time
Agricultural and Farm Service	568	156	36	167
Crops, Forestry and Soil Conservation	1200	29	88	15
Farm Machinery Sales and Service	949	146	196	165
Farm Supplies and Equipment	882	90	151	106
Food Handling and Processing *	1108	510	603	1149
Livestock Industry	5852	717	1705	610
Ornamental Horticulture	6129	1965	2197	2536
Wildlife and Recreation	512	1891	328	776
Total	17,200	5504	5304	5524

*Based on a total count of four major food chain stores and eighteen wholesale fruit companies.

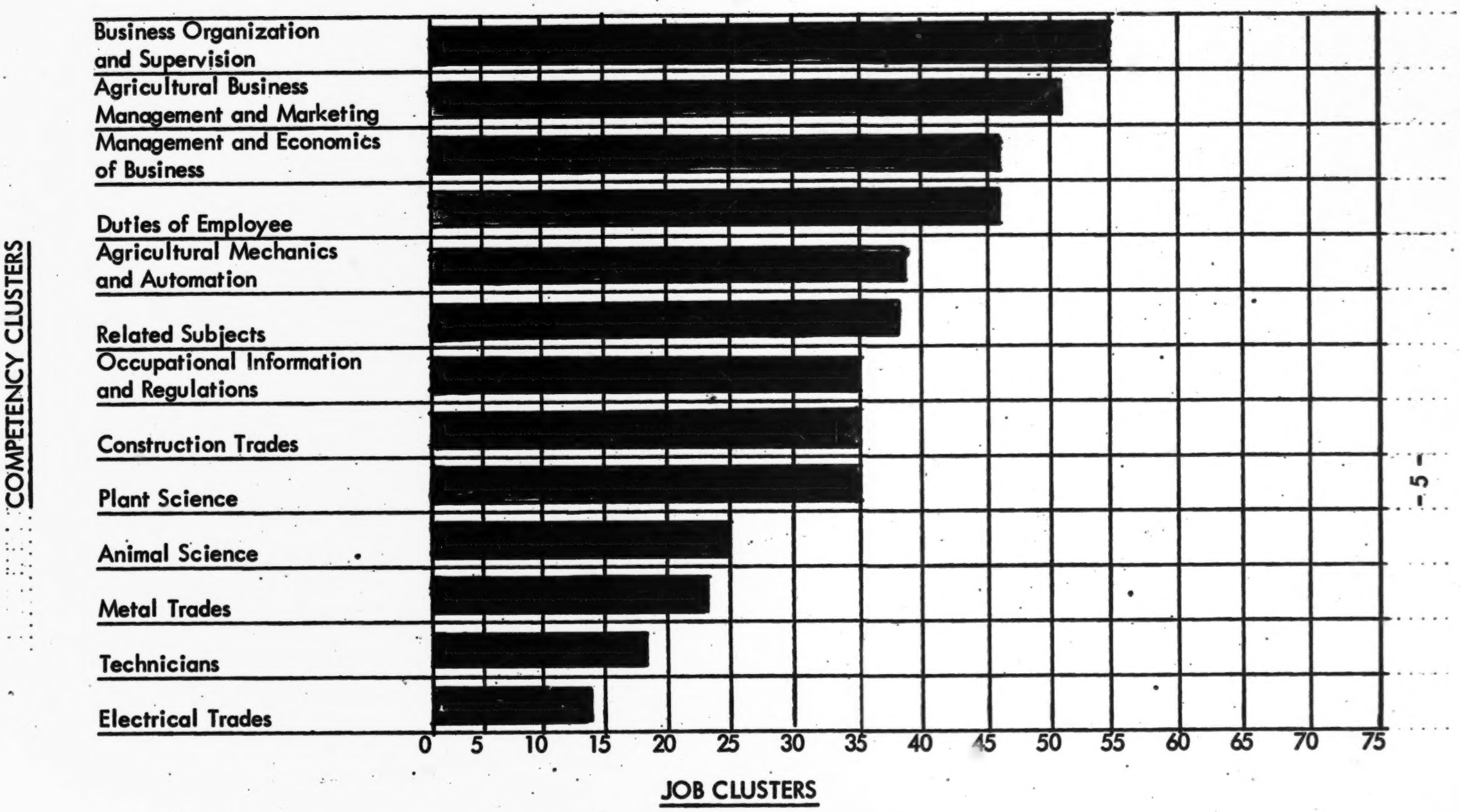

Figure 1. The Number of Job Clusters Associated with Competency Clusters in Nine Levels of Employment for Eight Occupational Families by Level of Standard Scores Ranging from One Standard Deviation Below and Two Standard Deviations Above the Mean.

CONCLUSIONS

1. The large number of persons employed in non-farm agricultural occupations justifies the expansion and development of programs in non-farm agricultural occupations in Connecticut. It was estimated that 17,200 full-time and 5404 part-time employees need some knowledge and competencies in agriculture.

2. Attention should be focused on the development of programs of instructions in non-farm agricultural occupations within close proximity of urban centers. Fifty-one percent of the firms and fifty-nine percent of the employees in the study were located in towns and cities with populations of 25,000 or over.

3. Most of the full-time and part-time employees expected to be hired by 1970 will be at the semi-skilled levels, their prospects for advancement will be enhanced by education in agriculture, which is important to their positions. Therefore, programs should give regard to advancement opportunities as well as entry level jobs.

4. Few or no restrictions with regard to place of residence are needed to regulate admission. There are employment opportunities demanding farm experience or background but the majority of jobs indicate no such need.

5. A high school education is preferred for entry into most full-time non-farm agricultural occupations. Additional training beyond high school is necessary for advancement to higher levels of employment in some instances.

6. Occupational experience as a part of the total instructional program in non-farm agricultural occupations is generally feasible and would aid in eventual full-time employment.

7. For the most part, instructional programs in non-farm agricultural occupations should be planned for older students, perhaps for third and fourth year high school students and adults. In some cases, however, there are advantages for some in obtaining introductory work in earlier years.

8. The largest numbers of employment opportunities in non-farm occupations are found in Ornamental Horticulture, the Livestock Industry, Food Handling and Processing, and Wildlife and Recreation families.

9. Many job clusters require competencies of a similar nature. The most general requirements involve business aspects of the job and specified agricultural competencies.

10. The common competency requirements provide a basis for planning instructional programs in non-farm agricultural occupations to prepare persons for a number of jobs.

11. The development of specific programs requires attention to careful definition of what is included within the competency area.

RECOMMENDATIONS

1. Consideration should be given to curricula offerings for a narrow range of occupations involving one to five job clusters. These require few competencies but a high level of mastery. Curricula of this type may involve specialized instruction for selected youths and adults for a year or less. Job clusters in Farm Supplies and Equipment and the Farm Machinery Sales and Service families are adaptable to curricula of this type.

2. The opportunity should be explored in determining occupational family curricula that are oriented to one or more family groups. The Ornamental Horticulture and the Wildlife and Recreation families indicate a need for employees with agricultural competencies at nearly all levels of employment. Curricula for these families should be designed for preparing persons for careers because of the employment opportunities available.

3. Consideration should be given to cross family curricula of wide spread importance involving several occupational families. Curricula of this type are associated with agri-business. Employees in Food Handling and Processing and the Livestock Industry indicate a need for agricultural competencies and specialized instruction in business. Curricula for these employees should be planned cooperately with the business and agriculture departments on the secondary level.

4. Multiple teacher departments in Connecticut should develop instructional programs for a variety of non-farm agricultural occupations. The programs developed should be based on the employment opportunities in the community and availability of work experience.

5. The State Department of Education should plan for a minimum of 1000 students enrolled in the program of vocational agriculture in order to meet the needs of present and future employees desiring competencies in agriculture.

6. Care must be exercised in coordination and initiating new programs in vocational agriculture. Policies and operational guidelines should be established by the State Department of Education before new programs are developed.

7. Based on information obtained from major chemical companies curricula should be developed in areas of biological science, business, and agriculture. The agricultural chemical industry has shown a need for persons trained in this field. Curricula pertaining to the agricultural chemical industry should probably be conducted on the junior college or technical institute level.

RESEARCH PROCEDURE

The selection of towns in Connecticut used in this study was effected through a system of random numbers. A twenty-five percent sample of towns was selected from each of the designated sixteen regions as developed by the State Department of Education. The sample included a total of forty-three towns with a population representation of 680,031 people.

Paid interviewers were employed in conducting the study. Two interview schedules, Forms I and II were developed for the purpose of obtaining data on employment opportunities and needed competencies in non-farm agricultural occupations. The basic design of Forms I and II was patterned from work of the Research Coordinators Conference on Agricultural Occupations at Ohio State University. Forms I and II were pre-tested by the paid interviewers under field conditions. Forms I and II are in Appendix A.

The yellow pages in the telephone directories were used as a main source in locating categories of firms in non-farm agricultural occupations in Connecticut. A jury made up of key personnel in the State was used to determine the listing of categories of firms which were judged likely to employ persons in non-farm agricultural occupations.

Vocational agricultural teachers in fifteen of the sixteen regions in Connecticut cooperated in the study. The teachers were asked to compile all firms listed under the categories previously selected by the jury. The instructors also included firms not previously identified which were known to employ people with agricultural competencies.

The principal investigator contacted some agencies on a State-wide basis. These agencies were made to correspond to a twenty-five percent sample. The number of employees in these firms was reduced to twenty-five percent of the original total.

Statistical treatment of the firms listed under categories was necessary in order to reduce the size of the initial sample. A minimum large scale sampling technique was utilized in this study. If a major category, previously selected by the jury included less than thirty firms, the entire lot was selected to be interviewed. If a category contained more than thirty firms for the forty-three towns the entire number was recorded but only thirty firms were selected to be interviewed. The selected thirty firms were obtained by alphabetizing the forty-three towns and numbering the firms consecutively in the categories. A table of random numbers was then used to determine the actual sample.

A procedure was also used in the study to remove categories of firms which did not employ persons needing a knowledge of agriculture. If six consecutive visits by interviewers to firms revealed no non-farm agricultural occupations, the category was removed from the sample.

The firms utilized in this study were classified into occupational families. Employees in the eight occupational families were then classified into one of nine occupational levels of employment. Employers in these firms helped interviewers with classification of employees in the various levels of employment. Changes in the classification of employees with regard to level of employment were made by the investigator only after consultation with the interviewers. The classification system and levels of employment were patterned after the work of the Research Coordination Conference at the Ohio State University. Two changes were made, however; the Food Handling and Processing family was added, and the Agricultural Service and Farm Service were combined.

The rationale for the selection of clusters was that curriculum choices in vocational agriculture in secondary and technical schools generally rest upon the following assumptions: (1) careers as well as jobs are open to students who are successful in the program; (2) the number of employment opportunities are substantial; and (3) there is a substantial body of teaching content for these jobs. For these reasons it seemed appropriate that an initial study of alternatives in curriculum should not concentrate on job titles, single skills or competencies but rather should involve large units.

Major emphasis was given to two primary units, a job cluster and a competency cluster (Appendix A). A job cluster is formed by grouping job titles for each of eight occupational families into one of nine levels of employment. These eight occupational families and levels of employment offer a potential number of seventy-two job clusters. The competency cluster is composed of from two to seven competencies commonly regarded as closely related. A total of thirteen competency clusters and sixty competencies was utilized in this study.

A measure of degree of competency was determined for the potential seventy-two job clusters. The measure of degree or percent of competency was determined by the following procedure: (1) The total number of employer responses for each job cluster was multiplied by the total number of competencies in the competency cluster and (2) the product was divided into the actual responses given by employers for competencies desired in the competency cluster for jobs in the job cluster. The percent or degree of competency was then multiplied by the number of employees in the job cluster. These two factors, number of employees and degree of competency were multiplied to obtain a curriculum index.

To facilitate comparisons, these curriculum indices, were organized to form a double matrix as standard scores for both rows (seventy-two job clusters) and columns (thirteen competency clusters). This was done primarily to determine the following: (1) the relative importance of thirteen competency clusters to a job cluster and (2) the relative importance of each competency cluster to seventy-two job clusters.

Two sets of standard scores were used in order to obtain a two-dimensional evaluation of the data. The first set of standard scores designated as A are read for rows. This constitutes a way of comparing thirteen competency clusters to each job cluster. The second set of standard scores designated as B are read for columns. This constitutes a way of comparing the relative need of employees in seventy-two job clusters for a particular competency cluster.

The following levels of standard scores were used in the study: A70-B65, A65-B60, A55-B60, A45-B60, A40-B55 and A40-B40. At the A40-B40 level, only those competencies identified as agricultural were included at this level. Standard scores designated as A are the same with regard to number of employees in the job cluster, differing only in degree of competency required. Standard scores designated as B are different in terms of numbers of employees in each job cluster and degree of competency required.

MAJOR FINDINGS

Employment Opportunities and Prospects - Summary of Results

1. A total of 1170 firms were identified in the sample area of forty-three towns in Connecticut. Of these 1170 firms, 685 contacts were made and 480 useable responses were obtained by interviewers. These 685 contacts represented 59 percent of the 1170 firms in the sample.

2. Fifty-one percent of the firms employing persons in non-farm agricultural occupations were located in urban communities with populations of 25,000 or over. These firms employed a total of fifty-nine percent of the full-time employees in the study.

3. Sixty-nine percent of the 375 firms reporting in the study were in operation for ten years or more. The Food Handling and Processing and Farm Machinery Sales and Service families showed an increase of new firms with twenty-one and eighteen percent, respectively.

4. The larger communities generally employ more people per firm than the suburban and rural areas in the state. The Livestock Industry and Crops, Forestry and Soil Conservation families include the largest average number of employees per firm. The urban communities include an average of more people per firm than either the suburban or rural areas. Two exceptions, however, are noted: Crops, Forestry and Soil Conservation and Farm Machinery Sales and Service, which include an average of twenty-five and five employees respectively, per firm.

5. There was a total of 290 job titles identified in the study. The largest number of job titles was included in the semi-skilled job clusters in the Ornamental Horticulture and Livestock family.

6. The largest average number of employees per job title was included in job clusters at the semi-skilled levels with 114 in Food Handling and Processing, fifty in Ornamental Horticulture, and forty-three in sales in the Livestock Industry family.

7. The total number of full-time and part-time workers employed in 480 firms was 3475 and 1081, respectively. The largest number of these full-time and part-time employees was employed at the semi-skilled level.

8. Employers' estimates of full-time and part-time employees needed by 1970 in these 480 firms were 1064 and 1089 respectively. Most of the new and replacement employees anticipated by employers would be hired at the semi-skilled levels. Seventy-two percent of the full-time employees were included in the semi-skilled job clusters. Likewise, eighty-one percent of the part-time employees were included in the semi-skilled job clusters.

9. Projections for the number of full-time employees in the estimated 3276 firms in the State were over 23,000. Of these 23,000 employees over 17,000 needed some knowledge of agriculture.

10. Estimates for the number of full-time employees needed by 1970 requiring competencies in agriculture exceeds ten times the number of annual graduates in vocational agriculture in 1965.

Employers' Preferences - Summary of Results

1. Employers indicated a preference for employees with a high school education for fifty-nine percent of the jobs in the study. However, eighty-three percent of ths jobs in this study could be entered by employees with a high school education or less (Table II).

2. Thirty-nine percent of the jobs in the study required no experience for entry. These jobs were predominantly at the semi-skilled levels. Respondents for sixty-one percent of the jobs indicated preference for employees with experience (Table III).

3. Most of the respondents expressed no preference with regard to type of residential experience of employees. Seventy-three percent of all jobs reported by employers required no particular kind of residential experience (Table IV).

4. Employers indicated that proficiency in agriculture was either essential, highly desirable, or useful for seventy-four percent of the jobs in the study (Table V).

5. The largest obstacle with reference to limitations on job entry as indicated by respondents was legal labor restrictions. Union restrictions were reported as a problem for entering eighteen percent of the jobs in Farm Machinery Sales and Service (Table VI).

6. The data collected on minimum age requirements for job entry indicate that employers prefer employees between the ages of seventeen and twenty-four for sixty-six percent of the jobs in the study (Table VII).

TABLE II

MINIMUM EDUCATION PREFERRED BY EMPLOYERS OF NON-FARM AGRICULTURAL EMPLOYEES

Minimum Preferred Educational Level	Percentage of Respondents
Elementary	19
Junior High	5
High School	59
Post High School	3
Some College	6
College Degree	7
Doctorate	1
TOTAL	100

TABLE III

NECESSARY EXPERIENCE PREFERRED BY EMPLOYERS OF NON-FARM AGRICULTURAL EMPLOYEES

Experience Necessary in Months	Percentage of Respondents
None	39
1	*
2 - 3	2
4 - 6	3
7 - 12	11
13 - 18	5
19 - 24	13
25 - 30	*
31 - 36	2
Over 36	25
TOTAL	100

*Less than one percent

TABLE IV

AGRICULTURAL PROFICIENCIES PREFERRED BY EMPLOYERS OF NON-FARM AGRICULTURAL EMPLOYEES

Proficiencies	Percentage of Respondents
Essential	13
Highly Desirable	22
Useful	39
Unnecessary	26
TOTAL	100

TABLE V

RESIDENTIAL EXPERIENCE PREFERRED BY EMPLOYERS OF NON-FARM AGRICULTURAL EMPLOYEES

Residential Experience	Percentage of Respondents
Farm	19
Rural Non-Farm	3
Suburban	5
No Preference	73
TOTAL	100

TABLE VI

MINIMUM AGE PREFERRED BY EMPLOYERS OF NON-FARM AGRICULTURAL EMPLOYEES

Minimum Age Requirement	Percentage of Respondents
Under 14	*
15 - 16	15
17 - 19	34
20 - 24	32
25 - 29	16
Over 30	2
TOTAL	100

* Less than one percent

TABLE VII

EMPLOYERS' LIMITATIONS ON JOB ENTRIES FOR NON-FARM AGRICULTURAL EMPLOYEES

Limitation on Job Entry	Percentage of Respondents
Labor Restrictions Union	4
Labor Restrictions Legal	87
Licensing and Certification	3
Other	6
TOTAL	100

Curricula Determinants - Summary of Results

1. Six associations of job and competency clusters for the Agricultural and Farm Service were at the discriminatory level of A40-B55 or above. All of these associations of job and competency clusters were at the professional level. They included three of the agricultural, two of business, and one of the industrial. Sixteen associations of job and agricultural competency clusters were at the A40-B40 level or above but below the A40-B55 level (Table VIII).

2. Four associations of job and competency clusters for the Crops, Forestry and Soil Conservation family were at the discriminatory level of A40-B55 or above. These associations included the semi-skilled and managerial job clusters. The competency clusters associated with these job clusters were two of the business, one of the agricultural, and one of the industrial. Twenty associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table IX).

3. The Farm Machinery Sales and Service family included seven associations of job and competency clusters at the discriminatory level of A40-B55 or above. These associations included the managerial, skilled and semi-skilled job clusters. The competency clusters associated with these job clusters were four of the industrial, two of the business and one of the agricultural. Sixteen associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table X).

4. Four associations of job and competency clusters for the Farm Supplies and Equipment family were at the discriminatory level of A40-B55 or above. These associations included the managerial and sales job clusters. The competency clusters associated with these job clusters were two of the business, one of the agricultural and one of the industrial (Technicians). Twenty-one associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table XI).

5. Five associations of job and competency clusters for the Food Handling and Processing family were at the discriminatory level of A40-B55 level or above. These associations included the supervisory and semi-skilled job clusters. Thirteen associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table XII).

6. The Livestock Industry family included eighteen associations of job and competency clusters at the discriminatory level of A40-B55 or above. These associations included the managerial, supervisory, sales, skilled and semi-skilled job clusters. The competency associated with these job clusters were ten of the business, seven of the agricultural and one of the industrial. Twenty-two associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table XIII).

7. Twenty-eight associations of job and competency clusters for the Ornamental Horticulture family were at the discriminatory level of A40-B55 or above. These associations included the professional, managerial, supervisory, sales, skilled and semi-skilled job clusters. The competency clusters associated with these job clusters were twelve of the agricultural, nine of the business and seven of the industrial. Fifteen associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table XIV).

8. Fifteen associations of job and competency clusters for the Wildlife and Recreation family were at the discriminatory level of A40-B55 level or above. These associations included the professional, supervisory, skilled and semi-skilled job clusters. Competency clusters associated with these job clusters were eight of the industrial, four of the agricultural, and three of the business. Fourteen associations of job and agricultural competency clusters were at the A40-B40 level or above, but below the A40-B55 level (Table XV).

9. Eighty-seven associations of job and competency clusters were identified at the A40-B55 level or above. These eighty-seven associations of job and competency clusters have important implications for curriculum development in vocational agriculture on a state-wide basis (Figure II).

10. A total of 138 associations of job and agricultural competency clusters * were identified at the A40-B40 level or above, but below the A40-B55 level. This was done in order to determine to what extent agricultural competency clusters were needed by employees in job clusters for eight occupational families (Figure II).

11. A total of 462 associations of job and competency clusters were identified for all levels of employment for all occupational families. The competency cluster Business Organization and Supervision was associated with the greatest number of job clusters with a total of fifty-five. The competency cluster Electrical Trades was associated with the least job clusters with only fourteen (Figure II).

*Agricultural competency clusters include the four designated as Agricultural and also "Technician" in the industrial group.

TABLE VIII

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE AGRICULTURAL AND FARM SERVICE FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
1. Professional	A 65	B 60	Related Science
	A 40	B 55	Animal Science
	A 40	B 55	Agricultural Business Management and Marketing
	A 40	B 55	Occupational Information and Regulations
	A 40	B 55	Management and Economics of Business
	A 40	B 55	Agricultural Mechanics and Automation
	A 63	B 50	Plant Science
2. Technical	A 73	B 52	Animal Science
	A 49	B 45	Agricultural Business Management and Marketing
	A 42	B 44	Farm Mechanics and Automation
3. Service	0	0	
4. Managerial	A 59	B 45	Plant Science
	A 70	B 44	Agricultural Business Management and Marketing
	A 43	B 44	Farm Mechanics and Automation
5. Supervisory	A 48	B 45	Plant Science
	A 59	B 44	Agricultural Business Management and Marketing
6. Sales	0	0	
7. Clerical	A 51	B 44	Agricultural Business Management and Marketing
8. Skilled	A 52	B 45	Farm Mechanics and Automation
	A 43	B 43	Agricultural Business Management and Marketing
9. Semi-Skilled	A 72	B 50	Animal Science
	A 50	B 45	Plant Science
	A 42	B 44	Farm Mechanics and Automation
	A 41	B 42	Agricultural Business Management and Marketing

TABLE IX

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE CROPS, FORESTRY AND SOIL CONSERVATION FAMILY

Level of Employment of Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
10. Professional	A 65	B 45	Plant Science
	A 55	B 44	Agricultural Business Management and Marketing
	A 41	B 44	Agricultural Mechanics and Automation
	A 42	B 43	*Technicians
11. Technical	A 66	B 46	Plant Science
	A 58	B 46	Agricultural Business Management and Marketing
	A 47	B 46	Agricultural Mechanics and Automation
	A 42	B 44	Animal Science
12. Service	0	0	
13. Managerial	A 40	B 55	Occupational Information and Regulations
	A 58	B 51	Agricultural Business Management and Marketing
	A 42	B 47	Agricultural Mechanics and Automation
14. Supervisory	A 47	B 46	Agricultural Mechanics and Automation
15. Sales	A 48	B 46	Agricultural Business Management and Marketing
	A 40	B 46	Agricultural Mechanics and Automation
16. Clerical	A 41	B 43	Agricultural Business Management and Marketing
17. Skilled	A 61	B 47	Agricultural Mechanics and Automation
	A 43	B 45	Plant Science
	A 43	B 43	Animal Science
	A 48	B 43	Agricultural Business Management and Marketing
	A 43	B 43	*Technicians
18. Semi-Skilled	A 45	B 60	Construction Trades
	A 40	B 55	Agricultural Mechanics and Automation
	A 40	B 55	Business Organizations and Supervision
	A 43	B 45	Agricultural Business Management and Marketing

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

TABLE X

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE FARM MACHINERY SALES AND SERVICE FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
19. Professional	0	0	
20. Technical	A 41	B 49	Technicians
	A 64	B 44	Agricultural Mechanics and Automation
21. Service	A 50	B 42	Agricultural Business Management and Marketing
22. Managerial	A 40	B 55	Management and Economics of Business
	A 40	B 55	Related Subjects
	A 56	B 54	Agricultural Business Management and Marketing
	A 45	B 51	Agricultural Mechanics and Automation
	A 43	B 46	Plant Science
	A 40	B 45	Occupational Information and Regulations
23. Supervisory	A 51	B 44	Agricultural Business Management and Marketing
	A 41	B 44	Agricultural Mechanics and Automation
24. Sales	A 44	B 48	Agricultural Mechanics and Automation
	A 45	B 46	Agricultural Business Management and Marketing
25. Clerical	A 53	B 44	Agricultural Mechanics and Automation
	A 53	B 43	Agricultural Business Management and Marketing
26. Skilled	A 65	B 60	Metal Trades
	A 55	B 60	Related Subjects
	A 40	B 55	Agricultural Mechanics and Automation
	A 44	B 46	Agricultural Business Management and Marketing
	A 40	B 44	Plant Science
27. Semi-Skilled	A 40	B 55	Metal Trade
	A 43	B 47	Agricultural Mechanics and Automation
	A 40	B 44	Agricultural Business Management and Marketing

TABLE XI

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE FARM SUPPLIES AND EQUIPMENT FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
28. Professional	0	0	
29. Technical	A 64	B 45	Plant Science
30. Service	0	0	
31. Managerial	A 40	B 55	Agricultural Business Management and Marketing
	A 40	B 55	Management and Economics of Businesss
	A 40	B 55	*Technicians
	A 55	B 52	Animal Science
	A 50	B 47	Plant Science
32. Supervisory	A 40	B 52	* Technicians
	A 49	B 45	Plant Science
	A 58	B 45	Agricultural Business Management and Marketing
	A 44	B 44	Animal Science
	A 40	B 44	Farm Mechanics and Automation
33. Sales	A 40	B 55	Management and Economics of Business
	A 51	B 51	Animal Science
	A 57	B 49	Plant Science
	A 46	B 49	Agricultural Business Management and Marketing
34. Clerical	A 43	B 45	Plant Science
	A 43	B 44	Animal Science
	A 54	B 44	Agricultural Business Management and Marketing
35. Skilled	A 41	B 44	Plant Science
	A 47	B 44	Farm Mechanics and Automation
36. Semi-Skilled	A 53	B 49	Animal Science
	A 51	B 47	Plant Science
	A 49	B 47	Agricultural Business Management and Marketing
	A 43	B 46	Farm Mechanics and Automation
	A 41	B 43	*Technicians

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

TABLE XII

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF THE STANDARD SCORES FOR THE FOOD HANDLING AND PROCESSING FAMILY

Level of Employment of Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
37. Professional	0	0	
38. Technical	0	0	
39. Service	0	0	
40. Managerial	A 65	B 53	Agricultural Business Management and Marketing
	A 40	B 45	Plant Science
41. Supervisory	A 40	B 55	Occupational Information and Regulations
	A 40	B 55	Duties of Employee
	A 40	B 55	Business Organization and Supervision
	A 48	B 53	Agricultural Business Management and Marketing
	A 41	B 47	*Technicians
	A 41	B 45	Plant Science
42. Sales	A 42	B 44	Plant Science
	A 43	B 42	Agricultural Business Management and Marketing
	A 44	B 40	*Technicians
43. Clerical	A 52	B 43	Agricultural Business Management and Marketing
44. Skilled	0	0	
45. Semi-Skilled	A 65	B 60	Duties of Employee
	A 65	B 60	Business Organization and Supervision
	A 44	B 50	*Technicians
	A 46	B 47	Agricultural Business Management and Marketing
	A 44	B 45	Agricultural Mechanics and Automation
	A 44	B 43	Animal Science

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

TABLE XIII

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE LIVESTOCK INDUSTRY FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
46. Professional	A 50	B 44	Animal Science
47. Technical	A 49	B 50	*Technicians
	A 67	B 46	Animal Science
	A 42	B 43	Agricultural Business Management and Marketing
48. Service	A 80	B 46	Animal Science
	A 45	B 44	Plant Science
	A 52	B 43	Agricultural Business Management and Marketing
	A 43	B 43	Agricultural Mechanics and Automation
	A 45	B 40	Technicians
49. Managerial	A 55	B 60	Animal Science
	A 55	B 60	Agricultural Business Management and Marketing
	A 55	B 60	Duties of Employee
	A 55	B 60	Business Organization and Supervision
	A 55	B 60	Management and Economics of Business
	A 45	B 60	Occupational Information and Regulations
	A 40	B 49	*Technicians
	A 40	B 46	Agricultural Mechanics and Automation
50. Supervisory	A 40	B 55	Agricultural Business Management and Marketing
	A 40	B 55	Management and Economics of Business
	A 51	B 49	Animal Science
	A 41	B 49	Technicians
	A 41	B 46	Agricultural Mechanics and Automation

TABLE XIII (Continued)

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
51. Sales	A 65	B 60	Duties of Employee
	A 55	B 60	Agricultural Business Management and Marketing
	A 55	B 60	Business Organization and Supervision
	A 45	B 60	Management and Economics of Business
	A 40	B 55	Related Subjects
	A 42	B 51	Animal Science
	A 40	B 51	Agricultural Mechanics and Automation
52. Clerical	A 56	B 49	Agricultural Business Management and Marketing
	A 40	B 44	Animal Science
53. Skilled	A 40	B 55	*Technicians
	A 45	B 45	Agricultural Mechanics and Automation
	A 45	B 44	Agricultural Business Management and Marketing
	A 44	B 43	Animal Science
54. Semi-Skilled	A 65	B 60	Business Organization and Supervision
	A 55	B 60	Animal Science
	A 55	B 60	Duties of Employee
	A 40	B 55	Agricultural Business Management and Marketing
	A 43	B 51	Agricultural Mechanics and Automation

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

TABLE XIV

ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE ORNAMENTAL HORTICULTURE FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
55. Professional	A 55	B 60	*Technicians
	A 74	B 48	Plant Science
	A 40	B 44	Agricultural Mechanics and Automation
	A 40	B 43	Agricultural Business Management and Marketing
56. Technical	A 66	B 49	Plant Science
	A 43	B 47	*Technicians
	A 47	B 45	Agricultural Business Management and Marketing
57. Service	0	0	
58. Managerial	A 65	B 60	Duties of Employee
	A 55	B 60	Agricultural Business Management and Marketing
	A 55	B 60	Plant Science
	A 45	B 60	Occupational Information and Regulations
	A 45	B 60	Management and Economics of Business
	A 45	B 60	Related Subjects
	A 40	B 55	Agricultural Mechanics and Automation
59. Supervisory	A 55	B 60	Related Subjects
	A 40	B 55	Occupational Information and Regulations
	A 40	B 55	Plant Science
	A 40	B 55	Agricultural Business Management and Marketing
	A 45	B 54	Agricultural Mechanics and Automation
60. Sales	A 40	B 55	Duties of Employee
	A 52	B 51	Agricultural Business Management and Marketing
	A 61	B 50	Plant Science
	A 40	B 47	*Technicians
	A 40	B 45	Agricultural Mechanics and Automation

TABLE XIV (Continued)

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
61. Clerical	A 67	B 47	Plant Science
	A 53	B 47	Agricultural Business Management and Marketing
62. Skilled	A 65	B 60	Plant Science
	A 45	B 60	Related Subjects
	A 40	B 55	Duties of Employee
	A 40	B 55	Business Organization and Supervision
	A 40	B 55	Construction Trades
	A 40	B 55	Agricultural Mechanics and Automation
	A 40	B 51	*Technicians
63. Semi-Skilled	A 70	B 65	Plant Science
	A 65	B 60	Business Organization and Supervision
	A 45	B 60	Construction Trades
	A 45	B 60	Metal Trades
	A 45	B 60	Duties of Employee
	A 45	B 60	Agricultural Mechanics and Automation
	A 45	B 60	Agricultural Business Management and Marketing
	A 40	B 55	*Technicians
	A 40	B 55	Related Subjects
	A 46	B 52	Management and Economics of Business

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

TABLE XV
ASSOCIATIONS OF JOB AND COMPETENCY CLUSTERS BY LEVEL OF STANDARD SCORES FOR THE WILDLIFE AND RECREATION FAMILY

Level of Employment or Job Cluster	Standard Scores A Indicate Relative Importance of a Competency Cluster for a Job Cluster	Standard Scores B Indicate Relative Importance of a Competency Cluster for All Job Clusters	Competency Cluster
64. Professional	A 40	B 55	Occupational Information and Regulations
	A 67	B 54	Animal Science
	A 64	B 49	Plant Science
	A 45	B 49	Agricultural Business Management and Marketing
65. Technical	A 40	B 47	Plant Science
66. Service	0	0	
67. Managerial	A 72	B 46	Plant Science
	A 47	B 45	Agricultural Mechanics and Automation
	A 47	B 44	Animal Science
	A 50	B 44	Agricultural Business Management and Marketing
68. Supervisory	A 55	B 60	Agricultural Mechanics and Automation
	A 45	B 60	Occupational Information and Regulations
	A 45	B 60	Construction Trades
	A 40	B 55	Plant Science
	A 40	B 55	Related Subjects
	A 48	B 54	Agricultural Business Management and Marketing
69. Sales	0	0	
70. Clerical	0	0	
71. Skilled	A 65	B 60	Construction Trades
	A 55	B 60	Metal Trades
	A 45	B 60	Electrical Trades
	A 51	B 52	Animal Science
	A 40	B 51	Agricultural Mechanics and Automation
	A 55	B 50	Plant Science
72. Semi-Skilled	A 65	B 60	Plant Science
	A 55	B 60	Construction Trades
	A 55	B 60	Agricultural Mechanics and Automation
	A 45	B 60	Metal Trades
	A 40	B 55	Business Organization and Supervision
	A 40	B 55	Electrical Trades
	A 42	B 48	Animal Science
	A 41	B 47	Agricultural Business Management and Marketing

* This competency cluster refers, in most cases, to the specific competency "quality control" and generally pertains to food or plant products rather than an industrial cluster.

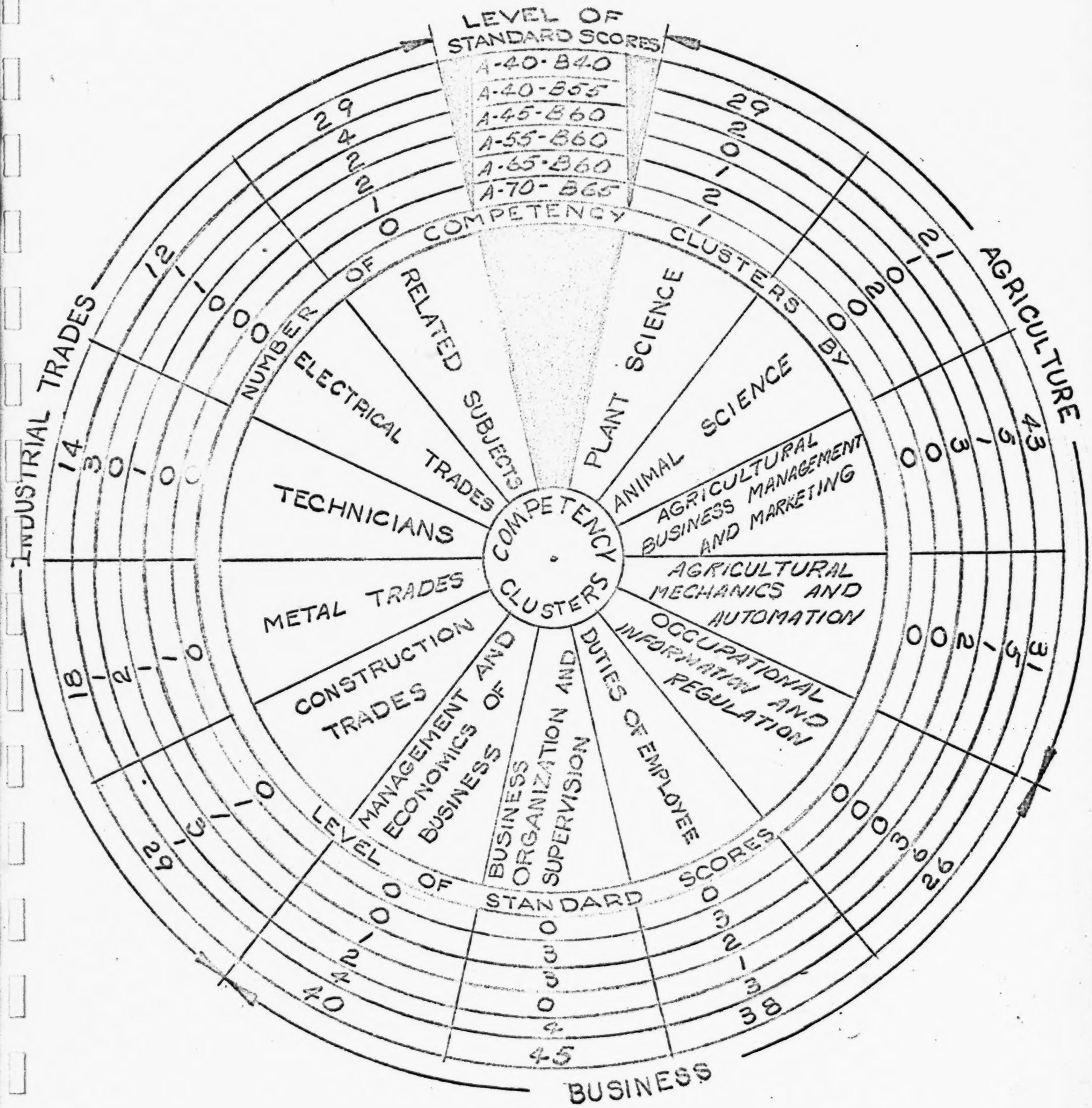

Figure 2. The Number of Job Clusters Associated with Competency Clusters by Level of Standard Scores for Eight Occupational Families

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APPENDIX A

1. Current and Projected Employment by Level of Employment and Job Title for Firms in the Sample

   a. Agricultural and Farm Service
   b. Crops, Forestry and Soil Conservation
   c. Farm Machinery Sales and Service
   d. Farm Supplies and Equipment
   e. Food Handling and Processing
   f. Livestock Industry
   g. Ornamental Horticulture
   h. Wildlife and Recreation

2. Competencies and Competency Clusters

3. Interview Schedules - Forms I and II

CURRENT AND PROJECTED EMPLOYMENT BY LEVEL OF EMPLOYMENT AND JOB TITLE FOR FIRMS IN THE SAMPLE

Level of Employment *		Currently Employed			Expected to be Hired During Next 5 Years		
		Full-Time		Part-Time	Full-Time		Part-Time
A. Agricultural and Farm Service Occupational Family							
1. Professional							
Agricultural County Agent		6		0	0		0
Agricultural Engineer		3		0	0		0
Civil Engineer Soil Conservation		1		0	0		0
County F.H.A. Supervisor		1		0	0		0
Entomologist		6		0	0		0
Landscape Architects		10		0	0		0
Soil Conservationist		6		0	0		0
Soil Scientists		2		0	0		0
Veterinarian		11		0	0		0
Sub-Totals	46		0			0	
2. Technical							
Agricultural Division Chief		1		0	0		0
Agricultural Inspector		9		0	0		0
Agricultural Stabilization and Conservation Reporter		2		2	0		5
Senior Agricultural Inspector		1		0	0		0
Soil Conservation Technician		3		2	0		0
Veterinary Technician		4		1	1		1
Sub-Totals	20		5			1	
3. Service		0		0	0		0
Sub-Totals	0		0			0	
4. Managerial							
Custom Operator Manager		1		0	0		0
Exterminator Manager		2		1	0		0
Sub-Totals	3		1			0	

* Each level of employment for each occupational family constitutes a job cluster.

Level of Employment	Currently Employed: Full-Time	Currently Employed: Part-Time	Expected to be Hired During Next 5 Years: Full-Time	Expected to be Hired During Next 5 Years: Part-Time
5. Supervisory				
Agriculture Stabilization and Conservation Assistant Manager	3	0	1	0
Sub-Totals	3	0	1	0
6. Sales				
	0	0	0	0
Sub-Totals	0	0	0	0
7. Clerical				
A.S.C. Office Clerk	3	0	1	0
Entomologist Clerk, U.S.D.A.	1	0	1	0
Exterminator Bookkeeper	1	0	0	0
F.H.A. Office Clerk	1	0	0	0
Veterinary Receptionists	1	2	1	2
Sub-Totals	7	2	2	2
8. Skilled				
Farm Products Inspector	0	1	0	6
Exterminator	6	1	3	0
Sub-Totals	6	2	3	6
9. Semi-Skilled				
Groundsman Veterinary Hospital	0	2	0	1
Pest Control Aid	0	3	0	1
Truck Drivers Custom Service	0	6	0	3
Veterinary Aids	3	1	0	0
Veterinary Hospital Kennel Worker	7	4	1	9
Sub-Totals	10	16	1	14
TOTALS	95	26	8	28

B. Crops, Forestry and Soil Conservation

10. Professional				
Foresters	5	0	1	0
Forestry Fire Control Officer	1	0	0	0
Forestry Technician	1	0	0	0
Sub-Totals	7	0	1	0

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
11. Technical									
Conservation Officer		1		0		0		0	
Forest Ranger II		4		0		1		0	
Forest Ranger I		6		0		0		0	
Sub-Totals	11		0		1		0		
12. Service		0		0		0		0	
Sub-Totals	0		0		0		0		
13. Managerial									
Forest Maintenance and Conservation Manager		5		0		0		0	
Lumber Company Assistant Manager		3		0		0		0	
Lumber Company Manager		16		2		0		0	
Sub-Totals	24		2		0		0		
14. Supervisory									
Forest Maintenance and Conservation Supervisor		3		0		0		0	
Lumber Yard Foreman		8		0		0		0	
Sub-Totals	11		0		0		0		
15. Sales									
Lumber Company Store Salesman		21		0		0		0	
Sub-Totals	21		0		0		0		
16. Clerical									
Lumber Company Book-keeper and Clerk		7		2		0		3	
Sub-Totals	7		2		0		3		
17. Skilled									
Assistant Ranger		1		0		0		0	
Conservation Officer		5		0		0		0	
Lumber Company Millman		3		0		0		0	
Lumber Grader and Scaler		1		0		0		0	

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
17. Skilled (Continued)									
Lumber Yard Workers		4		0		0		0	
Sawmill Edger		1		0		0		0	
Sawmill Equipment Operator		2		0		0		0	
Sawmill Log Cutter		2		0		0		0	
Sawyer		2		0		0		0	
Sub-Totals	21		0		0		0		
18. Semi-Skilled									
Forestry and Conservation Workers		21		0		0		0	
General Sawmill Employees		16		0		0		0	
Lumber Company Truck Drivers		13		0		2		0	
Lumber Yard Workers		50		2		10		0	
Park and Forest Maintainer III		6		0		0		0	
Park and Forest Maintainer II		29		0		2		0	
Park and Forest Maintainer I		9		0		2		0	
Sub-Totals	144		2		16		0		
TOTALS		246		6		18		3	
C. Farm Machinery Sales and Service									
19. Professional		0		0		0		0	
Sub-Totals	0		0		0		0		
20. Technical									
Assembler Milk Transfer Equipment		1		0		0		0	
Bench Assembler Milk Transfer Equipment		1		0		6		0	
Plastic Milk Equipment Assembler		1		0		6		0	
Sub-Totals	3		0		12		0		

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
21. Service									
Farm Machinery Serviceman		2		0		1		0	
Sub-Totals	2		0		1		0		
22. Managerial									
Farm Machinery and Equipment Manager		9		0		0		0	
Farm Machinery Service Manager		2		0		0		0	
Small Engine and Equipment Manager		26		3		3		4	
Sub-Totals	37		3		3		4		
23. Supervisory									
Farm Machinery Foreman		2		0		0		0	
Farm Machinery Office Manager		1		0		0		0	
Farm Machinery Parts Manager		3		0		0		0	
Small Gas Engine Foreman		1		0		0		0	
Sub-Totals	7		0		0		0		
24. Sales									
Farm Machinery Salesman		7		2		0		4	
Gas Engine and Equipment Store Salesman		24		2		3		4	
Sub-Totals	31		4		3		8		
25. Clerical									
Farm Machinery Clerk or Bookkeeper		3		0		0		0	
Small Engine Clerk		3		0		0		0	
Sub-Totals	6		0		0		0		
26. Skilled									
Farm Machinery Mechanic		36		0		2		0	
Farm Machinery Parts Clerk		6		0		0		0	
Farm Machinery Repairman		3		0		1		0	

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
26. Skilled (Continued)									
Farm Machinery Set-up Man		3		2		2		1	
Small Equipment Repairman		2		0		0		0	
Small Gas Engine Mechanic		41		13		12		10	
Small Gas Engine Parts Clerk		3		0		0		0	
Sub-Totals	94		15		17		11		
27. Semi-Skilled									
Farm Machinery Assistant Repairman		2		1		1		1	
Farm Machinery Mechanic Helper		5		0		1		1	
Small Engine Delivery Man		3		1		0		3	
Small Engine Parts Clerk		4		1		0		0	
Small Gas Engine Assistant Mechanic		10		3		2		6	
Small Gas Engine Mechanic		16		5		6		4	
Stock Clerk Store Employee		3		1		0		1	
Sub-Totals	43		12		10		16		
TOTALS		223		34		46		39	

D. Farm Supplies and Equipment

28. Professional		0		0		0		0	
Sub-Totals	0		0		0		0		
29. Technical									
Feed Fieldman		1		0		0		0	
Fertilizer and Chemical Technicians		11		0		0		0	
Sub-Totals	12		0		0		0		
30. Service		0		0		0		0	
Sub-Totals	0		0		0		0		

Level of Employment		Currently Employed			Expected to be Hired During Next 5 Years		
		Full-Time		Part-Time	Full-Time		Part-Time
31. Managerial							
Farm Equipment and Supplies Manager		2		0	0		0
Feed and Farm Supplies Store Manager		22		0	0		0
Feed Plant Manager		1		0	0		0
Fence Installation Manager		3		0	0		0
Fertilizer and Chemical Plant Manager		1		0	0		0
Hardware Garden Supply Manager		7		0	1		0
Sub-Totals	36		0			1	
						0	
32. Supervisory							
Chemical and Fertilizer Plant Supervisor		12		0	1		0
Farm Equipment Foreman		1		0	0		0
Feed and Farm Supplies Store Foreman		5		0	0		0
Feed Plant Foreman		2		0	0		0
Sub-Totals	20		0			1	
						0	
33. Sales							
Agricultural Chemical Salesman		40		0	0		0
Farm Equipment and Supply Salesman		5		0	0		0
Feed and Farm Supplies Salesman		12		4	0		4
Fence and Equipment Salesman		1		0	0		0
Garden and Hardware Store Salesman		2		1	2		0
Sub-Totals	60		5			2	
						4	
34. Clerical							
Farm Equipment and Supplies Clerk		3		0	1		0
Feed and Farm Supplies Clerk		8		4	0		1
Feed Plant Clerk		2		0	1		0
Sub-Totals	13		4			2	
						1	

Level of Employment		Currently Employed			Expected to be Hired During Next 5 Years		
		Full-Time		Part-Time	Full-Time		Part-Time
35. Skilled							
Farm Equipment Serviceman		6		0	0		0
Farm Equipment Welder		2		0	1		0
Feed Mixers and Pelleter		4		0	2		0
Fence Installation Workers		9		0	3		0
Sub-Totals	21		0			6	
						0	
36. Semi-Skilled							
Farm Equipment and Supplies Worker		6		1	5		6
Feed and Farm Supplies Store Worker		19		5	3		6
Feed and Farm Supplies Trucker		34		4	7		5
Feed Packers and Scoopers		5		0	4		0
Feed Warehouseman		4		0	1		0
Fence Installation Workers		7		2	1		3
Fertilizer and Chemical Workers		21		5	11		6
Sub-Totals	96		17			32	
						26	
TOTALS		258		26	44		31

E. Food Handling and Processing

37. Professional		0		0	0		0
Sub-Totals	0		0			0	
						0	
38. Technical		0		0	0		0
Sub-Totals	0		0			0	
						0	
39. Service		0		0	0		0
Sub-Totals	0		0			0	
						0	
40. Managerial							
Wholesale Fruit Manager		20		0	0		0
Sub-Totals	20		0			0	
						0	

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
41. Supervisory									
Retail Dairy Delicatessen Manager		2		0		0		0	
Retail Meat Manager		24		2		0		0	
Retail Produce Manager		26		5		0		0	
Wholesale Fruit Foreman		1		0		0		0	
Wholesale Fruit Office Manager		1		0		0		0	
Sub-Totals	54		7		0		0		
42. Sales									
Wholesale Fruit Salesman		4		0		0		0	
Sub-Totals	4		0		0		0		
43. Clerical									
Wholesale Fruit Bookkeeper		2		1		0		1	
Sub-Totals	2		1		0		1		
44. Skilled		0		0		0		0	
Sub-Totals	0		0		0		0		
45. Semi-Skilled									
Retail Meat Workers		97		55		81		135	
Retail Produce and Grocery Workers		87		65		78		175	
Wholesale Fruit Packers		20		5		4		1	
Wholesale Fruit Trucker		20		7		3		4	
Sub-Totals	224		132		166		315		
TOTALS		304		140		166		316	

F. Livestock Industry

46. Professional									
Animal Nutritionist		1		0		0		0	
Meat Plant Efficiency Specialists		2		0		0		0	
Sub-Totals	3		0		0		0		

Level of Employment		Currently Employed		Expected to be Hired During Next 5 Years	
		Full-Time	Part-Time	Full-Time	Part-Time
47. Technical					
Artificial Inseminator		12	0	2	0
Dairy Plant Computer Technician		2	0	0	0
Dairy Plant Pasteurizers Technician		6	0	0	0
Poultry Hatchery Technician		1	0	0	0
Poultry Production Technician		3	0	1	0
Sub-Totals	24	0	3	0	
48. Service					
Dog Groomer		3	2	0	0
Dog Warden		1	0	0	0
Horse Groomer		0	1	0	2
Sub-Totals	4	3	0	2	
49. Managerial					
Abbatoir Manager		4	0	0	0
Dairy Plant Manager		28	0	0	0
Hatchery Manager		6	0	0	0
Ice Cream Plant Manager		3	0	0	0
Kennel Manager		8	6	1	0
Livestock Auction Manager		1	0	0	0
Livestock Buyer Manager		5	0	0	0
Meat Locker Manager		1	0	0	0
Meat Processing Plant Manager		19	0	0	0
Pet Shop Manager		3	0	0	0
Riding Stable Manager		8	4	2	2
Store Poultry Dressing Manager		7	0	0	0
Wholesale Egg Manager		9	0	0	0
Sub-Totals	102	10	3	2	
50. Supervisory					
Dairy Plant Laboratory Supervisor		1	0	0	0
Dairy Plant Member Relation Supervisor		1	0	0	0

Level of Employment		Currently Employed			Expected to be Hired During Next 5 Years		
		Full-Time		Part-Time	Full-Time		Part-Time
50. Supervisory (continued)							
Dairy Plant Office Supervisor		1		0	0		0
Dairy Plant Supervisor		7		0	0		0
Ice Cream Plant Foreman		1		0	0		0
Kennel Supervisor		3		0	1		1
Meat Processing Plant Office Manager		1		0	0		0
Meat Processing Supervisor		13		0	0		0
Milk Route Supervisor		10		0	1		0
Pet Shop Supervisor		1		0	0		0
Poultry Meat Processing Foreman		8		0	2		0
Sausage Manager		3		0	0		0
Wholesale Egg Supervisor		4		0	0		0
Sub-Totals	54		0			1	
				4			
51. Sales							
Hatchery Salesman		8		0	4		0
Ice Cream Salesman		13		0	2		0
Live Poultry Buyer		1		0	0		0
Livestock Buyer		2		0	0		0
Meat Salesman		84		0	29		3
Milk Salesman (Driver)		233		1	81		1
Pet Shop Salesman		4		1	0		3
Wholesale Egg Salesman		1		0	0		0
Sub-Totals	346		2			7	
				116			
52. Clerical							
Dairy Plant Clerk or Bookkeeper		10		2	5		0
Hatchery Bookkeeper or Clerk		8		0	2		0
Ice Cream Bookkeeper or Clerk		3		1	0		0
Livestock Auction Bookkeeper		1		0	0		0
Meat Processing Bookkeeper or Clerk		20		6	10		5
Pet Shop Clerk		1		0	0		0
Wholesale Egg Bookkeeper		3		0	0		0
Sub-Totals	46		9			5	
				17			

Level of Employment		Currently Employed			Expected to be Hired During Next 5 Years		
		Full-Time		Part-Time	Full-Time		Part-Time
53. Skilled							
Animal Skinners		18		0	0		0
Butchers		19		0	0		0
Dairy Plant Worker		5		2	5		6
Ice Cream Maker		4		0	1		0
Ice Cream Refrigerator Operator		3		0	1		0
Meat Curing Worker		7		4	7		3
Meat Cutters		34		2	14		1
Milk Plant Maintenance Worker		8		0	0		0
Milk Tank Truck Driver		60		0	0		0
Sausage Makers		14		2	7		5
Sub-Totals	172		10			35	15
54. Semi-Skilled							
Dairy Plant Worker		91		9	21		5
Egg Candlers		8		2	6		5
Egg Packers and Graders		12		1	5		1
Wholesale Egg Truck Driver		12		1	7		2
Hatchery Truck Drivers		4		0	3		0
Hatchery Workers		19		14	9		9
Ice Cream Plant Workers		32		7	3		7
Ice Cream Truck Drivers		14		0	2		0
Kennel Worker		7		12	3		26
Livestock Loaders		3		0	0		0
Meat Processing Plant Truck Drivers		18		3	8		0
Meat Processing Workers		156		37	99		15
Pet Shop Workers		2		1	1		6
Poultry Processing Plant Workers		216		39	37		26
Riding Stable Workers		7		6	12		7
Sub-Totals	601		132			216	109
TOTALS		1352		166	394		141

Level of Employment		Currently Employed		Expected to be Hired During Next 5 Years	
		Full-Time	Part-Time	Full-Time	Part-Time
G. Ornamental Horticulture					
55. Professional					
Assistant Highway Land-Scape Engineer		2	0	0	0
Florist		1	0	0	0
Highway Inspectors		6	0	0	0
Landscape Architects		2	0	0	0
Landscape Salesman		1	0	1	0
Nurseryman		1	0	0	0
Park Superintendent		1	0	0	0
Senior Highway Landscape Engineer		1	0	0	0
Sub-Totals	15	0	1	0	
56. Technical					
Floral Designers		13	2	2	0
Florists		9	0	1	0
Landscape Designers		3	0	0	0
Landscape Technicians		2	0	0	0
Nurseryman		1	0	0	0
Sub-Totals	28	2	3	0	
57. Service		0	0	0	0
Sub-Totals	0	0	0	0	
58. Managerial					
Floral Shop Manager		23	2	0	0
Garden Center Manager		7	1	0	0
Greenhouse Manager		32	2	0	0
Grounds Manager		1	0	0	0
Landclearing Manager		2	0	0	0
Landscape Garden Manager		8	0	1	0
Municipal Park Manager		1	0	0	0
Nursery Manager		22	2	1	0
Tree Service Manager		13	1	1	1
Sub-Totals	109	8	3	1	
59. Supervisory					
Floral Shop Supervisor		4	0	0	0
Garden Center Supervisor		2	0	0	0
Greenhouse Foreman		2	0	0	0

Level of Employment		Currently Employed				Expected to be Hired During Next 5 Years			
		Full-Time		Part-Time		Full-Time		Part-Time	
59. Supervisory (continued)									
Grounds Supervisor		15		0		0		0	
Landscape Gardener		8		0		1		0	
Landscape Garden Foreman		0		2		0		0	
Municipal Park Supervisor		9		0		0		0	
Nursery Foreman		17		2		6		0	
Roadside Foreman		1		0		0		0	
Top Soil Contracting Foreman		5		0		1		0	
Tree Service Foreman		2		0		0		0	
Sub-Totals	65		4		8		0		
60. Sales									
Floral Salesman		6		8		1		6	
Garden Center Salesman		13		5		12		9	
Greenhouse Salesman		7		2		3		6	
Nursery Salesman		3		12		0		16	
Sub-Totals	29		27		16		37		
61. Clerical									
Floral Shop Bookkeeper		1		0		0		0	
Garden Center Bookkeeper		5		0		0		0	
Greenhouse Bookeeper		6		0		1		1	
Nursery Bookkeeper		9		2		0		0	
Tree Service Bookkeeper		1		0		0		0	
Sub-Totals	22		2		1		1		
62. Skilled									
Floral Designers		33		6		6		0	
Florists		5		0		1		0	
Greenhouse Growers		16		2		4		3	
Grounds Equipment Operator		3		0		0		0	
Grounds Keeper		2		0		0		0	
Horticulturist		1		0		0		0	
Landscape Masons		3		0		0		0	
Landscape Planters		7		0		3		0	
Landscape Workers		25		0		3		0	
Nurserymen		5		0		8		12	
Nursery Propagator		1		0		0		0	
Tree Pruner		17		1		3		16	
Sub-Totals	118		9		28		31		

Level of Employment		Currently Employed			Expected to be Hired During Next 5 Years	
		Full-Time	Part-Time		Full-Time	Part-Time
63. Semi-Skilled						
Floral Shop Workers		0	20		0	21
Greenhouse, Floral Shop Deliveryman		6	5		0	4
Greenhouse Workers		26	24		11	25
Groundskeeper		66	20		65	40
Highway Maintenance Workers		150	25		5	0
Municipal Park Workers		34	40		24	36
Nursery and Landscape Workers		174	95		114	163
Roadside Truck Drivers		5	1		3	1
Roadside Workers		16	3		5	8
Tree Service Groundsmen		26	0		32	0
Sub-Totals	503	233		259	298	
TOTALS		889	285		319	368

H. Wildlife and Recreation

64. Professional						
Fish Biologist I		1	0		0	0
Game Biologist I		1	0		0	0
Recreation Specialist		0	25		0	0
Sub-Totals	2	25		0	0	
65. Technical						
Recreation Specialist		0	49		0	25
Sub-Totals	0	49		0	25	
66. Service		0	0		0	0
Sub-Totals	0	0		0	0	
67. Managerial						
Golf Course Manager		7	0		3	0
Grounds and Building Maintenance and Manager		3	0		1	0
Sub-Totals	10	0		4	0	

Level of Employment	Currently Employed				Expected to be Hired During Next 5 Years			
	Full-Time		Part-Time		Full-Time		Part-Time	
68. Supervisory								
Assistant Golf Course Manager	1		0		0		0	
Golf Course Foreman	8		0		1		0	
Grounds and Building Supervisor	5		1		0		0	
Recreation Specialist	0		85		0		35	
Sub-Totals		14		86		1		35
69. Sales	0		0		0		0	
Sub-Totals		0		0		0		0
70. Clerical	0		0		0		0	
Sub-Totals		0		0		0		0
71. Skilled								
Grounds Maintenance	0		30		0		3	
Recreation Specialist	0		85		0		0	
Riding Instructor	0		1		0		0	
Sub-Totals		0		116		0		3
72. Semi-Skilled								
Assistant Riding Instructor	0		1		0		0	
Camp Grounds Keeper	0		16		0		9	
Fish Culturist II	2		0		0		0	
Fish Culturist I	1		0		0		0	
Golf Course Greenskeeper	58		39		49		48	
Grounds and Building Maintenance Worker	21		6		15		1	
Recreation Specialist	0		60		0		42	
Sub-Totals		82		122		64		100
TOTALS	108		398		69		163	

COMPETENCIES AND COMPETENCY CLUSTERS*

1. Plant Science

Plant propagation, seed production
Plant growth, fertilization
Controlling insects, diseases, weeds
Soils, types and conservation
Additional production practices

2. Animal Science

Animal breeding, selection
Animal growth, feeding
Health and sanitation
Housing and equipment
Additional production practice

3. Agricultural Business Management and Marketing

Budgeting, records and analysis
Farm financing (credit, taxes)
Labor management
Marketing practices
Agricultural policy

4. Agricultural Mechanics and Automation

Farm power and machinery
Farm buildings and convenience
Rural electrification and processing
Soil structures (ditches, ponds, etc.)
Farm construction and maintenance

5. Occupational Information and Regulations

Job opportunities and trends
Job applications, interviews
Personal qualifications, preferences
Worker welfare (insurance, retirement)
Legal requirements of the job

6. Duties of Employee

Receiving, marking, shipping
Window and store display
Salesmanship
Customer relations
Bookkeeping, business mathematics

COMPETENCIES AND COMPETENCY CLUSTERS* (Continued)

7. Business Organization and Supervision

Employee-supervisor relations
Employee relations with fellow workers
Buying and merchandising
Inventory, stock control, warehousing
Internal business organization

8. Management and Economics of Business

Capital management, financing
Accounting, taxes, legal relationships
Trade relationships, promotion, advertising
Government regulations
Buying and merchandising

9. Construction Trades

Building maintenance
Masonry
Carpentry and cabinetmaking
Sheet metal, tinsmith, coppersmith
Painting and finishing
Plumbing
Heating, ventilation, refrigeration and air-conditioning

10. Metal Trades

Engines, repair and maintenance
Machinist
Welding

11. Technicians

Drafting (design, building and elevations)
Hydraulics and pneumatics
Industrial chemistry
Quality control

12. Electrical Trades

Electrical wiring
Electrical power and distribution
Electronics
Appliance repair

13. Related Subjects

Blueprint reading
Technical and service manuals, handbooks, etc.

* Numbers (1-13) are codes for competency clusters.

Interviewer _____

Date of Interview _____

EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES

IN

AGRICULTURAL OCCUPATIONS OTHER THAN FARMING

IN

CONNECTICUT

Form I

I BUSINESS or SERVICE

A. Name of Firm _____ Code No. _____
(from IBM name card)

Address _____ Township _____

B. Name of person interviewed _____

Telephone _____

Position of person interviewed:

1. _____ Owner
2. _____ Owner-Manager
3. _____ Manager
4. _____ Personnel Director
5. _____ Sales Manager
6. _____ Office Manager
7. _____ Supervisor (dist.,area,etc.)
8. _____ Other

C. Main function of firm, organization, or agency:

1. _____ Sales (Buying and/or Selling)
2. _____ Service
3. _____ Manufacturing
4. _____ Processing
5. _____ Specialized agriculture
6. _____ Recreational enterprises
7. _____ Professional services
8. _____ Other-Specify _____
_____

D. Number of years in business in this locality _____

E. Agricultural functions of business or service _____

F. Percent of gross income that is agriculturally oriented _____

Form I

II EMPLOYEES

A. Total number of persons working in firm _____

1. Do you employ any high school students? No _____ Yes _____ (how many)

2. Would you employ high school students as trainees? No _____ Yes _____ (how many)

3. If you employed high school students would you prefer students studying Vocational Agriculture? No _____ Yes _____

B. Present job titles

Existing job titles	Number of Employees Full-time	Number of Employees Part-time	Level of Employment
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

(Additional titles may be listed on the back of this sheet)

C. New job titles foreseen in this firm in the next five years:

Anticipated new job titles	Number of Employees Full-time	Number of Employees Part-time	Level of Employment
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

Level of Employment Code

1. Professional Occupation
2. Technical
3. Service Occupations
4. Managerial
5. Supervisory
6. Sales
7. Clerical
8. Skilled Occupations
9. Semi-skilled Occupations

Interviewer _____

Date of Interview _____

EMPLOYMENT OPPORTUNITIES AND NEEDED COMPETENCIES IN AGRICULTURAL OCCUPATIONS OTHER THAN FARMING IN CONNECTICUT

Form II

1. Identification of Business or Service, Level of Employment and Job Title (be sure to make out cards coded with name of business or service)

2. Answer card (Form II)

A. Code Number. Use spaces 1 and 2 for township; note township requires two marks. (See List 1, page 10 in manual)

B. Interviewer Number-3A, 3E, 28A, 28C.

C. Sex of Employee:
Male 28D, Female 28E.

List Job Titles

1	2	3	4	5	6	7	8	9	10	11	12

D. Level of Employment (See List 2, page 11 in manual)

4A Professional
4B Technical
4C Service
4D Managerial
4E Supervisory
29A Sales
29B Clerical
29C Skilled
29D Semi-Skilled

E. Agricultural Occupation Families
(See List 3, page 13 in manual)

5A Farm Machinery Sales and Service
5B Farm Supplies and Equipment _____
5C Livestock Industry _____
5D Crops, Forestry and Soil Conservation _____
5E Ornamental Horticulture _____
30A Wildlife and Recreation _____
30B Farm Service _____
30C Agricultural Service _____
30D Other _____

Form II

F. Job Number (See Form 1):

	1	2	3	4	5	6	7	8	9	10	11	12
6A 1st												
6B 2nd												
6C 3rd												
6D 4th												
6E 5th												
31A 6th												
31B 7th												
31C 8th												
31D 9th												
31E 10th												
50A 11th												
50B 12th												
50C 13th												
50D 14th												
50E 15th												

G. Full-time employees presently on job

Code	Number												
7A	1												
7B	2												
7C	3												
7D	4												
7E	5												
32A	6-7												
32B	8-9												
32C	10-11												
32D	12-14												
32E	15 or more												

H. Part-time employees presently on job

Code	Number												
8A	1												
8B	2												
8C	3												
8D	4												
8E	5												
33A	6-7												
33B	8-9												
33C	10-11												
33D	12-14												
33E	15 or more												

Form II

	1	2	3	4	5	6	7	8	9	10	11	12

I. How many full-time replacement or additional employees do you expect in the next five years? This may be based on turnover in last five years and expected increase.

Code	Number
9A	1-2
9B	3-4
9C	5-6
9D	7-8
9E	9-10
34A	11-13
34B	14-17
34C	18-20
34D	21-24
34E	25 or more

J. How many part-time replacement or additional employees do you expect in the next five years?

Code	Number
10A	1-2
10B	3-5
10C	6-8
10D	9-12
10E	13-15
35A	16-19
35B	20-24
35C	25-29
35D	30-34
35E	35 or more

K. What is the average hourly rate you pay full-time employees?

Code	Amount
11A	$1.25 or less
11B	1.26 - 1.50
11C	1.51 - 2.00
11D	2.01 - 2.50
11E	2.51 - 3.00
36A	3.01 - 4.00
36B	4.01 - 5.00
36C	5.01 - 6.00
36D	6.01 - 7.00
36E	7.01 or more

Form II

L. What is the average hourly rate you pay part-time employees?

Code	Amount
12A	$1.25 or less
12B	1.26 - 1.50
12C	1.51 - 2.00
12D	2.01 - 2.50
12E	2.51 - 3.00
37A	3.01 - 4.00
37B	4.01 - 5.00
37C	5.01 - 6.00
37D	6.01 - 7.00
37E	7.01 or more

M. How much time per year does the average part-time person work on this job? (Use name of job).

Code	Time
13A	1 - 2 weeks
13B	3 - 4 weeks
13C	2 months
13D	3 months
13E	4 months
38A	5 months
38B	6 months
38C	7 - 8 months
38D	9 - 10 months
38E	11 - 12 months

N. How many hours per day does the average part-time person work on this job?

Code	Hours
14A	1 - 2
14B	3
14C	4
14D	5
14E	6
39A	7
39B	8
39C	9 - 10
39D	11 - 12
39E	13 or more

1	2	3	4	5	6	7	8	9	10	11	12

Form II

O. Is there a peak season for part-time help on this job? What month of the year is it?

Code	Month	1	2	3	4	5	6	7	8	9	10	11	12
15A	Jan. - Feb.												
15B	March												
15C	April												
15D	May												
15E	June												
40A	July												
40B	August												
40C	September												
40D	Oct. - Nov.												
40E	December												

P. For persons in this job title, agricultural knowledge and competency is:

Code													
16A	Essential												
16B	Highly Desirable												
16C	Useful												
16D	Unnecessary												

Q. Are there any limitations on entering this job title such as:

Code													
41A	Labor restrictions, union												
41B	Labor restrictions, legal												
41C	Licensing or certification												
41D	Other (make a list, here, with code number):												

1. _____

2. _____

3. _____

Form II

	1	2	3	4	5	6	7	8	9	10	11	12

R. What is the minimum age for someone beginning to work as a _____?

Code	Age
17A	under 14
17B	15 - 16
17C	17 - 19
17D	20 - 24
17E	25 - 29
42A	30 - 35
42B	36 - 40
42C	41 - 45
42D	46 - 50
42E	51 - 55

S. What is the maximum age for someone beginning to work as a _____?

Code	Age
18A	15 - 16
18B	17 - 19
18C	20 - 24
18D	25 - 29
18E	30 - 35
43A	36 - 40
43B	41 - 45
43C	46 - 50
43D	51 - 55
43E	56 - 65

T. What is the minimum educational limit for the job of _____?

Code	Education
19A	Elementary
19B	Junior High School
19C	High School
19D	Post High School Tech.
19E	Some College
44A	College degree
44B	Some graduate work
44C	Master's degree
44D	Special certificate
44E	Doctor's degree

Form II

	1	2	3	4	5	6	7	8	9	10	11	12

U. What kind of residential experience is preferable for an employee in this job?

Code	Experience
20A	Farm
20B	Rural, non-farm
20C	Suburban
20D	City
20E	No preference

V. How much experience is necessary to begin work as a _____?

Code	Experience
21A	None
21B	1 month
21C	2-3 months
21D	4-6 months
21E	7-12 months
46A	13-18 months (1 1/2 years)
46B	19-24 months (2 years)
46C	25-30 months (2 1/2 years)
46D	31-36 months (3 years)
46E	more than 3 years

W. Do you feel some of your employees need more training? If yes, how many full-time employees need more training?

Code	Number
22A	1
22B	2 - 3
22C	4 - 5
22D	6 - 8
22E	9 - 12
47A	13 - 15
47B	15 - 20
47C	21 - 25
47D	26 - 30
47E	more than 30

Form II

X. How many part-time employees need more training?

Code	Number
23A	1
23B	2 - 3
23C	4 - 5
23D	6 - 8
23E	9 - 12
48A	13 - 15
48B	16 - 20
48C	21 - 25
48D	26 - 30
48E	more than 30

Y. Preferred method of training:

Code	Method
24A	Your business or industry
24B	On-the-job training
24C	Public school
24D	Agricultural college
24E	Private school
49A	Short course at a college
49B	Conferences
49C	Company school or training program
49D	Adult education courses
49E	Other

Z. Extent to which training programs are available. Check all which apply:

Code	
25A	Sufficient to meet all needs
25B	More training programs needed
25C	Training programs need to be established which are available to all employees
25D	Existing training programs need change in emphasis to meet present and future needs
25E	New types of training programs would be desirable

1	2	3	4	5	6	7	8	9	10	11	12

-- Turn card over --

Form II

a. Agricultural production enterprises most closely associated with job

Code	Enterprise	1	2	3	4	5	6	7	8	9	10	11	12
76A	Beef cattle												
76B	Dairy cattle												
76C	Swine												
76D	Sheep												
76E	Horses												
77A	Grasses												
77B	Hay crops												
77C	Silage												
77D	Small fruit												
77E	Tree fruit												
51A	Poultry												
51B	Corn												
51C	Vegetables												
51D	Tobacco												
51E	Meats												
52A	Floriculture												
52B	Apples												
52C	Nursery products												
52D	Forest products												
52E	Other												

AGRICULTURE

Code	Competency												
PLANT SCIENCE													
53A	Plant propagation, seed prod.												
53B	Plant growth, fertilization												
53C	Controlling insects, diseases, weeds												
53D	Soils, types and conservation												
53E	Additional production practices												
ANIMAL SCIENCE													
78A	Animal breeding, selection												
78B	Animal growth, feeding												
78C	Health and sanitation												
78D	Housing and equipment												
78E	Additional production practice												

Form II

		1	2	3	4	5	6	7	8	9	10	11	12
AGRICULTURAL BUSINESS MANAGEMENT AND MARKETING													
54A	Budgeting, records and analysis												
54B	Farm financing (credit, taxes)												
54C	Labor Management												
54D	Marketing practices												
54E	Agricultural policy												
AGRICULTURAL MECHANICS AND AUTOMATION													
79A	Farm power and machinery												
79B	Farm buildings and convenience												
79C	Rural electrification and processing												
79D	Soil structures (ditches, ponds, etc.)												
79E	Farm construction and maintenance												
BUSINESS AND DISTRIBUTION													
OCCUPATIONAL INFORMATION AND REGULATIONS													
55A	Job opportunities and trends												
55B	Job applications, interviews												
55C	Personal qualifications, pref.												
55D	Worker welfare (insurance, retirement)												
55E	Legal requirements of the job												
DUTIES OF EMPLOYEE													
80A	Receiving, marking, shipping												
80B	Window and store display												
80C	Salesmanship												
80D	Customer relations												
80E	Bookkeeping, business mathematics												
BUSINESS ORGANIZATION AND SUPERVISION													
56A	Employee-supervisor relations												
56B	Employee relations with fellow workers												
56C	Buying and merchandising												
56D	Inventory, stock control, warehousing												
56E	Internal business organization												

Form II

		1	2	3	4	5	6	7	8	9	10	11	12
MANAGEMENT AND ECONOMICS OF BUSINESS													
81A	Capital management, financing												
81B	Accounting, taxes, legal relationships												
81C	Trade relationships, promotion, advertising												
81D	Government regulations												
81E	Buying and merchandising												
TRADE AND INDUSTRIAL COMPETENCIES													
CONSTRUCTION TRADES													
57A	Building maintenance												
57B	Masonry												
57C	Carpentry and cabinetmaking												
57D	Sheet metal, tinsmith, coppersmith												
57E	Painting and finishing												
82A	Plumbing												
82B	Heating, ventilation, refrigeration, and air conditioning												
METAL TRADES													
58A	Engines, repair and maintenance												
58B	Machinist												
58C	Welding												
TECHNICIANS													
83A	Drafting (design, buildi ng & elevations)												
83B	Hydraulics and pneumatics												
83C	Industrial chemistry												
83D	Quality control												
ELECTRICAL TRADES													
59A	Electrical wiring												
59B	Electrical power & distribution												
59C	Electronics												
59D	Appliance repair												
RELATED SUBJECTS													
84A	Blueprint reading												
84B	Technical and service manuals and handbooks, etc.												

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PROCEEDINGS OF THE CONFERENCE ON BUYING AND CONSUMPTION PRACTICES OF LOW INCOME FAMILIES

New York University

February 14, 1964

Irene Oppenheim, Editor
Department of Home Economics
New York University

VT001270

PROGRAM

BUYING AND CONSUMPTION PRACTICES OF LOW INCOME FAMILIES
Home Economics Department, New York University
February 14, 1964

9:00 A.M. Coffee and Cake

9:30 A.M. I. Welcome, Dean Fields, New York University

9:45 A.M. II. Research and the Low Income Family--Chairman: Miss Mollie Orshansky, Long Range Research Branch, Division of Research and Statistics, Social Security Administration, Department of Health, Education, and Welfare

A. Definition of Low Income--Mrs. Helen H. Lamale, Chief, Division of Living Conditions Studies, Bureau of Labor Statistics, U.S. Department of Labor

B. What Can We Utilize from Existing Studies--Miss Mollie Orshansky

C. How Can We Make This Available to People Working With Low Income Families--

10:45 A.M. Intermission

11:00 A.M. III. Types of Community Programs for Low Income Families--Chairman: Mrs. Louise Addiss, Director, Home Economics Service Society, New York City

A. Brief Overview of the Variety of Programs for the Low Income Family--Dr. Virgil Clift, Professor of Secondary Education, New York University

B. Brief Overview of Home Economics Programs--Miss Alice Stewart, Home Economist, New Jersey Department of Institutions and Agencies

C. What Is Most Successful in Existing Programs--

12:00 Noon Luncheon--Room 513-514 Loeb Student Center

2:00 P.M. IV. Round Table Discussion: The Preparation of Home Economists to Work With Low Income Families--Chairman: Dr. Gwen Bymers, Associate Professor, Department of Household Economics and Management, Cornell University

A. What Is Our Responsibility to the Low Income Family--

B. What Do We Need to Know to Reach the Low Income Family--

C. How Can We Improve the Preparation of Home Economists to Work With All Income Levels in Public Schools and Community Agencies--

3:00 P.M. V. Round Table Discussion: Chairman: Dr. Irene Oppepheim, Assistant Professor of Home Economics, New York University

A. What Additional Types of Research About Low Income Families Do We Need

1. The Values and Goals of Low Income Families
2. Working with Low Income Families

B. What Types of Experimental Projects Do We Need--

4:00 P.M. VI. Summary: Miss Vocille Pratt, Chief, Bureau of Family Services, Welfare Administration, Department of Health, Education, and Welfare

WELCOME

Dean Morey Fields, New York University

I just couldn't resist coming here and extending greetings to you from New York University, the School of Education and Dean Anderson. We hope that you have a very successful conference, and that the discussions will yield great creative experiences for people who are interested in the topic of this conference--"Buying and Consumption Practices of Low Income Families."

BACKGROUND OF THE CONFERENCE

Dr. Irene Oppenheim, Assistant Professor
Department of Home Economics, New York University

I'd like to say just a few words about the background of this conference. First, this program was made possible through the generosity of both Consumers Union and New York University. Second, this meeting is an outgrowth of the ideas of many people. I should particularly like to mention the Program Committee who worked so hard in planning it. In selecting the people to invite, we picked some of the people who had been most vocal about "What Can We Do For the Low Income Family?" rather than asking for a representative sample of agencies and organizations.

RESEARCH AND THE LOW INCOME FAMILY

Defining Low Income

Mrs. Helen Lamale, Chief, Division of Living Conditions Studies
Bureau of Labor Statistics, U. S. Department of Labor.

I. Low Income is a compound term. Therefore, we must define both terms--each of which involves some problems, (a) "Low" is a relative term--income, however defined, is "low" only in relation to something else. (b) "Income" may be and has been, defined broadly or narrowly, as "gross income" in the national accounts, or "family money income after taxes" in the Bureau of Labor Statistics' surveys. (c) Both "Low" and "Income" must be defined in a manner appropriate to the purpose for which the definition is needed. National aggregate economic analyses require one set of definitions dealing with total population. Consumer unit economic and social analyses require another--dealing with individual families, or specific groups in the population.

II. The purpose of defining "Low Income" for this Workshop is for a better understanding of this segment of our population, i.e., "Low Income Families." Obviously, the interest of workshop is directed toward one way to attack poverty, how Home Economists may work more effectively with the poor. The first step, therefore, is to look at the term, "low income" in relation to defining who are poor.

In this framework we can say, at least that: (a) "low" means in relation to the distribution and level of income of all families, and (b) "income" means money income before taxes as defined by the Census Bureau and used in most household surveys, including the Bureau of Labor Statistics.

This definition includes the money wage or salary, net income from non-farm self employment, net income from farm self employment, social security, veterans' payments or other government or private pensions, interest on bonds or savings, dividends and income from annuities, net income from boarders or lodgers or from renting property to others, all other sources such as unemployment or sickness benefits, public assistance, alimony, and so forth. Receipts which are not considered income are as follows: money received from sale of property, such as stocks, bonds, a house or a car, unless the person was engaged in business of selling such property, in which case the net proceeds would be counted as income from self employment. Withdrawal of bank deposits, money borrowed, and tax refunds are not considered income.

III. At this point, I am tempted to change the title of my remarks from "Defining Low Income" to "All Quadrupeds Aren't Horses." One might paraphrase this to say, "All poor have low income, but all with low income aren't poor." What is important in understanding poverty is not level of income per se, but the level of living, i.e., consumption and manner of living of the family.

Therefore, low income must be defined (a) in relation to need which varies by family type and location. (b) In relation to total resources, money and non-money income, credit, insurance, inventories, and available community services.

Two people with the same money income may have quite different inventories of savings and durable goods that must be considered if you try to evaluate who is poor. And then, one may be living in a place where many community services are available to supplement income, and the other may not.

When you consider a definition of income or look at statistics both in terms of counting the number of families and describing those who are poor, remember that income as the indicator of poverty will be quite different if you convert the actual money income to what we call "real income," and allow for variations in family size. The Bureau of Labor Statistics has developed what we call equivalence scales. The most recent one would say that an income of $3,000 which would provide a given level of living for a four-person family, would be equivalent to $1,500 for a single consumer, something like $1,900 for a retired couple, and $4,500 or $4,600 for a six-plus family.

One must also distinguish between places of residence of different families. A $3,000 income in a high cost area would be equivalent to $3,500 in a place with such a differential in living cost. Among the 20 large cities that we use in the Bureau of Labor Statistics studies of living costs, there is about a 20 percent differential in the total cost of our budget. And so this introduces another variation in defining low income.

IV. Low Income defined as family money income "under $3,000," or "under $2,000," or any other number is a starting point but only a beginning. The real definition is yet to be made. We do have some new data which will contribute to a better understanding of the living conditions and spending patterns of the poor. There is the survey of consumer income, expenditures, and savings which covers the years 1960 and 1961, conducted as a cooperative study of the Bureau of Labor Statistics with the Department of Agriculture. Thus,

for the first time since 1941, we have data for household accounts which include rural non-farm families, rural farm families and urban families. The Bureau did roughly 9,500 schedules of families in two representative samples of urban areas that cover 66 cities. We have been publishing individual city reports which you may have seen. These summaries include total income before taxes, income after taxes, and the net change in assets and liabilities, as well as a listing of the major components of what we call current consumption expenditures--food, housing, etc. The housing is broken down into shelter, heat and utilities, house furnishings, and household operations. Clothing and medical care are still totals, but these data have been classified for the individual cities by income class, family size, age, occupation, etc.

The data now are being aggregated to the region and United States level for the urban segment, for each year and for both years combined. About the first of April 1964, the regional and U.S. reports will be available. Before the end of June, we hope there will be what we refer to as Group II tables. These Group II tables take the information that we had classified by major groups and break it down. They will show the sources of income--what income came from wage and salaries, what came from self-employment, and so forth, and break the commodity and service consumption categories down to a level which we refer to as subgroups and items. For the 66 individual cities, Group II tables will show two classes of families, those above the mean income and those below the mean income, and will show information for families of two or more and single consumers separately. At the regional and U.S. level, this table will be available by income and family size. There will also be another table which will show areas within a city--the central cities and the urban fringe--and then rural non-farm.

The two-way variables which are most helpful beyond the income and family size will be available only for the summary Group I tables, but there will be further classification of income and age, income and tenure, age and tenure, 27 different variables. There is now available a bundle of materials which describes what will be available from this survey and includes a set of sample reports of each type. At a later date there will be some detailed tables on annual clothing expenditures per person by sex and age groups, and, hopefully, sometime after July, the details of one week's expenditure for items of food. The annual table will give total food, food away from home, snacks and food in the home city, and food while traveling, but the data for individual items of food relate to one week in the spring of the year. The weekly food table is very similar to what Agriculture published for their survey of purchased food in 1955.

Materials coming out this spring are based on data collected in the spring and early summer of 1962. This is '64 and that's a two-year lapse. I realize that seems like a long time, but in 1950, the data did not come off in this form until about 1956.

The other area of our research, in which I think you people are very much interested, is the standard budget research. We have published the four-person family budget and the retired couple's budget. In the past, we have worked with the States in terms of their development of minimum wage budgets. The standard budget gives the dollar figure at which a worker's family with two children could live modestly but adequately in a large city. The budget is based on objective standards, or norms of consumption, and within the standard reflects consumer buying habits, while the expenditure data show actual income and spending. These data have many limitations, but if properly analyzed, in conjunction with data from other sources, would shed much needed light on the living conditions and financial problems of the poor.

What Can We Utilize From Existing Studies

Miss Mollie Orshansky, Long Range Research Branch, Division of Research and Statistics Social Security Administration, Department of Health, Education, and Welfare

I am supposed to talk about what we can use from existing studies. I almost feel like changing this--to what we should not use from existing studies. A major problem is that often because we are interested in getting an answer that is good, as fast as possible, we expect numbers to do what they certainly cannot do.

Also, when we are talking about the buying and consumption practices of low income families we often imply that low income families behave differently from high income families, or that they should. If they don't, why don't they? They obviously have less money, so they shouldn't be doing what high income families do. Well I don't know whether they should or they shouldn't.

I was intrigued in the book The Poor Pay More by Caplovitz at some of the things that surprised the researchers. They were startled that so many low income families had television sets. Also, many of the families had a washing machine--well this was reasonable because everybody needs a washing machine when you have a large family--but they had an expensive washing machine. Then they go on to point out that expensive is probably the wrong word. These families paid more for the same equipment than families with much higher incomes.

Some families had television sets which cost $900; in one group the median cost of a washing machine was $230. They found that these people are unfamiliar with stores that have other price ranges, that they do not know what a reasonable price is, and they are unable to get credit terms like higher income families.

We may look to data to show us how badly low-income families fare but the data may not always do that for all aspects of living. Low income families may look as if they are getting along very well, or very foolishly, depending on what you think they should do. Poor people buy things, the same as higher income people when they see the need for them. Often they don't have much information and get rooked. When they join in the grand American game of consumption, they may buy indiscriminately because they have more unfulfilled needs than most of us. Sometimes the pressure to buy comes from a growing family. Perhaps they are moving into a housing project with three or four rooms. Their previous home may have had only one or two rooms of furniture so they feel that they have to buy new furniture all at once.

I was very saddened by some of the things Caplovitz mentioned that had happened to the families he studied, but I was also intrigued by the fact that the people who were doing this research obviously had found it very difficult to put themselves in the position of the low income family. It is fine to say that people with low incomes should exercise restraint and not buy more than they can pay for now, but I think we would have to know that we were going against the American grain. If research were not restricted to one localized group of low-income families but also included high income families and middle income families, you would find that it isn't just low income families that are buying on credit. In fact, in terms of outstanding debts many middle and upper income families have a more substantial total debt, although many low income families have a large amount of debt relative to their income. The difference is that people with higher incomes aren't cheated so much, they buy in reputable places. Also, they usually have more resources to do something about the debt if it gets out of hand. Even more important is that with the prospect of a continued income you are able and encouraged to get credit.

If you just look at the materials on the low income family one might say that they were buying more than they should, and that they were foolish to carry on the policy of "buy now and pay later." It may be foolish for low income families but it happens to be what many other families in other income groups are doing, too.

There are many studies that give you broad characteristics of low income families. Often these families are not white. Many of them are old, and frequently they have young children.

The more specific composition of the group that you pick as poor depends very much on the definition of poor that you choose. Using a fixed point as the President's Economic Council did, $3,000, probably means that you will give a relatively heavier weight to older couples and smaller weight to large families with young children. Yet all of us know that one of the groups that needs help most because of the great pressure on its income are families with young children.

I haven't tried to list the sources of the data since I think most of us are familiar with them. Some of the most important sources are Labor Statistics Consumption Studies which come out from time to time; the Census data on characteristics of families, inventories of things they have in their home, and the condition of housing; and the annual Michigan Survey Research Center does a study of buying intentions.

It is important to know what people do, but how this information is used is even more important than making the data on low income families available to the people who work with these families. I'm always impressed when I look at studies on low-income families or families on public assistance, how much smarter we expect them to be than the rest of us. We realize that they may have little education, and that many of them come from rural areas in other parts of the country or Puerto Rico. We know that they are not familiar with our ways and that many can't read English. But on the other hand, they're supposed to look at the label and manage a small budget well.

The Bureau of Federal Credit Unions is trying to expand the services of their credit unions and counseling facilities to low-income families. They are hoping to do this in a number of low-income areas. Up to now families receiving public assistance could not participate in a Federal Credit Union because to participate in it, you have to save a little bit. Although it's not a lot of money a family on public assistance is not always allowed to save. If they were to save out of their grant many places would reduce the family's grant.

When we expect low income families to pay cash we're asking these people not to behave like the rest of us, not to mortgage the future a little bit to buy in the present. We ought to recognize the way they want to behave like the rest of the population. Also, many families do manage to do a great deal with very little money and few resources.

I disagree with those people who say that there is a culture of the poor. There are cultures and there are people who are poor, but I don't think there is a culture that is strictly for the poor. Every time we repeat that word, cultural poverty, we are talking about a culture of the poor.

TYPES OF COMMUNITY PROGRAMS FOR LOW INCOME FAMILIES

Mrs. Louise Addiss, Director, Home Economics Service,
Community Service Society of New York

There is available to American families a complex of community programs, both public and voluntary, which relate directly to the health and welfare of individuals and families. Although these may not be as extensive or complete as one might hope, they are greater than often supposed. Some relate to the majority of the population, as for instance the Social Security Program and Public Health services. Others are related to those with special needs, as for instance Public Assistance, subsidized housing projects or Family Life Education services. Those of us who are concerned with and have some responsibility for services to families--particularly those of low income--have the added responsibility of keeping currently informed of existing programs, their influence on the socio-economic status of families, and how and when specific programs can help meet the needs of families with special problems.

Our two speakers, by training and experience, are uniquely qualified to give us an overview of community programs of significance to families of low income:

> Dr. Virgil Clift is Professor of Secondary Education at New York University, Director of Research Programs with Low-Income Families for The Ford Foundation, and curriculum specialist with the Harlem Domestic Peace Corps Project.
>
> Miss Alice Stewart is on the Home Economics staff of the New Jersey Department of Institutions and Agencies, an agency which is one of the leaders in progressive public welfare programs in the country. Her graduate training in Family Economics and Home Management at Cornell, and her earlier experience as a teacher of children and adults have given her insight and understanding of the needs and problems of individual families.

Brief Overview of Programs for Low Income Families

Dr. Virgil Clift, Professor, Department of Secondary Education, New York University

I want to talk about five types of programs for low-income families. The first has to do with income, the second one has to do with public welfare and relief; the third one with housing; the fourth with health, and the fifth with education. I'll try to say a little bit about what is happening in each of these as it relates to the low income family.

First, let us look at this problem of unemployment and the types of programs that relate to it. This is one of the most pressing problems which confronts the American establishment. At the present we have over five million men out of work and 20,000 men are losing their jobs each week because of automation. As a result a large number of people are poverty stricken.

As was discussed earlier there are many different definitions of poverty and many different statistics on the number of people in this country who are poverty stricken. President Kennedy in his State of the Union message indicated that 32 million Americans were living in poverty. Michael Harrington, who wrote the recent best seller, The Other America, says that between 40 and 50 million Americans are poverty stricken. Leon Keyserling, former chief of the Conference on Economic Progress, says that there are 36 million people living in poverty and another 39 million people who are deprived. According to all of these figures there are a very large number of people in this country who are adversely affected by poverty.

Now, what are the programs that deal with this problem? In the first area, employment, the most widespread program that operates throughout this land is the state employment service. In each state in the nation there is a government sponsored employment service organized and operated to place men in jobs of all different types. Usually these positions are below professional level, many of them are unskilled and many are semi-skilled.

A second type of program that has something to do with unemployment and which is found in most of our major cities, are youth boards. Many cities have established youth boards or employment agencies that operate separately and apart from the State Employment Agency to aid the young people in their teens or early twenties, to get jobs. For some reason many young people who have just graduated from high school or who have dropped out of school are reluctant to go to the state employment office.

There are also other government agencies working on the problem of unemployment, such as the Federal Employment Practices Act Program (the FEPC). The Mayor's Commissions on Human Rights which operate in various cities are making a special effort to do something to help Negro, Puerto Rican and other minority groups who have been discriminated against for a long time for menial jobs and higher levels of employment. These groups work especially with firms that have government contracts or where government monies are involved.

We have many civic and social organizations, not associated with government, that try to do something in the employment field. One of the most important, of course, is the Urban League, which is primarily concerned with providing job opportunities for professionally trained Negroes. A large number of the Negro people that you find working as engineers and in other high level professional jobs have been helped to secure these positions by the Urban League.

You might think that professional job opportunities are not related to poverty, but in a sense they are. Until very recently more than 13 percent of the college-trained Negroes in this country were working in service occupations. They were working as elevator attendants, servants in homes, chauffeurs and other things of that nature.

Another more recent organization that helps people who are unemployed are the several programs sponsored by the Office of Manpower. The Office of Manpower in Washington is concerned with retraining individuals who lose their jobs because of automation and also in alleviating problems created in areas where there are military installations or defense plants. For example, when the operation of a Navy facility is decreased, a large number of non-military personnel are put out of work. Civilians who lose their jobs in this way can receive retraining through the Office of Manpower.

Finally, we have a number of smaller operations in urban areas which provide training opportunities for teenagers. On the lower east side of New York the Mobilization for Youth Program is training young people for jobs that are needed in the economy of America. Up in Harlem we have a similar operation called the Domestic Peace Corps.

One of the most important reasons why we need a more vigorous program of assistance to im poverished groups is that public welfare is expensive. We can run New York University, which is one of the most expensive universities in the country, for one year on what we spend in public welfare in three months in New York City. In addition to that, this past September, the Welfare Department in New York spent a million, seven hundred thousand dollars on clothes and shoes for children so that they would look respectable enough to go back to school.

Welfare touches a total of 450,000 lives in New York City. That's nearly a half a million people, a tremendous number. This, of course, is divided up into many different programs. We have home relief, child welfare, hospital relief and so forth. A part of the cash payments are for individuals who are unemployed. Often they no longer draw unemployment compensation and need money to pay their rent and buy food. Children whose parents have neglected them must be taken out of their home and placed somewhere else. There are also programs which provide aid to the blind and the disabled.

In almost every city there are community enterprises that are trying to do something for people. Some of the best examples of these are the settlement houses. New York had settlement houses long before there was organized relief and welfare. We still have many neighborhood houses and settlement houses who assist poverty stricken people. They provide aid to disadvantaged families on a short-term basis for a week or so until they can get on public welfare. They also provide other important programs. One of the most effective is the pre-school program in slum areas. Frequently they have recreational programs for young people. These programs are financed from private funds, not public ones. We really have two different sets of programs operating in our cities: those that are publicly supported and those that are financed from private sources.

The third type of program for low-income families has to do with health. I suppose poverty makes people unhealthy. Certainly if you're unhealthy you get poor in this age of high medical costs. But I think more frequently it works the other way. The people who have the highest incidence of heart trouble, all types of diseases and so forth are the very poorest.

We have clinics that are designed to help people with ailments and diseases which are more prevalent with the people who are in the slum areas, the VD clinics, the TB clinics, the rehabilitation programs for the alcoholics; the rehabilitation programs for drug addicts. We have now the psychiatric social caseworker who tries to help in a way which was unheard of three decades ago. Some kinds of problems are also widespread in more rural areas of the country.

Some very phenomenal things have been happening in the area of housing for the poor. In fact they are staggering. Let me give you some examples. In the city of New York between 1950 and 1957 we had 750,000 people move out of the city. They were, for the most part, white middle-class families; people who were making approximately $10,000 a year and up. To take their place we had 680,000 people move in, primarily Negro and Puerto Rican families, and white people from the Appalachian mountain area, i.e., Tennessee, Kentucky and West Virginia. That means that we had a city almost as large as Washington, D.C. or Baltimore move out of New York and one just as large move back in. We have built some 600,000 low-cost housing units in New York City since World War II. In spite of this we still have 8,000 acres of slums. New York has more problems of this type than any other place because it is bigger, but on a smaller scale you have the same thing operating in Washington, Philadelphia, Detroit, Chicago and Baltimore.

When we get ready to build one urban renewal project we sometimes displace as many as 100,000 people. That's a sizeable little city in itself. We tear down an area in New York City to build a new area, we displace 100,000 people, who are usually poor. This creates quite a problem just shifting people around while you're tearing down buildings to build new buildings.

Let's look at the fifth type of program, education. The heart of many of these problems that I've been talking about seems to be related to education. People who have high levels of education, with very few exceptions, are not poor people. If you can get people to acquire a great deal of education, they usually operate throughout a lifetime at a higher income level than the people who are poverty stricken. Also, there is a high correlation between how people operate in this society, the contribution they make to it, and the amount of income they have.

We have several important programs. All of you have probably heard about the Higher Horizons program in the New York City schools. You might want to ask some questions about it but since it is so highly publicized, and my time is so short that I won't say anything about it other than to mention it. Another type of program that is very effective and is giving us some new insights is the Northern Student Movement. This operates in many of our slum districts up and down the East Coast. College students from Ivy League colleges work with a small group of youngsters in slum districts who are doing absolutely nothing in school and try to get them to learn something. They work as tutors and assistants, they help them put on plays, improve their reading, learn their algebra lessons and other kinds of things. The effectiveness of this program is somewhat embarrassing to those of us who are college professors of education when our former students are not doing as well as teachers as we sometimes think they should. The youngsters from our outstanding colleges and universities who have elected to come into the slum districts do exceptionally well in working with children from the slum areas.

Another program designed especially to help underprivileged Negro, Puerto Rican and other culturally deprived youngsters who ordinarily wouldn't have an opportunity to go to college is the scholarship program. The result is that we now have some 125,000 Negro youngsters in colleges in the north, including some very excellent Ivy League colleges. This is the first time that we have had so many in northern schools, and the first time that we have more Negroes in colleges in the north than in the seventeen southern states.

It seems to me that what little consumer education is in the school curriculum is being done in home economics classes, or classes in family living which are nearly always optional. Yet you have children who are getting out of school at the age of fourteen or fifteen. Very shortly after that they are supporting themselves, and sometimes supporting a family. Although they've been given an academic education they often haven't been given the facts that they need to know about such topics as nutrition, the cost of credit or how to buy, or managing money. These are great desert areas.

Several things have happened to our society in the last thirty years that have resulted in the existing organizations being unable to make much impact on the problems of poverty and deprivation. Most of these organizations were related to society when the problem was different from what we now have. I think possibly the people in your field, with the type of curriculum and type of insight that you have into this thing, ought to do more with this than we're now doing in society as a whole.

The things that once held people together in a social organization just don't exist any more. Maybe home economics has to look at the home with new eyes. The home has changed. Many low income families do not have the same kind of homes that I grew up in, the home that was the center of things. Now the home is a place to come and sleep. Even the family functions are not the same.

Brief Overview of Home Economics Programs

Miss Alice Stewart, Home Economist, New Jersey Department of Institutions and Agencies, Division of Public Welfare

In early 1963 the American Home Economics Association recognized the need to identify the services home economists were providing for low income families. In response to this need, a sub-committee of the public relations committee of the Health and Welfare Section was appointed and charged with responsibility of preparing the statement for the Association interpreting the current role of the home economist in providing services to low-income individuals and families. To obtain the necessary background information to prepare such a statement, the committee appealed to the President of State Home Economics Associations, asking them to identify all programs, projects, and activities within their state which were directed towards strengthening the family life of low-income families and in which home economists participated, either directly or indirectly.

Twenty-nine of the states and the District of Columbia responded as requested. Three of these respondents reported that they knew of no programs within their states that were planned for low-income families. This report is based only on reports of the 27 respondents who indicated that there was some activity within their state.

The committee is aware that many interesting and unique projects have been excluded from this report, simply because the person who answered the questionnaire did not know about them or because there was not enough time to report them. Therefore, this report should not be interpreted to mean that home economists are not active in other areas.

The reports received indicate a diversity of significant projects being carried out presently and planned for the future. Cooperative efforts between Departments of Public Health, Public Welfare, Education and cooperative extension service were frequently mentioned. In many instances a home economist or a nutritionist from one of the agencies served as a resource person to the other agencies. Nutrition and the improvement of food habits in the use of surplus commodities was the area which received the most emphasis. Also included in the reports were brief descriptions of work with school drop-outs, migrants, senior citizens, urban renewal programs, and public housing projects.

Little research was being carried out and there was an absence of training programs for professional and non-professional persons who work with low income families. All means of communication were used to reach low income families from personal contact to television.

On the basis of the 27 reports of programs, projects and activities, which were directed toward strengthening the family life of low-income families and in which home economists participated, the committee made several observations. First, that there is no central clearing house for dissemination of information about different programs.

Second was that very few programs were planned specifically for low income families. The fact that members of low income families attended programs or meetings, or participated in projects does not indicate that there was any recognition in the subject matter of anything less than the middle class standard of living. It was evident that many of the home economists who served as resource persons knew very little about the policies and practices of the agencies at which they worked. Some low-income families did not receive the viewpoint of the home economist but rather the viewpoint of the agencies; this limited the function of the home economist.

The last observation of the committee is certainly an extremely important one. It was apparent that the role and responsibility of the home economist in improving the home and family life of low income families has not been clearly designed. Many home economists stated that they felt unprepared to work with low income families. The state presidents expressed the need for a better understanding of the activities of home economists and of what they can do for low income families.

What do home economists need to know? And what can they do to prepare themselves in order to successfully work with low income families?

HOME ECONOMICS AND THE LOW INCOME FAMILY

Dr. Gwen J. Bymers, Associate Professor, Department of Household Economics and Management New York State College of Home Economics, Cornell University

We all are quite aware of the criticism that Home Economics over the years has been identified with the middle class. We know it's true. It's also true that most families are middle class. But there are hundreds and thousands of families that are not so fortunate. Also those of us here recognize that we have a responsibility to work with low income families. We'll start out discussing three different questions, one, What is our responsibility to the low-income family? Two, What do we need to know to reach the low income family? and three, How can we improve the preparation of home economists to work with all income levels in public schools and community agencies?

Mrs. Louise Addiss, Community Service Society

I don't know how we ever separate our responsibilities as a home economist and our responsibilities as a citizen. I can't separate mine very well, I know. But it seems to me that as home economists, we have an additional responsibility over the average citizen in terms of interpretation. For instance, what does it mean to live on a public assistance grant at the level of some states? Interpreting this to the community at large, what it means to have ceilings and to have standards which are inadequate in the first place is our job. We need to have an opinion about minimum wage laws which are not at an adequate level to support a family adequately, and so many families need public assistance in

addition. It seems to me that we can help to identify what these problems are and interpret them to others in a way that many people cannot. I think that this is our major responsibility as home economists--to give impetus to this interpretation because maybe we can do it better than most other people.

Miss Gertrude Lotwin, Home Economist Consultant
N.J. Department of Institutions and Agencies, Division of Public Welfare

A home economist needs to have a thorough knowledge of the agency which she is working through to work effectively with low income families. She has to understand the group that she is working with and understand the purpose of the agency. Moreover, she needs to come with constructive feelings about what people who have low incomes can do. It's certainly been my experience that the number of persons on public assistance who are "mismanagers" are the least number in the group. By and large these are exceedingly good managers.

However, they make economic decisions you and I don't have to make. I'm not going to say that they're bad decisions. But it isn't necessarily a good decision in someone else's eyes, and I think this is where we as home economists have to be extremely careful. This is an area which I think we have to do some real soul searching on. Is a decision made by a family that doesn't necessarily conform to the kind of goal that we have set in our mind's eye necessarily a poor decision? Or is it really a very good decision in a total framework of the particular family?

Miss Doris Hanson, Graduate Student
Department of Home and Family Life, Teachers College, Columbia University

I'd like to pick up what someone said earlier. I wonder if it is possible that we are going to do a disservice by being able in our very efficient way to figure out how a family of four, if they are terribly poor, and very good at planning, can live on a food budget of $17.25 a week, instead of saying very loudly and boldly that it can't be done, that they need more money.

Dr. Irene Oppenheim, Assistant Professor
Department of Home Economics, New York University

I'm very much concerned in this area with what we can do for prospective home economists. Prospective home economics teachers often come from middle class backgrounds and many of them go to teach in communities where the youngsters are very poor. What can we do to make it easier for youngsters from middle class backgrounds, with middle class values, to work with low income families?

Miss Frances Shoun, Assistant Chief Nutritionist
Children's Bureau, Department of Health, Education, and Welfare

I would like to go back and underline some of the things that Dr. Clift said this morning about the interrelationships of programs to low income families and mental health. We in the Children's Bureau have known for a long time that a great need exists for medical care and services for families in addition to those provided by public assistance programs. With the great concentration of people in cities of New York and Chicago, and with some of the new legislation we now have, monies will be available to extend services to mothers and children for better health care, particularly for expectant mothers and infants. Some of the plans underway are for comprehensive projects, not just medical services, and nursing care.

These new comprehensive programs need the support of allied professions such as home economics. I would like to see training of home economists who will teach in high school levels and serve as consultants to public programs include some work with these problems before they get into them. Could laboratory work be used at the trainee level, and in-service training for teachers at the graduate level? This would introduce them to all of the resources which they are going to be working with in the community and take them into low income homes.

Miss Vocille Pratt, Chief, Assistance Standards Group, Bureau of Family Services,
Welfare Administration, Department of Health, Education, and Welfare

Whatever good comes out of the new push on poverty, the nation should get more perspective on what poor families actually manage on. The pattern varies greatly. New York State says that a mother and three children of specific ages, according to its public assistance standards, needs $249.50 a month and New York gives that family $249.50 a month, if it has no other income. Texas, which we do not think of as a poor state, says this same family needs $154.00 a month, and they give them $94. This is too little to be able to manage "well."

Dr. Bymers, Associate Professor, Department of Household Economics and Management
New York State College of Home Economics, Cornell University

I'm not so sure that I care how the families manage. If you can't prove to me that it makes a difference and an important difference, why shouldn't they do it the way they want?

. . . . . .

Mrs. Elizabeth W. Crandall, Chairman
Department of Home Management, University of Rhode Island

We cannot say one method of managing is better than another. Frequently, however, families are not satisfied with what they are achieving, and you are trying to open up alternatives to them without telling them what they should be doing.

If satisfaction is to be one of the consequences, there should be a way to measure whether people are satisfied. Not just whether I think it was a good idea, but whether what they did resulted in help as they perceived it. Can you show that managing one way makes them satisfied, and managing in another way doesn't?

Mrs. Ethel Ugelow, Home Economist,
Cook County Department of Public Aid

We are working with mothers from low income families. We have set up classes for these mothers, and we have learned a great deal over the three-year period that these have been running. We are constantly changing our curriculum, and especially what we teach about money management. We still don't think that we have it as well done as we would like.

Most of our home economists have had some casework background. They have actually worked with caseworkers in our agency. They have visited these families in their homes with similar problems. So they know a great deal about them before they get started teaching. We also don't expect too much in ten lessons and if the mothers can go away having learned one or two things that are useful to them we feel we have done something.

Mrs. Nathalie D. Preston
Brooklyn Bureau of Social Services

The major part of my duty is to supervise homemakers at the Brooklyn Bureau of Social Service. Up to now their major role within the family setting has been to relate to the caseworker who is involved with the family members, observations of the interrelationships between family members, and parents.

Record-keeping of how the low income family uses their money has not taken too big a role in their work. However, my experience leads me to believe that low income families have done pretty well in managing their money even where the funds are very limited amounts from welfare sources. I can see it has a huge area of exploration in this area if we could get the cooperation of the homemaker services in all areas of the country. If we get even a few of them to give us this kind of data it would be a wonderful source of information about how low income families manage.

Dr. Gwen J. Bymers, Associate Professor, Department of Household Economics and Management
New York State College of Home Economics, Cornell University

It seems to me this is a point that was made before, that everybody just being a person and a citizen in our society ought to know the essentials of money management. At least to be led to think about it- exposed to problems.

We may never have to live on a modest or meager income. I think this is part of the problem. We have grown up in separate cultures and there is a total lack of understanding as to how other people live. This we need to bridge. In home economics we should put our emphasis on how to live in our society as consumers, rather than on the techniques of being a good cook or seamstress.

. . . . . .

I'm talking from my own experience, but what we're working on and have been working on for quite some time through our extension teaching is not a family budget kind of approach but a preview of the year's spending. What we are using as a teaching device is not how much are you going to spend right now on this or that but a preview, I've got this to spend, I will have to take care of these things. Thus they are looking at a much more realistic figure of what they've got to spend right now.

Miss Mollie Orshansky, Long Range Research Branch, Division of Research and Statistics
Social Security Administration, Department of Health, Education, and Welfare

When you make up a budget, you can balance everything out. You can decide that a coat is going to last four years or you can put a quarter of the price in for the year. Then if you are real bright you can divide the quarter by twelve, and have the amount per month. And if you want one bedroom set every twelve years you divide it up and put in your amount per year.

But what do I do when I buy the coat? I don't buy a third of a coat this year, or a fifth. I need the $50 or the $60 all at once. I know I should have started five years ago to save but my problem is I didn't. I have to buy the coat and I haven't got the $50 yet. Now, my problem is, what choice will I make.

Food is easy. I eat every day and maybe I have leftovers, but I'm not saving up for next year. But how do I work it with other things? Is it the food that I don't buy when I buy a coat? Or is it the rent that I don't pay? The way they must manage is not at all like planning a budget.

Dr. Irene Oppenheim, Assistant Professor
Department of Home Economics, New York University

I'd like to come back to something Miss Orshansky said earlier and that's in terms of the method in which we teach financial management. I am very much impressed that in the materials I have seen on teaching financial management, you always start with a blank page. And preferably you have a blank page plus three weeks' accumulation of funds before you start your planning. Most spending plans assume you have money accumulated to make an initial payment for an item out of something you have saved.

If you do not, if you are a girl who has gone to school in the south and is taking a job in the north you may need a new winter coat on your first day in the north. Maybe you have come with nothing more than your carfare north, or perhaps you even borrowed that. A person in this situation is not starting with a blank page, but a red ledger. It's a whole new concept to teach money management to people who don't start with a little backlog of money. Most textbooks and teaching materials do not consider this problem.

Mrs. Louise Addiss
Community Service Society

I think you have been saying that families will manage their own affairs their own way and we need to respect their individual rights. I wholeheartedly approve of that. On the other hand, we who work with families know that they often pay a very heavy price for what they do.

Let me tell you about two cases that came to me for consultation in the last year. One family, on public assistance, was given $150 to buy some blankets and furniture. This was a family where the man's earnings were very low and they were being supplemented by public assistance. Poppa and Momma went off to an installment house in the neighborhood and put their $150 down on a $1,000 worth of furniture. The point is not whether it is good or bad, but that they have used the money which was to do something quite differently from the purpose for which they were given it.

Just last week a family on public assistance bought a $160 sewing machine. The mother sews well, and in terms of her values it was very important for her to have a sewing machine. It is one of the few satisfactions she has in life, and it meant a much better standard of living. There were six children, she could sew for them, and make things for the house. On the other hand she is on public assistance. How is she going to meet the payments of $10 a month, and where did she get the $5 to make the down payment?

Both of these families are going to pay a very heavy price for what they've done. We can't just say, you know they manage well, or sit in judgment of what they've done. Our social situation demands a very heavy price for the mistakes families with very low incomes make. How can we protect them? How can we help them? How can we help them to see that there are alternatives, and the choice that they may be making is not a very sound one in terms of the overall well being of the family?

SUMMARY

Miss Vocille Pratt, Chief, Assistance Standards Group, Bureau of Family Services
Welfare Administration, Department of Health, Education, and Welfare

It has certainly been an important occasion for all of us, and for what we represent to or for the field of home economics. Although we are very much concerned about the low-income family in American life, this is not to deny our interests in working with other groups in America.

This topic of low income families has been of interest to us because all of us are teaching through our different activities. You may teach a welfare director, a welfare board, a legislator, homemakers, caseworkers, and students. To that extent all have something in common out of which to consider the question of continuing a modification of this meeting in the future.

I'll just make one point from Helen Lamale's talk: the difficulty in formulating precise definitions when one is talking about a broad subject. One of our problems in communication today is that so many begin as if their world is the world, instead of beginning with their definitions; i.e., "This is my world." "This is what I mean." Thus Mrs. Lamale told us that the Department of Labor used the definitions from the Bureau of the Census to define what is income and what is not.

Mollie Orshansky brought the concept of "bridge-building": to take the familiar and build forward to the unfamiliar. This is something we can do. For example, in talking about the deprived or "the poor," is it necessary to make them as foreign and strange as some people seem to be doing? It is all very well to say poverty has been invisible and now it needs to be made visible, but it is also important to mention that there's a lot that's familiar to a lot of people. To this extent we do not have as big a bridge to build. I don't believe in discounting a problem. On the other hand, if one can bring it down to size, it helps in solving the problem.

We need solutions that are not moon shots but hardware solutions. One of these is the known fact that most people learn better in face to face situations. Some of the plans mentioned earlier are home economics-instituted plans of going to people who will not come to us. Projects in urban centers, in housing developments, going to individual families--this kind of thing we have to do.

Dr. Clift said it is essential to gain perspective. Spending "millions for welfare" may mean giving only $50 a month to half a million severely disabled people. This is a total of $25 million but it is not enough money to support most of these people decently. You people can call these things to the attention of the public.

Some very interesting things are being done about the "point of intervention" in rendering assistance to families. Do you intervene in the family only with the very young child, because it's the young you want to reach? Do you intervene at the point of adolescence, because this is where the school dropouts come? These decisions are very important to public policy because we cannot take all the options. We may have to decide on one. It may be the wrong one, but we have to risk it. These same kinds of decisions face every field--medicine, teaching, social work, public welfare, even the Congress.

A central clearing house was suggested for all the information in this area. To the public field, this seems an opportunity for the voluntary groups. People in the voluntary field probably think it should be done by the public sector. What we don't know is whether, if we have all the information there is, we can ever use it.

The point was made that anybody who listens can learn. This was said in reference to caseworkers, home economists, teachers and students. True, anybody who goes to another group can learn if he will listen. But this is a hard thing to do, and a very difficult thing to teach. Those of us who work with low income families need to learn to listen to find out how we can help people meet what they think are their real needs.

A final point made was that the group of people who had the most problems are the least equipped to cope with them. Home Economics is identified with trying to do something to bring about change. Social workers will tell you that nobody can predict what will bring a particular change in a particular person but that change does occur, given opportunity.

The most important thing that we can do, wherever we are, and with all of the families we work with, is to fight against their hopelessness. Hopelessness is a death in life, and it is this that we want most to work against.

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LEADERSHIP FOR VOCATIONAL EDUCATION IN CALIFORNIA

VT01429

THEORY AND PRACTICE OF PROGRAM DEVELOPMENT

ED013338

Report of the STATE CONFERENCE

Playa Del Rey, California

May 10-11, 1966

VT 01429

DIVISION OF VOCATIONAL EDUCATION
UNIVERSITY OF CALIFORNIA
IN COOPERATION WITH
THE VOCATIONAL EDUCATION SERVICES
CALIFORNIA STATE DEPARTMENT OF EDUCATION

STATEMENT OF PURPOSE

CALLED BY:

VOCATIONAL EDUCATION SECTION
OF THE CALIFORNIA STATE
DEPARTMENT OF EDUCATION
WESLEY P. SMITH, DIRECTOR

DIRECTED BY:

DIVISION OF VOCATIONAL EDUCATION
UNIVERSITY OF CALIFORNIA
MELVIN L. BARLOW, DIRECTOR

REASON:

TO PROVIDE REGULARLY SCHEDULED STUDY MEETINGS OF SUPERVISORS AND COORDINATORS OF PUBLIC SCHOOL VOCATIONAL EDUCATION PROGRAMS IN CALIFORNIA

PURPOSES:

I. TO STUDY CURRENT LEADERSHIP PRACTICES

II. TO STUDY VOCATIONAL EDUCATION PROGRAMS AS RELATED TO NATIONAL, STATE, AND LOCAL REQUIREMENTS.

1429

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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EVALUATION

Report of the

STATE CONFERENCE

Playa Del Rey, California

May 10-11, 1966

OPENING REMARKS

Bruce Reinhart

Leadership for Vocational Education in California: Theory and Practice of Program Development -- this is the name which has identified the 1965-1966 in-service program for vocational educators. The first conference opened at the Villa Hotel in San Mateo, October 13, 1965, and the final conference will close here at Playa Del Rey tomorrow. It has been an eventful year.

Just for the fun of it, I sharpened my pencil and reviewed the past conferences. I came up with a few interesting statistics. During the past year, one hundred seventy-two participants in the Program have been offered a total of one hundred forty-nine hours of conference time involving forty-three speeches, ninety-three individual group discussions of various types, thirty-five triad conversations, ten case study sessions, five panels, five symposiums, and six research instruments. In order to bring all this about, we have had a project staff at UCLA of three -- sometimes four -- people working full-time, three people working part-time, and Dr. Barlow, who has lost all track of time. It may interest you to know that before this project is over, we expect to have made about four thousand phone calls, sent out thirty-five hundred pieces of mail, collected more than one thousand IBM cards of data, published five summary reports and one final report, and held fifteen different committee meetings.

Now, all this information may just be so much "administrativia,"

but if it is indicative of the time and energy that went into the Program, then something significant ought to have taken place to validate the work that has gone on. The Project staff will be making a very comprehensive evaluation of the year's program in a final report which will bear the title Directions: Leadership for Vocational Education in California. Our report will not be a summary of the summaries of the conferences. On the contrary, it will be an analytical report of the year's program and research data for the purpose of appraising the development of leadership for vocational education in California through an in-service program. The final chapter will include some guidelines for in-service leadership development. It is our hope that this report will help advance vocational education in California.

We have encouraged your evaluation also. Feedback from the participants has been requested at every conference through a number of enclosures in your conference folders. In addition, many letters have come from conference participants. We have appreciated all of them. Today, we would call your attention to the one-page evaluation form in your folder and encourage your response.

On behalf of the project staff, I would like to say that we have all had a very interesting and enjoyable year. You have been generous with your good will and with your cooperation. We especially appreciate the friendships which have evolved, and we hope that our careers will bring us even closer together.

Leadership For Vocational Education In California

Personally, I have been interested in the administrative dynamics which shaped the year's program. Five major groups brought their interests to bear upon the program which emerged: (1) the participants, (2) the liaison committees, (3) the advisory committee, (4) the project staff, and (5) the Vocational Education Section of the State Department of Education. Each group had something to contribute. Ambivalent feelings about the distinctive character of the Program were common, and we were not always in agreement about what constituted a good program. What evolved was a synthesis of many contributions. The result was often surprisingly good.

I am reminded of a friend of mine who visited me from my home town in Du Page County, Illinois, just before the last Presidential election. Coming from one of the most solidly Republican counties in the nation, he volunteered this testimony: "I and my father and grandfather before me, and their fathers, have always been straight-ticket Republicans." "Ah," I said, "you are going to vote for Senator So-and-so." "No," said my friend, "there are times when a man has to push his principles aside and do the right thing." That friend of mine could well have been a member of one of the groups which developed our program this past year.

I am also reminded of a passage in Nash's play <u>The Rainmaker</u>. A great success on the stage and as a movie, the key to it, ethically, lies in a scene where the morally outraged brother of a lonely, spinster girl threatens to shoot the sympathetic but not "serious"

Rainmaker because he makes love to her in the barn at midnight. The Rainmaker's intention is to restore her sense of womanliness and her hopes for marriage and children. Her father, a wise old rancher, grabs the pistol away from his son, saying, "Noah, you're so full of what's right you can't see what's good."

We all carried our principles and our notions of what was right into our Leadership Development Program. But there were times when we pushed our principles aside and did the right thing. Yet, we were not so full of what was right that we could not see what was good. As a result, we have had a great year.

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LEADERSHIP FOR VOCATIONAL EDUCATION IN CALIFORNIA

WESLEY P. SMITH

LEADERSHIP FOR VOCATIONAL EDUCATION IN CALIFORNIA

Wesley P. Smith

Less than seven months ago we who represent the State Department of Education, you who represent the school districts, and the staff of UCLA's Division of Vocational Education began an experiment. We put into this experiment money in the form of vocational education funds contracted with the Division of Vocational Education of the University of California; we gave our time in the cumulative total of thousands of hours; we contributed our patience, our experience, and our hope for increased competency as individuals so that we might render better service to vocational education. Though the experiment is not over, we can run some tests. Before doing so, however, we must look again at our original purpose.

With the knowledge that almost overnight there had emerged in California over a hundred brand new leaders in vocational education (There were five bona fide vocational education directors in 1963; there were more than one hundred in 1965.); with the knowledge that this array of people had varied backgrounds in vocational education (Some had much experience; others had practically none.); with the knowledge that the manner in which vocational education would be extended and improved would depend more on this entirely new group than on any other personnel in the public schools; with the knowledge that neither time nor the requirements of the program permit learning

solely by trial and error the tasks of leadership; with the knowledge that the median skills of leadership could no longer be satisfied with preparation gleaned along the way; and with the selfish desire to make immediate and maximum use of the talents of these new practitioners; the vocational education staff of the Department of Education contracted with the staff of UCLA's Division of Vocational Education -- Dr. Barlow, Bruce Reinhart, Mary Fuller, and Judy Seder -- to develop a program of in-service assistance for these new middle-men in vocational education. Our only stipulations were that such assistance would be systematic in nature and keyed specifically to the needs of the local directors of vocational education for only one purpose: TO MAKE EACH OF US MORE COMPETENT TO PERFORM OUR INDIVIDUAL AND JOINT TASKS OF GIVING DIRECTION TO VOCATIONAL EDUCATION IN CALIFORNIA.

Now we come to the time when we should assess our accomplishments. I recite but a few. Communication between and among us has been improved to a marked degree -- not to the degree we desire, but enough to say that in seven months more has been accomplished than might have been accomplished in seven years without this approach. We have gained an understanding of the program and of our roles in it. We have achieved increased competency in leadership techniques. We have, as never before, a sense of identity as a special group. Our morale has been bolstered and our capacity for patience enlarged.

It is not my purpose here to evaluate all of the aspects of the program, but I must share with you my point of view. Everyone who

has participated in this program during these short seven months is a better practitioner of vocational education, a more capable leader in vocational education than he or she was at the start. The cumulative effect upon the program of vocational education must be recorded as one of the most significant developments in the history of vocational education in our state. So, Mel and your staff, we thank you for this contribution, and we express our appreciation for your zeal on our behalf. We give you credit for having performed well the task we asked you to assume.

With that said, we now must ask ourselves, "What next?" What next can we jointly do to increase our talents? What next can we jointly do to learn our jobs? What next can we jointly do to extend and improve our program?

A year ago this decision was made for you; this time the decision will be made by you. It is the intention of our state staff to designate immediately upon completion of this conference a representative advisory group composed of some of you who have participated in this experiment. We will ask this group to tell us what in-service assistance we can arrange for you next year. With the experience you have had during the past year in this general effort bolstered by a year of solid experience as directors of vocational education under your respective belts, you now become planners. You call the signals.

Dr. Barlow and his staff will evaluate our efforts, as will our

state staff. We will ask the representative committee to evaluate our efforts also, and we solicit your individual suggestions. We will put all of this together to mould a new model to serve you next year.

So much for the development of leadership talent. Now, with the freedom given me by your planning committee, I impose upon this final session some challenges in vocational education that deserve our most careful consideration, now and for the future. And as I suggest these matters, I once again stipulate that in this group, in this room today, are the persons who must and will do more to determine the future, status, shape, and character of vocational education than will any others in our state. You will shape its form by what you do or by what you do not do! We, you and I, have been assigned this task of leading, yes, directing the program of vocational education, and by our action or inaction, we will affect the program directly.

These, then, are the challenges as I see them.

- The amalgamation of local directors of vocational education (by whatever title -- dean, coordinator, director, consultant) into an identifiable group with an integrity unique to itself must continue. There must be increased emphasis upon the identification, solidification and recognition of your respective roles and responsibilities (you were often placed in your positions with minimum attention to your roles and responsibilities, but with

the charge to produce). Perhaps an association of some kind is in order.

- Of equal importance is the subsequent necessity to identify for all to see, to understand, and to recognize, your respective relationships with each other and with the staff of the State Department of Education.

- Consideration of these two challenges involves the attendant need for constant and quick communication. This program, among its several values, has performed well in this respect. I sat at a table today and listened to the chairman call off the first names of the members of his group -- Tom, Chet, John, Les, Dick -- without the aid of name-tags. You and I know that communication is a relative thing, but that for it to be really effective it must be planned and worked at. The kind of communication we need in our program will not just happen; we must make it happen.

- Our brand of vocational education must be identified in such a manner that it is immediately discerned as being different from and better than "brand x" or "brand y." How can we market a product so elusive in shape and character? Here we have the most

critical challenge in vocational education. The problem is particularly crucial because we are experiencing the stiffest competition ever, not only from other types of education but from within vocational education itself. The competition will be even greater tomorrow.

- We face the challenge to become more knowledgeable and to widen our purview. We must spread our influence over the entire program; if we are to be truly the Division of Vocational Education, we must be involved in the whole -- in M.D.T.A., W.E.E., in youth organizations, in all subject-matter areas.

- We must know more about what is going on in vocational education outside our own immediate district responsibility. This means being informed about federal appropriations, the State Plan, the organization of the State Department of Education, the Statewide Study of Vocational Education, state legislation, and State Board activities. Communications, again, provides us with the key, but also involved is an attitude of concern.

- We have the mandate to influence the best usage of existing federal funds for vocational education.

How easy it would be to let innovation suffer at the hands of routine! Federal funds cannot be construed as the principal support for vocational education, but instead as "seed" for future program development. Local directors have a significant opportunity to influence the shape, character, and future development of vocational education as they guide the use of these funds.

- We must expand the influence of vocational education through the wealth of professional associations around us, and within those other organizations that touch various aspects of our program. The American Vocational Association is a case in point. I will say again what I said in San Mateo: it is of critical importance that we support the only professional association that operates exclusively for our benefit. I was embarassed when Mary Ellis pointed out to us last night that we have only 800 members of A.V.A. in California out of a national membership of 36,000. I assume that everyone on our state staff is a member; I assume that every local director is a member. This means that only 600 other persons in the entire state belong to A.V.A. Bold as I may seem, I insist that it is

our obligation to support this one professional organization above all others.

- With patience and understanding, we must help our state staff adjust to organizational changes. The Arthur D. Little study will be finished soon. In the meantime, the regional office organization will continue to be our principal field contact, and next year we will strengthen our efforts in this direction.

- Above all, we are challenged to be leaders, to actually assume leadership responsibility; not by title, but by action; not by mere assignment, but by insertion of recognized services into the program; not by merely being on the outside edge of the program, but by being on the inside -- with sleeves rolled up, mixing our talents into the program so that we affect its operation and its results.

Now, as we approach adjournment, may I say to each of you, thanks for your patience, your confidence, your friendship, your cooperation, your loyalty, your talents, and your help. Vocational education in California was never stronger, has never enrolled so many, was never so well-founded as it is today. And for all of this, you people deserve the credit. While we list all we should be doing, discuss all our shortcomings, identify our unfinished tasks, and deplore our

frustrations, the fact remains that the program we lead has never been in better shape. The leadership has never been in more talented or in as many hands.

About a year ago in Fresno, and again seven months ago in San Mateo, I pledged to you that our state staff would join hands with you in the leadership of vocational education in California. We have not fully implemented this pledge; we still have a long way to go -- we in sharing our responsibility and you in accepting yours. But we have achieved enough to know that the potential is still great and that the goal is even more worthy than we had estimated it to be. Our staff asks for your patience, your understanding, and your help as we attempt to pass more and more of our inherited prerogatives on to you. You have grown immensely in your talents during this past year; you have increased your knowledge and effectiveness as leaders and as influencers of vocational education. You continue to merit our confidence. We are comforted by your accomplishments. We are proud to be associated with you in this joint mission which is ours.

EVALUATION: A CASE STUDY

J. Lyman Goldsmith, Chairman

Case Study:

THE VOCATIONAL EDUCATION PROGRAMS AT GOLDEN BEAR, CALIF.

J. Lyman Goldsmith

THE TASK

Based upon the information furnished and "additional information" you provide, prepare a master plan for the evaluation of vocational education programs for the city of Golden Bear, California, including the following: high school programs, junior college programs, and adult programs. Make your master plan for evaluation in a form appropriate for oral and written presentation to the school districts' Boards of Education. Indicate the evaluation program in its entirety, including the evaluation methods, techniques, and devices to be used in all aspects of the vocational education programs (staff, facilities, courses, placement, etc.). Justify your recommendations with as much "objective data" as possible.

PERTINENT FACTS ABOUT GOLDEN BEAR, CALIFORNIA

Location

Golden Bear, a city with an estimated population of 70,358 as of April 1950, grew to 86,123 by April 1960, and according to a March 1966 estimate has a population of 97,754. Golden Bear is located in Silver County, which has a population 456,399 as of 1964, and is the county seat and the largest community in the county.

Transportation

Golden Bear, located on one transcontinental highway and two state highways, is served by three interstate railroads and thirty-seven regularly-scheduled truck lines. Golden Bear Airport is a metropolitan airport with a jet runway regularly scheduled for service by two air lines.

Tourist Center

Golden Bear has a number of tourist attractions including an excellent hunting, fishing and skiing resort area within fifty miles. There are eight hotels with 600 rooms, and forty-four motels with 1,110 rooms.

Manufacturing

There are 360 manufacturing plants in the Golden Bear area. Leading group classes of products are: agricultural implements and machinery, wood products, steel fabrication, food processing, house trailer and pleasure boat manufacturing, and paper products.

The Work Force

The population trend in Silver County is toward a larger growth in younger age groups, with the work force ranging between 90,000 and 126,000. Variations in the work force are due to seasonal employment, some immigration and emigration of agricultural workers, and the addition and retirement of workers from the active work force. The work force, of which women constitute approximately one-third, is becoming

increasingly skilled as more workers enter the professional, technical and skilled occupations and fewer workers go into unskilled jobs such as agricultural work. Several important defense facilities and industrial research and development concerns are located in the Golden Bear area.

THE GOLDEN BEAR SCHOOL SYSTEM: GENERAL INFORMATION

Golden Bear Unified School District

The district's facilities include thirty-six elementary schools, five junior high schools, and three high schools. A limited adult education program is conducted by the district.

Golden Bear Junior College District

Golden Bear College, with a separate board of trustees, has a total enrollment of approximately 6,100 students. Nearly 2,500 full- and part-time students are enrolled in courses offered by the Evening and Adult Division of the college.

Colleges and Universities

The nearest campus of the University of California is located about 150 miles away. Students wishing to attend a state college must travel 50 miles to school.

Private Schools

Golden Bear has one private business school which enrolls nearly 100 full-time and part-time students.

INSTRUCTIONAL PROGRAMS

Junior High Schools

The five junior high schools in the Unified School District offer identical programs in subject areas related to vocational education. In business education, general business and personal typing are offered as electives in the eighth and ninth grades. In home economics, one semester each of foods and clothing is required of all girls in B7-A7 grades. These courses are offered as electives in the eighth and ninth grades. In industrial arts, one semester each of wood, drafting, electricity, and metal is required of all boys in the seventh and eighth grades. These courses are offered as electives in the ninth grade.

Senior High Schools

Business education offers salesmanship, typing, shorthand, office machines, and business math as electives in all schools. In home economics, one semester of senior homemaking is required of all girls in the twelfth grade; foods, clothing, personal dress and grooming are offered as electives in all schools. Industrial education offers wood, drafting, printing, metal and electricity as electives in all schools. A vocational major, based on three-hour classes in business education and industrial education, is offered in South High School and East High School only, with certificates of completion (without a diploma indicating graduation with all requirements met). Vocational majors are in the areas of wood, electricity, drafting

and clerk-typist. Experimental courses in nursing aid and hotel and motel service have been initiated this year.

Adult Schools

Evening high school programs are offered at East High School only. The adult school offerings range from typical academic and personal interest subjects to a limited number of courses in office machines, typing, shorthand, dressmaking, commercial food preparation, cabinet making, printing, electronics, drafting, and blueprint reading.

Junior College

A number of courses which lead to a certificate and an associate of arts degree are offered in various subject areas. Other courses are offered as extension and upgrading courses. Agriculture offers a single program in animal husbandry. In business education, there are programs in distributive education, secretarial practice, bookkeeping and data processing. Industrial education offers programs in electronics, carpentry and cabinet making, drafting, and machine shop. New programs have been established this year in vocational nursing and in cosmetology.

THE GOLDEN BEAR SCHOOL DISTRICT: SPECIFIC INFORMATION

North High School

North High School, with an enrollment of nearly 2,600 students, is located in a rapidly growing residential area which ranks highest in quality of residences and income. The students, eighty-five percent

of whom are Caucasian, come from the lower-middle to upper-middle classes. The major occupational classifications in which the fathers fall are as follows: professionals, technicians, proprietors, managers, craftsmen and foremen. A small number of the fathers are employed as outside salesmen.

I. College-entrance data for the last three years (Grade-averages should be as reported by colleges for freshmen)

	*	1961-1962	1962-1963	1963-1964	Totals
A. University of California	(1)	21	28	27	76
	(2)	2.24	2.41	2.30	2.32
	(3)	1.41	1.17	1.22	1.27
B. State College	(1)	15	6	1	22
	(2)	2.23	2.17	2.50	2.30
	(3)	-.48	-.53	-.27	-.41
C. Other 4-Year College	(1)	22	35	12	69
	(2)	2.42	2.57	2.39	2.46
	(3)	-1.09	-.61	-.69	-.79
D. Junior College	(1)	287	334	318	939
	(2)	1.92	2.07	2.18	2.06
E. Total Entering		345	403	358	1,106
F. Percent of Graduating Class		55%	59%	54%	57%

* (1) Number of students
(2) Grade-average
(3) Differential

II. Academic Inventory

A. Graduating Class	1964
B. Number of Boys	421
C. Number of Girls	419
D. Number with IQ 115 or above (or above 1 standard deviation above mean of ability test)	237

South High School

South High School, with a student population of 1,500, is unique in that there is no one major ethnic group. Students of Mexican ancestry make up the largest segment, followed by Negroes and Caucasians. Other ethnic groups include the Chinese, the Japanese, and the Filipinos. Most of the students come from lower-income families which rank third in the city in quality of residences and income. The major occupational classifications which provide employment for the fathers include: operatives, laborers, and service workers. Over thirty percent of the married women are employed on a full-or part-time basis as clerical and kindred workers, private household workers, operatives, and service workers.

I. College-entrance data for the last three years (Grade-averages should be as reported by colleges for freshmen)

		*	1961-1962	1962-1963	1963-1964	Totals
A.	University of California	(1)	6	4	6	16
		(2)	2.20	2.00	*	
		(3)	-1.58	-1.82	*	
B.	State College	(1)	3	6	5	14
		(2)	2.95	2.00	2.76	
		(3)	-0.26	-0.78	-0.43	
C.	Other 4-Year College	(1)	3	3	5	11
		(2)	3.00	3.12	2.70	
		(3)	-0.46	-0.63	-0.90	
D.	Junior College	(1)	161	137	159	457
		(2)	2.10	2.19	2.17	
E.	Total Entering		173	150	175	498
F.	Percent of Graduating Class		50	47	46	48

* (1) Number of students
(2) Grade-average
(3) Differential

II. Academic inventory

A.	Graduating Class	1964
B.	Number of Boys	199
C.	Number of Girls	196
D.	Number with IQ 115 or above (or above 1 standard deviation above mean of ability test)	53

East High School

East High School has an enrollment of 1,489 students. About sixty percent of the student enrollment is Caucasian; thirty percent is of Mexican ancestry; and ten percent is Negro. Most of these students come from upper-lower to lower-middle-class families. The occupational classifications of jobs held by the fathers include craftsmen, sales workers, operatives, and service workers. Approximately twenty to twenty-five percent of the married women are employed on a full-or part-time basis as sales workers, operatives, service workers, and clerical and kindred workers.

I. College-entrance data for the last three years (Grade-averages should be as reported by colleges for freshmen)

		*	1961-1962	1962-1963	1963-1964	Totals
A.	University of California	(1)	0	0	0	0
		(2)				
		(3)				
B.	State College	(1)		2	3	5
		(2)		2.026	1.969	1.998
		(3)		-1.461	-0.829	-1.145
C.	Other 4-Year College	(1)		3	1	4
		(2)		2.31	2.37	2.34
		(3)		-0.50	-1.38	-0.945

	*	1961-1962	1962-1963	1963-1964	Totals
D. Junior College	(1)	108	120	1100	338
	(2)	2.00	2.12	2.14	2.09
E. Total Entering		108	125	114	347
F. Percent of Graduating Class		32.4%	45.1%	29.45%	34.8%

* (1) Number of students
(2) Grade-average
(3) Differential

II. Academic inventory

A. Graduating Class	1964
B. Number of Boys	226
C. Number of Girls	181
D. Number with IQ 115 or above (or above 1 standard deviation above mean of ability test)	46

CASE STUDY REPORTS

J. Lyman Goldsmith, Chairman

Editor's note: The conferees formed five work groups, each of which presented a ten-minute oral evaluation of the case study to the conference-at-large. The groups also submitted the written reports we publish here with thanks to the chairmen, Elmer Wirta, Les Swartz, E. T. Barnett, Richard Payne, Lawrence Edler, and to their able recorders. We especially wish to thank Jerry Levendowski for his help in preparing the case study.

Group I: Elmer Wirta, Chairman

In working out a plan for evaluating vocational education in the schools of Golden Bear, our committee made the following assumptions:

- There is one school board.
- The work force is comprised of 100,000 persons, fifty percent of whom work in industry and fifty percent of whom work in service, agricultural, and technical occupations.
- The rate of population increase is approximately twelve percent per year.
- Vocational education is offered in the high schools, in the junior college, and in the adult schools.

Through our evaluation procedure we attempted to answer the questions (1) Where are we now? (2) Where are we going? and (3) How do we get there? The outline of our plan is as follows:

I. Evaluation

A. School self-evaluation

1. Occupational areas

a. Evaluated by teachers and supervisors
b. Reviewed by advisory committee (this is similar to Western Association of Schools and Colleges accreditation)

2. Facilities
3. Equipment
4. Curriculum
5. Instructors

B. Student information
1. Profile
2. Needs
3. Guidance (including placement and follow-up)

C. Community profile

1. Finance
a. Appraised value of real estate
b. Other sources of funds
c. Defense companies
d. Long-range financing
e. Short-range financing
f. Federal legislation
g. School tax-rate
h. Banking institutions
i. Bond issues

2. Communications
3. Culture
4. Labor market
a. Employed
b. Unemployed
c. Migratory labor
d. Seasonal demands
e. Ethnic origins
f. Skill-levels
g. Educational level
h. Delinquency and drop-out
i. Turnover
j. Defense employees
k. Continuing needs

5. Education
6. Recreation
7. Ratio of ethnic groups
8. Income averages
9. Attitudes
10. Support

11. History
12. Resources from business

    a. Advisory committees
    b. Personnel officers
    c. Jobs (entry-level, mid-level, high-level)
    d. Continuing needs
    e. Cooperative programs
        (1) Study
        (2) Work-experience
        (3) Apprenticeship

D. Coordination of school and community in evaluation
    1. Information and input from community assembled by coordinator
    2. Conclusions reviewed by general advisory committee
    3. Community report made

II. Surveys

A. Questionnaires
B. Conferences
C. Employment service
D. Home questionnaires
E. Want-ads
F. Trends

III. Steering committees (advisory committees)

A. Industry
B. Business
C. Professions
D. Chamber of Commerce

IV. Final report

A. Study of all self-evaluation reports, surveys, and committee actions
B. Preparation of formal evaluation report.

Group II: Lester Swartz, Chairman

Our plan for evaluating vocational education programs for the community of Golden Bear, California, is presented to you in the form of a request for permission to conduct the evaluation. This request, an outline of which follows, would be delivered orally to Golden Bear's Board of Education.

I. Vocational education defined

A. The Board should have a clear understanding of the term vocational education.

B. Vocational education, as we understand it, is that part of the educational program which prepares people through organized instructional programs for employment or for upgrading in an occupation.

II. Current educational programs in the Golden Bear community

A. Pre-vocational training programs at the junior high and lower high school grade-levels

B. Vocational offerings in the high school, i.e., agriculture, business, homemaking, trade and technical

C. Adult education and extension training

III. The reasons for evaluation

A. The recent rapid growth of the community (evaluative methods which were designed for a smaller community should be closely scrutinized)

B. Changes in the employment patterns in the community

C. Unemployment among certain groups, and the implications thereof

D. The increased need for skilled workers, and the importation of these skilled workers in the face of rising unemployment figures

E. The rising drop-out rate (50% at South High as compared with 20% at North High)

IV. Areas to be examined

A. Employment patterns in the community

B. The adequacy or inadequacy of vocational education at all levels to meet employment needs

C. The total output of vocational education in terms of its contribution to the labor force

D. The total education system in terms of its relation to occupational training needs
1. What is the extent of occupational training for all male and female students?
2. What is the nature of counseling service and counseling attitude regarding occupational training?

E. The quality of existing vocational training
1. Curriculum
2. Facilities
3. Staff
4. Administrative support
5. Community involvement
6. Lay advisory committees

F. The extent of alteration, expansion, and development necessary for vocational education to meet community training needs

V. Suggested evaluative procedure

A. A community occupational survey

B. Evaluation of the current occupational program

C. On-going follow-up studies

D. Maximum involvement
1. Community citizens' committees
2. Local advisory committees
3. School staffs

VI. The budget

A. Expenses for one year: $44,000

1. Project director: $16,000
2. Secretarial salaries: $16,000
3. Consultant fees: $8,000
4. Publications: $6,000
5. Released time for staff: $6,000

B. Sources of funds ($44,000)
1. VEA = 50% or $22,000
2. Net local district = 50% or $22,000

Group III: E. T. Barnett, Chairman

The following is our committee's presentation to Golden Bear's Board of Education:

Mr. Chairman and Members of the Board:

Thank you for this opportunity to present to you an outline for the vocational educational program. I want to compliment this board on the questions that it presented last Thursday night. It is impossible to present at this time a complete program for the evaluation of vocational education, but I suggest to you that the following areas need evaluation:

- Teacher preparation and retraining (in-service)
- Vocational guidance
- Work-experience programs (cooperative)
- The impact of allied federally-reimbursed programs
- Instruction related to vocational education courses
- Relationship to labor (apprenticeship)
- Relationship to the Department of Employment

- The number of people employed, unemployed, and on welfare
- The public relations program
- Communications

In order to provide the best vocational education program for Golden Bear, we assume that we should provide for both student and community needs. Needs of the community can best be assessed through a community advisory committee composed of representatives of the P.T.A., the taxpayers' associations, the Chamber of Commerce, industry, the high schools, the junior college, the county and state offices, the Employment Service, and other sources of information. This committee will evaluate employment needs and the educational program (present and future offerings; articulation between high school, junior college and adult programs). The committee will also help establish auxiliary committees for various vocational areas. Such a committee must be continuing and flexible in order to be maximally responsive to change. Furthermore, in planning and evaluating for the future, the committee should consider area-wide planning. The local Director of Vocational Education will provide minimum guidelines in pointing out obvious problems requiring immediate action.

The evaluation of the internal program of the Golden Bear schools must be organized into an assessment of the products (the students) and the processes (those factors which affect students):

Leadership For Vocational Education In California

I. Products

A. Student follow-up
1. Drop-outs
2. High school graduates
3. Junior college graduates
4. Persons trained in adult programs

B. Student inventory
1. Aptitudes
2. Interests
3. Numbers
4. Sociological factors
5. Aspirations

II. Processes

A. Utilization
1. The instructor: qualifications, attitudes turnover, in-service training, techniques and facilities
2. Instructional materials: equipment, facilities and plant
3. Time
4. Cost per student-contact hour

B. Innovations
1. History
2. Projection

C. Program support
1. The Board of Education
2. The community
   a. Monies
   b. Advisory committee
   c. Parents
   d. Faculty
   e. Agencies
3. Administration and supervision
4. The district policy

D. Prior studies and their implementation

E. Articulation
1. Vertical (between levels)
2. Horizontal
   a. Among vocational classes
   b. Among curriculum areas (interdisciplinary)

Leadership For Vocational Education In California

Group IV: Richard Payne, Chairman

In developing a master plan for evaluation of vocational education in Golden Bear our committee assumes that through joint action, the governing boards of Golden Bear Unified and Junior College districts have employed a coordinator of vocational education with across-the-board responsibilities for the vocational education program, grades seven through fourteen. The following is the report as presented to the two boards at a joint meeting called to consider the evaluation program proposed by the newly-appointed coordinator.

A Proposal by the Coordinator of Vocational Education

In order to establish the proper climate for my report, let me quote to you the words of David Bushnell of the United States Office of Education:

> . . . evaluation . . . is not merely for telling us how right we are. The true purpose is to point out where improvements are needed and how such improvements may be implemented. In a nutshell, evaluation research is systematic and methodical self-criticism that will accelerate progress toward the basic objectives of vocational education.

A look at current programs shows them to be narrowly traditional and much the same throughout the district. Little if any attention has been paid to the significant differences of the student bodies in the three high schools. There is no evidence that the programs have kept abreast of the changing patterns in business and industry, nor that they have kept pace with the increase in population.

Leadership For Vocational Education In California

Significantly few students go directly to four-year colleges or to universities from any of our high schools, and less than fifty percent go beyond high school at all. Yet our junior college offers little to the occupationally-oriented high school graduate. These factors, combined with the knowledge that the work force is becoming increasingly skilled and that the number of unskilled jobs is on the decline, makes it essential that a complete and continuing evaluation of our vocational education program be implemented.

Working with a group of vocational teachers and a consultant from the county office, I have come up with a proposed four-pronged attack on this problem:

- A system of internal appraisal
- A plan for continuing appraisal of community needs
- A method of articulating programs from grades seven through fourteen
- Provision for placement and for feedback from employers and graduates

Let's look at each of these elements briefly to determine some methods of implementation.

I. Each area of vocational education will be asked to look at itself critically from several points of view.

   A. The teaching staff
      1. Educational qualifications
      2. Occupational experience
         a. Recency
         b. Extent in subject area
         c. Involvement in related community activities
      3. In-service education

B. Curriculum
   1. Does it provide for entry jobs in appropriate occupations?
   2. Does the program meet the needs of the community?
   3. Are work-experience and field activities used?
   4. Are course outlines current and in use?
   5. Is there a logical sequence, and if so does it provide for both required and elective courses?

C. Guidance and counseling
   1. Is sufficient information about vocational education courses provided to counselors?
   2. Is there an in-service program to keep counselors up-to-date?
   3. What testing is done to determine aptitudes and abilities and how is this information used?

D. Facilities
   1. Are facilities sufficient to support curricula and student load?
   2. Are facilities appropriate to subjects and are they up-to-date?
   3. Is the atmosphere conducive to learning?

E. Equipment
   1. Is it sufficient and representative of the employing community?
   2. Is there an adequate maintenance and replacement program?
   3. Are provisions made for the leasing of costly equipment?

II. In order to provide continuing appraisal of community needs we propose initially the employment of a consultant trained in survey techniques to head a team of teachers, employers, Department of Employment representatives, and others having specific skills. This team will determine the present and projected employment needs of our community. To provide continuing appraisal, an advisory committee will be appointed to represent all phases of business and education, the Department of Employment, labor organizations, and others.

III. To provide articulation between and among schools, coordinators will be appointed in each occupational area. They will work with teachers and consultants to provide a continuing program of progressive skills from junior high through junior college. The program

must be made continuous but must provide entry skills at whatever level the student wishes to discontinue his training.

IV. Constant and continuing contact with employers and graduates must be established and maintained. This will involve personal contact as well as questionnaires, check-lists, evaluations, etc. Part of the responsibility of advisory committees must be to provide feedback from employers and graduates which can be used to evaluate current programs and provide information toward the development of new programs. Graduates of the program can provide valuable information as to how well the program suited them for their job and can give clues for improving the program.

Group V: Lawrence Edler, Chairman

The following is an outline of our evaluative plan:

I. Administration

A. Support
1. Adequate budget
2. Board resolutions
3. Adequate staff (coordinative and secretarial)
4. Involved staff (local, county, professional)
5. Modern administrative techniques

B. Public relations
1. News media
a. On-campus (including school bulletins and hand-outs, window displays)
b. Off-campus (all avenues must be explored)
2. Vocational fairs, career weeks, etc.
3. Department of Employment
4. Organizations (P.T.A., service clubs, junior achievement clubs, etc.)

C. Planning
1. Clear objectives
2. Acceptance of responsibility
3. Use of advisory committees, surveys, consultants, etc.

4. Accreditation teams
5. Selection and assignment of quality personnel
6. Realistically-sized classes
7. Program growth (maintained, developed, expanded)
8. Use of total resources
    a. Who is responsible?
    b. What is the nature of the plan?
    c. When will the plan get under way?
    d. Where is the planning to be done?
    e. Whither will the plan go?
    f. Why doesn't the plan go?

II. Finance

A. Local budget
1. Salaries high enough to attract and keep good people
2. Supplies, equipment
3. Plant, facilities
4. Services

B. Budget justifications (what criteria?)
1. Outside funds?
2. Long-range projections and commitments

III. Curriculum

A. The quality of instruction
1. Must be realistic, timely, teachable, and articulate
2. Must meet the special needs of students
3. Must provide a variety of learning experiences
4. Must be individualized
    a. Class size
    b. Teacher load

B. Interdisciplinary involvement

IV. Teacher personnel

A. Qualifications
1. Proper credentials (recency, etc.)
2. Student and self-evaluation
3. Resistant to change?
4. Placement record

B. Examination of recruitment policy
1. By advisory committees
2. By vocational education instructors

3. By vocational education administrators
4. Through organized files of applicants

C. In-service
1. Professional reading
2. Long-range goals in occupational area
3. Instructor-industry visits

V. Pupil personnel

A. Follow-up
1. Use of data processing
2. Use of survey to be developed by vocational educators and industry

B. Guidance and counseling
1. Student evaluation
a. Counseling time received
b. Occupational information available
c. Understanding of occupational requirements
2. Counselor evaluation
a. Professional time versus clerical time
b. Cooperation between vocational instructors and counselors

VI. Community

A. Support
1. Willingness to support tax issues
2. Willingness to serve on advisory committees
3. Willingness to provide community resources (field trips, career-day materials, etc.)
4. Willingness to help establish cooperative training stations

B. Information (survey data of community needs)

C. Image
1. Favorable press releases
2. Awareness of programs (public and industry)
3. Willingness to enroll in vocational education
4. Willingness to hire vocational students
5. Evening enrollment
6. Success of graduates
7. Type of student enrolled, counseled, assigned

THE PROCESS OF EVALUATION

Richard S. Nelson

James A. Herman

THE PROCESS OF ASSESSMENT

Richard S. Nelson

The product of the school is the educated person, a young adult prepared -- in keeping with his abilities and aptitudes -- for occupational life in a constantly changing world. Vocational education institutions, whether they be high schools, junior colleges, or adult schools, must constantly evaluate their product if they are to stay in business. If they reach the point where their product no longer achieves the skills and knowledges necessary for successful entry into and competition with the labor market, they are replaced by more effective institutions. Assessment of the product, then, and of the educational establishment and of its operation is needed. The responsibility for this appraisal is shared by all of us; administrators, supervisors, directors, coordinators and teachers.

Before we proceed, some clarification of terminology is in order. Appraisal is the estimation or evaluation of quality, status or character. Evaluation means to express mathematical or numerical value or amount; it is the process of measuring effectiveness and efficiency, and as such is concerned with whether the product or service leads to the results desired and with whether it does so efficiently. By assessment I mean the critical analysis and definitive judgment of the significance, the status, and the merit of the whole and of all its parts. Just as the assessment of an automobile involves finding out how well it provides the desired transportation and how well

each component part performs its task, so the assessment of an educational program inquires into the end result and how well the many components contribute to the whole. The process of measurement is contingent upon the criteria, or the standards by which judgments may be made. While in the physical world a product is measured against rigidly established standards -- the breaking strength of a structural beam, the horsepower developed by an engine, the yield of an acre of corn, the attainment of a calculated orbit by a satellite -- the measurement of vocational education must be accomplished in less exact terms.

True, the principle is the same: in the field of vocational education, objectives are established and programs are measured against these objectives or standards. But while formal vocational education makes its contribution in specific areas and in its own ways, it is not expected to provide every requisite for occupational competency. When we appraise overall occupational competency -- knowledge and understanding, skills and abilities, attitudes and appreciations -- we must recognize that much of what is learned comes from extra-formal education, that is, from self-study, observation, conversations on the job and elsewhere, reflective thinking, and other sources.

With this in mind, we may consider that the assessment of vocational education involves (1) the basic objectives, (2) a statement of goals, and (3) the establishment of program standards.

Leadership For Vocational Education In California

The basic objectives of vocational education are as follows: First, every citizen should have the opportunity to attain occupational competencies compatible with his abilities and interests. Vocational education must be available to all people who have the need, desire, and ability to benefit from the instruction. Second, the size and the scope of the vocational education program should meet the qualitative and quantitative needs of the nation for trained workers in a time of rapid technological change, economic growth, and international challenge. These objectives require a widely diversified program, geared to the ever-changing occupational needs of the economy, for in-school youth and for out-of-school youth and adults.

What are the stated goals of vocational education? In enacting the Vocational Education Act of 1963, Congress evidenced concern for the needs of the individual as well as for the needs of the economy and pledged itself to create a flexible vocational education system which would be available to all Americans of all ages and conditions in all communities. The vocational education system must provide access to realistic, high-quality occupational education and training for all who need or desire it (from the least able and the disadvantaged to individuals with a high level of technical ability), including young people attending high school, drop-outs, persons who have completed high school, those who are at work and need training or retraining to hold their jobs or to advance, and those who struggle with academic or socio-economic handicaps.

The system must also encourage the establishment in all types of schools or educational institutions of occupational programs appropriate to the needs of a given area. These include comprehensive high schools; specialized vocational-technical high schools; junior colleges; area vocational and technical schools of different types, both secondary and post-secondary; four-year colleges and universities, both public and private; and private schools under contract with the State Board or local educational agency. Programs must be offered which cover the entire occupational spectrum, excluding only those occupations which are generally considered professional or which require a bachelor's degree or higher. Flexibility must be fostered in the improvement of existing programs and in the development of new and varied programs responsive to present and future occupational requirements and opportunity.

Vocational and technical education programs must be geared to current and projected labor market needs (including local, state, regional, and national needs, as appropriate). To assure consideration of available labor market data and to assure effective coordination of the counseling, placement, and other services offered by schools and employment services, cooperative agreements between vocational education agencies and public employment service agencies must be established. Advisory councils to state boards for vocational education must be set up to include representatives of employers, labor unions, and other persons familiar with the training needs of employers and with

those of the individual.

There must be, furthermore, a periodic program review to assess the progress of programs toward reaching goals and to provide a basis for further planning to remedy shortcomings. Finally, the vocational education system must give encouragement to and provide some of the means for meaningful research and experimentation aimed at improvement of all aspects of vocational education.

The third factor in our consideration of the assessment of vocational education is the establishment of program standards.

The vocational education program should be an integral part of the total public education program, rendering service and earning status commensurate with its significance to the community, the state, and the nation. Thus, programs should be planned on the basis of statewide, regional, and national needs, with each vocational school, program unit, and curriculum offering planned to meet an appropriate part of the overall need. Programs should maintain, in addition to sound public relations, effective functional relationships with employers,with labor unions, and with other agencies through appropriate utilization of occupational advisory committees.

Secondly, the vocational education program should offer opportunities to all youth and adults at appropriate levels in all occupational fields, including highly technical work of less-than-professional grade. The program should be sufficiently flexible to meet

the needs not only of youth seeking occupational preparation as part of their high school education but also of persons who desire pre-employment training for one field while they are working in another, and of those who desire training for updating and upgrading. Thus, effective programs of student recruitment and selection should be maintained, with admission standards appropriate for each curriculum or unit of the program. Pre-employment training programs commensurate with the learning abilities of the students and the maturity required for employment should be provided at appropriate age and grade levels. The needs of employed persons who desire updating, upgrading and training for new occupations should be given attention commensurate with the growing importance of this type of education in a rapidly changing economy.

Finally, vocational education programs should maintain a high level of quality through well-developed curriculums and courses of study, satisfactory and accessible facilities, up-to-date instructional equipment and materials, competent instructors employing good teaching methods, carefully selected students, and efficient administration and supervision. Curriculums should provide for sufficient actual performance of simulated experiences in classrooms, laboratories, or shops and should include as much basic and general education as is appropriate for the age and grade level of the trainees.

Pre-employment curriculums should be of sufficient intensity and duration to prepare persons for effective entrance into the field of

work for which the curriculum is designed. The physical plant should be designed to meet the specific needs of the vocational education programs, should be sufficiently attractive to merit the respect of the community, and should be readily accessible to both full-time students and working persons. Instructional equipment and materials should be based upon specific teaching needs and occupational requirements and should include programmed learning and other new media of instruction. Instructional staffs should have adequate teaching competencies based upon occupational experience, technical training, general education, and teacher training. Effective vocational guidance service should be provided within the schools from which students are recruited and within the schools which provide vocational education programs. Effective placement and follow-up service should be provided for graduates of pre-employment programs, with the proportion of graduates who become successful in the fields of their training shown to be relatively high. Administrative and supervisory services should be of a quality and amount sufficient to assure satisfactory operation of the various programs.

In the light of these objectives, goals, and program standards, what should be evaluated?*

- The quality of the program in terms of vocational abilities and skill, knowledge and understanding of facts and principles basic to the work to be done, and in terms of the vocational attitudes and interests of workers

*See H. P. Sweany's article in The American Vocational Journal, March, 1966.

who have been students in vocational education programs.

- The availability of educational programs for all students who may have interest in and ability to enter and progress to their highest potential in chosen occupations.

- The adequacy of coverage of all essential occupational fields in vocational education programs based on occupational needs in an area, state, or nation.

- The changes required in present programs or in new programs to provide completely for needs of students for future employment or for needs of adults who must upgrade their vocational competencies to perform at current occupational levels.

- The effectiveness of teaching methods currently used in different learning situations by comparison with new alternate methods developed to achieve similar ends.

- The efficiency of learning through occupational experience programs or through study of available instructional materials and references.

- The comparative cost of vocational education programs in relation to similar programs provided by other institutions and agencies.

- The efficiency of the use of funds for maintenance, extension, and improvement of vocational education programs.

How do we go about this evaluation? What criteria, what instruments and procedures shall we use in our assessment? I suggest that the yardstick has seven divisions.

The first of these is concerned with <u>the people served</u>. In this category, we must estimate enrollment trends for all vocational-

technical programs and compare these trends by program, i.e., agriculture, business, health, trade and technical, and home economics. We must describe trends by occupation within the programs; are we still training where the need is declining? We must compare trends regarding enrollment and completions by level of program -- high school, junior college, adult, and private school; where should the student be? Lastly, we must compare these programs with other programs, for example, MDTA, OEO training within industry, etc.

In assessing the educational establishment itself, we should proceed by level: high school, junior college, adult school, and private school. Are these establishments receiving adequate allocation of funds? We must examine staffing patterns, also; how do the salary schedules compare with those of private schools? We must ask ourselves if the school has an adequate system of collecting data; does it use electronic data processing? Another major item is the evaluation procedure itself. You, by your attendance here today, have shown your desire to establish evaluation procedures, and you, in the last analysis, will be the ones responsible for evaluation. Furthermore, how well is coordination effected with other agencies, for example, the Employment Service, the Division of Apprenticeship Standards, the Department of Social Welfare, etc.? Every week another agency is doing training; we must see that this training is coordinated. What about the establishment and use of advisory committees, that is, are we getting the advice we need? We must ask ourselves if we are

providing adequate teacher education; we have a fair pre-service program, but do we have adequate in-service?

The third division is personnel. What are the minimum teacher certification requirements? We must base our judgments on occupational competency, academic preparation, professional education, and -- surely as important as any of these items -- upgrading or updating. Is the teacher keeping up with the state of the art? Evaluation of personnel applies also to supervisors, directors and coordinators. We must decide on minimum qualifications, on duties and responsibilities (Is the supervisor hired primarily to handle federal paper work? Too often, this is the case.), on position in the organizational hierarchy, and on availability to assist teachers (Does this person really have the time to work with teachers?). The same measurements apply to administrators and to guidance and pupil personnel at various levels; are there too many record-keeping types of activities? Finally, we must judge the effectiveness of our research. Are research personnel asking questions to which the answers are useless?

We must evaluate programs in terms of occupational categories. Do we have programs of quality and in sufficient quantity in agriculture, distribution, home economics (wage-earning or not?), health, office, technical, trade and industry, and guidance? How are we doing with regard to new programs for aids -- social welfare aids, recreation aids, rehabilitation aids, therapists, etc.? We must make certain that we are taking maximum advantage of youth organizations

such as the Future Farmers of America, the Future Homemakers of America, the Future Business Leaders of America, and, hopefully, the Industrial Education Clubs of America. Do you have adequate work-experience education, including cooperative education, apprenticeship, and work-study, in your area?

We must examine our services: counseling and guidance, placement and follow-up, research and experimentation. We must make sure that we have the proper instructional materials -- curriculum guides, teaching manuals, and guidance and counseling materials. And finally, we must evaluate vocational education in terms of the needs of the labor market. What are the current and projected labor demands -- by occupational group, by industry, by skill level, by economic area (there are ten in the state of California), and by sex (do we have programs for women?)?

Having discussed our criteria, I would summarize the results of evaluation in this way: we must assess the relationship of accomplishment to the basic objectives and goals established for vocational education in California. This means measuring the number trained against the number needing or desiring to be trained. It means matching people to jobs both quantitatively and qualitatively. It means measuring our achievement of objectives in terms of employment follow-up information -- gauging our success in terms of job placement; students' job satisfaction, advancement potential, and mobility; and employers' satisfaction. And it means, finally, evaluating the contribution to community and society of vocational education in California.

LISTENING TEAM REPORTS

James A. Herman, Chairman

The "listening team technique" was used to evaluate Richard Nelson's speech, "The Process of Assessment." A recent innovation, this technique organizes work teams before the speaker begins. A chairman is assigned and a recorder elected for each table or group. A specific question is given each group, and the participants are expected to understand the question and to react to the speaker's remarks in the light of the question.

The procedure is as follows:

1. At a signal from the chairman, turn and face the persons having the same team number.
2. Make certain that each member understands the assigned question.
3. Take a minute for each member to screen his best ideas.
4. Before beginning discussion, have each person state his best idea.
5. Make certain the recorder has written down each idea.
6. Discuss the ideas as interest dictates and as time allows.
7. Resume original positions and have the recorder report ideas when your team is called upon by the chairman of the conference-at-large.

Twelve teams gave the following reponses to the nine questions posed.

WHAT ARE THE MAJOR BARRIERS TO PUTTING TO WORK IN VOCATIONAL EDUCATION THE CONCEPTS PRESENTED?

Team No. 4: James Foxx, Chairman

1. The lack of tangible criteria for assessment.

2. The need for a new and more favorable image for vocational education.

3. The lack of cooperation and understanding in the community -- parents, students, teachers, and counselors.

4. The lack of communication, and therefore of acceptance and understanding, between vocational education and general education.

5. The legal barriers with regard to the need for qualified teachers under present program standards.

6. The cost of the program in money and in time of vocational teachers and administrative staff for follow-up.

7. The amount of federal legislation in recent years.

Team No. 10: C. Allen Paul, Chairman

1. The lack of an effective tool for evaluation; this problem cannot justify the time spent in the process.

2. The area concept: district differences and student mobility.

3. The difficulty of obtaining financial support; we must establish priorities.

4. The reluctance to emphasize properly vocational education at the junior college level.

5. The time and energy needed to evaluate.

6. The confusion of terminology.

7. The fact that goals and standards are not made understandable to outsiders.

8. The fact that we do not stress at an earlier stage to parents, students, and counselors the value of vocational education.

9. The lack of firmly established standards.

10. The difficulty of evaluating influences on student achievement beyond the school program; this problem invalidates most evaluation.

11. The lack of goals, objectives, and standards in other areas of education; our desire for evaluation is not understood.

WHAT ARE SOME OF THE WAYS THAT THE CONCEPTS PRESENTED CAN BE PUT TO WORK BY VOCATIONAL EDUCATORS?

Team No. 2: David E. Fleckles, Chairman

1. Improve instructional expertise by facilitating more prepatory time for all levels of education.

2. Attack items one step at a time.

3. Evaluate present programs on the basis of area, i.e., the geographical assessment of current and future needs.

4. Obtain better understanding with administrators and teachers through closer contact.

5. Organize a general advisory committee to bring current practices together by geographical area into a coordinated program.

6. Determine the needs of the labor market and of the people served.

7. Re-examine the composition of advisory groups; if necessary, add to them.

8. Hold a conference of representatives of occupational groups to determine the extent of subject-area coverage.

9. Arrange a conference similar to this one for teachers so that they may evaluate their own program through group discussion.

WHAT SHOULD BE THE ROLE OF THE LOCAL DIRECTOR IN THE PROCESS OF ASSESSMENT OF VOCATIONAL EDUCATION IN HIS COMMUNITY?

Team No. 9: Charles Mulkey, Chairman

1. The local director must be prime mover, sales manager, initiator, and catalyst (middle-man).

2. He must make sure all interested parties are involved, including labor, employers, and teachers.

3. He must rely on expertise from other disciplines.

4. He must master techniques sufficient to make use of the talents of others.

WHAT PRIORITY WOULD YOU GIVE TO THE OBJECTIVES OR STANDARDS FOR VOCATIONAL EDUCATION?

Team No. 8: Glen Larsen, Chairman

1. Administrative support

2. Planning for needs

3. The recognition of vocational education as part of the total educational program

4. Staff

5. The inclusion of all occupational fields

6. Provision for evaluation

WHAT THINGS NOT SAID SHOULD BE GIVEN CONSIDERATION?

Team No. 6: Floyd Hunter, Chairman

1. How do we coordinate the concerned agencies?
   a. What is the state doing to assist overall?
   b. Are we hitting target areas?

2. How do we overcome local limitations such as funds and attitudes?

3. What guarantee is there that credentials make a good teacher?

4. When and for how long is follow-up meaningful and appropriate?

5. What methods should be used to encourage districts to improve vocational programs?

Team No. 11: Albert J. Riendeau, Chairman

1. Released time for teachers.

2. The "how-to" of implementing these programs.

3. The public relations of selling the program to the public, and more especially the voting public.

4. The obsolescence of agency services and the need for more emphasis on the regional concept.

5. In-service for teacher educators.

6. Utilization of professional organizations such as A.V.A., C.I.E.A., and C.A.T.A.

7. Utilization of federal, state, and county governmental organizations in evaluation.

8. Observations and recommendations for the State Department of Education.

9. A systems-approach to communications.

10. A clearinghouse for instructional materials.

11. Ways in which administrators may develop administrative office skills such as standardization of filing systems, dictation methods, and hiring and firing practices.

WHAT CHANGES WOULD HAVE TO BE MADE BEFORE THE PROPOSED IDEAS COULD BE USED?

Team No. 7: Curtis Lackey, Chairman

1. We must establish a better image. We must assume that the general public, school administrators, school boards, teachers, counselors, and students do not understand the reasoning behind the establishment of vocational training programs.

2. We ourselves must know more about what we are trying to sell.

3. We must assume the duties of any public relations man in using all media at our disposal to reach the people.

4. Only when our mission is understood can we expand our occupational training programs to meet the needs of high school and junior college students and adults, and the needs of the community-at-large.

Team No. 12: James G. Soules, Chairman

1. Develop a "white paper" on the standards for assessing programs in the seven areas outlined by Mr. Nelson.

2. Develop procedures for implementing these standards, that is, train people responsible for assessment.

3. Develop closer cooperation between teacher-training institutions and operating programs, including pre-service, in-service, and experimental and pilot programs.

4. Place administrators of vocational education in policy-making positions.

5. Develop better techniques for presenting data and new ideas to the public and to educational institutions.

WHAT WAS SAID THAT DOES NOT CHECK WITH YOUR EXPERIENCES OR VIEWS?

Team No. 3: L. C. Fowler, Chairman

1. The goal is too ambitious in terms of time and of the evaluation of jobs done and not done.

2. Quantitative evaluation is not as important as qualitative evaluation, and yet ninety percent of what was said was devoted to it.

3. Techniques should be developed by a survey specialist.

WHICH SEEMED TO BE THE LEAST PRACTICAL IDEAS PRESENTED?

Team No. 5: Owen Harlan, Chairman

1. It is obvious that research was not adequately conducted: a yardstick has more than seven divisions.

2. There was no simple scientific sampling pattern that could be used to assess a vocational program.

3. Undue stress was placed on the quality of building; the major problem is the quality of education.

4. Offering programs to the entire occupational spectrum is never impossible; priority must be established.

5. We wonder who is genius enough to do all that was outlined in the speech.

6. We question if there is not room for occupational knowledge to be presented to those who will hold the bachelor's degree.

7. The least practical idea was the use of this question in the first place. Mr. Nelson's address was well prepared and well presented; unfortunately, he did not build into it a "least practical idea."

WHAT IS THE MOST PRACTICAL SUGGESTION TO COME FROM THE PRESENTATION?

Team No. 1: Gaylord Boyer, Chairman

1. Dick Nelson's excellent statement must be taken in total; any one section or statement would be rendered less effective if taken out of context.

2. Thus, we agree wholeheartedly that we should encourage the establishment of vocational education programs to meet the needs of the entire community, programs that will allow these people to fulfill their highest potential in the occupation of their choice.

IMPLEMENTING EVALUATION

Irvin Colt, Chairman

THE GRAB BAG OF LEADERSHIP TASKS

Irvin Colt

Evaluation is a multifaceted function in education generally, but in vocational education it covers a far broader range. It is true that we must participate in the common evaluations of student achievement, etc., along with the other disciplines in education. But no area of education comes under the scrutiny to which vocational education is subject. While few other educational activities are the recipients of such active financial support, no other area of education is required to document so carefully its activities. The range of evaluation extends from student achievement to national assessment of the total effectiveness of vocational education; from evaluation of a student's shop project to evaluation of a project application for federal funds; from the evaluation of the effectiveness of a vocational teacher to the self-evaluation of a supervisor or director as a leader in vocational education.

Since evaluation does extend over so broad a spectrum of our activities, we, as leaders in this field, find ourselves continuously engaged in some aspect of the process. We soon come to realize that evaluation is inextricably tied to the tasks required of us in our everyday activities, and that adequate evaluative procedures often depend on our own competence in many divergent activities. How are <u>we</u> evaluated -- by ourselves, by our peers, by our administrators?

Each of us participates in many activities dealing with various

aspects of evaluation. Each of us does a good job on some and an exemplary job on a few, but on many we flounder. Often the evaluative aspects of many of the tasks we are required to perform are not readily apparent, but upon a few moments' reflection we realize that almost every one of our activities is in some way a function of evaluation. It occurred to some of us that we might all benefit if we could begin to pool some of our best ideas, methods, and operations, and by so doing help improve our total stock of operational and evaluative techniques. For instance, most of you received recently an evaluative task from Wes Smith's office under the subject title "Year-End Reports and Reimbursement Claims." How are you going to handle it? How are you going to come up with accurate enrollments by code-number without counting any person more than once? Learning how one school is attacking this problem might help you in your task.

All of us need to avail ourselves of the best techniques possible so that we may improve all aspects of vocational education and therefore its evaluative methods. In this light, we have devised some exercises through which we hope all of us may share some of the best thoughts and ideas of the vocational education leaders assembled here today. We have filled a grab bag with the kinds of problems you face daily. Each of you will take one of these problems sight unseen. You will interpret the problem and perform the appropriate tasks, keeping in mind that we all hope to benefit by sharing your best ideas with you.

JURY GROUP REPORTS

Irvin Colt, Chairman

Editor's note: The problems posed were seventeen in number. After the participants completed their tasks, each problem and the several solutions to it were turned over to jury groups whose job it was to evaluate these solutions, contribute solutions of their own, arrive at a consensus, and present a three-minute report to the conference-at-large.

Exercise No. 1: Gaylord Boyer, Chairman

Problem

Evaluation is a many-faceted problem which requires comprehensive treatment to provide for adequate appraisal.

1. Prepare a list to classify the various things in vocational education that should be subject to evaluation.

2. Under each of the classifications, indicate two means by which it may be evaluated.

Answer

I. Relationship to community needs

- A. Employment opportunities
  - 1. Advisory committee
  - 2. Local employment office
- B. Community attitudes
  - 1. Record of press releases
  - 2. Feedback

II. Relationship to school needs

- A. Instructional program
  - 1. Employers' evaluation
  - 2. Graduate students' evaluation
- B. Teaching personnel
  - 1. Self-evaluation
  - 2. Student critique
  - 3. Advisory committee evaluation

C. Physical facilities
   1. Advisory committee evaluation
   2. Staff evaluation

D. Financial aspects
   1. Utilization
   2. Adequacy
   3. Long-term budget

III. Relationship to students' needs

A. Selection
   1. Recruitment
   2. Testing

B. Job placement
   1. Advisory committee
   2. Employment office

C. Follow-up
   1. Questionnaire
      a. Student
      b. Employer
   2. Personal contact

Exercise No. 2: David E. Fleckles, Chairman

Problem

As Director of Vocational Education, it is your responsibility to make a study of the vocational curricular needs for the district to be used for long-range planning.

1. Prepare a list of appropriate agencies and other sources from which valid data might be secured.

2. Write a procedural outline by which the study would be undertaken.

Answer

I. Valid data may be obtained from the following agencies:

A. Chambers of commerce

B. Private industrial and state employment agencies

C. Trade unions and associations

D. Joint apprenticeship committees and other advisory groups

E. Local professional associations such as A.S.T.M.E., American Welding Society, Dental Assistants' Society, etc.

F. Federal and state agencies; D.A.S., B.A.T., etc.

G. Central Labor Council

H. Vocational teaching staff at all levels

I. Teacher-training institutions

J. Civic and service groups; Lions, Rotary, etc.

K. Local legislators

L. College placement offices

II. The procedural outline to be used to undertake the study is as follows:

A. Advisory steering committee composed of representatives of each area determines scope, objectives, and current status of programs.

B. All available data is assembled.

C. An instrument (questionnaire) is designed for data processing methods and tried on sample community group.

D. The steering committee organizes, analyzes, revises, and disseminates the information.

E. The findings, i.e., conclusions and decisions on facilities, staff, and money, are summarized in a formal report.

Exercise No. 3: Lyman Fowler, Chairman

Problem

As the Director of Vocational Education, it will be your responsibility to have accurate data available pertaining to students going through your programs and for subsequent follow-up study.

Leadership For Vocational Education In California

1. Design a suitable report form of one page or less by which information on students may be gathered.

2. Include spaces for all information you deem pertinent.

3. Give a brief description of how the form should be used.

Answer

PERSONAL DATA	TRANSCRIPT PROFILE
0. Social Security Number 1. Identification Number 2. Name 3. Age 4. Sex 5. Marital Status 6. Parents' Occupation 7. Siblings 8. Address 9. Telephone Number	Courses Followed: College Prep ____ Accelerated ____ Vocational ____ General ____ GPA 7__ 8__ 9__ 10__ 11__ 12__ 13__ 14__ Location of Transcript _____
BIOGRAPHICAL DATA	**TEST DATA**
Occupational Preference Hobbies and Interests Educational Goals	Otis _____ Iowa _____ Kuder _____ SCAT _____ CTMM _____ Stan _____

EMPLOYMENT RECORD

YEAR	FIRM	POSITION	SALARY	REASON FOR LEAVING

Exercise No. 4: James Foxx, Chairman

Problem

Your local board happens to be opposed in principle to federal aid to education, and the curriculum has traditionally emphasized the liberal arts. You have been asked to make a presentation at the next meeting.

1. Prepare an outline for a thirty-minute presentation explaining vocational education.
2. Include in the outline the contemporary role of federal assistance.
3. Briefly indicate the salient points supporting your position.

Answer

I. The role of education

A. To meet the needs of all students
   1. Drop-outs
   2. Terminal graduates
   3. Junior college vocational and technical students
   4. College prepatory students

B. To prepare students for entry-level occupations:
   1. By recognizing that terminal graduates and junior college terminal students comprise the majority.
   2. By realizing that while the school has done an excellent job in liberal education, it must now turn its attention to those students not going to four-year colleges.

II. The problem of finance

A. The federal government has recognized the additional cost of vocational courses in the increasing amount of federal legislation offering assistance.

B. Legislation is designed to assist the local districts in new and improved programs; these acts encourage local efforts, not give-aways.

III. Recommendations

A. That the district seriously consider the expansion of its vocational program:
   1. To meet the needs of the entire community.
   2. To take advantage of the vocational funds available.

B. That a committee be appointed to make a thorough study and prepare a full report of the vocational needs of the youth and adults of the community.

Exercise No. 5: Owen Harlan, Chairman

Problem

For the first meeting of a new advisory committee on airline stewardess training, you, as the Vocational Coordinator, need to make certain preparations.

1. Prepare an agenda for the organizational meeting.

2. Write a brief description of the functions which school personnel and other participants will perform at this meeting.

Answer

AGENDA

Date, Time, Location

I. Informal coffee hour

II. Introduction of members (representation)

III. Background information
   A. Need
   B. Facilities available

IV. Function and responsibility of committee members
   A. Board policy
   B. Operational framework

V. Election of chairman and recorder

VI. Course objectives and outline

VII. Discussion
  A. Plans
  B. Action

VIII. Adjournment

Exercise No. 6: Floyd Hunter, Chairman

Problem

Two members of your advisory committee for electronics have completed their term of office and new members are needed to fill the vacancies.

1. Write a letter of invitation to serve, addressed to a prospective new member.

2. Write a letter of announcement of the next meeting addressed to all members of the committee.

Answer

I. After an initial telephone conversation or visit with the prospective committee member by the Coordinator of Vocational Education, the following letter of invitation is sent by the Superintendent of Schools:

August 1, 1966

Mr. _____ _____
ABC Electronics Company
123 Resistance Street

Dear Mr. _____:

It is indeed my pleasure to extend an invitation to you to serve on our Electronics Advisory Committee for the coming school year. You have been recommended for this committee on the basis of your experience in the field of electronics and your expressed interest in our program.

I realize that committee meetings make demands upon your time; however, there is no substitute for the participation of people like yourself in assisting in carrying out effective vocational programs.

Mr. _____, Coordinator of Vocational Education, will contact you regarding the details of the next meeting.

We would appreciate a confirmation of this invitation at your earliest convenience.

I will be looking forward to meeting you.

Sincerely yours,

Dr. _____
Superintendent of _____

II. Future communications regarding details (duties and responsibilities of committee members) and agendas are the responsibility of the Vocational Coordinator. The letter of announcement of the next meeting is as follows:

To: Electronics Advisory Committee Members for _____ Public Schools

From: _____, Coordinator of Vocational Education, _____ School District

Subject: The next meeting of the Electronics Advisory Committee

The next meeting of the Electronics Advisory Committee will be held on (date) at (location) at (time). Please notify me if you will not be able to attend.

On the agenda will be:

1. The minutes of the previous meeting
2. A report of the present electronics program at _____ High School
3. Other

Exercise No. 7: Curtis Lackey, Chairman

Problem

Your Board of Trustees has indicated that it lacks an understanding of terms and requests that you submit clear definitions of certain terms at the next board meeting.

1. Write concise and comprehensive definitions of the following terms: vocational-technical education, industrial arts education, apprenticeship education.

2. These definitions should be approximately 150 words in length.

Answer

I. Vocational-Technical Education

The principal purposes of vocational-technical education are the preparation of youth and adults for gainful employment and the provision of a foundation of skills and knowledge flexible enough to enable these persons to remain employed and productive long after they have entered their chosen occupation.

Vocational-technical education provides systematic learning experiences that have been designed primarily to fit individuals for gainful employment and derives its content from continuing analysis of the specific occupations and activities currently engaged in by those persons concerned with the production of goods and services. Furthermore, these analyses include the investigation of needs in anticipation of future demands for continued success in each field. Each instructional program is so constituted as to be as nearly representative as possible of the conditions and equipment encountered in the actual occupation. Preparation for successful livelihood is its primary function and therefore requires that its students achieve a prescribed level of competence before graduation. As an added note, occupational preparation cannot be considered technical unless it requires a minimum proficiency in applied mathematics and science.

II. Industrial Arts Education

Industrial arts is that part of general education at the elementary and high school levels that introduces youth to the basic materials and industrial processes by which society maintains itself. It derives its content from the sociology, economics, anthropology, industrial practices, technology and general aspects of the world of work. It is an acculturation medium whereby young people may be exposed to a variety of experiences unavailable to them through other means and is usually the only avenue by which they may gain insight into the myriad modes by which Americans gain their livelihood.

Industrial arts is general education in that it focuses upon knowledge and attitudes that are useful for successfull living in the broadest sense of the word. It provides unique opportunities for students to participate in representative industrial experiences and assists in the discovery and development of personal aptitudes, interests, creative technical abilities, responsibility, and resourcefulness through problem-solving and self-expression in an environment related to industry.

The primary function of industrial arts is that of career exploration. Interests and occupational choice can only be based on experience, and industrial arts seeks to provide a broad spectrum of experiences and concepts drawn from the real worlds of commerce, industry, science and technology.

III. Apprenticeship Education

Apprenticeship is an organized system of on-the-job training, supplemented by related technical instruction, in which the apprentice earns while he learns.

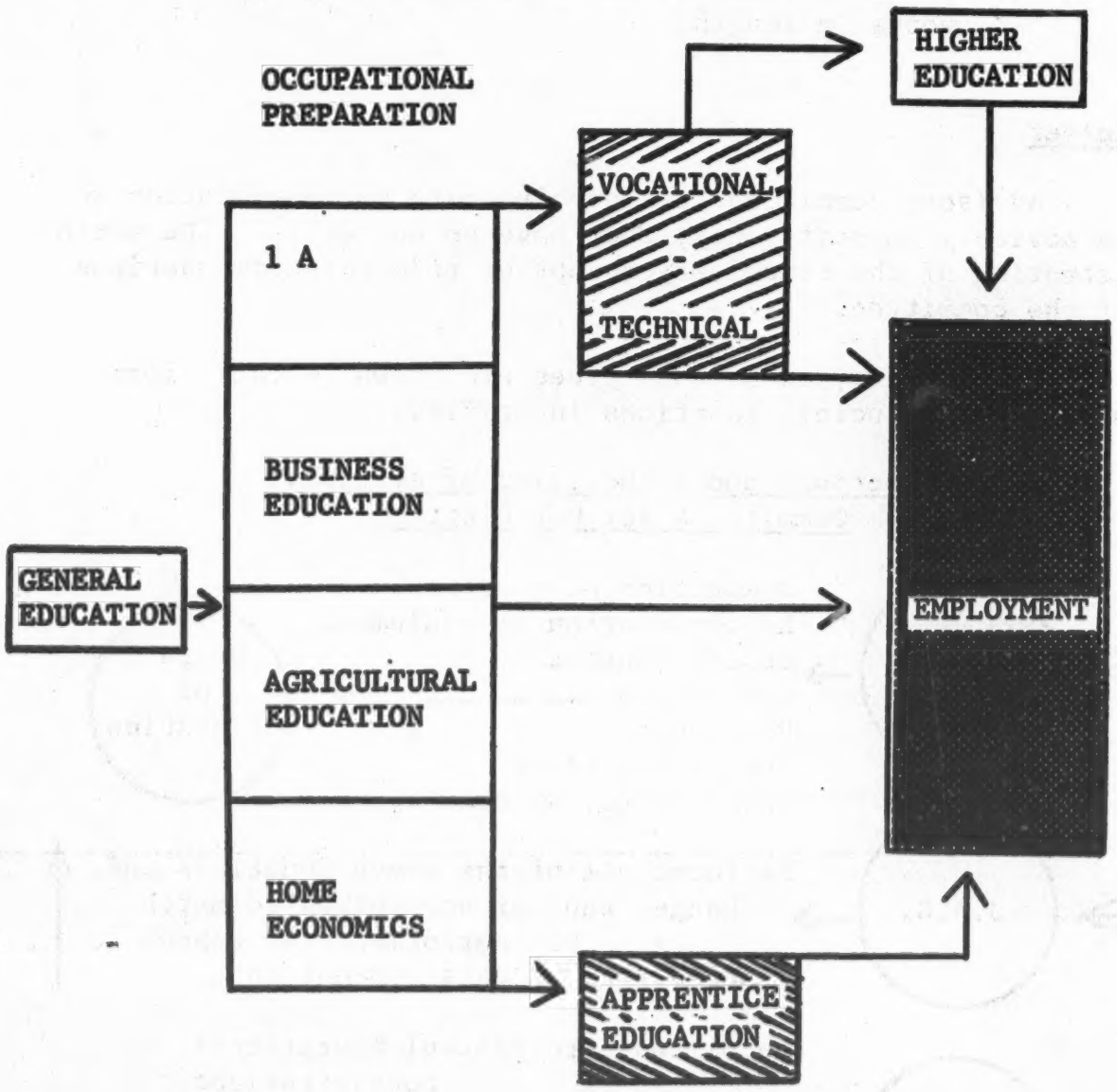
In California, this is a legally constituted activity under the Shelley-Maloney Apprenticeship Labor Standards Act. Locally, the program is governed by a Joint Apprenticeship Committee consisting of representatives from labor, management, the local school and the Division of Apprenticeship Standards.

An apprenticable occupation is one which requires two thousand hours of training. In most cases the apprentice is indentured to the Joint Apprenticeship Committee, which places him for training on-the-job

with a qualified employer who is acceptable to the committee. Wages are prorated and increase as the apprentice approaches journeyman status.

The related technical instruction is generally offered in the school, where an instructor is recruited from the particular trade and is trained to teach by the Department of Education. Courses of study for such instruction are developed by the State Department of Education and others and are adopted by the Joint Apprenticeship Committee at the local level.

CORRIDORS FOR EDUCATION FOR EMPLOYMENT



Exercise No. 8: Glen Larsen, Chairman

Problem

You have been asked to make a presentation at the next administrative council meeting to explain the functions and authorities of the advisory committees with which you work. In preparation for this:

1. Write three statements describing, respectively, the Joint Apprenticeship Committee, the Educational Advisory Committee, and the Trade Advisory Committee.

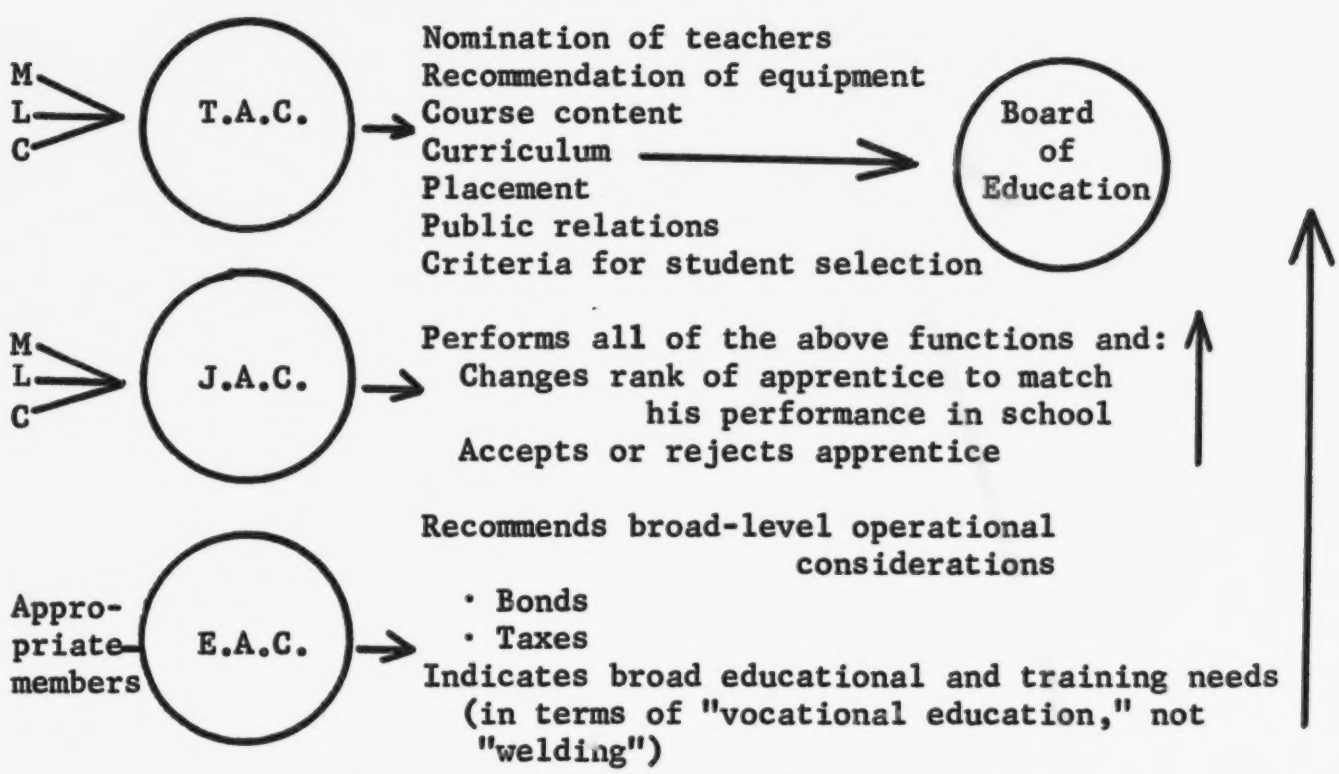
2. These statements should be approximately 150 words in length.

Answer

Advisory committees are appointed to serve education in an advisory capacity only; they have no authority. The administration of the school may accept or reject recommendations of the committee.

The three types of committees are shown in chart form with their principal functions identified:

Functions and Authorities of Advisory Committees for Our District



M = Management L = Labor C = Community

Exercise No. 9: Charles Mulkey, Chairman

Problem

You are engaged in an evaluative follow-up study, one phase of which consists of interviewing employers who have hired former students.

1. Prepare an outline for the interview.
2. List five techniques you might use to best acquire relevant information.
3. List five kinds of information you might seek to derive from the interview.

Answer

I. Interview

A. Review the purpose of the interview.

B. Review the program which trained the student.

C. Review the questionnaire about the student that the employer has prepared.

D. What new jobs does the employer foresee?

E. Who among the employer's staff might explain things, teach?

F. Will the employer participate in advisory committees and other school-community efforts?

G. What equipment and materials will the employer make available?

H. Is the employer informed about industry-education councils?

I. Will the employer involve his operation as a school-community resource?

II. Techniques

A. Send questionnaire in advance to the first-line supervisor.

B. Telephone new employers in advance of interview.

C. Prepare objective rating scales.

D. Send resumes or ratings on current graduates who might interest the employer.

E. Use flip-charts or other audio-visual aids.

F. Get participation of first-line supervisor if possible, plus owner, personnel manager, or whoever is assigned.

III. Kinds of information sought

A. In which position was the student accepted? What is the student's present position? What are his prospects for advancement?

B. What training does the student need for advancement?

C. Was the student adequately trained for the entry-level position?

D. How would the employer rate the student's attitudes, work habits, and efficiency?

E. What was the student's entry salary?

Exercise No. 10: C. Allen Paul, Chairman

Problem

In order to keep the administration advised of your activities as Vocational Coordinator and to prepare a basis for a comprehensive year-end report, you are going to prepare and submit regular one-page monthly reports.

1. Develop a format for the monthly report.

2. Make a list of the types of items to be included in the report.

Answer

The consensus is that a recommended format for monthly reporting not be developed, but that the Vocational Coordinator establish with the administration a reporting routine, if desired, that conforms to district policies. Methods may involve verbal or written reports to administrative staff meetings. The reports might cover:

I. Curriculum

A. New proposals

B. Changes

C. Trends

II. Personnel

A. Recruitment -- credentials

B. In-service training

C. Evaluation

D. Conference attendance

III. Facilities

A. Needs

B. Utilization

IV. Finance

A. Local budget

B. Reimbursement

C. Reporting

V. Community

A. Advisory groups

B. Civic activities

Exercise No. 11: Al Riendeau, Chairman

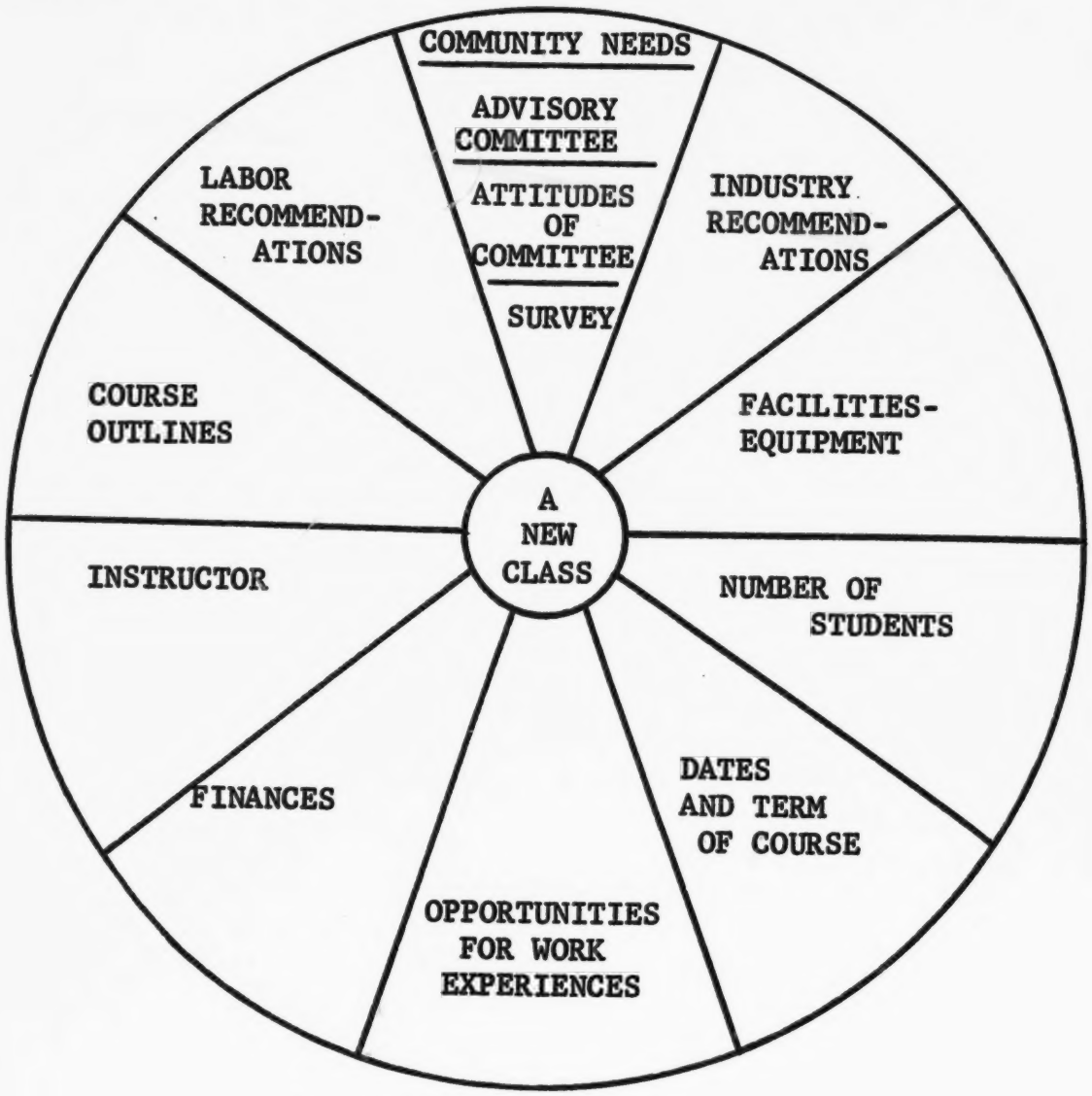
Problem

As Coordinator of Vocational Education you wish, on ample supportive information, to initiate a new course in air conditioning and refrigeration.

1. Design a format for a letter (report) to the curriculum committee and to the administration seeking approval to offer the new course, and incorporate with this a letter to a hypothetical district.

2. Make a list of the kinds of information which should be included.

Answer



NEW COURSE CONSIDERATIONS

Leadership For Vocational Education In California

To: Dr. A. Hardnose
Chairman, Curriculum Committee
Stovepipe Wells City College

From: Robert Softnose
Dean of Vocational Education

Subject: Recommended new Air Conditioning and Refrigeration course

It is proposed that a new two-year Air Conditioning and Refrigeration course be initiated in September, 1966, to qualify twenty students per year for entry into related technical occupations.

There have been repeated requests by local industry for training in this occupational area. In September, 1965, a nine-man advisory committee was established to study these requests and the need for training. The committee, consisting of representatives of industry, labor, the public, and education, made a complete survey and its findings and recommendations are included in the attached twenty-page report. In summary, the key findings and recommendations of this report are:

1. Over ninety percent of the thirty firms engaged in air conditioning and refrigeration favor this training program.

2. At least twenty technicians could be employed by these firms each year.

3. Mr. Johnson, Chairman, Central Labor Council, has stated in writing that the council endorses the program.

4. Ten of the firms surveyed have pledged to donate major equipment sufficient to outfit the shop. These donations will account for sixty-eight percent of the proposed equipment costs.

5. The college's student personnel office has advised that the proposed course will be filled immediately for the fall semester,

and that they already have a list of qualified and interested students.

6. Mr. John Coldspot, on our staff, has the requisite experience and credentials to teach this course. Only minor adjustment of existing and new class assignments will be necessary.

7. Shop No. 11 and adjacent classroom No. 11 are available for this new program (see Appendix A for proposed shop layout).

With the donation of major equipment, initial program costs to the district will be lessened. However, to provide some assistance to the district, a Vocational Education Act proposal will be submitted in April (see Appendix B for detailing of costs and proposed VEA financial assistance). If this proposal is approved by the end of February, ample time will be available to complete arrangements for program commencement in September.

I shall plan to be at the next curriculum committee meeting to answer any questions you and the members may have.

Exercise No. 12: Jim Soules, Chairman

Problem

You have established the need for expansion of your business data processing curriculum which will require additional equipment and facilities.

1. Devise the format for a one-page report/request to your Board of Trustees explaining the situation and requesting authorization to submit a project for assistance under VEA, 1963.

2. Prepare a list of the kinds of items that should be included in this report/request.

3. Write an example of such a memorandum.

Answer

I. The format

A. Statement of purpose

B. Statement of present course offerings

C. Statement of the nature of the expansion needed
1. How will it meet labor market needs?
2. How will it meet student needs?

D. Data to justify expansion
1. Department of Employment
2. Advisory committee
3. Increase of student enrollment
4. Student requests

E. Statement of costs
1. District share
2. VEA share

F. Itemized list of costs

II. A sample report to the Board of Trustees

The following report is submitted in response to the request by the Board of Education and the Superintendent of Schools to evaluate the vocational education program in Golden Bear's three high schools and junior college.

Our most pressing need is to expand our data processing department. At present, we are training keypunch operators only, and there is a need to expand the program to train computer operators. This necessitates additional equipment and personnel to conduct the program.

Therefore, we request authorization to submit a project to the State Department of Education for assistance under the Vocational Education Act of 1963. The total amount necessary to meet our needs is $80,000. The amount required from the local district is $40,000 and the additional $40,000 may be obtained from Vocational Education Act funds.

The reasons for the expansion of the business data processing program are as follows:

1. The Business Advisory Committee and the Department of Employment have just completed a study of training needs in our city, and they report a continuing need for persons trained in business data processing. The new facilities of the United States Air Force will require more workers than we are currently training in the computer field.

2. The increased student enrollment at Golden Bear College indicates that the percentage of students requesting data processing will increase next year.

A budget summary and a report of the community survey are attached. Your consideration and approval of this request at the March board meeting is necessary to qualify for the $40,000 federal aid.

Exercise No. 13: John Stead, Chairman

Problem

As the Director of Vocational Education, you have had ample opportunity to observe one of your teachers in the agriculture program.

1. Write a memorandum inviting the teacher for a conference.

2. Prepare an outline for the conference with this teacher to discuss the improvement of instruction.

Answer

I. The invitation to the teacher is as follows:

I enjoyed visiting with you last Tuesday and observing your agriculture class.

As we discussed at that time, I would like to arrange a time when we could exchange ideas concerning agricultural instruction programs.

I have set aside Monday afternoon of next week to meet with you in your classroom during your preparation period.

Please let me know at your earliest opportunity if this time will be convenient for our meeting.

II. An outline for the conference

The conference should be as unstructured as possible, taking its cues from the needs of the instructor, but should probably cover:

A. Course objectives and content

B. Teaching methods

C. Student rapport

D. Course organization

Exercise No. 14: George Outland, Chairman

Problem

As a function of evaluation it will be your responsibility to conduct a follow-up study.

1. Prepare a list of the activities to be performed, including preliminary preparation.

2. Write a sequential outline for such a study.

Answer

The Director of Vocational Education has received numerous requests for follow-up information. His role in coordinating the district's follow-up study can best be described as that of a catalyst, bringing together the various disciplines that can make a contribution to the study.

Preliminary to the actual development of the procedures involved in this follow-up will be a period of constructive sensitizing of staff, students, and community to the importance of

such information. Once the director feels he has adequate administrative, staff, student, and community support, it is suggested that the following operational steps for the follow-up be implemented:

I. Determination of information to be collected through the committee on follow-up

   A. School staff; vocational and general

   B. Guidance

   C. Advisory committee

   D. Students; currently enrolled, graduates, drop-outs

   E. Employers

   F. Research staff

II. Collection of data

   A. Design the questionnaire.
      1. Simple
      2. Direct

   B. Determine the group to be surveyed.

   C. Utilize a preliminary questionnaire as a sample.

   D. Revise questionnaire as indicated by evaluation of sample distribution.

   E. Review carefully the results; this should be done by the follow-up committee in order to develop recommendations to be presented to the superintendent.

   F. Build in monies to cover part of the cost (Actually, we suggest that monies for follow-up be built into each VEA project).

Exercise No. 15: Cecil Green, Chairman

Problem

Development of sound vocational programs requires clear and persuasive communication with district administration, not only in reporting past performance but in delineating future plans.

1. Prepare a list of the kinds of information which might be included in a report to your superintendent showing plans for the coming year.

2. Write a rather detailed outline for such a report.

Answer

I. The present status of vocational education

A. The number of students enrolled in occupational programs
   1. Age; sex
   2. Grade-level
   3. Type of program

B. Follow-up of graduates
   1. Students who completed programs
      a. Age; sex
      b. Type of program
      c. Present status
   2. Students who left programs prior to completion
      a. Age; sex
      b. Present status

C. Limitations of present program
   1. Budget
   2. Personnel
   3. Facilities
   4. Support

II. Plans for next year

A. Maintenance, improvement, or deletion in present programs
   1. Results of community survey, student needs, follow-up records, advisory committee recommendations, etc.

2. How well program meets established goals.

B. Proposed new programs
1. Describe each new program under consideration.
2. State how need was established.
3. Tell in what way program will meet needs of community.
4. State how each program will be implemented, including time schedules.

III. Report of program costs

A. Cost of maintaining existing programs
1. Student
2. Program
3. Total

B. Cost of improving and expanding existing programs

C. Cost of establishing new programs
1. Direct and indirect costs
2. Recommendations for financing

Exercise No. 16: Curtis Lackey, Chairman

Problem

Planning good vocational education requires careful organization and the cooperation of many people. As Coordinator of Vocational Education, you are planning a one-year development activity.

1. Prepare a list of the kinds of persons you would involve in the total planning process.

2. Write a sequential outline of the procedure for developing new programs and insert from the list where appropriate.

Answer

- A list of persons from community and education who should be involved in the total planning process

1. Board of Education
2. General advisory committee
3. Special advisory committee

4. Industry personnel
5. Labor representatives
6. Department of Employment (local and area)
7. Professional and trade associations
8. Chambers of Commerce, Industry-Education Council, and others
9. Students
10. Teachers
11. Counselors
12. Department chairmen
13. Principals
14. Coordinators (local)
15. Curriculum committees
16. Deans of instruction
17. Assistant Superintendent of Business
18. Superintendent
19. District Coordinator
20. County
21. Regional (state)

- An outline of procedure for developing new programs (numbers correspond above)

1. Authorization to proceed (determined by local procedure)

2. Determination or justification of need: 4, 5, 6, 7, 8, 11, 18, 20, 21

3. Authorization to act: 13, 16, 14, 18, 3, 15

4. Development of curriculum: 10, 11, 12, 15, 19, 20, 21, 3

5. Development of budget (facilities, equipment, supplies): 10, 11, 12, 16, 17, 19, 20, 21, 3

6. Acceptance: 10, 11, 12, 15, 16, 17, 18, 21, 1

7. Initiation: 9, 10, 11, 12, 13, 16, 3, 6, 8

8. Follow-up, placement, and evaluation: 9, 10, 11, 12, 14, 16, 19, 3, 4

Exercise No. 17: Mel Estrada, Chairman

Problem

Dynamic public relations activities are vital to the development and maintenance of vocational programs.

1. Design a brochure explaining the total vocational program or a single curriculum for your school.

2. Write a news release about a new program to be initiated at your school.

Answer

I. Brochure

A. Attractive design (samples were shown to the conference)
   1. Shape
   2. Size
   3. Color

B. Content
   1. Cover page
      a. Title of program
      b. Illustrative figure or picture
      c. School name, address, and phone number
   2. Inside pages
      a. Course outline
      b. Job opportunities
      c. Length of preparation
      d. Name of person to contact for admission to course

II. News release

A. News releases should be timely.

B. News releases should contain:

1. A brief description of the program and/or of the aims of the program
2. The location of the school where the program is to be offered
3. The time and date of enrollment
4. The dates of the first and last days of class
5. The name of the contact person

C. A news release might read as follows:

HOME LANDSCAPING TO BE OFFERED BY J. C.

Starting Thursday, September 15, Golden Bear Junior College will offer a non-credit class in Home Landscaping. The class will meet each Thursday evening from 7:00 p.m. to 10:00 p.m.

This course is designed to aid the home-owner or other interested persons in planning, designing, or improving the ornamental landscape surrounding residential buildings.

Those who wish to enroll can do so from 7:00 p.m. to 9:00 p.m. on Monday, September 12, or on Tuesday, September, 13.

For further information please contact Mr. Swartz in the Adult Education Office or phone 752 - 8216.

VOCATIONAL EDUCATION CLINIC

Robert L. Obrey, Chairman

The Panel: Richard S. Nelson, Lee W. Ralston, Dorothy M. Schnell, Joseph H. Stephenson, Rulen C. Van Wagenen, Donald E. Wilson

Special Guest: Mary Ellis, "The Oracle From Daedalus of Athens, the Skillful Artificer"

QUESTIONS TO THE PANEL

Editor's note: John H. Stead substituted for Lee Ralston on the panel.

Question: CAN WE FUND A PROGRAM TO CHANGE COMMUNITY ATTITUDES TOWARD VOCATIONAL EDUCATION FOR ITS YOUTH? WHAT IS PROPOSED IS AN ALL-OUT PROGRAM, INCLUDING TELEVISION AND OTHER COMMUNICATIONS MEDIA, FOR PARENTS, FOR THE BUSINESS COMMUNITY, AND FOR STUDENTS (SIXTH GRADE-LEVEL AND HIGHER).

Answer by Mrs. Schnell: One of the activities stated in P.L. 88-210 as a qualifying activity for receiving VEA funds is instructional materials. If the proposal can prove that the activity it plans is instructional (e.g., through television), it probably can be funded.

Question: SINCE YOUTH ACTIVITIES HAVE PROVED TO BE VERY EFFECTIVE IN HOMEMAKING AND AGRICULTURE, WILL THERE BE STATE STAFF ASSIGNED TO GIVE LEADERSHIP TO YOUTH PROGRAMS IN BUSINESS AND INDUSTRIAL EDUCATION? IF SO, WHO?

Answer by Mr. Van Wagenen: The bureau feels that the strength of the youth groups lies at the local level. Advisory committees from school administrators have counseled against state leadership or the assignment of staff for this function because the bureau renders consultative service to both the Future Business Leaders of America and the Distributive Education Clubs of America and assists with foundation grants from Sears Roebuck Company.

Question: WHAT IS THE PRESENT STATUS OF THE V.I.C.A. IN THE STATE OF CALIFORNIA?

Answer by Mr. Nelson: We are exploring this subject. If we have a youth club activity in California, it may be a California Industrial Education Club and it may be affiliated with V.I.C.A.

Question: HOW DO WE CONVINCE THE BOARDS OF EDUCATION AND THE SENIOR COLLEGES THAT WE DO A DISSERVICE TO HUMANITY AND TO EDUCATION WHEN WE DO NOT PROTECT THE AVERAGE STUDENT IN HIS SEARCH FOR KNOWLEDGE? HOW DO WE CONVINCE THEM THAT ACADEMIC EDUCATION IS NOT THE ONLY ANSWER?

Answer by Mrs. Schnell: A good high school accreditation program would certainly help in a high school program. Senior colleges have basic academic purposes which will probably always remain.

A good local director of vocational education could work through an advisory group and with State Department of Education personnel to describe vocational education in the state and to match efforts by the school with efforts in the school.

Question: EXPLAIN THE DEADLINE OF JUNE 30, 1966, AS IT PERTAINS TO THE DELIVERY OF GOODS FUNDED UNDER VEA. HOW LONG WILL WE CONTINUE THE PROJECT METHOD UNDER VEA?

Answer by Mr. Nelson: The policy of the district regarding expenditures of district funds will be honored by the Department of Education.

Question: HOW CAN THE F.E.A.S.T. PROGRAM CONCEPT BE EXPANDED TO THE OTHER IN-SERVICE AREAS OF INSTRUCTION, OF COORDINATION, AND OF TEACHER EDUCATION?

Answer by Mrs. Schnell: Application of the in-service idea of F.E.A.S.T., i.e., to train a team of teachers from a high school in a particular occupation and to prepare these teachers to handle the academic and occupational education of selected students in the high school, is dependent upon a creative attempt to design a proposal. The occupational training class in the high school is the part of the F.E.A.S.T. in-service concept that has been funded under VEA.

Question: I HAVE AN ELECTRONICS PROGRAM FOR WHICH I WANT TO PURCHASE EQUIPMENT AND HIRE A TEACHER, AND WHICH I WANT TO COORDINATE. WHICH PROJECT IS PROPER TO SUBMIT FOR FUNDING: VEA, GEORGE-BARDEN, OR NDEA?

Answer by Mr. Nelson: Your program can be funded by all three.

Question: HAVE PLANS BEEN MADE TO USE MEANS OTHER THAN THE PROJECT METHOD IN ALLOCATING VEA FUNDS?

Answer by Mr. Wilson: Several other methods are under consideration. Eventually, some sort of combination of a basic support-level system and a project system for new emphases will evolve.

Question: WHAT WILL BE THE RESULT OF THE NINETY PERCENT/TEN PERCENT MATCHING REQUIREMENT IN MDTA EFFECTIVE JULY 1?

Answer by Mr. Nelson: Ten percent matching can be "in kind." This could be used for facilities, administrative overhead, etc.

Question: HAS THERE BEEN ANY ACTION TOWARD THE STANDARDIZATION OF CLASS OR PROGRAM REPORTING AND OF REIMBURSEMENT PRACTICES BY THE SEVERAL SERVICES?

Answer by Mr. Van Wagenen: A standardized procedure for reporting classes and programs is now being developed. This is an important development in reporting systems and should simplify reporting in the long run. It is anticipated that such a standardized system of reporting will serve all bureaus.

Question: TO MEET THE NEEDS OF THE SLOW LEARNER, SHOULD VOCATIONAL PROGRAMS BE ORGANIZED TO COMBINE REMEDIAL READING, WRITING, AND ARITHEMATIC SKILLS WITH OCCUPATIONAL TRAINING SKILLS?

Answer by Mr. Stephenson: Yes, if remedial education is not otherwise being offered and if such education is necessary to prepare a person to succeed on the job. Our task should go beyond training for occupational skills.

Question: WHAT IMPACT, NEGATIVE OR POSITIVE, IS THE VOCATIONAL PROGRAM AT PARKS JOB CORPS CENTER HAVING UPON THE PUBLIC SCHOOLS' VOCATIONAL PROGRAM?

Answer by Mr. Nelson: Yes!

Question: SHOULD WE HAVE A STANDARDIZED FOLLOW-UP FORM FOR EVALUATION OF GRADUATING STUDENTS?

Answer by Mr. Stephenson: No standardization, but some similarity.

Question: IF A DISTRICT IN ITS ORIGINAL PROPOSAL (VEA) HAS ASKED FOR AND RECEIVED $100 IN LOCAL FUNDS AND $200 IN FEDERAL FUNDS AND ONLY SPENDS $150, HOW IS THE REIMBURSEMENT COMPUTED?

Answer by Mr. Wilson: The reimbursement is computed on the basis of actual expenditures in line with the approved project budget. Some substitution is possible with approval within subtotals.

Question: WOULD IT NOT BE BETTER TO ESTABLISH A SEPARATE BUREAU TO HANDLE ALL FEDERAL MONIES RATHER THAN TO HAVE INDIVIDUAL BUREAUS GO THEIR INDEPENDENT WAYS?

Answer by Mr. Stephenson: No, unless the organization was made up of members of the various bureaus.

Question: IS THERE ANY PROSPECT THAT MORE THAN FIFTY PERCENT SUPPORT MAY BECOME AVAILABLE TO START NEW AND INNOVATIVE PROGRAMS? WHEN DISTRICTS ARE MATCHED TO DEATH, FIFTY PERCENT IS NOT ENOUGH TO SELL A PROGRAM EVEN THOUGH THAT PROGRAM IS SORELY NEEDED BY THE STUDENTS AND BY THE COMMUNITY.

Answer by Mr. Van Wagenen: The prospect is good, I think, for reimbursement of over fifty percent to school districts for programs of an experimental nature which are designed to expand and improve vocational education under the research and experimentation provision of the Act (ancillary services). When we discover the extent and scope of the total district effort in public education, we will be in a better position to develop such programs.

Question: WHY CAN WE NOT CONSIDER BOTH INSTRUCTION AND SUPERVISION BY OUR OWN SCHOOL STAFF AS BEING PART OF THEIR REGULAR ASSIGNMENT RATHER THAN AS BEING "OVER AND ABOVE REGULAR DUTIES?" WE ARE FLEXIBLE IN OUR OTHER INSTRUCTION AND SUPERVISION PROGRAMS, SO WHY NOT IN MDTA?

Answer by Mr. Nelson: Regulation indicates that all costs of MDTA programs must be "direct and attributable."

Answer by Mr. Van Wagenen: You may use your existing staff if you do not expect to be reimbursed.

QUESTIONS TO THE ORACLE

Mary Ellis, "The Oracle From Daedalus of Athens, the Skillful Artificer"

Question: SHOULD VOCATIONAL EDUCATION BE CONCERNED ABOUT SECTION 612 OF THE ECONOMIC OPPORTUNITY ACT?

Answer: Yes, I don't believe we have any choice. As our political structure continues to change in the nation and as more legislation is adopted which has both direct and indirect bearing on our educational system, I believe we will see unprecedented demands on our time and talent to both direct and cooperate with other agencies and programs.

Question: IS IT POSSIBLE TO OBTAIN A MASTER'S DEGREE IN VOCATIONAL EDUCATION IN CALIFORNIA? IF SO, WHERE? IF NOT, SHOULD THE STATE DEPARTMENT PROMOTE SUCH A PROGRAM?

Answer: Your State Vocational Education Department can furnish you with a list of institutions offering vocational education and with the names of any which might offer a master's degree in vocational education. The United States Office of Education in Washington, D.C., could also supply you with names of institutions awarding degrees in vocational education.

Your state has shown much leadership in meeting the needs of vocational-technical personnel. As the program continues to expand, you can anticipate that the state will promote such programs.

Question: ONE PROBLEM OF PROGRAM IMPROVEMENT IS THE NEED FOR FACILITIES, ESPECIALLY BUILDINGS. DOES THE ORACLE SEE IN THE NEAR FUTURE INCREASED FEDERAL AID FOR BUILDING?

Answer: As you probably know, the House Appropriations Committee struck the residential school authorization funds from the bill which was subsequently passed by the House of Representatives last Thursday. Only as the total funds authorized under P.L. 88-210 are appropriated will funds be increased for Section 4

of the Act. Approximately one-third of all federal funds is being expended for construction under the provisions of P.L. 88-210. However, construction funds under the provisions of the Higher Education Facilities Act, the Library Construction and Facilities Act, and the Public Works and Economic Development Act may be used in a manner that would support the total vocational effort.

Question: HOW DO YOU GET A DEPARTMENT CHAIRMAN WHO PASSIVELY RESISTS EXPANSION OF VOCATIONAL EDUCATION WITHIN HIS OR HER DEPARTMENT TO GET OFF THE DIME?

Answer: My partner and I can answer almost any question. Unfortunately, my partner is not here tonight.

APPENDIX

CONFERENCE AGENDA

State Conference: Playa Del Rey, California

May 10-11, 1966

Tuesday, May 10, 1966

9:00 a.m.	REGISTRATION AND COFFEE
10:00 a.m.	OPENING REMARKS Bruce Reinhart
10:30 a.m.	CASE STUDY INTRODUCTION J. Lyman Goldsmith
11:00 a.m.	CASE STUDY WORK GROUPS J. Lyman Goldsmith, Chairman
12:00	Lunch (no host)
1:00 p.m.	CASE STUDY WORK GROUPS (continued)
2:45 p.m.	Coffee Break
3:00 p.m.	CASE STUDY REPORTS J. Lyman Goldsmith, Chairman
4:00 p.m.	THE GRAB BAG OF LEADERSHIP TASKS Irvin Colt, Chairman
5:00 p.m.	Informal Social (no host)
6:30 p.m.	BANQUET AND VOCATIONAL EDUCATION CLINIC Robert L. Obrey, Chairman Richard S. Nelson Lee W. Ralston Dorothy M. Schnell Joseph H. Stevenson Rulen C. Van Wagenen Donald E. Wilson Mystery Guest: "The Oracle from Daedalus of Athens"

CONFERENCE AGENDA

Wednesday, May 11, 1966

9:00 a.m.	"THE PROCESS OF ASSESSMENT" Richard S. Nelson James A. Herman
10:30 a.m.	Coffee Break
11:00 a.m.	JURY GROUPS Irvin Colt, Chairman
12:00	Lunch (no host)
1:00 p.m.	JURY GROUP REPORTS Irvin Colt, Chairman
2:00 p.m.	"LEADERSHIP FOR VOCATIONAL EDUCATION IN CALIFORNIA" Wesley P. Smith

CONFERENCE PARTICIPANTS

COASTAL

Bernard H. Archbold
Lee D. Bodkin
C. Patrick Carter
Everett Edington
Lawrence Edler
Melchior S. Estrada
William C. Fortman
Lyman C. Fowler
William Gordon
Owen Harlan
James Hoerner
Floyd M. Hunter
Bernice I. Jacubinas
Robert C. Kvam
Francis Larson
Paul V. W. Lofgren
Robert W. Lorenzen
Harry Loucks
Leo A. Meyer
Charles Mulkey
Jesse E. Norris
Robert L. Obrey
George F. Outland
John Pennington
Milton Reiterman
Albert J. Riendeau
John Satterstrom
George H. Schwalm
Edgar L. Smith
W. Verne Stevenson
Richard Storm
Al Waltz
Milan Wight
John L. Wixon

CENTRAL

E. T. Barnett
Samuel L. Barrett
C. Kent Bennion
Roland M. Boldt
Gaylord Boyer
John P. Conley
Robert K. Eissler
Robert P. Hansler
James A. Herman
Karl F. Jacobson
Gene Jensen
Russell P. Journigan
Curtis E. Lackey
Jerome C. Levendowski
Lloyd Livingston
Richard S. Nelson
M. Claire O'Brien
Henry J. Opperman
Richard Page
Richard C. Payne
Dorothy M. Schnell
Louis A. Schwark
J. Winston Silva
Wesley P. Smith
Lester J. Swartz
Russell Tibbetts
Roger K. Tucker
John Van Osdel
Rulen C. Van Wagenen
Donald E. Wilson
Don R. Youngreen

SOUTHERN

Jim Allison
Charles C. Brady
Irvin Colt
Kenneth B. Cutler
Stanley Everett
David E. Fleckles
James Foxx
Edward E. Fuller
Gordon Funk
Marjorie Gardner
J. Lyman Goldsmith
Cecil D. Green
Chester Gromacki
Glen R. Guldberg
Lowell Jones
Martha C. Kamm
James C. Krebs
Millard S. Lachman
Glen M. Larsen
W. James Maynard
John McDannel
Tillie Neft
Fred E. Orr
C. Allen Paul
Lee W. Ralston
Stanley Dean Ross
Thomas S. Ryan
Arthur Schilder
Fred Sherwyn
Donald Sieber
Robert G. Soltys
James G. Soules
Norman R. Stanger
William A. Stanton
John Stead
John H. Stephenson
Dorothy W. Stone
David O. Taxis
Robert Tobi
John R. Toothaker
Wayne C. Walraven
Don Welty
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Hilda Frazer, Secretary

Patricia H. Endo, Typist

WE MUST STRIVE FOR AN

ARISTOCRACY OF ACHIEVEMENT

ARISING OUT OF A DEMOCRACY

OF OPPORTUNITY.

THOMAS JEFFERSON